



Department of Forestry and Natural Resources Self-Study Report 2016-2020

Submitted to:

Dean Cox and the 2021 Forestry and Natural Resources Periodic Program Review Committee

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Submitted by:

Dr. Jeffrey Stringer, Chair
Department of Forestry and Natural Resources
College of Agriculture, Food and Environment
University of Kentucky
859-257-7596 stringer@uky.edu

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Executive Summary

Forests are critical to Kentucky occupying approximately 50 percent of the commonwealth's land area. They provide clean air, clean water, wildlife habit, renewable resources, and a place for people to recreate and enjoy the beauty of nature. Not only are forests important to Kentucky for the ecosystem services they provide, but forests have a key role in Kentucky's economy. In 2019, the total economic contribution of the forest sector to Kentucky was \$13.2 billion and the Kentucky forest sector directly employed almost 28,000 people¹.

The research, teaching and extension missions of the Department of Forestry and Natural Resources are to effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs elevate the quality of life by 1) enhancing the integrity, stability, and health of forests and related biotic communities, and 2) increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources.

The purpose of this Self-Study Report is to provide meaningful discussion and reflection on the core areas of the Department of Forestry and Natural Resources. As outlined in the report, despite the small size of our program, our faculty and staff make a huge impact on the forested resources, woodland owners, wood products industry, natural resource professionals, youth, and residents of Kentucky and beyond.

Our impact can be seen in the university, state, and national recognition of our faculty and staff. Examples include the UK Alumni Association Great Teacher Award in 2018; Kentucky's Environmental Excellence Award for Resources Caretaker; and the National Family Forest Education Award for the UK Forestry Extension program by the National Woodland Owners Association and National Association of University Forest Resources Programs, in 2009 and 2018.

Our impacts can be seen in the significant environmental and economic research contributions to forests, water and wildlife in Kentucky supported by the McIntire-Stennis program (Appendix A). In total, our McIntire-Stennis supported research projects have resulted in significant cumulative impacts including²:

- **125 million trees** – planted using improved practices to reforest surface mines and abandoned agriculture lands
- **3,319 streams** – annually afforded protection through the use of scientifically developed timber harvesting best management practices
- **\$5.3 billion** – in annual economic contributions positively impacted by research used by forest industry and in wildlife management
- **251,200 acres** – of privately owned forest land in Kentucky annually improved or positively impacted

¹ Source: Stringer, J.S., B. Thomas, B. Ammerman, C. Niman, D. Agyeman, G. Dhungel, and T. Ochuodho. 2020. Kentucky Forest Sector Economic Contribution Report 2018-2019. FORFS 20-02 https://forestry.ca.uky.edu/files/2020_kycontributionreport.pdf

² Source: Kentucky Agriculture Experiment Station McIntire-Stennis Projects – Research at the University of Kentucky 2019. https://forestry.ca.uky.edu/sites/forestry.ca.uky.edu/files/universityofkentuck-mcintirestennisreport-2019_0.pdf

- **13 million acres** – acres of public land in 8 states including Kentucky using research-based management

Since their inception, these projects have resulted in:

- 103 post-baccalaureate (Doctoral and Masters) trained professionals
- 819 undergraduate students
- 20,000 volunteers engaged
- 4,100 forest and natural resource professionals trained in the use of practices that were developed based on science generated from McIntire-Stennis projects at the University of Kentucky.

Our impacts can also be seen through our extension work providing current, applicable information on the sustained use and management of Kentucky’s forests for woodland owners, wood products industry, natural resource professionals, county agents, youth, and residents of Kentucky and beyond. A summary of UK Forestry and Natural Resources Extension Programs for 2018-2019 is provided in Appendix B. In this most recent UK FNR Extension Programs summary (for 2018-2019), extension support from the Renewable Resources Extension Act, which provides capacity funding for many of our extension programs, resulted in:

- **Ensuring Healthy Ecosystems** – 3,013 direct contacts learned to manage, control and prevent invasive species in 45 programs.
- **Economic Opportunities for Individuals and Communities** – Eighty-three programs were delivered directly to 2,612 individuals, and 69,973 people learned about the economic contributions of forestry and natural resources. Eight hundred and sixteen businesses were created or expanded, and five jobs were added. Forest-related industries in Kentucky and neighboring states saved or earned \$118,829,373. Of this, industry processing of timber harvested by trained Kentucky Master Loggers added \$93 million to Kentucky’s economy, and chain of custody certification provided almost \$16 million through the Center for Forest and Wood Certification. The remaining portion arose from training programs related to lumber drying and grading, machining, and entrepreneurship conducted at the UK’s Wood Utilization Center.
- **Forest Stewardship and Health** – One hundred and five programs were delivered to attendees about the benefits and opportunities of forest management. Two hundred and ninety-five landowners were trained to make management plans, influencing 2,217 direct contacts. An additional 72,110 were informed about the benefits of forest management, and 64 landowners indicated they would implement a forest management plan, for a total of 144,056 acres affected. The Kentucky Master Logger Program gave state-mandated training to 516 loggers representing 397 firms. Trained loggers worked with 931 landowners owning 33,590 acres.
- **Wildlife Management and Damage Control** – Wildlife programming provided 41 programs with 3,177 attendees and 105,786 indirect contacts. 1,259 individuals indicated they would adopt practices promoted in these programs, affecting 91,090 acres.

Our small department makes a huge impact in teaching, research and instruction. However, to maintain and build upon our work, additional institutional support is needed. Below are the priority areas for additional support that have been identified.

1. **T.P. Cooper Building** – The condition of the T.P. Cooper building is subpar and greatly detracts from the learning and working environment. Addressing the T.P. Cooper building issues is critical to improving the *learning and working* environment.
1. **Open Faculty Positions** – Due to hiring freezes and budget cuts during the pandemic, we have lost funding for 1.5 positions, resulting in the functional loss of two faculty members, one in research/teaching and one in extension. Filling these faculty lines is critical to the *instruction, research, and extension needs* of the forestry sector of Kentucky.
2. **Teaching Assistants** – The number of teaching assistants (TAs) has been reduced. We need to increase the number of TAs to cover *instructional needs* adequately.
3. **Research Technicians** – In the funding loss, we also lost half of a research technician position. There is an overall shortage of technicians in the department. Increasing the number of research technicians is critical for the maintenance and growth of our *research enterprise*.

I. Introduction

The Department of Forestry and Natural Resources (FNR) is one of 14 academic departments within the College of Agriculture, Food and Environment (CAFE) at the University of Kentucky. It has one of only a few professionally accredited degree programs in the college and the only accredited forestry program in the state. As such, the department is responsible for servicing all demand for forestry undergraduate and graduate programs, and the majority of research and all forestry-related Cooperative Extension programming in Kentucky. Approximately 50 percent of Kentucky is forested and there are 473,000 woodland owners in the state. According to the Kentucky Forest Sector Economic Contribution Report for 2018-2019, the direct economic contribution of the Kentucky forest sector in 2019 was \$9.1 billion and the total economic contribution was \$13.2 billion¹, on par or exceeding the economic contributions from highly visible industries like bourbon production and coal mining. In 2019, the Kentucky forest sector contained over 700 industry facilities and directly employed almost 28,000 people with a total employment of over 60,000¹. Kentucky is typically one of the top three hardwood-producing states in the country. Additional information on the forest sector economic contribution can be found on our website, [Kentucky Forest Sector Economic Contribution](#).

Mission, Vision, and Goals

The stated mission of the department is to enhance the ecological, economic, and social benefits of forests and related natural resources to elevate the quality of life for Kentuckians and beyond (Table 1).

Table 1. Department of Forestry and Natural Resources vision, mission, and departmental goals

Vision
The Department of Forestry and Natural Resources will be widely recognized for improving the lives of people and for improving the condition of human and biotic communities through learning, discovery, and outreach activities relating to forests and natural resources.
Mission
Research, teaching, and extension programs of the Department of Forestry and Natural Resources will effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs will elevate the quality of life by: <ul style="list-style-type: none"> • enhancing the integrity, stability, and health of forests and related biotic communities • increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources.
Goals
<ul style="list-style-type: none"> A. Enhance the university’s stature among its peers B. Prepare students for leadership in the knowledge economy and global society and stewardship of natural resources C. Enhance the intellectual and economic capital of Kentucky through growth in research D. Embrace and nurture diversity E. Engage Kentuckians through partnerships to elevate quality of life.

Instruction

FNR accomplishes its mission through instruction, research, and extension activities. FNR's primary instructional responsibility is its B.S. in Forestry program. Additionally, FNR contributes to the college-wide program in Natural Resources and Environmental Science (NRES) and offers a minor in Wildlife Biology and Management. Graduate instruction is offered through the M.S. in Forest and Natural Resource Sciences program, including both thesis and non-thesis options at the M.S. level, and the newly established Ph.D. program. Individual faculty members and some doctoral graduate students have traditionally or are currently engaged in related graduate programs including Crop Science, Animal and Food Sciences, Integrated Plant and Soil Science, and Biology. Educational programs of FNR prepare students for careers as forestry and natural resource professionals in public agencies, industry, non-profit sector, conservation organizations and education, and position them to further their academic development in forestry and natural resource graduate programs across the country.

The instructional goal of FNR is to prepare students for leadership in the knowledge economy and global society. Educating students is a fundamental means by which FNR enhances the future of the Commonwealth. FNR expects graduates to become leaders in forestry and natural resource professions, as well as their communities. Forestry graduates will serve the Commonwealth, region, and nation, by helping enhance sustainable economic, ecological, and social benefits of forests in Kentucky and beyond. FNR seeks to provide a responsive learning environment of creative thinking that enables all students to achieve their highest level of proficiency. Instructional objectives include:

- Recruit and retain students with high academic and professional potential.
- Develop and implement actions that will result in a more diverse and inclusive student body.
- Sustain a learning environment that will be rigorous and highly relevant to career opportunities for our graduates. The teaching program will be focused and structured to prepare graduates for success in achieving FNR's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and related natural resources.
- Ensure our graduates will be well prepared for dealing effectively with forest and natural resource related issues.

Instructional programs involve teaching faculty and staff who are engaged in the land grant missions of research and extension. The faculty provide a wide breadth of experience and knowledge resulting in a diverse forestry curriculum. Joint appointments and close ties among extension, teaching, and research faculty provide a constant interchange of ideas and experiences that strengthen undergraduate and graduate instruction. The integration and interaction of faculty involved in instruction, research and extension is a reflection of the mission statements and goals of FNR's research and extension areas. While integration and leveraging of research and extension faculty is significant, funding for instruction is problematic. Recent pandemic budget and tuition reductions have disproportionately decreased instructional funding compared to research and extension. Increasing support for teaching-related activities is needed.

Research

The research goal of FNR is to enhance the intellectual and economic capital of Kentucky. The land grant mission of the university, college, and FNR encourages research activities that result in the discovery of new knowledge.

Discovery is an essential part of FNR's vision of being widely recognized for improving the lives of people and the condition of human and biotic communities. Research in FNR therefore helps provide insight and solutions to important challenges relating to sustaining long-term economic, ecological, and social benefits provided by forests and natural resources in Kentucky and beyond. Research disciplines include silviculture and forest operations, wildlife ecology and conservation biology, forest hydrology and watershed management, forest health and ecological restoration, landscape and spatial ecology, natural resource policy and economics, and urban ecology. FNR will continue to improve the quality, relevance, and effectiveness of our research program, and obtain additional support for research. The strong tie between research and extension enterprises helps ensure that results from FNR research contributes to formation of ecologically, socially, and economically integrated solutions to natural resource management problems. FNR also encourages strong links among research programs and undergraduate, graduate and post-graduate education to prepare scientists and resource managers to meet the challenges facing society.

Extension

The goal of FNR's extension program is to provide current, applicable information on the sustained use and management of the state's forest and natural resources to elevate quality of life of the people of Kentucky. The extension program utilizing resources on main campus and the Wood Utilization Center and Robinson Forest located in eastern Kentucky has:

- developed a statewide extension network and individual and collaborative applied research programs in natural resources management with a broad base of support;
- provided quality presentations and continuing education opportunities and resources for county extension faculty and forestry and natural resource professionals;
- provided continuing education programs for the public through media, audio-visual contacts, and publications to further an understanding of natural resources management;
- educated youth through developmental programs; and
- assisted FNR's instructional mission by teaching courses.

The extension program is recognized nationally as a leader in providing comprehensive forest management resources and programming and certification of forest industries and forest lands. The program has won the National Woodland Owners Association (NWOA) and the National Association of University Forest Resources Programs' (NAUFRP) National Award for Excellence in Forestry Extension Programming twice since 2009 and continues to lead the Center for Forest and Wood Certification resulting in over \$20 million in certified wood products sold annually across the US. In total, our extension efforts annually provide over 100 million in dollars saved or earned by the forestry industry and forestland owners.

The instruction, research, and extension areas are highly integrated within FNR. The mix of experiences and expertise of the faculty transfers to the classroom, creating a dynamic and

effective learning environment to ensure that students are well equipped to handle the breadth and complexity of issues facing forestry and natural resource professionals.

Summary of Most Recent Periodic Review

The 2016 Program Review Implementation Plan can be found in Appendix C and the annual Program Review Implementation Plan Progress Reports for 2014-2020 can be found at <http://administration.ca.uky.edu/ipreports> . Below are highlights from the 2019-2020 FNR Program Review Implementation Plan Progress Report.

Recommendation 1: With input from College, develop a plan to replace facilities to provide faculty, staff, and students with suitable office, laboratory, and classroom space.

We have begun conversations with the Director of Philanthropy and with our alumni about initiating fundraising for a new facility. A new natural resources building has been added to UK's master plan. Interim space plans include the incorporation of office and lab space provided to FNR in the Dimock Building.

Recommendation 2: Simplify the administrative structure for Robinson Forest and Robinson Center for Appalachian Resource Sustainability

Three initiatives were completed, or are in-progress, to improve the administration and provide for fiscally sustaining Robinson Forest (RF) and the Wood Utilization Center (WUC). The department chair has spearheaded the development of an administrative structure involving the development of Assistant Director Positions for the WUC (Bobby Ammerman) and RF manager (John Reinstetle), both department staff, at the Robinson Center for Appalachian Resource Sustainability (RCARS) to help adequately address resource needs of WUC and RF within RCARS. The department chair has worked with the RCARS director to develop a budgetary assessment to address immediate and on-going infrastructure needs at RF and the WUC. The chair has initiated planning to enroll Robinson Forest in a voluntary carbon program to provide continued funding for Robinson Forest and RCARS.

Recommendation 3: Develop a succession plan to effectively deal with a significant number of faculty openings that will be the result of faculty members retiring in the next 5-10 years. This plan should include additional staffing at both the faculty and staff levels to meet current and future needs in research, teaching, and extension.

The Undergraduate Program Committee chair has developed and implemented a new undergraduate advising plan that incorporates all FNR faculty, replacing advising that had been largely done by the DUS, currently held by late career faculty. Instructional DOE has been added to two extension faculty lines, recently hired, to help build instructional capacity needed to address required courses needs for our accredited forestry undergraduate program. Career advancement opportunities have been planned for early career faculty. Succession planning was a key focus area of the department's two day faculty/staff retreat in fall of 2019 and since that time on-going discussions between late career faculty and the chair have helped provide paths forward and timelines aiding significantly in succession planning.

The department chair will annually assess succession planning and convene faculty representatives from all department mission areas to strategically discuss succession planning efforts as needed.

Recommendation 4: Develop a Ph.D. program for the department. Careful consideration will need to be given to what additional graduate level Forestry courses will need to be added and who will teach these courses.

A Ph.D. (Forest and Natural Resources Sciences) program was approved by UK Board of Trustees and by Kentucky Council on Post-Secondary Education in the summer of 2018. FNR is currently accepting applications to the Ph.D. program in Forest and Natural Resource Sciences and has made decisions regarding department stipend allocations among M.S. and Ph.D. candidates.

Recommendation 5: Aggressively work towards improving the diversity of the department's faculty and undergraduate student population.

We continue to seek diversity in our student population as well as our faculty and staff. Many of our peer institutions report challenges in diversifying their undergraduate student body and we are challenged in this regard as well. Further, the department has developed a draft Equity, Inclusion and Diversity plan, approved by and supporting university and college efforts. Formative steps were taken in implementing this plan in 2020.

Recommendation 6: With the involvement of all departments and students that comprise the multidisciplinary Natural Resources and Environmental Science (NRES) program, explore and address both the perceived and real underlying tensions between the Forestry and NRES programs.

In the summer of 2017, a MOU between FNR and NRES was approved by FNR faculty and NRES Steering Committee. Provisions within the MOU were acted upon and the MOU was shared with other CAFE departments, upon request. The development and implementation of the MOU have been helpful in dealing with issues. Communications between FNR and NRES leadership have been regular and effective. Continued monitoring of the situation is appropriate.

Recommendation 7: Continue development of the Forest Health Center (FHC) to meet the needs of the department, college, and forestry industry. Consideration should be given to providing the needed staffing, facilities, and equipment, including the possibility of co-locating the FHC and FNR in any new facility that is built.

The FHC has acquired well over \$2.5 million (competitive grants and gifts) to date and has hired 5 post-doctoral scholars to assist with research and programming. A forest genetics position has been added as a Research Specialist in FNR working collaboratively with FHC. We continue to seek permanent, recurring funding for the FHC. Our partnership with the USFS has yielded three permanently stationed USFS scientists on UK's campus for the first time. We will continue to look for opportunities to include the FHC in initiatives like the emerging Beam Spirits Institute and the White Oak Initiative to help build the presence of the FHC in Kentucky and at UK.

Recommendation 8: Continue developing relationships with stakeholders and support industries. In addition to departmental interaction with these groups, it is important for college administration (particularly the Dean) to have periodic, direct contact with these groups.

Our relationships with other forestry organizations and agencies in Kentucky and throughout the region are at a high level and continue to expand. FNR is exploring ways to leverage interaction with the emerging Beam Spirits Institute that will provide direct assistance to the distilling industry and forest industries that supply barrels critical to the survival and competitiveness of the whisky in industry in the U.S. FNR has worked with the American Forest Foundation and the Dendrifund to establish the White Oak Initiative, a region wide effort to assist white oak dependent industries and sustain white oak resources. FNR provided the proposal that was used to establish \$2.3 million in USDA funding for white oak sustainability efforts in 17 states where white oak is a critical ecosystem component and economic driver.

We will continue to broaden these relationships with other groups and focus on communicating with these partners. We have made particular strides in recent months to engage non-traditional forestry clientele, such as the distilling industry, which depends on white oak for making bourbon.

We will continue reaching out to clientele using our multiple Constant Contact (Center for Forest and Wood Certification, Youth, Wood Products, Landowner, Forest Health Research and Education Center) newsletters. We have completed an overhaul of our department website, which has greatly improved our clientele's access to information produced and compiled by the department. We will help establish an alumni group to facilitate improved fund raising and department awareness, and re-initiate and improve the department's hardcopy newsletter for alumni and friends of the department.

[Summary of Most Recent Society of American Foresters Accreditation Visit \(2020\)](#)

FNR has the only professionally accredited undergraduate forestry degree program in Kentucky. The undergraduate forestry degree program trains future forestry professionals to sustainably manage forested systems for present and future generations. Every ten years forestry programs are re-accredited by the Society of American Foresters (SAF) to ensure that high quality degree standards are still being met.

In February 2020, SAF conducted their site visit to re-accredit our Bachelor of Science in Forestry professional degree program. The SAF Self-Evaluation report and required SAF forms that were submitted to the SAF Visiting Team are located in Appendix D. In March 2020, the Visiting Team submitted a report of their findings from the site visit (see Appendix E). The re-accreditation approval documents are outlined in Appendix F. The program is now accredited through 2031.

According to the Site Visit Report, the Visiting Team found that forestry employers and partners were complimentary of the forestry program and viewed our forestry graduates as *“highly-qualified, motivated, and well-prepared to meet the challenges facing forestry in Kentucky. In*

particular, the group cited superior communication and forest management skills of the graduates” (p. 13).

The report also noted that the T.P. Cooper Building “*is lacking as an adequate, safe, healthful facility that is conducive to learning. Labs for research and office space for graduate students are also in poor condition...In a unit that teaches and promotes sustainability, energy efficiency, green technologies, and climate change mitigation, FNR’s credibility is undermined by these conditions. The VT [visiting team] believes the subpar conditions of FNR’s building greatly detracts from an environment that is conducive to student learning”* (pg 17). In response to this finding, the university has begun to address the windows and heating/air units in the T.P. Cooper Building. The \$500,000 in improvements are scheduled to begin in winter 2021. **T.P. Cooper Building improvements and plans toward a new building should remain a priority.**

To maintain the SAF professionally accredited forestry degree program, our department must maintain high-quality instruction and forestry expertise. In March 2020, we were in the formal search process for an Assistant/Associate Professor of Forest Management to replace a faculty member who left UK in 2019. Due to the pandemic, the university placed a hiring freeze across campus. The issue of the hiring freeze was mentioned in Provost David Blackwell’s response letter to the Visiting Team. **Filling the Forest Management position and maintaining appropriate number of faculty remains critical for both instruction and research.**

Another area highlighted by the Visiting Team Report was “*The number of teaching assistants (TA) available to FNR instructors was substantially reduced several years ago to its current allocation of three. FNR faculty reported their need to increase the number of TAs to cover their instructional needs adequately”* (p. 15). **To maintain instructional needs, the number of teaching assistants must be increased.**

Self-Study Process

The Self-Study process began in spring 2020. To prepare this report, information was gathered from FNR faculty and staff and used together with information collected for the SAF 2020 Accreditation Report. The SAF report and supporting data were critical for supplying information for the Self-Study report. Significant time and effort from several FNR committees was devoted the SAF 2020 Accreditation Report. CAFE and UK data were also collected and used for the Self-Study report.

Initial drafts of the Self-Study were compiled by the FNR academic coordinator. The Self-Study report was reviewed and revised by the department chair. FNR faculty and staff of the following committees also reviewed and commented on the report - Extension Committee, Graduate Program Committee, Research Committee, and Undergraduate Program Committee.

II. Department Overview

Forestry is an interdisciplinary profession comprised of many fields, including biological, quantitative, managerial, and social sciences. FNR recognizes the interdisciplinary nature of forestry and reflects this distinction via student education, faculty recruitment and maintenance, and extension. This recognition led to a name change for the department in 2017 from “Forestry” to “Forestry and Natural Resources” to better reflect our program’s diversity, goals, and mission relative to the interdisciplinary nature of the forestry profession.

A goal of FNR is to recruit and maintain a distinguished faculty committed to FNR’s core purpose and values, and dedicated to achieving FNR’s mission through high quality research, teaching, and outreach activities. In the past several years, multiple faculty positions have been filled with highly qualified individuals identified through nationwide search processes. We ensure effective mentoring and professional development of faculty by encouraging of appropriate consulting activities and by encouraging faculty attendance at professional development conferences, workshops, and seminars. Our professional staff, including extension associates and specialists, provide value-added contributions to our instructional effort and we value their input and engagement in all facets of FNR. As with faculty, we also work to ensure opportunities for growth and professional development for our staff.

Faculty and Staff

Faculty Composition and Deployment

At the present time, FNR has 13 full-time faculty positions, including the department chair, who contribute to the forestry degree program through instruction, advising, and curriculum development and assessment (Table 2). Faculty CVs are provided in Appendix P. In March 2020, the university president paused hiring across campus. At that time, FNR was in a formal search process for an Assistant/Associate Professor of Forest Management to replace a faculty member who left UK in summer 2019. This position is important for FNR to maintain high-quality instruction and forestry expertise to continue to meet SAF standards. Further, the budget reduction resulted in the loss of funding for half of a faculty line in extension. The timing of the budget reduction was in concert with the retirement of an extension faculty, functionally resulting in the loss of funding to support rehiring the extension faculty line. This line was responsible for providing solutions for our wood industries and represents a loss of support for a key element of Kentucky’s rural economy. In summary, the reduction in faculty salaries resulted in the loss of two full-time faculty. While there is still salary funds available it is not enough to support a faculty position, the department may choose to use these salary funds for an extension associate position.

In addition to the formal faculty lines, four full-time staff (Dr. Darryl Cremeans, Dr. Laura Lhotka, Rob Paratley, and Billy Thomas) contribute to the forestry degree program through consistent teaching assignments. One faculty member in the Department of Entomology provides instructional assistance (0.10 FTE) to the forestry undergraduate curriculum by delivering one required forestry course and serves as a member of the graduate faculty of FNR.

Faculty expertise represents a wide array of forestry disciplines, providing for meaningful learning experiences and opportunities in the graduate and undergraduate program. FNR’s

faculty includes five professors, three associate professors, and five assistant professors. The gender distribution of the current faculty includes eleven men and two women.

Since the last department periodic review, two faculty members retired – David Wagner in 2017 and Terry Conners in 2020. Three others left the university including an assistant professor, associate professor, and department chair. Drs. Crocker, Muller, Ochuodho, and Springer were hired since the last department periodic review.

Table 2. FNR faculty

Name	Rank	Specialty
Jeffrey Stringer	Chair, Extension Professor	Hardwood Silviculture and Forest Operations
Mary Arthur	Professor	Forest Ecology
Christopher Barton	Professor	Forest Hydrology and Watershed Management
John Cox	Associate Professor	Wildlife and Conservation Biology
Ellen Crocker	Assistant Professor	Forest Health Extension
Michael Lacki	Professor	Wildlife Ecology and Management
John Lhotka	Associate Professor	Silviculture
Jacob Muller	Assistant Professor	Hardwood Silviculture & Forest Operations Extension
Thomas Ochuodho	Assistant Professor	Forest Economics and Policy
Steven Price	Associate Professor	Stream and Riparian Ecology
James Ringe	Professor	Marketing, Economics, and Wood Products
Matthew Springer	Assistant Extension Professor	Wildlife Management
Jian Yang	Assistant Professor	Forest Landscape Ecology
Vacant	Faculty	Forest Management
Vacant	Extension Faculty	Wood Products

The budgeted allocation for the faculty members for 2019-2020 listed in Table 3.

Table 3. Budgeted allocation for FNR faculty (2019-2020)

Faculty	Budgeted Allocation (%)		
	Teaching	Research	Extension/Service
Mary Arthur	20.16%	64.84%	15.00%
Christopher Barton	30.00%	65.00%	5.00%
Terrence Conners [^]	0.00%	0.00%	100.00%
John Cox	44.25%	50.75%	5.00%
Ellen Crocker	26.33%	0.00%	73.67%
Michael Lacki	26.30%	68.70%	5.00%
John Lhotka	44.00%	43.50%	12.50%
Thomas Ochuodho	24.80%	70.20%	5.00%
Steven Price*	38.30%	51.70%	0.00%
James Ringe*	79.35%	0.00%	5.65%
Matthew Springer	11.50%	0.00%	88.50%
Jeffrey Stringer*	5.00%	8.85%	20.00%
Jian Yang	23.50%	71.50%	5.00%
[^] retired Oct. 2020			
*Remaining allocation is for Administration			

The average teaching budget allocation for the faculty is 29%.

We do not have any faculty that have received an overload for working outside the university, such as consulting, expert testimony, etc.

FNR assesses faculty workload by annual reviews and conversations with the department chair.

Table 4 shows the FNR faculty demographics.

Table 4. FNR faculty demographics for 2015-2019³

	Race				Gender	
	African American	Asian	Hispanic	White	Female	Male
2015-2016	0	1	1	12	1	13
2016-2017	1	1	1	11	1	13
2017-2018	1	1	1	10	1	12
2018-2019	1	1	1	10	2	11

Staff Composition and Deployment

FNR has 23 professional and support staff employees to support the students, faculty and administration (Table 5).

Since the last department periodic review one extension administrator retired. Three individuals (a research technician, forest manager, and extension forester) took positions outside of UK.

Also, in the recent funding loss, we lost half of a research technician position. There is an overall shortage of technicians in the department. We currently use a shared technician model to fill the void. **Increasing the number of research technicians is critical for the maintenance and growth of our research enterprise.**

FNR assesses staff workload by annual reviews and conversations with the supervisor and department chair.

³ Source: CAFE Departmental Reports for FNR from 2015-2016 through 2018-2019.

Table 5. FNR staff listing

Name	Title
Bobby Ammerman	Extension Associate of Secondary Wood Industry – RCARS Assistant Director
Anna Branduzzi*	Program Coordinator – Green Forests Work
Megan Buland*	Forest Health Technician
David Collett	Laboratory Technician Senior
Darryl Cremeans, Ph.D.	Data Systems Manager
Allison Davis	Wildlife Technician
Laura DeWald, Ph.D.	Tree Improvement Specialist
Andrea Drayer	Laboratory Technician Senior
Briana Fortunato	Extension Assistant (<i>temporary employment</i>)
Michael French*	Program Director – Green Forests Work
Eric Gracey*	Management Forester
Debbie Gutierrez	Business Manager
Zachary Hackworth	Laboratory Technician Senior
Milinda Hamilton	Research Analyst of Forest Ecology and Forest Hydrology
Laura Lhotka, Ph.D.	Academic Coordinator
Darren Morris*	Forestry Extension Associate Senior
Chad Niman	Primary Forest Products Specialist
Robert Paratley	Curator of University Herbarium
Leslie Queary	Administrative Services Coordinator
John Reinstetle	Robinson Forest Manager – RCARS Assistant Director
Billy Thomas	Extension Forester
Laurie Thomas	Extension Forester
Betty Hardin	Staff Associate - Quicksand
Reneé Williams	Information Specialist Senior
Nic Williamson*	Agriculture Extension Associate

*Grant / Non-Departmental Funded

A description of the staff resources and how they support the mission of the department are outlined below.

Administrative Staff – The current administrative staff consists of three full-time employees in Lexington and one part-time employee at the Robinson Center in Quicksand, Kentucky. The administrative positions in Lexington are devoted to faculty and staff support. The extension information specialist and assistant serve the needs of the extension faculty and staff. The business manager assists all faculty and staff of FNR. The administrative services coordinator primarily serves the chair and assists with the faculty, staff and students. The staff associate in Quicksand, Kentucky serves the needs of Robinson Forest and the Wood Utilization Center.

Data Systems Manager – FNR has a full-time data systems manager to provide computer assistance to assist faculty and graduate student research, teaching and extension. Responsibilities of the position include setting up and maintaining computer systems and the departmental network, understanding and translating new technologies for faculty and staff, and physical space analysis and inventory management. The data systems manager coordinates and supervises shared technician work to provide unbiased assistance in allocating time and work

effort among faculty lead projects. The individual, who holds a Ph.D. in forest soils, also teaches undergraduate courses.

Academic Coordinator – FNR has a 0.75 FTE academic coordinator that works on recruitment, retention and placement of undergraduate students. Responsibilities also include working with alumni and teaching courses.

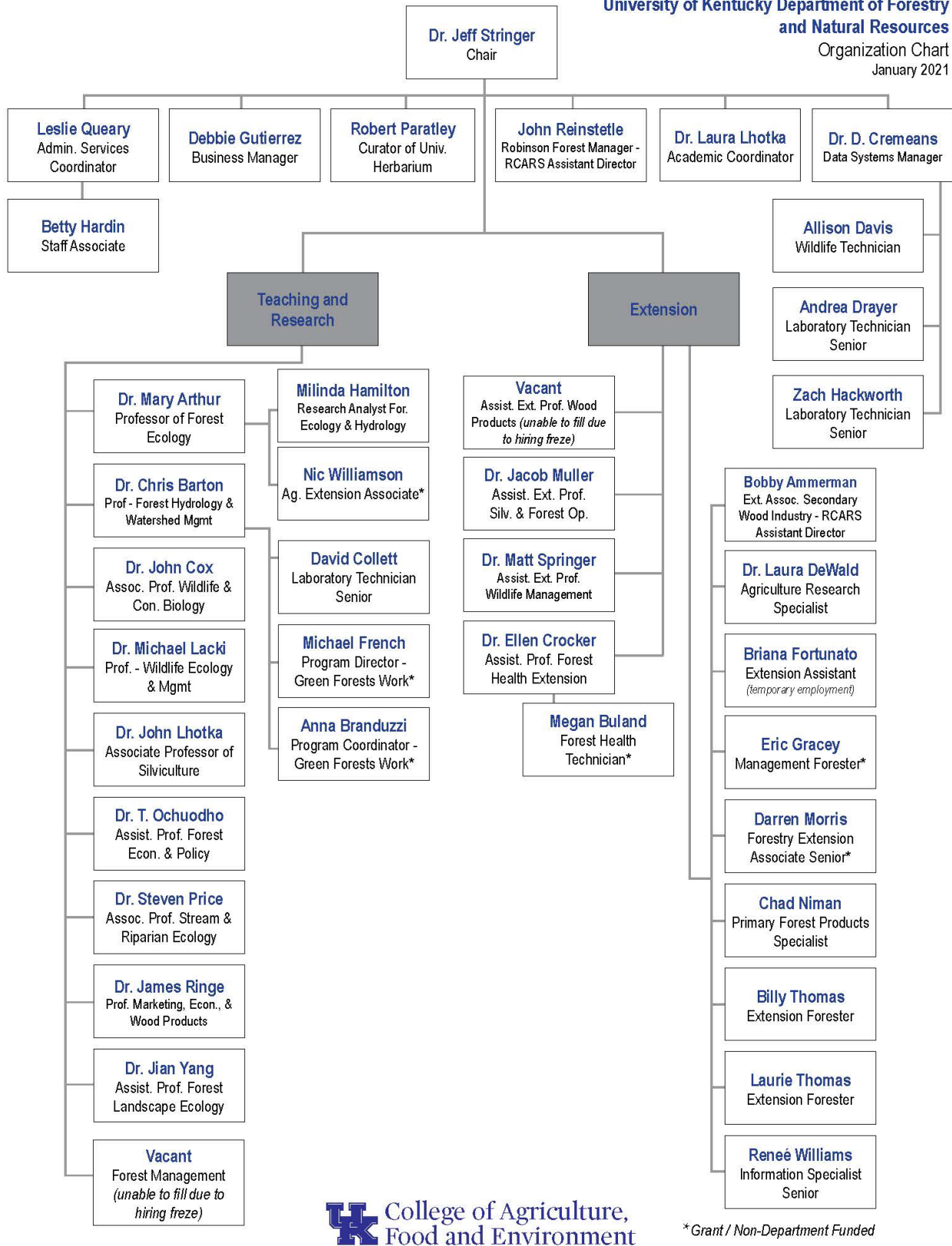
Research/Lab Technicians – There are presently three senior laboratory technicians, one wildlife technician, and one research analyst in FNR. Technicians assist the faculty with their research using a shared technician model.

Research Specialist – A research specialist serves as curator of the University of Kentucky Herbarium, which is housed in FNR. The curator manages the University of Kentucky Herbarium and provides botanical consulting and plant identification for the College of Agriculture, Food and Environment, the wider university community, and the public, as well as teaching courses in dendrology, plant taxonomy and economic botany.

Extension Staff – There are seven full-time extension staff, in addition to the extension information specialist listed above. Extension staff members contribute significantly and positively to program objectives in teaching, research and extension. Several of the extension staff are involved with undergraduate instruction and contribute guest lectures.

Robinson Forest Manager – Robinson Forest and the Wood Utilization Center at Quicksand, Kentucky are part of the Robinson Center for Appalachian Resource Sustainability. While the Center provides administrative oversight for Robinson Forest and the Wood Utilization Center, FNR still maintains staff and management of the forestry research, teaching, and extension programming at the facilities. Robinson Forest Technical Committee, chaired by FNR, oversees the management of Robinson Forest proper.

The organization chart for FNR is shown below in Figure 1.



*Grant / Non-Department Funded

Figure 1. FNR Organizational Chart

Faculty and Staff Success

Scholarly activities by faculty and staff serve to enrich FNR's instruction. This enrichment comes in the form of professional development that builds the experiences and knowledge base of contributing instructors. These activities also build partnerships with external stakeholders that can have positive feedback into the curriculum including diversification of student learning experiences, providing support for students, and creating employment opportunities. Research and extension work by faculty and staff also yields research and demonstration sites that build our capacity to deliver a field-based curriculum, particularly in the context of the spring field semester each student takes in their junior year.

The majority of faculty, including several extension faculty, have substantial research responsibilities. FNR is very active in research and graduate education. For instance, data available for the last four years (2016 to 2019) showed faculty published 172 peer-reviewed manuscripts (an average of 43 per year). Between 2013 and 2018, FNR faculty secured an average of \$932,181 per year in external funding and supervised more than 28 M.S. students through to graduation. Research conducted by faculty have been featured in high-impact scientific journals as well as in applied and professional publications such as the Journal of Forestry and USDA Forest Service General Technical Reports. Many of the research enterprises have been developed in collaboration with extension faculty and staff, and extension programs have utilized research to provide solutions that address multiple economic, social and environmental needs in the state.

Where possible, faculty and staff incorporate undergraduate students into their research and extension programs. Such opportunities provide critical exposure of the land grant mission to undergraduates and offer important work experience to students. In the past five years, 101 undergraduate students have been engaged in various research and extension activities. Thirty-five have been forestry students. This work has yielded 26 published works (research and extension publications) co-authored by undergraduate students. Four of these co-authored publications were by forestry students.

An important mechanism for faculty professional development within the university environment is sabbatical leave. Since the last self-study report, one faculty member has participated in the leave program:

Chris Barton, Ph.D. - Fulbright Distinguished Chair in Science, Technology and Innovation. Position is affiliated with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Brisbane, Australia, Jan 1 – June 30, 2021. (*travel dates impacted by COVID-19*)

Professional development opportunities and service to the profession pursued by faculty extend beyond research and extension. Faculty provide important leadership contributions within the college and university through avenues such as the UK Faculty Senate and the CAFE Faculty Council. Participation in professional societies such as the Society of American Foresters, the Wildlife Society, the Ecological Society of America, the Soil Science Society of America, American Society for Surface Mining and Reclamation, and International Association of Landscape Ecology are important to faculty. As members of these associations, faculty have

made important contributions to leadership and service roles within these organizations at the state and national levels. Faculty serve important roles on advisory boards of natural resources organizations and initiatives (e.g., Appalachian Region Reforestation Initiative’s Science Team, executive committee member of the White Oak Initiative, co-directorship and team leaders in the Forest Health Research and Education Center, Southern Region Extension Forestry – Executive Committee, chair of the governors appointed Kentucky Forestry Best Management Practices Board, Kentucky Woodland Owners Association Berea College Forest Advisory Board, and Kentucky State Fire Council I&E Committee). Several of FNR’s research faculty also serve on the editorial boards of national and international journals. Each of these endeavors serves to improve faculty experience, knowledge, and the breadth and diversity of their professional networks. In turn, these activities help faculty enrich educational experiences for students and allow the faculty body as a whole to better administer, assess, and improve FNR’s forestry curriculum.

Faculty and staff have received several honors and awards since the last review (Table 6). These honors are for teaching, research, and extension. Both faculty and staff have been recognized for outstanding achievements in their fields.

Table 6. Faculty and staff awards since last department review

Name	Award
Mary Arthur	Nominated for the Sarah Bennett Holmes Award that recognizes female UK faculty and staff for their contributions to issues that affect women at the University and across the Commonwealth (2020)
	Career Achievement Award, Eastern Fire and Oak Forest Conference (2019)
	Highlighted in the journal <i>Fire</i> article “Recognizing Women Leaders in Fire Science” (2018)
Chris Barton	Fulbright Distinguished Chair in Science, Technology and Innovation. Position is affiliated with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Brisbane, Australia (2021)
	American Society of Mining and Reclamation, William T. Plass Award (2020)
	Kentucky Department of Environmental Protection’s Environmental Excellence Award for Resource Caretaker (2018)
Terry Conners	Award of Merit as selected by your industry peers at the Railway Tie Association (2020)
Ellen Crocker	Environmental Award, Lexington-Fayette Urban County Government (2019)
John Lhotka	Outstanding Alumni Mid-Career Award, Southern Illinois University Carbondale, College of Agricultural Sciences (2019)
Rob Paratley	UK Alumni Association Great Teacher Award (2018)
Steve Price	Senior Research Award, Association of Southeastern Biologists (2016)
Jeff Stringer	Gold Award for Excellence in Research Technology Transfer, Southern Regional Extension Forestry (2019)
	Forest Stewardship Council - National Leadership Award (2017)
	“Kentucky Logging BMP Field Guide” - Award with High distinction, from the Southern Regional Extension Forestry Extension Awards Program in the Extension Publication (other than newsletters) category (2019)
UK Forestry and Natural Resources Cooperative Extension team	National Family Forest Education Award for the UK Forestry Extension program by the National Woodland Owners Association and National Association of University Forest Resources Programs (2018)

Laurie Thomas and Matt Springer	Kentucky Forest Leadership Program - Award from the Southern Regional Extension Forestry Extension Awards Program in the Youth and Teacher Education category (2018)
Reneé Williams	Outstanding Extension Associate Award from the Kentucky Association of State Extension Professionals (2016)

Diversity, Inclusivity, and Civility

Diversity and Inclusivity

FNR is committed to a policy of providing employment opportunities to all qualified applicants regardless of economic or social status, and do not discriminate on the basis of race, color, religion, gender, marital status, beliefs, age, national origin, sexual orientation, or physical or mental disability. FNR is committed to maintaining as diverse a workforce as possible and aims to attract the most qualified candidates without reference to gender, race or cultural bias. As per university requirement, FNR completes an affirmative action form for every faculty and professional staff search. These activities follow the University of Kentucky’s policies and guidelines for recruiting and retaining a diverse faculty and staff workforce.

When faculty vacancies arise, a search committee is appointed and the position is advertised in the major journals for the specific area of specialty, at all the land grant universities, and on relevant internet list serves. The university and college, through the Assistant Dean and Director for Diversity, provide support in faculty job postings to aid in reaching a diverse audience. FNR has, and continues, to actively seek assistance to ensure that our faculty search process is inclusive. The search committee members screen the applications, the committee provides interview recommendations to the chair and faculty, and the top (2-4) candidates are invited for an on-site interview. Upon completion of the interview process, which involves engagement with all faculty irrespective of assignment, staff, and undergraduate and graduate students in group meetings, the search committee obtains input and subsequently discusses with faculty and forwards a recommendation to the chair. The chair provides this input and his recommendation to the dean of CAFE, and if in agreement, an offer is extended to the candidate. If the candidate does not accept the offer, the chair solicits input from the faculty regarding the suitability of the other candidates interviewed, and an offer may be extended to a second suitable candidate. If no suitable candidate is found, the search committee may re-advertise the position and the selection process would be re-initiated.

Civility

In 2019, the university conducted the 2019 UK@Work Survey. The results of this survey can be found in Appendix G. FNR strengths were in communication, supervision and sustainable engagement. Areas to focus on are physical working conditions, retention, and stress/balance/workload.

The department chair also conducts exit interviews with the undergraduate students at the end of the junior year (after the Spring Field Semester) and at the end of the senior year. These exit interviews provide the department with feedback pertaining to the undergraduate program, instructors, etc. When issues of concern arise, the department chair is able to address these issues. The department chair also maintains an open door policy and students are encouraged to speak with him throughout the year if any issues arise.

FNR has a Graduate Student Association that acts as the voice of the FNR graduate student community by communicating with the department chair, faculty, and other constituencies.

Stakeholder Engagement

As our knowledge and understanding of forests has increased, these complex systems are increasingly understood to have valuable utilitarian and intrinsic importance. The ecological services and economic wealth that forests provide affect all residents of our Commonwealth and beyond. As such, the definition of a traditional forestry constituent has evolved to encompass a multitude of consumptive and non-consumptive stakeholders. As the state's sole forestry program, FNR has an inherent responsibility to actively engage this diverse constituency through research, outreach, and teaching activities in ways designed to effectively address forestry and related natural resource issues, challenges, and the needs of Kentuckians.

FNR has established a standing Advisory Committee that includes representatives from key partnering natural resource agencies and organizations within the Commonwealth. Periodic meetings with this committee help us ensure that our research, teaching, and outreach programs are highly relevant to important environmental and economic issues involving the forests and related natural resources of Kentucky.

In our research, teaching, and outreach programs and activities, we will sustain and enhance productive collaborations focusing on forest-related issues in the Commonwealth. Research efforts have largely focused on improving our knowledge and understanding of complex forest ecosystems, and often, the effects that human activities have on them. As a land grant institution, we place particular emphasis on research that has practical management implications for our constituency. In the past decade, research has included topics that address the consequences of increasing globalization (e.g., invasive species, competition in global timber markets), changing human attitudes (e.g. forest wildlife-human conflicts, timber harvest on public lands), changing land use and ownership patterns (e.g., forest fragmentation and ownership), new technologies and approaches (e.g., GPS systems), and restoration ecology (e.g., post-mine tree planting, restoration of watersheds).

Through education and training activities, our teaching and extension efforts are designed to effectively deliver knowledge and solutions that address forest-related challenges affecting the quality of life of Kentuckians. Our faculty and staff are recognized both in the state and nationally for their expertise and value in providing information critical for the development of regulation, policy, and programs. Faculty have chaired governor-appointed task forces, and faculty and staff are members of over thirty boards, task forces and working groups within the state and nationally to help shape forest practice. Examples include chairing the governor-appointed Kentucky Forestry Best Management Practices board, participation in the Kentucky Agriculture Advisory Council, members of boards and committees in the Kentucky Forest Industries Association, Kentucky Farm Bureau, Kentucky Woodland Owners Association, The Wildlife Society, Kentucky's Exotic Pest Council and other state and regional organizations.

Our faculty and staff are also a part of county agent networks, and interact with teachers and youth, the public, woodland owners, county agents, professionals in timber harvesting and wood-based industries.

Our engagement with partners include both state and federal agencies and private sector partners and organizations. Agencies include, Kentucky Division of Forestry, Kentucky Department of Fish and Wildlife Resources, Office of Kentucky Nature Preserves, U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service, and Natural Resource Conservation Service. Partnering associations include the Kentucky Forest Industries Association, Kentucky Woodland Owners Association, Kentucky Association of Consulting Foresters, Kentucky Farm Bureau, Kentucky Nature Conservancy, and others. Collectively these partners provide critical mechanisms of communication between us and a galaxy of stakeholders. National, state, and county-level involvement in many of these organizations allows us to more effectively disseminate up-to-date knowledge and information affecting Kentuckians and their forest resources, and in turn, better understand the needs of these groups and their constituents.

Exchanges with stakeholders are supported and enhanced by departmental publications (e.g., Kentucky Woodlands Magazine, From the Woods Kentucky podcast, and From the Woods Today videos) and related information made easily available electronically through our website, podcasts and other online outlets, as well as by research presentations given by our faculty. We are fully embracing new social communication mechanisms (e.g., YouTube demonstration videos, Webinars, podcasts, and Facebook Live) to enhance our outreach efforts.

Through establishment and maintenance of communication with forestry alumni, we continue to solicit feedback about the evolving forestry profession and how we may better prepare our graduates for success in dealing with forest-related resource challenges in the Commonwealth. Knowledge gained from research and extension is translated to our forestry students to make them society-ready, i.e., capable of dealing effectively with the complex economic, ecological, and social issues involving forest resources today.

In addition to receiving information from our alumni, we regularly keep our alumni informed of department activities through our department E-News that is emailed out several times a year. Past issues of the department E-News are posted to our [website](#). We have also hosted multiple events for our alumni including a 2018 Alumni Weekend Bash where we had a Saturday evening catered cookout at the UK South Farm followed by a Sunday tour and lunch at Robinson Forest. In 2019, we held a catered forestry alumni event in Louisville during the 2019 National SAF Convention. These alumni events are in addition to the Department Alumni-Student picnic that is held each fall in front of the T.P. Cooper Building. Alumni regularly attend our fall picnic and travel from throughout the southeast to attend this event.

Administration and Governance

Administrative Structure and Effectiveness

FNR is one of 14 academic departments in CAFE administered by Dean Nancy Cox. Each department is responsible for programs of undergraduate and graduate instruction, research and extension, with full integration of faculty assigned to these functions within the department. Departments are administered by chairs who are appointed for six-year terms, subject to renewal following six- year institutional review.

Department chairs report directly to the dean of CAFE or, when appropriate, indirectly through associate deans for faculty, research, extension and academic programs. Department chairs work closely with, and have ready access to, the dean and associate deans. Chairs and directors hold monthly meetings with college administration and the dean meets quarterly with chairs and program directors. The responsibilities of the department chair are described in the Governing Regulations of the university ([GR VII.F.2.e](#)).

Communication and interactions among faculty and staff in FNR are strong. With roughly equal numbers of faculty and staff, and including several who work off-campus, the FNR team is relatively small and accustomed to working and coordinating closely on research, teaching, and extension endeavors. FNR holds monthly faculty/staff meetings during the fall and spring semesters, taking a 3-month hiatus during the summer field season when most faculty and staff are traveling and conducting research. All faculty, staff, and post-doctoral associates are invited to faculty meetings. The department is one of the few in the university that strategically conducts combined faculty/staff meetings, the majority of departments opting for faculty only meetings.

FNR has organized nine standing committees through which much of the department's planning, program development, and deliberative business takes place (see Appendix H). A formal department-level retreat occurred in October 2019 during which longer-range planning and strategic deliberation took place. Other planning and deliberation occurs during mission-area committee meetings (e.g., Extension, Research, Undergraduate and Graduate Program Committees) which occur monthly or, in some cases, less frequently. In some cases, input on strategic and long-term planning is solicited via email.

Below is a description of the FNR committees. Each of these committees is active in planning some portion of the activities of the department and making recommendations to the Chair regarding implementation of policy for the department. A list of these committees and their members are shown in Appendix H.

- **FNR Chair Advisory Committee** is composed of three tenured faculty who represent teaching, research and extension endeavors and aid the chair in making major budgetary and strategic decisions.
- **Undergraduate Program Committee** addresses undergraduate student and curriculum issues.
- **Graduate Program Committee** addresses graduate student and curriculum issues.
- **Extension Committee** coordinates activities and develops a vision for the department in the extension mission area.
- **Research Committee** coordinates activities and develops a vision for the department in the research mission area.
- **Robinson Forest Technical Committee** is comprised of faculty and staff both within and outside of the department, to coordinate management and research activities on Robinson Forest.
- **Outreach Committee** provides leadership on maintaining relations with alumni and communicating the department's goals and objectives to the public.
- **Facilities Committee** addresses building and space issues in the department's two buildings.

- **Seminar Committee** organizes the department's seminar series, predominantly the fall semester portion where outside speakers from a variety of disciplines are hosted for presentations and interactions with the faculty.

Other ad-hoc committees have proven extremely valuable in making decisions and coordinating and ensuring implementation of projects significant to the functioning of the department and maintenance of the research, instruction, and extension enterprises. These include the Space and Safety Committees and the FNR Instructional Planning Team, established directly after the start of the pandemic, which along with the Safety Committee was critical to addressing the immediate issues of teaching and safety during the pandemic. Both teams had members of the faculty and staff.

Governance-related Policies and Procedures

In 2018, FNR revised its Rules of Procedures to enhance the department's structure and decision-making process to reflect the university's Governing Regulations and to help effectively and efficiently achieve the department's goals and objectives (see Appendix I).

In budgetary matters, the chair has authority to allocate state and federal funds, support personnel, and physical facilities within FNR. Allocations of funds to support the teaching, research, and extension programs of individual faculty members and extension staff are made annually from state and federal capacity building funds. The chair distributes available funds to teaching programs, approved research projects of the Kentucky Agricultural Experiment Station, and extension programs. This system also provides the chair with some degree of flexibility to address special needs (e.g., a faculty member with rather urgent requests for start-up funds for new teaching responsibilities and/or research materials not currently available in the program). Budget reductions in the past two years have shrunk the operating pool, and faculty vacancies have reduced the total requests accordingly. The Faculty Advisory Committee, composed of three tenured faculty, aid the chair in making major budgetary and strategic decisions. Research funds obtained through outside grants to faculty members are administered entirely by the grantee(s) within agency and university guidelines.

There is less program-based authority regarding purchases of non-expendable (major) equipment items and facilities modifications/improvements. Within FNR, available funds may be used for equipment and facilities needs as appropriate; however, these funds are limited. CAFE has maintained a support fund for equipment, which is distributed based upon availability, need and justification. FNR faculty maintain a list of equipment needs which can be presented upon request and/or at other appropriate times. Major facilities modifications are treated on an as needed basis and support is solicited from all levels of the university. Space is at a premium, and, while space issues are also treated on an as needed basis, the likelihood of obtaining additional space is remote.

In terms of faculty salaries, there is a broadly distributed and shared decision process among administrative levels. For example, the chair has responsibility for making recommendations of initial (starting) salaries of new faculty to the dean, tempered by parity, college policy and available funds. In general, such recommendations are approved. Salary increases (raises) are based on an average salary pool (generally a percentage) based upon legislative allocation and

established for the university by the President's office. Based on this target mean, individual salary increases are allocated according to a merit rating scale based on an annual (non-tenured faculty) or biennial (tenured faculty) faculty performance evaluation. The college's faculty performance evaluation process allows for a five-rank scale with each college assigned a quota for the top rank. Raises are assigned to each merit rating to allow for an overall institutional raise at the target mean. Funds are available from the Provost office, approved by the dean, to address competitiveness issues associated with faculty lines.

The chair's most significant input to the process is in assigning a merit rating to each faculty member, based upon review of the individual faculty-generated performance evaluation document. The chair's evaluation utilizes the input of the FNR chair advisory committee unless, committee composition requires other ad-hoc appointments for the purpose of merit evaluation. Regardless, the evaluation forwarded to the dean is the chair's alone. The documents are then reviewed by the dean and appropriate associate deans, and any discrepancies between their ratings and the chair's ratings are resolved in conference. Assignment of the final merit rating lies with the dean. Regarding salary levels, the college can receive permission to exceed the university pool (within reason) by re-allocation of its resources to personnel services, on a continuing basis. (However, such a reallocation must come from non-personnel current expenses.) Also, in any year, each faculty member has the right to appeal their merit rating (thus, their raise) and the chair must decide to support, or not to support, this appeal.

In general, the chair has a rather broad range of responsibility with regard to directions and operations of programs, personnel management (including recruitment) and allocation of budgeted resources, but is much more limited in terms of program expansion (especially in regard to adding faculty positions), facilities development, and acquisition of major equipment items (using state or federal funds). These latter functions involve justification, documentation and, to some degree, the ability to compete with other campus units for increasingly limited college and/or university resources.

Planning Process

Major forces of change are transforming forests and natural resources in Kentucky, the nation, and the world. To thrive in today's environment of change, university-based programs of forestry research, teaching, and outreach must be of high quality in terms of scientific and academic rigor, productive in terms of measured outputs, and innovative in the use of new scientific, teaching, and communications technologies. It is to this end that FNR directs its ongoing planning and assessment activities.

A three-tiered hierarchy of planning documents encompasses the programs of FNR. The University of Kentucky Strategic Plan for 2015-2020 is available at <https://www.uky.edu/sotu/2015-2020-strategic-plan>. The Strategic Plan provides an overall institutional direction for the university, and the programs of CAFE and FNR are developed within that context. The CAFE Strategic Plan for 2015-2020 develops the college's missions within the context of the university plan (https://strategicplan.ca.uky.edu/sites/strategicplan.ca.uky.edu/files/cafe_strategic_plan_master_f_or_website_the_plan_with_new_logo.pdf). The mission and vision of the Department provide

specific direction for its research, instruction, and extension programs (<https://forestry.ca.uky.edu/about-uk-forestry>).

The development of all of these plans involves a complex process which provides for significant input from administrators, faculty, staff, and students. In all of these efforts, the principle driving force is the desire to identify needs of the Commonwealth of Kentucky and opportunities for the university and its programs to satisfy those needs.

Program planning within FNR is a product of the faculty with input from appropriate staff. University Administrative Regulations require FNR to undergo a Periodic Review every six years, during which a committee of external and internal reviewers make recommendations and priorities are established. Departmental faculty and leadership review these and make suggestions directed towards overall departmental improvement, finally submitting an Implementation Plan to guide initiatives over the six-year cycle until the next review. FNR has also used faculty retreats to set overall plans and policies. In this planning process, FNR has created an assessment procedure intended to serve as a stimulus for continued planning.

Undergraduate curriculum planning is a function of the teaching faculty of FNR. The Undergraduate Program Committee is comprised of teaching faculty and staff, including the Director of Undergraduate Studies. During the last major curriculum revision, FNR conducted an intensive review of the prior curriculum with significant input from employers, producers, students, alumni, and other interested parties.

Research planning is a departmental function only in the definition of vacant faculty positions and the selection of new faculty. It has been the philosophy of CAFE and FNR that if we can select the best faculty, they will define the appropriate directions for productive research.

Extension planning is a function of the extension faculty and staff who use a variety of retreats and monthly meetings to plan and direct overall extension efforts. Annual accomplishment reports summarize the results of these planning efforts.

Facilities and Budget

Facilities – Lexington Campus

FNR occupies space on the Lexington campus in the Thomas Poe Cooper, Dimock Animal Pathology, and the Plant Sciences buildings. The T.P. Cooper building houses 5 classrooms (including a computer classroom); meeting rooms; 7 research labs; faculty, staff and graduate student offices; storage space; a student lounge; a walk-in cooler; a walk-in drier; a wood shop; and a video studio. Our space in the Dimock building includes 4 research labs; faculty, graduate student and student worker offices, storage space, and the university's herbarium collection. In Plant Sciences, the Forest Health Research and Education Center occupies one research lab and space for faculty and post-doctoral offices. FNR also has access to space in the CAFE greenhouses located on UK's South Farm.

The T.P. Cooper building is the primary facility for teaching and research in the department. Built in 1930 and renovated in the 1970's, the building provides a good amount of space, but the quality of the space is well below the standards of nearly every other building on campus (with

the possible exception of Dimock, which we also occupy). The building suffers from poor climate control. Very noisy and energy inefficient window unit air conditioners make teaching difficult during hot weather periods (early fall and late spring). Steam radiators that often cannot be regulated make the building hotter in mid-winter than it is in mid-summer. Classrooms and offices can be so hot in the winter that windows must be opened for relief. In rooms where the windows do not open, air conditioners often run simultaneously with the heaters. We also experience fairly common steam outages and no heat, which makes for interesting teaching and research conditions. Old plumbing and frequent breaks and leaks have led to instances of equipment loss or damage, sample loss, and lost productivity. In a unit that teaches and promotes sustainability, energy efficiency, green technologies, and climate change mitigation, our credibility is greatly undermined by these conditions. Our enthusiasm to work under these conditions also suffers.

In fall 2020, the university made plans to replace the T.P. Cooper windows and install HVAC units in two classrooms and the conference room.

From a safety perspective, T.P. Cooper meets the minimum standards. We routinely pass required laboratory inspections, but several labs have below optimal or non-functioning fume hoods that restricts their use for chemical handling. In August 2013, exterior doors to the building were propped open to allow air circulation and cooling of the halls. An individual who was not affiliated with the university entered the building through one of the open doors and attacked two employees with a fire extinguisher, inflicting serious bodily harm. In response, all exterior doors with the exception of the front and rear entrances remain locked at all times. The front and rear entrances are unlocked during regular business hours and are accessible after hours by students and personnel with an approved access pass associated with their UK identification card. Recent renovations to the building have been performed to meet requirements of the Americans with Disabilities Act. Although compliant, free movement throughout the building and access to all classroom, laboratories and offices in a wheelchair can be a tricky, if not impossible, requiring extensive outdoor travel from one end of the building to the other and use of a freight elevator to get from the first floor to the second. Although the T.P. Cooper building has many shortcomings, it has a basement with a severe weather shelter classification that is readily accessible if threatened by a tornado.

The quality of the research and lab space seriously constricts the types and quality of research that faculty can pursue, limiting grantsmanship and participation in some cutting edge research topics. The quality of our space may also be a detraction for the recruitment and retention of students, staff and faculty. For instance, our conference room, which is utilized for seminars, interviews, and meetings, is one of the most up-to-date rooms in our building, but it suffers from the climate control and noise issues discussed above and has other limitations that can be a distraction to speakers and audience alike.

In a 2015, UK Work-Life Survey, the department was positively reflected according to most metrics. Two areas where faculty and staff ranked the department lowest were salaries and facilities, the latter being the lowest metric of all. In response to the survey and our 2015 Self Study, CAFE informed us in 2016 that a new building for Environmental Sciences and Natural Resources has been planned and that it is a top priority for new construction for the college. A

new building, with appropriate classroom, laboratory and meeting spaces would significantly improve working and learning conditions and morale for our program. A significant component of this new facility will be the capacity to bring the public to the university to participate in educational programs on-site. There is no funding as yet and thus no construction has begun.

FNR is responsible for the University of Kentucky Herbarium, which began in 1934 and is housed in the Dimock Building. There are over 50,000 specimen sheets of vascular plants in the main collection. Over 280 plant families are represented, two-thirds of which have representative species in the Kentucky flora. Although relatively small compared to herbaria at universities in neighboring states, the University of Kentucky Herbarium is the oldest and largest collection of plant specimens in Kentucky.

Facilities and Equipment – Robinson Forest and Wood Utilization Center

Off campus, FNR personnel are located at the Robinson Center for Appalachian Resource Sustainability, the Wood Utilization Center, and Robinson Forest, in Breathitt County. The Wood Utilization Center is a 14,000 square foot facility containing an industrial hardwood furniture manufacturing laboratory, classrooms, computer laboratory and a 10,000 board foot hardwood lumber dry kiln. Robinson Forest is a collection of seven tracts totaling nearly 14,800 acres making it one of the largest research and educational forests in the eastern United States. The camp at Robinson Forest includes a classroom, a computer lab, kitchen and dining hall, lodging cabins, hydrology lab, staff office, storage, and a workshop. Robinson Forest is a critical resource for conducting research, demonstration projects for extension workshops, and teaching undergraduate students.

FNR's primary outdoor facility is Robinson Forest. Owned by the University of Kentucky, Robinson Forest is dually managed by the Robinson Center of Appalachian Resource Sustainability (RCARS) and the Robinson Forest Technical Committee. RCARS is directly responsible for hardscape facilities at the forest and the Technical Committee is responsible for in-forest management. The Robinson Forest Manager who is also the RCARS Director for Robinson Forest is directly supervised by the FNR department chair, and facilitates coordination of RCARS and the Technical Committee, and management of the Robinson Forest as a whole. Robinson Forest is located approximately 100 miles southeast of the main campus in Lexington. Robinson Forest is a member of the Organization of Biological Field Stations. Robinson Forest is comprised of eight discontinuous properties, with the main block comprising approximately 4,200 ha (10,300 ac). The main block contains a network of headwater streams, several of which are identified as Outstanding State Resource Waters and Reference Reaches by the Kentucky Division of Water. The forest sits within the rugged eastern section of the Cumberland Plateau, and its landscape consists of long, rectilinear side slopes cut into a horizontally-bedded substrate of sandstone, shale, siltstone and coal. The vegetation is typical of the mixed mesophytic forest region, the most diverse forest region found in temperate North America, and ranges from xeric oak-pine dominated stands to rich mesic cove hardwoods.

The University of Kentucky acquired Robinson Forest in 1923 after extensive logging. As such, the majority of Robinson Forest is comprised of 90+-year old second growth. However, during the early to mid-1990s, a portion of Robinson Forest (approx. 600 ha of the 900 ha Laurel Fork watershed, now referred to as the Paul VanBooven Wildlife Management Area), was surface

mined for coal. This resulted in the creation of considerable flat lands reclaimed as pasture, steep high walls that were planted with exotic shrubs and non-native conifers and many head-of-hollow fills or valley fills that buried pre-existing stream networks and destroyed aquatic habitat. Mining of the site ceased in the early 2000s and much of the area has received Phase II and III bond release. Although much of the mined area borders the unfragmented portion of the forest, large areas on the mine exist in a state of arrested natural succession dominated by a mix of exotic herbaceous, shrub and conifer species.

The main block of Robinson Forest supports the full range of neotropical migratory bird species that are expected in this part of North America, and is an important migratory stopover for birds flying to breeding grounds in Canada or wintering grounds in South America. Other wildlife species such as the Indiana bat (*Myotis sodalists*), northern long-eared bat (*Myotis septentrionalis*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Cerulean Warbler (*Dendroica cerulean*) and the Kentucky arrow darter (*Etheostoma sagitta spilatum*) have been found at the Forest and are, or are being, considered for federal listing under the Endangered Species Act of 1973. Robinson Forest also supports a variety of vernal wildflowers including several terrestrial orchids, trilliums, and others typical for the region. The mined portion of the Forest generally supports a different assemblage of wildlife species, primarily early-successional habitat specialists and those that rely on open grassland.

Active research has been conducted at Robinson Forest since 1969 when the department was established, and has produced over 250 peer-reviewed publications, over 75 M.S. theses and 12 dissertations. Much of the past and current research at the Forest focuses on five general areas of study: 1) restoration research (active restoration and use as a reference site); 2) long-term hydrology and water quality monitoring; 3) environmental gradient research; 4) large-scale manipulative studies; and 5) wildlife biology, including elk, black bear, bats, fish, and salamanders. A long-term study of note focused on water quality impacts of streamside management zone best management practices, and developed improved guidelines for stream protection during logging operations. Another ongoing project is evaluating techniques for reforesting surface mined land, with implications for restoration of an estimated 600,000 ha of degraded land throughout Appalachia. A third ongoing project is investigating impacts of water quality degradation on salamander populations, with particular focus on linkages to food web processes.

The hydrologic monitoring network at Robinson Forest is one of the most outstanding research and teaching attributes Robinson Forest has to offer. Flow and water quality in five watersheds ranging in size from 50 ha to 1500 ha has been continuously monitored since the early 1970's. Stream flow is monitored with v-notch weirs and water level recorders (floating strip-chart recorders from installation to 2008 and pressure transducers since). Water quality data include pH, temperature, dissolved oxygen, specific conductivity, turbidity, alkalinity, dissolved organic carbon, major cations (Ca, Mg, Na, K, Fe, Mn, NH₄) and anions (Cl, SO₄, NO₃, NO₂, PO₄). In 1981 a set of three flumes were installed on some smaller watersheds (15-25 ha) for a paired watershed study and stream flow and water quality monitoring continues in these watersheds. In 2003, one additional weir and 18 new flumes were installed on the forest for a project to examine the effectiveness of streamside management zones for protecting water quality and stream fauna

after forest harvest. Data logging pressure transducers are included in all of the newer water sampling stations.

Robinson Forest facilities include cabins that will sleep up to 60 individuals, which are heavily used by graduate students conducting research, as well as summer forestry interns, undergraduate students participating in field courses, and a number of visiting groups participating in research, education, outreach, and other training events. The forest has a dining hall that can accommodate groups of up to 75 individuals. In addition, the forest has a variety of equipment and resources needed for teaching, research and management of the facilities, including: classroom, laboratory, shop, portable sawmill, heavy earth moving equipment (dozer, grader, backhoe, dump truck), skidder, tractors, vans, 4x4 vehicles, generators, and hand equipment (chainsaws, shovels, dibbles, etc.).

Entities utilizing Robinson Forest for research, teaching, and extension include the following: various University of Kentucky departments (Forestry and Natural Resources, Biology, Geography, Entomology, Plant and Soil Sciences, Earth and Environmental Sciences, Landscape Architecture, Biosystems and Agriculture Engineering), Cooperative Extension Service, Eastern Kentucky University, Western Kentucky University, University of Louisville, Radford University, Colorado School of Mines, Kentucky/Tennessee Society of American Foresters, Kentucky Dept. of Fish and Wildlife, US Dept. of Fish and Wildlife, Kentucky Division of Water, Kentucky Division of Forestry, USDA Natural Resource Conservation Service, USDA Forest Service, USDI Office of Surface Mining, Kentucky Division of Natural Resources, US Geological Survey, Kentucky Geological Survey, US Environmental Protection Agency, US Army Corps of Engineering, Berea College, Kentucky State University, Bethel Mennonite Camp, Centre College, East Kentucky Water Monitoring, Savannah River Environmental Sciences Field Station, University of North Carolina – Chapel Hill, Kentucky Organization of Field Stations. Robinson Forest does not keep a strict record of user days or visitor numbers, but estimates usage by 1,000 – 1,500 visitors annually.

Forestry courses conducted at Robinson Forest:

- FOR 460: Forest Hydrology and Watershed Management: The FOR 460 class currently uses USGS stream data and KY Mesonet in problem sets and laboratories for determining the impact of land-use on stream discharge (USGS) and for evaluating various methods for estimating evapotranspiration (Mesonet). Both sites are used to develop storm flow hydrographs.
- FOR 356 Forest Soils and Hydrology
- FOR 357 Inventory and Measurements
- FOR 358 Silvicultural Practices
- FOR 359 Forest Operations and Utilization
- FOR 365 Wildlife Assessment

In 2018, a cell tower was erected on the forest that allows 4G service throughout much of the forest and provides reliable internet service for students, staff, faculty and visitors. The cell coverage also provides an enhanced safety net for remote workers and students via improved communications. Erection of the tower also allowed for an upgrade to the hydrology network on the forest. Through a National Science Foundation Facilities Improvement Grant awarded in

2019, a remote data acquisition system that networks two Mesonet weather stations and 15 continuously logging stream flow and quality stations was erected at the forest. This network provides real-time data that can be accessed on-line. This network will be utilized for both teaching and research.

In addition to Robinson Forest, forestry students and researchers perform considerable education and research activities on the 9,000 acre Berea College Forest, which is approximately 30 miles south of the Lexington campus, and the over 700,000 acre Daniel Boone National Forest in eastern Kentucky. The UK Arboretum, State Botanical Garden of Kentucky, is a 100-acre greenspace located on the main UK campus that is also used extensively as an on-campus resource for forestry students and faculty.

Budget

Many of our administrative operations (e.g., human resources, budgets, post-award support) are conducted by FNR personnel, but supported by CAFE staff where necessary and appropriate. Pre-award functions are supported by staff at the college and university levels, but FNR is increasing its involvement and support of faculty and staff grant applications in an effort to provide hands-on support and lessen the burden of increasingly complicated grant application preparation. Where necessary, FNR and/or college personnel work with university-level staff on issues related to human resources, purchasing, and the Graduate School, among others. Development activities are supported both at the college and university levels. For the most part, these relationships and structure serve our faculty, staff, and FNR well. The CAFE Office of Philanthropy and Alumni supports FNR’s effort to engage alumni and have been helpful in recent efforts to bolster alumni support.

FNR has also increased its development efforts in recent years. Most of the increases are attributable to several new gift accounts within the last decade: the Forestry Alumni Scholarship Fund, the Pete McNeill Scholarship Fund, the Kentucky Forestry Research Cooperative, the Danny Koons Scholarship, and the Forest Health Research and Education Center Gift Fund. Healthy gains were also realized by donations to the Wood Zones gift account and the Green Forests Work gift account. The department chair devotes time to development and several faculty and staff are important factors in the success of these efforts.

Despite several budget cuts over the last decade, FNR’s total budget has steadily increased during that period (Table 7). The mean source of funding was 73.5% from State and 26.5% from Federal resources. In general, research accounted for approximately 50% of the budget over the last decade with teaching and extension each representing approximately 25% of the budget during this period. We have observed a significant increase in our teaching budget over the last ten years, from below 20% to around 26% (from \$428,474 in FY 2010 to \$723,593 in FY 2020). Funding for research has remained relatively constant over the ten years ranging from \$1.15 to \$1.35 million. The extension budget, on the other hand, has been variable over the last ten years.

Table 7. Summary of FNR budget (including state and federal capacity) for the last 10 years

Source	Teaching (\$)	Research (\$)	Extension (\$)	Total (\$)	%
2019-2020					
State	723,593	840,596	526,728	2,090,918	74.9

Federal		485,406	216,848	702,253	25.1
Total	723,593	1,326,002	743,576	2,793,171	
%	25.9	47.5	26.6		
2018-2019					
State	718,185	822,845	513,270	2,054,300	74.4
Federal		493,508	213,542	707,050	25.6
Total	718,185	1,316,352	726,813	2,761,350	
%	26.1	47.6	26.3		
2017-2018					
State	706,311	869,181	454,099	2,029,591	74.4
Federal		489,648	208,914	698,562	25.6
Total	706,311	1,358,829	663,013	2,728,153	
%	25.9	49.8	24.3		
2016-2017					
State	607,837	807,530	499,567	1,914,934	70.7
Federal		483,579	309,286	792,865	29.3
Total	607,837	1,291,108	808,853	2,707,799	
%	22.6	47.6	29.8		
2015-2016					
State	605,267	799,346	449,916	1,854,559	73.0
Federal		475,420	209,510	684,930	27.0
Total	605,267	1,274,766	659,426	2,539,489	
%	23.8	50.2	26.0		
2014-2015					
State	546,660	777,445	438,156	1,762,261	72.8
Federal		461,947	197,145	659,092	27.2
Total	546,660	1,239,392	635,301	2,421,353	
%	22.6	51.2	26.2		
2013-2014					
State	545,637	829,515	358,960	1,734,113	73.3
Federal		423,632	207,028	630,560	26.7
Total	545,637	1,253,147	565,988	2,364,773	
%	23.0	53.0	24.0		
2012-2013					
State	463,125	844,525	333,108	1,640,758	72.9
Federal		409,942	200,683	610,626	27.1
Total	463,125	1,254,467	533,791	2,251,384	
%	20.6	55.7	23.7		
2011-2012					
State	412,407	787,470	531,647	1,731,524	73.0
Federal		495,506	182,206	641,712	27.0

Total	412,407	1,246,976	713,853	2,373,236	
%	17.4	52.5	30.1		
2010-2011					
State	428,474	780,010	527,937	1,736,423	75.9
Federal		375,775	175,980	551,755	24.1
Total	428,474	1,155,785	703,917	2,288,178	
%	18.7	50.5	30.8		

Comparing budget expenditures among our southern NAUFRP benchmark institutions for FY 2017, FNR remains near the bottom of our peer institutions (Figure 2). Care must be taken in evaluating these data as some peer institutions are organized into much larger schools of forestry, with multiple programs, much larger numbers of faculty and staff, and a greater pool and diversity of resources to call upon. However, even among those programs that are similar in structure and size, FNR remains near the bottom in terms of resources expended to achieve our missions.

Budget Breakdown Comparison for Fiscal Year 2016-2017

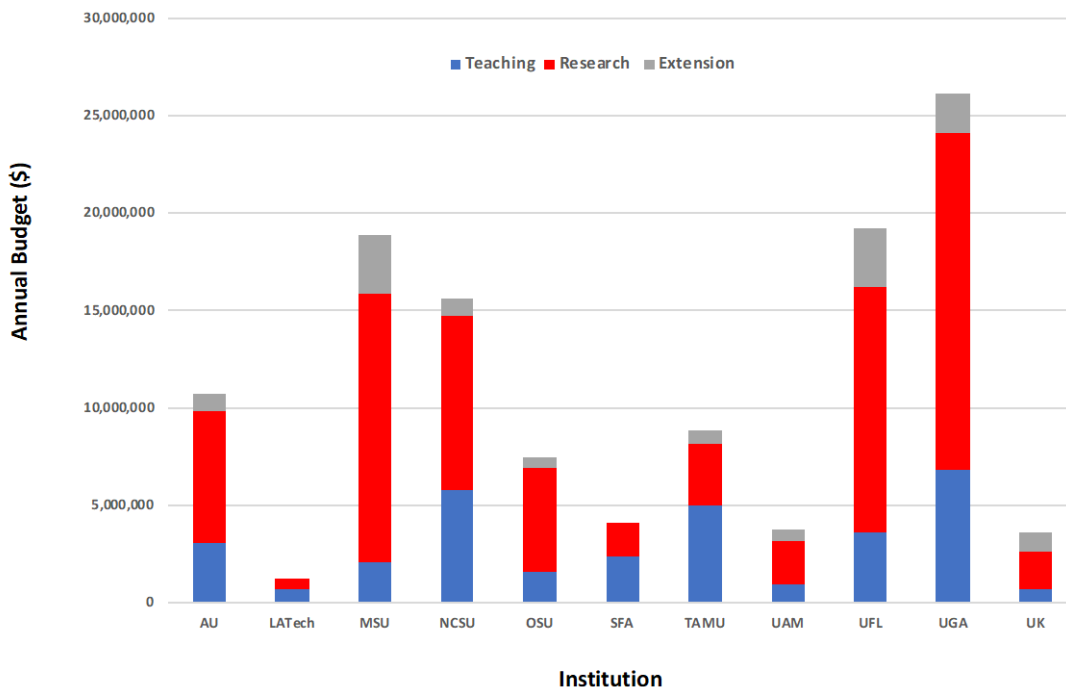


Figure 2. Annual budget breakdown for teaching, research and extension of NAUFRP institutions for FY 2017.

Breaking down the budget by FTE provides a slightly better outlook for FNR, but we still remain on the lower end of this grouping (Figure 3).

Annual Budget per FTE for Fiscal Year 2016-2017

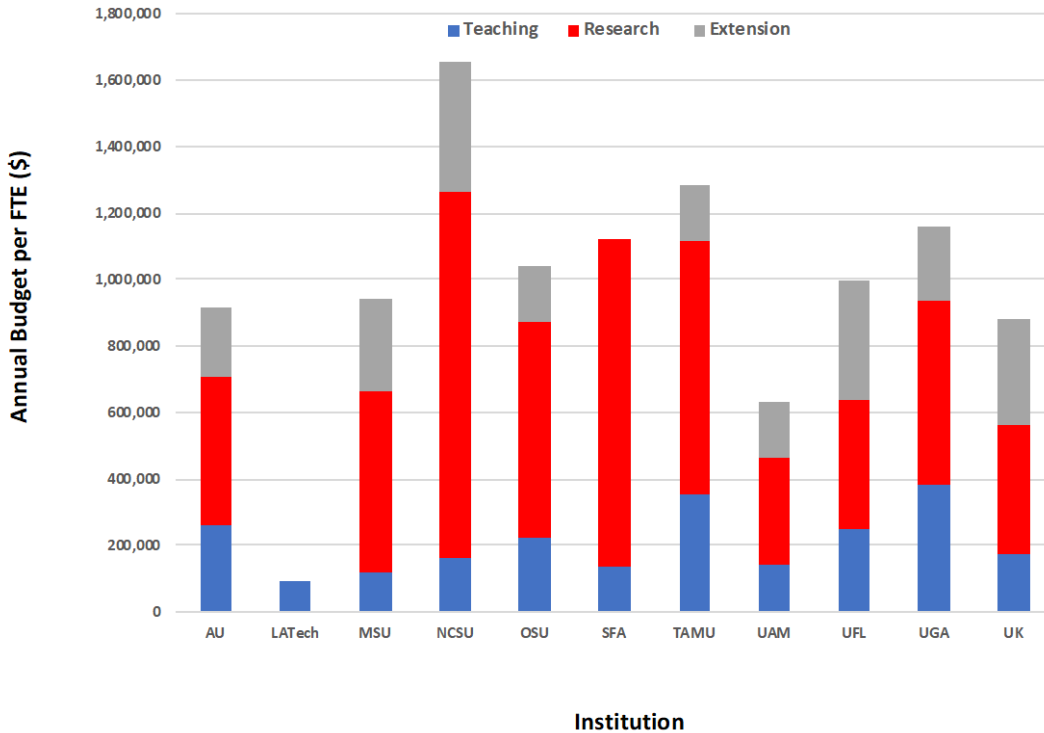


Figure 3. Annual budget breakdown by FTE for teaching, research and extension of NAUFRP institutions for FY 2017

Even though our budget is low compared to other NAUFRP institutions, faculty salaries were very competitive amongst this group (Figure 4). Mean FY 2018 salaries for FNR faculty at the rank of professor (\$118,912), associate professor (\$101,794) and assistant professor (\$83,128) were all above the mean of the respective position for NAUFRP institutions. FNR had the third highest mean salaries for associate professors. FNR faculty and staff were fortunate to have had annual salary increases for each of the last seven years.

Salaries for Fiscal Year 2017-2018

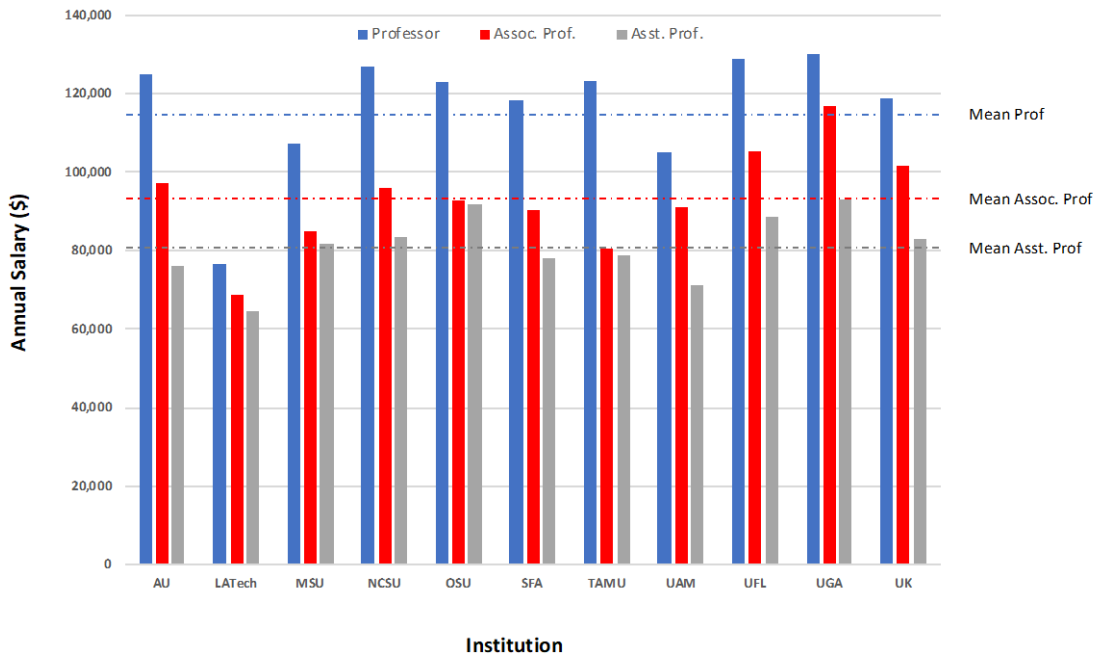


Figure 4. Mean annual salaries for faculty at the rank of Professor, Associate Professor and Assistant Professor at NAUFRP institutions for FY 2018

III. Undergraduate Education

The University of Kentucky offers the only accredited professional degree in forestry in Kentucky. Students take a wide variety of course work, studying the natural and social sciences related to forestry, as well as communication, management and operations, group problem-solving, and administration. Considerable learning takes place outdoors and much of it is hands-on and heavily experiential. A number of forestry courses utilize Robinson Forest, a 15,000-acre outdoor laboratory located in eastern Kentucky and managed by FNR. A significant portion of the semester-long Spring Field Semester is headquartered at the Robinson Forest camp where junior forestry majors live and develop practical field skills needed by foresters.

In 2020, the undergraduate forestry program underwent its 10-year reaccreditation visit by the Society of American Foresters. The SAF Self-Evaluation Report was submitted in February 2020 (Appendix D). The SAF Site Visit committee findings are outlined in Appendix E. The reaccreditation approval documents are outlined in Appendix F and our program is accredited through December 31, 2031.

Students

Recruitment

FNR is quite active (both formally and informally) in recruiting activities for the Bachelor of Science in Forestry degree. Some of these activities are in conjunction with CAFE's Center for Student Success (with which FNR has a very good working relationship) and some occur within FNR itself. The academic coordinator helps with recruiting and retention efforts.

CAFE administers an Agriculture (Ag) Ambassadors program. Outstanding undergraduate students are nominated for this program each year. Ag Ambassadors help conduct campus tours for prospective students and visit Kentucky high schools to recruit students for the college. Periodically, forestry students have served as Ag Ambassadors and we have a forestry senior who is currently an Ag Ambassador.

The college hosts multiple recruiting events aimed at recruiting motivated and academically qualified students who reflect cultural, ethnic, and gender diversity. The academic coordinator provides printed materials on the forestry program or will attend in-person (as invited) for the college-level events. The academic coordinator and college's Center for Student Success work closely to coordinate student visits so the prospective students tour and meet with the college representative to learn about the application process, scholarships, housing, etc. and will then meet with FNR to discuss the details of the major and career opportunities.

The academic coordinator promotes the forestry program at community events such as Reforest the Bluegrass, high school career days, Jr. MANRRS (Minorities in Agriculture, Natural Resources and Related Sciences) Leadership Conference, extension youth events (Win With Wood and Kentucky Forest Leadership Program), and with the Veterans Resource Center on campus.

The academic coordinator also uses online means as a way to meet a diverse audience. In 2016, FNR's website was redesigned using a responsive layout for mobile and desktop use.

Information for prospective students on the forestry program, career opportunities, scholarships, etc. can easily be accessed on our website (<https://forestry.ca.uky.edu/prospective-students>).

Additionally, the academic coordinator, along with the information specialist in extension, co-hosted a weekly radio show, *From the Woods Kentucky*, on the University of Kentucky's radio station WRFL 88.1 FM (<https://forestry.ca.uky.edu/fromthewoodsky>). *From the Woods Kentucky* is a show about all things forestry where we interview faculty, staff, and forestry professionals, to raise the awareness of our forestry resources. Each show we ask the guest how they became interested in their forestry, natural resources, or wildlife degree. When possible, we link the discussion back to our forestry courses and the forestry major. All episodes are available as a podcast on our website and major podcast platforms. Episode 27 "Forestry Careers" is regularly provided to prospective students as a way to learn more about our program from our director of undergraduate studies, forestry student, and college director of Student Relations. Episode 1 "What is Forestry" is also used as an informational tool to explain forestry to those that may be interested in our program. (*From the Woods Kentucky was put on hold in March 2020 due to the pandemic.*)

Retention

The academic coordinator, along with the faculty, work towards retaining students in the forestry program. The academic coordinator acts as a clearinghouse of information for the students and disseminates the information online, in class, throughout the building, and in person. Information about scholarships, volunteer opportunities, research, and job opportunities are shared with the students. We encourage the students to get involved in activities such as the UK Student Chapter of the Society of American Forestry (Forestry Club), UK Fire Cats, Kentucky Wood Expo, and Reforest the Bluegrass. We also encourage them to take advantage of networking with forestry professionals to help them find summer and full-time employment. Staying engaged in the Student Life activities mentioned below is helpful in having the students feel welcome and connected in the forestry program.

When students are struggling for academic or personal reasons, we encourage them to take advantage of the excellent resources the university has for Student and Academic Support as well as for Student Health and Wellness.

Student Life

FNR encourages students to participate in a range of academic and extracurricular offerings. These activities range from professional meetings, wildland fire jobs, community volunteer events, department activities, and forestry club.

FNR encourages students to participate in local, state, and national forestry professional meetings. Meetings include Society of American Foresters (SAF) National Convention, Kentucky-Tennessee SAF Meeting, Kentucky Forest Industries Association annual meeting, and Kentucky Woodland Owners Association annual meeting. Travel scholarships are provided for students to attend these meetings. From 2011 to 2018, FNR awarded 45 travel scholarships for undergraduate forestry students to attend the annual Society of American Foresters National Conventions. In 2019, when the national SAF convention was in Louisville, Kentucky, FNR along with financial assistance from forestry alumni, paid registration costs for 37 undergraduate

students to attend the meeting. Since 2013, all forestry juniors, totaling over 100, have attended the regional Kentucky-Tennessee Society of American Forester meetings held each January.

Since 2014, FNR has partnered with the Kentucky Division of Forestry and the U.S. Forest Service Daniel Boone National Forest to create the UK Fire Cats, a student wildland firefighter organization. The purpose of the UK Fire Cats is to provide forestry students hands-on experience with wildland firefighting. UK Fire Cats are paid employees of the Kentucky Division of Forestry and are classified as 'Emergency Firefighters.' UK Fire Cats are on-call to fight wildland fire on weekends during the fall and spring fire seasons. There are 21 slots available for the UK Fire Cats.

Students are also involved in community events such as the annual Reforest the Bluegrass that occurs each April and is hosted by the Lexington-Fayette Urban County Government. Students often volunteer as crew leaders to work with adults and youth to help them plant trees in Lexington. Students also volunteer at several of the Urban Forest Initiative events such as mulching the trees around the main campus library. Students also volunteer at the Kentucky Wood Expo event that is held in Lexington every other year.

FNR has activities throughout the academic year to promote a welcoming atmosphere for the students. Each fall FNR hosts the annual Student-Alumni fall picnic. Faculty/staff and their families, graduate and undergraduate students, and forestry alumni gather on the front lawn of the forestry building for an evening of barbecue and comradery. At the last picnic in 2019, there was a friendly quiz bowl competition between the alumni and students. In December each year, the students are invited to the FNR holiday party. This provides the students an opportunity to interact with the faculty/staff and graduate students in a relaxed, festive atmosphere. Finally, each spring FNR wraps up the academic year with a Spring Recognition Dinner to recognize the students' accomplishments throughout the year and present the graduating seniors with a wooden engraved diploma plaque and their SAF rings. The families of the graduating students are invited to attend.

The students also participate in the UK Student Chapter of the Society of American Foresters (also, known as the Forestry Club). The club is run by the students and has an academic advisor. The club provides an opportunity for students to become leaders in the program and get involved in a variety of activities.

Advising

FNR enjoys a strong reputation for readily available, quality advising. The advising process begins when a student enters the University of Kentucky. University-wide advising dates are scheduled at the beginning of each semester for transfer and re-admitted students, and throughout the summer for entering freshman. These dates are known in advance and are circulated among the faculty by the director of undergraduate studies. Willing and available faculty members volunteer to cover these dates. The student meets with the forestry advisor and develops a schedule for the next semester. It is the policy of FNR to allow the student to retain this faculty member as their academic advisor or, if the student wishes, to change to another faculty member.

Advising - Academic Opportunities

Advising for students already attending the University of Kentucky occurs during a four week period each fall and each spring semester. Forestry students are advised by FNR faculty. Students and advisors meet to discuss their schedule and map out their courses using the myUK GPS system. For the majority of forestry students, this is sufficient access to faculty advisors. Students who need further advice during the semester or who encounter problems have found their faculty advisors to be readily accessible. FNR's director of undergraduate studies, has a very liberal open door walk-in policy. Students can usually get their questions answered almost immediately. Should the situation require deferment to the college level, the CAFE Center for Student Success is also accessible and maintains a similar open door walk-in policy.

Forestry faculty advisors work closely with students to keep them on track for graduation. It is a common practice to outline a student's plan of study in advance, so students know when their courses (especially forestry courses) need to be taken. Both advisors and students have electronic access to unofficial transcripts and to the myUK GPS system. Keeping track of the university, college, and departmental courses that have been completed, allows both students and advisors to keep track of the progress toward graduation and is an effective advising tool. Prior to their last registration before graduation, the college's director of advising services calls each student in to review their academic progress and to make sure students understand what courses they must take during their last semester in order to graduate.

Students who encounter difficulties, both academic and non-academic, have a variety of resources available to them. The college has a director of First Year Success to provide any needed support and assistance to new freshman who encounter difficulties adjusting to college life. The university maintains a Counseling and Testing Center that is open to students through offered programs and courses as well as one-on-one assistance. The staff is equipped to assist with learning skills, test anxiety, stress management, depression as well as gender and diversity issues.

Advising - Professional and Career Opportunities

As with advising, students have multi-level assistance for help with professional and career opportunities. The university's Stuckert Career Center provides help with resume preparation, interview skills, and job searching strategies. The college also had a director of Career Development and Enrichment who assisted students with career exploration, education abroad, internships, professional mentoring, resumes, and interviews.

FNR is committed to providing quality student advising regarding professional and career opportunities. As mentioned above, all forestry students meet with faculty advisors. These meetings each semester allow for discussion of the student's interests and allow faculty time to provide mentorship on professional and career opportunities. The academic coordinator has an open-door policy to assist students on resumes, cover letters, interviews, and career exploration. The academic coordinator also serves as a communication hub for faculty and outside employers to help disseminate information about research and employment opportunities.

Forestry students also receive professional and career advice during the 2-part course on *Communication and Professional Development in Forestry and Natural Resources (FOR 285*

and FOR 286). During the first course (FOR 285), students prepare a cover letter and resume. Forestry professionals from various sectors of the forestry profession are invited as guest lecturers to inform the students about their career path, current position, and employer. The second course (FOR 286) occurs during the Spring Field Semester. Students visit several forest industries in Kentucky as well as meet with forestry professionals at the Kentucky-Tennessee Society of American Foresters Winter Meeting.

The academic coordinator also coordinates visits by forestry professionals who are looking to hire seasonal and full-time employees. This is usually done during Forestry Club meetings. The U.S. Forest Service, Student Conservation Association, Davey Tree Company, and Weyerhaeuser are some examples of employers that have met with our students to discuss career opportunities.

The academic coordinator also posts job opportunities (full-time, seasonal/temporary, graduate school) to FNR's online Forestry and Natural Resources Job Board (<http://forestry.ca.uky.edu/forestry-jobs>). The job board is public so that current students, forestry alumni, and the general public are able to view the forestry jobs that employers have asked us to post.

As mentioned earlier, FNR also provides students numerous opportunities to travel to professional meetings such as regional and national SAF meetings.

Student Enrollment

Table 8 lists the enrollment and demographic data for the past seven years. Figure 5 shows in how these trends have changed over time. Enrollment in the B.S. in Forestry program has steadily increased since fall semester 2014 with current enrollment at 66⁴. The average enrollment during this time period is 58. Outlined below is a summary of the demographic information from Table 8.

- **Gender** – The percent of female students has increased from 11.5 percent in fall 2014 to 31.8 percent in fall 2020. The average number of females is 20.1 percent.
- **First Generation** – The percent of first generation students in the program has varied over the past seven years with an average of 26.6 percent first generation students.
- **Underrepresented Minorities** – The number of underrepresented minorities has also varied during this time but there has been a steady increase in underrepresented minorities since fall 2017.
- **Non-Residents** – The number of non-resident students has also varied during the past seven years with an average of 17.1 percent of the students from outside of Kentucky. On average, one-fifth of the forestry students are from the Appalachia Kentucky region.
- **Veterans** – From fall 2014 through fall 2019, we had an average of eight veterans in our undergraduate program⁵. In fall 2019, we had eleven veterans. The veterans bring diverse backgrounds, experience, and wisdom to our undergraduate forestry program⁵.

⁴ Source: UK Tableau Site. CAFE Specializations Headcount data set. Fall semester 'Census Date' enrollment data was used for these charts. Site Accessed 12/9/2020.

⁵ Source: Tableau report prepared by CAFE. Veteran enrollment for academic year 2015-2020. Site accessed 12/15/2020.

Table 8. B.S. in Forestry demographic and enrollment trends (2014-2020)⁴

Year	Females	First Generation	Underrepresented Minorities	Non-Resident	KY Appalachia	Total Enrollment
Fall 2014	11.5%	32.7%	11.5%	15.4%	25.0%	52
Fall 2015	13.2%	37.7%	7.5%	13.2%	18.9%	53
Fall 2016	16.4%	27.3%	10.9%	18.2%	23.6%	55
Fall 2017	20.0%	23.3%	6.7%	21.7%	20.0%	60
Fall 2018	19.0%	20.7%	8.6%	15.5%	19.0%	58
Fall 2019	28.6%	17.5%	11.1%	19.0%	15.9%	63
Fall 2020	31.8%	27.3%	13.6%	16.7%	16.7%	66
Average	20.1%	26.6%	10.0%	17.1%	19.9%	58.1

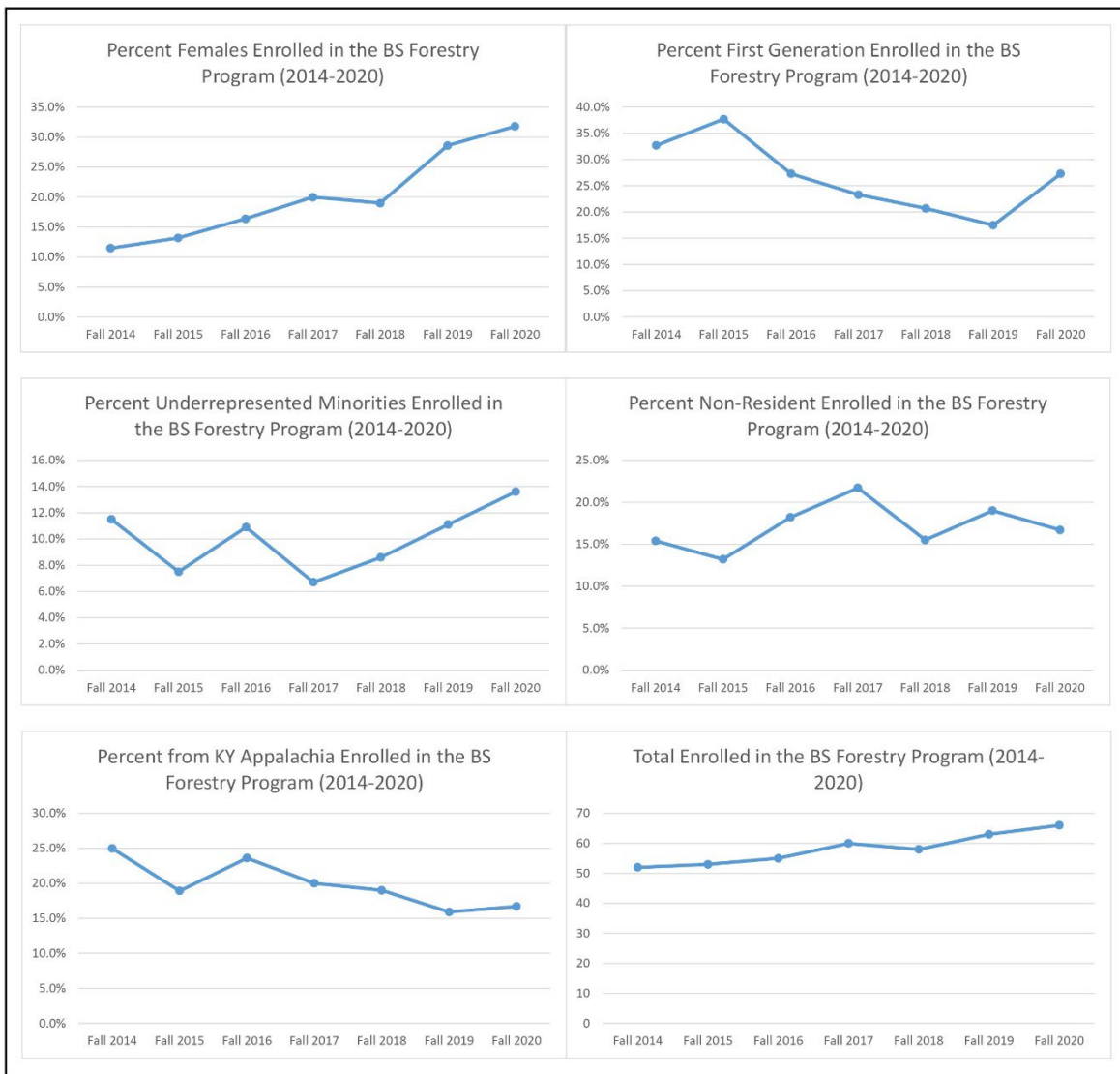


Figure 5. B.S. in Forestry demographic and enrollment trends (2014-2020)⁴

Our enrollment data are similar to national enrollment trends highlighted in a report by Terry Sharik and Tara Bal on *Enrollment Trends in Natural Resources Degree Programs in the U.S. with an Emphasis on Diversity: an Update*. The report was presented at the Biennial Conference on University Education in Natural Resources in Nacogdoches, Texas in March 2018. According to their report, in 2016, the female enrollment in forestry programs at 42 NAUFRP institutions was 26.2 percent. In fall 2020, FNR had 31.8 percent females enrolled in our undergraduate forestry program. According to their report, in 2016, the total minority percentage in forestry programs at 52 NAUFRP institutions was 9.0 percent. In fall 2020, FNR had 13.6 percent underrepresented minorities.

Wildlife Biology and Management Minor

The Wildlife Biology and Management Minor is designed to provide students in forestry, natural resources and environmental science, biology, animal sciences and related majors with a broad foundation in wildlife ecology and the practice of wildlife management and conservation. Students are required to complete a core set of foundational wildlife courses that provides a fundamental understanding of basic concepts, principles, and practices of wildlife studies applicable to multiple career lines that incorporate wildlife management, research, teaching, outreach, and land stewardship. Completion of the minor will also satisfy many of the courses required to become a Certified Wildlife Biologist as recognized by The Wildlife Society professional organization. Additional details on the Wildlife Biology and Management Minor can be found on our website (<https://forestry.ca.uky.edu/wildlife-minor>).

The Wildlife Biology and Management Minor began in fall 2017. Table 9 shows total the enrollment for the Wildlife Biology and Management Minor. Table 10 shows the number of students per major enrolled in the Wildlife Biology and Management Minor. In fall 2020, one-quarter of the forestry majors are pursuing a minor in Wildlife Biology and Management.

Table 9. Total enrollment for the Wildlife Biology and Management Minor (2017-2020)⁶

Year	Total Enrollment
Fall 2017	5
Fall 2018	32
Fall 2019	52
Fall 2020	65

⁶ Source: UK Tableau Site. CAFE Specializations Headcount Students data set. Fall semester ‘Census Date’ enrollment data was used for this chart. Site Accessed 12/10/2020.

Table 10. Number of students per major in the Wildlife Biology and Management Minor (Fall 2020)⁶

Majors with Wildlife Biology and Management Minor (Fall 2020)	Count
Bachelor of Science in Forestry	16
Bachelor of Science in Animal Sciences	15
BS in Natural Resources and Env'tl Sci	11
Bachelor of Arts	10
Bachelor of Science	5
BS in Equine Science and Management	2
Bachelor of Music	1
Bachelor of Science in Education	1
BS in Ag & Medical Biotechnology	1
BS in Biosystems Engineering	1
BS in Community and Leadership Dev	1
BS in Landscape Architecture	1
TOTAL	65

Natural Resources and Environmental Science

FNR has also been a leading contributor to the interdisciplinary Natural Resources and Environmental Sciences (NRES) major for many years, having been foundational in beginning the program back in 1991. Our faculty teach many classes in the NRES program and serve in key leadership positions. In 2018-2019, the NRES enrollment was 108⁷.

Student Success, Placement and Employer Demand

FNR recognizes that professional foresters have become increasingly vulnerable to the effects of a dynamic world of technology innovation, fluctuating global markets, urbanization, increasing energy demands, and changes in human attitudes towards resource extraction. These factors have dramatically altered forest ownership and use patterns in ways unforeseen a few decades ago. We also recognize that one of the most important challenges in a resource-hungry world is to maintain forest health through sustainable management while also providing economic benefits derived from forest products. Effective prognostication and subsequent adaption to these changes and demands requires FNR to be vigilant to and effective communicators of research, economic, policy, and cultural developments that could potentially affect forestry professionals. Our teaching efforts are designed to disseminate ours and others' research findings and other information that helps form the foundation within our forestry students the ability to effectively cope with and adapt to current and future challenges. At the same time, various communication forums that we engage in, as well as contact with our alumni, agency partners, and other collaborators allow us to actively solicit the concerns, ideas, and needs of professional foresters across Kentucky. Through these disseminative and solicitive mechanisms, our goal is to be timely, in-touch, and in-tune with forestry professionals.

We prepare students for leadership in the knowledge economy and global society with an interdisciplinary mindset. Multidisciplinary courses have been offered, such as ecology,

⁷ Source: CAFE 2018-2019 Multi-Disciplinary, Undeclared, Nondegree Undergraduate Programs. <http://administration.ca.uky.edu/files/multi.pdf> Site Accessed 12/11/2020.

economics, policy, geospatial analysis, hydrology, silviculture, soils, surface mine reclamation, timber management, wildlife biology, and wood utilization, among others. FNR expects graduates to become leaders in forestry and natural resource professions, and expects that graduates will become leaders in their communities. The forestry undergraduate curriculum, leading to a Bachelor of Science in Forestry, has an emphasis on producing graduates who are society-ready, i.e., capable of dealing effectively with the complex economic, ecological, and social issues involving forest resources today. Forestry graduates will be well prepared for further scientific study, and for successful careers as practitioners, scientists, educators, and extension professionals.

Table 11 shows the number of Bachelor of Science in Forestry degrees awarded by academic year for the past five years. Table 12 shows the placement data for graduates of the forestry undergraduate program. The placement data is tracked by emailing graduates to see where they are employed. The academic coordinator maintains a database of recent graduates to update as alumni communicate where they or their classmates are working.

Table 11. Bachelor of Science in Forestry degrees awarded by academic year (2015-2020)⁸

Academic Year	Degrees Awarded
2015-2016	16
2016-2017	9
2017-2018	11
2018-2019	13
2019-2020	14

⁸ Source: UK Tableau Site. Student Reports / Degrees Awarded / Time series. Site Accessed 12/9/2020.

Table 12. Graduate employment summary for Bachelor of Science in Forestry graduates (2015-2019) as reported to SAF in the 2020 Self-Accreditation Report

Post Graduation Status	Number of Graduates for Past Five Years										Total Graduates
	Year: 2015		Year: 2016		Year: 2017		Year: 2018		Year: 2019		
	#	%	#	%	#	%	#	%	#	%	
Employed Permanent											
Forestry	9	56%	7	54%	4	44%	6	60%	6	38%	32
Forestry-related	--	--	--	--	1	11%	--	--	1	6%	2
Other Employed	2	13%	3	23%	1	11%	2	20%	--	--	8
Employed temporary											
Forestry	--	--	--	--	--	--	1	10%	1	6%	2
Forestry-related	--	--	--	--	--	--	--	--	--	--	--
Other Employed	--	--	1	8%	1	11%	--	--	1	6%	3
Graduate Study	2	13%	2	15%	1*	11%	1	10%	2	13%	8
Military	--	--	--	--	1	11%	--	--	1	6%	2
Unemployed^	1	6%	--	--	--	--	--	--	2	13%	3
Unknown	2	13%	--	--	--	--	--	--	2	13%	4
Total Number and Percentage of Graduates	16	100%	13	100%	9	100%	10	100%	16	100%	64

*Went to UK for a BS in civil engineering

^ Includes those not employed because they are staying home to raise a family (n=2)

According to the Burning Glass Reports (Burning Glass Technologies, Boston, MA) compiled by CAFE for forestry graduates, there were 14,600 job postings in the last 12 months in the U.S. (see Appendix J). This report also stated that the number of jobs for forestry graduates is expected to grow over the next 10 years. When looking at this same data for the region (KY, OH, IN, TN WV, VA, IL, MO), there were 1,992 job postings in the last 12 months. The number of jobs for this region is also expected to grow over the next 10 years.

Curriculum Development

The undergraduate forestry curriculum and program integrity are maintained by the Society of American Foresters (SAF) accreditation process. To be accredited by SAF, academic programs leading to a Baccalaureate degree must, every ten years, prepare a self-evaluation report, host an onsite review by a visiting team, and undergo review by the SAF Committee on Accreditation, which determines that a degree program meets SAF accreditation standards for mission, goals and objectives, curriculum, program organization and administration, faculty, students, and parent-institution support.

Building upon the general education competencies provided by the UK Core curriculum and the pre-major science requirements, the forestry major includes 80 semester credit hours of required professional coursework. Seventy-six of these credits are provided by classes with a FOR prefix controlled by FNR. The additional 4 credits of professional coursework include *PLS 366 Fundamentals of Soil Science*. Beyond the breadth of the required coursework, the curriculum strength is its experiential nature. Eighteen of the required courses (53 semester credit hours) include a laboratory or outdoor learning component. The most notable of these experiential curriculum components is the 15-week spring field semester occurring in the junior year. This 13-credit semester includes seven, field-based courses generally delivered in week-long time blocks including six weeks when students are housed at the UK's Robinson Forest. The spring field semester also includes a number of day trips to field sites and overnight trips as part of forest industry and products tours, visits to national forests in North Carolina and Georgia, and travel to western Kentucky for forest operations and logging site visits.

To provide a culminating education experience to students within the curriculum, an extensive senior capstone management course is required, *FOR 480 Integrated Forest Resource Management* (5 credits). In *FOR 480*, students are presented with a real-life management scenario in a forested location in Kentucky. Working in teams, students collect data, determine management objectives, and develop action plans for managing the forest according to the desires of the owner, subject to realistic legal, economic, ethical, and social constraints. Students are required to produce a professional management plan and present the plan in a public forum at the end of the semester.

Beyond the required courses, the curriculum requires nine hours of professional electives that are designed to give forestry students supplemental coursework to support their career interests. Faculty advisors encourage students to use these professional electives to enhance their knowledge base and build their resume. In general, the professional electives are 300-level or above course. Students are provided a list of suggested courses that qualify as professional electives that has been approved by FNR faculty. If a student wants to take a course not on this list, the student must receive approval from the FNR Undergraduate Programs Committee (UPC). A student must provide a brief, written justification to their advisor for why they should receive approval to take the particular course. The advisor will then share this information with the UPC for final approval.

Details of the undergraduate curriculum and how the SAF standards are met can be found in Appendix D and in Table 13.

Table 13. Faculty teaching summary from the SAF Self-Evaluation Report (Document D-1).

Document D-1: Faculty Teaching Summary - Those Reporting to Program Head													
Institution Name: University of Kentucky - Department of Forestry and Natural Resources										Academic Year: 2019-2020			
Official Degree Title: Bachelor of Science in Forestry													
Official Option Titles: n/a													
Faculty Member	Budgeted Allocation (%)			All Courses Taught Title and Course	Indicate if the listed course is required or a restricted elective in the curricula under accreditation review.		Credit Hours	Weekly Contact Hours	Total Enrollment ¹		# of Advisees ²	Undergrad Credit Hours	** Proportion allocated to FOR
	Teaching	Research	Extension / Service		Required (FOR)	Restricted (FOR)			Undegrad	Graduate			
Mary Arthur	20.16%	64.84%	15.00%	FOR 340 Forest Ecology	Required	---	4	10.2	43	0	2	172	100%
Christopher Barton	30.00%	65.00%	5.00%	FOR 356 Forest Soils and Hydrology	Required	---	1	40 hrs for 1 week	11	0	0	11	100%
				FOR 460 Forest Hydrology & Watershed Management	Required	---	3	2.5	34	0	102		
Terrence Conners	0.00%	0.00%	100.00%	FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 1 week	11	0	0	33	100%
John Cox	44.25%	50.75%	5.00%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	5	22	45%
				FOR 435 Conservation Biology	Required	---	3	5.0	97	0	291		
Ellen Crocker	26.33%	0.00%	73.67%	FOR 310 Introduction to Forest Health and Protection	Required	---	1	40 hrs for 1 week	11	0	0	11	13%
Michael Lacki	26.30%	68.70%	5.00%	FOR 370 Wildlife Biology and Management	Required	---	4	4.8	38	0	2	152	50%
John Lhotka	44.00%	43.50%	12.50%	FOR 350 Silviculture	Required	---	4	5.3	10	0		40	100%
				FOR 358 Silvicultural Practices	Required	---	3	40 hrs for 3 weeks	11	0	9	65	
				FOR 480 Integrated Forest Resource Management*	Required	---	5	10.0	13	0	33		
Thomas Ochudho	24.80%	70.20%	5.00%	FOR 280 Forest Resource Policy and Law	Required	---	3	2.5	25	0	0	75	75%
Steven Price	38.30%	51.70%	0.00%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	0	22	15%
James Ringe	79.35%	0.00%	5.65%	FOR 100 Forests and Forestry	Required	---	3	2.5	48	0		144	100%
				FOR 200 Basics of Geospatial Technology*	Required	---	3	3.5	27	0	81		
				FOR 260 Forest Products and Wood Science	Required	---	4	4.3	31	0	54		
				FOR 320 Forest Valuation and Economics	Required	---	3	2.5	18	0	33		
				FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 1 week	11	0	56		
				FOR 425 Forest Management*	Required	---	4	4.3	14	0	65		
Matthew Springer	11.50%	0.00%	88.50%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	0	22	33%
Jeffrey Stringer	5.00%	8.85%	20.00%	FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 2 weeks	11	0	0	33	100%
Jian Yang	23.50%	71.50%	5.00%	FOR 200 Basics of Geospatial Technology*	Required	---	3	3.5	27	0	1	81	100%
				FOR 330 GIS and Spatial Analysis	Required	---	3	3.5	20	0	60		
Darryl Cremeans				FOR 250 Statistics and Measurements I (fall 2019)	Required	---	4	4.3	31	0		124	100%
				FOR 357 Inventory and Measurements II*	Required	---	2	40 hrs for 2 weeks	11	0	22		
Laura Lhotka				FOR 255 Forest Fire	Required	---	1	0.8	27	0		27	100%
				FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I	Required	---	1	0.8	25	0	25		
				FOR 286 Com. & Prof. Dev. in For. & Nat. Res. II	Required	---	1	40 hrs for 1 week	11	0	11		
				FOR 400 Human Dimensions of Forestry & Natural Resources*	Required	---	3	2.5	18	1	54		
Rob Paratley				FOR 219 Dendrology	Required	---	4	5.1	32	0		128	33%
				FOR 221 Winter Dendrology	Required	---	1	3.8	10	0	10		
William Thomas				FOR 400 Human Dimensions of Forestry & Natural Resources*	Required	---	3	2.5	18	1		54	100%
*Course co-taught											No. of faculty involved in each program		
**Advisees in the degree programs under accreditation review											11.65		
**For each faculty member indicate the proportion of total teaching time spent teaching courses relevant to the degree programs under accreditation review. (Not by course.)													
¹ Enrollment numbers as of 12/19/2019.													
² Advisee totals as of 12/19/2019.													

Delivery of Instruction

FNR courses are taught by regular faculty, or in some instances, by professional staff with particular expertise. As a result, there is very little formal use of graduate students for teaching. The teaching assistant position involves serving as a teaching assistant (TA) for both semesters in a given year, is primarily used for Dendrology (FOR 219) in the fall semester and for another course during the spring semester, typically Integrated Forest Resources Management (FOR 480). These classes have high enrollment and/or a major field component wherein an additional person is needed to conduct the course. Additionally, all graduate research assistants must serve as a TA for one semester to obtain some teaching experience. These teaching experiences are

carefully overseen by the faculty member responsible for the course, and the graduate student receives feedback regarding their performance. Further, this practice facilitates interactions between graduate and undergraduate students in FNR, which we believe enhances the educational experience of our undergraduates, many of whom become involved in research with graduate students. In addition, some Ph.D. candidates participate in undergraduate education through informal assistance in laboratory sections, and by filling in for lectures when faculty are ill or are away from campus for professional meetings. On occasion, Ph.D. students have volunteered to participate in undergraduate instruction to gain teaching experience and bolster their resumes.

As shown in Table 14, the number of attempted and earned credit hours has generally increase from 2016-2020.

Table 14. Attempted and earned credit hours for academic year 2016-2020⁹

Academic Year	Attempted Credit Hours	Earned Credit Hours
2016	2,114	1,885
2017	2,220	2,050
2018	2,601	2,474
2019	2,776	2,608
2020	2,637	2,468

Cooperative relations with regional industries, organizations, and agencies

FNR’s research, teaching, and extension faculty and staff have cooperative relations with regional industries, organizations, and agencies. These relationships extend through interactions with research, teaching, and extension aspects of FNR. Outlined below are examples of the cooperative relations that exist through the undergraduate program.

We have increased teaching-related cooperation and interaction with federal and state agencies, landowners, non-governmental organizations, and private industry in these efforts. We will continue to use the University of Kentucky Herbarium, Wood Utilization Center, Robinson Forest, greenhouses, and other resources to enhance student learning and to create diverse opportunities for learning. Nationally prominent individuals have been brought to FNR as seminar speakers and guest lecturers to heighten the awareness of significant issues, and to increase the interaction of faculty, staff, and students with national leaders, agencies, and organizations.

FNR’s cooperative relations with regional industries, organizations, and agencies has direct impact on our classroom instruction. During *FOR 285 Communication and Professional Development I* class, each year we invite about 6-8 representatives of various sectors of the industry to guest lecture to the class. For example, guest lectures include the U.S. Forest Service Daniel Boone National Forest, Kentucky Division of Forestry, Kentucky Department of Fish and Wildlife Resources, forestry consultants, wood products industry, The Nature Conservancy,

⁹ Source: Forestry and Natural Resources OSPIE Data July2020. From CAFE for FNR Departmental Periodic Program Review.

forestry extension. Representatives from these agencies and organizations involved with fire also guest lecture during the *FOR 255 Forest Fire* course.

During the spring field semester, students visit with forest industries, logging professionals, and national forests to see first-hand their activities and operations. Examples of recent industry tours include Robinson Stave Mill and Barrel Facility, Somerset Hardwood Flooring, American Woodmark Corporation, Roy Anderson Lumber Co, Stidham Cabinets, and Domtar. Students also visit a range of timber harvesting operations and interview loggers and interact with consulting foresters and land managers throughout the state as part of the spring field semester. Students also visit the national forests including the Daniel Boone National Forest (KY), Nantahala National Forest (NC), and Chattahoochee-Oconee National Forest (GA).

In addition to classroom lectures and the spring field semester, students also interact with our partners through extracurricular activities. Juniors in our spring field semester actively participate in the Kentucky/Tennessee Society of American Foresters annual meeting as part of their *FOR 286 Communication and Professional Development* course requirements. As mentioned above, students interact with the Kentucky Division of Forestry and the U.S. Forest Service Daniel Boone National Forest through UK Fire Cats, a student wildland firefighter organization.

Forestry students also volunteer at the Kentucky Wood Expo held in Lexington, Kentucky every other year. The Kentucky Wood Expo is an expo hosted by the Kentucky Forest Industries Association.

Each year, students attend and present during the annual Kentucky Woodland Owners Association meeting. During this meeting they present to the Kentucky Woodland Owner members about their activities as students and future forestry professionals. They also get to interact with the woodland owner members during this meeting.

Learning Outcomes Assessment

The university requires each degree program to conduct standardized learning outcomes assessment. Each program implements a plan to facilitate collection, review, and use of assessment data to guide improvements in learning and teaching. A formal assessment plan has been in place for the forestry degree program since the spring of 2009. Implementation of the assessment process for the forestry program is currently overseen by the department's Undergraduate Program Committee. The B.S. program assessment rubrics and the Program-Level Student Learning Outcomes Assessment Plan that was submitted and approved by the university in 2020 is located in Appendix K.

The forestry program's assessment methods include direct evidence. Examples of direct evidence include program early and late assessments (to measure value added by the undergraduate forestry curriculum), including independent review by several faculty members of capstone course management plans. The university Office of Assessment has advised FNR that the best direct evidence comes from curriculum embedded assessment. Thus, when possible, we will use as direct evidence work that students are already doing during the normal order of business in their courses (e.g., writing assignments, field exercises, and oral presentations).

Within the assessment plan, there are two program-level student learning outcomes, one of which has sub-outcomes.

- Outcome #1 (GCCR): Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:
 - a. find, read and interpret professional documents.
 - b-i. communicate information effectively in oral/visual presentations.
 - b-ii. communicate information effectively in writing, on technical / business levels.
 - b-iii. communicate information effectively, in writing, to non-professional audiences.
- Outcome #2: Graduates will meet the “Management Plans” Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate ability to develop management plans with specific multiple objectives and constraints.

The assessment activities, data collection and presentation of results, follow a two-year cycle, with one outcome assessed in year one and the other outcome assessed in year two. Program-level assessment results are emailed to all departmental faculty members prior to the final regularly-scheduled faculty meeting of each academic year. At that final meeting (normally in May), those present will discuss the results and make decisions about improvement actions.

For each program-level student learning outcome, assessment data will be gathered at two points in the curriculum. The first point will be in a course that introduces information relevant to the outcome (identified in our documents as “early-academic-career assessment”), and the second point will be in a course that students take closer to graduation (identified in our documents as “late-academic-career assessment”). The relevant competencies will be evaluated for all B.S. (Forestry) majors enrolled in the courses used for assessment. Because these courses are required by the degree program, each assessment will be based on a complete census of the student cohort being assessed (except, perhaps, for occasional situations such as unavoidable absences or transfer students who may take a course out of the normal sequence).

After the completion of an academic year’s program-level assessments, the Undergraduate Program Committee compiles and analyzes the data. Key features of the analyses address whether or not (a) benchmarks were achieved, and (b) graduating seniors outperformed “early-academic-career” students. As mentioned above, the results will be shared with all FNR faculty members prior to the final meeting of each academic year. Decisions regarding programmatic improvement actions will be made at that meeting by consensus, based on discussion of the year’s assessment data analyses and conclusions.

The FNR Undergraduate Program Committee prepares a program-level assessment report each year, in accordance with consensus decisions of the faculty (see preceding paragraph). The report is made available to all departmental faculty for review prior to its submission to the university’s assessment office. The most recent assessment report (2017-2018) is included in Appendix L.

Beyond outcomes assessment methods documented above, FNR utilizes other evaluation

approaches for the curriculum including exit interviews following the conclusion of the spring field semester (spring of the junior year), senior exit interviews and surveys, and external stakeholder input via advisory committee meetings. Similar to the annual assessment report, outcomes of these interviews and surveys are presented and discussed as part of the FNR's academic year-end faculty and undergraduate program committee meetings. These meetings are critical to the assessment feedback loop and allow for a determination of an action plan for the following academic year.

IV. Graduate Education

The FNR graduate program (M.S. and Ph.D.) encompasses a wide variety of social and natural science disciplines while addressing issues that range from molecular to landscape and societal levels. This broad scope creates a stimulating atmosphere for graduate education and research, leading to innovative approaches in the sustainable management of forest and other natural resources.

Graduate Curriculum

Forest and Natural Resource Sciences (FNRS) M.S. students can choose to pursue a thesis (Plan A) or a non-thesis (Plan B) option. The student path for the newly established doctoral program in FNRS includes a qualifying exam, a final exam and a dissertation. Graduate study can be conducted in a variety of topic areas including plant physiology, genetics, forest management, forest soils, economics, invasive species, natural resource policy, wood utilization, wildlife biology and management, conservation biology, forest ecology, silviculture, hydrology, natural resource policy, restoration ecology (including mine reclamation), and watershed management.

To foster professional development, it is a degree requirement for each M.S. student to acquire instructional experience under the direct supervision of a FNR course instructor. This requirement is fulfilled by assisting with the instruction of an undergraduate course for one semester. It applies to all M.S. students in the FNRS degree program, including those not employed as teaching assistants.

An orientation meeting for new graduate students of the FNRS degree program is held early each semester to acquaint them with university, Graduate School, graduate program, and FNR policies and procedures. During orientation, all students receive the FNRS Graduate Student Handbook and have opportunities to inquire about matters of concern.

M.S. students in FNRS are required to take:

- FOR 601 Research Methods in Forestry; 3 credits; taught every fall semester
- FOR 602 Renewable Natural Resources in a Global Perspective; 3 credits; taught in the fall semesters of odd-numbered years
- FOR 770 Forestry Seminar; three (3) credits are required of this 1-credit course; several sections are available most semesters, each with a unique topic and instructor

Table 15 provides a list of FOR 770 course taught since fall 2016.

Table 15. FOR 770 Forestry Seminar course and instructor from 2016-2020

Semester	Course (Instructor)
Fall 2016	Where in the World is Aldo (Leopold)? (Cox) Spatial Analysis for Natural Resources using GIS and R (Yang) University Forestry Teaching (Wagner)
Spring 2017	Neotropical Migrant Songbird Ecology, Management, and Conservation (Cox) The Pristine Myth: Anthropogenic Influences on New World Ecosystems (Paratley) University Forestry Teaching (Wagner)
Fall 2017	Ecology, Conservation, and Management of Wild Canids (Cox) Weekly Departmental Seminar (Springer) University Forestry Teaching (Wagner)
Spring 2018	Forest Disturbance, Resilience, and Health in Appalachia's Mountains (Yang) Reptile and Amphibian Conservation and Management (Price) University Forestry Teaching (Wagner)
Fall 2018	Weekly Departmental Seminar (Springer) University Forestry Teaching (Price)
Spring 2019	Urban and Community Forestry (Arthur) University Forestry Teaching (Price)
Fall 2019	Spatial Analysis in R (Yang) University Forestry Teaching (Price) Weekly Departmental Seminar (Springer)
Spring 2020	Natural Resource Policy and Law (Ochuodho) Forest Health (Dreaden and Crocker) University Forestry Teaching (Price)
Fall 2020	University Teaching (Price) Wetland Ecology and Management (Barton) Spatial Analysis in R (Yang) Discussion on Department Seminar Topics (Springer)
Spring 2021	University Teaching (Price) Forest Fire (Arthur) Forest Health (Crocker and Dreaden) Natural Resource Policy and Law (Ochuodho)

Graduate Assistantships

Most FNRS M.S. students are supported by research and teaching assistantships, which include a stipend, a health insurance policy, and scholarship funds that cover in-state and out-of-state tuition for graduate courses. Some of the FNRS assistantships are funded by research grants and contracts to individual faculty members. Additional assistantships are sometimes available from FNR departmental funds. The departmental assistantships are typically awarded in March to students admitted for the subsequent fall semester.

Assistantships are awarded on a competitive basis by the faculty members of the FNRS Graduate Program Committee. Assistantship appointments are contracted initially for a maximum period of 12 months. However, when an assistantship is awarded, the intention is that it would be renewed to provide financial support for a total period of up to 24 months, assuming that funds are available and satisfactory progress is being made toward the degree.

FNR also supports graduate student travel to professional conferences to present their research. From 2015-2016 through 2018-2019, FNR awarded 29 Graduate Student Research Conference Travel Awards.

Graduate Enrollment and Placement

The number of students enrolled in the M.S. program usually depends on the number of assistantships, research grants and contracts faculty have available. The total enrollment for the M.S. program is shown in Table 16.

Table 16. Enrollment of Masters Students¹⁰

Year	Total Enrollment of Masters Students	% Female	Underrepresented Minorities
Fall 2015	20	45%	20%
Fall 2016	20	35%	20%
Fall 2017	19	32%	26%
Fall 2018	19	42%	21%
Fall 2019	13	38%	31%

Table 17. Masters degrees awarded for academic year 2015-2019¹⁰

Academic Year	MS Degrees Awarded
2015	7
2016	4
2017	8
2018	8
2019	5

In June 2018, our Ph.D. program was approved by the Commonwealth. In 2018-2019, FNR began accepting students into the Ph.D. program. Since the doctoral program is so new, there are only three students enrolled in the Ph.D. program. Since fall 2015 through fall 2020, FNR had 7 post-doctoral scholars.¹¹

Graduate Students

The FNR Graduate Student Association (FNR GSA) is comprised of FNRS graduate students with the goal of enhancing graduate student professional, social, and personal development within the department. The FNR GSA meets regularly to facilitate social, philanthropic, and networking events to engage with other students, faculty, and the Lexington community. Examples of previous events are the Licking River Cleanup and volunteering at the Arboretum. The FNR GSA also acts as the voice of the FNR graduate student community by communicating with the department chair, faculty, and other constituencies.

The FNR GSA created an award to annually recognize outstanding graduate students within the program. The first awards were presented in April 2008 and graduate students have received the

¹⁰Source: Forestry and Natural Resources OSPIE Data July2020. From CAFE for FNR Departmental Periodic Program Review.

¹¹ Source: 2019-2020 Forestry and Natural Resources Departmental Report. Compiled by CAFE.

award each year since. From 2015-2016 through 2019-2020, the FNRS Graduate Student Award for Excellence has been awarded to 12 graduates students.

In fall of 2020, the FNR GSA organized a Departmental Journal Club with the purpose of engaging the faculty, staff, and student community in discussions related to the seminar series presentations.

Learning Outcomes Assessment

FNR conducts one of the most intensive student learning outcomes assessment of any program on campus; in fact, it has repeatedly been referenced as a model for other departments and majors. The FNRS Graduate Program Committee currently manages our assessment program, which is designed not only to meet university reporting requirements, but also assist FNR in understanding how well our students are understanding and retaining course material.

The M.S. and Ph.D. program assessment rubrics and the Program-Level Student Learning Outcomes Assessment Plan that was submitted and approved by the university in 2020 is located in Appendix M and Appendix N, respectively.

V. Research

FNR faculty conduct basic and applied research to support our understanding and use of forest ecosystems. Areas of emphasis and developing strength include

1. silviculture and forest operations
2. wildlife ecology and conservation biology
3. forest health and ecological restoration
4. landscape and spatial ecology
5. natural resource policy and economics
6. urban ecology
7. forest hydrology and watershed management.

Areas of Research Emphasis

McIntire-Stennis provides capacity funding that is used at the University of Kentucky to drive significant work by 11 researchers to address issues critical to the conservation and use of Kentucky's forests and natural resources¹². This research effort also results in the development of graduate students providing scientific expertise to industry, agencies, non-profits, and universities to address issues critical to our state's environmental and economic well-being.

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.

Long-term McIntire-Stennis projects at the University of Kentucky's College of Agriculture, Food and Environment have focused on forest, water, and wildlife issues important to Kentucky, resulting in significant environmental and economic contributions (Appendix A).

- **125 million trees** - planted using improved practices to reforest surface mines and abandoned agriculture lands
- **3,319 streams** - annually afforded protection through the use of scientifically developed timber harvesting best management practices
- **\$5.3 billion** - in annual economic contributions positively impacted by research used by forest industry and in wildlife management
- **251,200 acres** - of privately owned forest land in Kentucky annually improved or positively impacted
- **13 million acres** - acres of public land in 8 states including Kentucky using research-based management

Since their inception, these projects have resulted in:

- 103 post-baccalaureate (Doctoral and Masters) trained professionals
- 819 undergraduate students
- 20,000 volunteers engaged

- 4,100 forest and natural resource professionals trained in the use of practices that were developed based on science generated from McIntire-Stennis projects at the University of Kentucky.

Every dollar in McIntire-Stennis funding received by the University of Kentucky has been matched by 3 dollars in state, grant, and gift funding, resulting in a total research allocation of over \$2 million annually.

As evident by these accomplishments the McIntire-Stennis program provides research capacity funding that has, and continues to be, fundamental to generating meaningful science and trained professionals. This combination allows us to tackle real world problems and improve the economic and environmental benefits from our forests and associated natural resources. A summary of the McIntire-Stennis research for FNR faculty is outlined in Table 18. Also highlighted in Table 18 are the numerous collaborative partnerships that FNR faculty are involved with through this research.

While the McIntire-Stennis funded projects provide a foundation for our research enterprise, our researchers also conduct work beyond capacity funded projects. These are largely funded by extramural sources, primarily state and federal grants. The McIntire-Stennis projects and the projects originating with other extramural funds yield impactful science and also produce highly skilled post baccalaureate professionals working in Kentucky and throughout the US. These individuals provide critically needed expertise to deal with mounting pressures to our forests and natural resources. All of the projects also provide undergraduates, high-school students, and resource professionals with exposure to scientific insight and significant opportunities for advancement.

Table 18. Summary of FNR faculty McIntire-Stennis research from 2019¹²

Best Practices for Managing Water Resources in Appalachia
Project Summary
The extraction of coal, gas, and timber has been the primary economic driver for the Appalachian region for more than a century. Although these activities provide jobs and revenue, the on-going degradation of water quality and aquatic habitat as well as compromised water supplies from resource extraction have been clearly documented. The potential consequences from global climate change along with disturbances from resource extraction result in a high degree of uncertainty for the region's water resources. Management solutions developed to protect water resources from these issues has been a focus of major research. The research aims not only to develop best management practices (BMPs) for protecting watersheds from resource extraction, but research has also developed and demonstrated practices for restoring watershed health in historically impacted systems. Research in this area has informed policy development, provided professional and traditional outdoor teaching laboratories, and contributed to the protection and restoration of thousands of acres of Appalachian forests and their water resources.
Collaboration
Working in partnership with the USDA Forest Service, US Geological Survey, US Dept of Interior's Office of Surface Mining Reclamation & Enforcement, USDA Natural Resources Conservation Service, Appalachian Regional Commission, Ky Dept. of Fish & Wildlife Resources, Ky Division of Forestry, Ky Dept of Natural Resources, National Fish and Wildlife Foundation, Arbor Day Foundation, Sierra Club, and numerous regional conservation organizations.

¹² Source: Kentucky Agriculture Experiment Station McIntire-Stennis Projects – Research at the University of Kentucky 2019. https://forestry.ca.uky.edu/sites/forestry.ca.uky.edu/files/universityofkentuck-mcintirestennisreport-2019_0.pdf

Impact
<p>In Kentucky, information from this research has been used to revise state mandated timber harvesting BMPs used to protect water quality. Over five PhD degrees, 26 MS degrees, hundreds of undergraduate students, and more than 20,000 volunteers have been engaged in this research.</p> <ul style="list-style-type: none"> • 125 million trees have been planted in Appalachia to restore surface coal mining sites using new BMPs derived from this research. • 3,319 streams annually afforded protection using BMPs directly informed by this research. • \$4.9 billion of annual economic contribution is generated from the 215,000 acres of private forest land harvested using the required BMPs derived from this research.
Conservation and Management of Aquatic and Riparian Wildlife
Project Summary
<p>The occurrence and health of aquatic animals and those living in close proximity to water, known as riparian species, act as barometers of the impacts of land use on ecosystems. In some instances, these species become threatened or endangered due to negative impacts associated with land use. Understanding threats to aquatic and riparian biodiversity, quantifying how populations respond to these threats, and developing conservation and/or management strategies to bolster populations is a focus of work. Specifically, our McIntire-Stennis supported research has examined the response of salamanders to land use reclamation, quantified the impacts of emerging infectious disease on snake populations, examined the causes of unknown declines in freshwater mussels, and evaluated the effectiveness of wetland restoration on imperiled amphibians. Results from this research assist with the development of management tools and provide decision support for natural resource managers. Additionally, the project provides educational and research opportunities for undergraduate and graduate students as well as the general public.</p>
Collaboration
<p>This research requires a broad range of partners including the USDA Forest Service, US Fish & Wildlife Service, US Geological Survey National Wildlife Health Center, UK Center for Applied Energy Research, Ky Dept of Fish & Wildlife Resources, and Smithsonian Institution.</p>
Impact
<p>This emerging research on aquatic and riparian species is providing critical information to inform practices to allow for sustainable use of forest resources.</p> <ul style="list-style-type: none"> • 28 students & 32 publications that in the last 5 years have been developed to directly aid in the management of our forests and rural landscapes. • \$740,000 of competitive research funds have been secured to address critical species work. • 3,500 K-12 students educated in the last 5 years in Kentucky.
Informing Oak Silvicultural Practice Through Study of Growth and Regeneration
Project Summary
<p>Oaks are responsible for generating billions of dollars to the economy of Kentucky and surrounding states. Oak is used in a wide range of products, from paper and pallets to bourbon barrels, the latter produced from white oak, a dominant species in the central hardwood region and a focus species of research. Unfortunately, inadequacy in the natural regeneration of several oak species, including white oak, are predicted to result in long-term issues with the sustainability of oak forests, the availability of oak timber, and a reduction in a valuable food for wildlife. McIntire-Stennis supported research aims to develop management (silvicultural) practices to directly enhance the sustainability of oak forests. Our work focuses on foundational stand yield relationships and the development of thinning and regeneration practices. Our science can be applied at key phases of an oak forest's lifecycle to have an immediate impact on stabilizing the growth and drain of our oak resources.</p>
Collaboration
<p>The work is endorsed by the White Oak Initiative and completed in partnership with the USDA Forest Service Southern Research Station, USDA Forest Service Northern Research Station, USDA Forest Service Daniel Boone National Forest, Forest Health Research and Education Center, Berea College, and the Univ. of Vermont.</p>
Impact
<p>Science has resulted in the development of advanced techniques to culture oaks and is building our foundational understanding of oak regeneration, growth, and development.</p> <ul style="list-style-type: none"> • Advanced practices developed including gap-based systems and how to apply shelterwood techniques to enhance oak regeneration. • Leading long-term evaluation of individual tree and stand response to thinning within the Central Hardwood Region. • 1,200 acres annually being managed using scientifically based practices developed or investigated by this project.

Understanding the Role of Fire in Upland Hardwood Forests

Project Summary

Managers responsible for maintaining the diversity and productivity of central and southern Appalachian forests are increasingly turning to fire as one of several valuable tools for managing upland oak-dominated forests. McIntire-Stennis supported research has helped to pioneer our understanding of the multifaceted roles of fire in this region by examining forest response to repeated prescribed fire, the combined use of prescribed fire and other practices in oak woodland restoration, and the impacts of accidental wildfire. Results from 25 years of research point to the importance of using repeated fire followed by a fire-free interval to allow oak regeneration to establish and grow into saplings that are necessary to maintain oak in future forests and that excluding fire can lead, over time, to an increase in competing tree species that can limit oak regeneration. Research has also informed landowners and managers on the challenges of managing sites burned by wildfire.

Collaboration

This research is a long-term collaboration between researchers at UK, FNR, USDA Forest Service Daniel Boone National Forest and Bent Creek Experimental Forest, aided by resources from the USDA-USDI Joint Fire Science Program.

Impact

This research has informed forest management approaches to the use of fire throughout the central and Appalachian hardwood forest regions by addressing underlying ecological implications of fire, and the absence of fire, as disturbance agents applied to forest ecosystems where fire was used for millennia by Native peoples before being restricted for the past century.

- **12, 350+ and 100+** The number of graduate students, undergraduate students, and professional foresters trained in science-based understanding of the role of fire in central and Appalachian hardwood.
- **Leading** the region for 25 years in implementation of ongoing research on the use of prescribed fire in oak dominated upland forests used in management of public and private forests.

Economic Valuation and Policy Development of Forest Ecosystem Services (*Emerging Project*)

Project Summary

Forests, as natural systems if properly managed, yield a stream of benefits which are vital to society, such as timber, water purification, recreation, and wildlife conservation. While the economic contribution of timber resources is understood, the full extent of the economic values derived from ecosystem services generated by forests is not. Accounting for all of these values is critical to ensure effective policy decisions. This project is designed to quantify the full economic value of forests, providing the information necessary for making wise forest management decisions to provide maximum benefits to society. This emerging project develops an integrated environmental-economic framework, incorporating the value of forest ecosystem services into the economic valuation of the forest sector. This is accomplished through “tradeoffs simulation scenarios analyses” and provides robust and economically realistic data needed for forest management and policy decision-making.

Collaboration

This is a high-skill, data-intensive and long-term project that brings together expertise in both geospatial analyses and economic modeling. Researchers at UK are working in partnership with USDA Forest Service Southern Experiment Station, Ky Division of Forestry, and Ky Geological Survey.

Impact

As this emerging project develops, it will provide more inclusive value of our forests and show us where our forests provide the most valuable ecosystem services, helping to ensure their proper management and protection. It will show how land use change affects our economy, where water can best be protected, the relationship between economic growth and ecosystem services and help answer a host of critical economic and environmentally related issues.

- **12 Million** - The number of forest acres in Kentucky that are providing ecosystem services that will be economically accounted for.
- **Highly Skilled** - Students will be developed that can help answer the tough economic questions facing society.

Ecology and Population Dynamics of Elk in Fragmented Forests of Appalachia

Project Summary

Elk were common to the eastern U.S. prior to 1800, but hunting and other pressures caused their demise. There is now significant interest and activity in reintroducing elk to many states to provide recreational and economic opportunities and return an important species to the ecosystem. In the absence of large predators like the gray wolf, rapid population growth of elk in states like Kentucky have posed challenges to management of this wide-ranging species, particularly where high population densities occur. Populations must be managed to ensure that recreation and economic opportunities are sustained while minimizing negative impacts to the environment and humans. Research aims to quantify important aspects of

reintroduced elk populations that are important in managing the species in the Appalachian region. Research is also characterizing the ecological impacts of elk including the browsing of tree seedlings that impedes the regeneration of native forests and reclaimed surface mines, spread of invasive species, and human-elk interactions.
Collaboration
Researchers have worked in partnership with Ky Dept of Fish & Wildlife Resources, Morehead State Univ., Univ. of Tennessee, USDA Animal Parasitic Diseases Laboratory, and the Rocky Mountain Elk Foundation to advance elk reintroductions and population management.
Impact
20 years of research continues to inform management of elk in Kentucky and characterize important ecological impacts of this large herbivore on forest communities and reforestation sites. <ul style="list-style-type: none"> • \$1.5 million in competitive grant funds for elk research in Kentucky • 22 and 400 graduate students with published science and undergraduate students involved in elk research and education, respectively. • 1 and 3.5 million annual economic contribution of elk hunting in Kentucky and the number of acres in Appalachia that this on-going research impacts.
Ecology and Conservation of Forest-Dwelling North American Bats
Project Summary
Threatened and endangered species, including a number of forest dwelling bats, are an important ecological concern and also pose challenges for forest operations throughout the US, potentially impacting economically feasible access to billions of dollars in timber assets. Bats are experiencing significant declines from disease, climate change, pesticides, wind power development, and a host of changes to our forested landscapes. Research has focused on management of forested landscapes for bats, addressing timber extraction, prescribed fire, and impacts from white-nose syndrome, a disease specific to populations of bats in Kentucky and the eastern US. Research efforts have been directed at understanding specific dietary, roosting, and foraging requirements of bats, and how these needs are influenced by changes in land use practices. The goal of this research is to educate management efforts for imperiled bat species by providing a better understanding of the ecology and habitat requirements of these bats and how they are likely to be affected by proposed and existing forest management policies.
Collaboration
Researchers at UK are working in partnership with US Fish & Wildlife Service, US Forest Service, National Park Service, Bureau of Land Management, Ky Dept of Fish & Wildlife Resources, Ky Nature Preserves, and Industry TIMOs.
Impact
Understanding the biology and requirements of imperiled bat species along with their response to forest use and change allows us to develop better management strategies and help inform policies that can aid in benefiting these species and help ensure continued conservation and use of our forests. <ul style="list-style-type: none"> • 68 and 100+ undergraduate and graduate students trained and scientific publications generated from this ongoing research. • 13 million acres of forest lands spanning 8 states in eastern, Midwestern and northwestern US, have instituted management changes to improve bat habitat.
Landscape-Scale Evaluation of Forest Health and Response to Disturbance (Emerging Project)
Project Summary
Appalachian forests provide a wide range of economic and ecosystem services to the people of Kentucky, ranging from wood products to carbon sequestration, biodiversity, and water quality. However, with changing land use and climate the forests face an intensified disturbance regime, which may cause deterioration of forest health resulting in a host of ecological ramifications. This research has focused on quantifying the spatial patterns of forest disturbance and its impacts to forest landscape structure and ecological integrity in Appalachian forest of eastern Kentucky and beyond. This emerging research project uses satellite imagery and other remote sensing data to determine the extent of forest disturbance and characterize several critical measures of forest health. Models are being developed to correlate satellite and terrestrial data to use in defining changes to our forests due to human activity such as surface mining and timber harvesting as well as wildfires and natural disturbances such as storms and droughts.
Collaboration
Researchers from UK are working in partnership with the USDA Forest Service Southern Experiment Station, Daniel Boone National Forest, Ky Dept of Fish & Wildlife, Ky Geological Survey, and Chinese Academy of Sciences.
Impact

This emerging research is aimed at producing and developing technologically advanced tools that can be used to efficiently track forest disturbances, both human caused and natural, and determine changes that these disturbances have on forests.

- **5 post-doctorate scholars** and students engaged in the project.
- **Recognition** of this work as featured cover article in the internationally prestigious *Frontiers in Ecology and the Environment*.

Research Productivity

One metric of research productivity is publication output. Appendix O lists the publications per faculty using the Digital Measures reporting from January 1, 2016 – September 17, 2020. FNR’s publication production for refereed journals is shown in Figure 6.

Comparisons to other departments in CAFE shows that FNR has the second highest number of refereed articles, books, and chapters per research FTE in CAFE for 2018-2019¹⁴ (Figure 7).

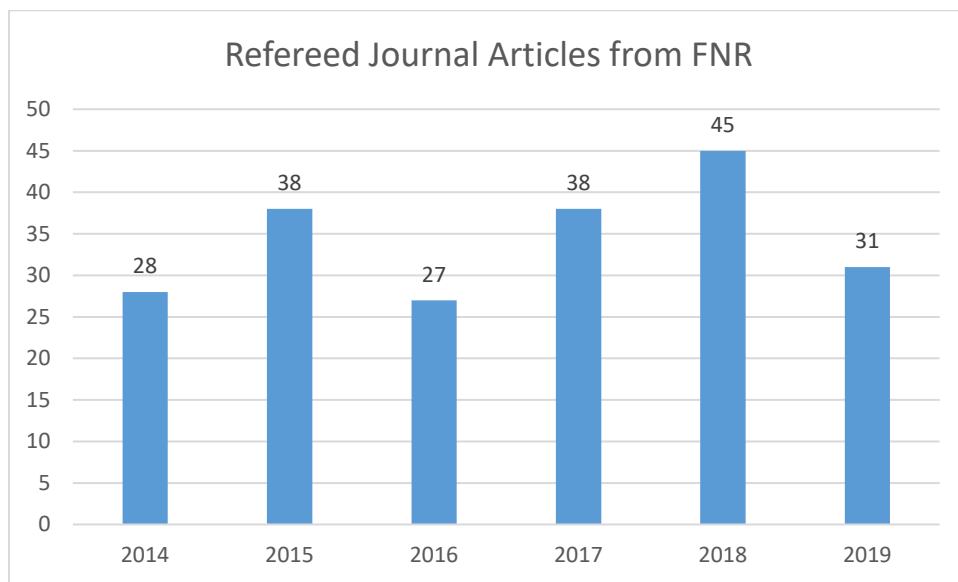


Figure 6. Number of refereed journal articles from FNR per calendar year from 2014-2019 ¹³

¹³ Source: Forestry and Natural Resources Departmental Report. Report prepared by CAFE. Reports are for years 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-2020

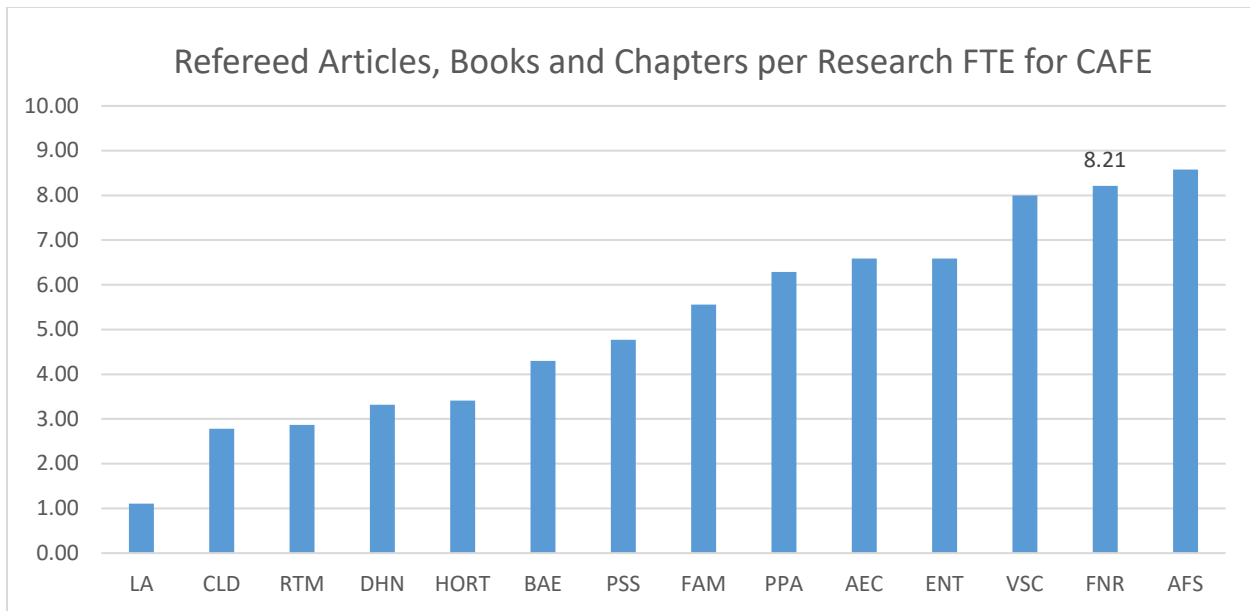


Figure 7. Total refereed articles, books, and chapters per research FTE for CAFE departments for 2018-2019¹⁴

Below is data from a SciVal report for FNR from 2010 to 2019. The SciVal report was created by CAFE on Sept. 8, 2020. FNR has 43.9% publications in the top 10% journal percentiles by CiteScore percentile.

¹⁴ Source: 2018-2019 Composite Report CAFE - <http://administration.ca.uky.edu/files/composite.pdf>. Site Accessed 12/14/2020

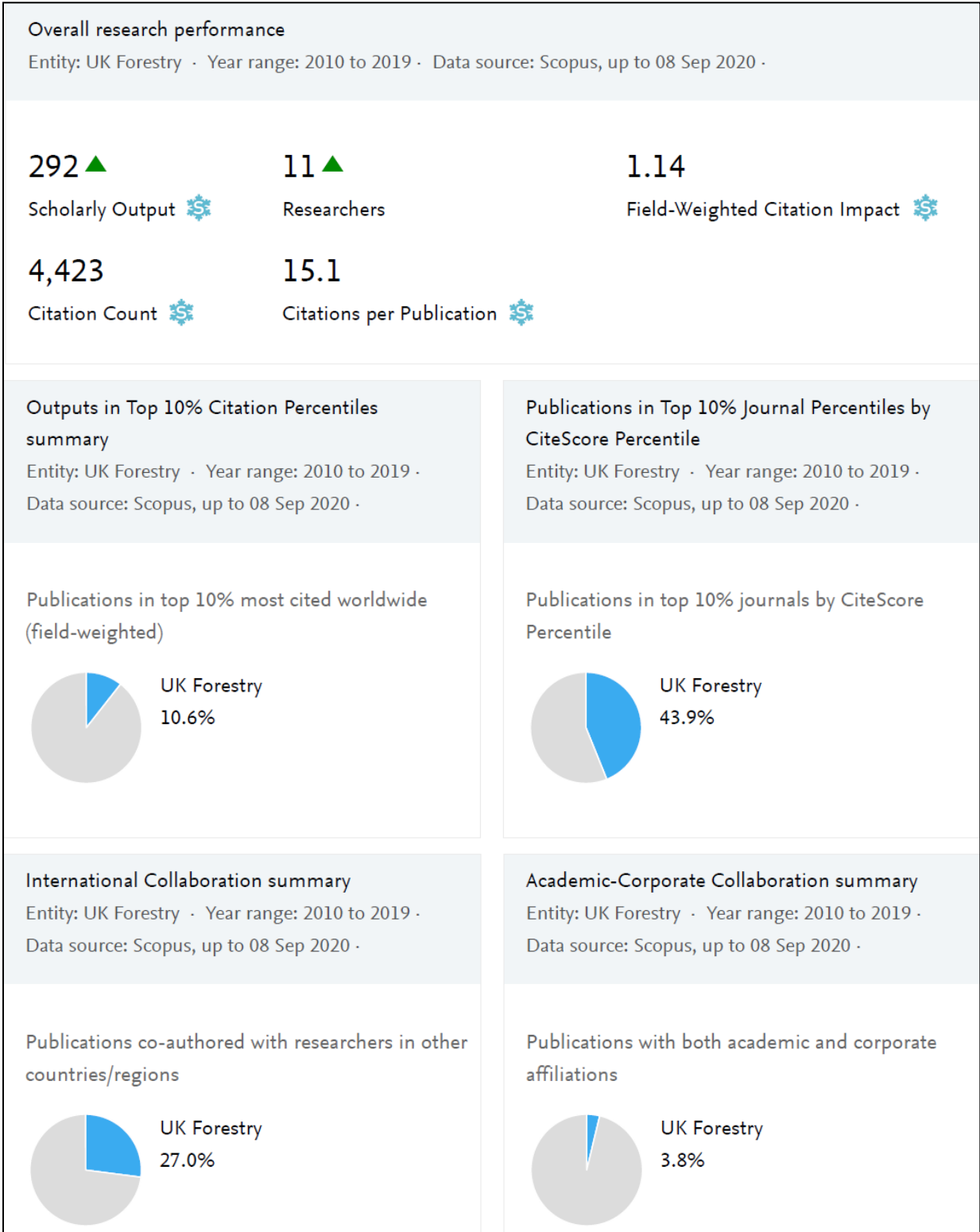


Figure 8. SciVal summary data for FNR for 2010-2019 ¹⁵

¹⁵ SciVal report for FNR from 2010 to 2019. The SciVal report was created by CAFE on Sept. 8, 2020.

FNR faculty continue to acquire direct awards to fund their research program as shown in Figure 9. Comparisons to other departments in CAFE shows that FNR ranks sixth for direct grants per research FTE for 2018-2019 (Figure 10).

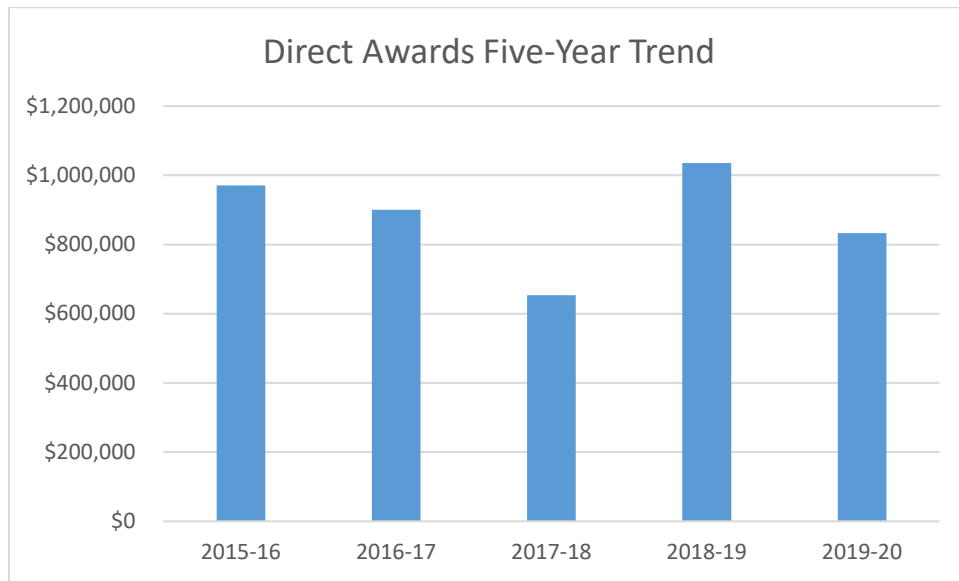


Figure 9. Direct awards five-year trend (2015-2020) ¹³

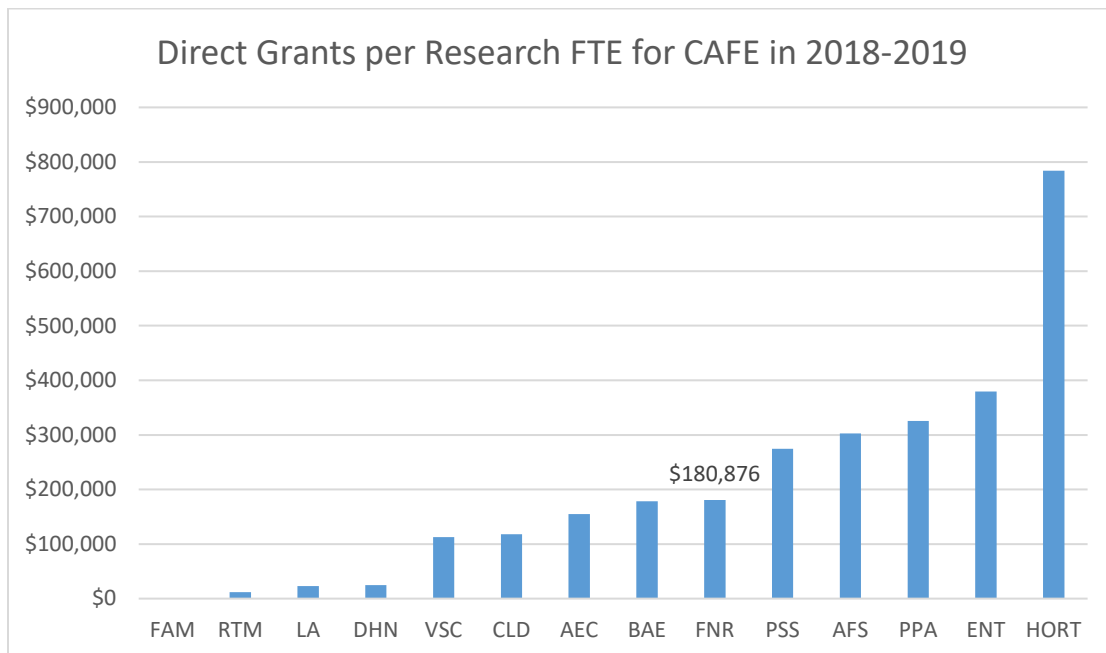


Figure 10. Direct grants per research FTE for CAFE departments for 2018-2019¹⁴

VI. Extension

The FNR extension program provides current, applicable information on the sustained use and management of the state’s forest and natural resources to elevate the quality of life of the people of Kentucky. Our extension program has:

- developed a statewide extension network and individual and collaborative applied research programs in natural resources management with a broad base of support;
- provided quality presentations and continuing education opportunities and resources for county extension faculty and forestry and natural resource professionals;
- provided continuing education programs for the public through media, audio-visual contacts, and publications to further an understanding of natural resources management;
- educated youth through developmental programs;
- sought and received numerous grants to support our extension work; and
- assisted FNR’s instructional mission by teaching courses.

The extension program is recognized nationally as a leader in providing comprehensive forest management resources and programming, winning the National Woodland Owners Association (NWOA) and the National Association of University Forest Resources Programs’ (NAUFRP) National Award for Excellence in Forestry Extension Programming twice since 2009.

The instruction, research, and extension areas are also highly integrated within FNR. In the last several years the mix of experiences, and expertise of the faculty and staff, has been transferred to the classroom creating a dynamic and effective learning environment to ensure that students are well equipped to handle the breadth and complexity of issues facing forestry and natural resource professionals. A summary of UK Forestry and Natural Resources Extension Programs for 2018-2019 is provided in Appendix B.

Table 19. Renewable Resources Extension Act summary reports for 2014-2019

Renewable Resources Extension Act (RREA) (Oct. 1 – Sept. 30. of each year)
2018 –2019
2018 –2019 Overall RREA Impact
RREA supported 274 programs reaching 248,951 individuals/businesses (10,779 direct contacts). Extension training and assistance affected 235,146 acres, resulting in \$118,829,373 dollars saved or earned. Dollars leveraged by RREA – RREA funding in 2019 (\$71,072) was matched with \$439,714 in state funds and \$528,581 in extramural funds resulting in a total of \$1,039,367 for RREA programming, a 1 to 13.6 leveraging of RREA funds.
2018 –2019 RREA Impacts and Success Stories
Ensuring Healthy Ecosystems – 3,013 direct contacts learned to manage, control and prevent invasive species in 45 programs. Economic Opportunities for Individuals and Communities – Eighty-three programs were delivered directly to 2,612 individuals, and a total of 69,973 people learned about the economic contributions of forestry and natural resources. Eight hundred and sixteen businesses were created or expanded, and five jobs were added. \$118,829,373 was saved or earned by forest-related industries in Kentucky and neighboring states. Of this, industry processing of timber harvested by trained Kentucky Master Loggers added \$93 million to Kentucky’s economy, and chain of custody certification provided almost \$16 million through the Center for Forest and Wood Certification. The remaining portion arose from training programs related to lumber drying and grading, machining, entrepreneurship and others conducted at the UK’s Wood Utilization Center. Forest Stewardship and Health – One hundred and five programs were delivered to attendees about the benefits and opportunities of forest management. Two hundred and ninety-five landowners were trained to make management plans, influencing 2,217 direct contacts. An additional 72,110 were informed about the benefits of forest management, and 64

landowners indicated they would implement a forest management plan, for a total of 144,056 acres affected. The Kentucky Master Logger Program gave state-mandated training to 516 loggers representing 397 firms. Trained loggers worked with 931 landowners owning 33,590 acres.

Wildlife Management and Damage Control – Wildlife programming provided 41 programs with 3,177 attendees and 105,786 indirect contacts. 1,259 individuals indicated they would adopt practices promoted in these programs, affecting 91,090 acres.

Electronic communications – Thirty-two sites were managed (Facebook, webinars, websites and e-newsletters). Five new social media products were created, ranging from Facebook to phone apps to websites and YouTube presentations.

2017 –2018

2017 –2018 Overall RREA Impact

RREA funding resulted in 412 programs reaching 131,211 individuals/businesses (19,892 direct contacts). Practice adoption rates ranged 17 to 100 percent impacting 346,559 acres, resulting in \$101.06 million dollars saved or earned.

Dollars leveraged by RREA – RREA funding in 2018 (\$68,175) was matched with \$618,827 in state funds and \$316,882 in extramural funds resulting in a total of \$1,003,844 for RREA programming, a 1 to 14.7 leveraging of RREA funds.

2017 –2018 RREA Impacts and Success Stories

Family Forest Educational Programs – 25,072 woodland owners were positively impacted either directly or indirectly by RREA supported programs in 2018. Our programs provided for direct education of 1,370 family forest owners and combined with forest management certification by the Center for Forest and Wood Certification impacted 144,653 acres.

Logging Programs – The Kentucky Master Logger Program provided state mandated training for 1,217 loggers representing 829 firms. Trained loggers provided \$42.0 million in stumpage revenue to 2,099 landowners owning 75,762 timbered acres. Industry processing of this timber resulted in \$210 million to Kentucky's economy.

Wildlife Management and Damage Control – Wildlife programming provided 29 programs with 1,191 attendees and an average practice adoption rate of 60.5 percent. Wildlife programming resulted in 264,170 acres impacted and 369 agricultural businesses assisted.

Forest and Wood Industry Programs – 282 programs were conducted for 13,031 individuals and 1752 businesses resulting in \$101 million dollars saved/earned by forest industries in Kentucky and surrounding states. The majority of the programming was associated with wood drying and primary industry training, secondary and entrepreneurial wood industry programs conducted at the University of Kentucky's Wood Utilization Center, and chain of custody certification provided by the Center for Forest and Wood Certification.

National Recognition – UK was the 2018 national winner of the Family Forests Education Award jointly presented by the National Woodland Owners Association and the National Association of University Forest Resources Programs.

2016 –2017

2016 –2017 Overall RREA Impact

RREA funding resulted in 222 programs reaching 1,020,849 individuals/businesses (47,044 direct contacts). Practice adoption rates ranged 15 to 98 percent impacting 471,528 acres, resulting in \$95.16 million dollars saved or earned.

Dollars leveraged by RREA – Every RREA dollar (\$59,198) is leveraged with 8.8 state dollars (\$523,708) providing a total of \$528,906 for RREA programming.

2016 –2017 RREA Impacts and Success Stories

Family Forest Educational Programs – 29,900 woodland owners were positively impacted either directly or indirectly by RREA supported programs in 2017. Our programs provided for direct education of 2,914 family forest owners and combined with forest management certification by the Center for Forest and Wood Certification impacted 124,088 acres.

Logging Programs – The Kentucky Master Logger Program provided state mandated training for 786 loggers representing 364 firms. Trained loggers provided \$29.6 million in stumpage revenue to 976 landowners owning 46,938 timbered acres. Industry processing of this timber resulted in \$178 million to Kentucky's economy.

Wildlife Management and Damage Control – Wildlife programming provided 29 programs with 1,191 attendees and an average practice adoption rate of 60.5 percent. Wildlife programming resulted in 264,170 acres impacted and 369 agricultural businesses assisted.

Forest and Wood Industry Programs – 125 programs were conducted for 10,683 individuals and 1718 businesses resulting in \$15.1 million dollars saved/earned by forest industries in Kentucky and surrounding states. The majority of the programming was associated with wood drying, secondary and entrepreneurial wood industry programs conducted at the UK's Wood Utilization Center, and chain of custody certification provided by the Center for Forest and Wood Certification.

2015 –2016

2015 –2016 Overall RREA Impact

RREA funding resulted in 189 programs with 6,225 individuals and/or businesses attending with a practice adoption rate of 15 to 63 percent. Practice adoption resulted in \$78.48 million in dollars saved or earned in 2016.

<p>Dollars leveraged by RREA – Every RREA dollar (\$59,198) is leveraged with 8.8 state dollars (\$523,708) providing a total of \$528,906 for RREA programming. Extramural grants resulted in an additional \$408,225 for extension programs.</p>
<p>2015 –2016 RREA Impacts and Success Stories</p> <p>Family Forest Educational Programs – 76,450 woodland owners were positively impacted either directly or indirectly by RREA supported programs in 2016. Our programs provided for direct education of 2,816 family forest owners enhancing 203,195 acres.</p> <p>Logging Programs – Logger programs included the Kentucky Master Logger Program trained 863 loggers, assisting 664 logging firms with a total of 2,057 employees to meet state requirements. Trained loggers provided 1,578 landowners owning 56,938 acres with \$31.6 million in stumpage resulting in a total contribution to Kentucky's economy of \$158 million.</p> <p>Wildlife Management and Damage Control – New wildlife programs were developed for 2016 including 29 programs with 1,191 attending and a practice adoption rate of 60.5 percent. This programming resulted in 125,200 acres impacted and 137 agricultural businesses assisted. Participation and impacts were roughly divided equally between wildlife damage control (predominately livestock predator control) and wildlife habitat and management.</p> <p>Forest and Wood Industry Programs – 26 programs were conducted for 378 individuals and 179 businesses resulting in \$15.2 million dollars saved/earned by forest industries in Kentucky and surrounding states. The majority associated with wood drying, secondary and entrepreneurial wood industry programs conducted at the UK's Wood Utilization Center, and work completed by the Center for Forest and Wood Certification.</p>
<p style="text-align: center;">2014 –2015</p>
<p>2014 –2015 Overall RREA Impact</p> <p>RREA funding resulted in 139 programs with 6,554 individuals and/or businesses attending with a practice adoption rate of 41 percent. Practice adoption resulted in \$13.732 million in dollars saved or earned in 2015 and \$101.1 million in contributions to rural economies, and enhancement of 87,141.</p> <p>Dollars leveraged by RREA – Every RREA dollar (\$59,198) is leveraged with 8.8 state dollars (\$523,708) providing a total of \$528,906 for RREA programming. Extramural grants resulted in an additional \$408,225 for extension programs.</p>
<p>2014 –2015 RREA Impacts and Success Stories</p> <p>Family Forest Educational Programs – 31,151 woodland owners were positively impacted either directly or indirectly by RREA supported programs in 2015. Our programs provided for direct education of 3,175 family forest owners enhancing 29,159 acres.</p> <p>Logging Programs – Logger education and training programs included the Kentucky Master Logger Program and the Certified Master Logger Program. They combined to train 1,626 loggers, assisting 375 logging firms with a total of 1,162 employees to meet state requirements.</p> <p>Economic Opportunities for Family Forest Owners – Economic opportunities evolve as direct consequences of both woodland owner's economic workshops and logger training. The eight educational events for woodland owners with 205 individuals attending and the training for loggers resulted in a total of \$209.5 million dollars for woodland owners from improved timber revenues, savings in forest practices and acquisition of farm bill payments.</p> <p>Forest and Wood Industry Programs – 48 programs were conducted for 970 individuals and 239 businesses resulting in \$13.732 million dollars saved/earned by forest industries in Kentucky and surrounding states. The majority associated with wood drying, secondary and entrepreneurial wood industry programs conducted at the UK's Wood Utilization Center, and work completed by the Center for Forest and Wood Certification.</p>

Extension Outreach, Publications, and Tools

- [From the Woods Today](#)** – *From the Woods Today* is a weekly online show created by the extension team. The show airs live on Wednesdays at 11 a.m. EDT. YouTube videos of past episodes are posted on the *From the Woods Today* website. As of December 16, 2020, there were 36 episodes. The show began April 8, 2020 as an immediate response to the pandemic. *From the Woods Today* was a way to reach the public during the pandemic since extension personnel were not able to conduct in-person trainings.
- [From the Woods Kentucky](#)** – *From the Woods Kentucky* was a weekly radio show on WRFL 88.1 FM. *From the Woods Kentucky* began in August 2018 and ran through March 2020 when the pandemic began. Sixty episodes were aired during this time. Podcasts of each episode are listed on the website. In addition to viewing the YouTube videos of *From*

the Woods Today, people can also download podcasts of past episodes of both *From the Woods Today* and *From the Woods Kentucky*. As of Dec. 14, 2020, there were 21,230 unique downloads for both shows. Almost 19,000 downloads were from the U.S. and the remaining were downloaded from 65 different countries.

- **[HealthyWoods App](#)** – A new mobile app and paired website to help landowners assess the health of their woodlands and connect to resources for next steps in management, www.healthywoodsapp.org
- **[Kentucky Forest Sector Economic Contribution](#)** – Since 2012, FNR extension and research faculty and staff have worked to annually publish Kentucky Forestry Economic Impact Reports. Forests cover nearly half the state of Kentucky and are the foundation of a forest sector that is a major economic force in the Commonwealth.
- **[Kentucky Snake Identification](#)** – A website to help educate Kentuckians about snakes and help them identify snakes they may encounter in Kentucky’s forests, prairies, wetlands, rivers, and backyards.
- **[Kentucky Woodlands Magazine](#)** – The *Kentucky Woodlands Magazine* began with its first issue in July 2006. After 30 issues, the *Kentucky Woodlands Magazine* continues to promote stewardship and sustainable management of Kentucky’s non-industrial private forests. The *Kentucky Woodlands Magazine* is a collaborative effort with FNR extension and the Kentucky Division of Forestry. Past issues of the printed magazine can be found on the [Kentucky Woodlands Magazine website](#).
- **[E-News](#)** – Extension has four E-Newsletters for the various audience segments. The E-Newsletters include *Kentucky Woodlands E-News*, *Kentucky Wood Industry E-News*, *Forestry and Natural Resources Youth E-News*, and *Certification E-News*.
- **[Forestry Webinar Series](#)** – Forestry webinars provide a significant amount of forestry information in a short time, without the need for driving great distances to attend. Previously recorded webinars are posted on the FNR website.
- **[LogJam Magazine](#)** – This annual publication targets the logger community with the objective of disseminating useful information related to updates on policy and practices. This color printed publication reaches over 3,000 individuals throughout the commonwealth.
- **[TreeSnap](#)** – TreeSnap (www.TreeSnap.org) is a citizen science project and mobile app created to collect information about trees being impacted by invasive insects and diseases and to support restoration efforts. It enables the public to easily submit information about trees of interest to scientists. It also provides a range of data curation tools on the website for scientist partners.

Extension Program Highlights

Forest Industry / Wood Technology

- **Chain-of-Custody Certification** – Chain-of-Custody certification is required for any forest industry (sawmill, loggers, cabinet manufacturers, etc.) that handles or sells certified material. The Forest Industry Section of the Center for Forest and Wood Certification is set up to help industry of all sizes with education and technical assistance. The main effort of the Forest Industry Section is securing a group Forest Stewardship Council® chain-of-custody certificates.
- **Forest Industry Support** – Technical outreach to the primary and secondary wood industry, including lean manufacturing, energy audits, manufacturing efficiency, technical support, and log and lumber grading and drying.
- **Technical Training Classes** – These training programs are designed to assist individuals and small groups with training in a variety of skills. Examples of some of these training programs include; Profile Knife Grinding and Moulder Setup and Operations, Lumber Drying, Lumber Grading, Log Grading and Bucking for Value, Tool Design and Template making for Profile Grinding, Planer Operations and Sharpening, Conventional Gluing for Hardwood Lumber, and other custom and on demand training programs.
- **Wood Entrepreneur Assistance** – Using the Robinson Center for Appalachian Resource Sustainability (RCARS) Wood Utilization Center for wood based entrepreneurs.

Logger Education and Training

- **Certified Master Logger Program** – This program certifies the performance of logging firms owned by master loggers in Kentucky and Tennessee. The program is Rainforest Alliance certified under SmartLogging standards.
- **Kentucky Master Logger Program** – The Kentucky Master Logger program is a cooperative program of FNR, Kentucky Forest Industries Association and Kentucky Division of Forestry. It is a comprehensive statewide education and training program for loggers and is mandated by state law to have a Kentucky Master Logger on-site and in charge of all commercial logging operations in Kentucky.

Woodland Owners

- **Kentucky Master Woodland Stewards Program** – The goal of the Kentucky Master Woodland Stewards Program is to cultivate a group of people who: embrace woodland stewardship, want to learn more about sustainable woodland management, and are willing to share what they learn with others. The program teaches woodland management practices and leadership skills and in return, participants will apply these principles to property they own or manage and actively encourage others to practice good woodland management.
- **Non-Timber Forest Products** – FNR extension provides information and resources to aid those interested in non-timber forest products.

- **Small Scale Logging Equipment Program**- The Small Scale Logging Equipment Program is targeted to farmers and woodland owners with small acreage properties that do not have the volume or value to allow for commercial harvest. A variety of implements are demonstrated that can readily be attached to a farm tractor, side-by-side (UTV), or ATV to move logs. Communication with sawmills and available markets, discussion on scaling and bucking, merchandizing, transportation, safety, state BMP's, and additional technical resources are all discussed.
- **White Oaks Genetics Program** – The white oak genetics project is a collaborative effort to develop high quality white oaks (*Quercus alba*) for reforestation throughout the eastern US. Through this effort we will also improve our knowledge about the genetic characteristics and potentials of white oak. The white oak genetics project is aligned with and supports the objectives of the White Oak Initiative and the Beam Spirits Institute.
- **Woodland Owners Short Course** – The Woodland Owner Short Course not only educates Kentucky woodland owners on why and how they can manage their woodlands but it also connects them with those who can provide technical and financial assistance to do so.

Youth

- **Kentucky Forest Leadership Program** – Week-long, hands-on learning for high school students to explore the many aspects of forestry and related fields. In 2018, the Kentucky Forest Leadership Program was Awarded the Youth and Teacher Education Program Award from the Southern Regional Extension Forestry.
- **Natural Resources & Environmental Sciences Academy** – The NRESci Academy is a three-year program designed to teach youth about their natural environment. In the program, scholars participate in hands-on investigations to learn about Kentucky's water, forest, entomology, and wildlife resources.
- **Win With Wood** - The Win With Wood project brings together the youth of the region, along with forest and wood industries owners/businessmen, extension agents, leaders, and UK specialists in a collaborative project to introduce the youth of the region to forestry and wood industries.

Centers and Partners

FNR has created centers and partnerships that conduct research, provide education and jobs, improve ecosystems, fight forest health threats, protect water quality, enhance urban forests, and help ensure the long-term sustainability of our forests. The centers and partners are the work of both research and extension faculty and staff. Below are a list of these centers and partnerships along with a link to each website.¹⁶

- **Appalachian Regional Reforestation Initiative** – *“The Appalachian Regional Reforestation Initiative (ARRI) is a coalition of groups, including citizens, the coal industry, and government dedicated to restoring forests on coal mined lands in the Eastern*

¹⁶ Source: FNR website for Centers and Partners <https://forestry.ca.uky.edu/centers-partners> Site Accessed 12/14/2020.

United States. ARRI was established in early 2004 with the formation of the Core Team. The Core Team's responsibilities include outreach, trainings, event planning, monthly meetings to discuss progress reports and new strategies, among other things.”

- **Center for Forest and Wood Certification** – “The Center for Forest and Wood Certification builds regional forest and wood certification capacity through the delivery of unbiased information; technical assistance; and the development of programs for landowners, loggers, and forest products industries to participate in certification in a sustainable and affordable manner.”
- **Forest Health Research and Education Center** – “The Forest Health Research and Education Center (FHC) advances the conservation of forested ecosystems by integrating genetics-based biological research, social science and education on factors affecting tree health and forest restoration. Using a collaborative approach, the FHC is developing research programs and facilitating discussions to fight forest health threats and ensure the resilience of eastern U.S. forest systems.”
- **Green Forests Works** – “GFW’s vision is to create a renewable and sustainable multi-use resource that will provide economic opportunities while enhancing the local and global environment. By converting reclaimed, non-native grasslands and scrublands into healthy, productive forestland, GFW is effectively addressing two needs of the region. Their reforestation projects provide jobs for equipment operators, nursery workers, and tree planters, and improve the environment by eradicating exotic species and restoring ecosystem services.”
- **Kentucky Master Logger** – “The Kentucky Master Logger Program is an education program that teaches logging methods that benefit both industry and the forest. The program was developed in 1992, but became mandatory with the passage of the Kentucky Forest Conservation Act (KFCA) in July 2000, which regulates all commercial loggers and requires the use of best management practices (BMPs) to help protect water quality.”
- **Urban Forest Initiative** – “The Urban Forest Initiative is a TFISE working group whose mission is to advocate for and elevate the function, value and perception of urban forests in the Bluegrass Region, from the UK campus to broader regional communities, by providing a dynamic framework for opportunities to partner across organizational and community boundaries to enhance urban forests. Collaborators in this group bring a wide array of skills and expertise from within UK, as well as the surrounding Bluegrass Region.”
- **White Oak Initiative** – “The White Oak Initiative is composed of white oak dependent or interested industries, trade associations, conservation organizations, agencies, universities, and non-profits working to ensure the long-term sustainability of America's white oak and contributing to the conservation of white oak and white oak-dominated forests.”

VII. Reflection

Changes

Significant Changes since the Last Review

Since the last periodic review there have been changes to FNR. The changes are listed below and the impact of these changes are discussed in more detail in the Self-Study.

- Changed the name of our department from the *Department of Forestry* to the *Department of Forestry and Natural Resources*
- Changed the name of our M.S. program from *M.S. in Forestry* to *M.S. in Forest and Natural Resource Sciences*
- Added a *Ph.D. in Forest and Natural Resource Sciences*.
- Added a *Wildlife Biology and Management Minor*
- Achieved re-accreditation through 2031 from the Society of American Foresters in 2020.

Proposed Changes

As we work through the Self-Study and through the SAF Accreditation process, below are the opportunities for improvement that have been identified. Additional resources are needed to accomplish these objectives.

2. **T.P. Cooper Building** – The condition of the T.P. Cooper building is subpar and greatly detracts from the learning and working environment. Addressing the T.P. Cooper building issues is critical to improving the *learning and working* environment.
3. **Open Faculty Positions** – Due to hiring freezes and budget cuts during the pandemic, we have lost funding for 1.5 positions, resulting in the functional loss of two faculty members, one in research/teaching and one in extension. Filling these faculty lines is critical to the *instruction, research, and extension needs* of the forestry sector of Kentucky.
4. **Teaching Assistants** – The number of teaching assistants (TAs) has been reduced. We need to increase the number of TAs to cover *instructional needs* adequately.
5. **Research Technicians** – In the funding loss, we also lost half of a research technician position. There is an overall shortage of technicians in the department. Increasing the number of research technicians is critical for the maintenance and growth of our *research enterprise*.

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Assessment Plan

Appendix L. BS Program Assessment Report 2017-2018

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Appendix A.

McIntire-Stennis Projects - 2019 Summary of Impacts

KENTUCKY AGRICULTURAL EXPERIMENT STATION



University of
Kentucky

College of Agriculture,
Food and Environment

MCINTIRE-STENNIS PROJECTS



McIntire-Stennis, a USDA National Institute of Food and Agriculture administrated program, provides universities with capacity building funds to cultivate and deliver forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the program has ensured healthy resilient forest and communities and an exceptional natural resources workforce since 1962.

This report provides a 2019 summary of the impacts of established and emerging McIntire-Stennis supported projects administered by the University of Kentucky, College of Agriculture, Food and Environment's Kentucky Agricultural Experiment Station.

McIntire-Stennis projects are 5 years in duration and are subjected to a review process to assure their scientific credibility and potential to generate knowledge useful in understanding and managing our forest systems and aligned resources. The individual McIntire-Stennis project reports compiled in this document encompass both established projects with significant accumulated impacts and descriptions and potential contributions of emerging projects.

IMPACTS OF UNIVERSITY OF KENTUCKY PROJECTS

Impact Summary - McIntire-Stennis Funded Research at the University of Kentucky -----	1
<i>A summary of research productivity and impacts of active McIntire-Stennis projects.</i>	

INDIVIDUAL PROJECTS

Water Quality and Aquatic Biology

Two projects focus on the protection of our water resources and aquatic species encompassing improved harvesting and reclamation practices and the conservation of important aquatic species.

Best Practices for Managing Water Resources in Appalachia -----	2
Conservation and Management of Aquatic and Riparian Wildlife -----	3

Forest Management, Ecology and Economics

Our upland oak forests are economic and ecologically important. The timber resources they provide directly contribute over \$6 billion dollars to Kentucky's economy. They also occupy a significant portion of our landscape, are critical to wildlife populations and recreation, and provide significant eco-system services such as clean water to all Kentuckians. Two projects are designed to provide an understanding of the growth and development of our oak forests and provide management options to improve their vitality and value.

Informing Oak Silvicultural Practice through Study of Growth and Regeneration -----	4
Understanding the Role of Fire in Upland Hardwood Forests -----	5
Economic Valuation and Policy Development of Forest Ecosystem Service -----	6

Wildlife and Conservation Biology of Key Species

Wildlife play an important role in the fabric of our society providing hunting, fishing, and recreational opportunities and the protection of threatened species, while ensuring continued use of our forests, is a critical challenge to Kentucky. Two wildlife focused projects are aimed at providing valuable insights to help us manage and conserve critical wildlife in Kentucky including elk an important game species for eastern Kentucky and imperiled bat species that have significant consequences for landowners and the forest, mining, and transportation industries in Kentucky.

Ecology and Population Dynamics of Elk in Fragmented Forests of Appalachia -----	7
Ecology and Conservation of Forest-Dwelling North American Bats -----	8

Forest Health and Disturbance

Our forests are under constant threat from invasive insects and diseases and damage from storms and other disturbances such as wildfire. Two of our projects are aimed at developing cutting-edge technologies to both combat pests as well as track and assess the health and disturbance of our forests.

Exploring the Potential of RNA Interference to Manage Wood-Boring Forest Pests -----	9
Landscape-Scale Evaluation of Forest Health and Response to Disturbance -----	10

MCINTIRE-STENNIS

Research at the
University of Kentucky



McIntire-Stennis provides capacity funding used at the University of Kentucky to drive significant work by 11 researchers to address issues critical to the conservation and use of Kentucky's forests and natural resources. This research effort also results in the development of graduate students providing scientific expertise to industry, agencies, non-profits, and universities to address issues critical to our state's environmental and economic well-being.

ECONOMIC AND ENVIRONMENTAL IMPACTS

Long-term McIntire-Stennis projects at the University of Kentucky's College of Agriculture, Food and Environment have focused on forest, water, and wildlife issues important to Kentucky, resulting in significant environmental and economic contributions.



125 million trees

planted using improved practices to reforest surface mines and abandoned agriculture lands



3,319 streams

annually afforded protection through the use of scientifically developed timber harvesting best management practices



\$5.3 billion

in annual economic contributions positively impacted by research used by forest industry and in wildlife management

About McIntire-Stennis



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251,200 acres

of privately owned forest land in Kentucky annually improved or positively impacted



13 million

acres of public land in 8 states including Kentucky using research-based management

TRAINING PROFESSIONALS AND VOLUNTEERS

McIntire-Stennis projects at the University of Kentucky, while yielding impactful science, also produce highly skilled post-baccalaureate professionals working in Kentucky and throughout the US, providing critically needed expertise to deal with mounting pressures to our forests and natural resources. The projects also provide undergraduates, high-schoolers, and resource professionals with exposure to scientific insight and significant opportunities for advancement. Projects have resulted in:

- 103 post-baccalaureate PhD and masters trained professionals
- 819 undergraduate students
- 20,000 volunteers engaged
- 4,100 forest and natural resource professionals trained in the use of practices that were developed using science generated from McIntire-Stennis projects at the University of Kentucky.

SUMMARY

Every dollar in McIntire-Stennis funding received by the University of Kentucky has been matched by 3 dollars in state, grant, and gift funding, resulting in a total research allocation of over \$2 million annually.

As can be seen by these accomplishments the McIntire-Stennis program provides research capacity funding that has, and continues to be, fundamental to generating meaningful science and trained professionals. This combination allows us to tackle real world problems and improve the economic and environmental benefits from our forests and aligned natural resources.

BEST PRACTICES FOR MANAGING WATER RESOURCES IN APPALACHIA



Forestry and Natural Resources
College of Agriculture, Food and Environment

A McIntire-Stennis supported project

The extraction of coal, gas, and timber has been the primary economic driver for the Appalachian region for more than a century. Although these activities provide jobs and revenue, the on-going degradation of water quality and aquatic habitat as well as compromised water supplies from resource extraction have been clearly documented. The potential consequences from global climate change along with disturbances from resource extraction result in a high degree of uncertainty for the region's water resources. Management solutions developed to protect water resources from these issues has been a focus of major research in the University of Kentucky's Department of Forestry and Natural Resources.



McIntire-Stennis supported research aims not only to develop best management practices (BMPs) for protecting watersheds from resource extraction, but research has also developed and demonstrated practices for restoring watershed health in historically impacted systems. Research in this area has informed policy development, provided professional and traditional outdoor teaching laboratories, and contributed to the protection and restoration of thousands of acres of Appalachian forests and their water resources.

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COLLABORATION



Researchers at the University of Kentucky are working in partnership with the USDA Forest Service, US Geological Survey, US Department of Interior's Office of Surface Mining Reclamation and Enforcement, USDA Natural Resources Conservation Service, Appalachian Regional Commission, Kentucky Department of Fish and Wildlife Resources, Kentucky Division of Forestry, Kentucky Department of Natural Resources, National Fish and Wildlife Foundation, Arbor Day Foundation, Sierra Club, and numerous regional conservation organizations.

IMPACT

In Kentucky, information from this research has been used to revise state mandated timber harvesting BMPs used to protect water quality. Over five PhD degrees, 26 MS degrees, hundreds of undergraduate students, and more than 20,000 volunteers have been engaged in this research.



125 million

trees have been planted in Appalachia to restore surface coal mining sites using new BMPs derived from this research.



3,319 streams

annually afforded protection using BMPs directly informed by this research.



\$4.9 billion

of annual economic contribution is generated from the 215,000 acres of private forest land harvested using the required BMPs derived from this research.

CONSERVATION AND MANAGEMENT OF AQUATIC AND RIPARIAN WILDLIFE



Forestry and Natural Resources
College of Agriculture, Food and Environment

A McIntire-Stennis supported project

The occurrence and health of aquatic animals and those living in close proximity to water, known as riparian species, act as barometers of the impacts of land use on ecosystems. In some instances, these species become threatened or endangered due to negative impacts associated with land use. Understanding threats to aquatic and riparian biodiversity, quantifying how populations respond to these threats, and developing conservation and/or management strategies to bolster populations is a focus of work at the Department of Forestry and Natural Resources at the University of Kentucky. Specifically, our McIntire-Stennis supported research has examined the response of salamanders to land-use reclamation, quantified the impacts of emerging infectious disease on snake populations, examined the causes of unknown declines in freshwater mussels, and evaluated the effectiveness of wetland restoration on imperiled amphibians.

Results from this research assist with the development of management tools and provide decision support for natural resource managers. Additionally, the project provides educational and research opportunities for undergraduate and graduate students as well as the general public.

COLLABORATION



This research requires a broad range of partners including the USDA Forest Service, US Fish and Wildlife Service, US Geological Survey National Wildlife Health Center, University of Kentucky Center for Applied Energy Research, Kentucky Department of Fish and Wildlife Resources, and Smithsonian Institution.

IMPACT

This emerging research on aquatic and riparian species is providing critical information to inform practices to allow for sustainable use of forest resources.



28 students & 32 publications

that in the last 5 years have been developed to directly aid in the management of our forests and rural landscapes.



\$740,000

of competitive research funds have been secured to address critical species work.



3,500

K-12 students educated in the last 5 years in Kentucky.



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INFORMING OAK SILVICULTURAL PRACTICE THROUGH STUDY OF GROWTH AND REGENERATION



A McIntire-Stennis supported project

Forestry and Natural Resources
College of Agriculture, Food and Environment

Oaks are responsible for generating billions of dollars to the economy of Kentucky and surrounding states. Oak is used in a wide range of products, from paper and pallets to bourbon barrels, the latter produced from white oak, a dominant species in the central hardwood region and a focus species of research at the University of Kentucky Department of Forestry and Natural Resources. Unfortunately, inadequacy in the natural regeneration of several oak species, including white oak, are predicted to result in long-term issues with the sustainability of oak forests, the availability of oak timber, and a reduction in a valuable food for wildlife.

McIntire-Stennis supported research aims to develop management (silvicultural) practices to directly enhance the sustainability of oak forests. Our work focuses on foundational stand yield relationships and the development of thinning and regeneration practices. Our science can be applied at key phases of an oak forest's lifecycle to have an immediate impact on stabilizing the growth and drain of our oak resources.



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COLLABORATION



The work is endorsed by the White Oak Initiative and completed in partnership with the USDA Forest Service Southern Research Station, USDA Forest Service Northern Research Station, USDA Forest Service Daniel Boone National Forest, Forest Health Research and Education Center, Berea College, and the University of Vermont.

IMPACT

Science has resulted in the development of advanced techniques to culture oaks and is building our foundational understanding of oak regeneration, growth, and development.



Advanced Practices

developed including gap-based systems and how to apply shelterwood techniques to enhance oak regeneration.



Leading

long-term evaluation of individual tree and stand response to thinning within the Central Hardwood Region.



1,200 acres

annually being managed using scientifically based practices developed or investigated by this project.

UNDERSTANDING THE ROLE OF FIRE IN UPLAND HARDWOOD FORESTS

A McIntire-Stennis supported project

Managers responsible for maintaining the diversity and productivity of central and southern Appalachian forests are increasingly turning to fire as one of several valuable tools for managing upland oak-dominated forests. McIntire-Stennis supported research at the University of Kentucky Department of Forestry and Natural Resources has helped to pioneer our understanding of the multifaceted roles of fire in this region by examining forest response to repeated prescribed fire, the combined use of prescribed fire and other practices in oak woodland restoration, and the impacts of accidental wildfire.



Results from 25 years of research point to the importance of using repeated fire followed by a fire-free interval to allow oak regeneration to establish and grow into saplings that are necessary to maintain oak in future forests and that excluding fire can lead, over time, to an increase in competing tree species that can limit oak regeneration. Research has also informed landowners and managers on the challenges of managing sites burned by wildfire.

About McIntire-Stennis

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COLLABORATION



This research is a long-term collaboration between researchers at the University of Kentucky, Department of Forestry and Natural Resources, USDA Forest Service Daniel Boone National Forest and Bent Creek Experimental Forest, aided by resources from the USDA-USDI Joint Fire Science Program.

IMPACT

This research has informed forest management approaches to the use of fire throughout the central and Appalachian hardwood forest regions by addressing underlying ecological implications of fire, and the absence of fire, as disturbance agents applied to forest ecosystems where fire was used for millennia by Native peoples before being restricted for the past century.



12, 350+ and 100+

The number of graduate students, undergraduate students, and professional foresters trained in science-based understanding of the role of fire in central and Appalachian hardwood.



Leading

the region for 25 years in implementation of ongoing research on the use of prescribed fire in oak dominated upland forests used in management of public and private forests.

ECONOMIC VALUATION AND POLICY DEVELOPMENT OF FOREST ECOSYSTEM SERVICES

A McIntire-Stennis supported project
Emerging Project



Forestry and Natural Resources
College of Agriculture, Food and Environment

Forests, as natural systems if properly managed, yield a stream of benefits which are vital to society, such as timber, water purification, recreation, and wildlife conservation. While the economic contribution of timber resources is understood, the full extent of the economic values derived from ecosystem services generated by forests is not. Accounting for all of these values is critical to ensure effective policy decisions. This project is designed to quantify the full economic value of forests, providing the information necessary for making wise forest management decisions to provide maximum benefits to society.

This emerging McIntire-Stennis supported project develops an integrated environmental-economic framework, incorporating the value of forest ecosystem services into the economic valuation of the forest sector. This is accomplished through “tradeoffs simulation scenarios analyses” and provides robust and economically realistic data needed for forest management and policy decision-making.

COLLABORATION



This is a high-skill, data-intensive and long-term project that brings together expertise in both geospatial analyses and economic modeling. Researchers at the University of Kentucky are working in partnership with USDA Forest Service Southern Experiment Station, Kentucky Division of Forestry, and Kentucky Geological Survey.

IMPACT

As this emerging project develops, it will provide more inclusive value of our forests and show us where our forests provide the most valuable ecosystem services, helping to ensure their proper management and protection. It will show how land use change affects our economy, where water can best be protected, the relationship between economic growth and ecosystem services and help answer a host of critical economic and environmentally related issues.



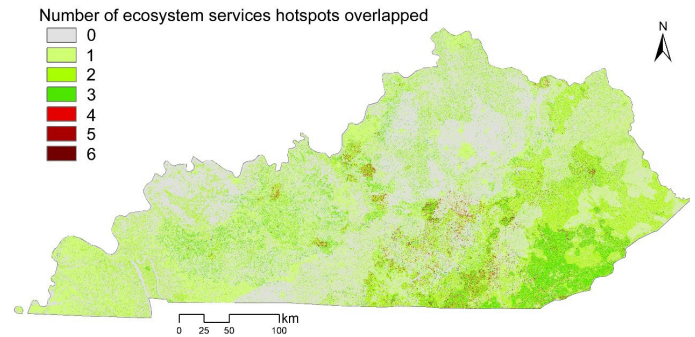
12 Million

The number of forest acres in Kentucky that are providing ecosystem services that will be economically accounted for.



Highly Skilled

Students will be developed that can help answer the tough economic questions facing society.



Concurrence of the seven ecosystem services hotspots in Kentucky

About McIntire-Stennis

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ECOLOGY AND POPULATION DYNAMICS OF ELK IN FRAGMENTED FORESTS OF APPALACHIA

A McIntire-Stennis supported project



Forestry and Natural Resources
College of Agriculture, Food and Environment

Elk were common to the eastern U.S. prior to 1800, but hunting and other pressures caused their demise. There is now significant interest and activity in reintroducing elk to many states to provide recreational and economic opportunities and return an important species to the ecosystem. In the absence of large predators like the gray wolf, rapid population growth of elk in states like Kentucky have posed challenges to management of this wide-ranging species, particularly where high population densities occur. Populations must be managed to ensure that recreation and economic opportunities are sustained while minimizing negative impacts to the environment and humans.



McIntire-Stennis supported research at the University of Kentucky Department of Forestry and Natural Resources aims to quantify important aspects of reintroduced elk populations that are important in managing the species in the Appalachian region. Research is also characterizing the ecological impacts of elk including the browsing of tree seedlings that impedes the regeneration of native forests and reclaimed surface mines, spread of invasive species, and human-elk interactions.

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COLLABORATION



Researchers have worked in partnership with Kentucky Department of Fish and Wildlife Resources, Morehead State University, University of Tennessee, USDA Animal Parasitic Diseases Laboratory, and the Rocky Mountain Elk Foundation to advance elk reintroductions and population management.

IMPACT

20 years of research continues to inform management of elk in Kentucky and characterize important ecological impacts of this large herbivore on forest communities and reforestation sites.



\$1.5 million
in competitive grant funds for elk research in Kentucky.



22 and 400
graduate students with published science and undergraduate students involved in elk research and education.



1 and 3.5 million
annual economic contribution of elk hunting in Kentucky and the number of acres in Appalachia that this on-going research impacts.

ECOLOGY AND CONSERVATION OF FOREST-DWELLING NORTH AMERICAN BATS

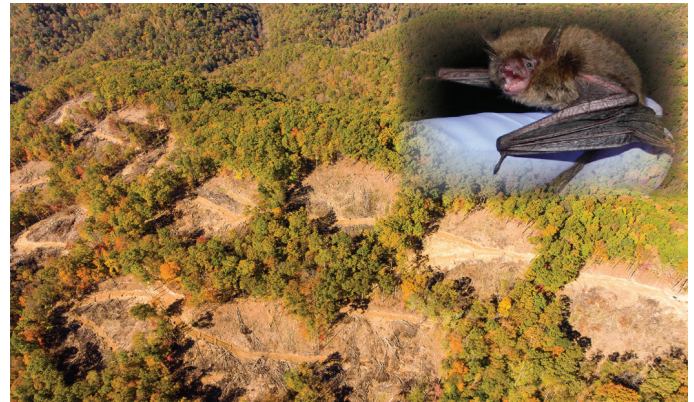


Forestry and Natural Resources
College of Agriculture, Food and Environment

A McIntire-Stennis supported project

Threatened and endangered species, including a number of forest dwelling bats, are an important ecological concern and also pose challenges for forest operations throughout the US, potentially impacting economically feasible access to billions of dollars in timber assets. Bats are experiencing significant declines from disease, climate change, pesticides, wind power development, and a host of changes to our forested landscapes. McIntire-Stennis supported research at the University of Kentucky Department of Forestry and Natural Resources has focused on management of forested landscapes for bats, addressing timber extraction, prescribed fire, and impacts from white-nose syndrome, a disease specific to populations of bats in Kentucky and the eastern US.

Research efforts have been directed at understanding specific dietary, roosting, and foraging requirements of bats, and how these needs are influenced by changes in land use practices. The goal of this research is to educate management efforts for imperiled bat species by providing a better understanding of the ecology and habitat requirements of these bats and how they are likely to be affected by proposed and existing forest management policies.



Imperiled northern long-eared bat and research in eastern Kentucky using timber harvesting to systematically create forest openings where bat use is being investigated.

About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.



COLLABORATION



Researchers at the University of Kentucky are working in partnership with US Fish and Wildlife Service, US Forest Service, National Park Service, Bureau of Land Management, Kentucky Department of Fish and Wildlife Resources, Kentucky Nature Preserves, and Industry TIMOs.

IMPACT

Understanding the biology and requirements of imperiled bat species along with their response to forest use and change allows us to develop better management strategies and help inform policies that can aid in benefiting these species and help ensure continued conservation and use of our forests.



68 and 100+

students, undergraduate and graduate, trained and scientific publications generated from this on-going research.



13 Million

acres of forest lands spanning 8 states in eastern, Midwestern and northwestern US, have instituted management changes to improve bat habitat.

EXPLORING THE POTENTIAL OF RNA INTERFERENCE TO MANAGE WOOD-BORING FOREST PESTS

A McIntire-Stennis supported project
Emerging Project



Entomology

College of Agriculture, Food and Environment

Both exotic and native insects are increasingly altering forest ecosystems and causing unprecedented economic losses. Innovative approaches to these problems are a focus of work at the University of Kentucky's Department of Entomology. One of these approaches, gene silencing, is being investigated to provide an alternative approach to traditional forest pest management. Direct suppression of forest insect pests is often impractical, unsustainable, and slow acting, and broadscale forest pest management is currently reliant on species selection and maintaining tree vigor. But these techniques are less and less effective in our rapidly changing forests, creating new challenges that warrant innovative approaches to pest management.

In response, this new project is evaluating the use of gene silencing as a means of suppressing forest pests. We've shown that gene silencing through RNA interference (RNAi) can cause rapid and extensive mortality of tree-killing beetles, and we're currently evaluating practical production and delivery approaches.



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COLLABORATION



Researchers from the University of Kentucky are working in partnership with the USDA Forest Service Southern Experiment Station, the Forest Health Research and Education Center, and the University of Georgia.



IMPACT

Developing innovative approaches using RNA interference could help manage native and exotic pests, potentially saving millions of trees and protecting tree and forest resources in the US.



> 85%

the rate of emerald ash borer mortality that could be avoided using RNAi to save trees and protect future forests.



Patent

under development for use of RNAi for emerald ash borer suppression.



Southern Pines

are under evaluation. RNAi can cause >75% mortality of southern pine beetle, potentially saving millions of hectares of southern pine forests.

LANDSCAPE-SCALE EVALUATION OF FOREST HEALTH AND RESPONSE TO DISTURBANCE

A McIntire-Stennis supported project
Emerging Project



Forestry and Natural Resources
College of Agriculture, Food and Environment

Appalachian forests provide a wide range of economic and ecosystem services to the people of Kentucky, ranging from wood products to carbon sequestration, biodiversity, and water quality. However, with changing land use and climate the forests face an intensified disturbance regime, which may cause deterioration of forest health resulting in a host of ecological ramifications. This new McIntire-Stennis supported research at the University of Kentucky Department of Forestry and Natural Resources has focused on quantifying the spatial patterns of forest disturbance and its impacts to forest landscape structure and ecological integrity in Appalachian forest of eastern Kentucky and beyond.

This emerging research project uses satellite imagery and other remote sensing data to determine the extent of forest disturbance and characterize several critical measures of forest health. Models are being developed to correlate satellite and terrestrial data to use in defining changes to our forests due to human activity such as surface mining and timber harvesting as well as wildfires and natural disturbances such as storms and droughts.

COLLABORATION



Researchers from the University of Kentucky are working in partnership with the USDA Forest Service Southern Experiment Station, Daniel Boone National Forest, Kentucky Department of Fish and Wildlife, Kentucky Geological Survey, and Chinese Academy of Sciences.

IMPACT

This emerging research is aimed at producing and developing technologically advance tools that can be used to efficiently track forest disturbances, both human-caused and natural, and determine changes that these disturbances have on forests.



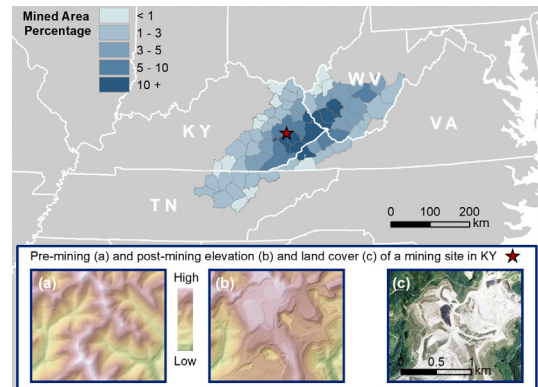
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post-doctorate scholars and students engaged in the project.



Recognition

of this work as featured cover article in the internationally prestigious *Frontiers in Ecology and the Environment*.



Central Appalachian counties with percentage area mined and contrasting topographies

About McIntire-Stennis

The McIntire-Stennis program, a unique federal-state partnership, cultivates and delivers forestry and natural resource innovations for a better future. By advancing research and education that increases the understanding of emerging challenges and fosters the development of relevant solutions, the McIntire-Stennis program has ensured healthy resilient forests and communities and an exceptional natural resources workforce since 1962.



Appendix B.

UK Forestry and Natural Resources Extension

Executive Summary 2018-2019

UK Forestry and Natural Resources Extension Executive Summary 2018-2019

The University of Kentucky Forestry and Natural Resources (FNR) Extension Team develops solutions for forest management and operations, wildlife management and wood utilization for the general public, professionals, industry, and youth. We are committed to delivering knowledge and solutions to improve the quality, health and value of forests and farms. This executive summary describes our 2018-2019 programs and the impacts on the FNR clients we serve.



Forest Management

- 1,700 woodland owners attended educational programs
- 10,000 owners received information on woodland management



Harvest & Forest Industry

- 1,750 forest industries
- 830 logging companies
- \$101 million dollars saved/earned in the forest industry



Wildlife Management

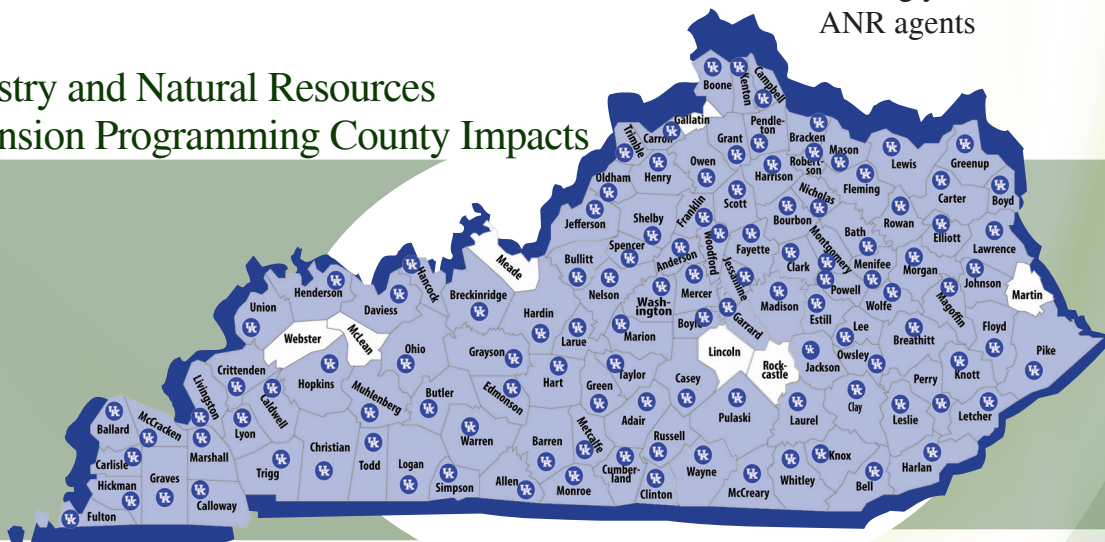
- 1,200 attended 29 wildlife programs addressing habitat and animal damage issues
- 264,000 acres were impacted
- 370 businesses assisted



Youth Programming

- 180 forestry and natural resources educational programs were conducted
- Over 8,200 participants annually including youth, teachers, and 4-H and ANR agents

Forestry and Natural Resources Extension Programming County Impacts



The shaded counties represent locations where UK Forestry and Natural Resources Extension actively conducted programming in the 2018 reporting year. All counties are impacted by our programming, however. For example, Kentucky Master Loggers are located in all 120 counties.



412 programs delivered



346,599 acres improved



131,211 individuals and business reached



\$101 million dollars saved or earned



Emerging Program - Forest Health

In 2019 we initiated a new focus on forest health centered on the many invasive plants, insects and diseases that are harming trees. This program has already engaged a wide range of stakeholders across the state, providing up-to-date information, increasing communication, and developing solutions to key problems.

Flagship Programs and Resources

Family Forestry Education

We conducted programs with 1,700 woodland owner attendees representing approximately 165,000 acres. In addition, over 10,000 woodland owners were reached through the dissemination of Kentucky Woodlands Magazine, edited and largely written by members of our department.

Programs Include:

- Family Forest Educational Programs
- Woodland Owners Short Courses
- Forestry Webinar Series with more than 30 counties participating in 2019.



Billy Thomas leading a Woodland Owners Short Course.

Kentucky Master Logger Program

The Kentucky Master Logger (KML) program is a state-mandated program designed to help timber harvesting professionals learn about laws and regulations, water quality and best management practices. Approximately 2,700 loggers have participated in initial three-day workshops overall, with 1,200 loggers from 830 firms participating in programs conducted in 2018.



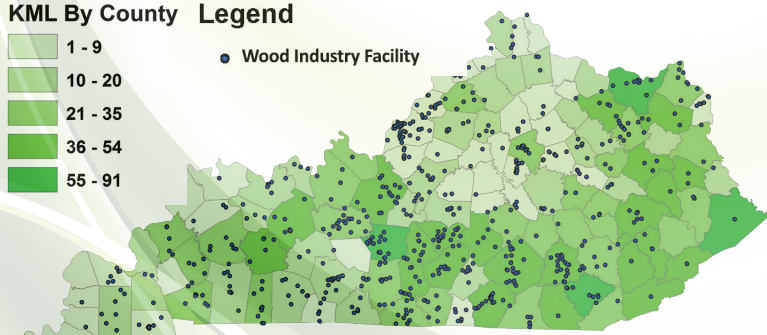
Impacts: KML-trained loggers provided \$42 million in stumpage revenue to 2,100 landowners owning nearly 76,000 timbered acres, and industry processing of this timber resulted in \$210 million to Kentucky's economy. A total of 1,261 streams were afforded water quality protection.

KY Wood Industries & Master Logger Distribution

KML By County Legend

- 1 - 9
- 10 - 20
- 21 - 35
- 36 - 54
- 55 - 91

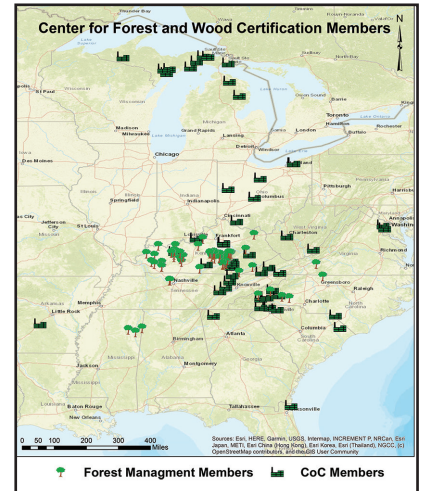
● Wood Industry Facility



Source: Kentucky Master Logger Database and Kentucky Forest Products Industry Directory

Center for Forest and Wood Certification

The Center for Forest and Wood Certification (CFWC) was created to facilitate forest and wood certification efforts in the central hardwood and southern Appalachian regions. Numerous partners are involved in this program, including landowners, consultants and others. As of 2019, there were 54 Chain of Custody (CoC) members, 31 of which have purchased and/or sold certified materials. More than \$24 million worth of certified products were moved by CFWC members in 2018, with third-party audits certifying that over 64,000 acres were verified to be management using sustainable forestry practices.



The Center for Forest and Wood Certification facilitating forest certification in the Eastern U.S.

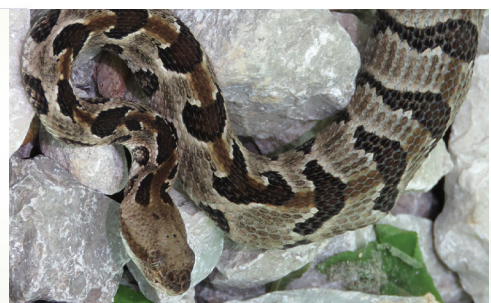
Wildlife Damage and Management Education

We conducted 29 wildlife programs with 1,200 attendees. Wildlife programming addressed 264,000 affected acres and assisted 369 agricultural businesses. Our programs include:

- Wildlife Damage Management, Forest Management for Wildlife, Deer Management 101, Livestock Control (Black vultures and Coyote), Biodiversity Conservation, and Bats of Eastern Kentucky.
- Kentucky Snake Identification: This page has been visited 78,000 times since it went active in 2018. The website for Kentucky Snake Identification provides information on every native snake in Kentucky, and shows how to identify any snake seen within the state.

 College of Agriculture, Food and Environment
 Department of Forestry
KENTUCKY SNAKE IDENTIFICATION

- Home
- Geographic Regions
- Non-Venomous
- Venomous
- Snake Characteristics



Flagship Programs and Resources

Forest Products Industry Assistance

Wood industries can be found in 112 of our 120 counties and comprise both the primary (sawmills, dry kilns pallets and paper mills) and secondary (moldings, cabinets and such) wood industries. Consequently, the programs we offer are wide-ranging. In 2018, we offered 282 programs for 13,031 individuals and 1,198 businesses resulting in \$77 million dollars saved/earned by forest industries in Kentucky and surrounding states not including CFWC impacts. Attendees at our programs represented companies with a combined production of 134 million board feet of hardwood lumber in 2018.



Chad Niman teaches participants lumber grading techniques.

- **Workshops:** We conduct one- to five-day programs on topics such as sawing and edging workshops, lumber drying short courses, railroad tie grading short courses, sawmill marketing instruction, and production tooling and product design.
- **Direct Assistance:** We provide individual and industry assistance for wood identification, wood drying and machining, and bourbon barrel production and rickhouse structural and environmental management.



Rickhouse inspection showing heavy accumulation of frass from powderpost beetle activity.

Youth Education Programs

UK FNR Extension provides forestry and natural resource education programs for youth that increases the awareness of the importance of Kentucky's forests. The programs are designed so youth will have (1) a greater understanding of the management and conservation of these resources and (2) an introduction to natural resources professionals and careers.



KFLP participant measures a tree.

Program partners include county 4-H and ANR agents, State 4-H, Kentucky Division of Forestry, Kentucky Division of Conservation, Kentucky Woodland Owners Association and Kentucky Forest Industries Association.

Highlighted Programs:

- **Kentucky Forest Leadership Program:** A week-long, hands-on residential program for high school students. This program won the Southern Region Forestry Extension Award for Excellence in Youth Education.
- **4-H Natural Resources and Environmental Science Academy:** The Academy is a multi-year program for middle school students.
- **4-H Win With Wood:** Conducted at the Robinson Center of Appalachia Resource Sustainability, the program provides the winning youth the Albert W. Spencer scholarship towards tuition at the University of Kentucky.
- **4-H Forestry and 4-H Environmental Education Field Days:** These hands-on, in the field, programs had more than 5,000 youth participants in 2018.

Forest Health Educational Programs

Forest health programs promote healthy trees and forests by increasing awareness of forest health threats and management options. This program works with partners across the state with activities including:

- The KY Forest Health Task Force increases communication about forest health and coordinated action by a growing group of key agency professionals, land managers, and stakeholders.
- We conduct educational programs about insects, diseases, and invasive plant species that affect forests and trees for county agents, professionals, landowners, and others (e.g. 50+ presentations, including 5 statewide and 1 multi-state, engaging 1,600+ people).
- Education programs about urban tree and forest health.
- Our citizen science programs connect members to scientific research on forest health. Our TreeSnap app has over 5,000 users.
- We provide mushroom identification and cultivation assistance and programming.



TreeSnap

White Oak Initiative

To restore American white oak, we need to think, plan and act decades ahead to prevent a crisis situation. We must actively manage our oak forests, remove competing tree species, treat insects and disease, and create openings for this sun-loving tree to flourish. UK is a co-founder of the initiative and helps manage this 17-state landscape-scale restoration project.



In-Service Programs to County Agents

County agents are an integral part of the Extension team instructing landowners, so we provide frequent opportunities for them to gain experience that they can relay to their clientele. Examples of our 2019 In-Service programs for agents include: Advanced Tree Health Training, Invasive Plant Management Training, Forest Health Training, Timber Economics, Wildlife Integrated Pest Management, and Small-Scale Logging. Over 55 agents representing 40 counties participated.



Dr. Ellen Crocker put on an in-service training for agents on invasive plant id and management at the Kentucky Wood Expo in 2019.

Partners

A major strength of the UK FNR Extension Program is the cross-disciplinary approach and the many strong working relationships (100+) we have with related organizations in Kentucky and beyond. Examples include:

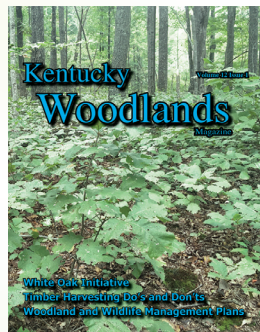
- UK Cooperative Extension Service Offices
- Kentucky Division of Forestry
- Kentucky Department of Fish and Wildlife Resources
- Kentucky Woodland Owners Association
- Kentucky Forest Industries Association...and more!

Outreach

UK FNR Extension has built and maintains numerous outreach and communication platforms to frequently communicate with family forest owners and those that serve and support them. These communication platforms not only deliver educational content, but they also alert the forestry community to educational opportunities, emerging issues or threats, and position UK FNR Extension as a forestry leader in Kentucky. Some highlights of our most prominent forestry outreach and multimedia communication platforms include:

Publications: UK FNR Extension produces many publications every year. Whether they are traditional Extension publications, Kentucky Woodlands Magazine, white papers, magazine articles, or reports all of them help to support and sustain Kentucky forests.

Kentucky Forest Sector Economic Contribution Report: While Kentucky's forests cover nearly half the state, only scattered information existed about their overall economic contribution. To address this gap, a team of faculty and staff from



the University of Kentucky Departments of Forestry and Agricultural Economics worked closely to compile data from a wide variety of sources to document the \$13 billion annual economic contributions associated with Kentucky's forests and associated industries. These data are annually summarized and analyzed to develop reports, summary factsheets, and Extension publications.

Radio and Podcasts: From the Woods Kentucky broadcasts are created and produced with the cooperation of WRFL 88.1 FM at UK. The podcasts cover many different topics. Examples include: What is Forestry, Wildlife Sounds from the Forest, Ticks, and Forestry Careers. Fifty episodes have been broadcast as of November 2019. Podcasts are available at <https://forestry.ca.uky.edu/fromthewoodsky>

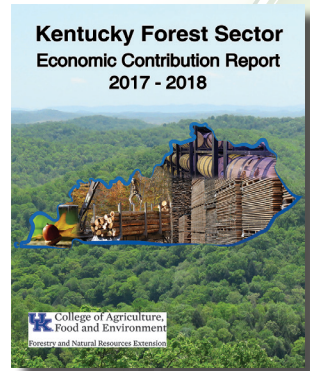
Other Outreach Communications: Webinars, many programmatic websites (e.g., conferences), bi-monthly electronic newsletters, and Facebook pages for our Extension programs, just to name a few.

Funding

UK Forestry and Natural Resources extension faculty and staff generated \$316,822 in extramural funding to support extension programming. This along with \$68,882 in USDA Renewable Resources Extension Act funding provided specifically for forestry and wildlife programming along with state extension funds of \$618,827 resulted in a 1:100 cost/benefit ratio of dollars spent on forestry and wildlife programs to dollars saved/earned to the economy.

UK Forestry and Natural Resources Extension

Dr. Jeff Stringer*, Department Chair and Extension Professor
Bobby Ammerman, Secondary Wood Industry and CFWC
Dr. Terry Conners*, Wood Products and Youth Education
Dr. Ellen Crocker, Forest Health
Briana Fortunato, Outreach
Eric Gracey, Center for Forest and Wood Certification
Darren Morris, White Oak Initiative
Chad Niman, Primary Wood Industry
Dr. Matt Springer, Wildlife Damage and Management Education
Billy Thomas, Family Forests Education
Laurie Thomas, Youth and Family Forests Education
Reneé Williams*, Outreach
FORFS19-03 * Authors



Appendix C.

2016 Program Review Implementation Plan

UK Program Review Implementation Plan

College/Unit: Department of Forestry

Date: 9/12/2016

Recommendations/ Suggestion	Source I/E/H*	Accept/Reject	Unit Response (goal or objective alignment)	Actions (including needed resources & Approximate Costs)	Time Line
<p>With input from College, develop a plan to replace facilities to provide faculty, staff, and students with suitable office, laboratory, and classroom space.</p>	E	A	<ul style="list-style-type: none"> • A recent CAFE survey identified the Thomas Poe Cooper (TPC) building as being unsuitable for conducting many types of research, much less cutting-edge research. • Substandard facilities have limited the types of research that we conduct, our ability to compete for extramural funding, and, ultimately, will negatively impact our ability to attract high-quality faculty. • The building is not ADA compliant and the teaching facilities are not conducive to high-quality instruction. Temperatures in TPC are regularly too hot or too cold for effective instruction or learning. • Faculty and students regularly remark that TPC is a very poor example of an energy efficient, cutting-edge, green building which, given the subject matter taught here (forestry, wildlife, sustainability, conservation, environmental stewardship), should be an example to the citizens of Kentucky. 	<ul style="list-style-type: none"> • UK Dept. of Forestry has been working with CAFE administration to develop a plan to construct a new facility to house Forestry and aligned (i.e., Entomology, Landscape Architecture, NRES, etc.) programs. • A prospectus has been prepared describing the need, the vision, and the resources to construct such a facility. • Dean Cox has visited with the Provost and UK administration regarding our needs and a new facility for these programs is among the CAFE's top capital improvement priorities. • The new building has also been on the UK Capital Improvement List for some time, though budget cuts may threaten progress on this front. • We are working with partners 	<p>The goal is to have plans in place to begin construction by 2020.</p>

				<p>(i.e., USDA, KY. Dept. of Forestry, private entities) to identify support and funding for such a facility, and we have identified many members of the greater forestry and forest products industries in Kentucky that are supportive of our proposal.</p> <ul style="list-style-type: none"> • We are also identifying intermediate improvements to be made to TP Cooper Building and Dimock Building in the event a new facility continues to be delayed. 	
<p>Simplify the administrative structure for Robinson Forest and Robinson Center for Appalachian Resource Sustainability</p>	E	A	<ul style="list-style-type: none"> • The restructuring that occurred in 2009 to create RCARS was never fully implemented, offering little or no accountability for administering RCARS and ensuring adequate facilities and cooperation for departments like Forestry to use RCARS as a launching point for educational programs focused on eastern KY. • The staffing structure at Robinson Forest often leaves the Forest Manager shorthanded to conduct important managerial activities at the forest. Simultaneously, the Forest Manager is regularly asked to handle many camp responsibilities that would otherwise be handled by RCARS personnel. A similar situation has developed at the Wood Utilization Center where the Wood Technician, who had functioned for many years as a lab technician for wood products, has now been tasked with making and selling wood products, leaving Forestry shorthanded to utilize the WUC most effectively and efficiently for educational programming and industry education/relations. 	<ul style="list-style-type: none"> • We suggest that RCARS personnel at Robinson Forest be supervised by Chris Osborne (Management Forester at Robinson Forest). This would create additional efficiencies as Chris often struggles to find adequate personnel to address in-forest management needs, particularly when these often involve heavy equipment or dangerous machinery which requires two employees to be present during operation. Similarly, Chris can reciprocate by helping to handle RCARS issues at Robinson Forest. • We recommend a similar arrangement at the Wood Utilization Center to be supervised by Bobby 	<p>Our goal is to see measurable efficiencies develop by the end of 2016.</p>

				<p>Ammerman, Secondary Wood Products Specialist and primary educational user of the Wood Utilization Center. This would effectively allow Bobby to maintain industry relationships, use the Wood Technician for educational programming, and increase his programming effectiveness and reach.</p> <ul style="list-style-type: none"> • Since Dr. David Williams was selected as the new Director of RCARS, we have discussed opportunities to identify efficiencies and to improve collaboration, communication, and the effectiveness of educational program development. We look forward to working with David on these efforts. 	
<p>Develop a succession plan to effectively deal with a significant number of faculty openings resulting from faculty retirement in the next 5-10 years, including plans</p>	E	A	<ul style="list-style-type: none"> • Forestry currently has a bi-modal distribution of faculty in terms of seniority and tenure; of our 13 faculty, six are within 5-10 years of retirement. • One of the biggest limitations Forestry currently faces is not just a succession plan for faculty, but a plan to increase staff support for faculty. Historically, UK Forestry has maintained minimal research staff support compared to other units in the CAFE. 	<ul style="list-style-type: none"> • UK Forestry is currently conducting a search for a Forest Economics and Policy faculty member that prepares us for the retirement of Dr. Jim Ringe, who teaches Forest Economics. The new faculty member will overlap with Dr. Ringe who can help with this transition. • We are also in the process of replacing a retiring Administrative Staff Assistant at Quicksand, who supports Forestry Extension personnel at RCARS. 	2016-2018

<p>for additional staffing at both the faculty and staff level to meet current and future needs in research, teaching, and extension.</p>				<ul style="list-style-type: none"> • UK Forestry sees the need to increase staff support for Forestry researchers and suggests our teaching and administrative contributions to the interdisciplinary NRES program would be one justification for this because a significant portion of our faculty's time is devoted to this program, which affects faculty research productivity. 	
<p>Develop a Ph.D. program for the department. Careful consideration will need to be given to what additional graduate level Forestry courses will need to be added and who will teach these courses.</p>	E	A	<p>A Ph.D. program would 1) attract students that otherwise would go outside the state, 2) attract and retain high-quality faculty, 3) attract high-quality grants and contracts, and 4) accrue other indirect benefits to our department and student body (graduate and undergraduate), not to mention research faculty.</p>	<ul style="list-style-type: none"> • The new graduate proposal form for the Kentucky Council on Postsecondary Education (CPE) was submitted to the Office of Institutional Effectiveness for review/consultation for SACSCOC (Southern Association of Colleges and Schools Commission on Colleges) requirements. Initial review suggests proposal is nearly complete except for 1) Budget, 2) SACS Faculty Roster, and 3) Course Curriculum Form. • Next steps involve CAFE review and approval and UK Graduate Council, Senate, and UK Board of Trustees approval before final submission to CPE. 	<p>In process with expected completion 2018.</p>
<p>Aggressively work towards improving the</p>	E	A	<ul style="list-style-type: none"> • Forestry has made this an objective over the last five years by actively recruiting faculty candidates nationally, and specifically seeking 	<ul style="list-style-type: none"> • We are currently conducting a search for a Forest Economics and Policy faculty member. All 	<ul style="list-style-type: none"> • The UK Forestry website went live on April 1, 2016

<p>diversity of the department's faculty and undergraduate student population.</p>		<p>those from underrepresented groups. In each of our last four faculty hires, our short-list candidate pools have contained individuals from underrepresented groups and two of our last four faculty hires have been from underrepresented groups.</p> <ul style="list-style-type: none"> • We have also made significant attempts to reach undergraduate students from underrepresented populations. A considerable portion of our Academic Coordinator's early efforts were directed toward recruitment of minority individuals by utilizing numerous venues across the University for engaging prospective and existing minority students. • The percent of first generation college students in the forestry program has continued to rise from 2010 (16%) to 2015 (35%); currently, Spring Semester 2016, approximately one-half of our students identify as first-generation college students and over 20% of our students are from underrepresented groups (e.g., minority and/or female). • Much like our peer institutions, recruiting minority and underrepresented students into our student body is extremely difficult when they don't gravitate to these disciplines without some prior passion for or exposure to them. 	<p>three interviewees for this position are from underrepresented groups.</p> <ul style="list-style-type: none"> • We are also in various stages of the process for developing a succession plan for replacing several faculty approaching retirement and will continue to actively recruit candidates from underrepresented groups with these hires. • In March 2016, UK Forestry established an <i>ad hoc</i> Student Engagement committee to improve recruitment in general, as well as identify opportunities to specifically recruit individuals from underrepresented groups. • The committee is also designing opportunities and programs to increase engagement of youth interested in forestry, wildlife, and natural resources subjects and help them see college and career opportunities in these fields. • We believe starting youth engagement early, particularly for individuals from underrepresented groups, is critical for long-term recruitment success. To that end, we recently hired an Extension Forestry Associate to provide forestry and natural resources youth education programs that raise the awareness and 	<p>and we expect this to be a useful tool for reaching broader audiences and potential students.</p> <ul style="list-style-type: none"> • We anticipate the new UK Core classes to be approved by the UK Undergraduate Council by Fall Semester 2016.
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				<p>importance of Kentucky's forests.</p> <ul style="list-style-type: none"> • The Extension Forestry Associate and our Academic Coordinator are working closely together to coordinate efforts for student engagement and recruiting. • We have also proposed five new courses in the UK Core that may attract undecided UK students to our forestry program. • We have also created a new website to provide improved access and understanding of our forestry program. • We will continue to serve first-generation college students, as well as military veterans. • We are also planning annual professionalism trainings for undergraduate and graduate students to prepare them for working appropriately with individuals from different backgrounds and experiences. 	
<p>With the involvement of all departments and students that comprise the multi-disciplinary Natural Resources and</p>	E	A	<ul style="list-style-type: none"> • Interviews with faculty, staff, and previous Forestry administrators indicated a long-term, complicated relationship with NRES (sometime complementary, sometimes competitive). Some of the confusion may stem from a failed effort to create a more formal partnership between the two programs back in the early-to-mid 2000s, after which little information was shared with Forestry personnel about the outcome of that exercise. 	<ul style="list-style-type: none"> • We believe a strong commitment from CAFE administration is required to address this issue. Attempts to deal with these issues on a case-by-case, or one-to-one basis, and even visiting with representatives from CAFE administration over the last several years, have not been 	2016-2017

<p>Environmental Science (NRES) program, explore and address both the perceived and real underlying tensions between the Forestry and NRES programs.</p>		<ul style="list-style-type: none"> • Efforts to break down communication barriers, identify synergies/efficiencies, and collaboratively engage students from both majors have been less than optimal. • Other universities have experienced similar phenomena with interdisciplinary programs; resources being allocated away from existing and principal units becomes a dis-incentive for cooperation and investment. • Forestry faculty and staff enjoy teaching and contributing in other ways (i.e., steering committee) to the NRES program due to the obvious synergies and similarities between programs. Further, students within each program should benefit by being and learning in proximity to one another. • Forestry faculty also enjoy the connection to NRES for the summer employee and potential graduate student relationships that often develop. 	<p>successful.</p> <ul style="list-style-type: none"> • A deliberate and strategic effort must be used to overcome the observed challenges. 	
<p>Continue development of the Forest Health Center (FHC) to meet the needs of the department, college, and forestry industry. Consideration should be given to providing the needed</p>	<p>E A</p>	<ul style="list-style-type: none"> • The Forest Health Research and Education Center (FHREC) has been a successful joint venture between UK, Kentucky Division of Forestry, and the USDA Forest Service Southern Research Station. The FHREC, and laboratory resources provided by CAFE, have significantly enhanced Forestry's grantsmanship and engagement of cutting-edge research. • Since its inception two years ago, the FHREC has attracted over \$1.5 million in extramural funding (grants and gifts), not including the initial \$350,000 investment. • The FHREC collaborates with scientists around the world to help understand and solve our most pressing tree and forest health problems, in both rural and urban environments. 	<ul style="list-style-type: none"> • The FHREC has already attracted two full-time Forest Service scientists, who are now permanently located on UK's campus, for the first time ever. We expect the US Forest Service to add personnel to the FHREC on UK's campus. • The FHREC sees the need to bring additional faculty and staff positions to several departments in the CAFE. • We envision pursuing a cluster hire which would allow us to hire the following disciplines: a tree physiologist/ eco-physiologist, a tree geneticist, 	<ul style="list-style-type: none"> • Complete cluster hire proposal in 2016. • Submit a request to the JGB Foundation for an endowed chair position in 2017; we have been in discussions with UK Philanthropy regarding this possibility.

<p>staffing, equipment, and facilities, including the possibility of co-locating FOR and the FHC in any new facility that is built.</p>				<p>human dimensions of forest health science and technology adoption, host-pest computational ecology/ bioinformatics, and forest and tree health outreach and education.</p> <ul style="list-style-type: none"> • These experts would be placed into several departments including Forestry, Plant Sciences, Plant Pathology, Entomology, and Horticulture. We also intend to pursue several staff support positions. • We have been in discussion with our partners regarding their interest in making contributions to a new environmental sciences building that would house forestry and aligned programs (see recommendation # 1 above). • We also have plans to request endowment support from one or more external foundations to support an endowed chair of forest genetics and have recently discussed this with the UK Office of Philanthropy relative to the James Graham Brown Foundation. 	
<p>Continue developing relationships with stakeholders and support</p>	<p>E</p>	<p>A</p>	<ul style="list-style-type: none"> • Forestry maintains a significant partnering and stakeholder network including federal agencies (USFS, USFWS, NPS, NRCS), state agencies (KDF, KDFWR, State Nature Preserves, KDA, among others), organizations (KFIA, KWOA, KFCA, MACED, KY Farm Bureau, TNC, ARRI, 	<ul style="list-style-type: none"> • We see opportunities to ensure that our partners fully understand all missions of the department, which is critical to optimizing the Department's impact and to improving 	<p>2016-2018</p>

<p>industries. In addition to dept. interaction with these groups, it is important for college administration (particularly the Dean) to have periodic, direct contact with these groups as well.</p>			<p>KDA), and many individuals, businesses and companies across the region.</p> <ul style="list-style-type: none"> • The department’s stakeholders are not restricted to organizations and associations; we frequently work with the general public, school groups, and other individuals as warranted. • Forestry is looking forward to involving the new Senior Director of Philanthropy in its external relationships, particularly from a fundraising standpoint. 	<p>collaboration, assistance, and advocacy. While a majority of our stakeholder engagement occurs through Forestry Extension, further work is needed to ensure that vital instruction and research accomplishments impacting society is effectively conveyed to our stakeholders.</p> <ul style="list-style-type: none"> • Though we have made significant strides in recent years, we recognize that many of our partners do not regularly see, nor are they regularly seen by, the CAFE or UK administration and we will work to increase this awareness in both directions. • The launch and continued maintenance of the Department’s new website will provide a much needed tool to help the Department strengthen relationships and messaging. • Effectively using the relatively new Forestry Advisory Group will aid in increasing awareness both internally and externally. 	
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* Source of Recommendation (I = Internal recommendation; E = External Review Committee recommendation; H = Unit Head recommendation)

** Accept/Reject Recommendation (A=Accept; R=Reject)

Unit Head Signature: _____ Unit Head Supervisor Signature: _____ Date: _____

Appendix D.

**SAF Self-Self Evaluation Report
along with required SAF forms**



University of Kentucky
Undergraduate Forestry Program
Self-Evaluation Report
February 2020

Prepared by the Department of Forestry and Natural Resources, University of Kentucky
for
The Society of American Foresters Committee on Accreditation

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STANDARD I: PROGRAM MISSION, GOALS, AND OBJECTIVES

It is essential to state clearly and document printed references to the items required by Standard I, as evaluation of subsequent standards is dependent upon a thorough explanation of a program's educational objectives.

I.1. Document the program's mission, goals and objectives and describe how they meet Standard I. Show where they appear in publicly disseminated materials.

The mission, goals, and objectives of our forestry program have been clearly defined and publicly stated. The following vision, mission, and goal statements have been taken directly from our Strategic Plan (http://administration.ca.uky.edu/files/sp/sp/strategic_plan_2009-2014_for.pdf). The mission statement is displayed throughout our physical facilities and the vision and mission statement is located on the Department web site <https://forestry.ca.uky.edu/about-uk-forestry>

Vision: The Department of Forestry and Natural Resources will be widely recognized for improving the lives of people and for improving the condition of human and biotic communities through learning, discovery, and outreach activities relating to forests and natural resources.

Mission: Research, teaching, and extension programs of the Department of Forestry and Natural Resources will effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs will elevate the quality of life by:

- enhancing the integrity, stability, and health of forests and related biotic communities;
- increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources.

Goals:

- A. Enhance the university's stature among its peers
- B. Prepare students for leadership in the knowledge economy and global society and stewardship of natural resources
- C. Enhance the intellectual and economic capital of Kentucky through growth in research
- D. Embrace and nurture diversity
- E. Engage Kentuckians through partnerships to elevate quality of life

Planning at the Department of Forestry and Natural Resources is a continuous and evolving process with multiple opportunities for review, evaluation, and adjustment of the goals, objectives, and policies of our Department. These include the Department of Forestry and Natural Resources' Strategic Plan, college review processes for teaching, research, and extension missions, forestry program curriculum revision, annual extension review, periodic graduate program review, and periodic departmental self-evaluation. Each of these planning and review processes has been used to shape the present mission, goals, and objectives of the Department of Forestry and Natural Resources.

The Department accomplishes its mission through instruction, research, and extension activities. The Department's primary instructional responsibility is its Forestry program. Additionally, the Department contributes to college-wide programs in Natural Resources and Environmental Science and Agricultural Biotechnology, and offers a minor in Wildlife Biology and Management. Graduate instruction is offered through the Ph.D. and Master of Forest and Natural Resource Sciences, including both thesis and non-thesis options at the M.S. level. Individual faculty members and some doctoral graduate students also participate in related graduate programs including Crop Science, Animal and Food Sciences, Plant and Soil Science, and Biology. Educational programs of the Department prepare students for careers as forestry and natural resource professionals in public agencies, industry, and education.

The Department of Forestry and Natural Resources' instructional goal is to prepare students for leadership in the knowledge economy and global society. Educating students is a fundamental means by which the Department of Forestry and Natural Resources enhances the future of the Commonwealth. The Department expects graduates to become leaders in forestry and natural resource professions, as well as their communities. Forestry graduates will serve the Commonwealth, region, and nation by helping enhance sustainable economic, ecological, and social benefits of forests in Kentucky and beyond. The Department seeks to provide a responsive learning environment of creative thinking that enables all students to achieve their highest level of proficiency. Instructional objectives include:

- Recruit and retain students with high academic and professional potential.
- Develop and implement actions that will result in a more diverse student body.
- Sustain a learning environment that will be rigorous and will also be highly relevant to career opportunities for our graduates. The teaching program will be focused and structured to prepare graduates for success in achieving the Department's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and related natural resources.
- Increase support for teaching-related activities.
- Ensure our graduates will be well-prepared for dealing effectively with forest-related issues.

Instructional programs involve teaching faculty and staff who are engaged in the land grant missions of research and extension. The faculty provide a wide breadth of experience and knowledge resulting in a diverse forestry curriculum. Joint appointments and close ties among the extension, teaching, and research faculty are encouraged to provide a constant interchange of ideas and experiences that strengthen both undergraduate and graduate instruction. The integration and interaction of faculty involved in instruction, research and extension is a reflection of the mission statements and goals of the Department's research and extension areas.

The Department of Forestry and Natural Resources' research goal is to enhance the intellectual and economic capital of Kentucky through growth in research. The land grant mission of the university, college, and Department encourages research activities that result in the discovery of new knowledge.

Discovery is an essential part of the Department's vision of being widely recognized for

improving the lives of people and for improving the condition of human and biotic communities. Research in the Department of Forestry and Natural Resources therefore helps provide insight and solutions to important challenges relating to sustaining long-term economic, ecological, and social benefits provided by forests and natural resources in Kentucky and beyond. Research disciplines include silviculture and forest operations, wildlife ecology and conservation biology, forest health and ecological restoration, landscape and spatial ecology, natural resource policy and economics, and urban ecology. The Department will continue to improve the quality, relevance, and effectiveness of the Department's research program, and obtain additional support for research. The results from departmental research endeavors contribute to formation of ecologically, socially, and economically integrated solutions to natural resource management problems. The Department also encourages strong links among research programs and undergraduate, graduate and post-graduate education to prepare scientists and resource managers to meet the challenges facing society.

The goal of the Department's extension program is to provide current, applicable information on the sustained use and management of the state's forest and natural resources to elevate quality of life of the people of Kentucky. Our extension program has:

- developed a statewide extension network and applied research programs in natural resources management with a broad base of support;
- provided quality presentations and continuing education opportunities for county extension faculty and other natural resource professionals;
- provided continuing education programs for the public through media, audio-visual contacts, and publications to further an understanding of natural resources management;
- educated youth through developmental programs; and
- assisted the Department's instructional mission by teaching courses.

The extension program is recognized nationally as a leader in providing comprehensive forest management resources and programming, winning the National Woodland Owners Association (NWOA) and the National Association of University Forest Resources Programs' (NAUFRP) National Award for Excellence in Forestry Extension Programming twice in the last ten years.

The instruction, research, and extension areas are as highly integrated within the Department. In the last several years the mix of experiences, and expertise of the faculty, has been transferred to the classroom creating a dynamic and effective learning environment to ensure that students are well equipped to handle the breadth and complexity of issues facing forestry and natural resource professionals.

Forestry as an interdisciplinary profession

Forestry is an interdisciplinary profession comprised of many fields, including biological, quantitative, managerial, and social sciences. Our Department recognizes the interdisciplinary nature of forestry and reflects this distinction via student education, faculty recruitment and maintenance, and extension. This recognition led to a name change for the Department from "Forestry" to "Forestry and Natural Resources" to better reflect our program's diversity, goals, and mission relative to the interdisciplinary nature of the forestry profession.

As one of the Department's goals, we prepare students for leadership in the knowledge economy

and global society with an interdisciplinary mindset. Multidisciplinary courses have been offered, such as ecology, economics, policy, geospatial analysis, hydrology, silviculture, soils, surface mine reclamation, timber management, wildlife biology, and wood utilization, among others. The Department expects graduates to become leaders in forestry and natural resource professions, and expects that graduates will become leaders in their communities. The forestry undergraduate curriculum has an emphasis on producing graduates who are society-ready, i.e., capable of dealing effectively with the complex economic, ecological, and social issues involving forest resources today. Forestry graduates will be well prepared for further scientific study, and for successful careers as practitioners, scientists, educators, and extension professionals. We have increased teaching-related cooperation and interaction with federal and state agencies, landowners, non-governmental organizations, and private industry in these efforts. We will continue to use the University of Kentucky Herbarium, Wood Utilization Center, Robinson Forest, greenhouses, and other resources to enhance student learning and to create diverse opportunities for learning. Nationally prominent individuals have been brought to the Department as seminar speakers and guest lecturers to heighten the awareness of significant issues, and to increase the interaction of faculty, staff, and students with national leaders, agencies, and organizations.

Another goal of our Department is to recruit and maintain a distinguished faculty committed to the Department's core purpose and values, and dedicated to achieving the Department's mission through high quality research, teaching, and outreach activities. In the past several years, multiple faculty positions have been filled with highly qualified individuals identified through nationwide search processes, and a new department chair has been hired to lead the Department into the next decade. We ensure effective mentoring and professional development of faculty, encouraging and supporting sabbatical and other leave programs, encouragement of appropriate consulting activities, by encouraging faculty coursework on and off campus, and by encouraging faculty attendance at professional development conferences, workshops, and seminars. Our professional staff, including extension specialists, provide value-added contributions to our instructional effort and we value their input and engagement in all facets of the Department. As with the faculty we work to help ensure opportunities for growth and professional development for our staff.

[Respond to the needs of the constituencies that the program seeks to serve](#)

As our knowledge and understanding of forests has increased, these complex systems are increasingly understood to have valuable utilitarian and intrinsic importance. The ecological services and economic wealth that forests provide affect all citizens of our Commonwealth and beyond. As such, the definition of a traditional forestry constituent has evolved to encompass a multitude of consumptive and non-consumptive stakeholders. As the state's sole forestry program, the Department of Forestry and Natural Resources has an inherent responsibility to actively engage this diverse constituency through research, outreach, and teaching activities in ways designed to effectively address forestry and related natural resource issues, challenges, and the needs of Kentuckians.

The Department has established a standing Advisory Committee that includes representatives from key partnering natural resource agencies and organizations within the Commonwealth. These periodic meetings help us ensure that our research, teaching, and outreach programs are

highly relevant to important environmental and economic issues involving the forests and related natural resources of Kentucky.

In our research, teaching, and outreach programs and activities, we will sustain and enhance productive collaborations focusing on forest-related issues in the Commonwealth. Research efforts have largely focused on improving our knowledge and understanding of complex forest ecosystems, and often, the effects that human activities have on them. As a land grant institution, we place particular emphasis on research that has practical management implications for our constituency. In the past decade, research has included topics that address the consequences of increasing globalization (e.g., invasive species, competition in global timber markets), changing human attitudes (e.g. forest wildlife-human conflicts, timber harvest on public lands), changing land use and ownership patterns (e.g., forest fragmentation and ownership), new technologies and approaches (e.g., GPS systems), and restoration ecology (e.g., post-mine tree planting, restoration of watersheds).

Through education and training activities, our teaching and extension efforts are designed to effectively deliver knowledge and solutions that address forest-related challenges affecting the quality of life of Kentuckians. Our faculty and staff are recognized both in the state and nationally for their expertise and value in providing information critical for the development of regulation, policy, programs, and focus. Faculty have chaired governor appointed task forces, both faculty and staff are members of over thirty boards, task forces and working groups within the state and nationally to help shape forest practice. Examples include chairing the governors appointed Kentucky Forestry Best Management Practices board, participation in the Kentucky Agriculture Advisory Council, members of boards and committees in the Kentucky Forest Industries Association, Kentucky Farm Bureau, Kentucky Woodland Owners Association, The Wildlife Society, Kentucky's Exotic Pest Council and other state and regional organizations. Our faculty and staff are also a part of county agent networks, and interact with teachers and youth, the general public, woodland owners, county agents, professionals in timber harvesting and wood-based industries. Our engagement with partners including the Kentucky Division of Forestry, Kentucky Department of Fish and Wildlife Resources, Kentucky Nature Preserves, U.S. Forest Service, U.S. Fish and Wildlife Service, National Park Service, and Natural Resource Conservation Service collectively provide critical mechanisms of communication between us and a galaxy of stakeholders. National, state, and county-level involvement in many of these organizations allows us to more effectively disseminate up-to-date knowledge and information affecting Kentuckians and their forest resources, and in turn, better understand the needs of these groups and their constituents. Exchanges with stakeholders are supported and enhanced by departmental publications (e.g., Kentucky Woodlands Magazine) and related information made easily available electronically through our website and other online outlets, as well as by research presentations given by our faculty. We are fully embracing new social communication mechanisms (e.g., YouTube demonstration videos, Webinars) to enhance our outreach efforts.

Through establishment and maintenance of communication with forestry alumni we continue to solicit feedback about the evolving forestry profession and how we may better prepare our graduates for success in dealing with forest-related resource challenges in the Commonwealth. Knowledge gained from research and extension is translated to our forestry students to make them society-ready, i.e., capable of dealing effectively with the complex economic, ecological,

and social issues involving forest resources today.

Role of professional foresters in meeting diverse and changing social, cultural, economic, and environmental needs and values

The Department of Forestry and Natural Resources recognizes that professional foresters have become increasingly vulnerable to the effects of a dynamic world of technology innovation, fluctuating global markets, urbanization, increasing energy demands, and changes in human attitudes towards resource extraction. These factors have dramatically altered forest ownership and use patterns in ways unforeseen a few decades ago. We also recognize that one of the most important challenges in a resource-hungry world is to maintain forest health through sustainable management while also providing economic benefits derived from forest products. Effective prognostication and subsequent adaption to these changes and demands requires our Department to be vigilant to and effective communicators of research, economic, policy, and cultural developments that could potentially affect forestry professionals. Our teaching efforts are designed to disseminate ours and others' research findings and other information that helps form the foundation within our forestry students the ability to effectively cope with and adapt to current and future challenges. At the same time, various communication forums that we engage in, as well as contact with our alumni, agency partners, and other collaborators allow us to actively solicit the concerns, ideas, and needs of professional foresters across the Commonwealth. Through these disseminative and solicitive mechanisms, our goal is to be timely, in-touch, and in-tune with forestry professionals.

Professionalism and ethical behavior necessary to manage and use forest resources and trees for the benefit of society

The Department has established very clear professional standards for itself to adhere to in educating students and the general public about forest resources management, and we intend to lead by example rather than wait for external agencies to correct our efforts.

Each fall, during the fall undergraduate Orientation and Welcome, the department chair outlines the Professional Guidelines and Expectations for Students in the Undergraduate Forestry Program document (see Appendix 6). The faculty in the Department are fully committed to the core values, policies, and principles of professionalism that are presented in the document. The purpose of the professionalism document is to emphasize to students the standards of academic and professional integrity that are expected of them. The professionalism document also contains the SAF Code of Ethics. After reviewing the contents of the document, (i.e., core values, attendance policy, Department honor code, cheating and plagiarism, and professional integrity) students are asked to sign that they agree to abide by the Department honor code.

The University of Kentucky's Department of Forestry and Natural Resources is entering a progressive and innovative era in response to changing scientific and human dimensions that are broadening and redefining the discipline of forestry and impacting many other natural resource sciences. The College of Agriculture, Food and Environment's new administrative team is actively supporting the expansion of natural resource programs and strengthening of the Department of Forestry and Natural Resources. In response to these opportunities, the Department has developed a new vision of our land grant mission to enhance a strong core program in forestry as well as to address a broader range of environmental and natural resource

issues.

I.2. Describe the process for periodic self-evaluation and revision of the program's mission, goals, and objectives.

The University of Kentucky updates its Strategic Plan on a periodic basis, focusing heavily on the mandate of the institution. The Strategic Plan of the College of Agriculture, Food and Environment, adopted in 2014, is being implemented through 2020. Additionally, the Administrative Regulations of the University of Kentucky require that each academic unit be reviewed every six years by an internal process involving faculty representatives from within the Department, representatives from other departments, and knowledgeable constituents from the private sector.

Each of these review and evaluation processes allows for the adjustment of directions of academic units. The institutional review of the Department of Forestry and Natural Resources has provided opportunity for input and comment in the formulation of the objectives of the Department. Representatives from resource management agencies, wood products industries, and other constituent groups are invited to on-campus interviews. Preliminary drafts of the objectives are sent to constituent groups for their review and comment prior to finalization. The outcomes from these reviews have been used during several internal departmental assessments. Results of annual reviews of research and extension programs as required by the Government Performance and Reporting Act are also used during internal reviews.

The overall purpose of the Department of Forestry and Natural Resources' planning process is to help ensure a high level of quality, effectiveness, and relevance in our research, teaching, and outreach programs. To accomplish this, the planning process is designed to guide the Department in:

- establishing and communicating a clear, department-level core ideology, as well as overall vision and specific mission statements for our research, teaching, and outreach activities; and
- developing, communicating, and measuring progress toward broad goals and specific objectives and action steps for the Department's research, teaching, and outreach programs.

The 2009 Departmental Strategic Plan incorporated comments from our graduates and interest groups during its development over the prior three years (2007-2009). The last internal review, i.e., self-study, of the Department of Forestry and Natural Resources was completed in 2016, and the last SAF self-evaluation was completed in 2010. A faculty and staff retreat held in the fall 2019 allowed for extensive discussions relating to strategic planning and procedures for periodic sessions to critique and evaluate our direction, strengths and weaknesses.

STANDARD II: PROGRAM ORGANIZATION AND ADMINISTRATION

II.1. Document that the program is administered by a person carrying the equivalent title and authority of administrators of comparable units in the institution. Present an organizational chart of the program, showing its relationship to the institution's central administration.

The organizational structures of the University of Kentucky, the Lexington campus, and the College of Agriculture, Food and Environment are presented on the following pages. The University of Kentucky is administered by the President (Dr. Eli Capilouto) who is responsible to a 20-member Board of Trustees. The College of Agriculture, Food and Environment is one of 18 academic colleges on the Lexington campus (Dr. David Blackwell, Provost). The Department of Forestry and Natural Resources is one of 14 academic departments in the College of Agriculture, Food and Environment administered by Dean Nancy Cox. Other academic departments of the college are agricultural economics, animal and food sciences, biosystems and agricultural engineering, community and leadership development, dietetics and human nutrition, entomology, family sciences, horticulture, landscape architecture, plant and soil sciences, plant pathology, retailing and tourism management, and veterinary science. Each department is responsible for programs of undergraduate and graduate instruction, research and extension, with full integration of faculty assigned to these functions within the department. Departments are administered by chairs who are appointed for six-year terms, subject to renewal following six-year Institutional Review.

The organization charts for the college and Department are included in Appendix 4. It is helpful to summarize the administrative structure by a reverse flow method. Department chairs report directly to the dean the College of Agriculture, Food and Environment or, when appropriate, indirectly through functional associate deans for faculty, research, extension and academic programs. The dean of the College of Agriculture, Food and Environment reports directly to the provost, who is directly responsible to the president of the University of Kentucky. In terms of its actual operation, the administrative structure is quite open and informal. Department chairs work closely with, and have ready access to, the dean and associate deans. Chairs and directors hold monthly meetings with college administration and the dean meets quarterly with chairs and program directors. Academic units are tied to the graduate school through a director of graduate studies for each graduate program. In the Department of Forestry and Natural Resources this responsibility is currently fulfilled by Dr. Steven Price.

The responsibilities of the department chair are described in the Governing Regulations of the university (GR VII.F.2.e). Excerpts of these regulations are quoted below:

The department chair leads the department faculty in its development of policies on such matters as academic requirements, courses of study, class schedules, graduate and research programs, and service functions. The chair presides at all department meetings, except as the chair may delegate this function, and is an ex officio member of all department committees. The chair has administrative responsibility for implementing the department's policies and programs within the limits established by these Governing Regulations, the Administrative Regulations, University Senate Rules, Rules of the Graduate Faculty, the rules of the college, and the rules of any school of which it is a

part.

The department chair is responsible for recommendations on the appointment of new faculty employees of the department, promotions, reappointments, terminal appointments, post-retirement appointments, the granting of tenure, and decisions not to reappoint.

Procedures used in preparing recommendations shall be those established by the University, the college, and the department faculty. At a minimum, on matters relating to decisions not to reappoint, reappointment, terminal reappointment, or the granting of tenure of persons in any title series, the department chair shall consult with all tenured faculty members of the department....

The department chair is responsible for the periodic evaluation of department members by procedures and criteria established by the University, the college, and the department faculty.

The department chair submits the budget request for the department and administers the budget after its approval. The chair also is responsible for making recommendations on salaries, salary changes, and distribution of effort.

In connection with the above major administrative functions, the chair shall seek the advice of members of the department, individually or as a group, or of advisory committees that the chair may appoint. Staff employees shall be consulted, when appropriate, by the chair, in the development of administrative policies and on decisions that directly affect staff employees.

The chair shall speak for the department. In the event that the chair believes it necessary to depart from the opinion of the department faculty, the chair shall communicate the department faculty's opinion as well as the chair's recommendation, stating reasons for differing from the department faculty's opinion, and notify the department faculty of such action.

(Source: <https://www.uky.edu/regs/sites/www.uky.edu.regs/files/files/gr7.pdf>)

The Department has recently revised its Rules of Procedures to enhance the Department's structure and decision-making process to reflect the universities Governing Regulations and to help effectively and efficiently achieve the Department's goals and objectives (see Appendix 7).

In budgetary matters, the chair has authority to allocate state and federally supported resources for support funds, support personnel, and physical facilities within the Department. Allocations of funds to support the teaching and research programs of individual faculty members are made annually through a simple and somewhat informal procedure. Each faculty member annually develops a teaching, research, and/or extension budget request. These are usually quite realistic and reasonable. The chair must then distribute available funds to teaching programs, approved research projects of the Kentucky Agricultural Experiment Station, and extension programs. This system also provides the chair with some degree of flexibility to address special needs (e.g., a

faculty member with rather urgent requests for start-up funds for new teaching responsibilities and/or research materials not currently available in the program). Overall budget reductions in the past two years have shrunk the operating pool, and faculty vacancies have reduced the total requests accordingly. The Faculty Advisory Committee, composed of three tenured faculty, aid the chair in making major budgetary and strategic decisions. Research funds obtained through outside grants to faculty members are administered entirely by the grantee(s) within agency and university guidelines.

There is less program-based authority regarding purchases of non-expendable (major) equipment items and facilities modifications/improvements. Within the Department, available funds may be used for equipment and facilities needs as appropriate; however, these funds are limited. The College of Agriculture, Food and Environment has maintained a support fund for equipment which is distributed based upon availability, need and justification. The Department faculty maintain a list of equipment needs which can be presented upon request and/or at other appropriate times. Major facilities modifications are treated on an as needed basis and support is solicited from all levels of the university. Space is at a premium, and, while space issues are also treated on an as needed basis, the likelihood of obtaining additional space is remote.

In terms of faculty salaries, there is a broadly-distributed and shared decision process among administrative levels. For example, the chair has responsibility for making recommendations of initial (starting) salaries of new faculty to the dean, tempered by parity, college policy and available funds. In general, such recommendations are approved. Salary increases (raises) are based upon an average salary pool (generally a percentage) based upon legislative allocation and established for the university by the president's office. Based upon this target mean, individual salary increases are allocated according to a merit rating scale based upon an annual (non-tenured faculty) or biennial (tenured faculty) faculty performance evaluation. The college's faculty performance evaluation process allows for a five-rank scale with a college assigned quota for the top rank. Raises are assigned to each merit rating to allow for an overall institutional raise at the target mean.

The chair's most significant input to the process is in assigning a merit rating to each faculty member, based upon review of the individual faculty-generated performance evaluation document. The chair's evaluation utilizes the input of an ad-hoc Department advisory committee; however, the evaluation forwarded to the dean is the chair's alone. The documents are then reviewed by the dean and appropriate associate deans, and any discrepancies between their ratings and the chair's ratings are resolved in conference. Assignment of the final merit rating lies with the dean. Regarding salary levels, the college can receive permission to exceed the university pool (within reason) by re-allocation of its resources to personnel services, on a continuing basis. (However, such a reallocation must come from non-personnel current expenses.) Also, in any year, each faculty member has the right to appeal their merit rating (thus, their raise) and the chair must decide to support, or not to support, this appeal.

In general, the chair has a rather broad range of responsibility with regard to directions and operations of programs, personnel management (including recruitment) and allocation of budgeted resources, but is much more limited in terms of program expansion (especially in regard to adding faculty positions), facilities development, and acquisition of major equipment

items (using state or federal funds). These latter functions involve justification, documentation and, to some degree, the ability to compete with other campus units for increasingly limited college and/or university resources.

II.2. Present the published procedure for evaluating and accepting students and for transferring credit to fulfill the general and professional education requirements in the curriculum. Document that transfer courses, advanced placement courses, and courses accepted for students in an accredited master's degree program are equal to or exceed the content and standards of the accepting institution's courses. In accordance with the Family Educational Right to Privacy Act (Buckley Amendment), visiting team members may ask to review student files on site to assess compliance in this area.

The forestry program adheres to the general admission requirements for the University of Kentucky. The 2019-2020 University of Kentucky Undergraduate Bulletin is accessed at <https://www.uky.edu/registrar/2019-2020-bulletin>. Undergraduate admissions policies are found at https://www.uky.edu/registrar/sites/www.uky.edu/registrar/files/admission_4.pdf.

The admission philosophy of the university is listed in the bulletin as follows:

“Consistent with the University’s mission of research, service and teaching, the university seeks to enroll and retain an academically talented student body that enriches the learning community and is representative of the diverse society it serves. The following admission policies reflect this philosophy.” (p. 14 of the 2019-2020 Undergraduate Bulletin)

The University of Kentucky has a selective admission policy. Once a student has been accepted to UK, they can declare forestry as their major.

“The University of Kentucky has a selective admission policy. A faculty committee of the University Senate establishes the academic criteria. A holistic review is based on factors including cumulative high school grade-point average, completion of the pre-college curriculum, ACT or SAT I score results, essay, special talents and abilities and an optional academic letter of recommendation. Applicants are offered admission on a competitive basis, with those meeting the University’s selective admission criteria receiving first offers.” (p. 14 of the 2019-2020 Undergraduate Bulletin)

The pre-college curriculum consists of: four English/Language Arts credits; three credits each in math (two algebra and geometry), science, and social studies; two in a foreign language; as well as several other individual courses (electives). Minimum requirements include a 2.0 high school GPA, including the pre-college curriculum; no minimum standard test scores are given.

Selective admission criteria for high school GPA and ACT/SAT scores are established by a faculty committee and applicants who meet them are offered admission. Applicants who have completed the pre-college curriculum but do not meet one or both of the other criteria have their admission deferred. If, after the application deadline, spaces remain in the freshman class, admission is offered to deferred-decision applicants on a competitive basis.

Students from other colleges and universities, including community colleges, may transfer to the university if they would have qualified for selective admission at the time they entered their first institution of higher learning, and provided they have maintained a 2.0 or better grade point average for all college work attempted. Students who would not have qualified for selective admission to the university may transfer after completing 24 or more semester hours with at least a 2.0 grade point average at other institutions. Transfer of credits from fully accredited colleges and universities (a member in good standing of the regional accrediting association) is determined by the Office of Admissions and the Registrar. The university's Transfer Equivalency Database is available on-line (<https://www.uky.edu/registrar/transfer-equivalency>) and is a comprehensive database of transfer equivalencies of courses at hundreds of other institutions to courses at the University of Kentucky. When a transfer equivalency for a given external course has not established or when a course has been changed, the substitution request for a given course (along with the course syllabus) will be sent from the CAFE office of the Associate Dean for Instruction to the Director of Undergraduate Studies (DUS) in the department for review. The DUS seeks a review from the instructor of the course in question along with the department's Undergraduate Program Committee. The review by this body considers the equivalency of the external course to the UK in terms of student learning outcomes, course activities, and the SAF competencies. This body, by consensus, determines whether the transfer equivalency is warranted. This decision is forward to the CAFE office of the Associate Dean for Instruction by the Forestry DUS.

II.3 Describe how high priority is given to quality instruction through faculty appointments, evaluation, and recognition of performance.

The forestry program has a relatively high degree of autonomy in regard to the forestry faculty's responsibilities and authority for establishing requirements for the degrees of Bachelor of Science in Forestry and graduate degrees. The professional aspects of the forestry degree programs are, in fact, the sole responsibility of the faculty of the Department of Forestry and Natural Resources, with the college and university exercising oversight functions to ensure that university requirements are satisfied in the curricula.

Program structure and requirements, course sequences and prerequisites, and any modifications to these are determined by the instructional faculty of the Department. Departmental recommendations are forwarded to the college Curriculum Committee for review and approval and then to the university-level Undergraduate Council (Graduate Council for graduate-level issues) and Faculty Senate for final recommendations and approval.

Selection of faculty (initial appointments) is mainly within the purview of the forestry program faculty. The chair initiates the procedure by securing permission to recruit from the dean of the College of Agriculture, Food and Environment. Position responsibilities and requirements are determined by a three or four-person faculty search committee, with full faculty approval, and an appropriate position announcement is developed and distributed. Usually, three candidates are selected for interview through search committee screening. Each candidate is interviewed by the chair, all members of the forestry program faculty, and by the college dean and associate deans. In some cases, such as those where a candidate is expected to conduct joint teaching or research with another program, members of that program's faculty will also participate in the interview

process. The search committee and chair solicit comments and opinions from the faculty regarding each candidate.

The administrator then forwards a recommendation to the dean who, barring any significant reservations on the part of the college administration, approves and grants authority to hire. Terms of appointment (tenure status), starting date and salary are determined mutually by the dean and the chair. Again, according to the Department's Strategic Plan, we will fill faculty positions with the most highly qualified individuals identified through nationwide search processes.

Furthermore, the Department ensures effective mentoring and professional development of all faculty. Professional development of the faculty is encouraged and supported through sabbatical and other leave programs, through appropriate consulting activities, by encouraging faculty coursework on and off campus, and by encouraging faculty attendance at professional development conferences, workshops, and seminars. The Department will seek additional funding to support faculty development, including activities that expose faculty to international issues and opportunities. The university also has a system involving the dean and provost that assists budgetarily with equity and retention issues as recommended by the chair. The Department has been able to retain key faculty due, in part, to the availability of this system, and the responsiveness of the dean and provost to department needs.

The requirements for and conditions of promotion and tenure are outlined in the Administrative Regulations of the University of Kentucky (AR 2:1-1) (<https://www.uky.edu/regs/ar2-1-1>). The actual procedure for promotion and tenure is initiated by the chair after consultation with all tenured program faculty members. Upon the approval of the faculty, the chair prepares a promotion proposal dossier which contains:

1. A letter of application for promotion from the candidate detailing his/her scholarly activities and accomplishments;
2. A complete, detailed resume of the candidate including teaching record and performance evaluations, research productivity (publications, grants obtained, awards and recognition), service to the university, profession and community, record of annual performance evaluations, and other information bearing upon the candidate's record and potential for continued academic excellence;
3. A Teaching Portfolio (described below) which highlights and emphasizes the candidate's instructional accomplishments;
4. Examples of representative research publications and other scholarly productivity;
5. Letters of evaluation from appropriate referees from outside the University of Kentucky, who have reviewed the candidate's academic record, containing their individual opinions and recommendations regarding the candidate's qualifications (a minimum of 6 outside referees, at least four of whom are selected independently by the unit administrator);
6. Letters of evaluation from all tenured program faculty members (and others within the university as may be appropriate) with their individual recommendations and specific information in support or non-support of the candidate's proposal;

7. A letter of transmittal from the chair to the dean containing specific information regarding the administrator's recommendation to promote/tenure or not to do so.

Upon receipt of the proposal dossier, the dean forwards it to a standing College Advisory Committee comprised of tenured professors and associate professors representing the various disciplinary areas of the College of Agriculture, Food and Environment. This committee reviews the document and makes a recommendation to the dean, who may then approve or disapprove the committee's recommendation to promote and/or grant tenure or not to do so. If the dean decides to recommend promotion and/or tenure, or in the case of all sixth-year assistant professors, the proposal is forwarded to the provost who in turn obtains review and recommendation from the appropriate Campus Academic Area Advisory Committee. The campus area committees are permanent committees of the Faculty Senate comprised of tenured full professors in the various disciplines of the university. The Academic Area Advisory Committees that usually review forestry program faculty are those in Biological Sciences, Social Sciences, and extension.

Following receipt of the area committees' recommendations, the provost forwards his recommendations to the president for his recommendation to the Board of Trustees for final action.

Thus, there is opportunity for a positive or negative recommendation for promotion and/or tenure at the department, college and university levels. This system places prime responsibility on the candidate, and also on tenured faculty colleagues, the chair and the college dean to make a strong case, with adequate documentation, for promotion and tenure of a faculty member. The process emphasizes evaluation by faculty colleagues at all levels.

The impact of the faculty promotion and tenure policies of the university on the forestry program and its objectives is significant and, generally, of a positive nature. The procedure emphasizes objectivity in evaluation of a candidate's teaching and research strengths, weaknesses and potentials by his or her peers, and minimizes subjective perceptions. The system is intended to develop balance of scholarly attainment, including both teaching and research competence, in individuals and in collective program strengths. In practice, it is much easier to present a positive case for an individual who is both an effective teacher and a productive scholar than for one who is clearly excellent in one aspect but severely deficient in the other.

The role of teaching in tenure and promotion decisions has been emphasized since 1992 with establishment of the criteria for a Teaching Portfolio to be included in the promotion dossier. The Teaching Portfolio is designed to provide additional information and highlight instructional accomplishments. Establishment of the Teaching Portfolio requirement has been an important step in emphasizing the importance which the university places upon undergraduate instruction. The Portfolio is described in the Administrative Regulations of the university (AR II-1.0-5) and consists of: (<https://www.uky.edu/regs/administrative-regulations-ar>)

1. A brief reflective statement by the instructor which describes teaching and advising assignments, sets forth philosophies or objectives, and provides whatever information may be necessary to provide colleagues with a context for interpreting and understanding other information;

2. For each semester under review, a list of all courses taught, with the title, course number, number of students enrolled, and - for each different course - a short description;
3. Representative course syllabi;
4. A quantitative and qualitative summary of student evaluations; and
5. Any additional information which may assist reviewers in evaluating the faculty member's teaching accomplishments.

The overall policy regarding tenure and promotion dictates that the forestry program (and all other programs of the university) must devote careful attention and major effort to recruiting and hiring individuals who clearly have the basic skills, enthusiasm and potential to develop effective programs of instruction, research and other scholarly activities. The major challenge to achieving the professional educational objectives of the program is to attract talented faculty, facilitate and encourage the full development of their instructional and research programs, and vigorously support their promotion to a tenured position and their continuing productivity and contributions to program goals. While it is not easy to attain tenure or be promoted at the University of Kentucky, it is the assumption of the faculty recruitment process that faculty joining the university will have the skills and ambition to ensure promotion.

II.4 Describe staff resources with competencies needed to support the students, faculty, and administration and explain why these are/are not adequate.

The Department has staff resources needed to support the students, faculty and administration. A description of the staff resources are outlined below. (See Appendix 4 for Department organization chart.)

Administrative Staff - The current administrative staff consists of three full-time employees in Lexington and one part-time employee at the Robinson Center in Quicksand, Kentucky. The administrative positions in Lexington are devoted to faculty and staff support. The extension information specialist and assistant, serves the needs of the extension faculty and staff. The business manager assists the faculty and staff of the Department. The administrative services coordinator primarily serves the chair and also assists with the faculty, staff and students. The staff associate in Quicksand, Kentucky serves the needs of Robinson Forest and the Wood Utilization Center.

Data Systems Manager - The Department has a full-time data systems manager to provide computer assistance to assist faculty and graduate student research, teaching and extension. Responsibilities of the position include setting up and maintaining computer systems and the departmental network, understanding and translating new technologies for faculty and staff, and physical space analysis and inventory management. The individual also teaches undergraduate courses.

Academic Coordinator – The Department has a 0.75 FTE academic coordinator that works on recruiting, retention and placement of undergraduate students. Responsibilities also include working with alumni and teaching courses.

Research/Lab Technicians - There are presently three senior laboratory technician, one wildlife technician, one biometrician, and one research analyst in the Department. Technicians assist the faculty with their research.

Research Specialist - A research specialist serves as curator of the University of Kentucky Herbarium which is housed in the Department. The curator manages the University of Kentucky Herbarium and provides botanical consulting and plant identification for the College of Agriculture, Food and Environment, the wider university community, and the public, as well as teaching courses in dendrology, plant taxonomy and economic botany.

Extension Staff – There are seven full-time extension staff, in addition to the extension information specialist listed above. Extension staff members are of high quality and contribute significantly and positively to program objectives in teaching, research and extension. Several of the Extension staff are involved with undergraduate instruction and guest lectures.

Robinson Forest Manager (currently vacant) - Robinson Forest and the Wood Utilization Center at Quicksand, Kentucky are part of the Robinson Center for Appalachian Resource Sustainability. While the Center provides administrative oversight for Robinson Forest and the Wood Utilization Center, the Department still maintains staff and management of the forestry research, teaching, and extension programming at the facilities. The management of Robinson Forest proper is overseen by the Robinson Forest Technical Committee, chaired by the Department.

II.5 Describe policies and processes for both short- and long-term planning of academic programs and detail how periodic reviews and updates are conducted.

Major forces of change are transforming forests and natural resources in Kentucky, the nation, and the world. To thrive in today's environment of change, university-based programs of forestry research, teaching, and outreach must be of high quality in terms of scientific and academic rigor, productive in terms of measured outputs, and innovative in the use of new scientific, teaching, and communications technologies. It is to this end that the Department of Forestry and Natural Resources directs its ongoing planning and assessment activities.

A three-tiered hierarchy of planning documents encompasses the programs of the Department of Forestry and Natural Resources. The University of Kentucky Strategic Plan for 2015-2020 is available at <https://www.uky.edu/sotu/2015-2020-strategic-plan>. The Strategic Plan provides an overall institutional direction for the University of Kentucky, and the programs of the College of Agriculture, Food and Environment and the Department of Forestry and Natural Resources are developed within that context. The College of Agriculture, Food and Environment Strategic Plan for 2015-2020 develops the college's missions within the context of the university plan (https://strategicplan.ca.uky.edu/sites/strategicplan.ca.uky.edu/files/cafe_strategic_plan_master_f_or_website_the_plan_with_new_logo.pdf). The mission and vision of the Department provide specific direction for its research, instruction, and extension programs (<https://forestry.ca.uky.edu/about-uk-forestry>).

The development of all of these plans involves a complex process which provides for significant

input from administrators, faculty, staff, and students. In all of these efforts, the principle driving force is the desire to identify needs of the Commonwealth of Kentucky and opportunities for the university and its programs to satisfy those needs.

Program planning within the Department of Forestry and Natural Resources is a product of the faculty. The Department is required by the Administrative Regulations of the university to undergo a Periodic Review every six years during which priorities are established. These are reviewed by an external committee of the College of Agriculture, Food and Environment which makes suggestions directed towards overall departmental improvement. The Department has also used faculty retreats to set overall plans and policies. The Department has in this process of planning created an assessment procedure that will hopefully be a stimulus for continued planning.

Curriculum planning is a function of the teaching faculty of the Department of Forestry and Natural Resources. The Undergraduate Program Committee is comprised of teaching faculty and staff, including the Director of Undergraduate Studies. During the last major curriculum revision, the Department conducted an intensive review of the prior curriculum with significant input from employers, producers, students, alumni, and other interested parties. The Department is in the process of renewing its assessment procedures (see below), which will provide mechanisms that ensure continual curriculum planning.

Research planning is a departmental function only in the definition of vacant faculty positions and the selection of new faculty. It has been the philosophy of the College of Agriculture, Food and Environment and the Department that if we can select the best faculty, they will define the appropriate directions for productive research.

Extension planning is a function of the extension faculty who use a variety of retreats and monthly meetings to plan and direct overall extension efforts. Recent accomplishment reports have resulted from these overall planning efforts.

II.6 Describe in detail the process and methods for assessing educational outcomes of the specific curricular elements articulated in Standard V. Indicate whether academic and professional goals are being met, the elements most contributing to program success or lack thereof, and the means by which assessment findings are used to enhance program outcomes. Describe how the interests of students and external constituents are represented in the assessments.

An outcomes assessment process is judged acceptable if it follows an outcomes assessment procedure endorsed by the parent institution that involves assessment of knowledge enhancement and retention across the curriculum relative to the learning objectives, includes alumni and employer feedback, and has a clearly identified link to curriculum review and improvement. Valid metrics, which need not all be used by any given institution, include, but are not limited to:

- Internal assessments such as group project reports, cumulative exams, capstone course evaluation, videotaping speeches.

- Instruments such as institution-wide competence testing, standardized tests, or evaluations.
- External assessments such as industry/public agency/NGO surveys, graduate surveys, employer surveys.
- External instruments such as state licensing tests, SAF certification, performance in various competency testing.

The University of Kentucky requires each degree program to conduct standardized learning outcomes assessment. Each program implements a plan to facilitate collection, review, and use of assessment data to guide improvements in learning and teaching. A formal assessment plan has been in place for the forestry degree program since the spring of 2009. Implementation of the assessment process for the forestry program is currently overseen by the department's Undergraduate Program Committee.

The forestry program's assessment methods include direct evidence. Examples of direct evidence include program early and late assessments (to measure value added by the undergraduate forestry curriculum), including independent review by several faculty members of capstone course management plans. The university Office of Assessment has advised the Department that the best direct evidence comes from curriculum embedded assessment. Thus, when possible, we will use as direct evidence work that students are already doing during the normal order of business in their courses (e.g., writing assignments, field exercises, and oral presentations).

Within the assessment plan, there are two program-level student learning outcomes, one of which has sub-outcomes.

- Outcome #1 (GCCR): Graduates will meet the "Communications" General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:
 - a. find, read and interpret professional documents.
 - b-i. communicate information effectively in oral/visual presentations.
 - b-ii. communicate information effectively in writing, on technical / business levels.
 - b-iii. communicate information effectively, in writing, to non-professional audiences.
- Outcome #2: Graduates will meet the "Management Plans" Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate ability to develop management plans with specific multiple objectives and constraints.

The assessment activities, data collection and presentation of results, follow a two-year cycle, with one outcome assessed in year one and the other outcome assessed in year two. Program-level assessment results are emailed to all departmental faculty members prior to the final regularly-scheduled faculty meeting of each academic year. At that final meeting (normally in May), those present will discuss the results and make decisions about improvement actions.

For each program-level student learning outcome, assessment data will be gathered at two points in the curriculum. The first point will be in a course that introduces information relevant to the outcome (identified in our documents as "early-academic-career assessment"), and the second

point will be in a course that students take closer to graduation (identified in our documents as “late-academic-career assessment”). The relevant competencies will be evaluated for all B.S. (Forestry) majors enrolled in the courses used for assessment. Because these courses are required by the degree program, each assessment will be based on a complete census of the student cohort being assessed (except, perhaps, for occasional situations such as unavoidable absences or transfer students who may take a course out of the normal sequence).

After the completion of an academic year’s program-level assessments, the Undergraduate Program Committee compiles and analyzes the data. Key features of the analyses address whether or not (a) benchmarks were achieved, and (b) graduating seniors outperformed “early-academic-career” students. As mentioned above, the results will be shared with all faculty members of the Department prior to the final meeting of each academic year. Decisions regarding programmatic improvement actions will be made at that meeting by consensus, based on discussion of the year’s assessment data analyses and conclusions.

The Undergraduate Program Committee prepares a program-level assessment report each year, in accordance with consensus decisions of the faculty (see preceding paragraph). The report is made available to all departmental faculty for review prior to its submission to the university’s assessment office. For reference to two most recent assessment reports are included within Appendix 5.

The university-level assessment framework at UK is currently undergoing revision. The university began its review of the process during 2018-2019 academic year, and during that period programs were not required to submit an assessment report. The University Assessment Council (UAC) has designed a new program-level student learning outcomes (PSLO) assessment process at UK intended to provide greater opportunity for reflection and "closing of the loop" (taking action based on results). Under the new PSLO process, programs will follow a 4-year assessment cycle. This cycle includes 2 years of data collection and results, 1 year of reflection, and 1 year of taking actions intended to improve student learning. Under the new UK PSLO structure, programs with small enrollments may gather data for each learning outcome more frequently than once every 4 years. The new PSLO process requires that each degree program submit a revised assessment plan by April 1, 2020. The first PSLO report on assessment data collected under each program’s revised plan will be due July 1, 2021. Given the strong alignment of our existing forestry program assessment methods described above (and further detailed in Appendix 5 – Assessment Reports) to the requirements of the new UK PSLO structure, it is expected that the assessment plan for the forestry degree program will remain unchanged. Should unforeseen changes to that assessment plan be required under the new UK PSLO in academic year 2020-2021, the Department will submit a Substantive Change Report to the SAF Committee on Accreditation outlining revisions to our assessment methods.

Beyond outcomes assessment methods documented above, the Department utilizes other evaluation approaches for the curriculum including exit interviews following the conclusion of the spring field semester (spring of the junior year), senior exit interviews and surveys, and external stakeholder input via advisory committee meetings. Similar to the annual assessment report, outcomes of these interviews and surveys are presented and discussed as part of the Department’s academic year-end faculty and undergraduate program committee meetings. These

meetings are critical to the assessment feedback loop and allow for a determination of an action plan for the following academic year.

II.7 Describe cooperative relations with regional industries, organizations, and agencies. Programs being reviewed under the Forest Technology standard must document that they work with a formal advisory committee.

The Department's research, teaching, and extension faculty and staff have cooperative relations with regional industries, organizations, and agencies. These relationships extend through interactions with research, teaching, and extension aspects of the Department. Outlined below are examples of the cooperative relations that exist through the undergraduate program.

The Department's cooperative relations with regional industries, organizations, and agencies has direct impact on our classroom instruction. During *FOR 285 Communication and Professional Development I* class, each year we invite about 6-8 representatives of various sectors of the industry to guest lecture to the class. For example, guest lectures include the U.S. Forest Service Daniel Boone National Forest, Kentucky Division of Forestry, Kentucky Department of Fish and Wildlife Resources, forestry consultants, wood products industry, The Nature Conservancy, forestry extension. Representatives from these agencies and organizations involved with fire also guest lecture during the *FOR 255 Forest Fire* course.

During the spring field semester, students visit with forest industries, logging professionals, and national forests to see first-hand their activities and operations. Examples of recent industry tours include Robinson Stave Mill and Barrel Facility, Somerset Hardwood Flooring, American Woodmark Corporation, Roy Anderson Lumber Co, Stidham Cabinets, and Domtar. Students also visit a range of timber harvesting operations and interview loggers and interact with consulting foresters and land managers throughout the state as part of the spring field semester. Students also visit the national forests including the Daniel Boone National Forest (KY), Nantahala National Forest (NC), and Chattahoochee-Oconee National Forest (GA).

In addition to classroom lectures and the spring field semester, students also interact with our partners through extracurricular activities. Juniors in our spring field semester actively participate in the Kentucky/Tennessee Society of American Foresters annual meeting as part of their *FOR 286 Communication and Professional Development* course requirements. Since 2014, the Department has partnered with the Kentucky Division of Forestry and the U.S. Forest Service Daniel Boone National Forest to create the UK Fire Cats, a student wildland firefighter organization. The purpose of the UK Fire Cats is to provide forestry students hands-on experience with wildland firefighting. UK Fire Cats are paid employees of the Kentucky Division of Forestry and are classified as 'Emergency Firefighters.' UK Fire Cats are on-call to fight wildland fire on weekends during the fall and spring fire seasons. There are 21 slots available for the UK Fire Cats.

Forestry students also volunteer at the Kentucky Wood Expo held in Lexington, Kentucky every other year. The Kentucky Wood Expo is an expo hosted by the Kentucky Forest Industries Association.

Each year, students attend and present during the annual Kentucky Woodland Owners Association meeting. During this meeting they present to the Kentucky Woodland Owner members about their activities as students and future forestry professionals. They also get to interact with the woodland owner members during this meeting.

II.8 Document all places where accredited status of degree programs is published, including but not limited to, the academic catalog, institution web pages, and program web pages.

The accredited status of the forestry degree program is published in the course bulletin, institution, college, and department webpages. These web pages are provided below.

- University of Kentucky *Find Your Major* - <https://www.uky.edu/academics/bachelors/forestry>
- University of Kentucky *2019-2020 Undergraduate Bulletin (pg 108)* - https://www.uky.edu/registrar/sites/www.uky.edu/registrar/files/cafe_4.pdf
- College of Agriculture, Food and Environment *Browse Our Programs* - <http://academics.ca.uky.edu/ugd/Forestry>
- Department of Forestry and Natural Resources *Prospective Forestry Students* - <https://forestry.ca.uky.edu/prospective-students>
- Department of Forestry and Natural Resources *Current Forestry Students* - <https://forestry.ca.uky.edu/forestry-undergraduate-program>

II.9 Document where information on student achievement is publically available. The information may include, but is not limited to, job placement rates of the program, graduation rates of the program, pass rates of professional certification exams, average starting salaries of graduates, and other information as determined by the program and institution.

- It is expected that information on student achievement - or links thereto - will be clearly present on department or program web pages. If institutional policy proscribes such information or links, provide an explanation of the policy.

The enrollment and placement data is available under the student section of the Department website. <https://forestry.ca.uky.edu/enrollment-and-job-placement>

STANDARD III: STUDENTS

III.1. Describe opportunities for students to participate in a range of academic and extracurricular offerings, which encourage the development of technical and leadership skills and promote cultural awareness.

Student Life

The Department encourages students to participate in a range of academic and extracurricular offerings. These activities range from professional meetings, wildland fire jobs, community volunteer events, department activities, and forestry club.

The Department encourages students to participate in local, state, and national forestry professional meetings. Meetings include Society of American Foresters (SAF) National Convention, Kentucky-Tennessee SAF Meeting, Kentucky Forest Industries Association annual meeting, and Kentucky Woodland Owners Association annual meeting. Travel scholarships are provided for students to attend these meetings. From 2011 to 2018, the Department awarded 45 travel scholarships for undergraduate forestry students to attend the annual Society of American Foresters National Conventions. In 2019, when the national SAF convention was in Louisville, Kentucky, the Department, with financial assistance from Department alumni, paid registration costs for 37 undergraduate students to attend the meeting. Since 2013, all forestry juniors, totaling over 100, have attended the regional Kentucky-Tennessee Society of American Forester meetings held each January.

Since 2014, the Department has partnered with the Kentucky Division of Forestry and the U.S. Forest Service Daniel Boone National Forest to create the UK Fire Cats, a student wildland firefighter organization. The purpose of the UK Fire Cats is to provide forestry students hands-on experience with wildland firefighting. UK Fire Cats are paid employees of the Kentucky Division of Forestry and are classified as 'Emergency Firefighters.' UK Fire Cats are on-call to fight wildland fire on weekends during the fall and spring fire seasons. There are 21 slots available for the UK Fire Cats.

Students are also involved in community events such as the annual Reforest the Bluegrass that occurs each April. Students often volunteer as crew leaders to work with adults and youth to help them plant trees in Lexington. Students also volunteer at several of the Urban Forest Initiative events such as mulching the trees around the main campus library. Students also volunteer at the Kentucky Wood Expo event that is held in Lexington every other year.

The Department has activities throughout the academic year to promote a welcoming atmosphere for the students. Each fall the Department host the annual Student-Alumni fall picnic. Faculty/staff and their families, graduate and undergraduate students, and forestry alumni gather on the front lawn of the forestry building for an evening of barbecue and comradery. This year, there was a friendly quiz bowl competition between the alumni and students. In December, the students are invited to the annual Department holiday party. This provides the students an opportunity to interact with the faculty/staff and graduate students in a relaxed, festive atmosphere. Finally, each spring the Department wraps up the academic year with a Spring Recognition Dinner to recognize the students' accomplishments throughout the year and present the graduating seniors with a wooden engraved diploma plaque and their SAF rings. The families

of the graduating students are invited to attend.

The students also participate in the UK Student Chapter of the Society of American Foresters (also, known as the Forestry Club). The club is run by the students and has an academic advisor. The club provides an opportunity for students to become leaders in the program and get involved in a variety of activities.

III.2. Document that the program follows institutional policies and guidelines in recruiting and retaining motivated and academically qualified students who reflect cultural, ethnic, and gender diversity. Describe institution, academic unit and/or program efforts at recruiting and retaining a diverse enrollment.

The Department of Forestry and Natural Resources is quite active (both formally and informally) in recruiting activities. Some of these are in conjunction with the college's Center for Student Success (with which the Department has a very good working relationship) and some occur within the Department itself. In December 2010, the Department hired an academic coordinator to help with recruiting and retention efforts.

Recruiting

The College of Agriculture, Food and Environment administers an Agriculture Ambassadors program. Outstanding undergraduate students are nominated for this program each year. If selected, the student receives academic credit for their participation. Among their duties, ambassadors help conduct campus tours for prospective students and must visit Kentucky high schools to recruit students for the college. Periodically, forestry students have served as Ag Ambassadors and we have forestry junior that is currently an Ag Ambassador.

The college hosts multiple recruiting events aimed at recruiting motivated and academically qualified students who reflect cultural, ethnic, and gender diversity. The academic coordinator provides printed materials on the forestry program or will attend in-person (as invited) for the college-level events. The academic coordinator and college's Center for Student Success work closely to coordinate student visits so the prospective students tour and meet with the college representative to learn about the application process, scholarships, housing, etc. and will then meet with the Department to discuss the details of the major and career opportunities.

The academic coordinator promotes the forestry program at community events such as Reforest the Bluegrass, high school career days, Jr. MANRRS Leadership Conference, extension youth events (Win With Wood and Kentucky Forest Leadership Program), and with the Veterans Resource Center on campus.

The academic coordinator also uses online means as a way to meet a diverse audience. In 2016, the Department's website was redesigned using a responsive layout for mobile and desktop use. Information for prospective students on the forestry program, career opportunities, scholarships, etc. can easily be accessed on our website. <https://forestry.ca.uky.edu/prospective-students>

Additionally, the academic coordinator, along with the information specialist in extension, co-host a weekly radio show, *From the Woods Kentucky*, on the University of Kentucky's radio

station WRFL 88.1 FM (<https://forestry.ca.uky.edu/fromthewoodsky>). *From the Woods Kentucky* is a show about all things forestry where we interview faculty, staff, and forestry professionals, to raise the awareness of our forestry resources. Each show we ask the guest how they became interested in their forestry, natural resources, wildlife degree. When possible we link the discussion back to our forestry courses and the forestry major. All episodes are available as a podcast on our website and major podcast platforms. Episode 27 “Forestry Careers” is regularly provided to prospective students as a way to learn more about our program from our director of undergraduate studies, forestry student, and college director of Student Relations. Episode 1 “What is Forestry” is also used as an informational tool to explain forestry to those that may be interested in our program.

Retention

The academic coordinator, along with the faculty, work towards retaining students in the forestry program. The academic coordinator acts as a clearinghouse of information for the students and disseminates the information online, in-class, throughout the building, and in person. Information about scholarships, volunteer, research, and job opportunities are shared with the students. We encourage the students to get involved in activities such as the UK Student Chapter of the Society of American Forestry (Forestry Club), UK Fire Cats, Kentucky Wood Expo, and Reforest the Bluegrass. We also encourage them to take advantage of networking with forestry professionals to help the find summer and full-time employment. Staying engaged in the Student Life activities mentioned above is helpful in having the students feel welcome and connected in the forestry program.

When students are struggling for academic or personal reasons, we encourage them to take advantage to the excellent resources the university has for Student and Academic Support (<https://www.uky.edu/studentacademicsupport/>) as well as for Student Health and Wellness (<https://www.uky.edu/wellness/>)

III.3. Complete Document F: Graduate Employment Summary and Document G: Student Data Summary

See Appendix 1 for Document F and Document G.

III.4. Describe the program’s commitment to quality student advising regarding students’ academic, professional, and career opportunities.

The Department of Forestry and Natural Resources enjoys a strong reputation for readily available, quality advising. The advising process begins when a student enters the University of Kentucky. University-wide advising dates are scheduled at the beginning of each semester for transfer and re-admitted students, and throughout the summer for entering freshman. These dates are known in advance and are circulated among the faculty by the director of undergraduate studies. Willing and available faculty members volunteer to cover these dates. Initial advising for students with a major in the College of Agriculture, Food and Environment occurs at a central location. At this time, the student meets with the forestry advisor and develops a schedule for the

next semester. It is the policy of the Department to allow the student to retain this faculty member as their academic advisor or, if the student wishes, to change to another faculty member.

Advising - Academic Opportunities

Advising for students already attending the University of Kentucky occurs during a four week period each fall and each spring semester. Advisors complete the myUK scheduler to indicate the times they are willing to advise and the students go online to myUK to sign up for an advising time. Students and advisors meet to discuss their schedule and map out their courses using the myUK GPS registration, scheduling and degree audit software. Students have time frames based on completed credit hours within which they can register. For the majority of forestry students, this is sufficient access to faculty advisors. Students who need further advice during the semester or who encounter problems have found their faculty advisors to be readily accessible. The Department's director of undergraduate studies, has a very liberal open door walk-in policy. Students can usually get their questions answered almost immediately. Should the situation require deferment to the college level, the CAFE Center for Student Success is also accessible and maintains a similar open door walk-in policy.

Forestry faculty advisors work closely with students to keep them on track for graduation. It is a common practice to outline a student's plan of study in advance, so students know when their courses (especially forestry courses) need to be taken. Both advisors and students have electronic access to unofficial transcripts and to the myUK GPS system. Keeping track of the university, college, and departmental courses that have been completed, allows both students and advisors to keep track of the progress toward graduation and is an effective advising tool. Prior to their last registration before graduation, the college's director of advising services calls each student in to review their academic progress and to make sure students understand what courses they must take during their last semester in order to graduate.

Students who encounter difficulties, both academic and non-academic, have a variety of resources available to them. The college has a director of First Year Success to provide any needed support and assistants to new freshman who encounter difficulties adjusting to college life. The university maintains a Counseling and Testing Center that is open to students through offered programs and courses as well as one-on-one assistance. The staff is equipped to assist with learning skills, test anxiety, stress management, depression as well as gender and diversity issues.

Advising - Professional and Career Opportunities

As with advising, students have multi-level assistance for help with professional and career opportunities. The university's Stuckert Career Center provides help with resume preparation, interview skills, and job searching strategies. The college also has a director of Career Development and Enrichment who assists students with career exploration, education abroad, internships, professional mentoring, resumes, and interviews.

The Department of Forestry and Natural Resources is committed to providing quality student advising regarding professional and career opportunities. University policy requires that students meet with their advisor each semester in order for their advising registration hold to be lifted. All forestry students meet with faculty advisors. These meeting each semester allow for discussion

of the student's interests and allow faculty time to provide mentorship on professional and career opportunities. The academic coordinator has an open-door policy to assist students on resumes, cover letters, interviews, and career exploration. The academic coordinator also serves as a communication hub for faculty and outside employers to help disseminate information about research and employment opportunities.

Forestry students also receive professional and career advice during the 2-part course on *Communication and Professional Development in Forestry and Natural Resources (FOR 285 and FOR 286)*. During the first course (*FOR 285*), students prepare a cover letter and resume. Forestry professionals from various sectors of the forestry profession are invited as guest lecturers to inform the students about their career path, current position, and employer. The second course (*FOR 286*) occurs during the Spring Field Semester. Students visit several forest industries in Kentucky as well as meet with forestry professionals at the Kentucky-Tennessee Society of American Foresters Winter Meeting.

The academic coordinator also coordinates visits by forestry professionals who are looking to hire seasonal and full-time employees. This is usually done during Forestry Club meetings. The U.S. Forest Service, Student Conservation Association, Davey Tree Company, and Weyerhaeuser are some examples of employers that have met with our students to discuss career opportunities.

The academic coordinator also posts job opportunities (full-time, seasonal/temporary, graduate school) to the Department's online Forestry and Natural Resources Job Board (<http://forestry.ca.uky.edu/forestry-jobs>). The job board is public so that current students, forestry alumni, and the general public are able to view the forestry jobs that employers have asked us to post.

As mentioned earlier, the Department also provides students numerous opportunities to travel to professional meetings such as regional and national SAF meetings.

STANDARD IV: PARENT INSTITUTION SUPPORT

IV.1. Discuss how the parent institution provides adequate funding and other institutional support to: allow the program to attract and retain highly qualified faculty, staff, and administrators; and provide for elements critical to the learning environment such as computers, spatial information technologies, specialized laboratories, and field instruction.

Budgets/Program Resources

Despite several budget cuts over the last decade, the Department's total budget has steadily increased during that period (Table 1). The mean source of funding was 73.5% from State and 26.5% from Federal resources. In general, research accounted for about 50% of the budget over the last decade and teaching and extension generated around 25% each. We have observed a significant increase in our teaching budget over the last ten years from below 20% to around 26% (from \$428,474 in FY 2010 to \$723,593 in FY 2020). Funding from research has remained relatively constant over the ten years ranging from \$1.15 to \$1.35 million. The extension budget, on the other hand, has been variable over the last ten years.

Table 1 Summary of the Department of Forestry and Natural Resources' budget through the last 10 years

Source	Teaching (\$)	Research (\$)	Extension (\$)	Total (\$)	%
2019-2020					
State	723,593	840,596	526,728	2,090,918	74.9
Federal		485,406	216,848	702,253	25.1
Total	723,593	1,326,002	743,576	2,793,171	
%	25.9	47.5	26.6		
2018-2019					
State	718,185	822,845	513,270	2,054,300	74.4
Federal		493,508	213,542	707,050	25.6
Total	718,185	1,316,352	726,813	2,761,350	
%	26.1	47.6	26.3		
2017-2018					
State	706,311	869,181	454,099	2,029,591	74.4
Federal		489,648	208,914	698,562	25.6
Total	706,311	1,358,829	663,013	2,728,153	
%	25.9	49.8	24.3		
2016-2017					
State	607,837	807,530	499,567	1,914,934	70.7
Federal		483,579	309,286	792,865	29.3
Total	607,837	1,291,108	808,853	2,707,799	
%	22.6	47.6	29.8		
2015-2016					

State	605,267	799,346	449,916	1,854,559	73.0
Federal		475,420	209,510	684,930	27.0
Total	605,267	1,274,766	659,426	2,539,489	
%	23.8	50.2	26.0		
2014-2015					
State	546,660	777,445	438,156	1,762,261	72.8
Federal		461,947	197,145	659,092	27.2
Total	546,660	1,239,392	635,301	2,421,353	
%	22.6	51.2	26.2		
2013-2014					
State	545,637	829,515	358,960	1,734,113	73.3
Federal		423,632	207,028	630,560	26.7
Total	545,637	1,253,147	565,988	2,364,773	
%	23.0	53.0	24.0		
2012-2013					
State	463,125	844,525	333,108	1,640,758	72.9
Federal		409,942	200,683	610,626	27.1
Total	463,125	1,254,467	533,791	2,251,384	
%	20.6	55.7	23.7		
2011-2012					
State	412,407	787,470	531,647	1,731,524	73.0
Federal		495,506	182,206	641,712	27.0
Total	412,407	1,246,976	713,853	2,373,236	
%	17.4	52.5	30.1		
2010-2011					
State	428,474	780,010	527,937	1,736,423	75.9
Federal		375,775	175,980	551,755	24.1
Total	428,474	1,155,785	703,917	2,288,178	
%	18.7	50.5	30.8		

The Department has also increased its development efforts in recent years. Most of the increases can be attributed to several new gift accounts within the last decade: the Forestry Alumni Scholarship Fund, the Pete McNeill Scholarship Fund, the Kentucky Forestry Research Cooperative, the Danny Koons Scholarship, and the Forest Health Research and Education Center Gift Fund. Healthy gains were also realized by donations to the Wood Zones gift account and the Green Forests Work gift account. The department chair devotes time to development and several faculty and staff are important factors in helping to make these efforts succeed.

Institutional Support

The Department is administratively housed within the College of Agriculture, Food and Environment (CAFE) at the University of Kentucky. Many of our administrative operations (e.g., human resources, budgets, post-award support) are conducted by department personnel, but supported by college-level staff where necessary and appropriate. Pre-award functions are supported by staff at the college and university levels, but the Department is increasing its involvement and support of faculty and staff grant applications in an effort to provide hands-on support and lessen the burden of increasingly complicated grant application preparation. Where necessary, Department and/or college personnel will work with university-level staff on issues related to human resources, purchasing, and the Graduate School, among others. Development activities are supported both at the college and university levels. For the most part, these relationships and structure serve our faculty, staff, and Department well. The CAFE Office of Philanthropy and Alumni supports the Department's effort to engage alumni and have been helpful in recent efforts to bolster alumni support.

Information Technologies

All personnel are supplied with the technology (desktops, laptops, tablets, etc.) needed to perform their jobs. All facilities contain wired and wireless internet connectivity. The Department maintains one computer lab (29 seats) dedicated to forestry instruction. The Department operates servers for file services, FTP and network printing. Researchers can get access to university supercomputer resources as needed. UK provides instructional computing support in the classrooms shared with other programs. Classroom technologies include lecture recording via Echo360 and audience response systems via TurningPoint software. UK maintains computer labs outside forestry properties that our students may utilize. UK provides site-licenses for software that might otherwise be cost prohibitive like ArcGIS, Matlab, SAS, SPSS, etc. UK also provides virtual software access via an application server that can be utilized on underpowered computers. UK also provides Canvas, our online learning management platform, to all faculty and students. The data systems manager handles most of the computing services/IT and space issues for the Department.

IV.2. Compare support for the program, including faculty salaries by academic rank, to other academic units in the parent institution and indicate changes that have occurred or are anticipated in the educational budget. Provide the program budget for the current fiscal year, and indicate by percent how the budget has changed in the last three years in terms of salaries, equipment, supplies, and travel and its relationship to the overall institutional budget. To the extent data for other similar programs are available, regional comparisons are also encouraged.

Comparing budget expenditures among our southern NAUFRP benchmark institutions for FY 2017, the Department remains near the bottom of peer institutions (Figure 1). Care must be taken in evaluating these data as some of peer institutions are organized into much larger schools of forestry, with multiple programs, much larger numbers of faculty and staff, and a greater pool and diversity of resources to call upon in the exercising of mission critical functions. However, even among those programs that are similar in structure and size, the Department remains near the bottom in terms of resources expended to achieve our missions.

Budget Breakdown Comparison for Fiscal Year 2016-2017

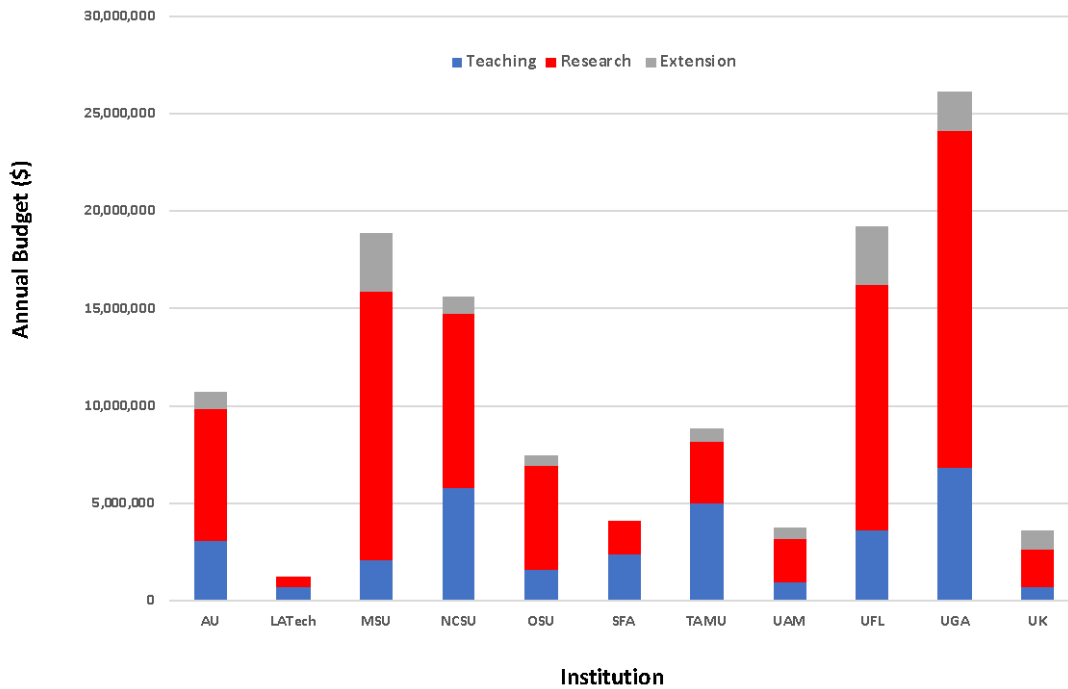


Figure 1 Annual budget breakdown for teaching, research and extension of NAUFRP institutions for FY 2017.

Breaking down the budget by FTE provides a slightly better outlook for the Department, but we still remain on the lower end of this grouping (Figure 2).

Annual Budget per FTE for Fiscal Year 2016-2017

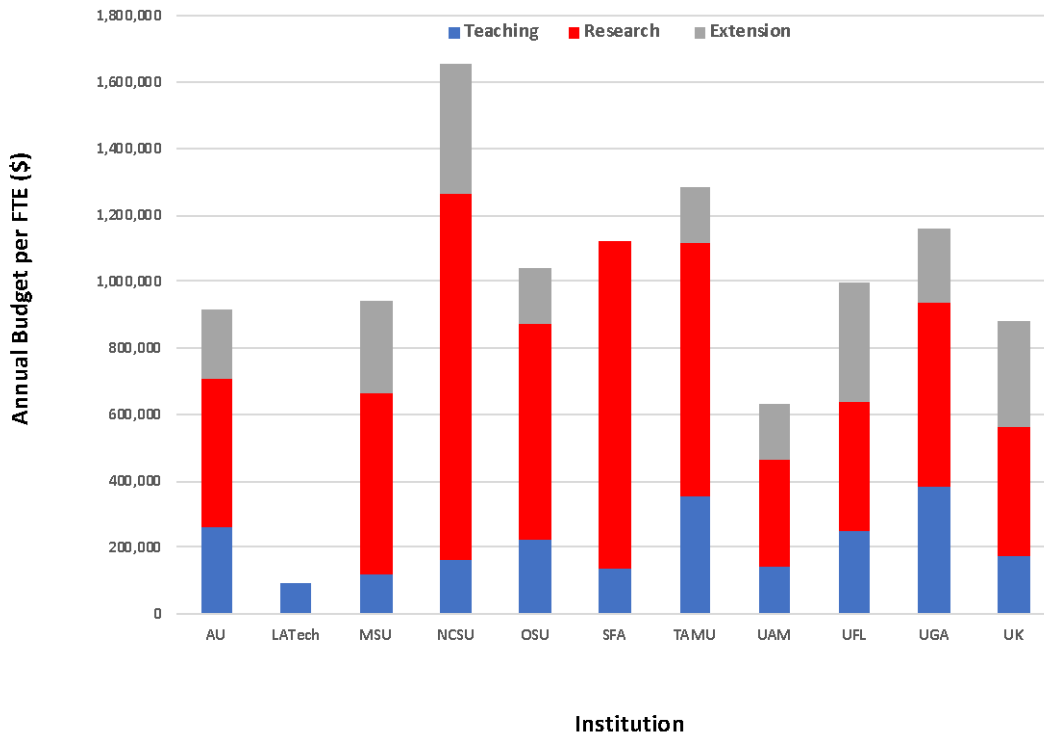


Figure 2 Annual budget breakdown by FTE for teaching, research and extension of NAUFRP institutions for FY 2017.

Even though our budget is comparatively low to other NAUFRP institutions, faculty salaries were very competitive amongst this group (Figure 3). Mean FY 2018 salaries for Department faculty at the rank of professor (\$118,912), associate professor (\$101,794) and assistant professor (\$83,128) were all above the mean of the respective position for NAUFRP institutions. The Department had the third highest mean salaries for associate professors. Department faculty and staff were fortunate to have had annual salary increases for each of the last seven years.

Salaries for Fiscal Year 2017-2018

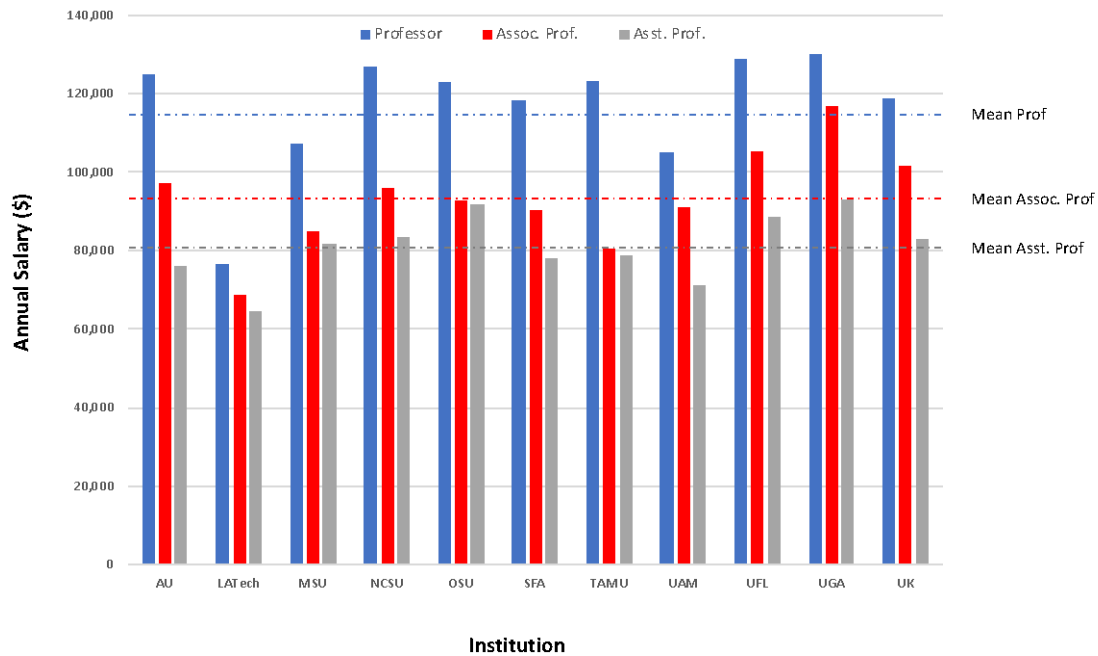


Figure 3 Mean annual salaries for faculty at the rank of Professor, Associate Professor and Assistant Professor at NAUFRP institutions for FY 2018.

IV.3. Document that faculty are provided opportunities for professional development and continuing education.

The University of Kentucky policy on sabbatical leave provides for a six-month (one semester) leave with full pay and benefits, or a twelve-month (full academic year) leave with half pay, following six years of continual service. Faculty may also elect three- or six-month leaves at full or half pay, respectively, following three years of service. During the past ten years, only one faculty member has participated in the leave program:

Chris Barton - March 15 – August 16, 2012. University of South Australia, Australian CRC CARE (Cooperative Research Centre for Contamination Assessment and Remediation of the Environment) and at coal mines operated by Peabody Energy in Queensland and New South Wales.

The procedure for requesting a sabbatical leave is straightforward. The faculty member submits a proposal to the chair in the form of a letter, stating the purpose of the leave and the expected benefits to the individual’s professional development, to the program, and to the university. The chair forwards a copy of that letter to the dean, along with a letter addressing the validity of the request, proposed mechanisms for covering the academic responsibilities of the individual while on leave, and a recommendation for approval or non-approval. The dean may approve the request and transmit the recommendation to the provost, who then submits it to the president for

final approval by the Board of Trustees. Upon granting of a sabbatical leave, the faculty member contracts to remain in the employment of the University of Kentucky for at least one year following return from leave. The individual is required to submit a report to the dean of the College of Agriculture, Food and Environment summarizing the leave experience and addressing the benefits derived.

Teaching responsibilities temporarily vacated by faculty on leave are generally assumed by colleagues within the Department. In other cases, sabbatical leaves may occur in a semester when the faculty member does not have any teaching responsibility, or the teaching responsibility can be shifted to another semester. Teaching duties have also been assumed by qualified, non-faculty personnel, such as a research specialist. Rarely, a person may be hired temporarily to provide program continuity and be paid by funds released by a faculty member on a one-year leave.

Other types of professional development have included conference attendance, continuing education courses and workshops. In 2017, all faculty were required to complete Unconscious Bias Training. Unconscious bias is the automatic stereotypes or attitudes we hold about groups or people. This course explored how unconscious biases are demonstrated through our thoughts and workplace behaviors, which have a great impact on the services faculty provide to students, staff and one another. Table 2 provides an overview of some activities self-reported as professional development opportunities.

*Table 2 Professional development and continuing education experiences of Department faculty.**

Faculty	Activity	Year
Arthur, M	Fire in Eastern Oak Forest Conference	2015, 2019
Barton, C	Sabbatical - Australia	2012
Cox, J	UK CELT Workshop: Cheating, curbing, catching and consequences	2014
	UK CELT Workshop: Enhancing student success	2013
	Course: Non-invasive techniques in genetics for wildlife conservation	2012
	Course: Chemical immobilization of animals	2011
	Course: Statistics for ecology and conservation biology	2011
Cremeans, D	Interop Conference	2010, 2012
	Campus Technology Conference	2015
	Mobile World Congress	2019
Lhotka, J	Grant Writers Workshop	2017
	IUFRO Workshop on Uneven-aged Silviculture	2016
	Professional Development in Instructional Methodology Program	2016-2017
Lhotka, L	Global Thinking Academy	2016-2017
	Faculty Fellow for Presentation U	2016
Ochuodho, T	Grantsmanship Workshop	2018
	NSF Grants Conference	2017
	Energy and Environment CGE Modeling with GAMS Course	2017
	Strategic Grant Writing Workshop	2017
	Introductory Economic Impacts Analysis Using IMPLAN Software	2016
	Computational and Collaboration Skills for Synthesis Science	2016
Yang, J	Remote Sensing Software ENVI Workshop	2011

*Not inclusive of all professional development activities reported.

IV.4. Discuss student support services provided by the parent institution and confirm that these services are readily accessible to students in the program.

University Resources

The University of Kentucky offers a diversity of services available to forestry students. These services are provided at the university and college level. The university's Division of Student and Academic Life (<http://www.uky.edu/sal/>) provides student support relating to academics, health and wellbeing, residence life, and social and recreational activities. The university's Dean of Students office provides both administrative and educational services that support the personal and academic success of students. The office provides extra-curricular, non-academic educational programs and collaborates with academic units to offer support for students in reaching their educational goals. The Dean of Students office also handles student complaints and oversees the Office of Student Content. Other services made available by the Dean of Students office include those related to emergencies, housing/meal contracts, notaries, sales/solicitation on campus, and student safety.

The Office of Student Financial Aid and Scholarships offers support to forestry students in many ways (<https://www.uky.edu/financialaid/contactus>). Most of the assistance is in the form of advising and educating students on how to obtain financial assistance in the form of loans, scholarships, and need-based assistance. Information is provided to students on applications procedures and deadlines, types of aid available, and eligibility requirements.

The university Counseling Center (<https://www.uky.edu/counselingcenter/assessment-and-testing-services>) aids students by providing individual, group, career planning, marital/relationship, learning skills and substance abuse counseling as well as tutoring services. The center provides information, practice opportunities, and administration for national tests. The Counseling Center cooperates with the Disability Resource Center (<https://www.uky.edu/DisabilityResourceCenter/>) to assist qualified students with disabilities for gaining equal access to institutional programs and services consistent with their unique needs. The Disability Resource Center seeks to responsibly advocate the needs of students with disabilities to the campus community through consultation and outreach efforts with administration, faculty, students and University partners.

The Office for Institutional Diversity (<https://www.uky.edu/diversity/>) helps maintain the University of Kentucky's commitment to embracing difference and promoting increased knowledge of diversity and its significance as a constitutive value of the university community. The Office for Institutional Diversity provides services needed to ensure the academic success and personal development of all ethnic minority students. Further, the Office for Institutional Diversity provides cultural programming to promote mutual respect and attributes of global citizenship on the part of students from all backgrounds. The Office for Institutional Diversity support program, TriO, is a federally funded program created to support students who are first generation, low income, and/or have a documented disability in transitioning to college life and academics. In addition to supporting the individual as a student, the program works to provide a family environment where the individual can make a connection to other individuals enrolled at the university. Services offered by TriO include personal counseling, academic counseling, career counseling and preparation, graduate school preparation, and academic skills

preparedness.

The advising infrastructure at the University of Kentucky is well-developed and the Central Advising Office of the University and CAFE's Center for Student Success (<https://students.ca.uky.edu/>) provide advising assistance to forestry students. These offices provide in-person support, print and web materials to aid students with advising questions. The CAFE Center for Student Success also provides information on scholarships, careers and enrichment opportunities for forestry students. CAFE provides student orientation and advising workshops for both freshmen and transfer students to attend each summer. Staff take every precaution to be sure faculty are prepared to meet the students and help them make well informed decisions during their first semester at the University of Kentucky. The university provides the web-portal myUK where students can make appointments with their advisors in forestry or access class information, personal records, and registration information. The university also participates in the Canvas on-line educational platform.

The university James W. Stuckert Career Center (<https://www.uky.edu/careercenter/>) offers a variety of services to students including individual career advising, computer-based programs for career planning and decision making, a career library with a large assortment of materials on career planning, résumé workshops and critiques, career fairs in collaboration with academic units, referral databases, and career/job search workshops. Interview workshops and job listings, as well as other services are provided for the benefit of the students. Internship opportunities can also be found at the Career Center. Programs for faculty that are designed to facilitate faculty development and involvement in the area of career services for students are also provided.

The Study (<http://www.uky.edu/thestudy/>) is the University of Kentucky's centralized peer tutoring center. The Peer Tutoring Program provides free, drop-in, peer tutoring for many core courses in mathematics, science, and business. Offering proactive assistance, the goal of the Peer Tutoring Program at The Study is to enhance students' academic experience as early and as often as possible. In addition to the Peer Tutoring Program, The Study offers Common Hour Review sessions. These large group tutoring sessions focus on practice problems and exam prep strategies. Common Hour Review sessions are offered for many of the most highly trafficked courses. The Study's Common Hour Review sessions are held at The 90 (campus dining commons) several nights prior to the Common Hour Exam date. Peer Tutors at The Study are nationally certified by the College Reading and Learning Association. These well-trained undergraduate students have successfully completed the course for which they tutor at UK, making them a great resource for questions about course format or online homework systems in addition to questions pertaining to the subject.

The university also has programs in place to help students with their writing and math skills. The Writing Center assists University of Kentucky students, faculty, and staff with the process of writing in any discipline and for any purpose. The Writing Center offers free individual and group consultations on any writing project at any stage in the writing process. At the Math Resource Center (Mathskeller), faculty, graduate students, and undergraduate math majors are available to help all students who are currently enrolled in a university mathematics course. The center includes a conference room, a private study room, two large study areas, and a kitchen.

The university's Information Technology Services unit provides support to a variety of student technology services, communications systems, and network services. The Information Technology Services unit offers eight computer labs on campus that are open to all enrolled students. The Information Technology Services unit also manages student email, Web servers and Wi-Fi. The Information Technology Services unit manages the UK Online academic program and oversees student evaluations. The Student Media Depot @ The Hub is a student digital media space located in the Hub at William T. Young Library managed by Information Technology Services. The Media Depot provides; access to recording equipment and space, editing stations with specialized multimedia software, and technical support for students' development of their academic media projects.

The Media Depot includes:

- Presentation Recording Rooms - rooms with 42-inch mounted monitors to display presentations, plus a tripod mounted iPad to record presentations.
- Green Screen Recording Room - mini studio, equipped with a green screen wall and tools to produce professional-grade presentations. Includes Canon XA 35 prosumer camcorder recording HD H264 format and Rode NGT 2 shotgun microphone using Garage Band.
- Audio and Screen Capture Recording Rooms - Rooms for audio recording and screen capture with professional recording equipment and software. Includes Neat Bumblebee USB microphone and tabletop audio sound booth. One room also includes an M-Audio Keystation 61 and Native Instruments Maschine Jam drum machine.
- Podcast Room - You can record the audio of three people using broadcast quality Sure SM7b microphones and an iMac computer using Garage Band.
- 30 27" iMacs / 16Gb RAM / 2Gb video cards / OS 10.13.2
- External hard drives and tripods with smart phone mounts are available for three day check out at the Audio Visuals Services desk in the HUB in William T. Young Library.

Lastly, all students have access to the new Gatton Student Center. The Center offers a wide range of dining options to entertainment and educational opportunities such as: UK Bookstore, UK Federal Credit Union, PNC Bank, free wireless internet access and free laptop use, meeting/conference rooms, two theaters with state of the art media technology, WRFL radio, The Cats Den recreational and entertainment facility as well as the Center For Student Involvement. Additionally, students will find numerous student services, programs and organizations all within the Center.

IV.5. Discuss major strengths and weaknesses of the parent institution and supporting departments, including breadth and accessibility, and how they affect the program and its students.

The University of Kentucky supports more than 200 academic programs spreading across sixteen degree-granting colleges, the Lewis Honor College, Graduate School and the UK Library system. In the last several years, UK has received nearly 100 national rankings for excellence in academics, research, health care and economic development. UK has a current enrollment of over 30,000 students. In 2017-2018, the University of Kentucky awarded 7,444 degrees with 66% bachelor's, 17% master's, 11% doctoral, and 6% professional. The University of Kentucky is one of only a handful of universities with both a full-service academic medical center as well

as a college of agriculture on a single campus. The U.S. News and World Report ranks several of UK's graduate programs among the nation's best. UK earned 28 Top 10 rankings and 50 Top 25 rankings over the last several years.

The university system provides many opportunities for program support and cross-discipline collaboration in a number of university institutes and centers. Several Department faculty have served on focal area committees (Urban Forest Initiative, Water Systems) within the Tracy Farmer Institute for Sustainability and the Environment. In collaboration with President's Sustainability Advisory Committee and the Office of Sustainability, the Tracy Farmer Institute for Sustainability and the Environment has implemented the Sustainability Challenge Grant program which is designed to engage multidisciplinary teams from the university community in the creation and implementation of ideas that will promote sustainability by simultaneously advancing economic vitality, ecological integrity and social equity. In the first five years of the program 33 projects have been awarded a total of \$900,000 to pursue transformational, sustainability-driven projects on our campus and beyond. Of those 33 projects, 7 projects totaling \$190,363 were led by Department faculty. Other institutes that Department faculty are currently engaged include: The Center for Applied Energy Research, Kentucky Water Resources Research Institute, Kentucky Geological Survey and the Appalachian Center.

Support for teaching programs within the Department is provided by the university's Center for the Enhancement of Learning and Teaching. The Center for the Enhancement of Learning and Teaching staff consults with teachers on any instructional issues including, but not limited to, course design, classroom management, student engagement, curriculum development, innovative pedagogies, inclusive teaching and learning. Each semester, Center for the Enhancement of Learning and Teaching offers a variety of workshops on current issues related to teaching. Current workshops include: New Faculty Services, Courageous Conversations, Digital Pedagogy, Universal Design for Learning, Open Educational Practices, Graduate Instructor Support and International Partnerships. Workshops typically last for 60 minutes, draw from research-based practices, and involve discussion, activities, and take-away resources. They are open to all faculty, staff, instructors, and graduate students. Center for the Enhancement of Learning and Teaching also provides mid-semester consultations, advice on the development of faculty learning communities, college and Department engagement, support for scholarly projects and grants and organization of campus-wide events.

The university Informational Technology Services unit provides enterprise level support for various campus systems, including the computing and communications infrastructure, directory services, Web services, and high-performance computing. It assists faculty to adapt or create courseware for use in the classroom, on the Web, in electronic presentations, or via multimedia applications. The unit offers online tutorials, resources, short courses and workshops.

The Office of Sponsored Projects Administration support the Department through assistance to researchers who are seeking funding opportunities, writing proposals, formulating budgets, and administering sponsored projects. The Office of Sponsored Projects Administration focuses on assisting faculty in attempting to secure extramural funding. The staff provides newsletters and bulletins that detail grant sources, deadlines, mailing lists as well as numerous grant and fellowship databases. They perform funding searches for faculty that cover both external and

internal sources. Seminars, workshops, and special events designed to enhance grant writing abilities also are offered. The Office of Sponsored Projects Administration also assists faculty in preparing budgets for grant proposals and contracts and provides faculty guidance and assistance to help ensure efficient and legal utilization of funds that have been secured.

IV.6. Describe library facilities, holdings, electronic access to information, and related services to which students have access and discuss their adequacy relative to the program.

The University of Kentucky Libraries (<http://libraries.uky.edu/>) provides excellent access to quality information resources, teaching and learning programs, and learning spaces for forestry students, staff and faculty. The university has nine physical facilities in their Library including: the William T. Young Library, Agricultural Information Center, Hunter M. Adams College of Design Library, Education Library, John A. Morris Equine Library and Information Services, Lucille Caudill Little Fine Arts Library, Medical Center Library, Science and Engineering Library, and the Special Collections Research Center. Both the William T. Young (main campus library) and the Agricultural Information Center are a short walk from the T.P. Cooper Building. All students, staff and faculty have open access to these facilities. In addition, on-line resources such as e-journals and e-books, tutorials, and a variety of research search engines and databases are available from remote locations.

Collections and information resources available from UK Libraries include 4,023,142 volumes, 588,428 electronic books, well over 400 commercial databases, approximately 27,000 linear feet of manuscripts and archives, and a broad collection of computer files, microforms, maps, film/video, audio and graphics. Special Collections at the library is Kentucky's largest repository of privately generated primary research materials and rare printed books and other documents. Special Collections holds several notable holdings include the Bert T. Combs Appalachian Collection (primary and secondary sources supporting Appalachian studies) and the Public Policy Archives (the collections of prominent Kentuckians and organizations involved in public policy) as well as the archives of the Appalachian Regional Commission. Given that many of our graduate students and faculty do research in Appalachia, these resources are particularly valuable.

The UK Library also houses the Wendell H. Ford Public Policy Research Center that supports research and programming relating to public policy, politics, and Congress. In addition, the Louie B. Nunn Center for Oral History contains more than 9,000 interviews representing more than 250 national or Kentucky-related projects and the Audio-Visual Archives, which houses millions of sound recordings, moving images, and still photographs, including those of the Lexington *Herald-Leader* from the years 1938 to 1990. The *Kentucky Digital Library* is the online archive of these digitized collections and includes over 189,000 photographic images, 575,000 historic Kentucky newspaper pages, 558,000 pages from other printed materials including manuscripts and theses, 730 oral histories, and 4,700 map images documenting the history and culture of Kentucky.

The Agricultural Information Center supports the faculty, staff, and students in the Department, the college, and anyone in need of agricultural and life science information. The Agricultural

Information Center is located in the Agricultural Sciences North Building. Online resources such as major research databases and e-journals are maintained by Agricultural Information Center staff. The Agricultural Information Center also provides current print issues of journals unavailable electronically. A variety of instructional services are offered by Agricultural Information Center staff to forestry students, staff and faculty to meet all information literacy needs, including classroom support, seminars, individual consultations, and EndNote workshops.

Both the William T. Young library and the Agricultural Information Center provide space in the form of individual study spaces, conference rooms, classrooms, meeting rooms and an auditorium that are utilized frequently by forestry students and employees. The auditorium and galleries at the Young library have been used frequently for Department sponsored events including: invited seminar speakers, workshops and film screenings. The auditorium has also been used as a venue for student final capstone course (FOR 480) presentations. This location provides parking for outside guests (stakeholders) and will seat nearly 100 individuals.

IV.7. Describe how the parent institution, in collaboration with the unit housing the program, provides a physical environment that is safe, healthful, and conducive to learning.

The Department occupies space on the Lexington campus in the Thomas Poe Cooper, Dimock Animal Pathology, and the Plant Sciences buildings. The T.P. Cooper building houses 5 classrooms (including a computer classroom); meeting rooms; 7 research labs; faculty, staff and graduate student offices; storage space; a student lounge; a walk-in cooler; a walk-in drier; a wood shop and a video studio. Our space in the Dimock building includes 4 research labs; faculty, graduate student and student worker offices, storage space, and the University's herbarium collection. In Plant Sciences, the Forest Health Research and Education Center currently occupies one research lab and space for faculty and post-doctoral offices. The Department also has access to space in the CAFE greenhouses located on UK's South Farm.

The T.P. Cooper building is the primary facility for teaching and research in the Department. Built in 1930 and renovated in the 1970's, the building provides good space but the quality of the space is well below the standards of nearly every other building on campus (with the possible exception of Dimock, which we also occupy). The building suffers from poor climate control. Very noisy and energy inefficient window unit air conditioners make teaching difficult during hot weather periods (early fall and late spring). Steam radiators that often cannot be regulated make the building hotter in mid-winter than it is in mid-summer. Classrooms and offices can be so hot in the winter that windows must be opened for relief. In rooms where the windows don't open, air conditioners often run simultaneously with the heaters. We also experience fairly common steam outages and no heat, which makes for interesting teaching and research conditions. Old plumbing and frequent breaks/leaks have led to instances of equipment loss or damage, sample loss and lost productivity. In a unit that teaches and promotes sustainability, energy efficiency, green technologies, and climate change mitigation, our credibility is greatly undermined by these conditions. Our enthusiasm to work under these conditions also suffers.

From a safety perspective, T.P. Cooper meets the minimum standards. We routinely pass required laboratory inspections, but several labs have below optimal or non-functioning fume

hoods which restricts their use for chemical handling. In August 2013 exterior doors to the building were propped open to allow air circulation and cooling of the halls. An individual who was not affiliated with the university entered the building through one of the open doors and attacked two employees with a fire extinguisher, inflicting serious bodily harm. In response, all exterior doors with the exception of the front and rear entrances remain locked at all times. The front and rear entrances are unlocked during regular business hours and are accessible after hours by students and personnel with an approved access pass associated with their UK identification card. Recent renovations to the building have been performed to meet requirements of the Americans with Disabilities Act. Although compliant, free movement throughout the building and access to all classroom, laboratories and offices in a wheelchair can be a tricky undertaking requiring extensive outdoor travel from one end of the building to the other and use of a freight elevator to get from the first floor to the second. Although the T. P. Cooper building has many shortcomings, it has a basement with a severe weather shelter classification that is readily accessible if threatened by a tornado.

The quality of the research and lab space available seriously constricts the type and quality of research that faculty can pursue, limiting grantsmanship and participation in cutting edge research topics. In some regards, the quality of our space may be a detraction for the recruitment and retention of students, staff and faculty. For instance, our conference room which is utilized for seminars, interviews, meetings, etc. is one of the most up-to-date rooms in our building, but it suffers from the climate control and noise issues discussed above and has other limitations that can be a distraction to speakers and to those who are trying to listen. In a 2015, UK Work-Life Survey, the Department was positively reflected according to most metrics. Two areas where faculty and staff ranked the Department lowest were salaries and facilities, the latter being the lowest metric of all. In response to the survey and our 2015 Self Study, CAFE informed us in 2016 that a new building for Environmental Sciences and Natural Resources has been planned and that it is a top priority for new construction for the college. A new building, with appropriate classroom, laboratory and meeting spaces would significantly improve working and learning conditions for our program and morale. A significant component of this new facility will be the capacity to bring the public to the university to participate in educational programs on-site. To date, no construction has begun.

Off campus, forestry personnel are located at the Robinson Center for Appalachian Resource Sustainability, the Wood Utilization Center, and Robinson Forest. The Wood Utilization Center is a 14,000 square foot facility containing an industrial hardwood furniture manufacturing laboratory, classrooms, computer laboratory and a 10,000 board foot hardwood lumber dry kiln. Robinson Forest is a collection of seven tracts totaling nearly 14,800 acres making it one of the largest research and educational forests in the eastern United States. The camp at Robinson Forest includes a classroom, a computer lab, kitchen/dining hall, lodging cabins, hydrology lab, staff office, storage, and a workshop. Robinson Forest is a critical resource for conducting research, demonstration projects for Extension workshops, and teaching undergraduate students. *See section IV.8. for further information on Robinson Forest.*

IV.8. Describe outdoor laboratory sites and their location relevant to the campus. If sites are not owned by the institution, discuss instructional use agreements that ensure access.

The Department's primary outdoor facility is Robinson Forest, a 5,983 ha (14,778 ac) teaching, research and extension experimental forest located in southeastern Kentucky. The forest is owned by the University of Kentucky, managed by the Robinson Center of Appalachian Resource Sustainability (RCARS), with input from the Department and the Robinson Forest Committee. Robinson Forest is located approximately 100 miles southeast of the main campus in Lexington. Robinson Forest is a member of the Organization of Biological Field Stations. Robinson Forest is comprised of eight discontinuous properties, with the main block comprising approximately 4,200 ha (10,300 ac). The main block contains a network of headwater streams, several of which are identified as Outstanding State Resource Waters and Reference Reaches by the Kentucky Division of Water. The forest sits within the rugged eastern section of the Cumberland Plateau, and its landscape consists of long, rectilinear side slopes cut into a horizontally-bedded substrate of sandstone, shale, siltstone and coal. The vegetation is typical of the mixed mesophytic forest region, the most diverse forest region found in temperate North America, and ranges from xeric oak-pine dominated stands to rich mesic cove hardwoods.

The University of Kentucky acquired Robinson Forest in 1923 after extensive logging. As such, the majority of Robinson Forest is comprised of 90+-year old second growth. However, during the early to mid-1990s, a portion of Robinson Forest (approx. 600 ha of the 900 ha Laurel Fork watershed, now referred to as the Paul VanBooven Wildlife Management Area) was surface mined for coal, resulting in the creation of considerable flat lands reclaimed as pasture, steep highwalls that were planted with exotic shrubs and non-native conifers and many head-of-hollow fills or valley fills that buried pre-existing stream networks and destroyed aquatic habitat. Mining of the site ceased in the early 2000s and much of the area has received Phase II and III bond release. Although much of the mined area borders the unfragmented portion of the forest, large areas on the mine exist in a state of arrested natural succession dominated by a mix of exotic herbaceous, shrub and conifer species.

The main block of Robinson Forest supports the full range of neotropical migratory bird species that are expected in this part of North America, and is an important migratory stop-over for birds flying to breeding grounds in Canada or wintering grounds in South America. Other wildlife species such as the Indiana bat (*Myotis sodalists*), northern long-eared bat (*Myotis septentrionalis*), Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Cerulean Warbler (*Dendroica cerulean*) and the Kentucky arrow darter (*Etheostoma sagitta spilatum*) have been found at the Forest and are or are being considered for federal listing under the Endangered Species Act of 1973. Robinson Forest also supports a variety of vernal wildflowers including several terrestrial orchids, trilliums, and others typical for the region. The mined portion of the Forest generally supports a different assemblage of wildlife species, primarily early-successional habitat specialists and those that rely on open grassland.

Active research has been conducted at Robinson Forest since 1969 when the Department was established, and has produced over 250 peer-reviewed publications, over 75 M.S. theses and 12 dissertations. Much of the past and current research at the Forest focuses on five general areas of study: 1) restoration research (active restoration and use as a reference site); 2) long-term hydrology and water quality monitoring; 3) environmental gradient research; 4) large-scale manipulative studies; and 5) wildlife biology, including elk, black bear, bats, fish, and

salamanders. A long-term study of note focused on water quality impacts of streamside management zone best management practices, and developed improved guidelines for stream protection during logging operations. Another ongoing project is evaluating techniques for reforestation of surface mined land, with implications for restoration of an estimated 600,000 ha of degraded land throughout Appalachia. A third ongoing project is investigating impacts of water quality degradation on salamander populations, with particular focus on linkages to food web processes.

The hydrologic monitoring network at Robinson Forest is one of the most outstanding research and teaching attributes Robinson Forest has to offer. Flow and water quality in five watersheds ranging in size from 50 ha to 1500 ha has been continuously monitored since the early 1970's. Stream flow is monitored with v-notch weirs and water level recorders (floating strip-chart recorders from installation to 2008 and pressure transducers since). Water quality data includes pH, temperature, dissolved oxygen, specific conductivity, turbidity, alkalinity, dissolved organic carbon, major cations (Ca, Mg, Na, K, Fe, Mn, NH₄) and anions (Cl, SO₄, NO₃, NO₂, PO₄). In 1981 a set of three flumes were installed on some smaller watersheds (15-25 ha) for a paired watershed study and stream flow and water quality monitoring continues in these watersheds. In 2003 one additional weir and 18 new flumes were installed on the forest for a project to examine the effectiveness of streamside management zones for protecting water quality and stream fauna after forest harvest. Data logging pressure transducers are included in all of the newer water sampling stations.

Robinson Forest facilities include cabins that will sleep up to 60 individuals, which are heavily utilized by graduate students conducting research, as well as summer forestry interns, undergraduate students participating in field courses, and a number of visiting groups participating in research, education, outreach, and other training events. The forest has a dining hall that can accommodate groups of up to 75 individuals. In addition, the forest has a variety of equipment and resources needed for teaching, research and management of the facilities, including: classroom, laboratory, shop, portable sawmill, heavy earth moving equipment (dozer, grader, backhoe, dump truck), skidder, tractors, vans, 4x4 vehicles, generators, hand equipment (chainsaws, shovels, dibbles, etc.).

Entities utilizing Robinson Forest for research, teaching, and extension include the following: various University of Kentucky Departments (Forestry and Natural Resources, Biology, Geography, Entomology, Plant and Soil Sciences, Earth and Environmental Sciences, Landscape Architecture, Biosystems and Agriculture Engineering), Cooperative Extension Service, Eastern Kentucky University, Western Kentucky University, University of Louisville, Radford University, Colorado School of Mines, Kentucky/Tennessee Society American Foresters, Kentucky Dept. of Fish and Wildlife, US Dept. of Fish and Wildlife, Kentucky Division of Water, Kentucky Division of Forestry, USDA Natural Resource Conservation Service, USDA Forest Service, USDI Office of Surface Mining, Kentucky Division of Natural Resources, US Geological Survey, Kentucky Geological Survey, US Environmental Protection Agency, US Army Corps of Engineering, Berea College, Kentucky State University, Bethel Mennonite Camp, Centre College, East Kentucky Water Monitoring, Savannah River Environmental Sciences Field Station, University of North Carolina – Chapel Hill, Kentucky Organization of

Field Stations. Robinson Forest does not keep a strict record of user days or visitor numbers, but estimates usage by 1000 - 1500 visitors annually.

Forestry courses conducted at Robinson Forest:

- FOR 460: Forest Hydrology and Watershed Management: The FOR 460 class currently uses USGS stream data and KY Mesonet in problem sets and laboratories for determining the impact of land-use on stream discharge (USGS) and for evaluating various methods for estimating evapotranspiration (Mesonet). Both sites are used to develop storm flow hydrographs.
- FOR 356 Forest Soils and Hydrology
- FOR 357 Inventory and Measurements
- FOR 358 Silvicultural Practices
- FOR 359 Forest Operations and Utilization
- FOR 365 Wildlife Assessment

In 2018, a cell tower was erected on the forest which allows 4G service throughout much of the forest and provides reliable internet service for students, staff, faculty and visitors. The cell coverage also provides an enhanced safety net for remote workers and students via improved communications. Erection of the tower also allowed for an upgrade to the hydrology network on the forest. Through a National Science Foundation's Facilities Improvement Grant in 2019, a remote data acquisition system that networks two Mesonet weather stations and 15 continuously logging stream flow and quality stations was erected at the forest. This network provides real-time data that can be accessed on-line. This network will be utilized for both teaching and research purposes.

In addition to Robinson Forest, forestry students and researchers perform considerable education and research activities on the 9,000 acre Berea College Forest, which is approximately 30 miles south of the Lexington campus, and the over 700,000 acre Daniel Boone National Forest in eastern Kentucky. The UK Arboretum, State Botanical Garden of Kentucky, is a 100-acre greenspace located on the campus of the main UK campus that is also used extensively as an on-campus resource for forestry students and faculty.

STANDARD V: CURRICULUM

Complete Documents A-1, A-2, B-1, and B-2. If Document A-2 or B-2 is not relevant, it does not need to be submitted.

V.1.a. For Document A-1: General Education Summary (Required Courses): List each course and indicate the credit hours required in each category: (a) Communications; (b) Science and Mathematics; (c) and Social Sciences and Humanities. Where appropriate, total credit hours for each course may be prorated across the areas.

See Appendix 1 for Document A-1.

V.1.b. Use Document A-2: General Education Summary (Restricted Electives) to list general education restricted electives, if any, and indicate the credit hours required in each category: (a) Communications; (b) Science and Mathematics; (c) and Social Sciences and Humanities. Where appropriate, total credit hours for each course may be prorated across the areas.

- See also Section II - Standard V: Curriculum, for specific descriptions of the general education components.

See Appendix 1 for Document A-2.

V.1.c. For Document B-1: Professional Education Summary (Required Courses): List each required course and indicate the approximate number of credit hours devoted to each subject area. Where appropriate, total credit hours for each course may be prorated across the areas. For example, the course "Forest Resources Management, 5 credits" might cover topics addressed by subject areas (Management of Forest Resources - 3 credits) and (Forest Resource Policy, Economics, and Administration - 2 credits). Indicate courses with significant fieldwork.

See Appendix 1 for Document B-1.

V.1.d. For Document B-2: Professional Education Summary (Restricted Electives): List each restricted elective course that contributes to the professional education categories and indicate the approximate number of credit hours devoted to each. Where appropriate, total credit hours for each course may be prorated across these areas. Indicate courses with significant fieldwork.

- See also Section II - Standard V: Curriculum, for specific descriptions of each of the professional areas.

See Appendix 1 for Document B-2.

V.1.e. Include course syllabi for professional education required and restricted elective courses as an appendix.

See Appendix 2 for compiled syllabi.

V.1 General Education Curriculum

The University of Kentucky's general education program – the UK Core – is foundational to a university education at the University of Kentucky. A university education is more than simply learning a set of skills in a specific area in preparation for a job or career. A university education is designed to broaden the students' understanding of themselves, of the world we live in, of their role in our global society, and of the ideals and aspirations that have motivated human thought and action throughout the ages. It must help individuals effectively put into action their acquired knowledge, to provide the bases for critical thinking and problem solving, and to develop life-long learning habits.

The UK Core is composed of the equivalent of 30 credit hours in 10 course areas that address four broad learning outcomes. The UK Core curriculum is well-aligned with the structure of the General Education competencies in communications, science and mathematics, and social sciences and humanities outlined in the SAF Standards for Accreditation. By completing the UK Core and the degree program's pre-major science requirements (see details below), students gain required competencies in oral and written communication, biological and physical sciences, mathematics including logic and problem solving, and a broad exposure to socioeconomic and cultural drivers of human society and current issues facing our world.

The UK Core Learning Outcomes

The UK Core curriculum is based on a comprehensive set of student learning outcomes that all students are expected to be able to demonstrate upon completion of a baccalaureate degree at the University of Kentucky. All UK Core courses are designed to meet one or more of the following learning outcomes:

I. Students will demonstrate an understanding of and ability to employ the processes of intellectual inquiry. [12 credit hours]

Students will be able to identify multiple dimensions of a good question (i.e., interesting, analytical, problematic, complex, important, genuine, researchable); determine when additional information is needed, find credible information efficiently using a variety of reference sources, and judge the quality of information as informed by rigorously developed evidence; explore multiple and complex answers to questions/issues/problems within and across the four broad knowledge areas: arts and creativity, humanities, social and behavioral sciences, and natural/physical/mathematical sciences; evaluate theses and conclusions in light of credible evidence; explore the ethical implications of differing approaches, methodologies or conclusions; and develop potential solutions to problems based on sound evidence and reasoning. Students will take four 3-credit courses, one in each of the four broad knowledge areas defined above.

II. Students will demonstrate competent written, oral, and visual communication skills both as producers and consumers of information. [6 credit hours]

Students will demonstrate the ability to construct intelligible messages using sound evidence and reasoning that are appropriate for different rhetorical situations (audiences and purposes) and deliver those messages effectively in written, oral, and visual form. Students will also demonstrate the ability to competently critique (analyze, interpret, and evaluate) written, oral, and visual messages conveyed in a variety of communication contexts. Students will take one 3-hour course focusing on the development of effective writing skills, and one 3-hour integrated communications course focusing on oral and visual communication skills, along with continued development of written communication skills.

III. Students will demonstrate an understanding of and ability to employ methods of quantitative reasoning. [6 credit hours]

Students will (a) demonstrate how fundamental elements of mathematical, logical and statistical knowledge are applied to solve real-world problems; and (b) explain the sense in which an important source of uncertainty in many everyday decisions is addressed by statistical science, and appraise the efficacy of statistical arguments that are reported for general consumption. Students will take one 3-hour course on the application of mathematical, logical and statistical methods, and one 3-hour course devoted to a conceptual and practical understanding of statistical inferential reasoning.

IV. Students will demonstrate an understanding of the complexities of citizenship and the process for making informed choices as engaged citizens in a diverse, multilingual world. [6 credit hours]

Students will recognize historical and cultural differences arising from issues such as ethnicity, gender, language, nationality, race, religion, sexuality, and socioeconomic class; students will demonstrate a basic understanding of how these differences influence issues of social justice, both within the U.S. and globally; students will recognize and evaluate the ethical dilemmas, conflicts, and trade-offs involved in personal and collective decision making. Students will take two courses, each with a topical or regional focus. The first course will include critical analysis of diversity issues as they relate to the contemporary United States. The second will be a non-US based course that includes critical analysis of local-to-global dynamics as they relate to the contemporary world. In addition, each course must address at least 2 of these 4 topics: societal and institutional change over time; civic engagement; cross-national/comparative issues; power and resistance.

[The Curricular Framework and Relationship to the Learning Outcomes](#)

Students must take one course from each of the areas listed below in order to complete the UK Core. A course taken to satisfy a requirement in one area of the UK Core cannot be

used to satisfy a requirement in another area, even if a specific course is present in more than one area (e.g., some courses are designed to meet the learning outcomes in more than one area).

Course Areas by Learning Outcome	Credit Hours
Learning Outcome I: Intellectual Inquiry	
The Nature of Inquiry in Arts and Creativity	3
The Nature of Inquiry in the Humanities.....	3
The Nature of Inquiry in the Social Sciences.....	3
The Nature of Inquiry in the Natural, Physical and Mathematical Sciences	3
Learning Outcome II: Written, Oral and Visual Communication	
Composition and Communication I	3
Composition and Communication II.....	3
Learning Outcome III: Quantitative Reasoning	
Quantitative Foundations	3
Statistical Inferential Reasoning.....	3
Learning Outcome IV: Citizenship	
Community, Culture and Citizenship in the USA.....	3
Global Dynamics	3
UK Core Credit-Hour Total	30

Summarized below are the courses that B.S. Forestry students take within each of the ten UK Core areas. The listed courses also include Forestry pre-major science requirements in biology and chemistry.

Learning Outcome I: Intellectual Inquiry

Arts and Creativity: Courses in this area are hands-on courses that allow students to engage actively with the creative process. Students will define and distinguish different approaches to creativity, demonstrate the ability to critically analyze work produced by other students, and evaluate results of their own creative endeavors. In general education, a focus on creativity adds to the vitality and relevance of learning and will translate into graduates who are better prepared to face the challenges of a dynamic society.

- B.S Forestry students: Any UK approved course under this area

Humanities: These courses develop students’ skills in *interpretation* and *analysis* of creations of the human intellect such as art and literature (including folklore, popular culture, film and digital media), philosophical and religious contemplation and argumentation, language systems, and historical narratives. In these courses, students gain

the ability not only to analyze the works themselves but to *evaluate* competing interpretations of such works.

- B.S Forestry students: Any UK approved course under this area

Social Sciences: These courses promote an understanding of the relationships between individuals and society and how scholars have come to understand these relationships using conceptual models and processes of inquiry. Through a discipline-based study of social problems or themes, students will learn to critically evaluate the variety of social situations with which they may be confronted in their everyday lives.

- B.S Forestry students: Any UK approved course under this area

Natural, Physical and Mathematical Sciences: These courses engage students in the fundamental processes of science through the exploration of an area in science. Students will be expected to use their knowledge of scientific concepts to formulate predictions, collect and analyze data, and construct explanations for the questions posed.

- B.S Forestry students: *BIO 103 Basic Ideas of Biology* or *BIO 148 Introductory Biology I*
- In addition to the biology requirement, B.S. Forestry students are required to take an introductory chemistry course to satisfy the degree programs pre-major science requirement. To fulfill this chemistry requirement, students must take either *CHE 104 Intro. General Chemistry* (3 credits) or *CHE 105 Gen. College Chemistry I* (4 credits).

Learning Outcome II: Written, Oral, and Visual Communication

Composition and Communication I: In this course, students are introduced to the process of writing, speaking, and visually representing their own ideas and the ideas of others; they also practice basic interpersonal communication skills and the ability to communicate with multiple audiences.

- B.S Forestry students: Any UK approved course under this area

Composition and Communication II: In this course, students research public controversies and work in teams to analyze and argue for a solution to these controversies in oral, written, and visual/digital forms for multiple audiences.

- B.S Forestry students: Any UK approved course under this area

Learning Outcome III: Quantitative Reasoning

Quantitative Foundations: These courses are concerned with the application of mathematical concepts and skills to solve real-world problems. In order to perform effectively as professionals and citizens, students must become competent in reading and using quantitative data, in understanding quantitative evidence and in applying basic quantitative skills to the solution of real-life problems.

- B.S Forestry students: Any UK approved Quantitative Foundations course with a Math (MA) prefix

Statistical Inferential Reasoning: These courses will encourage students to evaluate claims

based on statistical principles by providing an understanding of the conceptual and practical applications of statistical reasoning and thinking. Students will receive an introduction to the science of statistics, and while students will be expected to reason with statistical ideas and make sense of statistical information, computations are not the focus.

- B.S Forestry students: *FOR 250 Statistics and Measurements I*

Learning Outcome IV: Citizenship

Community, Culture and Citizenship in the USA: These courses promote a student's understanding of historical, societal, and cultural differences, such as those arising from race, ethnicity, gender, sexuality, language, nationality, religion, political and ethical perspectives, and socioeconomic class; engage students in grappling with conflicts, compromises, and/or ethical dilemmas stemming from the complex and diverse cultural contexts of US communities; and foster effective and responsible participation in a diverse community or society in the United States.

- B.S Forestry students: *GEN 100 Issues in Agriculture, Food and Environment*

Global Dynamics: These courses equip students to participate in a diverse, multiethnic, multilingual world community. Toward this end, students consider issues of equality, ethical dilemmas, global trends, social change, and civic engagement in the context of local cultures outside the U.S.

- B.S Forestry students: *FOR 435 Conservation Biology*

V.2. For the professional areas of study, discuss and describe how the curriculum delivers/imparts each of the professional/technical competencies/proficiencies specified in Section II – Standard V: Curriculum.

Building upon the general education competencies provided by the UK Core curriculum and the pre-major science requirements, the B.S. in Forestry at the University of Kentucky includes 80 semester credit hours of required professional coursework. Seventy-six of these credits are provided by classes with a FOR prefix controlled by the Department of Forestry and Natural Resources. The additional 4 credits of professional coursework include *PLS 366 Fundamentals of Soil Science*. Beyond the breadth of the required coursework, the curriculum strength is its experiential nature. Eighteen of the required courses (53 semester credit hours) include a laboratory or outdoor learning component. The most notable of these experiential curriculum components is the 15-week spring field semester occurring in the junior year. This 13-credit semester includes seven, field-based courses generally delivered in week-long time blocks including six weeks when students are housed at the UK's Robinson Forest. The spring field semester also includes a number of day trips to field sites and overnight trips as part of forest industry and products tours, visits to national forests in North Carolina and Georgia, and travel to western Kentucky for forest operations and logging site visits. To provide a culminating education experience to students within the curriculum, an extensive senior capstone management course is required, *FOR 480 Integrated Forest Resource Management* (5 credits). In *FOR 480*, students are presented with a real-life management scenario in a forested location in Kentucky. Working in teams, students collect data, determine management objectives, and develop action plans for managing the forest according to the desires of the owner, subject to

realistic legal, economic, ethical, and social constraints. Students are required to produce a professional management plan and present the plan in a public forum at the end of the semester.

Beyond the required courses, the curriculum requires nine hours of professional electives that are designed to give forestry students supplemental coursework to support their career interests. Faculty advisors encourage students to use these professional electives to enhance their knowledge base and build their resume. In general, the professional electives are 300-level or above course. Students are provided a list of suggested courses that qualify as professional electives that has been approved by the Department faculty. If a student wants to take a course not on this list, the student must receive approval from the Department of Forestry and Natural Resources Undergraduate Programs Committee (UPC). A student must provide a brief, written justification to their advisor for why they should receive approval to take the particular course. The advisor will then share this information with the UPC for final approval.

A. Ecology and Biology

Identification, taxonomy, and characteristics of forest trees are the focus of two lab-based classes, *FOR 219 Dendrology* and *FOR 221 Winter Dendrology*. Additional understanding of the biological character, distribution, and site relationships are provided within lecture materials and laboratory activities in *FOR 340 Forest Ecology*, *FOR 350 Silviculture*, and *FOR 358 Silvicultural Practices*. Wildlife species and their habits relative to management and conservation are addressed within the three required wildlife courses, *FOR 365 Wildlife Assessment*, *FOR 370 Wildlife Biology and Management*, *FOR 435 Conservation Biology*.

Aspects of soils properties and processes along with hydrology and water quality are addressed through a collection of courses that include *FOR 340 Forest Ecology*, *PLS 366 Fundamentals of Soil Science*, *FOR 356 Forest Soils and Hydrology*, and *FOR 460 Forest Hydrology and Watershed Management*.

An understanding of ecological concepts and principles is paramount among many of our required forestry courses, starting in the first semester of the freshman year with *FOR 100 Forests and Forestry* and culminating in the spring of the senior year in *FOR 480 Integrated Forest Resource Management* and *FOR 435 Conservation Biology*. Along this student path, these concepts are emphasized in *FOR 340 Forest Ecology*, *FOR 350 Silviculture*, and *FOR 370 Wildlife Biology and Management*. However, aspects of this competency (A.3) are also addressed in other courses across the curriculum (please refer to Matrix of Evident to Meet Standard V).

Ecosystem, forest, and stand assessments serve as essential starting points that help guide the management of forests and related natural resources. The Forestry curriculum provides educational components directly tied to such assessments from varied perspectives including applied forest ecology (in *FOR 340*, *FOR 350*, *FOR 358*), forest health (*FOR 310 Introduction to Forest Health and Protection*), and wildlife (*FOR 365 Wildlife Assessment*).

Subject areas included in competency A.5, “knowledge of tree physiology and the effects of climate, fire, pollutants, moisture, nutrients, genetics, insects and diseases on tree and forest health and productivity”, are inherently integrated. As such, the curriculum is delivered in a

manner that embeds these core concepts across the required forestry courses. Foundational components of tree physiology and aligned silvical characteristics are one focus of the lecture sessions in *FOR 219 Dendrology* and the first course module of *FOR 350 Silviculture* that covers principles of tree and stand growth. The impact of abiotic stressors including fire is addressed within *FOR 340 Forest Ecology*, *FOR 350 Silviculture*, and *FOR 255 Forest Fire*. The effects of insects and disease is focused on within the two-course forest health sequence, *FOR 310 Introduction to Forest Health and Protection* taught by a forest pathologist and *FOR 502 Forest Entomology* taught by an expert on forest insect pests. Other forest health issues such as invasive species are discussed within *FOR 340 Forest Ecology*, *FOR 350 Silviculture* along with *FOR 310 Introduction to Forest Health and Protection* and *FOR 502 Forest Entomology*.

B. Measurement of Forest Resources

A logical sequence of forest measurements courses is required for students within the Forestry degree program. A basic introduction of the scope of forest measurements is included in *FOR 100 Forests and Forestry*. In *FOR 200 Basics of Geospatial Technology*, students learn the foundations of land navigation, map and photo interpretation, land survey approaches, and the basics of global positioning and geographic information systems. *FOR 250 Statistics and Measurements I*, and its spring field semester counterpart *FOR 357 Inventory and Measurements II*, provide students with in-depth instruction on individual-tree measurement (i.e., height, diameter, volume), statistically-based sampling approaches, and stand inventory methods. *FOR 330 GIS and Spatial Analysis* builds upon *FOR 200* and *FOR 250* to provide educational activities in advanced methods of mapping and measuring land areas as well as spatial analysis tools that can be applied in forest management decision making.

Beyond the analysis of inventory data provided with the sequence of forest inventory and measurements courses (*FOR 200*, *250*, and *357*), the projection of future conditions of trees and forests is covered at the stand-level through educational components in *FOR 350 Silviculture* and *FOR 385 Silvicultural Practices*. In *FOR 425 Forest Management*, students learn more about growth and yield models applicable to forest stands as well as optimization techniques for decision making and projection of large-scale forest ownerships.

All of the competencies within this subject area are reinforced through the capstone project included in *FOR 480 Integrated Forest Resource Management*. Class activities in *FOR 480* include a statistically designed sample of a large project area that incorporates mapping, stand delineations, and a comprehensive inventory relating to timber and non-timber components.

C. Management of Forest Resources

The ecological basis for and the applications of silviculture practice are provided in the two-semester sequence of silviculture courses (*FOR 350* and *FOR 358*) and are reinforced through other components of the curriculum relating to forest and wildlife management (*FOR 425*, *FOR 480*, *FOR 365*, *FOR 370*) along with the spring field semester courses in forest operations (*FOR 359*) and forest health (*FOR 310*).

The ability to analyze the economic, environmental, and social consequences of forest resource management strategies and decisions is an integrated theme of our professional education courses and learning outcomes associated with this competency are included among 14 required courses (please refer to Matrix of Evident to Meet Standard V).

Students gain multiple opportunities to develop forest management plans within the curriculum. In the two-semester sequence of silviculture courses, students write stand-level prescriptions for multiple objectives and constraints. *FOR 480 Integrated Forest Resource Management* provides students the opportunity to write a comprehensive management plan for a forested property in Kentucky, usually ranging from 75 to 100 acres per student group. Students present the management plan in a public forum at the end their senior year.

Valuation procedures and understanding of market forces for consumptive and non-consumptive goods is addressed primarily through *FOR 260 Forest Products and Wood Science*, *FOR 320 Forest Valuation and Economics*, and *FOR 480*. Processing systems, transportation, and harvesting activities is the focus of *FOR 359 Forest Operations and Utilization* and these topics are also addressed in the two-semester sequence of silviculture courses (*FOR 350 and FOR 358*).

The senior-level sequence of management courses, *FOR 425* and *480*, provide students with an understanding of the administration, ownership, and organization of forest management enterprises.

D. Forest Resource Policy, Economics, and Administration

Students develop an understanding of policy and how legal and regulatory environments govern the practice of forest management primarily through the required courses *FOR 280 Forest Resource Policy and Law* and *FOR 435 Conservation Biology*. Along with *FOR 425 Forest Management* and *FOR 400 - Human Dimensions of Forestry and Natural Resources*, *FOR 280* also imparts knowledge of the logistical, social, and legal aspects of public and private forest management enterprises.

In the Forestry curriculum, coverage of ethics was historically delivered in a stand-alone course, *FOR 340 Forest Ethics*, that is no longer being taught. To enhance the delivery of ethics, this important aspect of the forestry profession has now been integrated across the curriculum. Discussion of ethics starts in the first semester of the freshman year in *FOR 285 – Communication and Professional Development in Forestry and Natural Resources I*. In this course, the Society of American Foresters Code of Ethics and the Association of Consulting Foresters Code of Ethics are presented to students. Also, one of the course's guest speakers discusses the SAF Code of Ethics and the importance of ethics in the workplace. *FOR 280 – Forest Resource Policy and Law* also discusses ethics from a myriad of perspectives including environmentalism and conservation; conservation ethics; professional codes of ethics; ethical violations; ethics, professionalism, and careers; and example ethical issues. Ethics is further explored in *FOR 400 - Human Dimensions of Forestry and Natural Resources* through discussions of diversity and inclusion as well as presentation of stakeholder issues including Which stakeholders are involved? Which groups are missing? How do we include the groups that aren't involved? How do viewpoints and experiences

vary based on individuals from different backgrounds? In the last semester of the senior year, *FOR 435 Conservation Biology* provides further discussions on ethics such as covering the philosophical and historical origins of the conservation movement including the evolution of ethical concerns about non-human life, and ensuing activities and codification of those belief systems into environmental laws. *FOR 435* also includes perspectives from various religious, scientific, minority/underrepresented groups, and political entities and how their philosophy towards wildlife and nature raised awareness about conservation issues, resulting in conservation policy and management changes (e.g. Pinchot’s philosophy adopted by USFS, and Muir’s by NPS). While this narrative above presents where ethics is emphasized in the curriculum, ethics is also addressed in a number of other courses across the curriculum (please refer to Matrix of Evident to Meet Standard V).

V.3. Discuss how oral and written communication skills are reinforced throughout the curriculum.

Oral and written communication skills are reinforced throughout the curriculum. Many of the courses have specific course learning outcomes and education activities associated with oral and written communication. Table 3 lists examples where oral and written communication are reinforced in the course.

Table 3 Examples of forestry courses where oral or written communication are reinforced.

Oral or Written Communication	
FOR 250 Statistics and Measurements I	Communicate in written form the results and interpretation of data collected.
FOR 280 Forest Resource Policy and Law	Articulate both verbally and in writing important connections between law and policy and contemporary forest management problems.
FOR 330 GIS and Spatial Analysis	Communicate spatially related natural resource problems using a map.
FOR 340 Forest Ecology	Assimilate an understanding of ecological concepts presented in lecture, field trips and laboratories, developing the ability to apply those concepts to new situations. Course emphasizes writing skills because writing is an essential part of the thinking process, and ecology is an evolving science that requires the assimilation of information to address new questions and problems. Give oral presentations using PowerPoint.
FOR 350 Silviculture	Write and present on basic silvicultural prescriptions.
FOR 400 Human Dimensions of Forestry and Natural Resources	

This course is a writing intensive course and by the end of the course you will be able to successfully complete the Writing Learning Outcomes. The Writing Learning Outcomes include:

- a. Write a paper that is essentially free of mechanical errors (grammar, punctuation, spelling, and syntax) and awkwardness, using a style that is appropriate to the purpose and audience.
- b. Demonstrate an ability to discover, evaluate, and clearly present evidence in support of an argument in the subject area and utilize documentation that conforms to the formats and the citation conventions of the subject area.
- c. Be aware that composing a successful text frequently takes multiple drafts, with varying degrees of focus on generating, revising, editing, and proofreading.
- d. Write a capable, interesting essay about a complex issue in forestry and natural resources for a general university audience.

FOR 435 Conservation Biology

Through short writing assignments and a research project have improved your communication and comprehension skills relevant to the field of conservation biology.

FOR 480 Integrated Forest Resource Management (Capstone)

Relate your knowledge of forestry concepts with information collected on a forested property to develop a detailed management prescription incorporating the landowner’s objectives and administering the objectives in light of ethical forestry and stewardship guidelines.

Demonstrate effective interaction skills and professional conduct with various types of landowners and the public.

V.4. Describe how the curriculum fosters analytical and critical reasoning skills, including systematic problem solving and decision-making by individuals and in a team environment.

The forestry curriculum has courses with analytical and critical reasoning skills. Not only will students learn basic forestry concepts, but they will be able to apply these concepts to solve problems. Table 4 provides examples of the learning outcomes and education activities that foster analytical and critical reasoning skills.

Table 4 Examples of forestry courses where analytical and critical reasoning skills are reinforced.

Analytical and Critical Reasoning Skills	
FOR 219 Dendrology	Identify basic soil and site characteristics (topography, aspect, relief, and drainage) and analyze how these characteristics impact tree location.
FOR 250 Statistics and Measurements I	Design and conduct a timber inventory that meets specific landowner objectives. Apply sampling theory and design concepts to ensure appropriate sampling methods and units of measurement are used when designing and conducting the timber inventory.
FOR 280 Forest Resource Policy and Law	Apply forest policy and law to forest-related issues, including current events and emerging challenges. Evaluate the assumptions, strengths and weaknesses of various reform measures and policy proposals.
FOR 340 Forest Ecology	

Use proper field note taking and data collection techniques. Analyze and interpret data using statistics. Use computers to conduct data analysis and present the data in graph format.
FOR 350 Silviculture
Develop silvicultural prescriptions using various silvicultural concepts.
FOR 357 Inventory and Measurements II
Evaluate how silvicultural prescriptions impact wood product value.
FOR 358 Silvicultural Practices
Analyze how to alter the forest canopy to meet a given objective.
FOR 400 Human Dimensions of Forestry and Natural Resources
Use Tools for Engaging Landowners Effectively (TELE) to formulate a plan to help organizations engage appropriate stakeholders, including landowners, with stewardship related actions.
FOR 460 Forest Hydrology and Watershed Management
Explain the hydrologic cycle and discuss how climate, soil, vegetation, and land-use influences the amount and quality of water.
FOR 435 Conservation Biology
Explain and critically examine common general practical approaches for conserving biodiversity, and identify similarities and differences in their strategies and implementation, as well as both common and unique problems across a diversity of cultures.
FOR 480 Integrated Forest Resource Management (Capstone)
Relate your knowledge of forestry concepts with information collected on a forested property to develop a detailed management prescription incorporating the landowner's objectives and administering the objectives in light of ethical forestry and stewardship guidelines.

Throughout the curriculum students will individually be able to solve problems and make decisions. Students will also work in a team environment to make decisions and solve problems. Collaborative problem solving is one of the common themes in the curriculum. Table 5 provides examples of forestry courses where collaborative problem solving skills are reinforced.

Table 5 Examples of forestry courses where collaborative problem solving skills are reinforced.

Collaborative Problem Solving	
FOR 280 Forest Resource Policy and Law	Listen and understand opposing viewpoints and rationally and fairly address a particular issue.
FOR 330 GIS and Spatial Analysis	Work in teams to develop GIS projects that address a real-world public concern.
FOR 340 Forest Ecology	Work in teams in the field to collect, analyze, and interpret data. Papers are written individually.
FOR 358 Silvicultural Practices	Work in teams to write and present basic silvicultural prescriptions.
FOR 400 Human Dimensions of Forestry and Natural Resources	Students will work in groups to prepare a presentation of their group project to the organization and other classmates.
FOR 480 Integrated Forest Resource Management (Capstone)	Work in teams to develop management plans.

V.5. Describe how student awareness of historical and current issues and policies affecting resource management and conservation is established.

Students begin their forestry curriculum with *FOR 100 Forests and Forestry*. During this course, they are presented with various issues facing the forestry profession. In spring of the sophomore year students take *FOR 280 Forest Resource Policy and Law*. During this course, students learn to explain the political process including how policy is formed, analyzed, evaluated, and implemented. Students learn to identify participants in the political process and explain the role these participants play in the political process. Historical and current issues are discussed and students will be able to explain how various programs, laws, and regulates impact forests. When given an issue at the local, regional, national, or global level, students will be able to explain how current and future policy approaches at these different levels can address the issue.

In their junior year, students in *FOR 320 Forest Valuation and Economics* will be able to apply economic policies to forestry practices. Students will also be able to identify how federal, state, and local tax policies govern the practice of forestry.

In their senior year, students take *FOR 400 Human Dimensions of Forestry and Natural Resources* where they will learn about a variety of resource management and conservation issues and be able to explain the interconnection between society and natural resource issues across a range of societies. When given a natural resource issue, students will be able to identify the stakeholders involved and explain the different decision-making and public participation options for these issues.

In the spring of the senior year, students will take *FOR 435 Conservation Biology* where they learn the history of conservation biology as well as current issues such as the role of forest management, wetland management, and land use decisions have in addressing conservation issues. Students also learn to analyze conservation policy, such as the Endangered Species Act, and its impact on conservation biology. Another learning outcome of this course is students will be able to explain conservation biology issues at the local, regional, national, and global level.

V.6. Describe how the curriculum provides a variety of educational experiences including lectures, discussion, simulations, computer applications, and individual and group projects in laboratories and field experiences and how these contribute to the program's stated educational outcomes. Discuss safety instruction provided in advance of indoor and field laboratories.

The forestry curriculum provides a variety of education experiences including lectures, discussion, simulations, computer applications, and individual and group projects in laboratories and field experiences. Many courses incorporate lecture format with discussion, computer applications and field work while other courses are more discussion based. The discussion based courses include *FOR 280 Forest Resource Policy and Law* and *FOR 400 Human Dimensions of Forestry and Natural Resources*.

Students regularly use computer applications in courses such as *FOR 250 Statistics and Measurements I*, *FOR 330 GIS and Spatial Analysis*, *FOR 350 Silviculture*, *FOR 425 Forest Management*, and *FOR 480 Integrated Forest Resource Management*. The types of computer software used ranges from spreadsheets, database and presentation software to simulation and mapping software. For example, students use simulation software in courses such as *FOR 350*

Silviculture and FOR 480 Integrated Forest Resource Management.

Students gain useful hands on experience by working in groups and individually with field and laboratory experiences. Over half of the courses in the undergraduate forestry curriculum have a field and laboratory component where students gain hands-on practical experience which allows them to better understand forest conditions, products, and services. The capstone of the forestry degree program during the final semester at UK is a course on integrated forest resource management (*FOR 480*). In this course, students merge all skills learned and develop a management plan for an actual piece of forested land.

A number of forestry courses utilize Robinson Forest, a 15,000-acre outdoor laboratory located in eastern Kentucky and managed by UK Forestry. A significant portion of the semester-long spring field semester is headquartered at the Robinson Forest camp where junior forestry majors live and develop practical field skills needed by foresters.

When the Department revised its undergraduate curriculum around the time of the last accreditation visit, one significant change was the replacement of the traditional summer camp with a field semester during the spring of the junior year. This change served a three-fold purpose. First, and most importantly, it allowed the entire summer following the junior year to be available for valuable internship experience. Second, it provided 14 weeks of field- based learning instead of eight. Third, by eliminating a summer tuition bill, it accomplished the above objectives at a significantly reduced the cost to students.

The spring field semester is designed to be a seamless weaving of detailed course material into hands-on, practical learning experiences across a wide range of subject matter. Often, students and faculty discuss multiple topics and disciplines on any given day. The field semester relies heavily on off-campus experiences and involvement by professionals in the field throughout. Although UK Forestry has annually evaluated and adjusted this component of the curriculum, some traditions have emerged. Juniors begin the semester at the Asbury University Challenge Course in Wilmore, Kentucky. This day-long event puts the students in situations where they have to rely on each other and work as a team to overcome physical challenges and obstacles. The day ends with students negotiating a series of challenges situated 30 feet in the air. Other traditions are attendance at the Kentucky-Tennessee Society of American Foresters winter meeting to foster professional development. In addition to fieldwork in the Lexington area, Robinson Forest, and western Kentucky, the field semester class spends a week visiting the Nantahala and Chattahoochee National Forests. The Forestry field experience (be it the old summer camp or the new field semester) continues to be a bonding mechanism for our students and helps foster the sense of a class within a big university.

V.7. Discuss how the curriculum imparts technological literacy.

Technology literacy is embedded within the curriculum in three primary ways: 1) use of computing software for written, visual, and oral communication, 2) applying global positioning system (GPS) hardware and geographic information systems (GIS) mapping and spatial analysis, 3) use of software tools for data processing, statistical analysis, and decision making. A broad diversity of courses provides students with guidance and experience relating to computing

software for communication. While a holistic summary of communication activities in the curriculum are provided above, some examples of where technology is employed are the writing and resume exercises in *FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I*, laboratory reports in measurements, ecology, silviculture, and hydrology courses, as well as the capstone student management plan portfolio and oral presentation in *FOR 480 Integrated Forest Resource Management*. Use of GPS and GIS technologies are foundational to class activities in *FOR 200 Basics of Geospatial Technology*, *FOR 330 GIS and Spatial Analysis*, *FOR 357 Inventory and Measurements II*, and *FOR 480 Integrated Forest Resource Management*. Student use includes traditional handheld GPS units and desktop computer-based ArcGIS, but also tablet-based mapping software solutions such as Avenza Maps on the Department owned tablets purchased in 2019. Software tools for data processing, statistical analysis, and decision making are directly integrated into educational activities in the sequence of forest measurement courses, laboratory projects in *FOR 340 Forest Ecology* and *FOR 350 Silviculture*, the senior-level course in forest management (*FOR 425*), and students' culminating capstone experience in *FOR 480 Integrated Forest Resource Management*.

V.8. Describe any distance-learning component of a program and how it is consistent with the program's stated objectives. Distance learning includes off-campus classroom programs, external degree programs, branch campuses, correspondence courses, and off-campus, electronically-based instruction.

The undergraduate forestry program does not have a distance learning component.

STANDARD VI: FACULTY

See Appendix 1 for the following SAF Forms:

Document C-1: Background Summary for Faculty Reporting to the Forestry Program Head

Document C-2: Background Summary for Faculty Teaching Courses Listed in Forms B-1 and B2 but NOT reporting to the Forestry Department Head.

Document D: Academic Summary for Faculty Reporting to the Forestry Program Head.

Complete Document C-1; and C-2 if appropriate; follow the format as presented.

VI.1.a. Use Document C-1: Background Summary for Faculty Reporting to the Program Head, to indicate faculty members within the department.

See Appendix 1 for Document C-1.

VI.1.b. Use Document C-2: Background Summary for Faculty Teaching Courses Listed in Forms B-1 and B-2 but NOT Reporting to the Program Head to indicate faculty members from other departments or outside agencies who teach required professional courses or restricted electives. Document any use of individuals from outside the program.

- You may create your own documents, as long as they provide the information requested in the provided forms.

See Appendix 1 for Document C-2.

VI.2. Complete Document D or the Program F_S Calculations form.

- Baccalaureate and Master's degree programs should complete Document D: Academic Summary for Faculty Reporting to the Program Head, to show the budgeted time allocation for faculty members who report to the program head. Include adjunct or contract faculty who hold joint appointments or are otherwise part-time members of the faculty. List vacant positions now authorized and for which funding is available. Do not list emeritus faculty unless actively teaching.
- You may create your own document, as long as it provides the information requested in the provided form.
- Document D must show that a minimum of eight full-time equivalent (FTE) faculty members are engaged and responsible for delivery of the professional curriculum within the degree program for which accreditation is sought and report to the responsible academic head. It must demonstrate that the teaching assignments of the faculty members who make up these 8 FTEs are reasonably distributed across the required areas of professional education study as defined in Standard V.
- Forest Technology programs should complete the Program F_S Calculations form. You may NOT use your own document.

See Appendix 1 for Document D.

VI.3. Complete Document E: Individual Faculty Information for each faculty member who teaches professional subject matter required or restricted elective courses in the curricula.

- You may create your own document, as long as it provides the information requested in the provided form.

See Appendix 3 for Document E – Faculty CVs.

VI.4. Discuss how the faculty is empowered to (and does) keep the curriculum current and in concert with the program's educational goals and objectives, and provides effective academic guidance for students.

Individual faculty members are responsible for developing their own syllabus and course content, in the context of several processes that engage faculty in curricular oversight. The university requires annual outcomes assessments, and so the curriculum, and courses within it, have been matched to the overall outcomes that are assessed by the program (see Standard II). All of these processes have led to ongoing improvement in the forestry curriculum with the goal of improved student learning.

Faculty in the Department of Forestry and Natural Resources have been fully engaged in faculty governance. For example, Department faculty have consistently had representation on the College Faculty Senate, as well as the University Senate, the latter an important body for decision-making that affects curricula among other academic concerns. Faculty have served frequently on both college and university promotion and tenure committees.

VI.5. Document that the program follows its institution's policies and guidelines in the recruitment and retention of faculty that reflect cultural, ethnic, and gender diversity. Describe institution, academic unit, or program initiatives to recruit and retain a diverse faculty.

The University of Kentucky, College of Agriculture, Food and Environment and the Department of Forestry and Natural Resources are committed to a policy of providing employment opportunities to all qualified applicants regardless of economic or social status, and do not discriminate on the basis of race, color, religion, gender, marital status, beliefs, age, national origin, sexual orientation, or physical or mental disability. The university, college, and Department are in compliance with Title IX of the Educational Amendments of 1972 which prohibits gender discrimination, and Title VI of the Civil Rights Act of 1964. Efforts to comply with the applicable laws and regulations are coordinated by the University's Office of Institutional Equity and Equal Opportunity. The Department is committed to maintaining as diverse a workforce as possible and aims to attract the most qualified candidates without reference to gender, race or cultural bias. As per university requirement, the Department

completes an affirmative action form for every faculty and professional staff search. These activities follow the University of Kentucky's policies and guidelines for recruiting and retaining a diverse faculty and staff workforce.

When faculty vacancies arise, a search committee is appointed and the position is advertised in the major journals for the specific area of specialty, at all the land grant universities, and on relevant Internet list serves. The university and college, through the Assistant Dean and Director for Diversity, provide support in faculty job postings to aid in reaching a diverse audience. The Department has, and continues, to actively seek assistance to ensure that our faculty search process is inclusive. The search committee members screen the applications, the committee provides interview recommendations to the chair and faculty, and the top (2-4) candidates are invited for an on-site interview. Upon completion of the interview process, that involves engagement with all faculty, irrespective to assignment, staff, and undergraduate and graduate student group meetings, the search committee obtains input and subsequently discusses with faculty and forwards a recommendation to the chair. The chair provides this input and his recommendation to the dean of the College of Agriculture, Food and Environment, and if in agreement, an offer is extended to the candidate. If the candidate does not accept the offer, the chair solicits input from the faculty regarding the suitability of the other candidates interviewed, and an offer may be extended to a second suitable candidate. If no suitable candidate is found, the search committee may re-advertise the position and the selection process would be re-initiated.

The general policies and procedures for promotion and tenure are guided by the University of Kentucky <https://www.uky.edu/ofa/sites/www.uky.edu.ofa/files/uploads/ar2-1-1.pdf>. These procedures are designed to evaluate, recognize, and reward high quality teaching, research, extension, and service missions of individual faculty regardless of an individual's race, color, religion, gender, marital status, beliefs, age, national origin, sexual orientation, or physical or mental disability. The distribution of effort agreement for the individual faculty member forms the basis for the expected balance of scholarly achievement among the three activity areas, research, teaching and extension; in addition, all faculty starting in 2019 have an additional service appointment. The promotion and tenure procedure, and the decisions that follow, are heavily based on peer review by department, college, and university colleagues, and upon outside letters of recommendation solicited by the chair. Candidates have the responsibility to provide clear evidence for attainment of excellence in all components of their assigned responsibilities to the university (research, teaching and extension) and demonstrate the potential for continuing productivity and achievement.

An integral component of the promotion and tenure process is the annual performance evaluation. Each year, non-tenured faculty submit a standardized self-evaluation document detailing their responsibilities, activities and accomplishments for the previous year. Included within this document is information detailing, for example, courses taught, student evaluation of performance, research productivity (as measured by project involvement, grant support, scientific papers presented and published, graduate student training), and service to the university, profession, stakeholders and community. These materials are reviewed and rated by the chair based on the relationship between the distribution of effort agreement and productivity in the assigned areas. In this process, the chair seeks input from a committee of three tenured faculty peers. A rating and corresponding strengths and areas of improvement developed by the

chair in consultation with the faculty peers are forwarded to the college administration (dean and associate deans) for review. A deans rating as well as recommendations for improvement are forwarded to the chair and the chair negotiates a final rating with the college administration under the purview of the dean. The chair discusses the final rating with faculty and if in agreement the annual evaluation is finalized. The university has an appeal process that allows faculty and the chair to discuss final ratings with the college administration, which if in agreement, can lead to changes in the annual rating. Tenured faculty undergo identical procedures biennially (although they may also opt for review in alternating years as well). Teaching faculty are required to develop and maintain a teaching portfolio that is incorporated into the documentation for periodic performance evaluation, as well as the promotion and tenure dossier.

The periodic performance evaluations are used as an instrument for judging faculty progress toward promotion and tenure, particularly for untenured faculty, and for determination of annual salary increases for all faculty. The chair is mandated to counsel individual faculty following completion of the performance evaluation process and to provide meaningful suggestions for improvement. For untenured faculty, the annual performance evaluation provides a faculty member with a clear understanding of his or her progress toward promotion and tenure. In a situation where marginal performance is noted, it is the chair's responsibility to indicate, and to advise appropriately and as early as possible that unsatisfactory progress is being made. For cases when the faculty member disagrees with the final rating ascribed in the evaluation, there is an established appeal process as indicated above. Appropriate procedures for the appeal process are communicated to the faculty with specific information as to the timeline for making an appeal. Similarly, there is also an appeals process in place for faculty denied promotion and/or tenure.

In addition to the annual performance evaluation, the chair conducts an assessment of faculty progress toward promotion and tenure two and four years after the initial appointment. A detailed CV and examples of the individual's accomplishments during each of these intermediate holistic reviews help identify strengths as well as areas of potential weakness that can be remedied prior to review for promotion and tenure. Tenured faculty within the unit review the progress of the individual toward promotion and tenure and advise the chair regarding advancement, as well as providing suggestions for improvement. The chair counsels the individual on these reviews and provides a statement of opinion that is incorporated into the faculty member's personnel file.

VI.6. Discuss faculty expertise in the assigned areas of instruction; ability and effectiveness in instructing; aptitude for working closely with students; and ability to stimulate independent thinking, provide intellectual leadership, and model ethical and professional behavior.

At the present time, the Department of Forestry and Natural Resources has 15 full-time faculty positions, including the department chair, who contribute to the forestry degree program through instruction, advising, and curriculum development and assessment. One of these positions was recently hired and the selected candidate, Dr. Jacob Muller, will join the faculty on February 1, 2020. One of these faculty positions is currently open due to a faculty departure in summer 2019.

The faculty search process for this open position in forest management is currently in process. The hiring process for this open position is expected to conclude by August 2020. In addition to the formal faculty lines, four full-time staff (Dr. Dr. Darryl Cremeans, Dr. Laura Lhotka, Rob Paratley, and Billy Thomas) contribute to the forestry degree program through consistent teaching assignments. One faculty member in the Department of Entomology provides instructional assistance (0.10 FTE) to the forestry undergraduate curriculum by delivering one required forestry course and serves as a member of the graduate faculty of the Department of Forestry and Natural Resources.

Faculty expertise represents a wide array of forestry disciplines, providing for meaningful learning experiences and opportunities in the undergraduate curriculum. Areas of faculty strength and expertise span the four professional education subject areas defined within Standard V. The Department's faculty body includes 5 professors, 4 associate professors, and 5 assistant professors. The gender distribution of the current faculty includes 12 men and 2 women.

In the College of Agriculture, Food and Environment, all courses are taught by regular faculty, or in some instances, by professional staff with particular expertise. As a result, there is very little formal use of graduate students for teaching in the college. The teaching assistant position involves serving as a teaching assistant (TA) for both semesters in a given year, is primarily used for Dendrology (FOR 219) in the fall semester and for another course during the spring semester, typically Integrated Forest Resources Management (FOR 480). These classes have high enrollment and/or a major field component wherein an additional person is needed to conduct the course. Additionally, all graduate research assistants must serve as a TA for one semester to obtain some teaching experience. These teaching experiences are carefully overseen by the faculty member responsible for the course, and the graduate student receives feedback regarding their performance. Further, this practice facilitates interactions between graduate and undergraduate students in the Department, which we believe enhances the educational experience of our undergraduates, many of whom become involved in research with graduate students. In addition, some Ph.D. candidates participate in undergraduate education through informal assistance in laboratory sections, and by filling in for lectures when faculty are ill or are away from campus for professional meetings. On occasion, Ph.D. students have volunteered to participate in undergraduate instruction to gain teaching experience and bolster their resumes.

VI.7. Describe faculty involvement in professional development and scholarly activities appropriate to their disciplines. Discuss the extent to which faculty research enriches the curriculum and any opportunities available to students to participate in research activities.

Scholarly activities by faculty and staff serve to enrich the Department's forestry degree program. This enrichment comes in the form of professional development that builds the experiences and knowledge based of contributing instructors. These activities also build partnerships with external stakeholders that can have positive feedback into the curriculum including diversification of student learning experiences, provide support for students, and create employment opportunities. Research and extension work by faculty and staff also yields research and demonstration sites that build our capacity to deliver a field-based curriculum especially when considering the spring field semester each student takes in their junior year.

The majority of faculty have substantial research responsibilities including several extension faculty, the Department is very active in research and graduate education. For instance, data available for the last four years (2016 to 2019) showed faculty published 172 peer-reviewed manuscripts (an average of 43 per year). Between 2013 and 2018, Department faculty secured an average of \$932,181 per year in external funding and supervised more than 28 M.S. students through to graduation. Research conducted by faculty have been featured in high-impact scientific journals as well as in applied and professional publications such as the Journal of Forestry and USDA Forest Service General Technical Reports.

Where possible, faculty and staff incorporate undergraduate students into their research and extensions programs. Such opportunities provide critical exposure of the land grant mission to undergraduates and offer important work experience to students. In the past five years, 101 undergraduate students have been engaged in various research and extension activities. Thirty-five have been forestry students. This work had yielded 26 co-authored published works (research and extension publications) by undergraduate students. Four of these co-authored publications were by forestry students.

An important mechanism for faculty professional development within the university environment is sabbatical leave. The University of Kentucky policy on sabbatical leave provides for a six-month (one semester) leave with full pay and benefits, or a twelve-month (full academic year) leave with half pay, following six years of continual service. During the past ten years, only one faculty member has participated in the leave program: Chris Barton - March 15 – August 16, 2012. University of South Australia, Australian CRC CARE (Cooperative Research Centre for Contamination Assessment and Remediation of the Environment) and at coal mines operated by Peabody Energy in Queensland and New South Wales.

Finally, professional development opportunities and service to the profession pursued by faculty extend beyond research and extension. Faculty provide important leadership contributions within the college and university through avenues such as the UK Faculty Senate and the CAFE Faculty Council. Participation in professional societies such as the Society of American Foresters, the Wildlife Society, the Ecological Society of America, the Soil Science Society of America, American Society for Surface Mining and Reclamation, and International Association of Landscape Ecology are important to faculty. As members of these associations, faculty have made important contributions to leadership and service roles within these organizations at the state and national levels. Faculty serve important roles on advisory boards of natural resources organizations and initiatives (e.g., Appalachian Region Reforestation Initiative's Science Team, executive committee member of the White Oak Initiative, co-directorship and team leaders in the Forest Health Research and Education Center, Southern Region Extension Forestry – Executive Committee, chair of the governors appointed Kentucky Forestry Best Management Practices Board, Kentucky Woodland Owners Association Berea College Forest Advisory Board, and Kentucky State Fire Council I&E Committee). Several of the Department's research faculty also serve on the editorial boards of national and international journals. Each of these endeavors serves to improve faculty experience, knowledge, and the breadth and diversity of their professional networks. In turn, these activities help faculty enrich educational experiences for students and allow the faculty body as a whole to better administer, assess, and improve the Department's forestry curriculum.

Appendix 1. SAF Forms

Matrix of Evidence to Meet Standard V: Curriculum
FORESTRY

Institution Name: **University of Kentucky – Department of Forestry and Natural Resources**

Official Degree Title: **Bachelor of Science in Forestry**

Official Option Titles: **n/a**

Academic Year: **2019-2020**

Major Subject Category	Competencies	List course number(s) and name(s) or other activities
A. Ecology and Biology:	A1. an understanding of taxonomy and an ability to identify forest and other tree species, their distribution, and associated vegetation and wildlife;	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 219 Dendrology • FOR 221 Winter Dendrology • FOR 340 Forest Ecology • FOR 365 Wildlife Assessment • FOR 370 Wildlife Biology and Management • FOR 480 Integrated Forest Resource Management
	A2. knowledge of soil properties and processes, hydrology, water quality, and watershed functions;	<ul style="list-style-type: none"> • FOR 219 Dendrology • FOR 221 Winter Dendrology • FOR 340 Forest Ecology • FOR 350 Silviculture • FOR 356 Forest Soils and Hydrology • FOR 358 Silvicultural Practices • PLS 366 Fundamentals of Soil Science • FOR 460 Forest Hydrology & Watershed Management • FOR 480 Integrated Forest Resource Management
	A3. an understanding of ecological concepts and principles, including the structure and function of ecosystems, plant and animal communities, competition, diversity, population dynamics, succession, disturbance, and nutrient cycling;	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 219 Dendrology • FOR 221 Winter Dendrology • FOR 310 Introduction to Forest Health and Protection • FOR 340 Forest Ecology • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 365 Wildlife Assessment • FOR 370 Wildlife Biology and Management • FOR 435 Conservation Biology
	A4. an ability to make ecosystem, forest, and stand assessments;	<ul style="list-style-type: none"> • FOR 310 Introduction to Forest Health and Protection • FOR 340 Forest Ecology • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 365 Wildlife Assessment

Matrix of Evidence to Meet Standard V: Curriculum
FORESTRY

		<ul style="list-style-type: none"> • FOR 370 Wildlife Biology and Management • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management
	<p>A5. knowledge of tree physiology and the effects of climate, fire, pollutants, moisture, nutrients, genetics, insects and diseases on tree and forest health and productivity.</p>	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 219 Dendrology • FOR 221 Winter Dendrology • FOR 255 Forest Fire • FOR 310 Introduction to Forest Health and Protection • FOR 340 Forest Ecology • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 365 Wildlife Assessment • FOR 435 Conservation Biology • FOR 480 Integrated Forest Resource Management • FOR 502 Forest Entomology
<p>B. Measurement of Forest Resources:</p>	<p>B1. an ability to identify and measure land areas and conduct spatial analysis;</p>	<ul style="list-style-type: none"> • FOR 200 Basics of Geospatial Technology • FOR 250 Statistics and Measurements I • FOR 330 GIS and Spatial Analysis • FOR 356 Forest Soils and Hydrology • FOR 357 Inventory and Measurements II • FOR 480 Integrated Forest Resource Management
	<p>B2. an ability to design and implement comprehensive inventories that meet specific objectives using appropriate sampling methods and units of measurement; and</p>	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 250 Statistics and Measurements I • FOR 357 Inventory and Measurements II • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management
	<p>B3. an ability to analyze inventory data and project future forest, stand, and tree conditions.</p>	<ul style="list-style-type: none"> • FOR 250 Statistics and Measurements I • FOR 350 Silviculture • FOR 357 Inventory and Measurements II • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management

Matrix of Evidence to Meet Standard V: Curriculum
FORESTRY

C. Management of Forest Resources	<p>C1. an ability to develop, apply, and understand the effects of silvicultural prescriptions appropriate to management objectives, including methods of establishing and influencing the composition, growth, and quality of forests;</p>	<ul style="list-style-type: none"> • FOR 310 Introduction to Forest Health and Protection • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 359 Forest Operations and Utilization • FOR 365 Wildlife Assessment • FOR 370 Wildlife Biology and Management • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management
	<p>C2. an ability to analyze the economic, environmental, and social consequences of forest resource management strategies and decisions;</p>	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 280 Forest Resource Policy and Law • FOR 310 Introduction to Forest Health and Protection • FOR 320 Forest Valuation and Economics • FOR 330 GIS and Spatial Analysis • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 359 Forest Operations and Utilization • FOR 400 Human Dimensions of Forestry & Natural Resources • FOR 425 Forest Management • FOR 435 Conservation Biology • FOR 460 Forest Hydrology & Watershed Management • FOR 480 Integrated Forest Resource Management • FOR 502 Forest Entomology
	<p>C3. an ability to develop management plans with specific multiple objectives and constraints;</p>	<ul style="list-style-type: none"> • FOR 358 Silvicultural Practices • FOR 359 Forest Operations and Utilization • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management
	<p>C4. an understanding of the valuation procedures, market forces, processing systems, transportation and harvesting activities that translate human demands for timber-based and other consumable forest products into the availability of those products;</p>	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 260 Forest Products and Wood Science • FOR 320 Forest Valuation and Economics • FOR 359 Forest Operations and Utilization • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management

Matrix of Evidence to Meet Standard V: Curriculum
FORESTRY

	<p>C5. an understanding of the valuation procedures, market, and non-market forces that avail humans the opportunities to enjoy non-consumptive products and services of forests; and</p>	<ul style="list-style-type: none"> • FOR 260 Forest Products and Wood Science • FOR 320 Forest Valuation and Economics • FOR 480 Integrated Forest Resource Management
	<p>C6. an understanding of the administration, ownership, and organization of forest management enterprises.</p>	<ul style="list-style-type: none"> • FOR 425 Forest Management • FOR 480 Integrated Forest Resource Management
<p style="text-align: center;">D. Forest Resource Policy, Economics, and Administration</p>	<p>D1. an understanding of forest policy and the processes by which it is developed;</p>	<ul style="list-style-type: none"> • FOR 280 Forest Resource Policy and Law • FOR 435 Conservation Biology
	<p>D2. knowledge of how federal, state, and local laws and regulations govern the practice of forest resource management;</p>	<ul style="list-style-type: none"> • FOR 280 Forest Resource Policy and Law • FOR 435 Conservation Biology
	<p>D3. an understanding of professional ethics, including the SAF Code, and recognition of the responsibility to adhere to ethical standards in decision making on behalf of clients and the public;</p>	<ul style="list-style-type: none"> • FOR 260 Forest Products and Wood Science • FOR 280 Forest Resource Policy and Law • FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I • FOR 286 Com.& Prof. Dev. in For. & Nat. Res. II • FOR 320 Forest Valuation and Economics • FOR 350 Silviculture • FOR 358 Silvicultural Practices • FOR 370 Wildlife Biology and Management • FOR 400 Human Dimensions of Forestry & Natural Resources • FOR 425 Forest Management • FOR 435 Conservation Biology • FOR 480 Integrated Forest Resource Management
	<p>D4. an understanding of the technical, financial, human resources, and legal aspects of public and private enterprises.</p>	<ul style="list-style-type: none"> • FOR 280 Forest Resource Policy and Law

Matrix of Evidence to Meet Standard V: Curriculum
FORESTRY

<p>Technological Literacy</p>	<p>Students must be able to use contemporary electronic technologies in professional life.</p>	<ul style="list-style-type: none"> • FOR 100 Forests and Forestry • FOR 200 Basics of Geospatial Technology • FOR 250 Statistics and Measurements I • FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I • FOR 286 Com.& Prof. Dev. in For. & Nat. Res. II • FOR 320 Forest Valuation and Economics • FOR 330 GIS and Spatial Analysis • FOR 340 Forest Ecology • FOR 350 Silviculture • FOR 357 Inventory and Measurements II • FOR 358 Silvicultural Practices • FOR 400 Human Dimensions of Forestry & Natural Resources • FOR 425 Forest Management • FOR 460 Forest Hydrology & Watershed Management • FOR 480 Integrated Forest Resource Management
<p>Distance Learning</p>	<p>Any distance-learning component of a program must be consistent with the program's stated objectives. Examples of distance learning include off-campus classroom programs, external degree programs, branch campuses, correspondence courses, and electronically based instruction.</p>	

Document AB-1: Education Summary - Required Courses													
Institution Name: University of Kentucky - Department of Forestry and Natural Resources										Academic Year: 2019-2020			
Official Degree Title: Bachelor of Science in Forestry													
Official Option Title: n/a													
Required Course # and Title	Credit Hours in SAF-Required Areas of Study (Credit hours may be distributed among two or more areas of study for a listed course.)							Course Contains Significant Content in (indicate all that apply)					TOTAL Credit Hours
	Communications	Basic Science and Mathematics	Social Sciences and Humanities	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, and Administration and Law	Field Work	Ethics	Oral and Written Communications	Integrated Resource Management	Technological Literacy	
Required Forestry Courses													
FOR 100 Forests and Forestry				0.75	0.75	0.75	0.75			✓		✓	3
FOR 200 Basics of Geospatial Technology					3			✓		✓		✓	3
FOR 219 Dendrology				4				✓					4
FOR 221 Winter Dendrology				1				✓					1
FOR 250 Statistics and Measurements I					4			✓		✓		✓	4
FOR 255 Forest Fire				1				✓					1
FOR 260 Forest Products and Wood Science						3	1			✓			4
FOR 280 Forest Resource Policy and Law							3			✓			3
FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I							1		✓	✓		✓	1
FOR 286 Com.& Prof. Dev. in For. & Nat. Res. II							1	✓	✓	✓		✓	1
FOR 310 Introduction to Forest Health and Protection				0.5		0.5		✓	✓	✓			1
FOR 320 Forest Valuation and Economics						2	1		✓	✓		✓	3
FOR 330 GIS and Spatial Analysis					3							✓	3
FOR 340 Forest Ecology				4				✓		✓		✓	4
FOR 350 Silviculture				1		3		✓	✓	✓	✓	✓	4
FOR 356 Forest Soils and Hydrology				0.5	0.5			✓		✓	✓		1
FOR 357 Inventory and Measurements II					2			✓		✓		✓	2
FOR 358 Silvicultural Practices				0.5		2.5		✓	✓	✓	✓	✓	3
FOR 359 Forest Operations and Utilization						3		✓	✓		✓		3
FOR 365 Wildlife Assessment				1		1		✓		✓	✓		2
PLS 366 Fundamentals of Soil Science				4				✓		✓			4
FOR 370 Wildlife Biology and Management				3.5		0.5			✓	✓	✓		4
FOR 400 Human Dimensions of Forestry & Natural Resources^						2	1		✓	✓		✓	3
FOR 425 Forest Management					1	3		✓	✓	✓	✓	✓	4
FOR 435 Conservation Biology				1.5			1.5		✓	✓	✓		3
FOR 460 Forest Hydrology & Watershed Management				2.5		0.5			✓	✓	✓	✓	3
FOR 480 Integrated Forest Resource Management^				1	1.5	1.5	1	✓	✓	✓	✓	✓	5
FOR 502 Forest Entomology				3						✓			3

*Forestry students must take FOR 250 and FOR 435 even if they have fulfilled the UK Core for *Statistical Inferential Reasoning* and *Global Dynamics*.

^FOR 400 and FOR 480 fulfill UK's *Graduation Composition and Communication Requirement*.

Document C 2: Faculty Summary - Those Reporting to Program Head										
Institution Name: University of Kentucky - Department of Forestry and Natural Resources							Academic Year:	2019-2020		
Official Degree Title: Bachelor of Science in Forestry							Expertise Relative to SAF Accreditation Knowledge Areas - check those that apply			
Official Option Titles: n/a							Forestry			
Faculty Member	Academic Rank or Title	Highest Degree / Year / Institution	Years at Current Institution (<i>since 2020</i>)	Years at Other Institution(s)	Years Non-academic Experience	Major Disciplinary Expertise	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, Admin
Mary Arthur	Full Professor	PhD/1990/Cornell Univ.	27	2.5	0	Forest Ecology	Ecology and Biology	---	---	---
Christopher Barton	Full Professor	PhD/1999/Univ. of Kentucky	17	0	4	Forest Hydrology & Watershed Mgmt	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	---
Terrence Conners	Associate Professor	PhD/1985/Virginia Polytechnic Univ.	19	15	1.2	Forest Products	---	---	Management of Forest Resources	---
John Cox	Associate Professor	PhD/2003/Univ. of Kentucky	7 as faculty / 16 total	1	1	Wildlife & Conservation Biology	Ecology and Biology	---	Management of Forest Resources	Policy, Economics, Admin
Ellen Crocker	Assistant Professor	PhD/2015/Cornell Univ.	1 as faculty / 5 total	4	0	Forest Health Extension	Ecology and Biology	---	---	---
Michael Lacki	Full Professor	PhD/1984/North Carolina State Univ.	31	5	0	Wildlife Ecology & Management	Ecology and Biology	---	Management of Forest Resources	---
John Lhotka	Associate Professor	PhD/2006/Auburn Univ.	13	1	0	Silviculture	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, Admin
Thomas Ochuodho	Assistant Professor	PhD/2013/Univ. of New Brunswick	4	2	0	Forest Economics & Policy	---	---	Management of Forest Resources	Policy, Economics, Admin
Steven Price	Associate Professor	PhD/2011/Wake Forest Univ.	8	8	0	Stream & Riparian Ecology	Ecology and Biology	---	---	---
James Ringe	Full Professor	PhD/1983/Purdue Univ.	36	0	0	Marketing, Economics, & Wood Products	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, Admin
Matthew Springer	Assistant Professor	PhD/2017/Southern Illinois Univ. Carbondale	4	0	1	Wildlife Management	Ecology and Biology	---	---	---
Jeffrey Stringer	Full Professor	PhD/1993/Univ. of Kentucky	25 as faculty / 42 total	0	0	Hardwood Silviculture & Forest Operations	---	---	Management of Forest Resources	---
Jian Yang	Assistant Professor	PhD/2005/Univ. of Missouri-Columbia	6	10	0	Forest Landscape Ecology	---	Measurement of Forest Resources	---	---
Adjunct Instructors										
Darryl Cremeans	Adjunct Instructor	PhD/1992/Univ. of Kentucky	9 as instructor / 31 total	0	0	Mensuration	---	Measurement of Forest Resources	---	---
Laura Lhotka	Adjunct Instructor	PhD/2006/Auburn Univ.	8 as instructor / 13 total	4	1	Human Dimensions of Forestry & Nat. Resources	Ecology and Biology	---	Management of Forest Resources	Policy, Economics, Admin
Rob Paratley	Adjunct Instructor	MS/1986/Cornell Univ.	27 as instructor	9	0	Dendrology	Ecology and Biology	---	---	---
William Thomas	Adjunct Instructor	MS/1999/Univ. of KY (currently PhD Candidate in Sociology at UK)	3 as instructor / 15 total	0	6	Extension Forester	---	---	Management of Forest Resources	Policy, Economics, Admin

Document C 2: Faculty Summary - Those Not Reporting to Program Head										
Institution Name: University of Kentucky - Department of Forestry and Natural Resources							Academic Year:	2019-2020		
Official Degree Title: Bachelor of Science in Forestry							Expertise Relative to SAF Accreditation Knowledge Areas - check those that apply.			
Official Option Titles: n/a							Forestry			
Faculty Member	Academic Rank or Title	Highest Degree / Year / Institution	Years at Current Institution	Years at Other Institution(s)	Years Non-academic Experience	Major Disciplinary Expertise	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, Admin
Chris Matocha	Associate Professor	PhD/2000/Univ. of Delaware	20	0	0	Plant and Soil Sciences	Ecology and Biology	---	---	---
David McNear	Associate Professor	PhD/2005/Univ. of Delaware	13	1	0	Plant and Soil Sciences	Ecology and Biology	---	---	---
Lynne Rieske-Kinney	Professor	PhD/1995/Univ. of Wisconsin	24	1	0	Entomology	Ecology and Biology	---	---	---

Document D-1: Faculty Teaching Summary - Those Reporting to Program Head													
Institution Name: University of Kentucky - Department of Forestry and Natural Resources										Academic Year: 2019-2020			
Official Degree Title: Bachelor of Science in Forestry													
Official Option Titles: n/a													
Faculty Member	Budgeted Allocation (%)			All Courses Taught Title and Course	Indicate if the listed course is required or a restricted elective in the curricula under accreditation review.		Credit Hours	Weekly Contact Hours	Total Enrollment ¹		# of Advisees ²	Undergrad Credit Hours	** Proportion allocated to FOR
	Teaching	Research	Extension / Service		Required (FOR)	Restricted (FOR)			Undergrad	Graduate			
Mary Arthur	20.16%	64.84%	15.00%	FOR 340 Forest Ecology	Required	---	4	10.2	43	0	2	172	100%
Christopher Barton	30.00%	65.00%	5.00%	FOR 356 Forest Soils and Hydrology	Required	---	1	40 hrs for 1 week	11	0	0	11	100%
				FOR 460 Forest Hydrology & Watershed Management	Required	---	3	2.5	34	0		102	
Terrence Conners	0.00%	0.00%	100.00%	FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 1 week	11	0	0	33	100%
John Cox	44.25%	50.75%	5.00%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	5	22	45%
				FOR 435 Conservation Biology	Required	---	3	5.0	97	0		291	
Ellen Crocker	26.33%	0.00%	73.67%	FOR 310 Introduction to Forest Health and Protection	Required	---	1	40 hrs for 1 week	11	0	0	11	13%
Michael Lacki	26.30%	68.70%	5.00%	FOR 370 Wildlife Biology and Management	Required	---	4	4.8	38	0	2	152	50%
John Lhotka	44.00%	43.50%	12.50%	FOR 350 Silviculture	Required	---	4	5.3	10	0	9	40	100%
				FOR 358 Silvicultural Practices	Required	---	3	40 hrs for 3 weeks	11	0		33	
				FOR 480 Integrated Forest Resource Management*	Required	---	5	10.0	13	0		65	
Thomas Ochuodho	24.80%	70.20%	5.00%	FOR 280 Forest Resource Policy and Law	Required	---	3	2.5	25	0	0	75	75%
Steven Price	38.30%	51.70%	0.00%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	0	22	15%
James Ringe	79.35%	0.00%	5.65%	FOR 100 Forests and Forestry	Required	---	3	2.5	48	0	46	144	100%
				FOR 200 Basics of Geospatial Technology*	Required	---	3	3.5	27	0		81	
				FOR 260 Forest Products and Wood Science	Required	---	4	4.3	31	0			
				FOR 320 Forest Valuation and Economics	Required	---	3	2.5	18	0		54	
				FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 1 week	11	0		33	
				FOR 425 Forest Management*	Required	---	4	4.3	14	0		56	
				FOR 480 Integrated Forest Resource Management*	Required	---	5	10.0	13	0		65	
Matthew Springer	11.50%	0.00%	88.50%	FOR 365 Wildlife Assessment*	Required	---	2	40 hrs for 2 weeks	11	0	0	22	33%

Institution Name: University of Kentucky - Department of Forestry and Natural Resources										Academic Year: 2019-2020				
Official Degree Title: Bachelor of Science in Forestry														
Official Option Titles: n/a														
Faculty Member	Budgeted Allocation (%)			All Courses Taught Title and Course	Indicate if the listed course is required or a restricted elective in the curricula under accreditation review.		Credit Hours	Weekly Contact Hours	Total Enrollment ¹		# of Advisees ^{^^2}	Undergrad Credit Hours	** Proportion allocated to FOR	
	Teaching	Research	Extension / Service		Required (FOR)	Restricted (FOR)			Undergrad	Graduate				
Jeffrey Stringer	5.00%	8.85%	20.00%	FOR 359 Forest Operations and Utilization*	Required	---	3	40 hrs for 2 weeks	11	0	0	33	100%	
Jian Yang	23.50%	71.50%	5.00%	FOR 200 Basics of Geospatial Technology*	Required	---	3	3.5	27	0	1	81	100%	
				FOR 330 GIS and Spatial Analysis	Required	---	3	3.5	20	0		60		
Darryl Cremeans				FOR 250 Statistics and Measurements I (fall 2019)	Required	---	4	4.3	31	0		124	100%	
				FOR 357 Inventory and Measurements II*	Required	---	2	40 hrs for 2 weeks	11	0		22		
Laura Lhotka				FOR 255 Forest Fire	Required	---	1	0.8	27	0		27	100%	
				FOR 285 Com. & Prof. Dev. in For. & Nat. Res. I	Required	---	1	0.8	25	0		25		
				FOR 286 Com. & Prof. Dev. in For. & Nat. Res. II	Required	---	1	40 hrs for 1 week	11	0		11		
				FOR 400 Human Dimensions of Forestry & Natural Resources*	Required	---	3	2.5	18	1		54		
Rob Paratley				FOR 219 Dendrology	Required	---	4	5.1	32	0		128	33%	
				FOR 221 Winter Dendrology	Required	---	1	3.8	10	0		10		
William Thomas				FOR 400 Human Dimensions of Forestry & Natural Resources*	Required	---	3	2.5	18	1		54	100%	
*Course co-taught													No. of faculty involved in each program	11.65
^^Advisees in the degree programs under accreditation review														
**For each faculty member indicate the proportion of total teaching time spent teaching courses relevant to the degree programs under accreditation review. (Not by course.)														
¹ Enrollment numbers as of 12/19/2019.														
² Advisee totals as of 12/19/2019														

Document D-2: Faculty Teaching Summary - Those Not Reporting to Program Head													
Institution Name: University of Kentucky - Department of Forestry and Natural Resources								Academic Year: 2019-2020					
Official Degree Title: Bachelor of Science in Forestry													
Official Option Titles: n/a													
Faculty Member	Budgeted Allocation (%)			All Courses Taught Title and Course	Indicate if the listed course is required or a restricted elective in the curricula under accreditation review.		Credit Hours	Weekly Contact Hours	Total Enrollment ¹		# of Advisees**	Undergrad Credit Hours	** Proportion allocated to FOR
	Teaching	Research	Extension		Required (FOR)	Restricted (FOR)			Undergrad	Graduate			
Chris Matocha	28.88%	61.12%	5.00%	PLS 366 Fundamentals of Soil Science	Required	---	4	15	89	0	0	356	
David McNear	31.03%	38.07%	5.00%	PLS 366 Fundamentals of Soil Science	Required	---	4	7.5	20	1	0	80	
Lynne Rieske-Kinney	80.00%	15.00%	5.00%	FOR 502 Forest Entomology	Required	---	3	3.5	16	0	0	48	
												0	
												0	
												0	
*Advisees in the degree programs under accreditation review											No. of faculty involved in each program		
**For each faculty member indicate the proportion of total teaching time spent teaching courses relevant to the degree programs under accreditation review. (Not by course.)													0.00
¹ Enrollment numbers as of 12/20/2019.													

Document F: Program Graduate Employment Summary											
Institution Name: University of Kentucky - Department of Forestry and Natural Resources								Academic Year: 2019-2020			
Official Degree Title: Bachelor of Science in Forestry											
Official Option Titles: n/a											
Post Graduation Status	Number of Graduates for Past Five Years										
	Year: 2015		Year: 2016		Year: 2017		Year: 2018		Year: 2019		Total Graduates
	#	%	#	%	#	%	#	%	#	%	
Employed Permanent											
Forestry	9	56%	7	54%	4	44%	6	60%	6	38%	32
Forestry-related	--	--	--	--	1	11%	--	--	1	6%	2
Other Employed	2	13%	3	23%	1	11%	2	20%	--	--	8
Employed temporary											
Forestry	--	--	--	--	--	--	1	10%	1	6%	2
Forestry-related	--	--	--	--	--	--	--	--	--	--	--
Other Employed	--	--	1	8%	1	11%	--	--	1	6%	3
Graduate Study	2	13%	2	15%	1*	11%	1	10%	2	13%	8
Military	--	--	--	--	1	11%	--	--	1	6%	2
Unemployed^	1	6%	--	--	--	--	--	--	2	13%	3
Unknown	2	13%	--	--	--	--	--	--	2	13%	4
Total Number and Percentage of Graduates	16	100%	13	100%	9	100%	10	100%	16	100%	64
*Went to UK for a BS in civil engineering											
^ Includes those not employed because they are staying home to raise a family (n=2)											

Document G: Student Data Summary										
Institution Name: University of Kentucky - Department of Forestry and Natural Resources							Academic Year: 2019-2020			
Official Degree Title: Bachelor of Science in Forestry										
Official Option Titles: n/a										
Students Enrolled	Freshman ¹		Sophomore ¹		Junior ¹		Senior ¹		Total Students	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Current Enrollment (Fall 2019)	5	6	4	13	5	13	5	12	19	44
Last Year (Fall 2018)	2	14	3	7	2	9	4	17	11	47
Two Years Ago (Fall 2017)	1	11	3	8	1	12	7	17	12	48
Three Years Ago (Fall 2016)	3	13	0	9	4	15	2	9	9	46

Students Enrolled	TOTAL NUMBER OF STUDENTS							TOTAL
	Multi-racial	African Amer.	Asian	Caucasian	Hispanic	Native Amer.	Unknown	
Current Enrollment (Fall 2019)	5			53	2		3	63
Last Year (Fall 2018)	2	--	--	51	3	--	2	58
Two Years Ago (Fall 2017)	1	--	--	54	3	--	2	60
Three Years Ago (Fall 2016)	4	--	--	47	2	--	2	55

Projected Total Enrollment for Next Three Years	Year	Year	Year
	2020-2021	2021-2022	2022-2023
	65	70	70

Graduating Class ²	TOTAL NUMBER OF GRADUATING STUDENTS								
	Female	Male	Multi-racial	African Amer.	Asian	Caucasian	Hispanic	Native Amer.	Unknown
Current Enrollment (May 2020)	2	11	--	--	--	13	--	--	--
Last Year (2019)	5	11	--	--	--	14	1	--	1
Two Years Ago (2018)	2	8	--	--	--	10	--	--	--
Three Years Ago (2017)	1	8	2	--	--	7	--	--	--

Projected Total Graduates for Next Three Years ³	Year	Year	Year ⁴
	May 2021	May 2022	May 2023
	11	21	21

Notes:

¹University classifications based on credit hours and not the year in the forestry program.²Includes students that graduated in May, August, December of a particular year.³Based on fall 2019 and spring 2020 enrollment information as of 12/5/2019.⁴Currently 14 freshmen on track to graduate May 2023. It is likely that 5-10 transfer students will join the program in fall 2020. Based on this information, we estimate that 21 students will graduate in May 2023.

Appendix E.

SAF Visiting Team cover letter and report

UNIVERSITY OF MINNESOTA

Twin Cities Campus

*Department of Forest Resources
College of Food, Agricultural and Natural Resource Sciences*

*115 Green Hall
1530 Cleveland Avenue North
St. Paul, MN 55108-6112
612-624-3400
Fax: 612-625-5212
www.forestry.umn.edu*

March 23, 2020

David W. Blackwell, Provost and Chief Academic Officer
105 Main Building
University of Kentucky
Lexington, Kentucky 40506-0032
Provost@email.uky.edu

Dear Dr. Blackwell:

In February, I had the pleasure of visiting your institution as Chair of the Society of American Foresters' Accreditation Visiting Team. On behalf of the team, I would like to take this opportunity to express our appreciation for the genuine interest and helpfulness shown us by administrators, faculty and students. The cooperation and courtesies extended to us contributed significantly to a pleasant and very constructive visit.

Enclosed is a copy of the team report that will be submitted to the SAF Committee on Accreditation. In the report, we have attempted to identify both the strengths of the B.S. in Forestry program in the Department of Forestry and Natural Resources, as well as areas that present opportunities for improvement.

Our accreditation procedure requests that you comment on the factual accuracy of this report. Your response will then be included as part of the final documentation sent to the Society's Committee on Accreditation for their discussion and final action. I would appreciate receiving these comments by May 18th this year. Please copy these comments to Carol Redelsheimer, SAF's Director of Science and Education.

The Committee on Accreditation will review the Visiting Team Report, your comments, and other relevant material. The Committee will meet for final action October 27 and 28, 2020 in Providence, Rhode Island, where a representative from the Program and I will have the opportunity for a final meeting before the Committee. You will be notified of the Committee's decision within 60 days of that meeting.

Again, we wish to thank you and others at the University of Kentucky for making our visit enjoyable and productive.

Sincerely,



Michael A. Kilgore
Professor and Head, Department of Forest Resources
College of Food Agricultural and Natural Resource Sciences
University of Minnesota

Cc: Nancy Cox, Dean, College of Agriculture, Food and Environment
Jeffrey Stringer, Chair, Department of Forestry and Natural Resources

REPORT OF THE
**SOCIETY OF AMERICAN FORESTERS
ACCREDITATION VISITING TEAM**

Bachelor of Science in Forestry
Department of Forestry and Natural Resources
College of Agriculture, Food and Environment
University of Kentucky

by

Mike Kilgore, Visiting Team Chair

Bill Oates, Visiting Team COA Member

Dave Walters, Visiting Team Practitioner Member

March 21, 2020



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EXECUTIVE SUMMARY

A visiting team (VT) of the Society of American Foresters (SAF) reviewed the B.S. in Forestry (BSF) degree program in the Department of Forestry and Natural Resources (FNR), College of Agriculture, Food and Environment (CAFE) at the University of Kentucky (UK) on February 25 - 27, 2020. The team received the Program's self-evaluation report in a timely manner. We commend the FNR faculty for their efforts in developing a comprehensive report of their program and an informative and well-organized site visit. We appreciate their gracious hospitality and candid exchange of information.

General observations are summarized below; additional detail is contained in the body of this report.

INSTITUTIONAL ACCREDITATION

UK is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). It was initially accredited in 1915 and the most recent reaffirmation was in 2013, with the next scheduled in 2023.

RESOLUTION OF CONFLICTS BETWEEN ACCREDITATION STANDARDS AND LOCAL, STATE OR FEDERAL LAWS GOVERNING THE INSTITUTION OR PROGRAM SEEKING ACCREDITATION

No conflicts between the SAF accreditation standards and local, state, or federal laws governing the institution and degree programs under review were identified.

STANDARD I: PROGRAM MISSION, GOALS, AND OBJECTIVES

FNR has clearly defined mission, goals, and objectives in their current strategic plan and a framework for an updated strategic plan.

The mission statement is prominent on FNR's website, in hallways, and in classrooms; although it is slightly different than what is included in the 2019-2014 strategic plan referenced in the self-evaluation report.

FNR's mission, goals, and objectives are consistent with the goals of UK and CAFE.

FNR's goals reflect managing for diverse and changing objectives and as an interdisciplinary profession for university constituencies.

FNR's mission, vision, and goals address professionalism, but don't directly refer to ethical behavior. However, the value statement clearly references ethics.

STANDARD II: PROGRAM ORGANIZATION AND ADMINISTRATION

FNR was established in 1969 and is the only 4-year forestry degreegranting program in the state of Kentucky.

Forestry student recruiting occurs in several ways, including booths at college fairs, FNR's website, From the Woods Kentucky (a weekly radio show produced by FNR and broadcast in central KY with podcasts of all episodes available on the FNR website), high school visits, and through the College's Agriculture Ambassadors Program.

Most Forestry courses are taught by FNR professors, although several adjunct professors, staff, and Extension personnel are actively engaged in teaching.

Students made very positive comments about the quality of instruction they receive, as well as how instructors are accessible and committed to teaching.

The VT observed staff working well together and appearing to be highly motivated. FNR's staff are highly valued by the faculty.

The BSF program's assessment methods use direct evidence of work that students are already doing through their courses (e.g., writing assignments, field exercises, oral presentations).

FNR's web page clearly states the Program is accredited by SAF.

STANDARD III: STUDENTS

UK graduates are viewed as highly-qualified, motivated, and well-prepared to meet the challenges facing forestry in Kentucky.

Students are active in Forestry Club, SAF, Conclave, and in the local community.

FNR's website provides information on academic programs, career opportunities, and scholarships.

Undergraduate program enrollment has remained consistent over the last four years, with an average of fifty-nine students each school year.

Females now account for roughly 30% of the student body in the Forestry program.

At least one-half of the Forestry undergraduates take advantage of internship opportunities.

STANDARD IV: PARENT INSTITUTION SUPPORT

UK financial support for FNR appears stable and adequate and constitutes a similar proportion of the university budget relative to other units within CAFE. CAFE has maintained relatively consistent faculty numbers over the past few years, and has hired and retained high quality faculty, staff, and administrators.

UK offers opportunities for faculty development and continuing education. Several FNR faculty have utilized those opportunities and found them to be valuable.

UK support for FNR computers, spatial info technologies, supplies, equipment, and transportation for field instruction appears adequate.

Student support by UK, CAFE, and FNR appears to be a strength. Support in applying for scholarships, advising, internships and job placement by FNR was highlighted by students interviewed by the VT.

Library facilities and electronic access to information appear adequate.

FNR's building is lacking as an adequate, safe, healthful facility that is conducive to learning. Labs for research and office space for graduate students are also in poor shape. The Vice Provost, Dean, faculty, and students all are aware that the building condition is inadequate.

University-owned outdoor labs are available and utilized on campus, at the arboretum, and at Robinson Forest.

The CAFE Dean commended the Forestry program for their work in developing partnerships recruiting funding from the bourbon industries.

STANDARD V: CURRICULUM

In addition to 27 credit hours in the UK General Education Core, the Forestry program requires 80 hours of professional instruction. UK requires 121 semester credit hours for a BSF degree.

The BSF curriculum is experiential; fifty-three semester credit hours involve an outdoor learning component, with thirteen credit hours earned during a fifteen-week spring field semester in the junior academic year. Activities include field trips, forest industry tours, and visits to National Forests in North Carolina and Georgia.

The BSF degree does not have a distance learning opportunity.

STANDARD VI: FACULTY

FNR tenured/tenure track faculty average more than 15 years of service in a faculty position at UK. FNR adjunct instructors have nearly 12 years of teaching experience in FNR.

FNR faculty and staff are recognized locally and nationally for their expertise and professional contributions.

FNR faculty and staff are extremely committed to teaching.

The table in Document C-1 of FNR's Self-Evaluation Report lists 13 full-time equivalent tenure/tenure track professors who are involved in teaching in the BSF curriculum and who report to the FNR Chair.

FNR undergraduate and graduate students were uniformly complimentary of their faculty's teaching effectiveness, accessibility, and care for student well-being.

INTRODUCTION

The Department of Forestry and Natural Resources (FNR), College of Agriculture, Food and Environment (CAFE) at the University of Kentucky (UK) seeks Society of American Foresters (SAF) accreditation, under the forestry standard, of its Forestry degree program leading to the Bachelor of Science in Forestry (BSF). During the period February 25 – 27, 2020, a SAF accreditation visiting team composed of Mike Kilgore, Team Chair, Bill Oates, Committee on Accreditation (COA) Member, and Dave Walters, Practitioner Member visited the UK campus in Lexington. The purpose of the SAF site visit was to verify information contained in the Program's self-evaluation report and to offer other observations from interviews conducted during the site visit.

The team received the Program's self-evaluation report in a timely manner. We commend FNR faculty for their efforts in developing a comprehensive report of their program and an informative, comprehensive, and well-organized site visit. The team had the opportunity to meet with the UK Vice Provost, CAFE Dean and Associate Dean for Instruction, FNR Department Chair, FNR Director of Undergraduate Studies, FNR Curriculum Committee Chair and Academic Coordinator, FNR faculty, Extension faculty, staff, students (undergraduate and graduate), stakeholders, employers, and alumni. The VT was accorded open access to all facets of the Program and wishes to thank FNR faculty and CAFE and UK administrators and staff for their warm hospitality and free exchange of information during the visit.

INSTITUTIONAL ACCREDITATION

UK is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). It was initially accredited in 1915 and the most recent reaffirmation was in 2013, with the next scheduled in 2023.

RESOLUTION OF CONFLICTS BETWEEN ACCREDITATION STANDARDS AND LOCAL, STATE OR FEDERAL LAWS GOVERNING THE INSTITUTION OR PROGRAM SEEKING ACCREDITATION

No conflicts between the SAF accreditation standards and local, state or federal laws governing the institution and degree programs under review were identified.

STANDARD I: PROGRAM MISSION, GOALS, AND OBJECTIVES

FNR offers an educational program in Forestry terminating with the awarding of a Bachelor of Science in Forestry degree. The Program includes classroom lectures, indoor laboratories, and strongly field-oriented laboratory experiences.

The FNR mission, goals, and objectives are clearly defined and publicly stated. The mission statement is displayed throughout physical facilities, and the vision and mission statement is located on the FNR [web site](#) and in its [2009-2014 Strategic Plan](#). FNR's mission, goals, and objectives are consistent with the goals of UK and CAFE.

CAFE's Strategic Plan was adopted in 2014 and is effective through 2020. Additionally, the Administrative Regulations of UK require that each academic unit be reviewed every six years by an internal process involving faculty representatives from within FNR, representatives from other departments, and knowledgeable constituents from the private sector. FNR is in the process of revising its strategic plan. The VT was provided a chart of priorities developed from a recent (Fall 2019) faculty retreat, which the VT was told would form the basis of the Department's new strategic plan.

FNR goals reflect managing for diverse and changing objectives and as an interdisciplinary profession for the University's constituencies. FNR recognizes the interdisciplinary nature of forestry and reflects this distinction via student education, faculty recruitment and maintenance, and extension. This recognition led to a department name change from "Forestry" to "Forestry and Natural Resources" to better reflect the Program's diversity, goals, and mission relative to the interdisciplinary nature of the forestry profession. Professional and ethical behavior necessary to manage and use natural resources for the benefit of society is represented in FNR's mission and goals and stressed throughout the curriculum. Although written mission and goals do not directly refer to ethical behavior, the value statement on the FNR home page clearly references ethics.

The VT found that the Forestry program has clearly defined its mission, goals, and objectives; and has provided the rationale and purpose for its existence and demonstrated how the goals and objectives of its current program meet the mission statement. The stated mission, goals, and objectives appear to be consistent with those expected by SAF.

STANDARD II: PROGRAM ORGANIZATION AND ADMINISTRATION

Administrator

FNR was established in 1969. It is the only 4-year forestry degree-granting program in the state of Kentucky. FNR is one of 15 academic departments in CAFE. FNR is headed by Dr. Jeffrey Stringer, who reports directly to the CAFE Dean, Dr. Nancy Cox. The Chair presides over all FNR meetings and is a line officer, with authority over all operations of the Department, including faculty and staff, policy, budget, resource allocation, and strategic planning.

The professional aspects of the BSF degree are the sole purview of the FNR faculty, with CAFE and UK serving in an oversight capacity to ensure the Program's curriculum meets university-wide requirements. Faculty have considerable control over the BSF curriculum with leadership provided by its Undergraduate Program Committee. Any proposed curriculum changes are first reviewed by the Curriculum Committee. If approved, they are reviewed and voted on by the full FNR faculty. Any BSF program changes approved by FNR faculty are subsequently reviewed and voted on by the CAFE Curriculum Committee, UK Undergraduate Council, and the Faculty Senate.

Student Recruitment, Admissions, and Transfers

Formal student recruiting responsibilities are assigned to FNR's Academic Coordinator. While Forestry student recruiting takes place in coordination with CAFE's recruiters, the majority of Forestry student recruiting effort occurs through FNR. Recruiting of Forestry students occurs in several ways within FNR, including booths at college fairs, FNR's website, From the Woods Kentucky (a weekly radio show produced by FNR and broadcast in central KY with podcasts of all episodes available on the FNR website), high school visits, and through CAFE's Agriculture Ambassadors Program. This program provides academic credit to undergraduate students to help recruit students to CAFE through activities such as leading campus tours for prospective students and visiting high schools. FNR currently has one Forestry student in the Agriculture Ambassadors Program.

UK's website contains an Academic Exploration Tool, which directs students to the FNR website based on applicant interests or a keyword search. Because the majority of FNR's Forestry students enter the Program by transferring from another academic institution or from within UK, FNR's Academic Coordinator works through the Transfer Student Office to obtain the names and contact information of students who have not declared a major who might be interested in the BSF program.

FNR conforms to the admissions requirements of UK. UK has a selective admissions policy that provides a holistic review of each application that considers cumulative high school grade-point average, completion of the pre-college curriculum, ACT or SAT I score results, essay, special talents and abilities, and an optional academic letter of recommendation when making an admission decision. Once a student has been accepted for admission to UK, she/he/they can declare Forestry as the major.

The VT found clear procedures for evaluating students and accepting transfer credits to fulfill the general and professional requirements of the FNR program. The University's Transfer Equivalency Database is available [on-line](#) and is a comprehensive database of transfer equivalencies of courses at hundreds of other institutions to courses at UK. When a transfer equivalency for an external course has not been established or when a course has been changed, the substitution request for a given course (along with the course syllabus) will be sent from the CAFE office of the Associate Dean for Instruction to the Director of Undergraduate Studies (DUS) in the Department for review. The DUS seeks a review from the instructor of the course in question along with FNR's Undergraduate Program Committee. The review by this body considers the equivalency of the external course to the UK in terms of student learning outcomes, course activities, and the SAF competencies. This body, by consensus, determines whether the transfer equivalency is warranted. This decision is forward to the CAFE office of the Associate Dean for Instruction by the DUS.

Teaching

Appendix 7 of the FNR Self-Evaluation Report (Rules of Procedure) describes departmental governance policies and procedures regarding faculty meetings and voting procedures, committee responsibilities and assignments, faculty leadership appointments (e.g., Director of Undergraduate Studies), faculty review, and promotion and tenure. The role of teaching in tenure and promotion decisions has been an important component since 1992. Each FNR faculty being considered for promotion and tenure is required to prepare a Teaching Portfolio as part of his/her/their dossier. FNR's statement detailing procedures and criteria for evaluating promotion and tenure cases was reviewed by the VT. This review found evidence that instructional effectiveness is a criterion in determining decisions on faculty tenure and/or promotion. While the FNR statement references peer evaluation of teaching as evidence of a teaching improvement activity, FNR faculty were not able to recall a time in the last few years when peer evaluation of teaching had been used.

Most Forestry courses are taught by FNR professors, although several adjunct professors, staff, and numerous Extension personnel are actively engaged in teaching. It was clear during the site visit that FNR is committed to delivering high quality instruction. The VT met with undergraduate and graduate students, who made numerous laudatory comments about the quality of instruction they receive, as well as how instructors are very accessible and committed to teaching. Students stated they felt comfortable approaching their instructors about mentoring, internships, or career questions and related assistance. At the end of the semester, enrolled students are asked to complete an on-line survey to provide feedback on the quality of instruction they receive in each course. The results of these student surveys are taken into consideration when reviewing promotion and tenure cases of FNR faculty. While CAFE has an award that recognizes an individual who provides outstanding instruction, no such award exists within FNR.

Administrative Support

FNR's administrative staff consists of three full-time employees. An administrative services coordinator primarily serves the Chair (although she also provides assistance to all faculty, staff, and students on matters such as human resources, travel arrangements, and purchasing). A business manager assists faculty and staff on financial matters. An Extension information specialist provides administrative support to Extension faculty and staff.

In addition to administrative staff, FNR has a full-time data systems manager to provide computer assistance to support faculty and graduate student research, teaching, and extension. This individual also provides instruction in FNR. FNR's Academic Coordinator has primary responsibility for recruiting, retention, and placement of undergraduate students, and alumni relations. She also provides instruction within FNR. FNR also has three senior laboratory technicians, one wildlife technician, one biometrician, and one research analyst who assist faculty with their research. A staff associate is employed at the Robinson Center in Quicksand, Kentucky (location of FNR's field camp) to provide administrative support to the Robinson Forest and the Wood Utilization Center.

The VT observed staff working well together and appearing to be highly motivated. FNR's staff are highly valued by the faculty.

Program Planning and Outcomes Assessment

FNR utilizes a tiered and hierarchical approach to planning. Planning at the broadest level is reflected in UK's [strategic plan \(2015-2020\)](#). This strategic plan establishes an overall institutional framework and broad strategic direction, within which collegiate and department planning efforts are developed. CAFE's 2015-20 Strategic Plan articulates the College's vision, mission, goals, and strategies within the context of the University's framework. FNR's [mission and core values](#) provide clarity and direction for its research, instruction, and extension programs. FNR is currently in the process of updating its strategic plan. A recent faculty retreat identified several strategic action items that will serve as basis for its new strategic plan.

Curriculum planning is driven by the FNR faculty. The Undergraduate Program Committee, which leads this effort, is comprised of teaching faculty and staff, including the Director of Undergraduate Studies. The last major curriculum revision occurred in 2016 and consisted of an intensive review of the curriculum and input from employers, producers, students, alumni, and other interested parties. FNR is in the process of renewing its assessment procedures, which will provide mechanisms that ensure continual curriculum planning.

UK requires each degree program to conduct standardized learning outcomes assessments. Each program, in turn, develops and implements a plan to facilitate collection, review, and use of assessment data to guide improvements in learning and teaching. A formal assessment plan has been in place for the BSF program since 2009. Implementation of the assessment process for the BSF program is currently overseen by FNR's Undergraduate Program Committee. The BSF program's assessment methods use direct evidence of work that students are already doing through their courses (e.g., writing assignments, field exercises, oral presentations). The Program uses early and late assessments to measure value added by the undergraduate forestry curriculum, as well as independent review by several faculty members of capstone course management plans.

FNR's outcomes-based assessment plan examines two program-level student learning outcomes.

Outcome #1. Graduates will meet the "Communications" General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:

- find, read and interpret professional documents.
- communicate information effectively in oral/visual presentations.
- communicate information effectively in writing, on technical / business levels.
- communicate information effectively, in writing, to non-professional audiences.

Outcome #2. Graduates will meet the “Management Plans” Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate ability to develop management plans with specific multiple objectives and constraints.

The student outcomes assessment activities, data collection, and presentation of results follow a two-year cycle, with one outcome assessed in year one and the other outcome assessed in year two. For each program-level student learning outcome, assessment data is gathered at two points in the curriculum. The first assessment point is in a course that introduces information relevant to the outcome (identified in the self-evaluation report documents as “early-academic-career assessment”). The second point is in a course that students take closer to graduation (identified in the self-evaluation report documents as “late-academic-career assessment”). The relevant competencies are evaluated for all Forestry students who are enrolled in the courses used for assessment. Because these courses are required for the BSF degree, each assessment is based on a complete census of the student cohort being assessed (except, perhaps, for occasional situations such as unavoidable absences or transfer students who may take a course out of the normal sequence).

After completing an academic year’s program-level assessments, the Undergraduate Program Committee compiles and analyzes the data. Key features of the analyses address whether the benchmarks were achieved, and whether graduating seniors out-performed “early-academic-career” students. The results of these analyses are shared with all FNR faculty members prior to the final meeting of each academic year. Decisions regarding programmatic improvement actions are made at that meeting by consensus, based on discussion of the year’s assessment data analyses and conclusions. The Undergraduate Program Committee prepares a program-level assessment report each year, in accordance with consensus decisions of the faculty regarding the assessment results. The report is made available to all FNR faculty for review prior to its submission to the University’s assessment office.

The university-level assessment framework at UK is currently undergoing revision. The University began its review of the process during 2018-2019 academic year, and during that period programs were not required to submit an assessment report. The University Assessment Council (UAC) has designed a new program-level student learning outcomes (PSLO) assessment process at UK intended to provide greater opportunity for reflection and “closing of the loop” (taking action based on results).

Under the new PSLO process, programs will follow a 4-year assessment cycle. This cycle includes two years of data collection and results, one year of reflection, and one year of taking actions intended to improve student learning. Under the new UK PSLO structure, programs with small enrollments may gather data for each learning outcome more frequently than once every four years. The new PSLO process requires that each degree program submit a revised assessment plan by April 1, 2020. The first PSLO report on assessment data collected under each program’s revised plan will be due July 1, 2021. Given the strong alignment of the existing BSF program assessment methods described to the requirements of the new UK PSLO structure, it is expected that the assessment plan for the BSF degree will remain unchanged. Should unforeseen changes to that assessment plan be required in academic year 2020-2021, FNR will submit a Substantive Change Report to the SAF Committee on Accreditation outlining revisions to its assessment methods.

Beyond outcomes assessment methods documented above, FNR utilizes other evaluation approaches for the curriculum including exit interviews following the conclusion of the spring field semester (spring of the junior year), senior exit interviews and surveys, and external stakeholder

input via ad hoc advisory committee meetings. Like the annual assessment report, outcomes of these interviews and surveys are presented and discussed as part of FNR's academic year-end faculty and Undergraduate Program Committee meetings. These meetings are critical to the assessment feedback loop and allow for a determination of an action plan for the following academic year.

The VT's review of course syllabi found course-specific student learning outcomes are clearly stated and that evaluations of student competencies in the two areas assessed (communications, forest management planning) have been undertaken.

FNR does not have a formal external advisory committee, although the FNR Chair engages selected stakeholders on an ad hoc basis for input on key matters affecting FNR. The FNR Chair and several faculty members indicated their desire to establish a more formal advisory committee for FNR. The VT met with several key stakeholders and employers of Forestry program graduates, all of whom had laudatory things to say about FNR leadership, faculty, staff, and students. In particular, employers of Forestry program graduates expressed satisfaction with the education and field training Forestry students receive. Additionally, Forestry students interact with key FNR partners, such as with the Kentucky Division of Forestry's UK Fire Cats. UK Fire Cats is a student wildland firefighter organization that provides students a hands-on, paid experience with wildland fighting in the state.

Representations to the Public

The UK Accreditation Inventory <https://www.uky.edu/ie/accreditation-inventory> (accessed 2/27/2020) lists the BSF as accredited by the Society of American Foresters. We note that interim reviews are no longer required at year 5 and that information here should be updated as appropriate following completion of this accreditation review. Other places (accessed 2/27/2020) where the accreditation is published include:

University of Kentucky [Find Your Major](#)

University of Kentucky *2019-2020 Undergraduate Bulletin* (p. 108)

College of Agriculture, Food and Environment [Browse Our Programs](#)

Department of Forestry and Natural Resources [Prospective Forestry Students](#)

Department of Forestry and Natural Resources [Current Forestry Students](#)

Provision of Reliable Information to the Public on Performance

SAF accreditation standards require that the program or institution shall provide reliable information to the public on its performance, including student achievement. The information provided to the public may include, but is not limited to, job placement rates of the program, graduation rates of the program, pass rates of professional certification exams, average starting salaries of graduates and other information as determined by the program and institution. This information or link thereto must be posted on the program web pages and may be made publicly available elsewhere.

A link to information on enrollment and job placement is located on the Student page <http://forestry.ca.uky.edu/students> (accessed 2/27/2020) of the FNR website.

STANDARD III: STUDENTS

On Day One of the review, a lunch was arranged by FNR leadership to facilitate communication between the VT and a cooperator/employer group. FNR faculty/staff were absent from these discussions. Participants included the Kentucky State Forester, a representative from Domtar Paper, a private-sector forestry consultant, and the Forest Supervisor from the National Forests in Kentucky. With the exception

of the Forest Supervisor, all are UK Forestry graduates. These partners were very complimentary of the undergraduate program and the level of cooperation from FNR leadership. The UK graduates are viewed as highly-qualified, motivated, and well-prepared to meet the challenges facing forestry in Kentucky. In particular, the group cited superior communication and forest management skills of the graduates.

On Day Two, the VT had the opportunity to talk with many of the undergraduate students during an informal, on-campus lunch at the T.P Cooper forestry building. These students represented roughly 20% of the forestry student body. The VT heard very positive feedback of their experiences with the program. Superior faculty advising, a personal interest in the students, easy to follow course maps, and outstanding support by the Academic Coordinator were just a few of the comments shared with the VT. Many students also expressed appreciation and support for the recently-created Wildlife minor course of study. In a subsequent meeting with graduate students, similar views were expressed. However, this group identified a need for more bonding opportunities and interaction with other FNR students and Faculty.

Student Life

Discussion with students indicated satisfaction with regard to student life at UK. There is currently a Forestry Club, as well a SAF chapter. Dormant for several years, Conclave activities have experienced a renewal of interest, as Forestry students are attending in-state events. From 2011 through 2018, the FNR awarded 45 travel scholarships for Forestry students to attend annual SAF National Conventions. In 2019, with Louisville as the host city for the convention, 37 undergrads from UK participated.

FNR serves the local community through various tree planting events such as the annual *Reforest the Bluegrass* effort. Students are also given the opportunity to volunteer for the *Urban Forest Initiative* in Lexington, where public trees across the area receive maintenance and care. Finally, students are often found assisting with the biannual, industry-sponsored *Kentucky Wood Expo*.

Since 2014, FNR has partnered with the Kentucky Division of Forestry and the USDA Forest Service to support "UK Fire Cats", a student wildland firefighting crew organization. Fire Cats provide Forestry students real-world experience with wildland fire suppression. FNR is allocated 21 slots on the crew.

Recruitment and Retention

Recruitment at the college-level is led by a full-time staff and one graduate student. The CAFE Dean told the VT that generous scholarship support is available to students, many of which are specific to forestry. CAFE sponsors an "Agriculture Ambassadors" program; undergraduate volunteers assist with campus tours for prospective students and visit Kentucky public schools to recruit for the academic programs. Currently, one Forestry junior serves with this important group.

Most FNR recruiting efforts are facilitated by the Academic Coordinator. Events and activities such as *Reforest the Bluegrass*, high school career days, FFA, Junior MANRRS Leadership Conference, 4-H, *Win with Wood*, *Kentucky Forest Leadership Program*, and Veterans Resource Center are key to the recruitment program. The FNR Chair reports using a USDA Landscape Scale Restoration Grant to fund internships. In collaboration with an Extension Specialist, the Academic Coordinator developed and hosts a weekly show, *From the Woods Kentucky*, on UK radio station WRFL 88.1. FNR faculty and staff are regularly interviewed to raise the awareness of the forestry profession and resources in the state. All episodes are podcast on the FNR website and other major platforms. Since 2016, 59 individual podcasts have been produced and aired.

In 2016, FNR's website was redesigned using an interactive format for mobile and desktop use. Users may glean information on academic programs, career opportunities, and scholarships.

ENROLLMENT AND DIVERSITY

Undergraduate program enrollment has remained consistent over the last four years, with an average 59 students each school year. Over the same period, gender diversity has improved significantly; females now account for roughly 30% of the student body in the Forestry program. FNR faculty and students indicate increasing gender diversity is likely to continue. FNR predicts overall enrollment to grow slightly over the next two years.

RETENTION

The Academic Coordinator, in cooperation with the Faculty, takes the lead toward retaining students in the Program. The AC serves as a point-of-contact and clearinghouse for information on scholarship and research assistance opportunities. Students report outstanding support from FNR, particularly with respect to internships, extracurricular activities, and post-graduation employment. The VT noted at least one-half of the Forestry undergraduates take advantage of internship opportunities.

Advising

Advising for current students at UK occurs during a four-week period each fall and spring semester. FNR advisors complete the “myUK Scheduler” to indicate times available to assist students. Students and advisors meet to discuss class schedules and map course needs using “myUK GPS Registration.” FNR graduate and undergraduate students report outstanding support and personal interest from faculty and staff. In the event of any problems or challenges, the AC, advisors, and Director of Undergraduate Studies are readily accessible and have an open-door policy.

The VT noted one faculty member advises over 70% of the Forestry undergraduate students. FNR leadership and faculty alike agree this is not a sustainable situation and are working to equitably distribute the advising workload. It is very likely this matter will be resolved within the next two to three academic years.

STANDARD IV: PARENT INSTITUTION SUPPORT

FNR is administratively housed within the CAFE at UK. Many of the administrative operations (e.g., human resources, budgets, post-award support) are conducted by department personnel, but supported by college-level staff where necessary and appropriate. Pre-award functions are supported by staff at the college and university levels, but FNR is increasing its involvement and support of faculty and staff grant applications. Where necessary, FNR and/or college personnel work with university-level staff on issues related to human resources, purchasing, and the Graduate School, among others. Development activities are supported both at the college and university levels. For the most part, these relationships and structure serve FNR faculty, staff, and the Department well. The CAFE Office of Philanthropy and Alumni supports FNR’s effort to engage alumni and have been helpful in recent efforts to bolster alumni support.

In our discussions with UK Vice Provost and the CAFE Dean and the Associate Dean, there was a clear indication of support for the BSF being accredited. The Program is viewed as an important major within CAFE, with its instruction integrated with other related undergraduate programs. Likewise, UK leaders are aware of FNR’s close association with alumni, state agencies, the forest products industry and, most recently, its alignment with the bourbon industry via the connection with white oak barrels.

Program Support

Support for the BSF is allocated by UK, appears stable and adequate, and likely constitutes a fair proportion of the UK budget relative to resources allocated to other colleges. The Vice Provost described

the UK budget model as incremental, which does not provide strong incentives for academic units to increase instruction. He informed us that UK is beginning to implement changes to its budget model that increase FNR's tuition revenue sharing to encourage growth in FNR student numbers. FNR has largely maintained faculty lines over the past few years and has hired and retained high quality faculty, staff, and administrators. The number of teaching assistants (TA) available to FNR instructors was substantially reduced several years ago to its current allocation of three. FNR faculty reported their need to increase the number of TAs to cover their instructional needs adequately.

Total Department funding was cut 5.1% in 2012-13 year but has increased every other year. However, the Extension budget saw substantial cuts in 2012-13 and 2017-18 years. The main source of FNR funding was 73.5% from state and 26.5% from federal resources. In general, research accounted for about 50% of the FNR budget over the last decade and teaching and extension generated around 25% each. FNR realized a significant increase in the teaching budget over the last ten years from below 20% to around 26% (from \$428,474 in FY 2010 to \$723,593 in FY 2020). Funding from research has remained relatively constant over the ten years ranging from \$1.15 to \$1.35 million. The Extension budget, however, has been variable over the last ten years. FNR faculty and staff were fortunate to have had annual salary increases for each of the last seven years.

Support for faculty and staff teaching programs within FNR is provided by UK's Center for the Enhancement of Learning and Teaching. This Center consults with teachers on any instructional issues including, but not limited to, course design, classroom management, student engagement, curriculum development, innovative pedagogies, inclusive teaching and learning. Each semester, the program offers a variety of workshops on current issues related to teaching. Current workshops include: New Faculty Services, Courageous Conversations, Digital Pedagogy, Universal Design for Learning, Open Educational Practices, Graduate Instructor Support, and International Partnerships. Workshops typically last for 60 minutes, draw from research-based practices, and involve discussion, activities, and take-away resources. They are open to all faculty, staff, instructors, and graduate students. The Center also provides mid-semester consultations, advice on the development of faculty learning communities, college and department engagement, support for scholarly projects and grants, and organization of campus-wide events.

The VT was told that faculty development and continuing education opportunities are supported by FNR leadership and have been used by several FNR faculty.

In addition to workshops provided by the Center, professional development opportunities have included conference attendance, continuing education courses, and workshops. In 2019, FNR faculty and staff were intimately involved in hosting SAF national convention in Louisville. In 2017, all faculty were required to complete Unconscious Bias Training. The UK policy on sabbatical leave provides for a six-month (one semester) leave with full pay and benefits, or a twelve-month (full academic year) leave with half pay, following six years of continual service. Faculty may also elect three- or six-month leaves at full or half pay, respectively, following three years of service. During the past ten years, only one faculty member has participated in the leave program.

Support for computers, spatial information technologies, supplies, equipment and transportation for field instruction appears adequate. One of the graduating students we interviewed who also is associated with information technologies services and computer construction reported that FNR had better quality computers than many other departments in the University.

Supporting Programs

UK's Information Technology Services unit provides support to a variety of student technology services, communications systems, and network services and offers eight computer labs on campus that are open to all enrolled students. The unit also manages student email, Web servers, Wi-Fi, the UK Online academic program, and oversees student evaluations. The Student Media Depot @ The Hub is a student digital media space located in the Hub at William T. Young Library and provides access to recording equipment and space, editing stations with specialized multimedia software, and technical support for students' development of their academic media projects.

Forestry student support from UK, CAFE, and FNR appears to be a strength, and was highlighted by students the VT interviewed with respect to applying for scholarships, advisement, internships, and job placement.

UK offers a diversity of services available to forestry students. These services are provided at the university- and college-level. The University's Division of Student and Academic Life (<http://www.uky.edu/sal/>) provides student support relating to academics, health and wellbeing, residence life, and social and recreational activities. UK's Dean of Students office provides both administrative and educational services that support the personal and academic success of students. The office provides extra-curricular, non-academic educational programs and collaborates with academic units to offer support for students in reaching their educational goals. The Dean of Students office also handles student complaints and oversees the Office of Student Content. Other services made available by the Dean of Students office include those related to emergencies, housing/meal contracts, notaries, sales/solicitation on campus, and student safety.

The Office of Student Financial Aid and Scholarships offers support to forestry students in many ways (<https://www.uky.edu/financialaid/contactus>). Most of the assistance is in the form of advising and educating students on how to obtain financial assistance in the form of loans, scholarships, and need-based assistance. Information is provided to students on applications, procedures and deadlines, types of aid available, and eligibility requirements.

The University Counseling Center (<https://www.uky.edu/counselingcenter/assessment-and-testing-services>) aids students by providing individual, group, career planning, marital/relationship, learning skills and substance abuse counseling as well as tutoring services. The Center provides information, practice opportunities, and administration for national tests, and cooperates with the Disability Resource Center (<https://www.uky.edu/DisabilityResourceCenter/>) to assist qualified students with disabilities for gaining equal access to institutional programs and services consistent with their unique needs. The Disability Resource Center advocates the needs of students with disabilities to the campus community through consultation and outreach efforts with administration, faculty, students and University partners.

The Office for Institutional Diversity (<https://www.uky.edu/diversity/>) helps maintain the UK's commitment to embracing difference and promoting increased knowledge of diversity and its significance as a constitutive value of the university community. The Office for Institutional Diversity provides services needed to ensure the academic success and personal development of all ethnic minority students. Further, it provides cultural programming to promote mutual respect and attributes of global citizenship on the part of students from all backgrounds. The Office for Institutional Diversity participates in TriO, a federally funded program created to support students who are first generation, low income, and/or have a documented disability, in transitioning to college life and academics. In addition to supporting the individual as a student, the program works to provide a family environment where the individual can make a connection to other individuals enrolled at the University.

UK's Libraries (<http://libraries.uky.edu/>) provide access to quality information resources, teaching and learning programs, and learning spaces for forestry students, staff, and faculty. UK has nine physical facilities in their library system including: the William T. Young Library, Agricultural Information Center, Hunter M. Adams College of Design Library, Education Library, John A. Morris Equine Library and Information Services, Lucille Caudill Little Fine Arts Library, Medical Center Library, Science and Engineering Library, and the Special Collections Research Center. Both the William T. Young (main campus library) and the Agricultural Information Center are a short walk from the T.P. Cooper building. All FNR students, staff, and faculty have open access to these facilities. In addition, on-line resources such as e-journals and e-books, tutorials, and a variety of research search engines and databases are available from remote locations.

Physical Facilities

FNR's building is lacking as an adequate, safe, healthful facility that is conducive to learning. Labs for research and office space for graduate students are also in poor condition. UK's Vice Provost, CAFE Dean, and FNR faculty, staff, and students all are aware of the building's subpar conditions. FNR occupies space on the Lexington campus in the Thomas Poe Cooper, Dimock Animal Pathology, and the Plant Sciences buildings. The T.P. Cooper building houses: five classrooms (including a computer classroom); several meeting rooms; seven research labs; faculty, staff and graduate student offices; storage space; a student lounge; a walk-in cooler; a walk-in drier; a wood shop; and a video studio. FNR's space in the Dimock building includes four research labs, faculty, graduate student, and student worker offices, storage space, and UK's herbarium collection. In Plant Sciences, the Forest Health Research and Education Center currently occupies one research lab and space for faculty and post-doctoral offices. FNR also has access to space in the CAFE greenhouses located on UK's South Farm.

The T.P. Cooper building is the primary facility for teaching and research in FNR. Built in 1930 and renovated in the 1970s, the building provides good space, but the VT's impression is that the condition is well below that of nearly every other building on campus, with the possible exception of Dimock, which FNR also occupies. The T.P. Cooper building suffers from poor climate control. Very noisy and energy inefficient window unit air conditioners make teaching extremely difficult during hot weather periods (early fall and late spring). Steam radiators that often cannot be regulated make the building hotter in mid-winter than in mid-summer. Classrooms and offices can be so hot in the winter that windows must be opened. In rooms where the windows don't open, air conditioners often run simultaneously with the heaters. FNR also experiences fairly common steam outages and no heat, which creates less-than-ideal teaching and research conditions. Old plumbing and frequent breaks/leaks have led to instances of equipment loss or damage, sample loss, and lost productivity. In a unit that teaches and promotes sustainability, energy efficiency, green technologies, and climate change mitigation, FNR's credibility is undermined by these conditions. The VT believes the subpar conditions of FNR's building greatly detracts from an environment that is conducive to student learning.

University-owned outdoor labs are available on campus, at the arboretum, and at Robinson Forest. Berea Forest is owned by a private college and utilized by FNR as a research forest and lab space. The FNR chair informed the VT that instructional agreements are in place for use of these facilities.

Off campus, forestry personnel are located at the Robinson Center for Appalachian Resource Sustainability, the Wood Utilization Center, and Robinson Forest. The Wood Utilization Center is a 14,000 square foot facility containing an industrial hardwood furniture manufacturing laboratory, classrooms, computer laboratory, and a hardwood lumber dry kiln. Robinson Forest is a collection of seven tracts totaling nearly 14,800 acres making it one of the largest research and educational forests in the eastern United States. The camp at Robinson Forest includes a classroom, a computer lab, kitchen/dining hall, lodging cabins, hydrology lab, staff office, storage, and a workshop. Robinson Forest is a critical resource

for conducting research, demonstration projects for Extension workshops, and teaching undergraduate students.

STANDARD V: CURRICULUM

The FNR seeks SAF reaccreditation of the Bachelor of Science in Forestry. In addition to twenty-seven credit hours in the UK General Education Core, the Forestry curriculum requires eighty hours of professional instruction. FNR prescribes nine hours of restricted electives and five hours of free electives. A minimum of one-hundred twenty-one semester credit hours is required for graduation from UK.

General Education

The UK Core is foundational to a university education at UK. More than simply learning a set of skills to prepare for a job or career, the UK Core is intended to broaden student understanding of themselves, the world, our role in the global society, and the aspirations that motivate human thought and action. The UK Core provides a basis for critical thinking and problem solving, as well as helping the student develop productive, life-long learning habits.

Table 1. General Education Requirements

	Communications	Science and Mathematics	Social Sciences and Humanities	Total
	Credit Hours for Required Courses			
	6	9	12	27
	Credit Hours for Free Elective Courses			
	0-5	0-5	0-5	5
Total	6-11	9-14	12-17	32

The UK Core includes ten course areas, addressing four broad learning outcomes:

- Understanding of and ability to employ the processes of intellectual inquiry
- Competent written, oral, and visual communication skills
- Understanding of and ability to employ methods of quantitative reasoning
- Understanding of the complexities of citizenship

Competencies related to oral and written communications skills, mathematics, biological and physical sciences, and social science and humanities required by the SAF accreditation standards appear to be covered by the UK Core requirements.

Professional Education

Of the 80 required hours within the Forestry curriculum, 76 hours are identified with the “FOR” prefix and delivered by FNR Faculty. Outside the FNR, the VT noted four credit hours in PLS 366, Fundamentals of Soil Science. Beyond the required courses in the BSF curriculum, nine hours of professional electives are required. These 300-level (and above) courses are intended to support career interests, enhance knowledge base, and build a resume. Unless otherwise approved by the FNR Undergraduate Program Committee, students must choose from a list of faculty-suggested courses.

The curriculum is experiential; 53 semester credit hours involve an outdoor learning component, with 13 credit hours earned during a 15-week spring field semester in the junior academic year. The activities include seven field-based courses, delivered in week-long time blocks. To enhance the hands-on experience, students are housed for six weeks at the UK Robinson Forest in Eastern Kentucky. Activities include field trips, forest industry tours, and visits to National Forests in North Carolina and Georgia.

Table 2-FOR: Professional Education Requirements

	Ecology and Biology	Measurement of Forest Resources	Management of Forest Resources	Policy, Economics, and Administration	Total
	Credit Hours for Required Courses				
	29.75	15.75	23.25	11.25	80
	Credit Hours for Restricted Elective Courses				
	0-9	0-9	0-9	0-9	9
Total	29.75-38.75	15.75-24.75	23.25-32.25	11.25-20.25	89

Faculty reported a plan to replace FOR 240 *Forestry and Natural Resource Ethics* with a two semester-credit-hour forest health course. This introductory, still-unnamed, offering will cover biotic and abiotic stressors. The Undergraduate Program Committee Chair believes ethics and policy is sufficiently covered in a number of Forestry courses, including FOR 285 *Communication and Professional Development in Forestry and Natural Resources* and FOR 435 *Conservation Biology*.

While FNR offers a suppression-based Forest Fire course, the VT noted an apparent lack of in-depth study in fire science or fire ecology. However, FNR faculty comments and course syllabi seem to support the conclusion that the program curriculum is sufficiently covering the discipline in upper-level Forestry coursework.

To address the perceived demand of private and public-sector employers, some FNR faculty suggested adding formal urban forestry instruction to the curriculum; creating a professional “certified” program.

The SAF accreditation standards identify eighteen competencies in four broad subject matter categories. The BSF curriculum relative to these subject matter categories is discussed below.

Ecology and Biology

The VT found significant emphasis in the curriculum, which appears to meet the requirements for fundamental knowledge of taxonomy, soil properties, hydrology, ecology, assessments, and plant physiology. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 219/221 – Dendrology (5)	FOR 255 – Forest Fire (1)	FOR 310 – Intro. to Forest Health (1)
FOR 340 – Forest Ecology (4)	FOR 350 – Silviculture (4)	FOR 356 – Forest Soils and Hydrology (1)	FOR 358 – Silvicultural Practices (3)
FOR 365 – Wildlife Assessment (2)	PLS 366 – Fundamentals of Soil Science (4)	FOR 370 – Wildlife Biology and Management (4)	FOR 425 – Forest Management (4)
FOR 435 – Conservation Biology (3)	FOR 460 – Forest Hydrology and Watershed Management (3)	FOR 480 – Integrated Forest Resource Management (5)	FOR 502 – Forest Entomology (3)

Measurement of Forest Resources

The curriculum appears to meet the competencies in all areas, including land measurements, spatial analysis, comprehensive inventories, and analysis. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 200 – Basics of Geospatial Technology (3)	FOR 250 – Statistics and Measurements I – (4)	FOR 330 – GIS and Spatial Analysis (3)
FOR 350 – Silviculture (4)	FOR 356 – Forest Soils and Hydrology (1)	FOR 357 – Inventory and Measurements II (2)	FOR 425 – Forest Management (4)
FOR 480 – Integrated Forest Resource Management (5)			

Management of Forest Resources

The curriculum appears to meet the requirements for silvicultural prescriptions, consequences of forest resource management, development of management plans, valuation, forest markets, and administration of forest management enterprises. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 260 – Forest Products and Wood Science (4)	FOR 280 – Forest Resource Policy and Law (3)	FOR 310 – Intro. to Forest Health (1)
FOR 320 – Forest Valuation and Economics (3)	FOR 330 – GIS and Spatial Analysis (3)	FOR 350 – Silviculture (4)	FOR 358 – Silvicultural Practices (3)
FOR 359 – Forest Operations and Utilization (3)	FOR 365 – Wildlife Assessment (2)	FOR 370 – Wildlife Biology and Management (4)	FOR 400 – Human Dimensions of Forestry and Natural Resources (3)
FOR 425 – Forest Management (4)	FOR 435 – Conservation Biology (3)	FOR 460 – Forest Hydrology and Watershed Management (3)	FOR 480 – Integrated Forest Resource Management (5)
FOR 502 – Forest Entomology (3)			

Forest Resource Policy, Economics, and Administration

Despite dedicating fewer credit hours in this area, the Forestry degree program appears to meet the standards by providing an understanding of forest policy, professional ethics, state/federal regulations, and operation of public/private enterprises. Evidence of competency is demonstrated through the following courses:

FOR 260 – Forest Products and Wood Science (4)	FOR 280 – Forest Resource Policy and Law (3)	FOR 285 – Com. And Prof. Development in Forestry and Natural Resources I (1)	FOR 286 – Com. And Prof. Development in Forestry and Natural Resources II (1)
FOR 320 – Forest Valuation and Economics (3)	FOR 350 – Silviculture (4)	FOR 358 – Silvicultural Practices (3)	FOR 370 – Wildlife Biology and Management (4)
FOR 400 – Human Dimensions of Forestry and Natural Resources (3)	FOR 425 – Forest Management (4)	FOR 435 – Conservation Biology (3)	FOR 480 – Integrated Forest Resource Management (5)

Technological Competency

Computer and technological literacy are present within the degree program. Opportunities to use, apply, and integrate results from geospatial technologies exist throughout the curriculum, as does experience with commonly-used presentation, reporting, and analysis software platforms. The following coursework provides instruction for the use and application of contemporary digital technologies:

FOR 100 – Forests & Forestry (3)	FOR 200 – Basics of Geospatial Technology (3)	FOR 250 – Statistics and Measurements I – (4)	FOR 285 – Com. And Prof. Development in Forestry and Natural Resources I
FOR 286 – Com. And Prof. Development in Forestry and Natural Resources II (1)	FOR 320 – Forest Valuation and Economics (3)	FOR 330 – GIS and Spatial Analysis (3)	FOR 340 – Forest Ecology (4)
FOR 350 – Silviculture (4)	FOR 357 – Inventory and Measurements II (2)	FOR 358 – Silvicultural Practices (3)	FOR 400 – Human Dimensions of Forestry and Natural Resources (3)
FOR 425 – Forest Management (4)	FOR 460 – Forest Hydrology and Watershed Management (3)	FOR 480 – Integrated Forest Resource Management (5)	

Distance Learning

At this writing, the Forestry program does not have a distance learning opportunity.

STANDARD VI: FACULTY

FNR appears to be adequately staffed with well-qualified faculty to carry out its instructional responsibilities. The table in Document C-1 of FNR’s Self-Evaluation Report lists 13 full-time equivalent tenure/tenure track professors who are involved in teaching in the BSF curriculum and who report to the FNR Chair. FNR recently hired a tenure-track Extension faculty who is not listed in this table. This table also lists four adjunct instructors who report to the FNR Chair that teach BSF courses. Additionally, Document C-2 lists three faculty who provide instruction for the BSF degree but do not report to the FNR Chair. Two are associate professors with disciplinary expertise in plant and soil sciences, and one is an entomology professor. The VT did not observe any gaps in discipline expertise among faculty that would inhibit the delivery of instruction required for the BSF degree.

The VT found clear and substantial evidence that FNR faculty recognize teaching excellence among their peers, and that high-quality instruction is a high priority within FNR. Undergraduate and graduate students alike acknowledged the high level of instructional quality they receive from the FNR faculty. It was clear that FNR faculty take great pride in their commitment to teaching and student well-being. Additionally, the high level of participation in teaching by FNR Extension faculty and staff is noteworthy. While FNR does not have a teaching award, the VT was informed that one of FNR’s adjunct faculty recently received a university-wide award for instructional excellence.

The selection of faculty is mainly within the purview of FNR faculty. The information contained in FNR’s self-evaluation report regarding faculty search processes conforms to procedures normally used by academic institutions. This includes collegiate permission to initiate a nationwide search, use of a departmental search committee (typically composed of 3-4 faculty) to screen applicants and identify candidate finalists, on-campus interviews with candidate finalists (typically three), FNR Chair request to the CAFE Dean to hire, and Dean approval for Chair to negotiate an employment agreement with the selected candidate. UK and CAFE, through the Assistant Dean and Director for Diversity, provide support in faculty job postings to aid in reaching a diverse audience and help ensure that faculty search processes are inclusive.

Academic and Professional Competency

All FNR’s tenured/tenure track faculty hold PhDs, along with two of the four adjunct instructors who teach BSF courses and report to the FNR Chair. Three tenured/tenure track faculty and one adjunct instructor earned their doctoral degrees at UK. The remaining doctoral degrees were granted from nine other institutions. FNR tenured/tenure track faculty average more than 15 years of service in a

faculty position at UK. FNR adjunct instructors have nearly 12 years of teaching experience in the Department. Some faculty spent as much as 15 years at another academic institution before joining FNR. Two of FNR's tenure/tenure track faculty are female, and two are persons of color. The VT believes the breadth and depth of discipline expertise among FNR faculty enables them to provide quality instruction to the BSF program.

FNR faculty and staff are recognized locally and nationally for their expertise and professional contributions. Faculty have chaired governor appointed task forces, and faculty and staff are members of over 30 boards, task forces, and working groups within the state and nationally to help shape forest practice. FNR faculty and staff are also a part of county agent networks, and interact with teachers and youth, the general public, woodland owners, county agents, professionals in timber harvesting and wood-based industries. FNR engagement with partners collectively provides critical mechanisms for on-going communication with their stakeholders. National, state, and county-level involvement in many of these organizations allows them to disseminate up-to-date knowledge and information more effectively, and in turn, better understand the needs of these groups and their constituents.

Teaching Skills

The VT believes FNR faculty and staff are extremely committed to teaching. This conclusion is supported by interviews with the CAFE Dean and Associate Dean for Instruction, FNR faculty, staff, and students, department stakeholders, and alumni. FNR undergraduate and graduate students were uniformly complimentary of their faculty's teaching effectiveness, accessibility, and care for student well-being. Faculty teaching responsibilities appear to align well with their disciplinary expertise. The VT was surprised by the high teaching load of several tenured/tenure-track faculty and Extension faculty and staff. The level of instruction associated with a faculty member's teaching appointment (a 3-credit course is equal to 10% teaching effort) seemed high to the VT, relative to peer institutions. Although FNR's model for mentoring BSF students highly concentrates advising responsibilities among just a few faculty members, FNR's undergraduate advising is moving toward a more distributed model that shares this responsibility among all faculty.



Appendix F.

**SAF Re-accreditation cover
letter and approval documents**



2121 K Street, NW
Suite 315
Washington, DC 20037

November 18, 2020

David W. Blackwell, Provost and Chief Academic Officer
105 Main Building
University of Kentucky
Lexington, Kentucky 40506-0032
Provost@email.uky.edu

Dear Dr. Blackwell:

The Society of American Foresters (SAF) appreciates the University of Kentucky's continued support of specialized accreditation review.

I am pleased to let you know the SAF Committee on Accreditation (COA) grants continued accreditation, under the Forestry standard, to the Forestry degree program leading to the B.S. in Forestry (BSF), as administered by the Department of Forestry and Natural Resources (FNR), College of Agriculture, Food and Environment (CAFE) at the University of Kentucky, effective January 1, 2021 through December 31, 2031.

SAF's goal is to maintain a responsive accreditation process; therefore, I encourage you to make any suggestions that may help to keep accreditation an effective tool for assessing and improving the quality of forestry education. Should you have any comments or questions, please direct them to Ms. Carol Redelsheimer, Director, Science and Education. She may be reached at (301) 897-8720 extension 240 or by email at redelsheimerc@safnet.org.

Sincerely,

Terry Baker
Chief Executive Officer

Cc: Nancy Cox, Dean, College of Agriculture, Food and Environment
Jeffrey Stringer, Chair, Department of Forestry and Natural Resources



Society of American Foresters
Committee on Accreditation
2121 K St NW, Suite 315
Washington, DC 20037
(301) 897-8720

Committee on Accreditation Summary Findings and Action

University of Kentucky 2020

Initial Accreditation: 1974

Currently Accredited Degree Programs:

Forestry: Forestry major leading to the B.S. in Forestry

Current Accreditation-Period Reviews:

Onsite Visit: 2020

Previous Site Visit: 2010

Substantive Change: 2016

Progress Report:

Accreditation Expires: December 31, 2020

2020 Review:

Forestry: Accreditation Review of the B.S. in Forestry degree program

INTRODUCTION

A Society of American Foresters (SAF) Visiting Team was invited to the University of Kentucky (UK) on February 25 – 27, 2020 to review the undergraduate Forestry degree program in the Department of Forestry and Natural Resources (FNR), College of Agriculture, Food and Environment (CAFÉ) leading to the Bachelor of Science degree in Forestry (BSF).

The Forestry program at UK has been continuously accredited by SAF since 1974. The previous accreditation review was in 2010. In 2016, the then Department of Forestry submitted a Substantive Change Report documenting curricular and faculty changes. The report was accepted, and accreditation continued with no further follow up requested.

SUMMARY FINDINGS

INSTITUTIONAL ACCREDITATION

UK is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC). It was initially accredited in 1915 and the most recent reaffirmation was in 2013, with the next affirmation scheduled in 2023.

RESOLUTION OF CONFLICTS BETWEEN ACCREDITATION STANDARDS AND LOCAL, STATE, OR FEDERAL LAWS GOVERNING THE INSTITUTION OR PROGRAM SEEKING ACCREDITATION

No conflicts between the SAF accreditation standards and local, state, or federal laws governing the institution and degree programs under review were identified.

STANDARD I: PROGRAM MISSION, GOALS, AND OBJECTIVES

The FNR mission, goals, and objectives are clearly defined and publicly stated. The mission statement is displayed throughout physical facilities, and the vision and mission statement is located on the FNR [web site](#). FNR goals reflect managing for diverse and changing objectives and as an interdisciplinary profession for the University's constituencies. Professional and ethical behavior necessary to manage and use natural resources for the benefit of society is represented in FNR's mission and goals and stressed throughout the curriculum. The Forestry program has clearly defined its mission, goals, and objectives, which are consistent with those expected by SAF.

The standard is met.

STANDARD II: PROGRAM ORGANIZATION AND ADMINISTRATION

Administrator

The Department is one of 15 in CAFE. It is headed by a Chair, who reports directly to the CAFE Dean. The Chair has authority over all operations of the Department, including faculty and staff, policy, budget, resource allocation, and strategic planning.

Student Recruitment, Admissions, and Transfers

While Forestry student recruiting takes place in coordination with CAFE's recruiters, formal student recruiting responsibilities are assigned to FNR's Academic Coordinator. UK's website contains an Academic Exploration Tool, which directs students to the FNR website based on applicant interests or a keyword search.

FNR conforms to the admissions requirements of UK and clear procedures for evaluating students and accepting transfer credits to fulfill the general and professional requirements of the FNR program. The Department's Director of Undergraduate Studies seeks review of a

course from an external institution from the instructor responsible for teaching the course. In conjunction with the Undergraduate Program Committee, the instructor determines if the course is equivalent to the FNR course in terms of student learning outcomes, course activities, and the SAF competencies. If consensus is reached that equivalency is warranted, the course is entered into the University's Transfer Equivalency Database - is a comprehensive database of transfer equivalencies of courses at hundreds of other institutions to courses at UK. This is a rigorous process, although it is unclear how often courses in the data base are reviewed to ensure that external courses at other institutions have not been significantly modified.

Teaching

The selection of faculty is mainly within the purview of FNR faculty, and faculty search processes conform to procedures normally used by academic institutions. UK and CAFE, through the Assistant Dean and Director for Diversity, provide support in faculty job postings to aid in reaching a diverse audience and help ensure that faculty search processes are inclusive.

The role of teaching in tenure and promotion decisions has been an important component since 1992. Each FNR faculty being considered for promotion and tenure is required to prepare a Teaching Portfolio as part of his/her/their dossier. Instructional effectiveness is a criterion in determining decisions on faculty tenure and/or promotion. Student course evaluations are also considered in review of promotion and tenure cases.

Most Forestry courses are taught by FNR professors, although several adjunct professors, staff, and numerous Extension personnel are actively engaged in teaching. Instructors are respected for the quality of their teaching, as well as for their commitment to student success be it through mentoring, helping students with access to internships, providing career advice, or related assistance. While CAFE has an award that recognizes an individual who provides outstanding instruction, no such award exists within FNR.

Administrative Support

Within FNR, an administrative services coordinator primarily serves the Chair (although also provides assistance to all faculty, staff, and students on matters such as human resources, travel arrangements, and purchasing); a business manager assists faculty and staff on financial matters; and an Extension information specialist provides administrative support to Extension faculty and staff. A full-time data systems manager provides computer assistance to support faculty and graduate student research, teaching, and extension. FNR's Academic Coordinator has primary responsibility for recruiting, retention, and placement of undergraduate students, and alumni relations. Three senior laboratory technicians, one wildlife technician, one biometrician, and one research analyst assist faculty with their research. A staff associate is employed at the Robinson Center to provide administrative support to the Robinson Forest and the Wood Utilization Center.

Program Planning and Outcomes Assessment

Planning at the broadest level is reflected in UK's [strategic plan \(2015-2020\)](#). CAFE's 2015-20 Strategic Plan articulates the College's vision, mission, goals, and strategies within the context of the University's framework. FNR's [mission and core values](#) provide clarity and direction for its research, instruction, and extension programs. FNR is currently in the process of updating its strategic plan. A recent faculty retreat identified several strategic action items that will serve as basis for its new strategic plan. Curriculum planning is driven by the FNR faculty. The last major curriculum revision occurred in 2016 and consisted of an intensive review of the curriculum and input from employers, producers, students, alumni, and other interested parties.

UK requires each degree program to conduct standardized learning outcomes assessments. A formal assessment plan has been in place for the BSF program since 2009. The process uses direct evidence of work that students are already doing through their courses including early and late assessments to measure value added by the undergraduate forestry curriculum, as well as independent review by several faculty members of capstone course management plans. FNR's outcomes-based assessment plan examines two program-level student learning outcomes – the "Communications" General Education and "Management Plans" Professional Education accreditation requirements of the Society of American Foresters. The student outcomes assessment activities, data collection, and presentation of results follow a two-year cycle, with one outcome assessed in year one and the other outcome assessed in year two. Key features of the analyses address whether the benchmarks were achieved, and whether graduating seniors out-performed "early-academic-career" students. The results of these analyses are shared with all FNR faculty members prior to the final meeting of each academic year, during which decisions regarding programmatic improvement actions are made by consensus.

The university-level assessment framework at UK is currently undergoing revision. Under the new program-level student learning outcomes (PSLO) assessment process, programs will follow a 4-year assessment cycle. This cycle includes two years of data collection and results, one year of reflection, and one year of taking actions intended to improve student learning. FNR's assessment report was submitted to the University in April 2020. Given the strong alignment of the existing BSF program assessment methods to the new UK PSLO structure, it is expected that the assessment plan for the BSF degree will remain unchanged.

Beyond the formal outcomes assessment methods, FNR utilizes other evaluation approaches for the curriculum including exit interviews following the conclusion of the spring field semester (spring of the junior year), senior exit interviews and surveys, and external stakeholder input via ad hoc advisory committee meetings. Like the annual assessment report, outcomes of these interviews and surveys are presented and discussed as part of FNR's academic year-end faculty and Undergraduate Program Committee meetings. These meetings are critical to the assessment feedback loop and allow for a determination of an action plan for the following academic year.

Representations to the Public

The UK Accreditation Inventory <https://www.uky.edu/ie/accreditation-inventory> (accessed 2/27/2020) lists the BSF as accredited by the Society of American Foresters. Other places (accessed 2/27/2020) where the accreditation is published include: University of Kentucky [Find Your Major](#); University of Kentucky *2019-2020 Undergraduate Bulletin* (p. 108); College of Agriculture, Food and Environment [Browse Our Programs](#); FNR [Prospective Forestry Students](#) and [Current Forestry Students](#). All accreditation references should be updated as needed following completion of this accreditation review.

Provision of Reliable Information to the Public on Performance

A link to information on enrollment and job placement is located on the Student page <http://forestry.ca.uky.edu/students> (accessed 8/10/2020) of the FNR website.

The standard is met.

STANDARD III: STUDENTS

Student Life

FNR student extra-curricular opportunities include a Forestry Club, a SAF chapter, in-state Conclave activities, and travel scholarships to attend annual SAF national conventions. FNR serves the local community through various opportunities such as *Reforest the Bluegrass*, *Urban Forest Initiative*, and *Kentucky Wood Expo*. Since 2014, FNR has partnered with the Kentucky Division of Forestry and the USDA Forest Service to support “UK Fire Cats”, a student wildland firefighting crew organization.

Recruitment, Enrollment, and Retention

Undergraduate program enrollment has remained consistent over the last four years, with an average 59 students each school year. Over the same period, gender diversity has improved significantly; females now account for roughly 30% of the student body in the Forestry program. The Academic Coordinator, in cooperation with the Faculty, takes the lead toward retaining students in the Program, serving as a point-of-contact and clearinghouse for information on scholarship and research assistance opportunities.

Advising

Advising at UK occurs during a four-week period each fall and spring semester. Students and advisors meet to discuss class schedules and map course needs. Students report outstanding support from FNR, particularly with respect to internships, extracurricular activities, and post-graduation employment. At present one faculty member advises over 70% of the Forestry undergraduate students. FNR leadership and faculty alike agree this is not a sustainable situation and are working to distribute the advising workload more equitably.

The standard is met.

STANDARD IV: PARENT INSTITUTION SUPPORT

Program Support

Support for the BSF is allocated by UK, appears stable and adequate, and likely constitutes a fair proportion of the UK budget relative to resources allocated to other colleges / departments. The UK budget model is currently incremental, although UK is beginning to implement changes to its budget model that would increase FNR's tuition revenue sharing to encourage growth in FNR student numbers. FNR has largely maintained faculty lines over the past few years and has hired and retained high quality faculty, staff, and administrators. The number of teaching assistants (TA) available to FNR instructors was substantially reduced several years ago to its current allocation of three. The University is, however, currently developing a mechanism for more efficient allocation and utilization of TA resources, which may result in an increase of TA resources to the program.

The mean source of FNR funding over the past 10 years was 73.5% from state and 26.5% from federal resources. In general, research accounted for about 50% of the FNR budget and teaching and extension generated around 25% each. FNR realized a significant increase in the teaching budget over the last ten years from below 20% to around 26%. FNR faculty and staff were fortunate to have had annual salary increases for each of the last seven years.

Support for faculty and staff teaching programs within FNR is provided by UK's Center for the Enhancement of Learning and Teaching. This Center consults with teachers on any instructional issues including, but not limited to, course design, classroom management, student engagement, curriculum development, innovative pedagogies, inclusive teaching and learning. Each semester, the program offers a variety of workshops on current issues related to teaching. The Center also provides mid-semester consultations, advice on the development of faculty learning communities, college and department engagement, support for scholarly projects and grants, and organization of campus-wide events. Additional professional development opportunities have included conference attendance, continuing education courses, and workshops. In 2017, all faculty were required to complete Unconscious Bias Training.

Support for computers, spatial information technologies, supplies, equipment and transportation for field instruction is appropriate.

Supporting Programs

UK offers a diversity of services available to all students at both the university- and college-level. Services encompass academics, health and wellbeing, counseling, residence life, social and recreational activities, emergencies, student safety, equal access, and cultural programming to promote mutual respect and attributes of global citizenship. UK's Libraries (<http://libraries.uky.edu/>) provide access to quality information resources, teaching and learning programs, and learning spaces for forestry students, staff, and faculty.

Physical Facilities

FNR occupies space on the Lexington campus in the Thomas Poe Cooper, Dimock Animal Pathology, and the Plant Sciences buildings. FNR also has access to space in the CAFE greenhouses located on UK's South Farm. UK and CAFE administrations acknowledge the conditions of the T.P. Cooper Building need addressing, as do several other buildings on campus. In the short term, plans are to address the climate of the classrooms by requesting funds for installing appropriate heating and air units that can adequately address the environmental and instructional requirements. The College's long-term goal, as reflected in its master plan, is for a new building as budgets allow.

University-owned outdoor labs are available on campus, at the arboretum, and at Robinson Forest. Berea Forest is owned by a private college and utilized by FNR as a research forest and lab space. Robinson Center for Appalachian Resource Sustainability, the Wood Utilization Center, and Robinson Forest offer off-campus facilities for research, demonstration projects, Extension workshops, and undergraduate teaching.

The standard is met.

STANDARD V: CURRICULUM

In addition to twenty-seven credit hours in the UK General Education Core, the Forestry curriculum requires eighty hours of professional instruction. FNR prescribes nine hours of restricted electives and five hours of free electives. A minimum of one-hundred twenty-one semester credit hours is required for graduation from UK.

General Education

SAF accreditation standards require that: oral and written communication skills be developed throughout the curriculum and that students develop 3 related competencies; the curriculum include mathematics and the biological and physical sciences and that students develop understanding and knowledge related to each area; and that students can demonstrate 3 competencies related to social sciences and humanities. Each of the general education components is covered by the UK Core Curriculum, which is the foundation for a university education at UK.

Professional Education

The FNR curriculum is experiential; 53 semester credit hours involve an outdoor learning component, with 13 credit hours earned during a 15-week spring field semester in the junior academic year. The activities include seven field-based courses, delivered in week-long time blocks. To enhance the hands-on experience, students are housed for six weeks at the UK Robinson Forest in Eastern Kentucky. Activities include field trips, forest industry tours, and visits to National Forests in North Carolina and Georgia.

The SAF accreditation standards identify eighteen competencies in four broad subject matter categories that must be delivered by the curriculum.

Ecology and Biology

Ecology and biology have significant emphasis in the curriculum, which meets the requirements for fundamental knowledge of taxonomy, soil properties, hydrology, ecology, assessments, and plant physiology. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 219/221 – Dendrology (5)	FOR 255 – Forest Fire (1)	FOR 310 – Intro. to Forest Health (1)
FOR 340 – Forest Ecology (4)	FOR 350 – Silviculture (4)	FOR 356 – Forest Soils and Hydrology (1)	FOR 358 – Silvicultural Practices (3)
FOR 365 – Wildlife Assessment (2)	PLS 366 – Fundamentals of Soil Science (4)	FOR 370 – Wildlife Biology and Management (4)	FOR 425 – Forest Management (4)
FOR 435 – Conservation Biology (3)	FOR 460 – Forest Hydrology and Watershed Management (3)	FOR 480 – Integrated Forest Resource Management (5)	FOR 502 – Forest Entomology (3)

Measurement of Forest Resources

The curriculum delivers the competencies in all areas, including land measurements, spatial analysis, comprehensive inventories, and analysis. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 200 – Basics of Geospatial Technology (3)	FOR 250 – Statistics and Measurements I – (4)	FOR 330 – GIS and Spatial Analysis (3)
FOR 350 – Silviculture (4)	FOR 356 – Forest Soils and Hydrology (1)	FOR 357 – Inventory and Measurements II (2)	FOR 425 – Forest Management (4)
FOR 480 – Integrated Forest Resource Management (5)			

Management of Forest Resources

The curriculum meets the requirements for silvicultural prescriptions, consequences of forest resource management, development of management plans, valuation, forest markets, and administration of forest management enterprises. Evidence of competency is demonstrated through the following courses:

FOR 100 – Forests & Forestry (3)	FOR 260 – Forest Products and Wood Science (4)	FOR 280 – Forest Resource Policy and Law (3)	FOR 310 – Intro. to Forest Health (1)
FOR 320 – Forest Valuation and Economics (3)	FOR 330 – GIS and Spatial Analysis (3)	FOR 350 – Silviculture (4)	FOR 358 – Silvicultural Practices (3)
FOR 359 – Forest Operations and Utilization (3)	FOR 365 – Wildlife Assessment (2)	FOR 370 – Wildlife Biology and Management (4)	FOR 400 – Human Dimensions of Forestry and Natural Resources (3)
FOR 425 – Forest Management (4)	FOR 435 – Conservation Biology (3)	FOR 460 – Forest Hydrology and Watershed Management (3)	FOR 480 – Integrated Forest Resource Management (5)
FOR 502 – Forest Entomology (3)			

Forest Resource Policy, Economics, and Administration

The Forestry degree program provides the requisite understanding of forest policy, professional ethics, state/federal regulations, and operation of public/private enterprises. Evidence of competency is demonstrated through the following courses:

FOR 260 – Forest Products and Wood Science (4)	FOR 280 – Forest Resource Policy and Law (3)	FOR 285 – Com. And Prof. Development in Forestry and Natural Resources I (1)	FOR 286 – Com. And Prof. Development in Forestry and Natural Resources II (1)
FOR 320 – Forest Valuation and Economics (3)	FOR 350 – Silviculture (4)	FOR 358 – Silvicultural Practices (3)	FOR 370 – Wildlife Biology and Management (4)
FOR 400 – Human Dimensions of Forestry and Natural Resources (3)	FOR 425 – Forest Management (4)	FOR 435 – Conservation Biology (3)	FOR 480 – Integrated Forest Resource Management (5)

Technological Competency

Opportunities to use, apply, and integrate results from geospatial technologies exist throughout the curriculum, as does experience with commonly used presentation, reporting, and analysis software platforms.

Distance Learning

Temporary adjustments consequent to the COVID-19 pandemic notwithstanding, the Forestry program does not have a significant distance learning component at this time.

The standard is met.

STANDARD IV: FACULTY

FNR is staffed with well-qualified faculty including 13 full-time equivalent tenure/tenure track professors who are involved in teaching in the BSF curriculum and who report to the FNR Chair. Four adjunct instructors who report to the FNR Chair also teach BSF courses. The Department has recently developed a Diversity, Equity, and Inclusion plan.

Academic and Professional Competency

All FNR's tenured/tenure track faculty hold PhDs, along with two of the four adjunct instructors who teach BSF courses and report to the FNR Chair. Three tenured/tenure track faculty and one adjunct instructor earned their doctoral degrees at UK. The remaining doctoral degrees were granted from nine other institutions. FNR tenured/tenure track faculty average more than 15 years of service in a faculty position at UK. FNR adjunct instructors have nearly 12 years of teaching experience in the Department. Some faculty spent as much as 15 years at another academic institution before joining FNR. Two of FNR's tenure/tenure track faculty are female, and two are persons of color. The breadth and depth of discipline expertise among FNR faculty enables them to provide quality instruction to the BSF program.

Teaching Skills

FNR faculty and staff are extremely committed to teaching and student success. Faculty teaching responsibilities align well with disciplinary expertise. FNR faculty recognize teaching excellence among their peers, and high-quality instruction is a priority within FNR. While FNR does not have a teaching award, one of FNR's adjunct faculty members recently received a university-wide award for instructional excellence.

The standard is met.

COMMITTEE ACTION

The SAF Committee on Accreditation grants continued accreditation, under the Forestry standard, to the Forestry degree program leading to the B.S. in Forestry (BSF), as administered by the Department of Forestry and Natural Resources (FNR), College of Agriculture, Food and Environment (CAFE) at the University of Kentucky, effective January 1, 2021 through December 31, 2031.*

Changes to curriculum, program organization and administration, names of concentrations or degrees, and other relevant matters must be reported to the COA on a timely basis.

The above summary findings and actions by the SAF Committee on Accreditation¹ are based upon a review of the Department's self-evaluation report, the visiting team's March 2020 report, the FNR response to that report, and oral comments provided to the COA by Dr. Jeffrey Stringer, FNR Chair, and Dr. Mike Kilgore, chair of the visiting team, at the COA annual meeting, October 27, 2020.

By: 

Susan Jeheber-Matthews, Chair
SAF Committee on Accreditation

Date: 4 November 2020

* In response to continuing uncertainties for campus-based higher education consequent to the global COVID-19 pandemic, the SAF Educational Policy Review Committee issued a policy August 1, 2020 postponing all accreditation reviews one year. For AY 2019-2020 reviews, this effectively extended the new accreditation period to eleven years.

¹ Committee Member John Lhotka recused himself from all discussion and decisions regarding this accreditation review.

Appendix G.

2019 UK@Work Survey



2019 UK@Work Survey

University of Kentucky 2019 Engagement Survey

Forestry and Natural Resources (21)

Definition of Terms

"University" or **"UK"** refers to University of Kentucky as a whole.

"Department" refers to your local group or team (e.g. Economics, Biology, Civil Engineering, Training and Development, Residence Life).

"College Leadership" refers to the dean's office in your college; if you work in more than one college, consider the college where you spend the most time.

"Unit Leadership" refers to:

- senior leadership in an academic support unit (e.g. Enrollment Management, PBO, SAL)
- OR senior leaders at the centers, institutes, facilities and research support units within VP Research
- OR senior leaders in a unit that reports directly to the President (e.g. Institutional Diversity, Legal, Athletics, Philanthropy, University Relations).

"Area Leadership" refers to senior leadership of an area within the EVPFA (e.g. Facilities Management, Financial Services, CBO, HR, ITS, Public Safety).

"Supervisor" refers to the person who has primary responsibility for managing your activities. This is the person to whom you report to on a day-to-day basis and who provides your performance evaluation.

How to Read Results

Scores

Scores shown are the total Percent Favorable (typically the top two options), or the Top Box. For example:



Differences and Colors

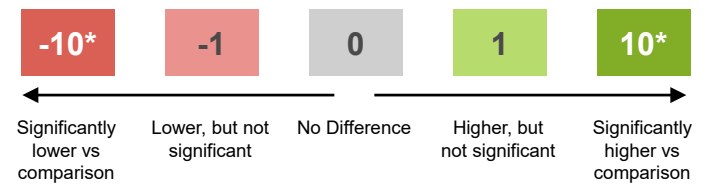
Differences to norms are shown as % points. Norms may include past surveys, parent groups, industry, national or high performance benchmarks.

For example:		Total Favorable Score	Historical	Parent Group	Company Overall	Industry Norm
Employee Engagement		76	-8*	3*	3*	-10*
3	I have a good understanding of our goals. ©	74	n/a	1	-9*	2*
12	I have a good understanding of how my job contributes to achieving our goals. ★	78	1	4*	-1	0

Icons (if applicable)

- #** When a question number is shown in red it is a priority issue.
- © Strategic Priority Question
- ★ Key driver question.
- (N) On some questions disagreeing is the favorable response.
- n/a Score not available

* **Statistically significant** differences are indicated with asterisks and darker colors. They are meaningful differences, where we are 95% confident it did not occur by chance. The cut-off for significance varies according to the size of the groups being compared. Small groups require a bigger difference for it to be significant.



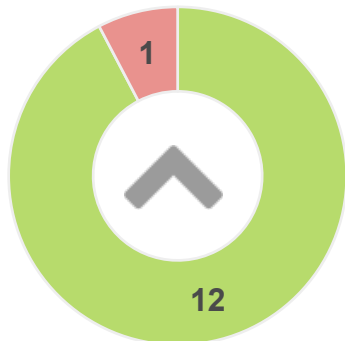


Results Summary

Forestry and Natural Resources (21) - Scores based on Total Favorable

Results vs. Forestry and Natural Resources 2017

12 Out Of 13 Categories Have Improved



Most Improved

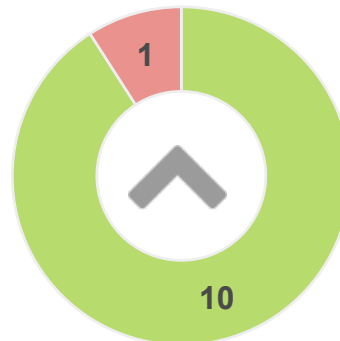
- Leadership 17
- Communication 16
- University Culture 15

Most Declined

- Career Development -3

Results vs. Universities Norm

10 Out Of 11 Categories Are Above



Most Favorable

- Communication 16
- Pay & Benefits 16
- Leadership 15

Least Favorable

- Stress, Balance, & Workload -5

Sustainable Engagement



Forestry and Natural Resources 2017



Universities Norm



US Norm



University of Kentucky Overall 2019



Strengths

- ▶ Communication, Supervision, Sustainable Engagement

Opportunities


- ▶ Retention, Stress, Balance, & Workload, Sustainable Engagement




Strengths and Opportunities

Forestry and Natural Resources (21)

Strengths

		% Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	US Norm (148,326)	University of Kentucky Overall 2019 (5,770)	
 <p>We should continue to build on these.</p>	11	UK does an excellent job of keeping faculty/staff informed about matters affecting us.	95	26*	31*	25*	28*
	15c	My Department Chair/Director/Dean/Supervisor: Gives me regular feedback on my performance	90	17	22*	14	14
	26	My department is able to meet our work challenges effectively.	95	4	20*	13	18*

Opportunities

		% Favorable	Forestry and Natural Resources 2017	Universities Norm	US Norm	University of Kentucky Overall 2019	
 <p>These are our priority areas to focus on.</p>	28	Overall, the physical working conditions at my location are satisfactory (e.g., ventilation, temperature, space to work).	29	-6	-46*	-51*	-41*
	57	At the present time, are you seriously considering leaving UK?	52	-22	-8	-15	-18
	13	I am able to sustain the level of energy I need throughout the work day.	67	-3	-10	-15	-11

These questions were chosen through an advanced algorithm that incorporates trends over time, difference from internal and external benchmarks, and predictive modelling of engagement and performance metrics, where available.



Suggested Actions

Forestry and Natural Resources (21)

WHAT WE COULD DO



"Best practice"
suggested actions

- ▶ **Ensure the physical working conditions are satisfactory (ventilation, temperature, space to work, etc.)**
Pay particular attention to: physical work conditions (comfortable and conducive to high productivity), the resources required to do the work (physical, financial, informational) and safety features to ensure that the work environment supports faculty and staff satisfaction. Additionally, ensure that employees are aware of any inherent risks in their job, and that they know how to reduce these risks. This may mean going beyond simply sharing safety policies and procedures by having one-to-one conversations with employees in high-risk roles. Discuss openly any risks that either of you see. Be sure to focus on how to mitigate each risk.
- ▶ **Not directly actionable**
Using staff turnover metrics and employees survey results, carry out an analysis to understand what distinguishes departments with very high and very low turnover. Identify best practices, select 2-3, and implement them.
- ▶ **Drive Sustainable Engagement**
To improve engagement in this category, focus on the 2019 Key Drivers: Empowerment, Diversity & Inclusion, Career Development and Stress, Balance, & Workload.

Group Sizes

Forestry and Natural Resources (21)

Benchmarks

Forestry and Natural Resources 2017.....	23	University of Kentucky Overall 2019.....	5,770
Forestry and Natural Resources 2015.....	16	Universities Norm.....	36,848
College of Ag, Food and Environment Overall 2019.....	878	US Norm.....	148,326
Provost Overall 2019.....	3,801		



Categories vs. Benchmarks

Forestry and Natural Resources (21)

	Total Favorable Score	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Sustainable Engagement	87	6	10	5	2
University Culture	80	15	n/a	6	8
Leadership	73	17	15	7	8
Communication	79	16	16	15	17
Diversity & Inclusion	83	14	9	7	7
Operating Effectively	71	13	n/a	10	11
Empowerment	75	3	8	5	4
Supervision	90	5	15	11	11
Working Relationships	87	7	5	10	11
Performance Evaluation	83	14	12	5	4
Career Development	72	-3	13	4	2
Stress, Balance, & Workload	61	7	-5	-3	-8
Pay & Benefits	67	6	16	4	8



Questions vs. Benchmarks - Sustainable Engagement (1 of 2)

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Sustainable Engagement	87	6	10	5	2
13 I am able to sustain the level of energy I need throughout the work day.	67	-3	-10	-11	-14
24 My work gives me a sense of personal accomplishment.	95	4	10	9	6
26 My department is able to meet our work challenges effectively.	95	4	20*	18*	13
27 I am proud to be associated with UK.	95	13	8	6	4
34 I believe strongly in the goals and mission of the University.	86	-10	4	-4	-4
37 My colleagues usually get along well together.	95	17	11	10	10
48 I have the equipment/resources I need to do my work effectively.	86	16	15	7	-1



Questions vs. Benchmarks - Sustainable Engagement (2 of 2)

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Sustainable Engagement	87	6	10	5	2
50 There are no substantial obstacles at the University to doing my work well.	71	6	12	1	-6
56 I would recommend UK as a good place to work.	95	n/a	18*	12	9



Questions vs. Benchmarks - University Culture

Forestry and Natural Resources (21)

		Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
University Culture		80	15	n/a	6	8
9	I think I could report instances of dishonest or unethical practices to the appropriate level of authority without fear of reprisal.	86	16	n/a	17	21*
16	UK is highly regarded by its faculty/staff.	71	28	3	-2	0
44	We have an institutional culture that promotes collaboration.	71	2	n/a	0	-3
51	UK is student-oriented.	90	n/a	n/a	8	13



Questions vs. Benchmarks - Leadership

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Leadership	73	17	15	7	8
1 I have confidence in the decisions made by my college / unit / area leadership.	81	33*	22*	7	10
2 There is sufficient contact between college / unit / area leadership and faculty/staff at UK.	67	14	20	1	4
7 The leadership of my college / unit / area make decisions that are consistent with the values.	81	11	16	9	12
8 I think action will be taken based on the problems identified in the survey.	52	9	-4	5	6
38 Faculty/staff are treated with respect here regardless of their position.	86	16	20	15	10



Questions vs. Benchmarks - Communication

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Communication	79	16	16	15	17
11 UK does an excellent job of keeping faculty/staff informed about matters affecting us.	95	26*	31*	28*	31*
14 Sufficient effort is made to get the opinions and thinking of faculty/staff.	62	5	1	2	3



Questions vs. Benchmarks - Diversity & Inclusion

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Diversity & Inclusion	83	14	9	7	7
4 My college / unit / area leadership recognizes and respects the value of human differences.	86	7	3	6	5
18 I can be myself at UK without worrying about how I will be accepted.	86	n/a	n/a	10	10
42 UK effectively addresses campus incidents of intolerance and bigotry.	81	11	n/a	13	15
45 I feel a sense of community at UK. ★	71	15	n/a	-2	-2
49 UK provides a working environment that is accepting of differences in personal identity.	86	n/a	n/a	2	1
55 I feel that my college / unit / area leadership supports equal opportunity for all faculty/staff. ★	86	20	14	10	9



Questions vs. Benchmarks - Operating Effectively

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Operating Effectively	71	13	n/a	10	11
21 In my opinion, decisions at UK are made in a timely manner.	67	28	21	18	18
30 Decisions at UK are made at the appropriate level.	67	28	n/a	8	13
36 My department operates effectively.	81	-15	n/a	5	1



Questions vs. Benchmarks - Pay & Benefits

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Pay & Benefits	67	6	16	4	8
17 From what I hear, our pay is as good as or better than the pay in similar institutions.	48	8	9	3	9
43 From what I hear, our benefits are as good as or better than the benefits in similar institutions.	86	3	24*	4	7



Questions vs. Benchmarks - Empowerment

Forestry and Natural Resources (21)

		Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)	
Empowerment		75	3	8	5	4
5	I have a very clear idea of the responsibilities for my faculty position/job.	100	9	11	11	9
19	I am satisfied with my involvement in decisions that affect my work. ★	86	-1	22*	16	14
22	UK has established a climate where people can challenge our traditional ways of doing things.	48	4	-4	-7	-9
25	Colleagues in my department are encouraged to come up with innovative solutions to work-related problems.	67	-7	-4	-6	-7
52	I am satisfied with the procedures available for resolving faculty/staff complaints.	62	10	n/a	8	11
54	The information I need to do my work is readily available. ★	90	4	13	8	3



Questions vs. Benchmarks - Supervision

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Supervision	90	5	15	11	11
15a My Department Chair/Director/Dean/Supervisor: Treats me with respect	95	-5	9	6	4
15b My Department Chair/Director/Dean/Supervisor: Communicates effectively	95	0	19*	16	15
15c My Department Chair/Director/Dean/Supervisor: Gives me regular feedback on my performance	90	17	22*	14	14
53 My supervisor does a good job of building teamwork. (staff only)	80	9	11	7	9



Questions vs. Benchmarks - Working Relationships

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Working Relationships	87	7	5	10	11
10 My colleagues/the people I work with are willing to help each other, even if it means doing something outside their usual activities.	90	-1	9	7	7
23 There is a strong feeling of trust between members of my department.	76	15	n/a	10	11
29 Differing opinions are openly discussed in reaching decisions in my department.	71	2	1	4	4
31 My department constantly looks for better ways to serve its students or internal customers.	95	n/a	n/a	15	17
33 People in my department treat each other with respect.	100	13	n/a	16*	16*



Questions vs. Benchmarks - Performance Evaluation

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Performance Evaluation	83	14	12	5	4
12 Where I work, my colleagues are accountable for following through on what they have promised.	81	24	n/a	7	8
39 At UK, I think my work performance is evaluated fairly.	76	15	4	0	-2
47 At UK, I understand how my work performance is evaluated.	90	4	20*	9	5



Questions vs. Benchmarks - Career Development

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Career Development	72	-3	13	4	2
6 I have a reasonably good idea of my possible career paths at UK. (staff only)	73	-9	9	3	-1
35 I think the University is doing a good job of retaining its most talented faculty and staff.	48	0	12	-5	-5
40 At UK, there are sufficient opportunities for me to receive training to improve my skills in my current faculty/staff position.	85	11	17	10	6
46 I believe I have the opportunity for personal development and growth at the University.	81	-15	13	6	6



Questions vs. Benchmarks - Stress, Balance, & Workload

Forestry and Natural Resources (21)

	Total Favorable	Forestry and Natural Resources 2017 (23)	Universities Norm (36,848)	University of Kentucky Overall 2019 (5,770)	College of Ag, Food and Environment Overall 2019 (878)
Stress, Balance, & Workload	61	7	-5	-3	-8
3 Work is usually appropriately distributed among faculty/staff in my department. *	57	9	-4	-9	-10
20 My work schedule allows sufficient flexibility to meet my personal/family needs.	95	13	14	13	8
28 Overall, the physical working conditions at my location are satisfactory (e.g., ventilation, temperature, space to work).	29	-6	-46*	-41*	-44*
32 There is usually sufficient staffing in my department to handle the workload. *	67	19	17	11	-4
41 The amount of stress I experience at work significantly reduces my effectiveness. (N)	57	1	n/a	9	8

Appendix H.

FNR Committee List

DEPARTMENT OF FORESTRY AND NATURAL RESOURCES

COMMITTEES (updated: August 2020)

Chair, Department of Forestry and Natural Resources is ex officio on all committees. Term limits for rotating chairs and members are noted where appropriate. Refer to FNR Rules of Procedure for details.

FNR Chair Advisory Committee

Dr. John Lhotka 8/2021

John Cox 8/2023

Dr. Jim Ringe 8/2022

Extension Committee

(all extension faculty and staff)

Dr. Matt Springer - coordinator 8/2023

Bobby Ammerman

Dr. Ellen Crocker

Dr. Jacob Muller

Darren Morris

Chad Niman

Eric Gracey

Billy Thomas

Laurie Thomas

Reneé Williams

Facilities and Space Committee

Darryl Cremeans, Chair

Millie Hamilton

Leslie Queary

Graduate Program Committee (2-year terms)

Dr. Steve Price, Chair – permanent member

Dr. Chris Barton – term ends 8/2021

Dr. John Lhotka – term ends 8/2021

Dr. Matt Springer - term ends 8/2022

Brianna Snyder - 8/2022

Sarah Tomke – term ends 8/2021

Outreach Committee

Laura Lhotka, Chair

Renee Williams

Research Committee

(all faculty with research FTE)

Dr. John Cox, Chair

Dr. Mary Arthur

Dr. Chris Barton

Dr. Ellen Crocker

Dr. Mike Lacki

Dr. John Lhotka

Dr. Thomas Ochuodho

Dr. Steve Price

Dr. Matt Springer

Dr. Jian Yang

Robinson Forest Technical Committee¹

Dr. Jeffrey W. Stringer, Chair

Robinson Forest Manager

Dr. Chris Barton

Dr. John Lhotka

Dr. Jian Yang

Dr. Lynne Rieske-Kinney

Seminar Committee

Dr. Ellen Crocker, Chair 2020-2021

Dr. Mary Arthur

Dr. Steve Price

Dr. Matt Springer

Dr. Jacob Muller

Undergraduate Program Committee

Dr. John Lhotka, Chair

Dr. Ellen Crocker

Dr. John Cox (wildlife minor – coordinator)

Dr. Laura Lhotka

Dr. Steve Price

Dr. Jim Ringe (DUS – permanent)

¹ College committee managed by the Department.

Appendix I.

FNR Rules of Procedure

RULES OF PROCEDURE

DEPARTMENT OF FORESTRY AND NATURAL RESOURCES

Est. February 8, 2001, Revised January 10, 2018, and
Approved November 28, 2018

These rules have been created and approved by the faculty of the Department of Forestry and Natural Resources of the College of Agriculture, Food and Environment, pursuant to the authority granted by the Administrative and Governing Regulations of the University of Kentucky. These rules do not become effective until and unless approved by the Dean as indicated by the signature below. Any modifications to these rules must also be approved by the Dean before the modifications take effect. Current copies of the approved rules for the department are available in the offices of the chair of the department, the dean of the college, and are posted on the University Senate website.

These Rules of Procedure (RoP) are intended to be consistent with the Rules of Procedure of the College of Agriculture, Food and Environment, the Governing and Administrative Regulations of the University of Kentucky, the laws of the Commonwealth of Kentucky, and the United States of America. In the event that these rules are inconsistent with or contrary to the above-mentioned regulations and laws, then those regulations and laws control.

Date approved by departmental Faculty vote: 11/28/2018


Jeffrey W. Stringer, Chair 11/30/18
Date


Nancy Cox, Dean 12/3/18
Date

1. Organizational Structure

1.1 Faculty and Staff

1.1.1 Faculty

The faculty of the Department of Forestry and Natural Resources (FNR) consists of the chair and those members of the department who hold tenure-track positions having the rank of assistant professor, associate professor, or professor in the Regular, Extension, Special, Research, Adjunct, or Lecturer title series in the College of Agriculture, Food and Environment (CAFE).

The faculty (defined above) of the department make up its governing body and have departmental voting privileges as specified in 1.3.2. Faculty will assist the chair in providing direction for the

department, including providing philosophy for allocation and utilization of resources. The governing body will accept input from any and all members of the department, whether transmitted through committees or by individuals. There are no *ex officio* members of the faculty.

1.1.2 Staff

Staff are regular non-faculty employees. For the purposes of department organization, staff are categorized as: technicians whose primary responsibility is to engage in lab and field work as directed by one or more research and/or extension faculty; administrative, having primary responsibilities in HR, business, and extension support and not normally engaged directly in program development; and program staff that are responsible for the development and implementation of instruction, research, and extension programs. Input from staff on departmental matters is encouraged.

1.2 Meetings and Voting Privileges

1.2.1 Regular Meetings

Departmental faculty/staff meetings should be held monthly during spring and fall semesters, and as needed during summer months. Agenda items may be submitted to the chair or designee in advance by faculty and others with department voting privileges. A tentative agenda and other information will be circulated prior to regularly scheduled meetings. The chair can recognize modifications to the agenda during meetings to facilitate the work of the department. The chair or designee will preside over all faculty/staff meetings.

1.2.1 Special Called Meetings

Special called meetings may be conducted if necessary for efficient and effective function of the department and may be called by the chair or through written request by any administrative faculty position (section 1.4) or standing committee (section 2.1). The request should include a brief description of the issue(s) to be placed on the agenda and the chair will announce the scheduling of the meeting within 5 to 10 business days.

1.3 Meeting Structure and Organization

1.3.1 Quorum, Protocols and Rules

All faculty and administrative and program staff (section 1.1.2) shall be invited to regularly scheduled department faculty/staff meetings. A quorum for a meeting shall consist of one more than one half of the members of the Regular and Extension faculty; staff members and other Faculty title series are not counted for the purpose of defining a quorum. All meetings will follow the established university policy on open meetings. The chair has discretion of the use of Robert's Rules of Order or consensus process for other issues with deference to request by the motion sponsor.

New policy and/or policy changes that arise during a faculty/staff meeting may not be voted upon on the same date and must occur at a future regular or special called meeting.

Minutes will be taken at all meetings and circulated to all members of the faculty/staff prior to the next regularly scheduled meeting. The minutes will be approved at the next regularly scheduled

meeting. Minutes will be kept on file in the chair's administrative office.

1.3.2 Voting

Regular and Extension faculty have full voting privileges within the department. Other faculty titles are encouraged to participate in faculty matters, but do not have a vote, unless voting privileges are granted by vote of the Regular and Extension faculty. Voting privileges (not including faculty appointments and policy) of department administrative and program staff (section 1.1.2) shall, as a whole, be granted or revoked by faculty vote. However, the voting status of individual staff (including all staff designations) may be amended by vote of the faculty.

Proxy voting on agenda items previously circulated will be allowed provided it is granted in writing to another voting member. Proxy notifications must be submitted to the chair or their designee at least one day in advance of the meeting.

1.4 Administrative Faculty Positions

1.4.1 Department Chair (GR VII F-2e)

The chair provides leadership to the faculty in the development by the department of policies on such matters as instructional and research programs, and service functions. The chair presides over all departmental meetings, except as he/she may delegate this function, and is an *ex officio* member of all department committees. The chair has administrative responsibility for implementing the department's programs within the limits established by the Governing and Administrative Regulations of the university, the rules of the University Senate and the directives of the college. The chair manages the day-to-day operations of the department in all matters which do not require joint deliberation. The chair is responsible for recommendations to the dean of the college on the appointment of new members of the department, promotions, reappointments, terminal appointments, decisions not to reappoint, post-retirement appointments and the granting of tenure. The chair is responsible for administering the periodic evaluation of departmental members by procedures and criteria established by the university, the college, and the tenure-track faculty.

1.4.2 Director of Graduate Studies

Under the administrative oversight of the chair, one tenure-track faculty member will serve as director of graduate studies (DGS) and will have the responsibility for matters pertaining to the graduate program. The appointment of DGS is for a three-year (3-year) term and they will receive an appropriate credit in their distribution of effort for serving. Responsibilities of the DGS will include corresponding with individuals inquiring about the graduate program, chairing the Graduate Curriculum Committee and performing all normal activities of a DGS as expected by the Graduate School.

1.4.3 Director of Undergraduate Studies

Under the administrative oversight of the chair, one tenure-track faculty member will serve as director of undergraduate studies (DUS) and will have responsibility for matters pertaining to the undergraduate programs of the Department. The appointment of DUS is for a three-year (3-year) term and they will receive an appropriate credit in their distribution of effort for serving. Responsibilities of the DUS include, but are not limited to, corresponding with individuals inquiring about the undergraduate program, chairing or collaborating with the Undergraduate Program

Committee and its chair, and oversight of undergraduate advising.

2. Committees

Standing committees are the Advisory Committee (2.1.1) and those representing the major mission areas (teaching, research and extension). Special, *ad hoc*, and committees of the whole will be established by the chair to aid in the functioning of the department.

2.1 Standing Committees

2.1.1 Advisory Committee

The Advisory Committee shall advise on significant policy and resource allocation issues, evaluation of faculty and professional staff, and faculty appointment, promotion, and tenure and other issues as requested by the chair. The Advisory Committee shall consist of three tenured department faculty members. The committee, including the chair, should provide significant DOE representation in research, instruction, and extension to ensure appropriate faculty DOE representation for evaluation of faculty and staff. The chair appoints the advisory committee and may appoint additional faculty, staff, or students to serve on an *ad hoc* basis.

2.1.2 Extension Committee

The extension committee will consist of all faculty and staff with extension appointments. It will be chaired by an extension coordinator appointed by the department chair. The responsibilities of this committee are to develop means for strengthening Cooperative Extension Programs offered by the department. The extension committee will develop annual and long-range plans of work, plans for interdisciplinary program efforts, priorities for educational material development, means of information delivery, and conduct all required and requested state and federal reporting.

2.1.3 Graduate Curriculum Committee (GCC)

The primary responsibility of the departmental GCC will be to provide continuing oversight of the graduate academic activities of the department. Duties will include reviewing applications to the graduate program, providing initial counsel to newly admitted graduate students, orchestrating graduate student recruitment efforts, curriculum planning, course scheduling, and reporting. (Admissibility of applicants to the graduate program will be voted on by all graduate faculty). The GCC will consist of the DGS, who will serve as committee chair, with a minimum of three (3) other faculty members and one (1) graduate student appointed by the department chair.

2.1.4 Undergraduate Program Committee (UPC)

The primary responsibility of the departmental UPC will be to provide continuing oversight of the undergraduate academic programs of the department. Duties will include curriculum review and planning, determination of departmentally controlled scholarships, consideration of special requests by undergraduates concerning curriculum requirements, and reporting. The Undergraduate Program Committee will include at least six members of the department's faculty and professional staff, and will consist of a committee chair appointed by the department chair, DUS, DGS, academic coordinator, and instructional faculty and staff who represent the breadth of disciplines encompassed by the department's undergraduate education mission including a Bachelor of Science degree in Forestry and a minor in Wildlife Biology and Management.

2.1.5 Research Committee

The committee works with the DGS and departmental GCC on issues associated with graduate research, facilitates communication amongst faculty regarding research opportunities and needs, assists the department chair in review of Agricultural Experimentation Station project proposals, and provides recommendations for and works with other faculty and the department chair to enhance research infrastructure and opportunities. The committee consists of all faculty with a research appointment and/or DOE. The committee chair will be appointed by the department chair.

2.2 Special Committees

2.2.1 Robinson Forest Technical Committee

This committee has responsibility for assisting the chair to establish operational and management directives for Robinson Forest. Specific responsibilities include: recommendations on development of facilities and land base, long-term planning for use of the forest, and internal and external in-forest project approval. The committee works under the provisions of the Robinson Forest Trust and at the discretion and approval of the Dean of the College of Agriculture, Food and Environment. The committee will consist of five (5) faculty, one of whom will serve as committee chair as appointed by the department chair, and the Robinson Forest Manager.

2.2.2 Facilities and Safety Committee

The responsibility of this committee includes continual review of safety matters in the department and to ensure the equitable and efficient allocation of available space and other facility resources. This committee will consist of a chair appointed by the department chair, and at least one (1) other faculty member, one (1) administrative staff, and one (1) other regular staff.

2.2.3 Seminar Committee

The Seminar Committee will plan the department's seminar program for the mutual benefit of the students, faculty, and staff. The committee will receive input on seminar invitations, work with the department chair on scheduling, and manage expenditures provided for conducting seminars. The membership of this committee shall include at least three (3) faculty members with full voting privileges with committee chair appointed by the department chair.

2.2.4 Outreach Committee

The committee will consist of the academic coordinator, extension information specialist, and others as deemed necessary by the chair. The committee works in collaboration with the chair and appropriate department committees such as Extension, GCC, and UPC, as well as extra-departmental resources to ensure effective marketing and communication of department activities, opportunities, and resources.

2.2.5 Search Committees

The responsibility of a search committee is to ensure that vacancies are properly defined and advertised following university, college and departmental guidelines and policies. The committee evaluates applications and narrows them to a list of interview quality candidates. This list is forwarded to the department chair for final approval. The committee, in concert with the chair (and dean in the case of faculty hires), helps facilitate interview scheduling and arrangements; develops means by which faculty, staff, and students can provide input in the candidate evaluation process;

and provides final evaluative information on candidates to the chair. The chair assigns faculty and staff whose fields are closely related to that of the vacant position and the committee can contain non-department and non-university persons in a non-voting capacity. The committees generally consist of a chair appointed by the department chair and at least two (2) other department members.

2.3 *Ad hoc* and Committee of the Whole

2.3.1 *Ad hoc*

In addition to the standing committees listed above, the department chair may appoint such additional *ad hoc* committees as are necessary.

2.3.2 Committee of the Whole

Matters for deliberation outside the purview of standing or *ad hoc* committees will, if appropriate, be voted upon at faculty meetings with those members attending representing a Committee of the Whole.

2.4 Committee Reports and Recommendations

Standing and *ad hoc* committees will make reports to faculty meetings at least once a year. Recommendations from committees are not binding and must receive a majority vote at faculty meetings for any action to be taken. Exceptions to this requirement will be: 1) decisions made by the departmental GCC as regards the admission of and support for new graduate students, 2) decisions made by the UPC as regards to applications by individual undergraduate students for a waiver of specific curriculum requirements, 3) decisions of the Robinson Forest Technical committee, and 4) decisions by the Advisory Committee on annual performance reviews.

2.5 Committee Structure

Committee members will be appointed by the department chair. Appointments to committees will typically be made at the first faculty meeting of the fall semester, and will be for two year (2-year) terms, except for student members who will serve for one (1) year. Committee members may be reappointed to the same committees. The department chair may appoint replacements for individuals who leave the unit during their term; such appointees will serve the remainder of the term of the individual vacating the position. The Department chair serves as an *ex officio* member of all department committees.

3. Budget

At the beginning of each fiscal year and/or when unit budgets become available the chair, in consultation with the department business office, and in consideration of available funding will allocate operating and equipment monies, as appropriate, to faculty and staff while reserving funds for department operations (e.g., telephone, vehicle insurance, copier expenses, departmental computers and servers, departmental initiatives). To aid in allocations, the chair may ask faculty and staff to provide expenditure requests as unit budgets allow.

4. Faculty Appointment, Reappointment, Promotion and Tenure

[University of Kentucky Administrative Regulations Chapter 2, Senate Rules]

Appointments, reappointments, terminal appointments, decisions not to reappoint, post-retirement

appointments, granting of tenure, and promotion of the faculty are handled in accordance with the provisions set forth in the Governing and/or Administrative Regulations of the university and in accordance with the policies and procedures of the College of Agriculture, Food and Environment.

4.1 Faculty Selection, Review, Appointment, Re-Appointment and Promotion and Tenure

All matters of faculty selection, progress review, reappointment, promotion, and tenure shall include a review of the candidate's dossier by departmental faculty, as stated in the AR 2:1-1 Appendix 1 –Matrix of Consultation and Written Judgments. Additionally, the chair will invite other faculty members to participate in minimum consultation and written judgments on a voluntary basis. Each faculty member will be allowed to use his or her own judgment regarding the total dossier of an individual and put a relative value on such issues as peer review and non-peer review publications, teaching portfolio, record of service, perceived academic status, funding levels, quantity and quality of activities, involvement with students, service on external bodies (such as review teams, and editorships), quality and quantity of teaching activities, and other issues relevant to appointment, promotion and tenure. The department has developed and adopted Statements on Evidences of Scholarly Productivity for the purpose of guiding faculty in their achievement of promotion and tenure.

4.2 Faculty Two- and Four-Year Evaluation Reviews

The chair will discuss non-tenure and/or early career (junior) faculty performance with the mission appropriate tenured faculty of the advisory committee for the two- and four-year evaluation reviews. The early career faculty may ask to present their input before the tenured faculty. The chair will perform and sign the evaluation after considering all input from the tenured faculty of the department.

4.3 Written Recommendation Requirements

When the Administrative Regulations require written recommendations from the faculty on these matters, the department shall not require written recommendations from 1) faculty on leave of absence or on assignment outside the department, and 2) non-tenured faculty in tenure cases from assistant to associate professor, nor from associate professors promotion to Full Professor. The faculty in all program areas will be consulted in these cases, except as described above. The faculty delegate to the chair the right to make recommendations on temporary appointments and appointments at the assistant professor rank or below, following consultation by the chair with the Advisory Committee and any appropriate search and screening committees, as stated in Administrative Regulation AR 2:1 and other regulations related to the appropriate faculty title series under Chapter 2 of the Administrative Regulations.

5. Distribution of Effort

At a period designated by the college and/or university, the chair in consultation with individual faculty members will develop and submit their Distribution of Effort (DOE) in the format designated by the college/university to encompass the faculty member's major activities during the upcoming year. The DOE shall acknowledge each faculty member's activities in research, instruction, administration, service (Extension), and professional development that relate to their

assigned appointment in the department and be generally reflective of their activities that contribute toward salary.

Should there be disagreement on the DOE, the dean will resolve any issues and the dean's decision will be final. In case of a significant change in the faculty members' DOE during the review period, an appropriately revised agreement will be negotiated.

6. Performance Evaluation

Performance evaluation of the faculty is carried out in accordance with the policies and procedures of the College of Agriculture, Food and Environment. Performance evaluation of all staff members will be carried out in accordance with the appropriate policies and procedures of the college relating to the position. The role of the chair and the Advisory Committee in this process is described above.

7. Modifying the Rules of Procedure

These rules of procedure may be changed, amended, and/or modified by a majority vote of the faculty at any regularly scheduled faculty and/or faculty/staff meeting.

Appendix J.

Burning Glass Report

VALIDATE: EMPLOYMENT POTENTIAL

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	12/1/2019 - 11/30/2020
Selected Programs	Forest Management/Forest Resources Management (03.0506), Forest Resources Production and Management (03.0510), Forest Sciences and Biology (03.0502), Forest Technology/Technician (03.0511), Forestry, General (03.0501), Forestry, Other (03.0599), Urban Forestry (03.0508), Wood Science and Wood Products/Pulp and Paper Technology (03.0509)
Career Outcomes mapped to Selected Programs of Study	Arborist / Faller, Firefighter, Forest / Conservation Technician, Forester, Conservation Scientists / Park Ranger

HOW MANY JOBS ARE THERE FOR YOUR GRADUATES?

For your project criteria, there were **14,600** job postings in the last 12 months.

Compared to:

- 36,389,215 total job postings in your selected location
- 11,165,030 total job postings requesting a Bachelor's degree in your selected location

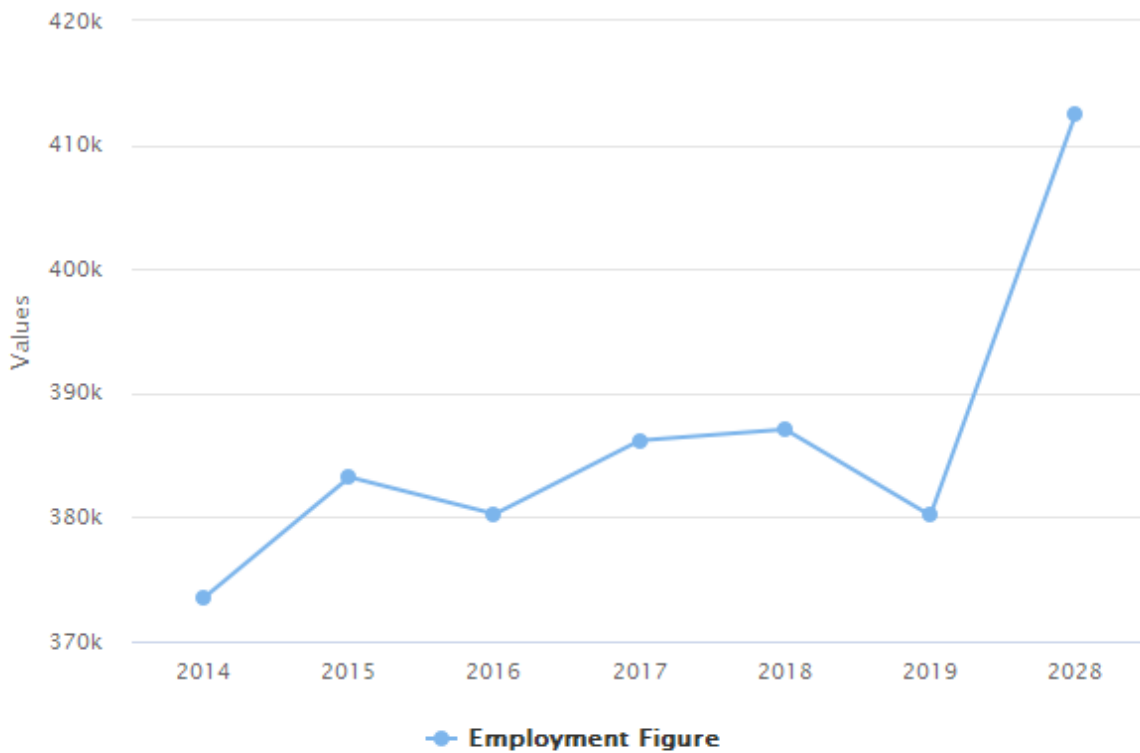
The number of jobs is expected to **grow** over the next 10 years.

GROWTH BY GEOGRAPHY

Geography	Selected Occupations	Total Labor Market	Relative Growth
Nationwide	8.50 %	4.24 %	Average

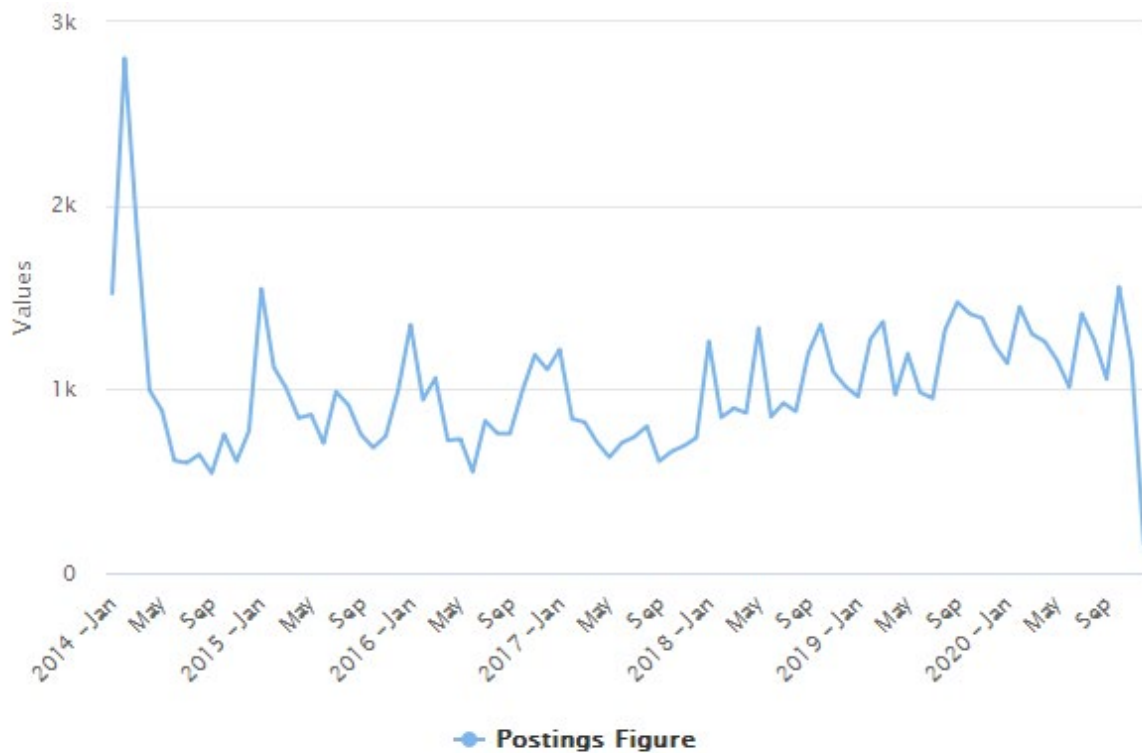
HOW HAS EMPLOYMENT CHANGED FOR CAREER OUTCOMES OF YOUR PROGRAM?

	2014	2015	2016	2017	2018	2019	2028
Employment (BLS)	373,540	383,230	380,260	386,190	387,080	380,150	412,474



Employment data between years 2019 and 2028 are projected figures.

POSTINGS TRENDS



DETAILS BY OCCUPATION

Occupation Group	Postings	LQ	Employment (2019)	Employment Growth (2018 - 2019)	Projected Employment Growth (2019-2028)
Rangers and Foresters	8,864	NA	50,640	-16.8%	26.0%
Landscaping and Gardening	5,007	NA	4,890	4.5%	-19.6%
Fire Safety	729	NA	324,620	0.9%	6.2%

HOW VERSATILE IS MY PROGRAM?

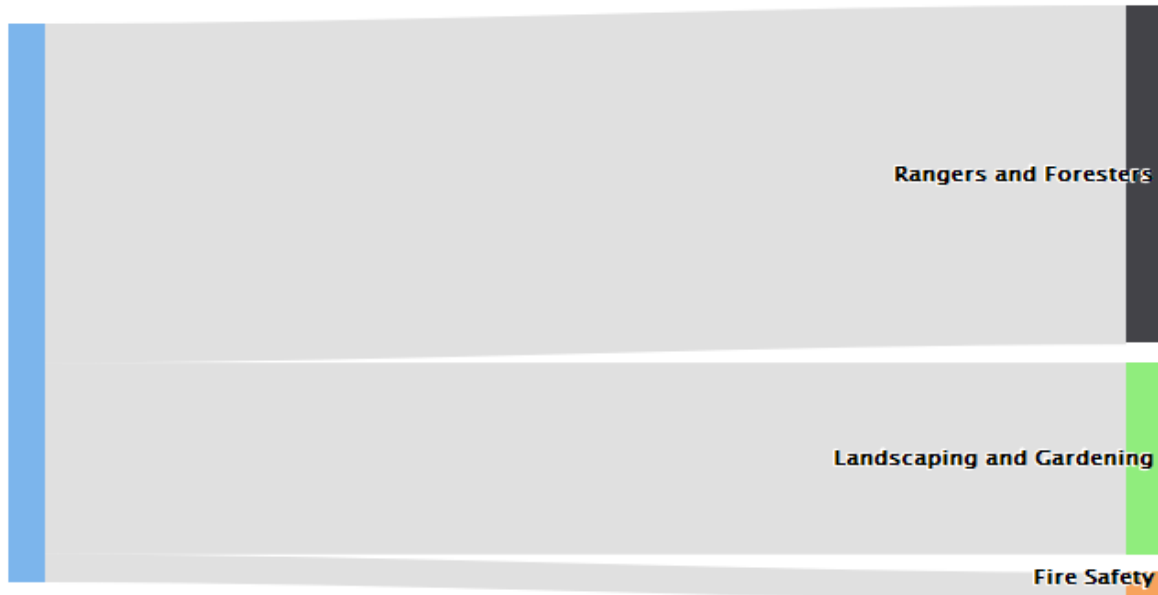
Graduates of this program usually transition into any of the 3 different occupation groups:

Occupations Group	Market Size (postings)	Percentage of Career Outcome demand
Rangers and Foresters	8,864	60.7%
Landscaping and Gardening	5,007	34.3%

Fire Safety

729

5.0%



WHAT SALARY WILL MY GRADUATES MAKE?

The average salary in **the nation** for graduates of your program is **\$45,868**

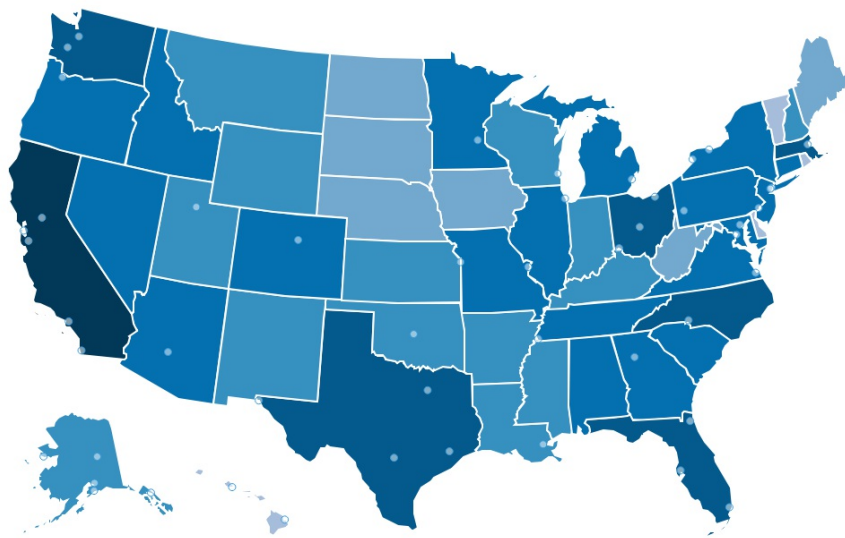
This average salary is **Above** the average living wage for your region of **\$31,450**



Salary numbers are based on Burning Glass models that consider advertised job posting salary, BLS data, and other proprietary and public sources of information.

Occupation Group	0-2 Years	3-5 Years	6+ Years
Rangers and Foresters	\$42871	\$44715	\$57913
Landscaping and Gardening	\$49110	\$52970	\$58518
Fire Safety	\$51533	\$62147	\$78779

WHERE IS THE DEMAND FOR MY GRADUATES?



TOP LOCATIONS BY POSTING DEMAND

Location	Postings
California	2,049
North Carolina	963
Florida	808
Massachusetts	686
Washington	598
Texas	588
Ohio	502
Virginia	497

Arizona	478
Connecticut	473

VALIDATE: COMPETITIVE LANDSCAPE

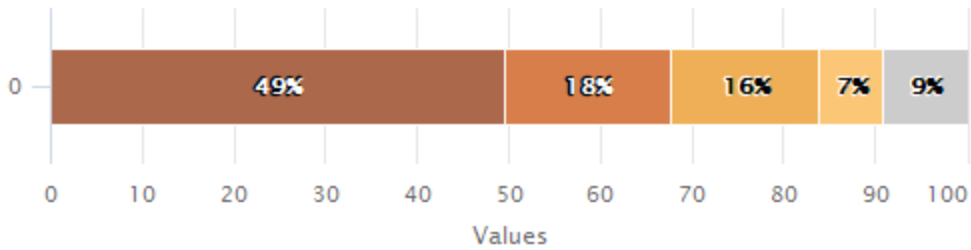
PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	12/1/2019 - 11/30/2020
Selected Programs	Forest Management/Forest Resources Management (03.0506), Forest Resources Production and Management (03.0510), Forest Sciences and Biology (03.0502), Forest Technology/Technician (03.0511), Forestry, General (03.0501), Forestry, Other (03.0599), Urban Forestry (03.0508), Wood Science and Wood Products/Pulp and Paper Technology (03.0509)
Career Outcomes mapped to Selected Programs of Study	Arborist / Faller, Firefighter, Forest / Conservation Technician, Forester, Conservation Scientists / Park Ranger

OVERVIEW

	#	% Change (2014-2018)
Degrees Conferred	1,078	-4%
Number of Institutions	55	-5%
Average Conferrals by Institution	20	0.00%
Median Conferrals by Institution	16	23.10%

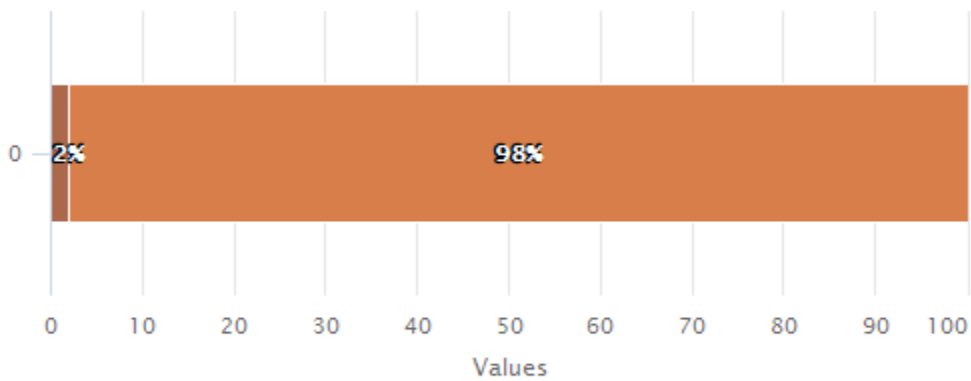
MARKET SHARE BY PROGRAM



- Forestry, General
- Forest Sciences and Biology
- Forest Management/Forest Resources Management
- Wood Science and Wood Products/Pulp and Paper Technology
- Other

Program	Conferrals (2018)	Market Share (%)
Forestry, General	532	49.35%
Forest Sciences and Biology	194	18.00%
Forest Management/Forest Resources Management	172	15.96%
Wood Science and Wood Products/Pulp and Paper Technology	78	7.24%
Other	102	9.46%

MARKET SHARE BY INSTITUTION TYPE



- Private
- Public

Institution Type	Conferrals (2018)	Market Share (%)
Private	23	2.13%
Public	1,055	97.87%

TOP INSTITUTIONS

Institution	School Type	Market Share (2018)	Market Share Change	Conferrals (2018)	Conferrals Change (2014-2018)
North Carolina State University at Raleigh	Public	8.07%	3.92%	87	85.10%
University of Wisconsin-Stevens Point	Public	6.77%	-1.61%	73	-23.20%
Virginia Polytechnic Institute and State University	Public	6.31%	-6.49%	68	-53.10%
Southern Illinois University-Carbondale	Public	4.82%	-0.03%	52	-5.50%
University of Florida	Public	4.64%	1.46%	50	38.90%
Humboldt State University	Public	3.71%	0.00%	40	-4.80%
University of Idaho	Public	3.62%	0.00%	39	-4.90%
University of Minnesota-Twin Cities	Public	3.25%	1.31%	35	59.10%
Northern Arizona University	Public	3.25%	-0.90%	35	-25.50%
California Polytechnic State University-San Luis Obispo	Public	2.97%	-0.12%	32	-8.60%

TOP PROGRAMS

Program	Market Share (2018)	Market Share Change	Conferrals (2018)	Conferrals Change (2014-2018)
Forestry, General	49.35%	-5.55%	532	-14.50%
Forest Sciences and Biology	18.00%	-1.59%	194	-12.60%
Forest Management/Forest Resources Management	15.96%	-0.02%	172	-5.00%
Wood Science and Wood Products/Pulp and Paper Technology	7.24%	3.18%	78	69.60%
Forestry, Other	7.14%	3.34%	77	79.10%
Urban Forestry	1.86%	1.07%	20	122.20%
Forest Resources Production and Management	0.46%	0.02%	5	0.00%
Forest Technology/Technician	0.00%	-0.44%	0	-100.00%

ACTIVE COMPETITORS

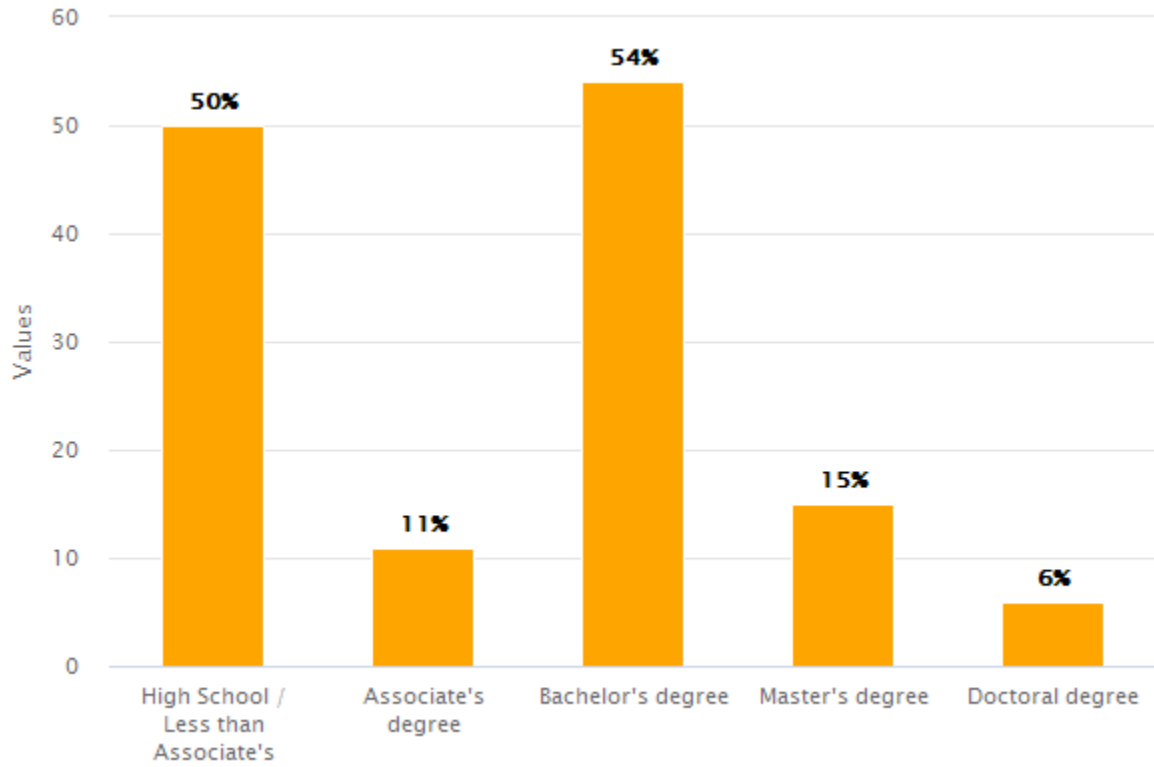
Institution	School Type	Market Share (2018)	Market Share Change	Conferrals (2018)	Conferrals Change (2014-2018)
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VALIDATE: MARKET ALIGNMENT

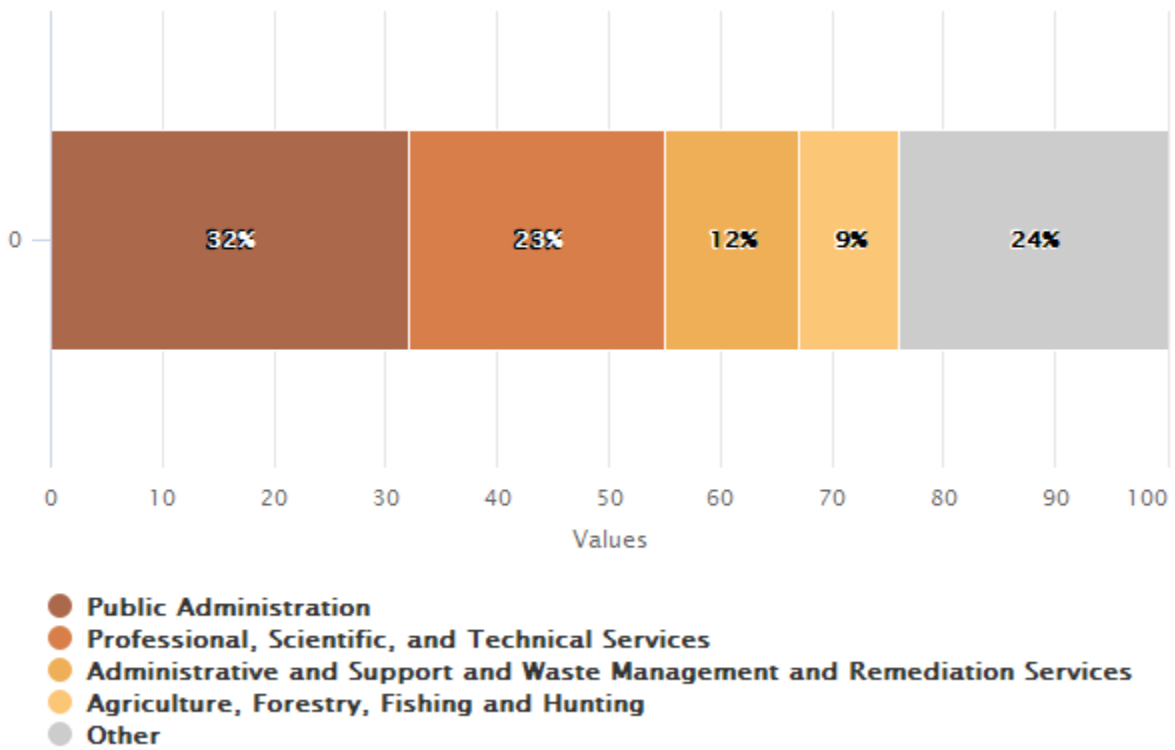
PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	12/1/2019 - 11/30/2020
Selected Programs	Forest Management/Forest Resources Management (03.0506), Forest Resources Production and Management (03.0510), Forest Sciences and Biology (03.0502), Forest Technology/Technician (03.0511), Forestry, General (03.0501), Forestry, Other (03.0599), Urban Forestry (03.0508), Wood Science and Wood Products/Pulp and Paper Technology (03.0509)
Career Outcomes mapped to Selected Programs of Study	Arborist / Faller, Firefighter, Forest / Conservation Technician, Forester, Conservation Scientists / Park Ranger

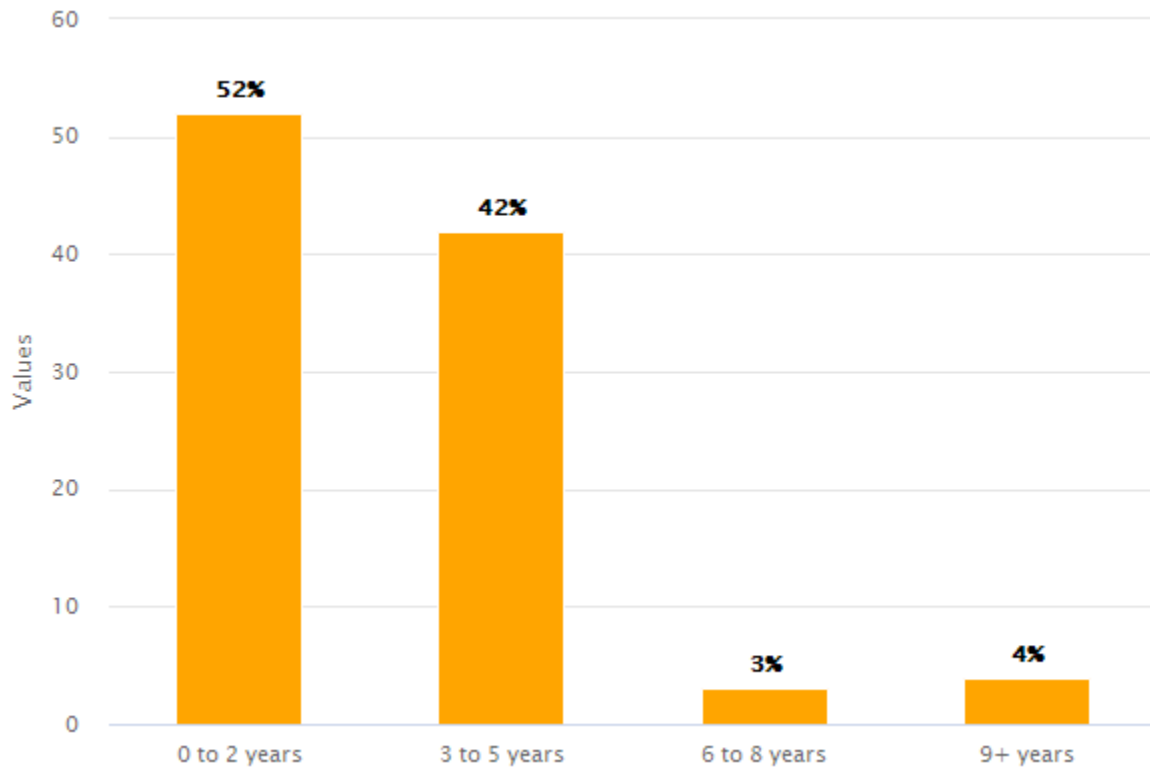
JOB POSTINGS BY ADVERTISED EDUCATION (%)



JOB POSTINGS BY INDUSTRY (%)



JOB POSTINGS BY EXPERIENCE REQUESTED (%)



TOP TITLES

Experience Level: All Experience

Title	Postings	Market Share (%)
Consulting Utility Forester	484	6.32%
Arborist Climber	459	5.99%
Arborist Crew Leader	381	4.97%
Utility Forester	345	4.50%
Soil Conservationist	301	3.93%
Forester	260	3.39%
Arborist Representative	234	3.05%
Park Ranger	143	1.87%
Natural Resource Specialist	117	1.53%
Soil Conservation Technician	116	1.51%

Forestry Technician	113	1.47%
Forestry Technician Recreation	86	1.12%
Firefighter	74	0.97%
Soil Conservationist District Conservationist	71	0.93%
Park Ranger I	70	0.91%

TOP EMPLOYERS HIRING

Experience Level: All Experience

Employer	Postings	Market Share (%)
Natural Resources Conservation	552	7.20%
Forest Service	496	6.47%
Davey Tree Expert Company	375	4.89%
National Park Service	231	3.01%
US Department of Agriculture	214	2.79%
Utilities Service	163	2.13%
Cn Utility Consulting	161	2.10%
Bureau of Land Management	147	1.92%
Acrt Incorporated	116	1.51%
Environmental Consultants Eci	108	1.41%
US Department of the Interior	108	1.41%
Monster Tree Service	91	1.19%
Davey Resource Group	83	1.08%
State Of Washington Department Of Agriculture	81	1.06%
Cn Utility Consulting Cnuc	78	1.02%

VALIDATE: KEY COMPETENCIES

PROJECT CRITERIA

Validate	Programs
Location	Nationwide
Degree Level	Bachelor's degree
Time Period	12/1/2019 - 11/30/2020
Selected Programs	Forest Management/Forest Resources Management (03.0506), Forest Resources Production and Management (03.0510), Forest Sciences and Biology (03.0502), Forest Technology/Technician (03.0511), Forestry, General (03.0501), Forestry, Other (03.0599), Urban Forestry (03.0508), Wood Science and Wood Products/Pulp and Paper Technology (03.0509)
Career Outcomes mapped to Selected Programs of Study	Arborist / Faller, Firefighter, Forest / Conservation Technician, Forester, Conservation Scientists / Park Ranger

TOP 15 SPECIALIZED SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Herbicides	3391 (22.57%)	40.15%	No	No
Natural Resources	3122 (20.78%)	-38.4%	No	No
Environmental Science	2347 (15.62%)	-8.57%	No	No

Scheduling	1727 (11.49%)	1.88%	No	No
Soil Science	1487 (9.9%)	-50.26%	No	No
Personnel Management	1482 (9.86%)	-41.73%	No	No
Natural Resource Management	1432 (9.53%)	-13.51%	No	No
Manual Dexterity	1320 (8.79%)	16.12%	No	No
Biology	1221 (8.13%)	-20.99%	No	Yes
Wildlife Management	1204 (8.01%)	-24.99%	No	No
Resource Management	1170 (7.79%)	-13.8%	No	No
Budgeting	1138 (7.57%)	-10.04%	Yes	No
Range Management	1090 (7.26%)	12.36%	No	No
Watershed Management	1053 (7.01%)	-36.91%	No	No
Data Collection	1043 (6.94%)	0.22%	No	No

TOP 15 BASELINES SKILLS

Skill	Postings
Physical Abilities	4609 (30.68%)
Communication Skills	3560 (23.7%)
Range of Motion	2806 (18.68%)
Planning	2667 (17.75%)
Research	2439 (16.23%)
Organizational Skills	1761 (11.72%)
Detail-Oriented	1659 (11.04%)
Teamwork / Collaboration	1515 (10.08%)
English	1504 (10.01%)

Writing	1485 (9.88%)
Microsoft Office	1299 (8.65%)
Problem Solving	1219 (8.11%)
Written Communication	1155 (7.69%)
Computer Literacy	1148 (7.64%)
Building Effective Relationships	866 (5.76%)

TOP 15 SOFTWARE PROGRAMMING SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Microsoft Office	1299 (8.65%)	-10.2%	No	No
Microsoft Excel	828 (5.51%)	17.03%	No	No
Microsoft Word	495 (3.29%)	-13.39%	No	No

Microsoft Powerpoint	479 (3.19%)	-8.52%	No	No
ArcGIS	357 (2.38%)	-0.43%	No	No
Public administration	266 (1.77%)	-30.37%	No	No
Geographic Information System (GIS)	195 (1.3%)	-42.56%	No	No
Word Processing	137 (0.91%)	-19.34%	No	No
Microsoft Access	136 (0.91%)	-57.74%	No	No
Active Server Pages (ASP)	128 (0.85%)	-52.12%	No	No
Facebook	99 (0.66%)	-34.28%	No	No
Microsoft Outlook	76 (0.51%)	-1.45%	No	No
Microsoft Windows	51 (0.34%)	6.61%	No	No
Adobe Photoshop	47 (0.31%)	-22.36%	No	No
Adobe Acrobat	42 (0.28%)	-15.24%	No	No

TOP 15 SKILL CLUSTERS

Skill	Postings
Resource Management and Restoration	4531 (30.16%)
Agronomy and Farming	3884 (25.85%)
Environmental Work	3544 (23.59%)
People Management	2294 (15.27%)
Conservation	2256 (15.02%)
Ecology	1988 (13.23%)
Environmental Geology	1613 (10.74%)
Business Management	1552 (10.33%)
Biology	1516 (10.09%)
Landscaping and Yard Care	1496 (9.96%)

Fire Inspection	1209 (8.05%)
Budget Management	1138 (7.57%)
General Sales	929 (6.18%)
Performance Management	927 (6.17%)
Project Management	856 (5.7%)

TOP 15 SALARY PREMIUM SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Budgeting	1138 (7.57%)	-10.04%	Yes	No

TOP 15 COMPETITIVE ADVANTAGE SKILLS

Skill	Postings	Projected Growth	Salary Premium	Competitive Advantage
Biology	1221 (8.13%)	-20.99%	No	Yes

TOP 15 CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
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Driver's License	7559 (50.31%)	No	No
Certified Arborist	1072 (7.14%)	No	No
Emergency Medical Technician (EMT)	488 (3.25%)	No	No
Wildland Firefighter I	464 (3.09%)	No	No
Fire Fighter I	340 (2.26%)	No	No
Certified Patient Account Technician	304 (2.02%)	No	No
Certified Pest Control	284 (1.89%)	No	No
Security Clearance	271 (1.8%)	No	No
First Aid Cpr Aed	270 (1.8%)	No	No
Real Estate Certification	183 (1.22%)	No	No
Paramedic Certification	144 (0.96%)	No	No
Firefighter II	144 (0.96%)	No	No

Cdl Class C	92 (0.61%)	No	No
Police Officer	85 (0.57%)	No	No
Applicators License	64 (0.43%)	No	No

TOP 15 SALARY PREMIUM CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

TOP 15 COMPETITIVE ADVANTAGE CERTIFICATIONS

Skill	Postings	Salary Premium	Competitive Advantage
No certificates available			

Appendix K.

BS Program Assessment Rubrics and Program-Level Student Learning Outcomes Assessment Plan

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 1a: Communications

Rubric current on 31 March 2020

EARLY-Academic-Career Assessment:

Student:

FOR 280: Forest Resource Policy and Law

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p>Learning Outcome 1 - Communications Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:</p>						
<p>a. find, read and interpret professional documents.</p>	<p>Early-Academic Career Assessment: FOR 280 (Policy/Law Reading)</p>	<p>Can find and extract pertinent information from professional sources.</p>	<p>Can do #1 and articulate the main points of a professional document.</p>	<p>Can do #1 and #2, and explain the relevance for forestry of the information in professional documents.</p>	<p>Can use skills from lower performance levels to develop practical applications and novel lines of inquiry for problem solving.</p>	

Comments:

Evaluator(s):

Dr. Thomas Ochuodho (FOR 280 Instructor)

Date:

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 1a: Communications

Rubric current on 31 March 2020

LATE-Academic-Career Assessment:

Student:

FOR 400: Human Dimensions of Forestry and Natural Resources

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p>Learning Outcome 1 - Communications</p> <p>Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:</p>						
<p>a. find, read and interpret professional documents.</p>	<p>Late-Academic Career Assessment: FOR 400 (Final Written Project)</p>	Can find and extract pertinent information from professional sources.	Can do #1 and articulate the main points of a professional document.	Can do #1 and #2, and explain the relevance for forestry of the information in professional documents.	Can use skills from lower performance levels to develop practical applications and novel lines of inquiry for problem solving.	

Comments:

Evaluator(s):

Dr. Laura Lhotka and Billy Thomas (FOR 400 co-instructors)

Date:

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 1b: Communications

Rubric current on 31 March 2020

EARLY-Academic-Career Assessment:

Student:

FOR 330 GIS and Spatial Analysis • FOR 340 Forest Ecology • FOR 250 Statistics and Measurements I

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Learning Outcome 1 - Communications Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:						
b-i. communicate information effectively in oral/visual presentations.	Early-Academic Career Assessment: FOR 330 (GIS Project Presentation)	Can adequately address <u>one</u> component below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address <u>two</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address <u>three</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address all <u>four</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	
b-ii. communicate information effectively in writing, on technical / business levels.	Early-Academic Career Assessment: FOR 340 (Lab Report)	Some competency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in all lower-level skills <u>plus</u> adequate logical structure and organization	Proficiency in all lower-level skills <u>plus</u> adequate orderly synthesis of ideas appropriate for audience	
b-iii. communicate information effectively in writing, to non-professional audiences.	Early-Academic Career Assessment: FOR 250 (Inventory Report)	Some competency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in all lower-level skills <u>plus</u> adequate logical structure and organization	Proficiency in all lower-level skills <u>plus</u> adequate orderly synthesis of ideas appropriate for audience	

Comments:

Evaluator(s):

Dr. Jian Yang (FOR 330 Instructor)

Dr. Mary Arthur (FOR 340 Instructor)

Dr. Jacob Muller (FOR 250 Instructor)

Date:

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 1b: Communications

Rubric current on 31 March 2020

LATE-Academic-Career Assessment:

Student:

FOR 400 Human Dimensions of Forestry and Natural Resources • FOR 480 Integrated Forest Resource Management

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Learning Outcome 1 - Communications Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to:						
b-i. communicate information effectively in oral/visual presentations.	Late-Academic Career Assessment: FOR 400 (Visual Project Component)	Can adequately address <u>one</u> component below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address <u>two</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address <u>three</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	Can adequately address all <u>four</u> components below: ▪ delivery ▪ structure /organization ▪ visual aids ▪ information content	
b-ii. communicate information effectively in writing, on technical / business levels.	Late-Academic Career Assessment: FOR 400 (Final Written Project)	Some competency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in all lower-level skills <u>plus</u> adequate logical structure and organization	Proficiency in all lower-level skills <u>plus</u> adequate orderly synthesis of ideas appropriate for audience	
b-iii. communicate information effectively in writing, to non-professional audiences.	Late-Academic Career Assessment: FOR 480 (Mgmt. Prescriptions)	Some competency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in: ▪ grammar, spelling, punctuation ▪ information content	Proficiency in all lower-level skills <u>plus</u> adequate logical structure and organization	Proficiency in all lower-level skills <u>plus</u> adequate orderly synthesis of ideas appropriate for audience	

Comments:

Evaluator(s):

Dr. Laura Lhotka and Billy Thomas (FOR 400 Co-Instructors)

Dr. John Lhotka and Dr. James Ringe (FOR 480 Co-Instructors)

Date:

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 2: Management Plans

Rubric current on 31 March 2020

EARLY-Academic-Career Assessment:

Student:

FOR 320: Forest Valuation and Economics

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p>Learning Outcome 2 - Management Plans Graduates will meet the “Management Plans” Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate:</p>						
<p>ability to develop management plans with specific multiple objectives and constraints.</p>	<p>Early-Academic Career Assessment: FOR 320 (Lab exercises, exam questions)</p>	Can identify the components of a forest management plan that meets multiple objectives and constraints.	Can analyze the economics of the timber components of a forest management plan.	Can analyze inventory data and prepare a multiple resource forest management plan based on the analysis.	Can interpret a multiple resource forest management plan and communicate it to landowners and other stakeholders.	

Comments:

Evaluator(s):

Dr. James Ringe (FOR 320 Instructor)

Date:

Department of Forestry and Natural Resources Assessment – BS FORE Degree Program
Assessment Scoring Rubric for Learning Outcome 2: Management Plans

Rubric current on 31 March 2020

LATE-Academic-Career Assessment:

Student:

FOR 480: Integrated Forest Resource Management

Semester/Year:

Student Learning Outcome or Objective	Project or Activity Assessed	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p>Learning Outcome 2 - Management Plans Graduates will meet the “Management Plans” Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate:</p>						
<p>ability to develop management plans with specific multiple objectives and constraints.</p>	<p>Late-Academic Career Assessment: FOR 480 (Mgmt. Prescriptions)</p>	Can identify the components of a forest management plan that meets multiple objectives and constraints.	Can analyze the economics of the timber components of a forest management plan.	Can analyze inventory data and prepare a multiple resource forest management plan based on the analysis.	Can interpret a multiple resource forest management plan and communicate it to landowners and other stakeholders.	

Comments:

Evaluator(s):

Dr. John Lhotka and Dr. James Ringe (FOR 480 Co-Instructors)

Date:

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

INSTRUCTIONS

The faculty of each academic program, degree or certificate, are asked to complete this plan template during the 2019-20 academic year to guide assessment of the program-level student learning outcomes (PSLOs) during the [upcoming cycle](#). Assessment plans are due to the Office of Strategic Planning & Institutional Effectiveness (OSPIE) no later than **April 15, 2020** and should be submitted to the appropriate college and program folder in [SharePoint](#).

A [Quick Start Guide and other documentation](#) as well as dates for live [training sessions](#) are provided on the OSPIE website. Training resources and session topics range from an overview of the new assessment process to principles and practice for student learning outcome assessment. Questions can be directed to [OSPIE staff](#).

Reading the Quick Start Guide prior to completing the new plan template is strongly encouraged.

ABOUT THE PROGRAM

College or School *(example: College of Arts & Sciences)*

College of Agriculture, Food, and Environment

Degree Type *(example: BA or MS)*

BS

Program Name *(example: History)*

Forestry

Please provide the mission statement for the program. If one does not currently exist, provide the department or college mission statement.

Research, teaching, and extension programs of the Department of Forestry and Natural Resources will effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs will elevate the quality of life by:

- enhancing the integrity, stability, and health of forests and related biotic communities; and
- increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

The teaching program is focused and structured to prepare graduates for success in achieving the Department's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and related natural resources.

(Optional) Include any additional information about the program's history, development, or structure that may be beneficial in understanding the curriculum and how student learning is assessed.

This B.S. (Forestry) degree program of the University of Kentucky is the only one in Kentucky accredited by the Society of American Foresters. The Society of American Foresters (SAF) is the national scientific and educational organization representing the forestry profession in the United States. A 501(c)(3) nonprofit organization founded in 1900 by Gifford Pinchot, it is the largest professional society for foresters in the world. SAF members include natural resource practitioners in public and private settings, researchers, industry executives, administrators, educators, and students. Professional accreditation of forestry programs has been a critically important function of the Society since accreditation was initiated in 1935. Over the years, accreditation processes and standards have been reviewed and revised periodically—approximately every ten years—to ensure that professional foresters continue to meet contemporary needs.

The program's student learning outcomes are based on the SAF's [accreditation standards](#).

ASSESSMENT CYCLE

All programs that do not have specialized accreditation and are not located in a department/college with a specialized accreditation should follow a [4-year PSLO assessment cycle](#). Programs that have specialized accreditation(s) or are within a college that has a comprehensive accreditation can develop an alternate PSLO and periodic review cycle in consultation with OSPIE.

Which cycle will the program being using?

- 4-year cycle [\[What does this look like?\]](#)
- Other (accredited programs/departments only)

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

If the program has selected "other" for the assessment and periodic review cycle, please append a copy of the proposed cycle and a brief justification to this plan.

ASSESSMENT COORDINATION AND RESOURCES

Individual(s) coordinating program-level student learning outcomes assessment

First and Last Name	Title/Position	Email
John Lhotka	Associate Professor	john.lhotka@uky.edu
Jim Ringe	Professor	jim.ringe@uky.edu
Laura Lhotka	Academic Coordinator	laura.lhotka@uky.edu

Other individuals providing oversight, coordination, or support for assessment

First and Last Name	Title/Position
Steve Price	Associate Professor
John Cox	Associate Professor
Ellen Crocker	Assistant Professor

(Optional) Other utilized resources for assessment (e.g. software such as rubrics or portfolios, evaluator stipends, etc.)

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Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

PROGRAM-LEVEL STUDENT LEARNING OUTCOMES

Please list the program-level student learning outcomes (PSLOs). If applicable, indicate which, if any, outcomes are required by your specialized accreditor(s) [\[What is this?\]](#). Bachelor's degree programs must also indicate which outcome(s) map to the university's GCCR ([Graduation Composition & Communication Requirement](#)). The GCCR is not a requirement for certificates, graduate, or professional programs.

Space for up to 10 PSLOs has been provided below, but this does not imply that 10 outcomes are required. Program faculty should decide the appropriate number based on the design of the curriculum. Most programs have 3-8 outcomes, depending on the length of the program. If more than 10 lines are needed, either insert more lines into the table or submit a request to OSPIE@uky.edu for a template with additional lines for PSLOs.

PSLO #	Program-level Student Learning Outcome Statement (How should these be written?)	Required by Specialized Accreditor(s)?	Mapped to GCCR? <small>(Undg degrees only)</small>
<i>Example</i>	<i>Graduates will be able to critically evaluate scientific literature related to drugs and disease to enhance clinical decision-making.</i>	<input type="checkbox"/>	<input type="checkbox"/>
1	Graduates will meet the "Communications" General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to: a. find, read and interpret professional documents. b-i. communicate information effectively in oral/visual presentations. b-ii. communicate information effectively in writing, on technical / business levels. b-iii. communicate information effectively, in writing, to non-professional audiences.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

PSLO #	Program-level Student Learning Outcome Statement (How should these be written?)	Required by Specialized Accreditor(s)?	Mapped to GCCR? (Undg degrees only)
2	Graduates will meet the "Management Plans" Professional Education Accreditation Requirement of the Society of American Foresters, i.e. they will demonstrate ability to develop management plans with specific multiple objectives and constraints.	<input type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>
10		<input type="checkbox"/>	<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Please provide a brief description of the process used to develop or revise current PSLOs and the extent to which program faculty were involved. If applicable, provide discussion of any attempts to align PSLOs with professional or accreditation standards, employer expectations and job skills, graduate program curricula, etc. If PSLOs are taken directly from an accreditor, discuss whether (and how) the PSLO statements were reviewed by the faculty to ensure they were comprehensive.

The B.S. in Forestry is administered by the Department of Forestry and Natural Resources (DFNR). The department's Undergraduate Program Committee (a six member standing committee) oversees assessment and is the faculty group charged with implementing the assessment activities as well as visioning for improvement of the plan. However, the DFNR Undergraduate Program Committee serves an advisory role to the DFNR faculty body, and ultimately any decision regarding change to the assessment methodology (or specific program learning outcomes) are considered and approved by the whole DFNR faculty body.

The program's student learning outcomes developed by the DFNR faculty are based on the Society of American Forester's (SAF) [accreditation standards](#). Accreditation of the Forestry degree program at the University of Kentucky is reviewed on a ten-year cycle by the SAF Committee on Accreditation, and this process includes a self-study generated by the Department of Forestry and Natural Resources and a site visit review team selected by the SAF Committee on Accreditation. Seven accreditation standards are under review through this process including the method of program learning outcomes assessment (Standard II). During calendar year 2020 as part of the normal ten-year accreditation cycle, the forestry degree program is under review by the SAF Committee on Accreditation. The site visit associated with this review occurred on February 25, 2020 to February 27, 2020.

CURRICULUM MAP

Please create a map of the PSLOs to the curriculum. All required courses should be included in the left-hand column, and all PSLOs should span across the remaining columns. If desired, specific elective courses or elective "tracks" can be included (recommended). The purpose of the curriculum map is to show where each PSLO is emphasized within the curriculum. The level at which each PSLO is taught within a given course should be indicated as follows: introductory (I); reinforced (R); or mastery (M). Each PSLO should have at least an instance of I, R, and M across the curriculum, with the exception of certain graduate programs where introductory knowledge is provided at the undergraduate level. For assistance in developing a curriculum map, please visit the [OSPIE website](#) or contact the [OSPIE team](#).

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Course	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7	PSLO8	PSLO9	PSLO10
<i>Example: EDP 548</i>	<i>I</i>		<i>R</i>			<i>R</i>	<i>I</i>		<i>I</i>	
FOR 250	I	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 285	I	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 320	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 340	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 350	R	I	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 370	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 400	M	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 425	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 435	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 480	M	M	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

FOR 330	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

I = Introduced; indicates that students are introduced to the outcome

R = Reinforced and opportunity to practice; indicates the outcome is reinforced and students afforded opportunities to practice

M = Mastery at the senior or exit level; indicates that students have had sufficient practice and can now demonstrate mastery

ASSESSMENTS

Please complete the chart below by listing each assessment on a separate row, and including the requested information. Except for outcomes that focus on students' values or beliefs, at least 1 assessment should be [direct](#). Ideally, all outcomes should have at least 2 assessments. If available, append a copy of the assessment measure/instrument (e.g. scoring rubric or sample questions) to this report. If a goal/target has already been set or can be set for a given measure/instrument, this should be included in the table. Otherwise, the program will need to determine and specify a target/goal when results are first reported for that instrument/measure. Note: space for only 15 instruments/measures have been provided. If space for additional assessment instruments/measures are needed, either insert additional rows into the table or contact [OSPIE staff](#) to receive a customized template with additional lines.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
<i>Example: SPIE 430 Final Paper</i>	1,3	Direct	<i>Students complete the final paper individually on a relevant & timely topic related to program assessment. Papers are scored by the course instructor using a standard rubric developed by members of the department curriculum committee. No sampling will be done; however, non-SPIE majors will be excluded from the results. The scores for criteria 1-2 will be used for PSLO1 and criteria 4-7 for PSLO3 (see attached rubric).</i>	<i>Measure was chosen because it provides evidence of student achievement near end of program and multiple criteria on rubric align directly to outcomes 1 & 3. Curriculum committee recently (2018) reviewed assignment instructions, rubric, and samples of student work to ensure good alignment with outcomes. In the future, multiple evaluators will be used to score a sample of student work and estimate reliability (interrater agreement) of the rubric.</i>	<i>95% of students will earn a 3 or better on each criterion (on a 4-point scale)</i>	<i>SPIE 430: Advanced Program Assessment Design</i>	<input type="checkbox"/>
FOR 280 Reading	1a	Direct	<i>Students complete a writing summary for a reading assignment associated with policies and laws associated with forest land management. Papers will be scored by the</i>	This early-academic-career assessment is the first point in the curriculum where such	Median performance of late-academic-	FOR 280 Forest Policy and Law	<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			<i>course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	an activity is completed in required forestry classes	career students will be at least "Accomplished"		
FOR 400 Written Final Project	1a, 1b-ii	Direct	<i>Students complete an individual term research paper on human dimensions of forestry. Papers will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	This is the late-academic-career assessment of an individual writing assignment and is associated with GCCR requirement of the degree program. The assignment integrates analysis of professional documents and the	Median performance of late-academic-career students will be at least "Accomplished"	FOR 400 Human Dimensions of Forestry and Natural Resources	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
				grading structure allows for assessment of writing abilities like grammar, sentence structure, clarity, logical organization, and higher-order synthesis of thought.			
FOR 330 GIS Project	1b-i	Direct	<i>Students complete a poster presentation for a geographic information system mapping project. Presentations will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	An early-academic-career assessment that is the first point in the curriculum where a visual presentation project is completed as part of a required forestry class.	Median performance of late-academic-career students will be at least "Accomplished"	FOR 330 GIS and Spatial Analysis	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
FOR 340 Lab Report	1b-ii	Direct	<i>Students complete a comprehensive written lab report discussing an experiment associated with the study of forest ecology. Written reports will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	An early-academic-career assessment. FOR 340 lab reports are small-scale research reports that offer a strong ability to test a student's skills at communicating technical information in a written assignment.	Median performance of late-academic-career students will be at least "Accomplished"	FOR 340 Forest Ecology	☒
FOR 250 Inventory Report	1b-iii	Direct	<i>Students complete a writing synthesis of a forest inventory project. Written reports will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program</i>	Forest inventory reports are technical, but also must be written so non-technical audiences (such as forest landowners) can	Median performance of late-academic-career students	FOR 250 Statistics and Measurements	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			<i>Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	understand them. As such this written assignment in the second year of the curriculum offers a good opportunity for early-academic-career assessment of this PSLO.	will be at least "Accomplished"		
FOR 400 Infographic	1b-i	Direct	<i>Students complete and present an infographic for a human dimensions of forestry service learning project. Presentations will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors</i>	A late-academic-career assessment that tests the ability of students to distill complex information into a visual presentation format.	Median performance of late-academic-career students will be at least "Accomplished"	FOR 400 Human Dimensions of Forestry and Natural Resources	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			<i>will be excluded from the results.</i>				
FOR 320 Management Assessments	2	Direct	<i>Lab exercises and associated exam questions relating to economics of forest management decision making. The combination of lab and exam measures will be aggregated and scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors will be excluded from the results.</i>	This early-academic-career assessment is the first point in the curriculum where management plan associated components are addressed in required forestry course activities.	Median performance of late-academic-career students will be at least "Accomplished"	FOR 320 Forest Valuation and Economics	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
FOR 480 Management Prescriptions	1b-iii, 2	Direct	<i>Students complete a writing assignment associated with their capstone forest management plan project. In the assignment, students must present the stand-level management regimes that meet landowner objectives given current conditions indicated by the inventory data, and clearly present the silvicultural and economic basis for the presented management regimes. Written reports will be scored by the course instructor using the outcome-specific rubric developed by members of the department Undergraduate Program Committee. No sampling will be done; however, non-forestry majors</i>	Management plans and their imbedded silvicultural prescriptions and justifications are technical, but also must be written so non-technical audiences (such as forest landowners) can understand them. As such this written assignment in the senior capstone class offers a good opportunity for late-academic-career assessment of the associated PSLOs.	Median performance of late-academic-career students will be at least "Accomplished"	FOR 480 Integrated Forest Resource Management	☒

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mappe d to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			<i>will be excluded from the results.</i>				
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type <small>(Direct or Indirect)</small>	Assessment Instrument/Measure Description <small>(What is this?)</small>	Assessment Instrument/Measure Rationale <small>(What is this?)</small>	Benchmark or Goal <small>(If Available)</small> <small>(What is this?)</small>	Course(s) <small>(If applicable)</small>	Rubric or Example Appended?
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

ASSESSMENT REPORTING CYCLE

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Please complete the chart below by providing the requested information for each learning outcome. Note: space for up to 10 PSLOs has been provided. If space for additional PSLOs are needed, either insert additional rows into the table or contact the [OSPIE staff](#) to receive a customized template.

PSLO #	Semester/ Year(s) Data Collected	Year(s) Results Submitted to OSPIE <small>(see Results Report Definition)</small>	Year(s) Reflection Report Submitted to OSPIE <small>(see Reflection Report Definition)</small>	Year(s) Action Report Submitted to OSPIE <small>(see Action Report Definition)</small>
<i>Example</i>	<i>Fall / 2020</i>	<i>Summer 2021</i>	<i>Summer 2023</i>	<i>Summer 2024</i>
1	Fall 2020/Spring 2021	Summer 2021	Summer 2023	Summer 2024
2	Fall 2021/Spring 2022	Summer 2022	Summer 2023	Summer 2024
3				
4				
5				
6				
7				
8				

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

9				
10				

FEEDBACK AND SUPPORT ON PSLO ASSESSMENT PLAN

Each program has the option of receiving formative feedback on its new or revised PSLO assessment plan from OSPIE staff members. OSPIE staff can provide suggestions for improvement to learning outcome statements, overall assessment plan design, curriculum mapping, standard setting, individual assessment tools, etc. If your program would like to receive feedback on its assessment plan, please indicate below:

- Yes, we would like to receive feedback.
- No thank you, not at this time.

If there are questions the program director or faculty did not have the opportunity to ask prior to submission of the PSLO assessment plan, and you would like to schedule a brief consultation with OSPIE staff, please indicate below:

- Yes, we would like to schedule an individual or group consultation.
- No thank you, not at this time.

Appendix L.

BS Program Assessment Report 2017-2018

Report : Assessment Year Details for : Forestry, Bachelor

Report Generated by Taskstream

Workspace : Student Learning Assessment Workspace

Assessment Report: 2017-2018: Assessment Activities and Assessment Results

Assessment Report Template : Academic Assessment Plan Template

Report Generated : Saturday, January 04, 2020

Measures and Results

Forestry, Bachelor Outcome Set

✦ Outcome

Communications (1.a) - Find, Read, Interpret Professional Documents

Graduates will meet the "Communications" General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to find, read and interpret professional documents.

Mapped to:

- **UK Graduation Composition & Communication Requirement (GCCR):** UK Graduation Composition & Communication Requirement (GCCR)

Measure

Early and Late Academic Career Assessment

DIRECT - STUDENT ARTIFACT

Rationale for use of assessment tool and how tool aligns to the Student Learning

Outcome:

The B.S. Forestry program uses only direct methods of assessment, i.e. a rubric is scored for each assessed student's performance on relevant course activities (e.g., papers, projects, presentations, and/or specific exam questions). For each student learning outcome we utilize a complete census of all students who are enrolled in the relevant courses and participate in the activities assessed.

To help us understand whether or not our program delivers 'value added', we assess students both early and late in their tenure in the academic program. For our 'Communications – Find, Read, Interpret Professional Documents' student learning outcome, the early academic career assessment examines forestry students enrolled in FOR 330 GIS and Spatial Analysis in spring 2018. Lab assignment #12 is used to assess the performance of early academic career students for this learning outcome because the course is an occasion relatively early in the degree program when students encounter significant challenges in finding and understanding professional documents. The assignment was written by the course instructor, Dr. Jian Yang, and provides students with an opportunity to demonstrate their levels of competence relative to the outcome (Appendix 1a – Early and Late Academic Career Assessment, see Lab Assignment #12).

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1a – Early and Late Academic Career Assessment, see Rubric 1a (early)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 330 in spring 2018 were assessed, unless a forestry major did not participate in the assignment. A lack of participation occurred only occasionally due to student illness, excused student absence, or unexcused failure to complete an assignment. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

For our 'Communications – Find, Read, Interpret Professional Documents' student learning outcome, the late academic career assessment examines forestry students enrolled in FOR 400 Human Dimensions of Forestry and Natural Resources in fall 2017. The Individual Research Project final paper is used to assess the performance of late academic career students for this learning outcome because it provides students an opportunity to demonstrate their levels of competence in finding and interpreting professional documents, at a time when they are approaching graduation. The assignment was written by the course co-instructors, Dr. Laura Lhotka and Billy Thomas, and this term paper assignment is typical of senior-level courses. The assignment is due dear the end of the semester. (Appendix 1a – Early and Late Academic Career Assessment, see Individual Research Project Instructions)

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1a – Early and Late Academic Career Assessment, see Rubric – 1a (late)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 400 in fall 2017 were assessed. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

The faculty members of the Department of Forestry and Natural Resources consider the FOR 330 instructor and FOR 400 co-instructors as appropriate individuals to evaluate the student performance for this learning outcome, for one of the same reasons faculty are entrusted with course instruction and mentoring of undergraduate students, i.e., they are experts in forestry and natural resource communication.

Target/Benchmark/Goal:

The early academic career assessment is used as a baseline to see where students are with regards to 'Communications – Find, Read, Interpret Professional Documents' student learning outcome when the topic is early in the curriculum.

The benchmark for the 'Communications – Find, Read, Interpret Professional Documents' student learning outcome is that the median rubric score to the late academic career students will be at least 3 ('Accomplished'). This was adopted by consensus during a 27 April 2012 faculty meeting of the Department of Forestry. The rationale for this benchmark is that the rubric's description of the 'Accomplished' level of performance (Appendix 1a – Early and Late Academic Career Assessment, see Rubric 1a (late)) matches the B.S. Forestry program expectations for its graduates.

Data Collection (includes time/semester and place, sampling process, population description, and data review process):


Our early academic career assessment data comes from Lab Assignment #12 in FOR 330 GIS and Spatial Analysis during spring 2018. Thirteen out of 16 forestry students enrolled in FOR 330 completed the assignment and were therefore evaluated by the rubric. A description of Lab Assignment #12 and the scoring rubric are included in Appendix 1a – Early and Late Academic Career Assessment.

Our late academic career assessment data comes from the Individual Research Project final paper in FOR 400 Human Dimensions of Forestry and Natural Resources during fall 2017. All eleven forestry students enrolled in FOR 400 completed the assignment and were therefore evaluated by the rubric. A description of the Individual Research Project final paper assignment and the scoring rubric are included in Appendix 1a – Early and Late Academic Career Assessment.

The rubric for each FOR 330 student was completed by the course instructor, Dr. Jian Yang. The rubric for each FOR 400 student was completed by the course co-instructors, Dr. Laura

Lhotka and Mr. Billy Thomas. All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 330 and FOR 400 instructors and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Supporting Attachments:

 Appendix-1a-Early-and-Late-Career-Assessment.pdf (Adobe Acrobat Document)

Results

for Early and Late Academic Career Assessment

Summary of Results:

Appendix 1a contains the results for the 'Communications – Find, Read, Interpret Professional Documents' for early and late academic career assessments including details for:

1. A description of the four performance levels in the rubric
2. Early and late assignments assessed
3. Means and medians
4. A statistical test of the hypothesis that early academic career student competence does not differ from that of late academic career students.

Target/Benchmark/Goal Achievement:

Met

Interpretation and Reflection of Results:

All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 330 and FOR 400 instructors and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Apart from the exceptions noted above, the data in the Appendix 1a result from a complete census of all early and late academic career students in the cohorts assessed. These data lead to the following two major conclusions for this learning outcome:

1. The benchmark that the median score of the late academic career students will be at least 'Accomplished' was achieved.
2. The results of the Yates-corrected chi-square test of the null hypothesis that early

and late academic students perform equally after pooling “Beginning” data with “Developing” data, and “Accomplished” data with “Exemplary” data were statistically significant. One hundred percent of the late academic career students achieved ‘Accomplished’ or ‘Exemplary’. Only 31 percent of the early academic career students achieved ‘Accomplished’ or ‘Exemplary’.

However, even with a nearly complete census we assess few students each year. Thus, we view the results with caution. Their validity and reliability will become more certain if we continue to obtain satisfactory results in the future. Due to the small sample size we did not disaggregate the results of the early and late assessment (N=13 and 11, respectively).

Actions Intended for the Improvement of Student Learning:

Because our benchmark was achieved it was recommended to the faculty that we continue to maintain and monitor student success for this learning outcome by assessing it again in another academic year. It was also recommended to the faculty that we use the time during the 2018-2019 academic year to evaluate all of our student learning outcomes and assessment process to determine if adjustments need to be made in the assessment process. We will consult with the Office of Strategic Planning and Institutional Effectiveness to determine if the adjustments are appropriate.

Substantiating Evidence:

[Appendix-1a-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Communications (1.b-i) – Communicate Effectively Oral/Visual Presentations

Graduates will meet the “Communications” General Education Accreditation Requirements of the Society of American Foresters, i.e. they will demonstrate ability to communicate information effectively in oral/visual presentations.

Mapped to:

- **UK Graduation Composition & Communication Requirement (GCCR):** UK Graduation Composition & Communication Requirement (GCCR)

Measure

Early and Late Academic Career Assessment

DIRECT - STUDENT ARTIFACT

Rationale for use of assessment tool and how tool aligns to the Student Learning

Outcome:

The B.S. Forestry program uses only direct methods of assessment, i.e. a rubric is scored for each assessed student’s performance on relevant course activities (e.g., papers, projects, presentations, and/or specific exam questions). For each student learning outcome we utilize a complete census of all students who are enrolled in the relevant courses and participate in the activities assessed.

To help us understand whether or not our program delivers ‘value added’, we assess students both early and late in their tenure in the academic program. For our ‘Communications – Communicate Effectively Oral/Visual Presentations’ student learning outcome, the early academic career assessment examines forestry students enrolled in FOR 340 Forest Ecology in fall 2017. The Week #9 Allelopathy Experiment oral presentations assignment was used to assess the performance of early academic career students for this learning outcome because the course is an occasion relatively early in the degree program when students begin to encounter significant professional oral/visual presentation assignments. Forestry students in both sections of FOR 340 were assessed. The assignment was written by the course instructor, Dr. Mary Arthur, and is due at the end of the semester. The assignment provides students an opportunity to demonstrate their levels of oral/visual presentation competence (Appendix 1b-i – Early and Late Academic Career Assessment, see Week # 9 assignment).

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point

assessment rubric (Appendix 1b-i – Early and Late Academic Career Assessment, see Rubric – 1b-i (early)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 340 in fall 2017 were assessed, unless a forestry major did not participate in the assignment. A lack of participation occurred only occasionally due to student illness, excused student absence, or unexcused failure to complete an assignment. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

For our ‘Communications – Communicate Effectively Oral/Visual Presentations’ student learning outcome, the late academic career assessment examines forestry students enrolled in FOR 400 Human Dimensions of Forestry and Natural Resources in fall 2017. The Oral Presentation of research paper is used to assess the performance of late academic career students for this learning outcome because it provides students an opportunity to demonstrate their levels of competence in oral/visual presentations, at a time when they are approaching graduation. This assignment required FOR 400 students to present their term papers and is due near the end of the semester. The assignment was written by the course co-instructors, Dr. Laura Lhotka and Billy Thomas.

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1b-i – Early and Late Academic Career Assessment, see Rubric – 1b-i (late)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 400 in fall 2017 were assessed. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

The faculty members of the Department of Forestry and Natural Resources consider the FOR 340 instructor and FOR 400 co-instructors as appropriate individuals to evaluate the student performance for this learning outcome, for one of the same reasons faculty are entrusted with course instruction and mentoring of undergraduate students, i.e., they are experts in forestry and natural resource communication.

Target/Benchmark/Goal:

The early academic career assessment is used as a baseline to see where students are with regards to ‘Communications – Communicate Effectively Oral/Visual Presentations’ student learning outcome when the topic is early in the curriculum.

The benchmark for the ‘Communications – Communicate Effectively Oral/Visual Presentation’ student learning outcome is that the median rubric score to the late academic career students will be at least 3 (‘Accomplished’). This was adopted by consensus during a 27 April 2012 faculty meeting of the Department of Forestry. The rationale for this benchmark is that the rubric’s description of the ‘Accomplished’ level of performance (Appendix 1b-i – Early and Late Academic Career Assessment, see Rubric – 1b-i (late)) matches the B.S. Forestry program expectations for its graduates.

Data Collection (includes time/semester and place, sampling process, population description, and data review process):

Our early academic career assessment data comes from the Week #9 Allelopathy Experiment oral presentation assignment in FOR 340 in fall 2017. Fifteen out of 16 forestry students enrolled in FOR 340 completed the assignment and were therefore evaluated by the rubric. A description of the Week #9 Allelopathy Experiment oral presentation assignment and the scoring rubric are included in Appendix 1b-i – Early and Late Academic Career Assessment.

Our late academic career assessment data comes from the Individual Research Project – Presentation in FOR 400 Human Dimensions of Forestry and Natural Resources during fall 2017. All eleven forestry students enrolled in FOR 400 completed the assignment and were therefore evaluated by the rubric. A description of the Individual Research Project – Presentation assignment and the scoring rubric are included in Appendix 1b-i – Early and Late Academic Career Assessment.

The rubric for each FOR 340 forestry student assessed was completed Dr. Laura Lhotka, Director of Forestry Degree Programs Assessment during the oral presentations. The rubric for each FOR 400 student was completed by the course co-instructors, Dr. Laura Lhotka and Mr. Billy Thomas. Dr. Lhotka then compiled the assessment data and conducted statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Supporting Attachments:

[Appendix-1b-i-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Results

for Early and Late Academic Career Assessment

Summary of Results:

Appendix 1b-i contains the results for the 'Communications – Communicate Effectively Oral/Visual Presentations' for early and late academic career assessments including details for:

1. A description of the four performance levels in the rubric
2. Early and late assignments assessed
3. Means and medians
4. A statistical test of the hypothesis that early academic career student competence does not differ from that of late academic career students.

Target/Benchmark/Goal Achievement:

Met

Interpretation and Reflection of Results:

All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 340 and FOR 400 instructors and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Apart from the exceptions noted above, the data in the Appendix 1b-i result from a

complete census of all early and late academic career students in the cohorts assessed. These data lead to the following two major conclusions for this learning outcome:

1. The benchmark that the median score of the late academic career students will be at least 'Accomplished' was achieved.
2. The results of the Yates-corrected chi-square test of the null hypothesis that early and late academic students perform equally after pooling "Beginning" data with "Developing" data, and "Accomplished" data with "Exemplary" data were not statistically significant.

However, even with a nearly complete census we assess few students each year. Thus, we view the results with caution. Their validity and reliability will become more certain if we continue to obtain satisfactory results in the future. Due to the small sample size we did not disaggregate the results of the early and late assessment (N=15 and 11, respectively).

Actions Intended for the Improvement of Student Learning:

Because our benchmark was achieved it was recommended to the faculty that we continue to maintain and monitor student success for this learning outcome by assessing it again in another academic year. It was also recommended to the faculty that we use the time during the 2018-2019 academic year to evaluate all of our student learning outcomes and assessment process to determine if adjustments need to be made in the assessment process. We will consult with the Office of Strategic Planning and Institutional Effectiveness to determine if the adjustments are appropriate.

Substantiating Evidence:

[Appendix-1b-i-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Communications (1.b-ii) – Communicate Effectively in Writing on Technical/Business Level

*Graduates will meet the
"Communications" General
Education Accreditation
Requirements of the Society of
American Foresters, i.e. they will
demonstrate ability to
communicate information
effectively in writing, on technical /
business levels.*

Mapped to:

- **UK Graduation Composition & Communication Requirement (GCCR):** UK Graduation Composition & Communication Requirement (GCCR)

Measure

Early and Late Academic Career Assessment

DIRECT - STUDENT ARTIFACT

Rationale for use of assessment tool and how tool aligns to the Student Learning

Outcome:

The B.S. Forestry program uses only direct methods of assessment, i.e. a rubric is scored for each assessed student's performance on relevant course activities (e.g., papers, projects, presentations, and/or specific exam questions). For each student learning outcome we utilize a complete census of all students who are enrolled in the relevant courses and participate in the activities assessed.

To help us understand whether or not our program delivers 'value added', we assess students both early and late in their tenure in the academic program. For our 'Communications – Communicate Effectively in Writing on Technical/Business Level' student learning outcome, the early academic career assessment examines forestry students enrolled in FOR 340 Forest Ecology in fall 2017. The Week #9 Allelopathy Experiment written lab report assignment was used to assess the performance of early academic career students for this learning outcome because the course is an occasion relatively early in the degree program when students begin to encounter significant technical writing. Forestry students in both sections of FOR 340 were assessed. The assignment was written by the course instructor, Dr. Mary Arthur, and is due at the end of the semester.

The assignment provides students an opportunity to demonstrate their levels of technical writing abilities (Appendix 1b-ii – Early and Late Academic Career Assessment, see Week #9 assignment).

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1b-ii – Early and Late Academic Career Assessment, see Rubric – 1b-ii (early)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 340 in fall 2017 were assessed, unless a forestry major did not participate in the assignment. A lack of participation occurred only occasionally due to student illness, excused student absence, or unexcused failure to complete an assignment. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

For our 'Communications – Communicate Effectively in Writing on Technical/Business Level' student learning outcome, the late academic career assessment examines forestry students enrolled in FOR 400 Human Dimensions of Forestry and Natural Resources in fall 2017. The Individual Research Project final paper is used to assess the performance of late academic career students for this learning outcome because it provides students an opportunity to demonstrate their levels of technical writing proficiency at a time when they are approaching graduation. The assignment was written by the course co-instructors, Dr. Laura Lhotka and Billy Thomas, and this term paper assignment is typical of senior-level courses. The assignment is due near the end of the semester. (Appendix 1b-ii – Early and Late Academic Career Assessment, see Individual Research Project Instructions)

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1b-ii – Early and Late Academic Career Assessment, see Rubric – 1b-ii (late)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 400 in fall 2017 were assessed. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

The faculty members of the Department of Forestry and Natural Resources consider the FOR 340 instructor and FOR 400 co-instructors as appropriate individuals to evaluate the student performance for this learning outcome, for one of the same reasons faculty are entrusted with course instruction and mentoring of undergraduate students, i.e., they are experts in forestry and natural resource communication.

Target/Benchmark/Goal:

The early academic career assessment is used as a baseline to see where students are with regards to 'Communications – Communicate Effectively in Writing on Technical/Business Level' student learning outcome when the topic is early in the curriculum.

The benchmark for the 'Communications – Communicate Effectively in Writing on Technical/Business Level' student learning outcome is that the median rubric score to the late academic career students will be at least 3 ('Accomplished'). This was adopted by consensus during a 27 April 2012 faculty meeting of the Department of Forestry. The rationale for this benchmark is that the rubric's description of the 'Accomplished' level of performance (Appendix 1b-ii – Early and Late Academic Career Assessment, see Rubric – 1b-ii (late)) matches the B.S. Forestry program expectations for its graduates.

Data Collection (includes time/semester and place, sampling process, population)

description, and data review process):

Our early academic career assessment data comes from the Week #9 Allelopathy Experiment written lab report assignment in FOR 340 in fall 2017. Fifteen out of 16 forestry students enrolled in FOR 340 completed the assignment and were therefore evaluated by the rubric. A description of the Week #9 Allelopathy Experiment written lab report assignment and the scoring rubric are included in Appendix 1b-ii – Early and Late Academic Career Assessment.

Our late academic career assessment data comes from the Individual Research Project final paper in FOR 400 Human Dimensions of Forestry and Natural Resources during fall 2017. All eleven forestry students enrolled in FOR 400 completed the assignment and were therefore evaluated by the rubric. A description of the Individual Research Project final paper assignment and the scoring rubric are included in Appendix 1b-ii – Early and Late Academic Career Assessment.

The rubric for each FOR 340 student was completed by the course instructor, Dr. Mary Arthur. The rubric for each FOR 400 student was completed by the course co-instructors, Dr. Laura Lhotka and Mr. Billy Thomas. All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 340 instructor and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Supporting Attachments:

[Appendix-1b-ii-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Results

for Early and Late Academic Career Assessment

Summary of Results:

Appendix 1b-ii contains the results for the 'Communications – Communicate Effectively in Writing on Technical/Business Level' for early and late academic career assessments including details for:

1. A description of the four performance levels in the rubric
2. Early and late assignments assessed
3. Means and medians
4. A statistical test of the hypothesis that early academic career student competence does not differ from that of late academic career students.

Target/Benchmark/Goal Achievement:

Met

Interpretation and Reflection of Results:

All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 340 and FOR 400 instructors and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were

created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Apart from the exceptions noted above, the data in the Appendix 1b-ii result from a complete census of all early and late academic career students in the cohorts assessed. These data lead to the following two major conclusions for this learning outcome:

1. The benchmark that the median score of the late academic career students will be at least 'Accomplished' was achieved.
2. The results of the Yates-corrected chi-square test of the null hypothesis that early and late academic students perform equally after pooling "Beginning" data with "Developing" data, and "Accomplished" data with "Exemplary" data were statistically significant. One hundred percent of the late academic career students achieved 'Accomplished' or 'Exemplary'. Only 53 percent of the early academic career students achieved 'Accomplished' or 'Exemplary'.

However, even with a nearly complete census we assess few students each year. Thus, we view the results with caution. Their validity and reliability will become more certain if we continue to obtain satisfactory results in the future. Due to the small sample size we did not disaggregate the results of the early and late assessment (N=15 and 11, respectively).

Actions Intended for the Improvement of Student Learning:

Because our benchmark was achieved it was recommended to the faculty that we continue to maintain and monitor student success for this learning outcome by assessing it again in another academic year. It was also recommended to the faculty that we use the time during the 2018-2019 academic year to evaluate all of our student learning outcomes and assessment process to determine if adjustments need to be made in the assessment process. We will consult with the Office of Strategic Planning and Institutional Effectiveness to determine if the adjustments are appropriate.

Substantiating Evidence:

[Appendix-1b-ii-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Communications (1.b-iii) – Communicate Effectively in Writing to Non-Professional Audiences

*Graduates will meet the
"Communications" General
Education Accreditation*

Measure

Early and Late Academic Career Assessment

DIRECT - STUDENT ARTIFACT

Rationale for use of assessment tool and how tool aligns to the Student Learning Outcome:

Requirements of the Society of American Foresters, i.e. they will demonstrate ability to communicate information effectively, in writing, to non-professional audiences.

.....
Mapped to:

- **UK Graduation Composition & Communication Requirement (GCCR):** UK Graduation Composition & Communication Requirement (GCCR)

The B.S. Forestry program uses only direct methods of assessment, i.e. a rubric is scored for each assessed student's performance on relevant course activities (e.g., papers, projects, presentations, and/or specific exam questions). For each student learning outcome we utilize a complete census of all students who are enrolled in the relevant courses and participate in the activities assessed.

To help us understand whether or not our program delivers 'value added', we assess students both early and late in their tenure in the academic program. For our 'Communications – Communicate Effectively in Writing to Non-Professional Audiences' student learning outcome, the early academic career assessment examines forestry students enrolled in FOR 330 GIS and Spatial Analysis in spring 2018. The Final Project – Individual Project Report is used to assess the performance of early academic career students for this learning outcome because the course is an occasion relatively early in the degree program when students begin to encounter significant challenges in communicating technical information to lay audiences. The assignment, due at the end of the semester and written by the course instructor, Dr. Jian Yang, provides students with an opportunity to demonstrate their levels of competence relative to the outcome (Appendix 1b-iii – Early and Late Academic Career Assessment, see Final Project).

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1b-iii – Early and Late Academic Career Assessment, see Rubric – 1b-iii (early)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 330 in spring 2018 were assessed, unless a forestry major did not participate in the assignment. A lack of participation occurred only occasionally due to student illness, excused student absence, or unexcused failure to complete an assignment. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

For our 'Communications – Communicate Effectively in Writing to Non-Professional Audiences' student learning outcome, the late academic career assessment examines forestry students enrolled in FOR 400 Human Dimensions of Forestry and Natural Resources in fall 2017. Section Review #3 is used to assess the performance of late academic career students for this learning outcome because it provides students an opportunity to demonstrate their competencies in communicated technical information to non-technical audiences, at a time when they were approaching graduation from the degree program. The assignment was written by the course co-instructors and was due near the end of the semester (Appendix 1b-iii – Early and Late Academic Career Assessment, see Section Review #3).

For this learning outcome, the course instructor uses evidence provided by the student performances on the assignment indicated above to complete our existing 4-point assessment rubric (Appendix 1b-iii – Early and Late Academic Career Assessment, see Rubric – 1b-iii (late)). The rubric for these assessments had been developed for prior assessment cycles and have been used ever since. All forestry majors enrolled in FOR 400 in fall 2017 were assessed. The result is an almost-complete census for all forestry majors in each cohort assessed, because each of course used for assessment is required by the B.S. Forestry degree program and is offered as a single section in only one semester per year.

The faculty members of the Department of Forestry and Natural Resources consider the FOR 330 instructor and FOR 400 co-instructors as appropriate individuals to evaluate the student performance for this learning outcome, for one of the same reasons faculty are entrusted with course instruction and mentoring of undergraduate students, i.e., they are experts in forestry and natural resource communication.

Target/Benchmark/Goal:

The early academic career assessment is used as a baseline to see where students are with regards to 'Communications – Communicate Effectively in Writing to Non-Professional Audiences' student learning outcome when the topic is early in the curriculum.

The benchmark for the 'Communications – Communicate Effectively in Writing to Non-Professional Audiences' student learning outcome is that the median rubric score to the late academic career students will be at least 3 ('Accomplished'). This was adopted by consensus during a 27 April 2012 faculty meeting of the Department of Forestry. The rationale for this benchmark is that the rubric's description of the 'Accomplished' level of performance (Appendix 1b-iii – Early and Late Academic Career Assessment, see Rubric – 1b-iii (late)) matches the B.S. Forestry program expectations for its graduates.


Data Collection (includes time/semester and place, sampling process, population description, and data review process):

Our early academic career assessment data comes from the Final Project – Individual Project Report in FOR 330 GIS and Spatial Analysis during spring 2018. All sixteen forestry students enrolled in FOR 330 completed the assignment and were therefore evaluated by the rubric. A description of the Final Project – Individual Project Report and the scoring rubric are included in Appendix 1b-iii – Early and Late Academic Career Assessment.

Our late academic career assessment data comes from the Section Review #3 in FOR 400 Human Dimensions of Forestry and Natural Resources during fall 2017. All eleven forestry students enrolled in FOR 400 completed the assignment and were therefore evaluated by the rubric. A description of the Section Review #3 assignment and the scoring rubric are included in Appendix 1b-iii – Early and Late Academic Career Assessment.

The rubric for each FOR 330 student was completed by the course instructor, Dr. Jian Yang. The rubric for each FOR 400 student was completed by the course co-instructors, Dr. Laura Lhotka and Mr. Billy Thomas. All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 330 instructor and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Supporting Attachments:

 [Appendix-1b-iii-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Results

for Early and Late Academic Career Assessment

Summary of Results:

Appendix 1b-iii contains the results for the 'Communications – Communicate Effectively in Writing to Non-Professional Audiences' for early and late academic career assessments including details for:

1. A description of the four performance levels in the rubric
2. Early and late assignments assessed
3. Means and medians

4. A statistical test of the hypothesis that early academic career student competence does not differ from that of late academic career students.

Target/Benchmark/Goal Achievement:

Met

Interpretation and Reflection of Results:

All assessment data were compiled by Laura Lhotka, Director of Forestry Degree Programs Assessment. Laura Lhotka initiated the data review by summarizing the data provided by the FOR 330 and FOR 400 instructors and by conducting statistical analyses to compare the performance of early academic career students with that of late academic career students. The statistical analysis formulas/spreadsheets were created by the past Director of Forestry Degree Programs Assessment, Dr. David Wagner (now retired). The data summaries and statistical results, as well as the original rubrics for all students included in the assessment were provided to the chair of the forestry Undergraduate Programs Committee (UPC), Dr. John Lhotka, for review. After the chair of the UPC provided review and input, a final version of these materials were made available (by email) to the Department of Forestry and Natural Resources faculty.

Apart from the exceptions noted above, the data in the Appendix 1b-iii result from a complete census of all early and late academic career students in the cohorts assessed. These data lead to the following two major conclusions for this learning outcome:

1. The benchmark that the median score of the late academic career students will be at least 'Accomplished' was achieved.
2. The results of the Yates-corrected chi-square test of the null hypothesis that early and late academic students perform equally after pooling "Beginning" data with "Developing" data, and "Accomplished" data with "Exemplary" data were statistically significant. One hundred percent of the late academic career students achieved 'Accomplished' or 'Exemplary'. Only 25 percent of the early academic career students achieved 'Accomplished' or 'Exemplary'.

However, even with a nearly complete census we assess few students each year. Thus, we view the results with caution. Their validity and reliability will become more certain if we continue to obtain satisfactory results in the future. Due to the small sample size we did not disaggregate the results of the early and late assessment (N=16 and 11, respectively).

Actions Intended for the Improvement of Student Learning:

Because our benchmark was achieved it was recommended to the faculty that we continue to maintain and monitor student success for this learning outcome by assessing it again in another academic year. It was also recommended to the faculty that we use the time during the 2018-2019 academic year to evaluate all of our student learning outcomes and assessment process to determine if adjustments need to be made in the assessment process. We will consult with the Office of Strategic Planning and Institutional Effectiveness to determine if the adjustments are appropriate.

Substantiating Evidence:

[Appendix-1b-iii-Early-and-Late-Career-Assessment.pdf](#) (Adobe Acrobat Document)

Appendix M.

MS Program Assessment Rubrics and Program-Level Student Learning Outcomes Assessment Plan

Department of Forestry and Natural Resources – MS FNRS (Plan A) Degree Program
Scoring Rubric for Learning Outcome 1: Defining Science

Check one of the following:

Initial Assessment: FOR 601 (“Science and Science Communication” Assignment)

Final Assessment: Thesis and Final Exam

Student: _____

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<u>Learning Outcome 1:</u> With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to define science and distinguish it from non-science.	Understands science as a tool of inquiry.	Understands the steps in the scientific method.	Can determine whether research findings have been generated by the scientific method. Can formulate testable hypotheses.	Can evaluate the scientific rigor of a specific project or article. For example, demonstrates an ability to critique and integrate peer-reviewed literature, in the thesis or in other student writing or speaking.	

Comments:

Evaluator(s): _____

Date: _____

**Department of Forestry and Natural Resources – MS FNRS (Plan A) Degree Program
Scoring Rubric for Learning Outcome 2: Conclusions and Evidence from Literature**

Check one of the following:

_____ Early-Academic-Career Assessment: FOR 601 (Journal Article Assignment & Project Proposal)

_____ Late-Academic-Career Assessment: Thesis (Plan A only), Final Exam, and (if applicable) Manuscript(s) & Grant Proposals

Student: _____

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p><u>Learning Outcome 2:</u> With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature.</p>	Can find and extract pertinent information and conclusions from research sources.	Can synthesize and evaluate research findings and draw conclusions based on available literature.	Can develop novel lines of inquiry based on questions raised in previously presented evidence and identify context of their own academic work in literature.	Has submitted a manuscript for a peer reviewed paper or has submitted a grant proposal to a competitive grant program.	

Comments:

Evaluator(s): _____

Date: _____

**Department of Forestry and Natural Resources Assessment – MS FNRS (Plan A) Degree Program
Scoring Rubric for Learning Outcome 3: Communication of Information**

Check one of the following:

_____ Early-Academic-Career Assessment: FOR 601 (Project Proposal)

_____ Late-Academic-Career Assessment: Exit Seminar, Thesis (Plan A only), and (if applicable) Manuscript(s)

Student: _____

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p>Learning Outcome 3: With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to demonstrate the ability to communicate information effectively</p>					
<p>a. in oral/visual presentations.</p> <p>Early-career assessment by FOR 601 instructor.</p> <p>Late-career assessment by consensus of FOR 601 instructor and major professor.</p>	<p>No more than two of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure / organization • visual aids • information content 	<p>Three of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure/organization • visual aids • information content 	<p>All four of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure/organization • visual aids • information content 	<p>Received regional or national award for oral presentation or poster presentation.</p>	
<p>b. in writing.</p> <p>Early-career assessment by FOR 601 instructor.</p> <p>Late-career assessment by major professor.</p>	<p>Submitted a research proposal containing all fundamental elements (and, if in FOR 601, received “satisfactory” grade)</p>	<p>Submitted to major professor thesis draft that includes all required components</p>	<p>Final thesis accepted by major professor and other committee members as a result of final examination (and satisfactory completion of any required revisions)</p>	<p>Submitted manuscript, based on thesis work, for peer-reviewed paper</p>	

Comments:

Evaluator(s): _____

Date: _____

Department of Forestry and Natural Resources– MS FNRS (Plan A) Degree Program
Scoring Rubric for Learning Outcome 4: Generation of New Knowledge

Check one of the following:

_____ **Initial Assessment: FOR 601 (Project Proposal)**

_____ **Final Assessment: Thesis, Final Exam, and (if applicable) Manuscript(s)**

Student: _____

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<u>Learning Outcome 4:</u> With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to employ appropriate methods to generate new knowledge.	Identifies a strategy for addressing a natural resource / forestry topic with a science-based approach.	Submits acceptable thesis research proposal.	Submits final draft of an acceptable thesis.	Has published an article or submitted a manuscript for publication, based on original research findings.	

Comments:

Evaluator(s): _____

Date: _____

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

INSTRUCTIONS

The faculty of each academic program, degree or certificate, are asked to complete this plan template during the 2019-20 academic year to guide assessment of the program-level student learning outcomes (PSLOs) during the [upcoming cycle](#). Assessment plans are due to the Office of Strategic Planning & Institutional Effectiveness (OSPIE) no later than **April 15, 2020** and should be submitted to the appropriate college and program folder in [SharePoint](#).

A [Quick Start Guide and other documentation](#) as well as dates for live [training sessions](#) are provided on the OSPIE website. Training resources and session topics range from an overview of the new assessment process to principles and practice for student learning outcome assessment. Questions can be directed to [OSPIE staff](#).

Reading the Quick Start Guide prior to completing the new plan template is strongly encouraged.

ABOUT THE PROGRAM

College or School *(example: College of Arts & Sciences)*

College of Agriculture, Food, and Environment

Degree Type *(example: BA or MS)*

MS

Program Name *(example: History)*

Forest and Natural Resource Sciences

Please provide the mission statement for the program. If one does not currently exist, provide the department or college mission statement.

Research, teaching, and extension programs of the Department of Forestry and Natural Resources will effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs will elevate the quality of life by: enhancing the integrity, stability, and health of forests and related biotic communities; and increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources. The M.S. (Forest and Natural Resource Sciences) degree program is focused and structured to prepare graduates

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

for success in achieving the Department's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and related natural resources. The degree program has two options: Plan A (Thesis Option) and Plan B (Non-Thesis Option). Plan B is seldom used.

(Optional) Include any additional information about the program's history, development, or structure that may be beneficial in understanding the curriculum and how student learning is assessed.

ASSESSMENT CYCLE

All programs that do not have specialized accreditation and are not located in a department/college with a specialized accreditation should follow a [4-year PSLO assessment cycle](#). Programs that have specialized accreditation(s) or are within a college that has a comprehensive accreditation can develop an alternate PSLO and periodic review cycle in consultation with OSPIE.

Which cycle will the program being using?

- 4-year cycle [\[What does this look like?\]](#)
- Other (accredited programs/departments only)

If the program has selected "other" for the assessment and periodic review cycle, please append a copy of the proposed cycle and a brief justification to this plan.

ASSESSMENT COORDINATION AND RESOURCES

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Individual(s) coordinating program-level student learning outcomes assessment

First and Last Name	Title/Position	Email
Steven J. Price	Associate Professor/Director of Graduate Studies	Steven.price@uky.edu
Laura Lhotka	Academic Coordinator	Laura.lhotka@uky.edu

Other individuals providing oversight, coordination, or support for assessment

First and Last Name	Title/Position
Chris Barton	Professor
John Lhotka	Associate Professor
Thomas Ochuodho	Assistant Professor

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

(Optional) Other utilized resources for assessment (e.g. software such as rubrics or portfolios, evaluator stipends, etc.)

PROGRAM-LEVEL STUDENT LEARNING OUTCOMES

Please list the program-level student learning outcomes (PSLOs). If applicable, indicate which, if any, outcomes are required by your specialized accreditor(s) [\[What is this?\]](#). Bachelor's degree programs must also indicate which outcome(s) map to the university's GCCR ([Graduation Composition & Communication Requirement](#)). The GCCR is not a requirement for certificates, graduate, or professional programs.

Space for up to 10 PSLOs has been provided below, but this does not imply that 10 outcomes are required. Program faculty should decide the appropriate number based on the design of the curriculum. Most programs have 3-8 outcomes, depending on the length of the program. If more than 10 lines are needed, either insert more lines into the table or submit a request to OSPIE@uky.edu for a template with additional lines for PSLOs.

PSLO #	Program-level Student Learning Outcome Statement <i>(How should these be written?)</i>	Required by Specialized Accreditor(s)?	Mapped to GCCR? <i>(Undg degrees only)</i>
<i>Example</i>	<i>Graduates will be able to critically evaluate scientific literature related to drugs and disease to enhance clinical decision-making.</i>	<input type="checkbox"/>	<input type="checkbox"/>
1	With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to define science and distinguish it from non-science.	<input type="checkbox"/>	<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

PSLO #	Program-level Student Learning Outcome Statement (How should these be written?)	Required by Specialized Accreditor(s)?	Mapped to GCCR? (Undg degrees only)
2	With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature.	<input type="checkbox"/>	<input type="checkbox"/>
3	With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to demonstrate the ability to communicate information effectively in oral/visual presentations and in writing.	<input type="checkbox"/>	<input type="checkbox"/>
4	With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to employ appropriate methods to generate new knowledge.	<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>
10		<input type="checkbox"/>	<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

Please provide a brief description of the process used to develop or revise current PSLOs and the extent to which program faculty were involved. If applicable, provide discussion of any attempts to align PSLOs with professional or accreditation standards, employer expectations and job skills, graduate program curricula, etc. If PSLOs are taken directly from an accreditor, discuss whether (and how) the PSLO statements were reviewed by the faculty to ensure they were comprehensive.

The M.S. in Forest and Natural Resource Sciences is administered by the Department of Forestry and Natural Resources (DFNR). The DFNR Graduate Program Committee (GPC; a 4 member standing committee) oversees assessment and is the faculty group charged with implementing the assessment activities as well as visioning for improvement of the plan. However, the DFNR GPC serves an advisory role to the DFNR faculty body, and ultimately any decision regarding change to the assessment methodology (or specific program learning outcomes) are considered and approved by the DFNR faculty body.

CURRICULUM MAP

Please create a map of the PSLOs to the curriculum. All required courses should be included in the left-hand column, and all PSLOs should span across the remaining columns. If desired, specific elective courses or elective “tracks” can be included (recommended). The purpose of the curriculum map is to show where each PSLO is emphasized within the curriculum. The level at which each PSLO is taught within a given course should be indicated as follows: introductory (I); reinforced (R); or mastery (M). Each PSLO should have at least an instance of I, R, and M across the curriculum, with the exception of certain graduate programs where introductory knowledge is provided at the undergraduate level. For assistance in developing a curriculum map, please visit the [OSPIE website](#) or contact the [OSPIE team](#).

Course	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7	PSLO8	PSLO9	PSLO10
<i>Example:</i> EDP 548	I		R			R	I		I	
FOR 601	I	I	I	I	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

FOR 602	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 770	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
Exit Seminar, Final Examination, and Thesis	M	M	M	M	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

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	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

I = Introduced; indicates that students are introduced to the outcome

R = Reinforced and opportunity to practice; indicates the outcome is reinforced and students afforded opportunities to practice

M = Mastery at the senior or exit level; indicates that students have had sufficient practice and can now demonstrate mastery

ASSESSMENTS

Please complete the chart below by listing each assessment on a separate row, and including the requested information. Except for outcomes that focus on students' values or beliefs, at least 1 assessment should be [direct](#). Ideally, all outcomes should have at least 2 assessments. If available, append a copy of the assessment measure/instrument (e.g. scoring rubric or sample questions) to this report. If a goal/target has already been set or can be set for a given measure/instrument, this should be included in the table. Otherwise, the program will need to determine and specify a target/goal when results are first reported for that instrument/measure. Note: space for only 15 instruments/measures have been provided. If space for additional assessment instruments/measures are needed, either insert additional rows into the table or contact [OSPIE staff](#) to receive a customized template with additional lines.

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
<i>Example: SPIE 430 Final Paper</i>	1,3	Direct	<i>Students complete the final paper individually on a relevant & timely topic related to program assessment. Papers are scored by the course instructor using a standard rubric developed by members of the department curriculum committee. No sampling will be done; however, non-SPIE majors will be excluded from the results. The scores for criteria 1-2 will be used for PSLO1 and criteria 4-7 for PSLO3 (see attached rubric).</i>	<i>Measure was chosen because it provides evidence of student achievement near end of program and multiple criteria on rubric align directly to outcomes 1 & 3. Curriculum committee recently (2018) reviewed assignment instructions, rubric, and samples of student work to ensure good alignment with outcomes. In the future, multiple evaluators will be used to score a sample of student work and estimate reliability (interrater agreement) of the rubric.</i>	<i>95% of students will earn a 3 or better on each criterion (on a 4-point scale)</i>	<i>SPIE 430: Advanced Program Assessment Design</i>	☒
FOR 601 Written Assignments plus thesis (plan A only) and final examination	1	Direct	Students complete writing assignments on defining science. Assignments will be scored by the course instructor using outcome-specific rubric developed by	Assignment in FOR 601 is an early-academic-career assessment and the first point in the curriculum where students will be evaluated on their ability to define science	Median performance of late-academic-career students will	FOR 601	☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			the DFNR GPC. Non-thesis students not be sampled. Thesis and final examination will include questions evaluating the students' ability to define science. Assessment during thesis and final exam will be conducted by students' MS advisory committee. See attached rubric.	(Outcome 1). Thesis and final examination provide a late-academic-career assessment and the final point in the curriculum where students will be evaluated on Outcome 1.	be at least "Accomplished" (see rubric)		
FOR 601 Written work and presentation in FOR 601 plus thesis (Plan A only) and final examination	2	Direct	Students complete writing assignments to evaluate their ability to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature. Assignments will be scored by the course instructor using outcome-specific rubric developed by the DFNR GPC. Non-thesis	Assignments and presentation in FOR 601 is an early-academic-career assessment and the first point in the curriculum where students will be evaluated on their ability find, synthesize and evaluate conclusions (Outcome 2). Thesis and final examination provide a late-academic-career assessment and the final point in the curriculum	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)	FOR 601	☒

Program-level Student Learning Outcomes Assessment Plan Template

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			students not be sampled. During thesis and final examination, students will be assessed by their MS advisory committee on their ability to find, synthesize and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature. See attached rubric.	where students will be evaluated on Outcome 2.			
FOR 601 Project Proposal plus thesis and final examination	3a, 3b	Direct	Students complete a project proposal in FOR 601. Part a evaluates the students' ability to communicate information effectively via oral/visual presentations. Part b evaluates their ability to communicate via writing. Presentations and writing will be scored by the course instructor using outcome-specific rubric	Project proposal and presentation in FOR 601 is an early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 3a and 3b. Thesis and final examination provide a late-academic-career assessment and the final point in the curriculum where	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)	FOR 601	☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			developed by the DFNR GPC. Non-thesis students not be sampled. During thesis and final examination, students will be evaluated again on their ability to communicate information effectively via oral/visual presentations and in writing (thesis). Student advisory committee will evaluate late career students. See attached rubric.	students will be evaluated on Outcome 3a and 3b.			
FOR 601 Project Proposal in FOR 601 plus thesis and final examination	4	Direct	Students will complete a project proposal in FOR 601 plus thesis and final examination. Project proposal and thesis and final exam and writing will be scored by the course instructor using outcome-specific rubric developed by the DFNR GPC and student advisory committee, respectively. Non-	Project proposal and presentation in FOR 601 is an early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 4. Thesis and final examination provide a late-academic-career assessment and the final point in the	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)	FOR 601	☒

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Assessment Instrument/ Measure Name	PSLO(s) Mappe d to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			thesis students not be sampled.	curriculum where students will be evaluated on Outcome 4.			
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

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Assessment Instrument/ Measure Name	PSLO(s) Mappe d to	Assessment Type <small>(Direct or Indirect)</small>	Assessment Instrument/Measure Description <small>(What is this?)</small>	Assessment Instrument/Measure Rationale <small>(What is this?)</small>	Benchmark or Goal <small>(If Available) (What is this?)</small>	Course(s) <small>(If applicable)</small>	Rubric or Example Appended?
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

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Assessment Instrument/ Measure Name	PSLO(s) Mappe d to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

University of Kentucky

ASSESSMENT REPORTING CYCLE

Please complete the chart below by providing the requested information for each learning outcome. Note: space for up to 10 PSLOs has been provided. If space for additional PSLOs are needed, either insert additional rows into the table or contact the [OSPIE staff](#) to receive a customized template.

PSLO #	Semester/ Year(s) Data Collected	Year(s) Results Submitted to OSPIE <small>(see Results Report Definition)</small>	Year(s) Reflection Report Submitted to OSPIE <small>(see Reflection Report Definition)</small>	Year(s) Action Report Submitted to OSPIE <small>(see Action Report Definition)</small>
<i>Example</i>	<i>Fall / 2020</i>	<i>Summer 2021</i>	<i>Summer 2023</i>	<i>Summer 2024</i>
1	Fall 2021/Spring 2022	Summer 2022	Summer 2023	Summer 2024
2	Fall 2020/Spring 2021	Summer 2021	Summer 2023	Summer 2024
3	Fall 2020/Spring 2021	Summer 2021	Summer 2023	Summer 2024
4	Fall 2021/Spring 2021	Summer 2022	Summer 2023	Summer 2024
5				
6				

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7				
8				
9				
10				

FEEDBACK AND SUPPORT ON PSLO ASSESSMENT PLAN

Each program has the option of receiving formative feedback on its new or revised PSLO assessment plan from OSPIE staff members. OSPIE staff can provide suggestions for improvement to learning outcome statements, overall assessment plan design, curriculum mapping, standard setting, individual assessment tools, etc. If your program would like to receive feedback on its assessment plan, please indicate below:

- Yes, we would like to receive feedback.
- No thank you, not at this time.

If there are questions the program director or faculty did not have the opportunity to ask prior to submission of the PSLO assessment plan, and you would like to schedule a brief consultation with OSPIE staff, please indicate below:

- Yes, we would like to schedule an individual or group consultation.
- No thank you, not at this time.

Appendix N.

Ph.D. Program Assessment Rubrics and Program-Level Student Learning Outcomes Assessment Plan

**Forestry and Natural Resources Department – PhD Degree
Program**

**Scoring Rubric for Learning Outcome 1: Identifying
Critical Concepts**

Check one of the following:

Early-Academic-Career Assessment: Qualifying Exams

Late-Academic-Career Assessment: Final Exam and Dissertation

Student: _____

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p><u>Learning Outcome 1:</u> With regard to the breadth of issues that exist in natural resource sciences, graduates will be able to describe the foundation of critical concepts in natural resource sciences, management and policy and place their own academic work into the context of both seminal and contemporary scientific literature.</p>	<p>Can find and identify the foundational literature and critical concepts in natural resource sciences and received a passing grade in FOR 603</p>	<p>Submitted to major professor dissertation proposal that includes a synthesis of the foundation of critical concepts in natural resource sciences, management and policy as related to their research</p>	<p>Final dissertation accepted by major professor and other committee members as a result of final examination (and satisfactory completion of any required revisions)</p>	<p>Has submitted a review/meta-analysis manuscript for review</p>	

Comments:

Evaluator(s):

Date: _____

Forestry Department – PhD FNRS Degree Program
Scoring Rubric for Learning Outcome 2: Conclusions and Evidence from Literature

Check one of the following:

- Early-Academic-Career Assessment: Qualifying Exam**
 Late-Academic-Career Assessment: Final Exam and Dissertation

Student:

Semester/Year:

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p><u>Learning Outcome 2:</u> With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature.</p>	<p>Can find and extract pertinent information and conclusions from research sources.</p>	<p>Can synthesize and evaluate research findings and draw conclusions based on available literature.</p>	<p>Can develop novel lines of inquiry based on questions raised in previously presented evidence and identify context of their own academic work in literature.</p>	<p>Has submitted a manuscript for a peer reviewed paper or has submitted a grant proposal to a competitive grant program.</p>	

Comments:

Evaluator(s):

Date: _____

**Forestry Department Assessment – PhD FNRS Degree Program Scoring Rubric
for **Learning Outcome 3: Communication of Information****

Check one of the following:

_____ **Early-Academic-Career Assessment: Qualifying Exam**

_____ **Late-Academic-Career Assessment: Final Exam and Dissertation**

Student:

Semester/Year: _____

Student Learning Outcome or Objective	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
<p><u>Learning Outcome 3:</u> With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to demonstrate the ability to communicate information effectively</p>					
<p>a. in oral/visual presentations.</p>	<p>No more than two of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure / organization • visual aids • information content 	<p>Three of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure/organization • visual aids • information content 	<p>All four of the following presentation components are adequate:</p> <ul style="list-style-type: none"> • delivery • structure/organization • visual aids • information content 	<p>Received regional or national award for oral presentation or poster presentation.</p>	
<p>b. in writing.</p>	<p>Submitted a research proposal containing all fundamental elements (and, if in research proposal, received “satisfactory” grade)</p>	<p>Submitted to major professor dissertation draft that includes all required components</p>		<p>Submitted manuscript, based on thesis work, for peer-reviewed paper</p>	

Comments: _____

Evaluator(s): _____

Date: _____

Program-level Student Learning Outcomes Assessment Plan Template

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INSTRUCTIONS

The faculty of each academic program, degree or certificate, are asked to complete this plan template during the 2019-20 academic year to guide assessment of the program-level student learning outcomes (PSLOs) during the [upcoming cycle](#). Assessment plans are due to the Office of Strategic Planning & Institutional Effectiveness (OSPIE) no later than **April 15, 2020** and should be submitted to the appropriate college and program folder in [SharePoint](#).

A [Quick Start Guide and other documentation](#) as well as dates for live [training sessions](#) are provided on the OSPIE website. Training resources and session topics range from an overview of the new assessment process to principles and practice for student learning outcome assessment. Questions can be directed to [OSPIE staff](#).

Reading the Quick Start Guide prior to completing the new plan template is strongly encouraged.

ABOUT THE PROGRAM

College or School *(example: College of Arts & Sciences)*

College of Agriculture, Food, and Environment

Degree Type *(example: BA or MS)*

PhD

Program Name *(example: History)*

Forest and Natural Resource Sciences

Please provide the mission statement for the program. If one does not currently exist, provide the department or college mission statement.

Research, teaching, and extension programs of the Department of Forestry and Natural Resources will effectively enhance sustainable economic, ecological, and social benefits of forests and related natural resources in Kentucky and beyond. Our programs will elevate the quality of life by: enhancing the integrity, stability, and health of forests and related biotic communities; and increasing the long-term value added, sustainable income, and sustainable flow of services from forests and natural resources. The Ph.D. (Forest and Natural Resource Sciences) degree program is focused and structured to prepare graduates for success in achieving the Department's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and

Program-level Student Learning Outcomes Assessment Plan Template

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related natural resources. The Ph. D. (Forest and Natural Resource Sciences, FNRS) degree program is focused and structured to prepare graduates for success in achieving the Department's overall mission of enhancing the sustainable economic, ecological, and social benefits of forests and related natural resources. Our goal is to produce high quality scientists, who will contribute to natural resource disciplines through high impact research, education and extension.

(Optional) Include any additional information about the program's history, development, or structure that may be beneficial in understanding the curriculum and how student learning is assessed.

ASSESSMENT CYCLE

All programs that do not have specialized accreditation and are not located in a department/college with a specialized accreditation should follow a [4-year PSLO assessment cycle](#). Programs that have specialized accreditation(s) or are within a college that has a comprehensive accreditation can develop an alternate PSLO and periodic review cycle in consultation with OSPIE.

Which cycle will the program being using?

- 4-year cycle [\[What does this look like?\]](#)
- Other (accredited programs/departments only)

If the program has selected "other" for the assessment and periodic review cycle, please append a copy of the proposed cycle and a brief justification to this plan.

ASSESSMENT COORDINATION AND RESOURCES

Program-level Student Learning Outcomes Assessment Plan Template

Academic Degree Programs

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Individual(s) coordinating program-level student learning outcomes assessment

First and Last Name	Title/Position	Email
Steven J. Price	Associate Professor/Director of Graduate Studies	Steven.price@uky.edu
Laura Lhotka	Academic Coordinator	Laura.lhotka@uky.edu

Other individuals providing oversight, coordination, or support for assessment

First and Last Name	Title/Position
Chris Barton	Professor
John Lhotka	Associate Professor
Thomas Ochuodho	Assistant Professor

Program-level Student Learning Outcomes Assessment Plan Template

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(Optional) Other utilized resources for assessment (e.g. software such as rubrics or portfolios, evaluator stipends, etc.)

--

PROGRAM-LEVEL STUDENT LEARNING OUTCOMES

Please list the program-level student learning outcomes (PSLOs). If applicable, indicate which, if any, outcomes are required by your specialized accreditor(s) [\[What is this?\]](#). Bachelor's degree programs must also indicate which outcome(s) map to the university's GCCR ([Graduation Composition & Communication Requirement](#)). The GCCR is not a requirement for certificates, graduate, or professional programs.

Space for up to 10 PSLOs has been provided below, but this does not imply that 10 outcomes are required. Program faculty should decide the appropriate number based on the design of the curriculum. Most programs have 3-8 outcomes, depending on the length of the program. If more than 10 lines are needed, either insert more lines into the table or submit a request to OSPIE@uky.edu for a template with additional lines for PSLOs.

PSLO #	Program-level Student Learning Outcome Statement (How should these be written?)	Required by Specialized Accreditor(s)?	Mapped to GCCR? (Undg degrees only)
<i>Example</i>	<i>Graduates will be able to critically evaluate scientific literature related to drugs and disease to enhance clinical decision-making.</i>	<input type="checkbox"/>	<input type="checkbox"/>
1	With regard to the breadth of issues that exist in natural resource sciences, graduates will be able to describe the foundation of critical concepts in natural resource sciences, management	<input type="checkbox"/>	<input type="checkbox"/>

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PSLO #	Program-level Student Learning Outcome Statement <i>(How should these be written?)</i>	Required by Specialized Accreditor(s)?	Mapped to GCCR? <i>(Undg degrees only)</i>
	and policy and place their own academic work into the context of both seminal and contemporary scientific literature.		
2	With regard to the breadth of issues that exist in forestry and other renewable natural resource professions, graduates will be able to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of available scientific literature.	<input type="checkbox"/>	<input type="checkbox"/>
3	With regard to the breadth of issues that exist in natural resource sciences, graduates will be able to demonstrate the ability to communicate information effectively in oral/visual presentations and in writing.	<input type="checkbox"/>	<input type="checkbox"/>
4	With regard to the breadth of issues that exist in natural resource sciences, graduates will be able to employ appropriate methods to generate new knowledge.	<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

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PSLO #	Program-level Student Learning Outcome Statement (How should these be written?)	Required by Specialized Accreditor(s)?	Mapped to GCCR? <small>(Undg degrees only)</small>
10		<input type="checkbox"/>	<input type="checkbox"/>

Please provide a brief description of the process used to develop or revise current PSLOs and the extent to which program faculty were involved. If applicable, provide discussion of any attempts to align PSLOs with professional or accreditation standards, employer expectations and job skills, graduate program curricula, etc. If PSLOs are taken directly from an accreditor, discuss whether (and how) the PSLO statements were reviewed by the faculty to ensure they were comprehensive.

The Ph.D. in Forest and Natural Resource Sciences is administered by the Department of Forestry and Natural Resources (DFNR). The DFNR Graduate Program Committee (GPC; a 4 member standing committee including DGS) oversees assessment and is the faculty group charged with implementing the assessment activities as well as visioning for improvement of the plan. However, the DFNR GPC serves an advisory role to the DFNR faculty body, and ultimately any decision regarding change to the assessment methodology (or specific program learning outcomes) are considered and approved by the DFNR faculty body.

CURRICULUM MAP

Please create a map of the PSLOs to the curriculum. All required courses should be included in the left-hand column, and all PSLOs should span across the remaining columns. If desired, specific elective courses or elective "tracks" can be included (recommended). The purpose of the curriculum map is to show where each PSLO is emphasized within the curriculum. The level at which each PSLO is taught within a given course should be indicated as follows: introductory (I); reinforced (R); or mastery (M). Each PSLO should have at least an instance of I, R, and M across the curriculum, with the exception of certain graduate programs where introductory knowledge is provided at the undergraduate level. For assistance in developing a curriculum map, please visit the [OSPIE website](#) or contact the [OSPIE team](#).

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Course	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7	PSLO8	PSLO9	PSLO10
<i>Example: EDP 548</i>	<i>I</i>		<i>R</i>			<i>R</i>	<i>I</i>		<i>I</i>	
FOR 601	I	I	I	I	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 602	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 603	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
FOR 770	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
Qualifying Exam	R	R	R	R	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
Exit Seminar, Final Examination and Dissertation	M	M	M	M	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

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Academic Degree Programs

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	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
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I = Introduced; indicates that students are introduced to the outcome

R = Reinforced and opportunity to practice; indicates the outcome is reinforced and students afforded opportunities to practice

M = Mastery at the senior or exit level; indicates that students have had sufficient practice and can now demonstrate mastery

ASSESSMENTS

Please complete the chart below by listing each assessment on a separate row, and including the requested information. Except for outcomes that focus on students' values or beliefs, at least 1 assessment should be [direct](#). Ideally, all outcomes should have at least 2 assessments. If available, append a copy of the assessment measure/instrument (e.g. scoring rubric or sample questions) to this report. If a goal/target has already been set or can be set for a given measure/instrument, this should be included in the table. Otherwise, the program will need to determine and specify a target/goal when results are first reported for that instrument/measure. Note: space for only 15

Program-level Student Learning Outcomes Assessment Plan Template

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instruments/measures have been provided. If space for additional assessment instruments/measures are needed, either insert additional rows into the table or contact [OSPIE staff](#) to receive a customized template with additional lines.

Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type <i>(Direct or Indirect)</i>	Assessment Instrument/Measure Description <i>(What is this?)</i>	Assessment Instrument/Measure Rationale <i>(What is this?)</i>	Benchmark or Goal <i>(If Available)</i> <i>(What is this?)</i>	Course(s) <i>(If applicable)</i>	Rubric or Example Appended?
<i>Example: SPIE 430 Final Paper</i>	<i>1,3</i>	<i>Direct</i>	<i>Students complete the final paper individually on a relevant & timely topic related to program assessment. Papers are scored by the course instructor using a standard rubric developed by members of the department curriculum committee. No sampling will be done; however, non-SPIE majors will be excluded from the results. The scores for criteria 1-2 will be used for PSLO1 and criteria 4-7 for PSLO3 (see attached rubric).</i>	<i>Measure was chosen because it provides evidence of student achievement near end of program and multiple criteria on rubric align directly to outcomes 1 & 3. Curriculum committee recently (2018) reviewed assignment instructions, rubric, and samples of student work to ensure good alignment with outcomes. In the future, multiple evaluators will be used to score a sample of student work and estimate reliability (interrater agreement) of the rubric.</i>	<i>95% of students will earn a 3 or better on each criterion (on a 4-point scale)</i>	<i>SPIE 430: Advanced Program Assessment Design</i>	<input type="checkbox"/>

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
Qualifying exam plus dissertation and final examination	1	Direct	Students complete a written proposal for their dissertation work as part of their qualifying exam. Students will be scored by their advisory committee using outcome-specific rubric developed by the DFNR GPC. Final dissertation and final examination will include questions evaluating the students' ability to describe the foundation of critical concepts in natural resource sciences, management and policy. Assessment during dissertation and final exam will be conducted by students' PhD advisory committee. See attached rubric.	Written proposal and qualifying exam is the early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 1. Dissertation and final examination provide a late-academic-career assessment and the final point in the curriculum where students will be evaluated on Outcome 1.	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)		☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
Qualifying exam plus dissertation and final examination	2	Direct	Students complete a written proposal for their dissertation work as part of their qualifying exam. Students will be assessed on to find, synthesize, and evaluate conclusions and evidence reported in a variety of sources and place their own academic work into the context of both seminal and contemporary scientific literature. Students will be scored by their advisory committee using outcome-specific rubric developed by the DFNR GPC. Final dissertation and final examination will include questions evaluating the students' ability to find, synthesize, and evaluate conclusions and evidence	Written proposal and qualifying exam is the early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 2. Dissertation and final examination provide a late-academic-career assessment and the final point in the curriculum where students will be evaluated on Outcome 2.	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)		☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			reported in a variety of sources and place their own academic work into the context of both seminal and contemporary scientific literature. Assessment during dissertation and final exam will be conducted by students' PhD advisory committee. See attached rubric.				
Qualifying exam plus dissertation and final examination	3a, 3b	Direct	Students complete a written proposal for their dissertation work as part of their qualifying exam. Students will be assessed on their ability to communicate information effectively in oral/visual presentations and in writing. Students will be scored by their advisory committee using outcome-specific rubric developed by the DFNR GPC. Final dissertation and final	Written proposal and qualifying exam is the early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 3. Dissertation and final examination provide a late-academic-career assessment and the final point in the curriculum where students will be evaluated on Outcome 3.	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)		☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			examination will include questions ability to communicate information effectively in oral/visual presentations and in writing. Assessment during dissertation and final exam will be conducted by students' PhD advisory committee. See attached rubric.				
Qualifying exam plus dissertation and final examination	4	Direct	Students complete a written proposal for their dissertation work as part of their qualifying exam. Students will be assessed on their ability to employ appropriate methods to generate new knowledge. Students will be scored by their advisory committee using outcome-specific rubric developed by the DFNR GPC. Final dissertation and final examination will include an	Written proposal and qualifying exam is the early-academic-career assessment and the first point in the curriculum where students will be evaluated on Outcome 4. Dissertation and final examination provide a late-academic-career assessment and the final point in the curriculum where students will be evaluated on Outcome 4.	Median performance of late-academic-career students will be at least "Accomplished" (see rubric)		☒

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type (Direct or Indirect)	Assessment Instrument/Measure Description (What is this?)	Assessment Instrument/Measure Rationale (What is this?)	Benchmark or Goal (If Available) (What is this?)	Course(s) (If applicable)	Rubric or Example Appended?
			evaluate on the students' ability to employ appropriate methods to generate new knowledge. Assessment during dissertation and final exam will be conducted by students' PhD advisory committee. See attached rubric.				
							<input type="checkbox"/>
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Program-level Student Learning Outcomes Assessment Plan Template

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Assessment Instrument/ Measure Name	PSLO(s) Mapped to	Assessment Type <small>(Direct or Indirect)</small>	Assessment Instrument/Measure Description <small>(What is this?)</small>	Assessment Instrument/Measure Rationale <small>(What is this?)</small>	Benchmark or Goal <small>(If Available)</small> <small>(What is this?)</small>	Course(s) <small>(If applicable)</small>	Rubric or Example Appended?
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Assessment Instrument/ Measure Name	PSLO(s) Mappe d to	Assessment Type <small>(Direct or Indirect)</small>	Assessment Instrument/Measure Description <small>(What is this?)</small>	Assessment Instrument/Measure Rationale <small>(What is this?)</small>	Benchmark or Goal <small>(If Available) (What is this?)</small>	Course(s) <small>(If applicable)</small>	Rubric or Example Appended?
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

Program-level Student Learning Outcomes Assessment Plan Template

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ASSESSMENT REPORTING CYCLE

Please complete the chart below by providing the requested information for each learning outcome. Note: space for up to 10 PSLOs has been provided. If space for additional PSLOs are needed, either insert additional rows into the table or contact the [OSPIE staff](#) to receive a customized template.

PSLO #	Semester/ Year(s) Data Collected	Year(s) Results Submitted to OSPIE <small>(see Results Report Definition)</small>	Year(s) Reflection Report Submitted to OSPIE <small>(see Reflection Report Definition)</small>	Year(s) Action Report Submitted to OSPIE <small>(see Action Report Definition)</small>
<i>Example</i>	<i>Fall / 2020</i>	<i>Summer 2021</i>	<i>Summer 2023</i>	<i>Summer 2024</i>
1	Fall 2021/Spring 2022	Summer 2022	Summer 2023	Summer 2024
2	Fall 2020/Spring 2021	Summer 2021	Summer 2023	Summer 2024
3	Fall 2020/Spring 2021	Summer 2021	Summer 2023	Summer 2024
4	Fall 2021/Spring 2021	Summer 2022	Summer 2023	Summer 2024
5				
6				

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7				
8				
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10				

FEEDBACK AND SUPPORT ON PSLO ASSESSMENT PLAN

Each program has the option of receiving formative feedback on its new or revised PSLO assessment plan from OSPIE staff members. OSPIE staff can provide suggestions for improvement to learning outcome statements, overall assessment plan design, curriculum mapping, standard setting, individual assessment tools, etc. If your program would like to receive feedback on its assessment plan, please indicate below:

- Yes, we would like to receive feedback.
- No thank you, not at this time.

If there are questions the program director or faculty did not have the opportunity to ask prior to submission of the PSLO assessment plan, and you would like to schedule a brief consultation with OSPIE staff, please indicate below:

- Yes, we would like to schedule an individual or group consultation.
- No thank you, not at this time.

Appendix O.

Digital Measures Publication Report for Jan 2016 – Sept 2020

Intellectual Contributions

University of Kentucky
January 1, 2016 - December 31, 2020

Forestry and Natural Resources

Arthur, Mary A. (Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Yang, Z., Chen, S., Liu, X., Xiong, D., Xu, C., Arthur, M. A., McCulley, R. L., Shi, S., Yang, Y. (2019). Loss of soil organic carbon following natural forest conversion to Chinese fir plantation. *Forest Ecology and Management*, 449.
https://api.elsevier.com/content/abstract/scopus_id/85068992647

Journal Article, Academic Journal (Published)

Rounsaville, T. J., McCulley, R. L., Arthur, M. A. (2019). Allee effects and soil nutrient changes mediated by experimental plantings of a nonindigenous, temperate liana. *Plant Ecology*, 220(9), 861-872.
https://api.elsevier.com/content/abstract/scopus_id/85069516375

Journal Article, Academic Journal (Published)

Black, D. E., Arthur, M. A., Leuenberger, W., Taylor, D. D., Lewis, J. F. (2019). Alteration to Woodland Structure through Midstory Mastication Increased Fuel Loading and Cover of Understory Species in Two Upland Hardwood Stands. *Forest Science*, 65(3), 344-354.
https://api.elsevier.com/content/abstract/scopus_id/85068553326

Journal Article, Academic Journal (Published)

Rieske, L. K., Borden, S., Damron, B., Williamson, N., Arthur, M. A., Kinney, A. (2019). College Campus as a Living Laboratory: Scrubbing Scales, Saving Trees, Engaging Students. *American Entomologist*, 65(1), 43-49.
https://api.elsevier.com/content/abstract/scopus_id/85063146232

Journal Article, Academic Journal (Published)

Rounsaville, T., Baskin, C., Roualdes, E., McCulley, R. L., Arthur, M. A. (2018). Seed dynamics of the liana *Euonymus fortunei* and implications for invisibility. *JOURNAL OF THE TORREY BOTANICAL SOCIETY*, 145(3), 225-236.
doi.org/10.3159/TORREY-D-17-00033

Journal Article, Academic Journal (Published)

Arthur, M. A., Blankenship, B. A., Schorgendorfer, A., Alexander, H. D. (2017). Alterations to the fuel bed after single and repeated prescribed fires in an Appalachian hardwood forest. *FOREST ECOLOGY AND MANAGEMENT*, 403, 126-136.

Journal Article, Academic Journal (Published)

Bray, S. R., Hoyt, A. M., Yang, Z., Arthur, M. A. (2017). Non-native liana, *Euonymus fortunei*, associated with increased soil nutrients, unique bacterial communities, and faster decomposition rate. *PLANT ECOLOGY*, 218(3), 329-343.

Journal Article, Academic Journal (Published)

Keyser, T. L., Arthur, M. A., Loftis, D. L. (2017). Repeated burning alters the structure and composition of hardwood regeneration in oak-dominated forests of eastern Kentucky, USA. *FOREST ECOLOGY AND MANAGEMENT*, 393, 1-11.

Journal Article, Academic Journal (Published)

Yang, Y., Yanai, R. D., See, C. R., Arthur, M. A. (2017). Sampling effort and uncertainty in leaf litterfall mass and nutrient flux in northern hardwood forests. *ECOSPHERE*, 8(11).

Journal Article, Academic Journal (Published)

Arthur, M. A., Weathers, K. C., Lovett, G. M., Weand, M. P., Eddy, W. C. (2017). A beech bark disease induced change in tree species composition influences forest floor acid-base chemistry. *CANADIAN JOURNAL OF FOREST RESEARCH*, 47(7), 875-882.

Journal Article, Academic Journal (Published)

Lovett, G. M., Arthur, M. A., Crowley, K. F. (2016). Effects of Calcium on the Rate and Extent of Litter Decomposition in a Northern Hardwood Forest. *ECOSYSTEMS*, 19(1), 87-97.

Journal Article, Academic Journal (Published)

Varner, J. M., Arthur, M. A., Clark, S. L., Dey, D. C., Hart, J. L., Schweitzer, C. J. (2016). FIRE IN EASTERN NORTH AMERICAN OAK ECOSYSTEMS: FILLING THE GAPS. *FIRE ECOLOGY*, 12(2), 1-6.

Journal Article, Academic Journal (Published)

Crowley, K. F., Lovett, G. M., Arthur, M. A., Weathers, K. C. (2016). Long-term effects of pest-induced tree species change on carbon and nitrogen cycling in northeastern US forests: A modeling analysis. *FOREST ECOLOGY AND MANAGEMENT*, 372, 269-290.

Journal Article, Academic Journal (Published)

Mattingly, K. Z., McEwan, R. W., Paratley, R., Bray, S. R., Lempke, J. R., Arthur, M. A. (2016). Recovery of forest floor diversity after removal of the nonnative, invasive plant *Euonymus fortunei*. *JOURNAL OF THE TORREY BOTANICAL SOCIETY*, 143(2), 103-116.

Journal Article, Academic Journal (Accepted)

Black, D. E., Poynter, Z. W., Cotton, C. A., Upadhaya, S., Taylor, D. D., Leuenberger, W., Blankenship, B. A., Arthur, M. A. (in press). Post-wildfire recovery of an upland oak-pine forest on the Cumberland Plateau, Kentucky. *To appear in FIRE ECOLOGY*.

Journal Article, Academic Journal (Accepted)

Black, D. E., Arthur, M. A., Taylor, D. D., Lewis, J. F., Leuenberger, W. (in press). Using mastication to support woodland restoration in upland oak forests on the Cumberland Plateau, Kentucky. *To appear in Forest Science*.

Journal Article, Academic Journal (Accepted)

Rieske, L., Borden, S., Damron, B., Williamson, N., Arthur, M. A., Kinney, A. (in press). College campus as a living laboratory: Scrubbing scales, saving trees, engaging students. *To appear in AMERICAN ENTOMOLOGIST*.

Journal Article, Academic Journal (Accepted)

Rounsaville, T. J., Baskin, C. C., Roemmele, E., Arthur, M. A. (in press). Seed dispersal and site characteristics influence germination and seedling survival of the invasive liana *Euonymus fortunei* (wintercreeper) in a rural woodland. *To appear in Canadian Journal of Forest Research*.

Barton, Christopher D. (Professor)

Book Chapters

Book, Chapter (Published)

Barton, C. D. (2017). Forward to Spoil to Soil: Mine Site Rehabilitation and Revegetation. In N. Bolan, MB. Kirkham and YS. Ok (Ed.), *Spoil to Soil: Mine Site Rehabilitation and Revegetation*. Taylor and Francis.

Book, Chapter (Published)

Barton, C. D., Witt, E., Stringer, J. (2017). Protecting Water Resources with Streamside Management Zones at Robinson Forest. In BD. Lee, DI. Carey and AL. Jones (Ed.), *Water in Kentucky* (pp. 81-87). Lexington, KY: University Press of Kentucky.

Book, Chapter (Published)

Agouridis, C. T., Barton, C. D., Warner, R. C. (2017). Recreating a headwater stream system on a valley fill in the Appalachian coal field. In N. Bolan, MB. Kirkham and Y. Ok (Ed.), *Spoil to Soil: Mine Site Rehabilitation and Revegetation* (pp. 147-174). Abingdon: Taylor and Francis.

Book, Chapter (Published)

Barton, C. D., Sena, K., Dolan, T., Angel, P., Zipper, C. (2017). Restoring forests on surface coal mines in Appalachia: A regional Reforestation approach with global application. In N. Bolan, MB. Kirkham and YS. Ok (Ed.), *Spoil to Soil: Mine Site Rehabilitation and Revegetation* (pp. 124-145). Abingdon: Taylor and Francis.

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Bowker, D., Stringer, J. W., Barton, C. D. (2020). Influence of timber harvesting operations and streamside management zone effectiveness on sediment delivery to headwater streams in appalachia. *Forests*, 11(6).
https://api.elsevier.com/content/abstract/scopus_id/85087402651

Journal Article, Academic Journal (Published)

Castillo-Meza, L. E., Cravotta, C. A., Tasker, T. L., Warner, N. R., Daniels, W. L., Orndorff, Z. W., Bergstresser, T., Douglass, A., Kimble, G., Streczywilk, J., Barton, C. D., Fulton, S., Thompson, A. I., Burgos, W. D. (2020). Batch extraction method to estimate total dissolved solids (TDS) release from coal refuse and overburden. *Applied Geochemistry*, 115. https://api.elsevier.com/content/abstract/scopus_id/85079614946

Journal Article, Academic Journal (Published)

Sena, K., Metzmeier, J., Smith, B. C., Hansen, B., Barton, C. (2020). Climate Change and Invasive Species: Challenges and Opportunities for Forest Establishment on Appalachian Surface Mines. *Journal of Sustainable Forestry*.
https://api.elsevier.com/content/abstract/scopus_id/85087045149

Journal Article, Academic Journal (Published)

Dement, W. T., Hackworth, Z. J., Lhotka, J. M., Barton, C. D. (2020). Plantation development and colonization of woody species in response to post-mining spoil preparation methods. *New Forests*. https://api.elsevier.com/content/abstract/scopus_id/85077628482

Journal Article, Academic Journal (Published)

Hall, S. L., Barton, C. D., Sena, K. L., Angel, P. (2019). Reforesting appalachian surface mines from seed: A five-year black walnut pilot study. *Forests*, 10(7).
https://api.elsevier.com/content/abstract/scopus_id/85073893976

Journal Article, Academic Journal (Published)

Fritz, K. M., Pond, G. J., Johnson, B. R., Barton, C. D. (2019). Coarse particulate organic matter dynamics in ephemeral tributaries of a Central Appalachian stream network. *Ecosphere*, 10(3). https://api.elsevier.com/content/abstract/scopus_id/85073009647

Journal Article, Academic Journal (Published)

Fletcher, D. E., Lindell, A. H., Seaman, J. C., Stankus, P. T., Fletcher, N. D., Barton, C. D., Biemiller, R. A., McArthur, J. V. (2019). Sediment and biota trace element distribution in streams disturbed by upland industrial activity. *Environmental Toxicology and Chemistry*, 38(1), 115-131. https://api.elsevier.com/content/abstract/scopus_id/85058845955

Journal Article, Academic Journal (Published)

Hackworth, Z. J., Lhotka, J. M., Cox, J. J., Barton, C. D., Springer, M. T. (2018). First-Year Vitality of Reforestation Plantings in Response to Herbivore Exclusion on Reclaimed Appalachian Surface-Mined Land. *Forests*, 9(4), 222.

Journal Article (Published)

Tyree, M., Larkin, J., Eggerud, S., Angel, P., French, M., Barton, C. D. (2018). Flight 93 National Memorial reforestation project: Survival and health of native woody plants established on reclaimed mineland. *Journal of the American Society of Mining and Reclamation*, 7(2), 35-60. [dx.doi.org/10.21000/JASMR18020035](https://doi.org/10.21000/JASMR18020035)

Journal Article, Academic Journal (Published)

Price, S. J., Freytag, S. B., Bonner, S. J., Muncy, B., Drayer, A., Hutton, J., Barton, C. D. (2018). Mountaintop removal mining alters stream salamander population dynamics. *Diversity and Distributions*, 24(1242-1251). [10.1111/ddi.12760](https://doi.org/10.1111/ddi.12760)

Journal Article (Published)

Sena, K., Crocker, E., Vincelli, P., Barton, C. D. (2018). Phytophthora cinnamomi as a driver of forest change: Implications for conservation and management. *Forest Ecology and Management*, 409, 799-807.

Journal Article (Published)

Sena, K., Yeager, K., Dreaden, T., Barton, C. D. (2018). Phytophthora cinnamomi Colonized Reclaimed Surface Mined Sites in Eastern Kentucky: Implications for the Restoration of Susceptible Species. *Forests*, 9. [doi:10.3390/f9040203](https://doi.org/10.3390/f9040203)

Journal Article, Academic Journal (Published)

Li, X., Stainback, A., Barton, C., Yang, J. (2018). Valuing the environmental benefits from reforestation on reclaimed surface mines in Appalachia. *Journal of the American Society of Mining and Reclamation*, 7(1), 1-29. <https://www.asmr.us/Portals/0/Documents/Journal/Volume-7-Issue-1/JASMR-Volume-7-Issue-1.pdf>

Journal Article (Published)

Sena, K., Dreaden, T., Crocker, E., Barton, C. D. (2018). Detection of Phytophthora cinnamomi in forest soils by PCR on DNA extracted from leaf disc baits. *Plant Health Progress*, 193-200. [doi:10.1094/PHP-01-18-0004-RS](https://doi.org/10.1094/PHP-01-18-0004-RS)

Journal Article, Academic Journal (Published)

Blackburn-Lynch, W., Agouridis, C. T., Barton, C. D. (2017). Development of Regional Curves for Hydrologic Landscape Regions (HLR) in the Contiguous United States. *JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION*, 53(4), 903-928.

Journal Article, Academic Journal (Published)

Bell, G., Sena, K. L., Barton, C. D., French, M. (2017). Establishing Pine Monocultures and Mixed Pine-Hardwood Stands on Reclaimed Surface Mined Land in Eastern Kentucky: Implications for Forest Resilience in a Changing Climate. *FORESTS*, 8(10).

Journal Article, Academic Journal (Published)

Sanderson, T. M., Barton, C. D., Cotton, C., Karathanasis, T. (2017). Long-Term Evaluation of Acidic Atmospheric Deposition on Soils and Soil Solution Chemistry in the Daniel Boone National Forest, USA. *WATER AIR AND SOIL POLLUTION*, 228(10).

Journal Article (Published)

Drayer, A., Sena, K., Barton, C. D., Andrews, D. (2017). Long-term Response of Stream and Riparian Restoration at Wilson Creek, Kentucky USA. *Ecological Restoration*. *Ecological Restoration*, 35(3), 246-254.

Journal Article, Academic Journal (Published)

Adkins, J. K., Barton, C. D., Grubbs, S., Stringer, J. W., Kolka, R. K. (2016). Assessment of Streamside Management Zones for Conserving Benthic Macroinvertebrate Communities Following Timber Harvest in Eastern Kentucky Headwater Catchments. *WATER*, 8(6).

Journal Article, Academic Journal (Published)

Price, S. J., Muncy, B. L., Bonner, S. J., Drayer, A. N., Barton, C. D. (2016). Effects of mountaintop removal mining and valley filling on the occupancy and abundance of stream salamanders. *JOURNAL OF APPLIED ECOLOGY*, 53(2), 459-468.

Journal Article, Academic Journal (Published)

Witt, E. L., Barton, C. D., Stringer, J. W., Kolka, R. K., Cherry, M. A. (2016). Influence of Variable Streamside Management Zone Configurations on Water Quality after Forest Harvest. *JOURNAL OF FORESTRY*, 114(1), 41-51.

Journal Article (Published)

Daniels, L., Zipper, C., Orndorff, Z., Skousen, J., Barton, C. D., McDonald, L. (2016). Predicting total dissolved solids release from central Appalachian coal mine spoils. *Environmental Pollution*, 216, 371-379. [dx.doi.org/10.1016/j.envpol.2016.05.044](https://doi.org/10.1016/j.envpol.2016.05.044)

Non-Refereed Journal Articles

Journal Article, Academic Journal (Published)

Sena, K. L., Yang, J., Kohlbrand, A. J., Dreaden, T. J., Barton, C. D. (2019). Landscape variables influence *Phytophthora cinnamomi* distribution within a forested Kentucky watershed. *Forest Ecology and Management*, 436, 39--44.

Journal Article, Public or Trade Journal (Published)

French, M., Barton, C. D. (2017). Restoration of the red spruce ecosystem in the Monongahela National Forest. *Journal of the American Chestnut Foundation*, 31(1), 9-12.

Other Intellectual Contributions

Extension Publication- Numbered, Original Content (Published)

Zipper, C., Agouridis, C. T., Krenz, R., Sweeten, E., Barton, C. D., Angel, P. (2018). Establishing Riparian Woody Vegetation for Constructed Streams on Mined Lands Using the Forestry Reclamation Approach. *Forestry Reclamation Advisory* (vol. 15, pp. 6). US Department of Interior, Office of Surface Mining, Reclamation and Enforcement. arri.osmre.gov/FRA/Advisories/FRA-15-RiparianWoodyVegetationForConstructedStreams-Mar2018.pdf

Report, Technical (Published)

Burger, J., Zipper, C., Skousen, J., Angel, P., Hall, N., Barton, C. D., Eggerud, S. (2017). Chapter 10: Establishing native trees on legacy surface mines. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 10-1 - 10-12). U.S. Forest Service.

Report, Technical (Published)

French, M., Barton, C. D., Zipper, C., Skousen, J., Angel, P., McCarthy, B., Keiffer, C. (2017). Chapter 12: Reestablishing American Chestnut on Mined Lands in the Appalachian Coalfields. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 12-1 - 12-9). U.S. Forest Service.

Report, Technical (Published)

Skousen, J., Zipper, C., Burger, J., Barton, C. D., Angel, P. (2017). Chapter 3: Selecting materials for mine soil construction when establishing forests on Appalachian mined lands. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 3-1 - 3-10). U.S. Forest Service.

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Report, Technical (Published)

Stram, B., Zipper, C., Burger, J., Skousen, J., Barton, C. D., Angel, P. (2017). Chapter 5: Loosening compacted soils on mined lands. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 5-1 - 5-6). U.S. Forest Service.

Report, Technical (Published)

Burger, J., Zipper, C., Skousen, J., Angel, P., Davis, V., Barton, C. D., Franklin, J. (2017). Chapter 6: Tree-compatible ground covers for reforestation and erosion control. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 6-1 - 6-8). U.S. Forest Service.

Report, Technical (Published)

Groninger, J., Zipper, C., Burger, J., Barton, C. D., Skousen, J., Angel, P. (2017). Chapter 8: Mine reclamation practices to enhance forest development through natural succession. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. 8-1 - 8-7). U.S. Forest Service.

Report, Technical (Published)

Barton, C. D., Zipper, C., Burger, J. (2017). Preface. *The Forestry Reclamation Approach: Guide to Successful Reforestation of Mined Lands* (General Technical Report NRS-169 ed., pp. Pp. i-iii). U.S. Forest Service.

Conners, Terrance E. (Associate Professor)

Other Intellectual Contributions

Extension Publication- Numbered, Original Content

Conners, T. E. (2020). *FOR-135 Softwood Growth Rings* (pp. 6). Lexington, KY: University of Kentucky Agricultural Communications Service.
<http://www2.ca.uky.edu/agc/pubs/FOR/FOR135/FOR135.pdf>

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Conners, T. E. (2020). *FOR-136 Further Distinguishing Softwood Species* (pp. 4). Lexington, KY: University of Kentucky Agricultural Communications Service.
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Extension Publication- Numbered, Original Content

Conners, T. E. (2020). *FOR-137 Hardwood Growth Rings* (pp. 8). Lexington, KY: University of Kentucky Agricultural Communications Service.
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Extension Publication- Numbered, Original Content

Conners, T. E. (2020). *FOR-138 Wood Structure and Mechanical Performance are Related* (pp. 4). Lexington, KY: University of Kentucky Agricultural Communications Service.
<http://www2.ca.uky.edu/agc/pubs/FOR/FOR138/FOR138.pdf>

Extension Publication- Numbered, Original Content

Conners, T. E. (2017). *FOR-128- Hardwood Dry Kiln Operation: A Manual for Operators of Small Dry Kilns* (pp. 114). Lexington, KY: University of Kentucky Agricultural Communications Service. <http://www2.ca.uky.edu/agc/pubs/FOR/FOR128/FOR128.pdf>

Extension Publication- Numbered, Original Content

Conners, T. E. (2016). *FOR-122- How to Select and Buck Logs for Railroad Ties* (pp. 9). Lexington, KY: University of Kentucky Agricultural Communications Service.
<http://www2.ca.uky.edu/agc/pubs/FOR/FOR122/FOR122.pdf>

Cox, John J. (Associate Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

McDermott, J. R., Leuenberger, W., Haymes, C. A., Clevinger, G. B., Trudeau, J. K., Carter, T. C., Hast, J. T., Jenkins, G. S.W., Bowling, W. E., Cox, J. J. (2020). Safe Use of Butorphanol–Azaperone–Medetomidine to Immobilize Free-Ranging White-tailed Deer. *Wildlife Society Bulletin*, 44(2), 281-291.
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Maigret, T. A., Cox, J. J., Weisrock, D. W. (2020). A spatial genomic approach identifies time lags and historical barriers to gene flow in a rapidly fragmenting Appalachian landscape. *Molecular Ecology*, 29(4), 673-685.
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Journal Article, Academic Journal (Published)

Hackworth, Z. J., Cox, J. J., Felch, J. M., Weegman, M. D. (2019). A Growing Conspiracy: Recolonization of Common Ravens (*Corvus corax*) in Central and Southern Appalachia, USA. *Southeastern Naturalist*, 18(2), 281-296.
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Journal Article, Academic Journal (Published)

Maigret, T., Cox, J. J., Yang, J. (2019). Persistent geophysical effects of mining imperil the biodiversity of Appalachian forests. *Frontiers in Ecology and the Environment*, 17(2), 85-91.

Journal Article, Academic Journal (Published)

Maigret, T. A., Cox, J. J., Yang, J. (2019). Persistent geophysical effects of mining threaten ridgetop biota of Appalachian forests. *Frontiers in Ecology and the Environment*, 17(2), 85-91. https://api.elsevier.com/content/abstract/scopus_id/85059593633

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Maigret, T., Cox, J. J. (2018). *Agkistrodon contortrix hibernacula*. *Herpetological Review*, 49(1), 123.

Journal Article, Academic Journal (Published)

Hackworth, Z. J., Lhotka, J. M., Cox, J. J., Barton, C. D., Springer, M. T. (2018). First-Year Vitality of Reforestation Plantings in Response to Herbivore Exclusion on Reclaimed Appalachian Surface-Mined Land. *Forests*, 9(4), 222.

Journal Article, Academic Journal (Published)

Kristensen, T., Puckett, E., Landguth, E., Belant, J., Hast, J. T., Carpenter, C., Sajecki, J., Beringer, J., Means, M., Cox, J. J., Eggert, L., White, D., Smith, K. (2018). Spatial genetic structure in American black bears (*Ursus americanus*): female philopatry is variable and related population history. *Heredity*, 120, 329-341.

Journal Article, Academic Journal (Published)

Spaulding, S., Cox, J. J., Maigret, T., Drayer, A., Richards, J., Treanor, J. Occurrence of *Batrachochytrium dendrobatidis* in plethodontid salamanders following timber harvests in southeastern Kentucky. *Herpetological Review*, 49(2), 258-262.

Journal Article, Academic Journal (Published)

Haymes, C., McDermott, J., Jenkins, G., Bowling, W., Hast, J., Johannsen, K., Cox, J. J. (2018). Survival and cause-specific mortality of white-tailed deer in southeastern Kentucky. *Journal of the Proceedings of the Association of the Southeastern Fish and Wildlife Agencies*, 5, 90-96.

Journal Article, Academic Journal (Published)

Muller, L., Lupardus, J., Murrow, J., Clark, J., Yarkovich, J., Stiver, W., Delozier, E., Slabach, B., Cox, J. J., Miller, B. (2018). Genetic Structure in Elk Persists after Translocation. *Journal of Wildlife Management*, 82(6), 1124-1134.

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Slabach, B., McKinney, A., Cunningham, J., Hast, J., Cox, J. J. (2017). A Survey of Tick Species in a Recently Reintroduced Population of Elk: Implications for Interstate Translocation of Zoonotic Vectors. *Journal of Wildlife Diseases*, 54(2), 366-370.

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Cox, J. J., Murphy, S. M., Augustine, B. C., Guthrie, J. M., Hast, J. T., Maehr, S. C., McDermott, J. (2017). Seroprevalence of *Toxoplasma gondii* in American Black Bears (*Ursus americanus*) of the Central Appalachians, USA. *Journal of Wildlife Diseases*, 53(3), 671-673.
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Murphy, S., Ulrey, W., Augustine, B., Guthrie, J., Cox, J. J. (2017). Natural genetic rescue of a low density carnivore population inhabiting a severely fragmented landscape. *PLoS One*, 12(7), e0181849. <https://doi.org/10.1371/journal.pone.0181849>

Journal Article, Academic Journal (Published)

Murphy, S. M., Ulrey, W. A., Guthrie, J. M., Maehr, D. S., Abrahamson, W. G., Maehr, S. C., Cox, J. J. (2017). Food habits of a small Florida black bear population in an endangered ecosystem. *Ursus*, 28(1), 92-104. <https://doi.org/10.2192/URSU-D-16-00031.1>

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Cox, J. J., Slabach, B., Hast, J. T., Murphy, S. M., Kwok, O. C., Dubey, J. P. (2017). High seroprevalence of *Toxoplasma gondii* in elk (*Cervus canadensis*) of the central Appalachians, USA. *Parasitology Research*, 116(3), 1079-1083. <https://www.ncbi.nlm.nih.gov/pubmed/28130658>

Journal Article, Academic Journal (Published)

Cilles, S. E., Coy, G., Stieha, C. R., Cox, J. J., Crowley, P. H., Maehr, D. S. (2016). A comparison of seed predation, seed dispersal, and seedling herbivory in oak and hickory; species with contrasting regenerating abilities in a Bluegrass savanna-woodland habitat. *Northeastern Naturalist*, 23(4), 466-481. <http://www.bioone.org/doi/abs/10.1656/045.023.0404>

Journal Article, Academic Journal (Published)

Murphy, S. M., Cox, J. J., Augustine, B., Hast, J. T., Guthrie, J. M., Wright, J., McDermott, J., Maehr, S., Plaxico, J. (2016). Characterizing recolonization by a reintroduced bear population using genetic spatial capture–recapture. *Journal of Wildlife Management*, 80(8), 1390-1407. <http://onlinelibrary.wiley.com/doi/10.1002/jwmg.21144/pdf>

Journal Article, Academic Journal (Accepted)

Murphy, S., Augustine, B., Adams, J., Waits, L., Cox, J. J. (in press). Integrating multiple genetic detection methods to estimate density of social, territorial carnivores. *To appear in Ecosphere*.

Journal Article, Academic Journal (Accepted)

Augustine, B., Kelly, M., Murphy, S., Royale, A., Cox, J. J., Chandler, R. (in press). Spatial Capture-Recapture for Categorically Marked Populations with an Application to Genetic Capture-Recapture. *To appear in Ecosphere*.

Journal Article, Academic Journal (Submitted)

Murphy, S., Augustine, B., Hast, J., Curry, T., Cox, J. J. Early genetic outcomes of American black bear reintroductions in the Central Appalachians, USA. *Ursus*.

Journal Article, Academic Journal (Submitted)

Murphy, S., Adams, J., Cox, J. J., Waits, L. Substantial red wolf genetic ancestry persists in wild canids of southwestern Louisiana. *Conservation Letters*.

Journal Article, Academic Journal (Submitted)

Slabach, B., Hast, J., Murphy, S., Bowling, W., Crank, D., Jenkins, G., Johannsen, K., Cox, J. J. Survival and cause-specific mortality of elk (*Cervus canadensis*) in Kentucky, USA. *Wildlife Biology*.

Crocker, Ellen V. (Assistant Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Conrad, A., Crocker, E. V., Li, X., Thomas, W. R., Ochuodho, T. O., Holmes, T. P., Nelson, C. D. (2020). Threats to oaks in the eastern United States: Perceptions and expectations of experts. *Journal of Forestry*, 118(1), 14-27. https://api.elsevier.com/content/abstract/scopus_id/85083035226

Journal Article, Academic Journal (Published)

Li, X., Holmes, T. P., Boyle, K. J., Crocker, E. V., Nelson, C. D. (2019). Hedonic analysis of forest pest invasion: The case of emerald ash borer. *Forests*, 10(9). https://api.elsevier.com/content/abstract/scopus_id/85072569202

Non-Refereed Journal Articles

Journal Article, Academic Journal (Published)

Fang, L., Crocker, E. V., Yang, J., Yan, Y., Yang, Y., Liu, Z. (2019). Competition and Burn Severity Determine Post-Fire Sapling Recovery in a Nationally Protected Boreal Forest of China: An Analysis from Very High-Resolution Satellite Imagery. *Remote Sensing*, 11(6), 603.

Other Intellectual Contributions

Extension Publication- Numbered, Original Content (Published)

Fountain, W. M., Durham, R. E., Crocker, E. V. (2017). *ID-244- Landscape Site Assessment Assessment* (pp. 4). Lexington, KY: University of Kentucky Agricultural Communications Service. <http://www2.ca.uky.edu/agc/pubs/ID/ID244/ID244.pdf>

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Fountain, W. M., Crocker, E. V., Durham, R. E. (2018). Landscape Site Assessment. *Kentucky Arborists' Association Newsletter*. Kentucky Arborists' Association Newsletter.

Lacki, Michael J. (Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Johnson, J. S., Treanor, J. J., Slusher, A. C., Lacki, M. J. (2019). Buildings provide vital habitat for little brown myotis (*Myotis lucifugus*) in a high-elevation landscape. *Ecosphere*, 10(11). https://api.elsevier.com/content/abstract/scopus_id/85076345886

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Johnson, J. S., Lacki, M. J., Fulton, S. A. (2019). Foraging patterns of Rafinesque's big-eared bat in upland forests managed with prescribed fire. *Journal of Mammalogy*, 100(2), 500-509. https://api.elsevier.com/content/abstract/scopus_id/85067560526

Journal Article, Academic Journal (Published)

Lacki, M. J., Thalken, M. M., Yang, J. (2018). Landscape-scale distribution of tree roosts of the northern long-eared bat in Mammoth Cave National Park, USA. *Landscape Ecology*, 33(7), 1103-1115.

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Thalken, M. M., Lacki, M. J. (2018). Tree roosts of northern long-eared bats following white-nose syndrome. *JOURNAL OF WILDLIFE MANAGEMENT*, 82(3), 629-638.

Journal Article, Academic Journal (Published)

Johnson, J. S., Treanor, J. J., Lacki, M. J., Baker, M. D., Falxa, G. A., Dodd, L. E., Waag, A. G., Lee, E. H. (2017). Migratory and winter activity of bats in Yellowstone National Park. *JOURNAL OF MAMMALOGY*, 98(1), 211-221.

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Lacki, M. J., Dodd, L. E., Skowronski, N. S., Dickinson, M. B., Rieske, L. K. (2017). Relationships among burn severity, forest canopy structure and bat activity from spring burns in oak-hickory forests. *INTERNATIONAL JOURNAL OF WILDLAND FIRE*, 26(11), 963-972.

Lhotka, John M. (Associate Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Hackworth, Z. J., Lhotka, J. M., Stringer, J. W. (2020). Midstory removal facilitates growth but reduces competitiveness of oak reproduction prior to and after shelterwood establishment cutting. *Forest Science*, 66(3), 371–381.

Journal Article, Academic Journal (Published)

Kara, F., Lhotka, J. M. (2020). Climate and silvicultural implications in modifying stand composition in mixed fir-pine stands. *Journal of Sustainable Forestry*, 39(5), 511-525. https://api.elsevier.com/content/abstract/scopus_id/85074681437

Journal Article, Academic Journal (Published)

Kara, F., Lhotka, J. M. (2020). Comparison of unmanaged and managed trojan fir–scots pine forests for structural complexity. *Turkish Journal of Agriculture and Forestry*, 44(1), 62-70. https://api.elsevier.com/content/abstract/scopus_id/85079488808

Journal Article, Academic Journal (Published)

Dement, W. T., Hackworth, Z. J., Lhotka, J. M., Barton, C. D. (2020). Plantation development and colonization of woody species in response to post-mining spoil preparation methods. *New Forests*. https://api.elsevier.com/content/abstract/scopus_id/85077628482

Journal Article, Academic Journal (Published)

Kara, F., Loewenstein, E. F., Lhotka, J. M., Kush, J. S. (2018). A Gingrich-style Stocking Chart for Longleaf Pine (*Pinus palustris* Mill.) Forests. *Forest Science*, 64(3), 307–315.

Journal Article, Academic Journal (Published)

Lhotka, J. M., Cunningham, R. A., Stringer, J. W. (2018). Effect of silvicultural gap size on 51 year species recruitment, growth and volume yields in *Quercus* dominated stands of the Northern Cumberland Plateau, USA. *Forestry*, 91(4), 451–458.

Journal Article, Academic Journal (Published)

Agha, M., Todd, B., Augustine, B., Lhotka, J. M., Fleckenstein, L., Lewis, M., Patterson, C., Stringer, J. W., Price, S. J. (2018). Effects of gap-based silviculture on thermal biology of a terrestrial reptile. *Wildlife Research*, 45(10.1071/WR17110), 72-81.

Journal Article, Academic Journal (Published)

Hackworth, Z. J., Lhotka, J. M., Cox, J. J., Barton, C. D., Springer, M. T. (2018). First-Year Vitality of Reforestation Plantings in Response to Herbivore Exclusion on Reclaimed Appalachian Surface-Mined Land. *Forests*, 9(4), 222.

Journal Article, Academic Journal (Published)

Lhotka, J. M. (2017). Examining growth relationships in Quercus stands: An application of individual-tree models developed from long-term thinning experiments. *FOREST ECOLOGY AND MANAGEMENT*, 385, 65-77.

Journal Article, Academic Journal (Published)

Lhotka, J. M., Parrott, D. L., Ruffner, C. M. (2016). A Dendroecological Investigation of an Upland Oak-Dominated Forest within the Grand Prairie Region of Illinois. *NATURAL AREAS JOURNAL*, 36(3), 310-322.

Non-Refereed Journal Articles

Journal Article, Academic Journal (Published)

Yang, Y. Z., Cai, W. H., Yang, J., White, M., Lhotka, J. M. (2018). Dynamics of Postfire Aboveground Carbon in a Chronosequence of Chinese Boreal Larch Forests. *Journal of Geophysical Research: Biogeosciences*, 123(12), 3490--3506.

Journal Article, Academic Journal (In Preparation; Not Yet Submitted)

Love, K. J., Yang, J., Lhotka, J. M. Evaluating the ability of GIS-derived compound moisture indices to represent soil moisture and properties in a dissected forest landscape. *Geoderma*.

Journal Article, Academic Journal (In Preparation; Not Yet Submitted)

Patterson, C. P., Hackworth, Z. J., Lhotka, J. M., Stringer, J. W. Initial Light and Regeneration Patterns Following an Expanding-Gap Irregular Shelterwood in Quercus-dominated stands of the Northern Cumberland Plateau, USA. *Forestry*.

Journal Article, Academic Journal (In Preparation; Not Yet Submitted)

Vogel, P. J., Lhotka, J. M., Stringer, J. W. Long-term effects of crop tree release on growth and quality in white oak (Quercus alba L.) dominated stands. *Forest Science*.

Ochuodho, Thomas (Assistant Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Conrad, A., Crocker, E. V., Li, X., Thomas, W. R., Ochuodho, T. O., Holmes, T. P., Nelson, C. D. (2020). Threats to oaks in the eastern United States: Perceptions and expectations of experts. *Journal of Forestry*, 118(1), 14-27.
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Journal Article, Academic Journal (Published)

Conrad, A., Crocker, E., Thomas, W., Li, X., Ochuodho, T., Holmes, T., Dana, N. (2020). Threats to oaks in the eastern united states: Perceptions and expectations of experts. *Journal of Forestry*, Journal of Forestry, 2020, 14–27.
<https://academic.oup.com/jof/article/118/1/14/5645422>

Journal Article, Academic Journal (Published)

Olale, E., Yiridoe, E., Ochuodho, T., Lantz, V. (2019). The Effect of Carbon Tax on Farm Income: Evidence from a Canadian Province. *Environmental and Resource Economics*. <https://link.springer.com/article/10.1007/s10640-019-00337-8>

Journal Article, Academic Journal (Published)

Ochuodho, T., Alavalapati, J., Lal, P., Agyeman, D., Wolde, B., Burli, P. (2019). Potential Economic Impacts of Allocating More Land for Bioenergy Biomass Production in Virginia. *Forests*, 10, *Forests* 2019, 10, 159. <https://pubag.nal.usda.gov/catalog/6489724>

Journal Article, Academic Journal (Published)

Bai, Y., Ochuodho, T., Yang, J. (2019). Impact of land use and climate change on water-related ecosystem services in Kentucky, USA. *Ecological Indicators*, 102, 51-64.

Journal Article, Academic Journal (Published)

Joshi, O., Poudyal, N., Weir, J., Fuhlendorf, S., Ochuodho, T. (2019). Determinants of perceived risk and liability concerns associated with prescribed burning in the United States. *Journal of Environmental Management*, 230, 379-385. <https://www.sciencedirect.com/science/article/pii/S0301479718310995>

Journal Article, Academic Journal (Published)

Withey, P., Lantz, V., Ochuodho, T., Patriquin, M., Wilson, J., Kennedy, M. (2018). Economic Impacts of conservation area strategies in Alberta, Canada: A CGE model analysis. *Journal of Forest Economics*, 33, 33-40. <https://www.sciencedirect.com/science/article/pii/S1104689918301302>

Journal Article, Academic Journal (Published)

Olale, E., Ochuodho, T., Lantz, V., El Armali, J. (2018). Environmental Kuznets Curve Model for Greenhouse Gas Emissions in Canada. *Journal of Cleaner Production*, 184, 859-868.

Journal Article, Academic Journal (Published)

Banerjee, O., Cicowiez, M., Ochuodho, T., Masozera, M., Wolde, B., Lal, P., Dudek, S., Alavalapati, J. (2018). Financing the sustainable management of Rwanda's protected areas. *Journal of Sustainable Tourism*, 1-17. <https://doi.org/10.1080/09669582.2018.1456541>

Journal Article, Academic Journal (Published)

Lal, P., Wolde, B., Masozera, M., Burli, P., Alavalapati, J., Ranjan, A., Montambault, J., Banerjee, O., Ochuodho, T., Mugabo, R. (2017). Valuing visitor services and access to protected areas: The case of Nyungwe National Park in Rwanda. *Tourism Management*, 61, 141-151.

Journal Article (Published)

Millard, R., Withey, P., Lantz, V., Ochuodho, T. O. (2017). The General Equilibrium Costs and Impacts of Oil Price Shocks in Newfoundland and Labrador. *Energy Economics*. <http://www.sciencedirect.com/science/article/pii/S0140988317303067>

Journal Article (Published)

Ochuodho, T., Johnston, c., Withey, P. (2017). Assessing Economic Impacts of Internet Adoption through Reduced Pulp and Paper Demand. *Canadian Journal of Forest Research*, 47(10), 1381 - 1391. <http://www.nrcresearchpress.com/doi/full/10.1139/cjfr-2017-0014>

Journal Article, Academic Journal (Published)

Ochuodho, T., Lantz, Van A., Olale, E. (2016). A Computable General Equilibrium Analysis of the United States-Canada 2006 Softwood Lumber Agreement. *Forest Science*, 62(6), 679-689.

Journal Article, Academic Journal (Revising to Resubmit)

Bai, Y., Ochuodho, T., Yang, J., Agyeman, D. Bundles and hotspots of multiple ecosystem services for optimized land management in Kentucky, USA. *Ecosystem Services*.

Other Intellectual Contributions

Working Paper

Banerjee, O., Cicowiez, M., Ochuodho, T., Masozera, M., Wolde, B., Lal, P., Dudek, S., Alavalapati, J. (2017). *Financing the Sustainable Management of Rwanda's Protected Areas* (pp. 32). Plata, Argentina: www.cedlas.econo.unlp.edu.ar

Price, Steven J. (Associate Professor)

Refereed Journal Articles

Journal Article, Academic Journal (Published)

Drayer, A. N., Guzy, J. C., Caro, R., Price, S. J. (2020). Created wetlands managed for hydroperiod provide habitat for amphibians in Western Kentucky, USA. *Wetlands Ecology and Management*, 28(3), 543-558.
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Leuenberger, W., Davis, A. G., McKenzie, J. M., Drayer, A. N., Price, S. J. (2019). Evaluating Snake Density Using Passive Integrated Transponder (PIT) Telemetry and Spatial Capture-Recapture Analyses for Linear Habitats. *Journal of Herpetology*, 53(4), 272-281.
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Journal Article, Academic Journal (Published)

Stengle, A. G., Farrell, T. M., Freitas, K. S., Lind, C. M., Price, S. J., Butler, B. O., Tadevosyan, T., Isidoro-Ayza, M., Taylor, D. R., Winzeler, M., Lorch, J. M. (2019). Evidence of vertical transmission of the snake fungal pathogen ophioidiomyces ophioidicola. *Journal of Wildlife Diseases*, 55(4), 961-964.
https://api.elsevier.com/content/abstract/scopus_id/85072994942

Journal Article, Academic Journal (Published)

Hutton, J. M., Price, S. J. (2018). *Ambystoma barbouri*. Predation. *Herpetological Review*.

Journal Article, Academic Journal (Published)

Hutton, J. M., Price, S. J., Richter, S. C. (2018). Diet of the Black Mountain Salamander (*Desmognathus welteri*) in Southeastern Kentucky. *Herpetological Review*(49), 12-19.

Journal Article, Academic Journal (Published)

Agha, M., Todd, B., Augustine, B., Lhotka, J. M., Fleckenstein, L., Lewis, M., Patterson, C., Stringer, J. W., Price, S. J. (2018). Effects of gap-based silviculture on thermal biology of a terrestrial reptile. *Wildlife Research*, 45(10.1071/WR17110), 72-81.

Journal Article, Academic Journal (Published)

Hutton, J. M., Price, S. J. (2018). *Eurycea bislineata*. Oophagy. *Herpetological Review*(49), 90-91.

Journal Article, Academic Journal (Published)

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Springer, Matthew T. (Assistant Professor)

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Stringer, Jeffrey W. (Professor)

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Yang, Jian (Assistant Professor)

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- Kong, J. j., Yang, J., Bai, E. (2018). Long-term effects of wildfire on available soil nutrient composition and stoichiometry in a Chinese boreal forest. *Science of the Total Environment*, 642, 1353-1361. https://api.elsevier.com/content/abstract/scopus_id/85048838197
- Journal Article, Academic Journal (Published)*
- Yu, L., Xu, Y., Xue, Y., Li, X., Cheng, Y., Liu, X., Porwal, A., Holden, E. J., Yang, J., Gong, P. (2018). Monitoring surface mining belts using multiple remote sensing datasets: A global perspective. *Ore Geology Reviews*, 101, 675-687. https://api.elsevier.com/content/abstract/scopus_id/85051648055
- Journal Article, Academic Journal (Published)*
- Cai, W. H., Liu, Z., Yang, Y. Z., Yang, J. (2018). Does environment filtering or seed limitation determine post-fire forest recovery patterns in boreal larch forests? *Frontiers in Plant Science*, 9, 1318. https://api.elsevier.com/content/abstract/scopus_id/85054501337
- Journal Article, Academic Journal (Published)*
- Li, X., Stainback, A., Barton, C., Yang, J. (2018). Valuing the environmental benefits from reforestation on reclaimed surface mines in Appalachia. *Journal of the American Society of Mining and Reclamation*, 7(1), 1-29. <https://www.asmr.us/Portals/0/Documents/Journal/Volume-7-Issue-1/JASMR-Volume-7-Issue-1.pdf>
- Journal Article, Academic Journal (Published)*
- Bai, X., Yang, J., Tao, B., Ren, W. (2018). Spatio-temporal variations of soil active layer thickness in Chinese boreal forests from 2000 to 2015. *10(8)*, 1225.
- Journal Article, Academic Journal (Published)*
- Fang, L., Yang, J., White, M., Liu, Z. (2018). Predicting potential fire severity using vegetation, topography and surface moisture availability in a Eurasian boreal forest landscape. *Forests*, 9(3). https://api.elsevier.com/content/abstract/scopus_id/85043379199
- Journal Article, Academic Journal (Published)*
- Wang, J., Zhao, F., Yang, J., Li, X. (2017). Mining Site Reclamation Planning Based on Land Suitability Analysis and Ecosystem Services Evaluation: A Case Study in Liaoning Province, China. *Sustainability*, 9(6), 890.

Journal Article, Academic Journal (Published)

Contreras, M. A., Staats, W., Yang, J., Parrott, D. (2017). Quantifying the Accuracy of LiDAR-Derived DEM in Deciduous Eastern Forests of the Cumberland Plateau. *Journal of Geographic Information System*, 9(03), 339.

Journal Article, Academic Journal (Published)

Shifley, S. R., He, H. S., Lischke, H., Wang, W. J., Jin, W., Gustafson, E. J., Thompson, J. R., Thompson, F. R., Diak, W. D., Yang, J. (2017). The past and future of modeling forest dynamics: from growth and yield curves to forest landscape models. *Landscape Ecology*, 1–19.

Journal Article, Academic Journal (Published)

Liu, B., Yang, J., Johnstone, J. F. (2017). Understory vascular plant community assembly in relation to time-since-fire and environmental variables in a Chinese boreal forest. *Journal of Mountain Science*, 14(7), 1317–1328.

Journal Article, Academic Journal (Published)

Yang, Y. Z., Cai, W. H., Yang, J. (2017). Evaluation of MODIS Land Surface Temperature Data to Estimate Near-Surface Air Temperature in Northeast China. *REMOTE SENSING*, 9(5).

Journal Article, Academic Journal (Published)

Qi, L., Yang, J. (2017). Microbial community composition regulates SOC decomposition response to forest conversion in a Chinese temperate forest. *ECOLOGICAL RESEARCH*, 32(2), 163-172.

Journal Article, Academic Journal (Published)

Van Gunst, K. J., Weisberg, P. J., Yang, J., Fan, Y. (2016). Do denser forests have greater risk of tree mortality: A remote sensing analysis of density-dependent forest mortality. *Forest Ecology and Management*, 359, 19–32.

Journal Article, Academic Journal (Published)

Chu, H., Xiang, X., Yang, J., Adams, J. M., ZHANG, K., Li, Y., Shi, Y. (2016). Effects of slope aspects on soil bacterial and arbuscular fungal communities in a boreal forest in China. *Pedosphere*, 26(2), 226–234.

Journal Article, Academic Journal (Published)

Cai, W. H., Yang, J. (2016). High-severity fire reduces early successional boreal larch forest aboveground productivity by shifting stand density in north-eastern China. *International Journal of Wildland Fire*, 25(8), 861–875.

Journal Article, Academic Journal (Published)

Liu, Z., Yang, J., Dwomoh, F. (2016). Mapping recent burned patches in Siberian larch forest using Landsat and MODIS data. *European Journal of Remote Sensing*, 49(1), 861–887.

Journal Article, Academic Journal (Published)

Qi, L., Yang, J., Yu, D., Dai, L., Contreras, M. A. (2016). Responses of regeneration and species coexistence to single-tree selective logging for a temperate mixed forest in eastern Eurasia. *Annals of forest science*, 73(2), 449–460.

Journal Article, Academic Journal (Revising to Resubmit)

Bai, Y., Ochuodho, T., Yang, J., Agyeman, D. Bundles and hotspots of multiple ecosystem services for optimized land management in Kentucky, USA. *Ecosystem Services*.

Non-Refereed Journal Articles

Journal Article, Academic Journal (Published)

Fang, L., Crocker, E. V., Yang, J., Yan, Y., Yang, Y., Liu, Z. (2019). Competition and Burn Severity Determine Post-Fire Sapling Recovery in a Nationally Protected Boreal Forest of China: An Analysis from Very High-Resolution Satellite Imagery. *Remote Sensing*, 11(6), 603.

Journal Article, Academic Journal (Published)

Sena, K. L., Yang, J., Kohlbrand, A. J., Dreaden, T. J., Barton, C. D. (2019). Landscape variables influence *Phytophthora cinnamomi* distribution within a forested Kentucky watershed. *Forest Ecology and Management*, 436, 39--44.

Journal Article, Academic Journal (Published)

Liu, B., Chen, H. Y., Yang, J. (2019). Linking understory species diversity, community-level traits and productivity in a Chinese boreal forest. *Journal of Vegetation Science*, 30(2), 247--256.

Journal Article, Academic Journal (Published)

Kong, J.-j., Yang, J., Liu, B., Qi, L. (2019). Wildfire Alters Spatial Patterns of Available Soil Nitrogen and Understory Environments in a Valley Boreal Larch Forest. *Forests*, 10(2), 95.

Journal Article, Academic Journal (Published)

Bai, X., Huang, Y., Ren, W., Coyne, M. S., Jacinthe, P.-A., Tao, B., Hui, D., Yang, J., Matocha, C. (2019). Responses of soil carbon sequestration to climate-smart agriculture practices: A meta-analysis. *Global Change Biology*, 25(8), 2591-2606.

Journal Article, Academic Journal (Published)

Yang, Y. Z., Cai, W. H., Yang, J., White, M., Lhotka, J. M. (2018). Dynamics of Postfire Aboveground Carbon in a Chronosequence of Chinese Boreal Larch Forests. *Journal of Geophysical Research: Biogeosciences*, 123(12), 3490--3506.

Journal Article, Academic Journal (Published)

Liu, B., Chen, H. Y., Yang, J. (2018). Understory Community Assembly Following Wildfire in Boreal Forests: Shift From Stochasticity to Competitive Exclusion and Environmental Filtering. *Frontiers in plant science*, 9, 1854.

Journal Article, Academic Journal (Accepted)

Fang, L., Yang, J., Zhang, W., Zhang, W., Yan, Q. (in press). Combining Allometry and Landsat-derived Disturbance History to Estimate Tree Biomass in Subtropical Planted Forests. *To appear in Remote Sensing of Environment*.

Journal Article, Academic Journal (In Preparation; Not Yet Submitted)

Love, K. J., Yang, J., Lhotka, J. M. Evaluating the ability of GIS-derived compound moisture indices to represent soil moisture and properties in a dissected forest landscape. *Geoderma*.

Appendix P.

Faculty CVs

Mary Arthur

CURRICULUM VITAE

Mary A. Arthur

Department of Forestry
University of Kentucky
103 Thomas Poe Cooper Building
Lexington, KY 40546-0073
Phone: 859.257.2852; email: marthur@uky.edu

EDUCATION

Ph.D. Forest Ecology, minor in Soil Science, Cornell University
M.F.S. Forest Science, Yale School of Forestry & Environmental Studies
B.A. Environmental Studies, Colby College

PROFESSIONAL EXPERIENCE

Professor , Department of Forestry, University of Kentucky	2006 to present
Co-Lead , Urban Forest Initiative Working Group	2014 to present
Chair , Natural Resources and Environmental Science Curriculum Steering Committee	2009 to 2019
Co-Director , Greenhouse Residential College	2013 to 2016
Associate Professor , Department of Forestry, University of Kentucky	2000-2006
Visiting Scientist , Institute of Ecosystem Studies, Millbrook, NY	2000-2012
Sabbatical Leave , Institute of Ecosystem Studies, Millbrook, NY	1/00-7/00
Member , UK Biology Program Graduate Faculty	2003-present
Member , UK Soil Science Graduate Faculty	1994-present
Assistant Professor , Department of Forestry, University of Kentucky	1993-2000
Post-doctoral Associate , Boyce Thompson Institute for Plant Research, Ithaca, NY	1990-1992

RESEARCH PROGRAM

Research Funding

Extramural

2020-2023 **Kentucky Division of Forestry**. L. Rieske-Kinney PI, M. Arthur co-PI. Landscape Scale Restoration grant project, "Conservation, protection, and enhancement of forest canopies in rural communities and small municipalities" \$406,338

2019-2020 **Kentucky Division of Forestry**. M. Arthur and L. Rieske-Kinney. Urban Forest Initiative: Modeling replicable urban and community forestry programs in Kentucky. \$10,000

2018-2021 **USDA Higher Education Challenge Grant**, \$150,000. Ellen Crocker, PI; Co-investigators: L. Rieske-Kinney, M. Arthur, M. Williams, C. Sass. "Undergraduate Certificate in Urban and Community Forestry."

2018-2019 **Lexington-Fayette Urban County Government**, \$34,954. M. Arthur and L. Rieske-Kinney. Stormwater Quality Projects Incentive Grant.

2015-2017 **USDA Forest Service**, Daniel Boone National Forest, \$97,000. Principal Investigator. "Triplett Creek Landscape Restoration"

2016-2017 **Kentucky Division of Forestry**. L. Rieske-Kinney and M. Arthur. Investigating Pathways for Central Kentucky Communities to Enhance the Urban Tree Canopy \$20,000.

2009-2014 **USDA Forest Service**, Daniel Boone National Forest, \$10,000. Principal Investigator. "Fire ecology research in the Daniel Boone National Forest."

- 2007-2011 **National Science Foundation**, \$34, 813. "Long term ecological research at Hubbard Brook Research Forest." \$27,301, Subcontract from Cary Institute of Ecosystem Studies.
- 2007-2009 **USDA Forest Service**, Southern Research Station, \$16,000. Principal Investigator. "Fire and new oak seedlings."
- 2006-2008 **Kentucky Environmental and Public Protection Cabinet**. Principal Investigator, "Colonization by invasive plant species into urban and successional forest remnants in the Bluegrass Region of central Kentucky." \$7996. Co-PIs – Ryan McEwan and Rob Paratley.
- 2005-2009 **National Science Foundation**, Principal investigator, "Collaborative research: Influences of geology and tree species composition on the response of forest nutrient dynamics to an exotic pest." \$115,000.
- 2004-2006 **Northeastern States Research Cooperative**, Co-principal investigator; subcontract to UK \$30,000. (PI: G.M. Lovett, Institute of Ecosystem Studies).
- 2004-2008 **USDA-USDI Joint Fire Science Program**. Co-principal investigator; subcontract to UK, (PI: D.L. Loftis, U.S. Forest Service.) "Fire in the southern Appalachians: fuels, stand structure and oaks." \$342,000.
- 2003-2007 **National Science Foundation, DEB-Ecosystems**. Co-principal investigator, subcontract to UK, \$80,000. (PI: R.D. Yanai, SUNY-ESF). "Biotic control of calcium supply: Distinguishing sources to regrowing forests."
- 2003-2006 **National Park Service**. Principal investigator. "Establishing baselines for nitrogen cycling in Mammoth Cave National Park Forests." \$50,000.
- 2002-2005 **USDA-USDI Joint Fire Science Program**. Co-principal investigator; subcontract to UK, \$214,000. (PI: D.L. Loftis; U.S. Forest Service). "Fire and oak regeneration in the southern Appalachians."
- 2002 **Colorado State University**. Principal investigator. "Loch Vale Watershed Forest Re-survey." \$4,511.
- 2000-2005 **National Science Foundation, DEB, Ecosystems**. Co-principal investigator; subcontract to UK, \$199,999. (PI: Gary Lovett, Institute of Ecosystem Studies.) "Effects of an Introduced Pest on the C and N Dynamics of a Northern Hardwood Forest."
- 2000-2001 **USDA Forest Service**, Southern Research Station, \$10,000. Principal Investigator. "Fire ecology research in the Daniel Boone National Forest."
- 1996-1999 **USDA National Research Initiative Competitive Grants Program**, Co-principal investigator; subcontract to UK, \$92,708. (PI: G.M. Lovett, Institute of Ecosystem Studies; Co-PI: Kathleen Weathers, Institute of Ecosystem Studies) "Nitrate loss from Catskill watersheds: the role of forest change."
- 1995-2000 **U.S. Forest Service** Challenge Cost-share Agreement, Daniel Boone National Forest, \$14,000. Principal investigator. "The use of prescribed fire in maintaining fire prone communities."
- 1994-1997 **EPA 319 and Kentucky State Natural Resources Environmental Protection**, \$100,000. Principal investigator: M. Arthur, Co-principal investigator, J. Stringer. "Environmental education: Impacts of harvesting practices on water quality in forested ecosystems."
- 1994-1995 **Tennessee Valley Authority**, \$15,416. Principal investigator. "Modelling ozone exposure to northern red oak."
- 1993-1998 **USDA National Research Initiative Competitive Grants Program**, Co-principal investigator, subcontract to UK, \$67,000. (Principal investigator, R.D. Yanai, SUNY-ESF.) "Recent changes in nutrient concentrations in the northern hardwood forest: are they natural or anthropogenic?"

- 1993 **Boyce Thompson Institute for Plant Research**, \$2,200. Principal investigator. "Development of red oak parameters for Tregro." .
- 1991 **New York State Gas and Electric Corporation**, \$75,000. Co-principal investigators; (PI: L.H. Weinstein, Boyce Thompson Institute for Plant Research). "Effects of gypsum on plant uptake of selenium from coal fly ash."
- 1991-1992 **Niagara Mohawk Power Corporation**, \$150,000. Co-principal investigator; PI: L.H. Weinstein, Boyce Thompson Institute for Plant Research). "A survey of selenium concentration in select native plant species and small mammals."

Intramural

- 2019 **UK Campus Sustainability Challenge Grant. \$19,871.** M. Arthur, L. Rieske-Kinney and others. Training Collegiate Arborist Teams (TreeCATS) to expand the visibility of urban tree benefits.
- 2019 **UK Student Sustainability Council.** \$11,160. M. Arthur. TreeCATs: Collegiate Arborist Team and Training Workshop.
- 2018 **UK Campus Sustainability Challenge Grant.** \$38,898. M.A. Arthur, L. Rieske-Kinney, and others. From Roots to Branches: Expanding UK's capacity to care for and nurture urban forests and their people.
- 2017 **UK Campus Sustainability Challenge Grant.** \$49,774. M.A. Arthur, L. Rieske-Kinney. Mobilizing tree ambassadors through campus and community engagement, teaching and research.
- 2016 **UK Sustainability Challenge Grant.** \$32,636. Co-Principal investigator with L. Rieske-Kinney and N. Williamson. "Creating Tree Ambassadors: Fostering a campus and community culture of sustainability through urban trees.
- 2015 **UK Sustainability Challenge Grant.** \$17,000. Co-Principal investigators with L. Rieske-Kinney and N. Williamson. "The Campus Tree Initiative: Enhancing sustainability through engagement with the urban tree canopy on UK campus and beyond."
- 2009-2011 **USDA-CSREES**, Precision Resource Management. \$49,093. Co-principal investigator with C. McMichael (Morehead State University). "Using remotely-sensed imagery to monitor post-fire forest dynamics."
- 2006 **University of Kentucky**, Precision Resource Management.
- 2006-2008 **USDA-CSREES**, Precision Resource Management – Phase III – Scope 6. \$72,500. Co-principal investigator with doctoral student, M. Poulette. "Spatial patterning of the effects of savanna trees and exotic species on soil nutrient and C cycling and soil biota."
- 2006-2007 **University of Kentucky Faculty Research Support Grant.** "Alteration of belowground processes during ecosystem invasion: *Lonicera maackii* in the forests of central Kentucky. \$14,000. Co-PIs: Mary Arthur, Lynne Rieske-Kinney and Ryan McEwan.
- 2005 **University of Kentucky, College of Agriculture**, \$14,590. Co-principal investigators, L.K. Rieske-Kinney and M.A. Arthur. "Exploring the effects of Amur (bush) honeysuckle on plant community and ecosystem dynamics."
- 1999-2000 **University of Kentucky Research Committee Grant**, \$4,820. Principal Investigator. "Species control of nutrient dynamics in the mixed mesophytic forest of eastern Kentucky."
- 1997-1999 **Robinson Forest Initiative**, \$72,121. Principal Investigator. "Forest fire in eastern Kentucky: How the role of fire in the ecosystem is perceived and controlled."

- 1996-1998 **Robinson Forest Initiative**, \$28,049. Principal Investigator. "The response of eastern Kentucky forest ecosystems to prescribed burns and wildfire."
- 1995-1996 **University of Kentucky Research Committee Grant**, \$4,500. Principal investigator. "Use of prescribed fire on ridgetops in the Daniel Boone National Forest."
- 1986-1988 **Edna Bailey Sussmann Fellowship** for graduate research in environmental studies.
- 1986-1987 **Andrew W. Mellon Competitive Grant for Student Research**, Cornell University.

Publications

Refereed journal articles (total: 89 published; h-index: 35; total citations: 3356)

*Authorship by graduate or post-doctoral student denoted by *; undergraduate student or technician author denoted by **.*

- Hanberry, B.B., M. D.Abrams, M.A. Arthur, J. M. Varner. 2020. Reviewing fire, climate, deer and foundation species as drivers of historically open oak and pine forests and transition to closed forests. *Front. For. Glob. Change.* 3:56. doi: 10.3389/ffgc.2020.00056
- Black*, D.E., M.A. Arthur, D.D. Taylor, J.F. Lewis, and W. Leuenberger*. 2019. Using mastication to support woodland restoration in upland oak forests on the Cumberland Plateau, Kentucky. *For. Sci.* 14: <https://doi.org/10.1093/forsci/fxy066>
- Rieske, L, S. Borden, B. Damron**, N. Williamson, M. Arthur, and A. Kinney. 2019. College campus as a living laboratory: Scrubbing scales, saving trees, engaging students. *American Entomologist* 65: 43-49.
- Rounsaville, T.J., R.L. McCulley, and M.A. Arthur. 2019. Allee effects and soil nutrient changes mediated by experimental plantings of a nonindigenous, temperate liana. *Plant Ecology* 220: 861-872; <https://doi.org/10.1007/s11258-019-00960>.
- Yang*, Z., S. Chen, X. Liu, D. Xiong, C. Xu, M.A. Arthur, R.L. McCulley, S. Shi, and Y. Yang. 2019. Loss of soil organic carbon following natural forest conversion to Chinese fir plantation. *Forest Ecology and Management* . <https://doi.org/10.1016/j.foreco.2019.117476>.
- Rounsaville*, T.J., C.C. Baskin, E. Roemmele, M.A. Arthur. 2018. Seed dispersal and site characteristics influence germination and seedling survival of the invasive liana *Euonymus fortune* (wintercreeper) in a rural woodland. *Can. J. For. Res.* 48: 1343-1350.
- Black*, D.E., Z.W. Poynter*, C.A. Cotton, S. Upadaya*, D.D. Taylor, W. Leuenberger, B.A. Blankenship, and M.A. Arthur. 2018. Post-wildfire recovery of an upland oak-pine forest on the Cumberland Plateau, Kentucky. *Fire Ecology* 14. DOI: <https://doi.org/10.1186/s42408-018-0013-9>
- Rounsaville*, T., C. Baskin, E. Roualdes, McCulley, R.L. and M. Arthur. 2018. Seed dynamics of the liana *Euonymus fortunei* and implications for invisibility. *J. Torrey Bot. Soc.* 145: 225-236.
- Yang, Y., R.D. Yanai, C.R. See, and M.A. Arthur. 2017. Sampling effort and uncertainty in leaf litterfall mass and nutrient flux in northern hardwood forests. *Ecosphere* 8(11):e01999. [10.1002/ecs2.1999](https://doi.org/10.1002/ecs2.1999).
- Arthur, M.A., B.A. Blankenship, A. Schorgendorfer, and H.D. Alexander. 2017, Alterations to the fuel bed after single and repeated prescribed fires in an Appalachian hardwood forest. *For. Ecol. Management* 403: 126-136.

- Arthur, M.A., K.C. Weathers, G.M. Lovett, M.P. Weand and W.C. Eddy. 2017. A beech bark disease induced change in tree species composition influences forest floor acid-base chemistry. *Can. J. For. Res.* 47: 875-882.
- Bray, S.R., A.M. Hoyt**, Z. Yang and M.A. Arthur. 2017. Non-native liana, *Euonymus fortunei*, associated with increased soil nutrients, unique soil bacterial communities, and faster leaf decomposition. *Plant Ecology* 218: 329-343.
- Keyser, T.L., M.A. Arthur, D.L. Loftis. 2017. Repeated burning alters the structure and composition of hardwood regeneration in oak-dominated forests of eastern Kentucky, USA. *Forest Ecology and Management* 393: 1-11.
- Crowley, K.F., G.M. Lovett, M.A. Arthur and K.C. Weathers. 2016. Long-term effects of pest-induced tree species change on carbon and nitrogen cycling in northeastern U.S. forests: A modeling analysis. *Forest Ecology and Management* 371: 269-290.
- Lovett, G.M., M.A. Arthur, and K.F. Crowley. 2016. Effects of calcium on the rate and extent of litter decomposition in a northern hardwood forest. *Ecosystems* 19: 87-97.
- Mattingly**, K.Z., R.W. McEwan, R.D. Paratley, S.R. Bray, J.R. Lempke, and M.A. Arthur. 2016. Recovery of forest floor diversity after removal of the non-native invasive plant *Euonymus fortunei*. *Journal of the Torrey Botanical Society* 143: 103-116.
- Varner, J.M., M.A. Arthur, S.L. Clark, D.C. Dey, J.L. Hart and C.J. Schweitzer. 2016. Fire in Eastern North American oak ecosystems: filling the gaps. *Fire Ecology* 12:1-6.
- Arthur, M.A., B.A. Blankenship, A. Schorgendorfer, D.L. Loftis, and H.D. Alexander. 2015. Changes in stand structure and tree vigor with repeated prescribed fire in an Appalachian hardwood forest. *Forest Ecology and Management* 340: 46-61.
- Alexander*, H.D. and M.A. Arthur. 2014. Increasing red maple leaf litter alters decomposition rates and nitrogen cycling in historically oak-dominated forests of the Eastern US. *Ecosystems* 17:1371-1383.
- Rodriguez, A., G.M. Lovett, K.C. Weathers, M.A. Arthur, P.H. Templer, C.L. Goodale, and L.M. Christenson. 2014. Lability of C in temperate forest soils: assessing the role of nitrogen addition and tree species composition. *Soil Biology and Biochemistry* 77:129-140.
- Kim, D., and M. A. Arthur. 2014. Changes in community structure and species-landform relationship after repeated fire disturbance in an oak-dominated temperate forest. *Ecological Research* 29: 661-671.
- Littlefield*, T., C. Barton, M. Arthur, and M. Coyne. 2013. Factors controlling carbon distribution on reforested minelands and regenerating clearcuts in Appalachia, USA. *Science of the Total Environment* 465: 240-247.
- Lovett, G.M., M.A. Arthur, K.C. Weathers, R.D. Fitzhugh, P.H. Templer. 2013. Nitrogen addition increases carbon storage in soils, but not in trees, in an eastern deciduous forest. *Ecosystems* 16:980-1001.
- Lovett, G.M., M.A. Arthur, K.C. Weathers, J.C. Griffin. 2013. Effects of introduced insects and diseases on forest ecosystem in the Catskill Mountains of New York. *Annals of the New York Academy of Sciences* 1298:66-77
- Wilson*, H.N., M.A. Arthur, A. Schorgendorfer, R.D. Paratley, B.D. Lee, and R.W. McEwan. 2013. Site characteristics as predictors of *Lonicera maackii* and other invasive plants in second growth forests of central Kentucky, USA. *Natural Areas Journal* 33: 189-198.
- Yanai, R.D., M.A. Vadeboncoeur, S.P. Hamburg, M.A. Arthur, C.B. Fuss, P.M. Groffman, T.G. Siccama, and C.T. Driscoll. 2013. *Environmental Science and Technology* 47: 11440-11448.
- Arthur, M.A., H.D. Alexander, D.C. Dey, C.J. Schweitzer, and D.L. Loftis. 2012. Refining the oak-fire hypothesis for management of oak-dominated forests of the eastern United States. *J. Forestry* 110: 257-266.

- Arthur, M.A., Bray, S.R., C. Kuchle**, and R.W. McEwan. 2012. The influence of the invasive shrub, *Lonicera maackii*, on leaf decomposition and microbial community dynamics. *Plant Ecology* 213: 1571-1582. doi: 10.1007/s11258-012-0112-7
- Blum, J.D., S.P. Hamburg, R.D. Yanai, and M.A. Arthur. 2012. Determination of foliar Ca/Sr discrimination factors for six tree species and implications for Ca sources in northern hardwood forests. *Plant and Soil* 356: 303-314.
- Crowley, K.F., B.E. McNeil, G.M. Lovett, C.D. Canham, C.T. Driscoll, L.E. Rustad, E. Denny, R.A. Hallett, M.A. Arthur, J.L. Boggs, C.L. Goodale, J.S. Kahl, S.G. McNulty, S.V. Ollinger, L.H. Pardo, P.G. Schaberg, J.L. Stoddard, M.P. Weand, and K.C. Weathers. 2012. Do nutrient limitation patterns shift from nitrogen toward phosphorus with increasing nitrogen deposition across the northeastern United States? *Ecosystems* 15:940-957. doi:10.1007/s10021-012-9550-2
- McEwan, R.W., M.A. Arthur, S.E. Alverson. 2012. Throughfall chemistry and soil nutrient effects of the invasive shrub *Lonicera maackii* in deciduous forests. *Am. Midl. Nat.* 168: 43-55.
- Yanai, R.D., M.A. Arthur, M. Acker, C.R. Levine, and B.B. Park. 2012. Variation in mass and nutrient concentration of leaf litter across years and sites in a northern hardwood forest. *Canadian Journal of Forest Research* 42: 1597-1610.
- Poulette*, M.M. and M.A. Arthur. 2012. The impact of the invasive shrub *Lonicera maackii* on the decomposition dynamics of a native plant community. *Ecological Applications* 22:412-424.
- Srinivasan, M.P., S.K. Gleeson, and M.A. Arthur. 2012. Short-term impacts of nitrogen fertilization on a montane grassland ecosystem in a South Asian biodiversity hotspot. *Plant Ecology and Diversity* 5:289-299.
- Fatemi, F.R., R.D. Yanai, S.P. Hamburg, M.A. Vadeboncoeur, M.A. Arthur, R.D. Briggs, and C.R. Levine. 2011. Allometric equations for young northern hardwoods: the importance of age-specific equations for estimating aboveground biomass. *Canadian Journal of Forest Research* 41:881-891.
- Alexander*, H.D. and M.A. Arthur. 2010. Implications of a predicted shift from upland oaks to red maple on forest hydrology and nutrient availability. *Canadian Journal of Forest Research*: 40: 716-726.
- Green*, S.R. and M.A. Arthur. 2010. Oak and red maple seedling survival and growth following periodic prescribed fire on xeric ridgetops on the Cumberland Plateau. *Forest Ecology and Management* 259: 2256-2266.
- Lovett, G.M., M.A. Arthur, K.C. Weathers and J.M. Griffin. 2010. Long-term changes in forest carbon and nitrogen cycling caused by an introduced pest/pathogen complex. *Ecosystems* 13: 1188-1200.
- McEwan*, R.W., L.G. Arthur-Paratley, L.K. Rieske and M.A. Arthur. 2010. A multi-assay comparison of seed germination inhibition by *Lonicera maackii* and co-occurring native shrubs. *Flora* 205:475-483.
- Royse*, J., M.A. Arthur, A. Schorgendorfer, and D.L. Loftis. 2010. Establishment and growth of oak (*Quercus alba*, *Quercus prinus*) seedlings in burned and fire-excluded upland forests on the Cumberland Plateau. *Forest Ecology and Management* 260: 502-510. Doi: 10.1016/j.foreco.2010.05.005.
- Weand*, M.P., M.A. Arthur, G.M. Lovett, K.C. Weathers, R.L. McCulley. 2010. Effects of tree species and nitrogen addition on forest floor microbial communities and extracellular enzymes. *Soil Biology and Biochemistry* 42: 2161-2173.

- Weand*, M.P., M.A. Arthur, G.M. Lovett, F. Sikora and K.C. Weathers. 2010. The phosphorus status of northern hardwoods differs by species but is unaffected by nitrogen fertilization. *Biogeochemistry* 97:2-3.
- Alexander*, H.D. and M.A. Arthur. 2009. Foliar morphology and chemistry of upland oaks, red maple, and sassafras seedlings in response to single and repeated prescribed fires. *Canadian Journal of Forest Research* 39: 740-754.
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- Chiang*, J. and M.A. Arthur. 2002. Prescribed fire effects on understory light environment and seedling performance of oak and red in eastern Kentucky. Abstracts of the 87th Annual Meeting of the Ecological Society of America.
- Newman*, G.S., M.A. Arthur and R.N. Muller. 2002. Carbon allocation and interannual variability of net primary production in a temperate mixed deciduous forest. Abstracts of the 87th Annual Meeting of the Ecological Society of America.
- Templer, P, G.M. Lovett, K.C. Weathers and M.A. Arthur. 2002. Plant and soil natural abundance delta-¹⁵N: Indicators of nitrogen cycling in the Catskills Mountains, NY. AGU meeting, December 2002.
- Weathers, K.C., G.M. Gary M. Lovett, M.A. Arthur and S.M. Simkin. 2002. Watershed controls on streamwater nitrate concentrations, Catskill Mountains, NY. Abstracts of the 87th Annual Meeting of the Ecological Society of America.

- Arthur, M.A., R.D. Yanai, T.G. Siccama, C.A. Federer, A. Friedland, and C. Prescott. 2001. Repeated sampling in a chronosequence to detect change in the forest floor. *Agronomy Abstracts*.
- Chiang*, J. and M. A. Arthur. 2001. Growth and leaf nitrogen responses of oak and red maple seedlings to canopy gap fraction following prescribed fires. *Abstracts of the 86th Annual Meeting of the Ecological Society of America*, p. 266.
- Newman*, G.S., M.A. Arthur and R.N. Muller. 2001. Topographic aspect control on nutrient input and soil chemistry of forest soils in eastern Kentucky. *Agronomy Abstracts*.
- Newman*, G.S., M.A. Arthur and R.N. Muller. 2001. Net primary productivity and nitrogen mineralization in mesic and xeric deciduous forest stands. *Abstracts of the 86th Annual Meeting of the Ecological Society of America*, p. 324.
- Arthur, M.A., R.D. Yanai, and T.G. Siccama. 2000. Litterfall mass and nutrient dynamics in a northern hardwood forest successional sequence. *Abstracts of the 85th Annual Meeting of the Ecological Society of America*, pp. 244.
- Arthur, M.A., S.P. Hamburg and R.D. Yanai. 2000. Calcium depletion in the northern hardwood forest: biotic control. *Agronomy Abstracts*, 2000:p. 40.
- Hamburg, S.P., R.D. Yanai, and M.A. Arthur. 2000. Biotic control of calcium decline in forest soils. *Abstracts of the 85th Annual Meeting of the Ecological Society of America*, pp. 113.
- Lovett, G.M., K.C. Weathers and M.A. Arthur. 2000. Effect of tree species on nitrogen cycling in the Catskill Mountains, NY: Fertilization studies. *Abstracts of the 85th Annual Meeting of the Ecological Society of America*, pp. 149.
- Rieske-Kinney, L.K., M.A. Arthur, and H.H. Housman*. 2000. Prescribed fire in deciduous systems - do the herbivores care? 44th Southern Forest Insect Work Conference, Memphis, TN.
- Yanai, R.D. and M.A. Arthur. 2000. Distinguishing the effects of environmental stress and forest succession on changes in the forest floor. *Abstracts of the 85th Annual Meeting of the Ecological Society of America*, pp. 237.
- Arthur, M.A., R.D. Yanai. 1999. Distinguishing the effects of environmental stress and forest succession on changes in the forest floor. *Proceedings of the 3rd International Conference on Long-Term Ecology Research in the East Asia-Pacific Region*. October 11-16, 1999. Seoul, Korea.
- Arthur, M.A. and J.A. Thompson. 1999. Incorporation of ecology into an interest-based approach to natural resource problem-solving: A capstone course description. *Abstracts of the 84th Annual Meeting of the Ecological Society of America*, 44.
- Arthur, M.A., K.C. Weathers, and G.M. Lovett. 1999. Species-specific effects on cation cycling in the Catskill Mountains, NY. *Abstracts of the 84th Annual Meeting of the Ecological Society of America*, 23.
- McEwan**, R.W., R.N. Muller, M.A. Arthur, and H.H. Housman*. 1999. Temporal and spatial patterns of flowering dogwood mortality in the mixed mesophytic forest of eastern Kentucky. *Abstracts of the 84th Annual Meeting of the Ecological Society of America*, 280.
- Miller*, C.S., and M.A. Arthur. 1999. Single-species effects on soil nutrient availability in an oak-pine forest in Kentucky. *Abstracts of the 84th Annual Meeting of the Ecological Society of America*, 283.
- Yanai, R.D., M.A. Arthur and T.G. Siccama. 1999. Changes in total carbon and nitrogen in northern hardwood forest floors. *Agronomy Abstracts*, 1999:296
- Arthur, M.A., R.D. Paratley and B.A. Blankenship*. 1998. Single and repeated fire affect survival and regeneration of woody species in an oak-pine forest. *Journal of the Torrey Botanical Society* 125:225-236.
- Gilbert**, N.L., M.A. Arthur, S.L. Johnson, S.K. Gleeson and B.A. Blankenship. 1998. Prescribed fire effects on foliar nutrients, photosynthesis, and growth of ridgetop maple and oak seedlings. *Ecological Society of America Abstracts*:169.

- Blankenship*, B.A. and M.A. Arthur. 1996. Control of eastern white pine with late winter prescribed fire and its effects on nutrients, microbial biomass, and loss of organic matter. *Bulletin of the Ecological Society of America* 77(3):40.
- Yanai, R.D., M.A. Arthur, L. Taylor, T.G. Siccama and C. A. Federer. 1996. Long-term changes in the forest floor of northern hardwood stands of different ages. *Bulletin of the Ecological Society of America* 77(3):494.
- McMillan, D.M., R.D. Yanai, M.A. Arthur and T.G. Siccama. 1996. Long term changes in pH and calcium in precipitation, streamwater and soils at the Hubbard Brook Experimental Forest, New Hampshire. *Bulletin of the Ecological Society of America* 77(3):298.
- Taylor*, L.A. and M.A. Arthur. 1995. An assessment of microbial biomass across a northern hardwood forest successional sequence. *Agronomy Abstracts* 1995:306.
- Wang*, Yating and M.A. Arthur. 1995. Effects of four weed management strategies on soil microbial biomass and nutrients in a Christmas tree plantation. *Agronomy Abstracts* 1995:230.
- Arthur, M.A., T.G. Siccama and R.D. Yanai. 1995. The relationship of calcium and magnesium in wood of three hardwoods to site conditions at the Hubbard Brook Experimental Forest. *Bulletin of the Ecological Society of America* 76(2):8
- Yanai, R.D., M.A. Arthur, T.G. Siccama and C.A. Federer. 1995. Losses of calcium and magnesium from the forest floor in northern hardwoods of New Hampshire. *Bulletin of the Ecological Society of America* 76(2):290-291
- Samuelson, L.G., M.A. Arthur, D.A. Weinstein and G. Edwards. 1994. Simulating the growth of northern red oak seedling and mature trees in response to ozone using TREGRO. 79th *Bulletin of the Ecological Society of America* 75(3):203.
- Arthur, M.A., D.A. Weinstein and B. Gollands. 1993. Predicting the effects of tropospheric ozone on the growth of mature white fir trees. *Bulletin of the Ecological Society of America* 74(3):150.
- Yanai, R.D., T.G. Siccama and M.A. Arthur. 1993. Changes in forest floor mass and nutrient content over 17 years in a northern hardwood forest. *Bulletin of the Ecological Society of America* 74(3):496.
- Woodbury, P.B., M.A. Arthur and L.H. Weinstein. 1992. Effects of gypsum on the uptake of selenium by plants growing on a closed coal fly ash landfill. *Annual Meeting of the Society of Environmental Toxicology and Chemistry, Cincinnati, OH, November 1992.*
- Arthur, M.A. and J. Gold. 1991. Elevated concentrations of selenium in alfalfa plants grown in columns with soil overlying coal fly ash. *Agronomy Abstracts* 1991:302.
- Arthur, M.A. and G. Rubin. 1991. How many trees must you core to determine basal area increment? *Bulletin of the Ecological Society of America* 72(2):40
- Arthur, M.A., T.J. Fahey and W. Wollheim. 1990. Detrital dynamics in a northern hardwood forest disturbed 23 years ago. *Bulletin of the Ecological Society of America* 71: 79.
- Arthur, M.A. and T.J. Fahey. 1989. The role of vegetation in proton flux in a subalpine/alpine watershed in north-central Colorado. *Bulletin of the Ecological Society of America* 70: 54.
- Arthur, M.A. and T.J. Fahey. 1988. Precipitation and throughfall chemistry in an old-growth *Picea engelmannii*/*Abies lasiocarpa* forest in north-central Colorado. *Bulletin of the Ecological Society of America* 69: 61.

Mentoring of Graduate Students

Dissertation director:

Zhijie Yang, PhD. Topic: Influence of disturbance and soil warming on forest soil carbon cycling in Chinese fir plantations. Current.

Todd Rounsaville, PhD. 2017. Topic: Invasion dynamics of the exotic liana *Euonymus fortunei* (Turcz.) Hand.-Mazz. (wintercreeper)

Megan Poulette, Ph.D. 2012. Topic: Spatial patterning of the effects of savanna trees and exotic species on soil nutrient and C cycling and soil biota
Matthew Weand, Ph.D. 2010. Topic: Interactions between N and P cycling and microbial communities in northern hardwood forests
Heather Alexander, PhD. 2009. Topic: Oak regeneration failure: Impacts on N cycling and effects of prescribed fire
Erin Hladilek, co-advised with Dr. John Obrycki, 2008

Thesis director:

Jordan Winkenback, MS. Topic: Long-term vegetation response to repeated prescribed fire on the Cumberland Plateau.
Devin Black, MS. 2017. Topic: Managing upland oak forests with disturbance and the implications for non-native species invasions.
Zach Poynter, MS. 2017. Topic: Vegetation response to repeated prescribed burning and varied wildfire severity in upland forests on the Cumberland Plateau, Kentucky
Suraj Upadhaya. 2015. Topic: Using remotely sensed data to evaluate the ecological and economic impacts of wildfire in the Daniel Boone National Forest, Kentucky. Co-advised with Marco Contreras
Abe Levin-Nielsen, co-advised with Songlin Fei, 2012
Heather Wilson, MS. 2011. Topic: Plant community response to Amur honeysuckle removal in Bluegrass urban remnant forests
Jacob Royse. 2008. Establishment and development of hardwood seedlings in response to prescribed fire in a central Appalachian forest.
Marty Acker. 2006. Base cation concentration and content in litterfall and woody debris across a northern hardwood forest chronosequence.
Eric Fabio. 2006. Influence of moisture regime and tree species on nitrogen cycling and decomposition dynamics in deciduous forests of Mammoth Cave National Park, Kentucky, USA.
Tara Littlefield (Co-advised with Chris Barton). 2007. Carbon and nutrient dynamics in regenerating forests within the eastern Kentucky coal fields.
Stephanie Green. 2005. The effects of prescribed fire on stand structure, canopy cover and seedling populations in oak dominated forests on the Cumberland Plateau, KY.
David Lyon. 2004. Persistent effects of eastern redcedar on calcareous glade soils and plant community.
Elizabeth Loucks. 2004. The effects of landscape scale prescribed fire on fuel loading and tree health in an Appalachian hardwood forest, Kentucky.
Jyh-min Chiang. 2002. Prescribed fire effects on understory light environment and seedling performance of oak and red maple in eastern Kentucky.
Greg S. Newman. 2002. Carbon allocation and interannual variation in net primary production in a temperate mixed deciduous forest.
Linda Kuddes-Fischer. 1999. Response of understory vegetation and tree regeneration to a single prescribed fire in an oak-pine ecosystem.
Carol S.M. Washburn 1999. Tree species effects on soil nutrient availability and the response to fire in an oak-pine forest.
Beth Blankenship. 1997. Response of eastern white pine, soil nutrients and microbial biomass to prescribed fire in the Red River Gorge.
Laurie Taylor. 1996. An assessment of microbial biomass across a northern hardwood forest successional sequence.
Yating Wang. 1996. Effects of four weed management strategies on soil microbial biomass and nutrients in a Christmas tree plantation.

Post-doctoral fellow:
Ryan McEwan, 2006-2008.

Non-thesis M.S. degrees directed:

Nic Williamson, MS. Topic: Improving awareness of the ecological, social, and economic importance of urban trees on the University of Kentucky campus.

Greg Abernathy, 1999.

Heather Housman. 2001.

Amy Thompson. 2000.

Graduate Committee member, PhD

Brittany Adam, Engineering; Tom Coleman, Entomology; Hannah Harris, Forestry; Janet Lensing, Entomology; Chris Strohm, Entomology; Madhu Srinivisan, Biology; Shawn Lucas, Soils Program; John Davenport, Geography; Kelton Welch, Entomology; Elihu Levine, U. of Louisville; Jann Fry, Biology;

Graduate committee member, MS: 8

Outside examiner for PhD dissertation defense: 3

Professional Activities

Editorial, Reviewing and Professional Society Responsibilities

Associate Editor:

Canadian Journal of Forest Research, 2017-present

Biogeochemistry, 2011-2013

Ecology, 2006-2009

Soil Science Society of America Journal, 2004-2010

Forest Science, 2001-2005

Journal of Environmental Quality, 1995-1998

Panelist:

National Science Foundation grant panel, March 2014

Department of Energy panel, Ecosystem Sciences, January 2012

JFSP panel, January 2012

National Science Foundation, Ecosystems Grant Panel

National Science Foundation, Field Stations and Marine Laboratories

U.S. Environmental Protection Agency, Peer Review Panel for STAR Fellowships

National Science Foundation, Ecological Studies Grant Panel, October 2002

U.S. Environmental Protection Agency, Peer Review Panel for Ecological Indicators

Member, American Institute of Biological Sciences (AIBS) Nominating Committee, 2002.

Ad hoc Proposal Reviews:

National Science Foundation, 10/00, 10/01, 4/03, 9/03, 3/04, 10/04, 3/05, 10/07

USDA-NRI, 4/05.

Austrian Science Fund, 10/04

External reviewer for tenure/promotion: 2-3/year

Peer review teams:

National Science Foundation, Peer review of H.J. Andrews Forest Long Term Ecological Research site, Corvallis, OR. August 2011.

National Science Foundation, Peer review of H.J. Andrews Forest Long Term Ecological Research site, Corvallis, OR. July 2005.

Bent Creek Experimental Forest, USDA Forest Service, Technical Assistance Visit, December 6-7, 2004.

U.S. Environmental Protection Agency, Peer Review Team to review research plan for a proposed E.P.A. research project, Corvallis, OR. July 1999.

Manuscript reviewer for: *Biogeochemistry, Bioscience, Canadian Journal of Botany, Canadian Journal of Forest Research, Ecological Applications, Ecological Monographs, Ecology, Forest Ecology and Management, Forest Science, Journal of Ecology, Journal of the Torrey Botanical Society, Soil Science Society of America Journal.*

Book Reviewer:

Yale University Press: *Science Writing*, Robert Goldbort. (2004, 2005)

John Wiley and Sons: *Forest Ecology*, Barnes, B.V., D.R. Zak, S.R. Denton and S.H. Spurr. (1997)

Judge: Ecological Society of America Buell Award for Best Student Poster, 1995, 1996, 1998

Invited Presentations and Seminars

William H. Martin Appalachian Research Symposium, Key note presentation, June 2019

Fujian Normal University, Fujian Province, China, August 2016

Fujian Normal University, Fujian Province, China, June 2012

Wildflower weekend, Keynote address, Natural Bridge State Park, May 2012

Miami University of Ohio, Department of Biology, Oxford, OH, April 2012

Tiachung University, Taichung, Taiwan, March 2011

Taiwan University, Taipei, Taiwan, March 2011

Dunghua University, Dunghua, Taiwan, March 2011

North American Forest Ecology Workshop, Richmond, VA, June 2011

Kentucky Prescribed Fire Council, First Annual Meeting, Greenville, KY, September 2009

Kentucky Prescribed Fire Council, June 2008.

Virginia Tech, Department of Forestry. November 2007.

Eastern Kentucky University, Department of Biology. September 2006.

Centre College, Department of Biology, Centre, Kentucky. March 2006.

Alabama A&M University, Department of Forestry. January 2006.

Northern Kentucky University, Department of Biology. November 2004.

University of Louisville, Department of Biology. 2002.

Eastern Kentucky University, Department of Biology. 2002.

Ohio University, Department of Environmental and Plant Biology. 2002.

Colorado State University, Natural Resources Graduate Student Colloquium. 2001.

Institute of Ecosystem Studies, Millbrook, NY. 2000.

Ohio State University, Dept. of Evolution, Ecology, and Organismal Biology, 2000.

Third International Conference on Long-Term Ecological Research in East Asia-Pacific Region in Seoul, Korea, 1999

University of Northern Iowa, Department of Biology. 1999.

Bryn Mawr, Environmental Sciences Group. 1999.

Cornell University, Department of Natural Resources. 1999.

University of Illinois, Department of Biology. 1995.

University of New Hampshire, Department of Natural Resources. 1994.

University of Louisville, Biology Department. 1994.

Institute of Ecosystem Studies, Millbrook, NY. 1993.

Professional Affiliations

Ecological Society of America, Soil Science Society of America, Society of American Foresters.

Professional Service

Extramural Advisory Committees:

- Member, Advisory Board of the USDA-USDI Joint Fire Science Program-funded Consortium of Appalachian Fire Managers and Scientists, 2015-present.
- Member, Steering Committee member for the 2015 5th Fire and Oaks conference, held in Alabama, 2015.
- Prescribed Fire Task Force, Convened by the Kentucky Division of Forestry, 2001- 2003.
- Steering Committee, Conference on "Fires, People, and the Central Hardwood Landscape," held March 12-14, 2000.
- Natural Areas Scientific Advisory Committee, Bernheim Arboretum and Research Forest, Bardstown, KY. 1999-2003.
- Research Advisory Committee, National Outdoor Leadership School, Lander, WY. 1990-2001.
- Advisory Board, Raven Run Nature Sanctuary, Lexington, KY. 1994-1997

Presentations and trainings:

- Fire Ecology module of the National Advanced Silviculture Program, Morehead, KY, May 2015.
- Invited presentation, KY-TN Prescribed Fire Council Meeting, July 2016.
- Invited presentation: 5th Fire in Eastern Oaks Conference, Tuscaloosa, Alabama, May 2015.
- Fire Ecology module of the National Advanced Silviculture Program, Mountain Module, May 2015.
- Timber Quality Workshop, Oak Woodlands and Forests Fire Consortium, October 16-7, 2013, Poplar Bluffs, MO.
- Workshop on Ecological Burning (Rx 301), September 24, 2011, Greenville, KY.
- Cumberland Plateau Prescribed Fire Workshop, August 11-13, 2008. Planned, organized and convened two-day workshop with Daniel Boone National Forest partners, held at Natural Bridge State Park.
- Fire ecology in upland oak ecosystems. Presentation for USFS NASP training, June 2008, Asheville, NC.
- Fire and oak ecosystems on the Cumberland Plateau. Training presentation for Rx-310, *Introduction to Fire Effects* class, December 5, 2007, London, KY.
- Fire ecology and management in the Cumberlands. Presentation to the *Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains* conference, Knoxville, TN, November 13-14, 2007.
- Prescribed fire and oak regeneration, Presentation to Oak Regeneration and management, Professional Forestry Workshop, October 3-4, 2007, Lexington, KY.
- Fire ecology and research in Appalachian hardwood forests. One-day presentation as part of the US Forest Service PASS (Program of Advanced Silvicultural Studies) Training, Mountain Module Section, May 2006, Asheville, NC.
- Fire ecology and management in the central hardwood forest. Two-day presentation as part of the US Forest Service PASS Training, June 2004, Asheville, NC.
- Fire and oak regeneration in the central Appalachians. Presented to the Joint Fire Science Program Annual Scientists Meeting, Phoenix, AZ, March 2003.
- Prescribed fire effects in oak-pine forests. Presented to East Kentucky Chapter, Society of American Foresters, September 2001.

Other professional recognition

- Faculty Futures Award. An incentive award from the University of Kentucky, College Agriculture recognizing achievement and potential in research and leadership. 2005.

TEACHING AND ADVISING

Courses taught (see Teaching Portfolio for teaching evaluations)

- A&S 100 Pathways and Barriers to Sustainability, 2cr, 2014, 2015
- A&S 100 Real-World Sustainability, 1 cr, 2015, 2016
- FOR 340 Forest ecology, 3 credits, undergraduate, 1993-1996, 1998, 2000, and 2002-2018
- FOR 375 Dendrology and ecology, 1 credit, undergraduate forestry summer camp
1993, 1994, 1995, 1996, 1998
- NRE 471 Senior problem in natural resources, 3 credits, undergraduate, 1993-1999, 2001, 2003,
2004, 2011, 2013-2016
- NRE 201 Introduction to Natural Resources and Environmental Science, 2 credits, undergraduate,
2017, 2018
- FOR 612 Forest ecosystem dynamics, 3 credits, graduate, 1994, 1997, 1999, 2001, 2003,
2005
- FOR 620 Biogeochemistry; 3 credits, graduate, 1994
- FOR 770 Graduate seminar, 1 credit, graduate, 1998, 2004, 2010, 2011, 2012
- FOR620 Graduate seminar, 2 credits, Complex ecology, 2005, co-taught with Dr. David
Wise, Entomology

UNIVERSITY SERVICE

Committee Assignments

Department of Forestry

Graduate Committee, 1994-1999, 2002-2005, 2007-2009, 2011-2013, 2017-2019.

Advisory Committee to the Chair on faculty review, 2000-2001, 2004, 2010, 2011.

Search Committee Chair, Restoration Ecologist Position. 1997-1998.

Search Committees

Forest Economist, 2016

Landscape Forest Ecologist, 2013-2014

Forestry Department Chair, 2010

Silviculture, 2007

Forestry and Natural Resources Economics, 2005.

Forestry Department Chair, 2002-2004.

Forest Hydrologist Position, 1997-1998.

Robinson Forest Director Position, 1995-1996.

Silviculture Extension Position, 1995.

Forest Hydrologist position, 1994

College of Agriculture

CAFE Promotion and Tenure committee, 2017-2018

Search Committee, Associate Dean of Research, 2014

Carrie Casner Fellowship review: 2015, 2016, 2017

Planning Committee for Natural Resources and Environmental Sciences, 2007-2009

College of Agriculture Review Committee, 2007

Tracy Farmer Center for the Environment Science Advisory Committee, 2006-2007

Agriculture Faculty Council, 2005-2007

Agronomy Department, Faculty Search Committee, 2005

Periodic Review Committee, Department of Landscape Architecture, 2004-2005

Proposal reviewer, Precision Resource Management Committee grants, 2004 and 2005.
College of Agriculture Strategic Planning Committee, 2003.
College Advisory Committee on Appointment, Promotion and Tenure. 2001-2002.
Search Committee, Associate Dean of Research, 2001.
Natural Resources Conservation and Management Coordinating Committee. 1993 to present. This committee is responsible for guiding the curriculum for the NRC major.
Professional Development Committee, 1997-2001. This committee was charged with guiding professional development activities to assist faculty in developing excellence in instructional programs.
SB 271 Advisory Committee, 1997 to 1999. This committee was responsible for making recommendations to the Associate Deans of Agriculture regarding dissemination of funds from the Senate Bill 271 Water Quality Program. Work entailed reviewing proposals and progress reports, convening a symposium, and guiding future funding agendas.
Review of upper-class scholarship applications, 1998.
Gamma Sigma Delta Outstanding Graduate Student Award Committee, 1999.
Committee to Review GEN 100 and 200, 1999. This committee of eight faculty from throughout the College of Agriculture was charged with the task of evaluating two courses required of all Agriculture majors since 1994.

Other Committees

University Undergraduate Council, 2014-2016
University Senate, 2011-2013, 2013-2016; Senate Academic Programs Committee
Chair, Biological Sciences Academic Area Committee, 2011-2012.
Biological Sciences Academic Area Committee, 2006-2008, 2010-2012
Review committee, Women in Underrepresented Areas Fellowships, 2005-2007.
UK Task Force on Sustainability, 2004. Subcommittee chair, Transportation Subcommittee.
Graduate Council Committee on Fellowships and Traineeships, 2004.
Tracy Farmer Center for the Environment, Director Search Committee, 2002.
University Senate, 2001-2003. Structure and Organization Committee.
Center for Ecology, Evolution and Behavior Executive Committee, 1997 to 1998.
Search Committee, Evolutionary Biologist position, Morgan School of Biological Sciences. 1997.
Ad hoc committee to develop a management plan for the Ecological Research Facility (ERF), Morgan School of Biological Sciences. 1996-1997.

Christopher Barton

CURRICULUM VITAE

CHRISTOPHER DOUGLAS BARTON

Department of Forestry
University of Kentucky
203 Thomas Poe Cooper Bldg.
Lexington, KY 40546-0073
Phone: 859.257.2099
email: barton@uky.edu

EDUCATION:

Ph.D. 1999. Soil Science, University of Kentucky
Dissertation: Colloid Enhanced Transport and Desorption of Contaminants Through Macropores in Kentucky Soils.

M.S. 1997. Plant and Soil Sciences, University of Kentucky
Thesis: Water Quality and Mineralogical Attributes of a Constructed Wetland Treating Acid Mine Drainage.

B.S. 1989. Centre College, Danville, Kentucky

PROFESSIONAL EXPERIENCE:

Professor of Forest Hydrology and Watershed Management, University of Kentucky, Department of Forestry, July 2013 to present. DOE: 75% research; 25% teaching (DOE 2015 to 2018: 50% research; 50% administrative)

President and Founder, Green Forests Work. 501(c)3 organization established to reforest land affected by surface mining in Appalachia. 2009 to present.

Director of the University of Kentucky Appalachian Center, July 2015 to June 2018.

Sabbatical Leave, University of Kentucky, March 15 – August 16, 2012. University of South Australia, Australian CRC CARE (Cooperative Research Centre for Contamination Assessment and Remediation of the Environment) and at coal mines operated by Peabody Energy in Queensland and New South Wales.

Associate Professor of Forest Hydrology and Watershed Management, University of Kentucky, Department of Forestry, July 2008 to June 2013. DOE: 75% research; 25% teaching.

Assistant Professor of Forest Hydrology and Watershed Management, University of Kentucky, Department of Forestry, January 2003 to June 2008. DOE: 75% research; 25% teaching.

Adjunct Professor, University of Louisville, Biology Department, January 2004 to present.

Adjunct Professor, South Carolina State University, Biology Department, January 2000 to 2006.

Research Hydrologist, USDA Forest Service, Southern Research Station, Center for Forested Wetland Research, Charleston, SC. Stationed at US DOE Savannah River Site, SC. January 2002 to January 2003.

Postdoctoral Research Soil Scientist, Southern Research Station, Center for Forested Wetland Research, Charleston, SC. Stationed at US DOE Savannah River Site, SC. February 1999 to January 2002.

Research and Teaching Assistant, University of Kentucky, September 1994 to January 1999.

Chemist and Field Technician, Fouser Environmental, Versailles, KY, January 1990 to June 1994.

CURRENT RESEARCH:

Crocker, M, E. Santillan-Jimenez, I. Escobar, C. Agouridis, C. Barton, T. Mark, S. DeBolt, L. Moe and J. Landon. 2019-2024. NRT: IN FELLOWS & an Academy of Innovators at the Nexus of Food, Energy & Water Systems. National Science Foundation. \$2,998,456. Barton-coI.

Barton, C.D. and K. Sena. 2018-2019. Water for the Future: Upgrading the Robinson Forest stream monitoring network to improve quality and accessibility. National Science Foundation. \$166,140. Barton-PI.

Agouridis, C., E. Crocker, L. Thomas, M. Springer, W. Sanderson, A. Gumbert, C. Barton, C. Belton, P. Long and D. Stamper. 2018. Kentucky Master Naturalist: Promoting Environmental Stewardship through Student and Volunteer Training. UK Sustainability Challenge Grant. \$14,257
Barton-coPI.

Christopher Barton and Carmen Agouridis. 2017-2020. Restoring Headwater Streams and Riparian Corridors at the Savannah River Site, SC. USDA Forest Service. \$16,848. Barton-PI.

Christopher Barton, Tanja Williamson, Carmen Agouridis and Kevin Yeager. 2016-2019. Evaluating the Influence of the Forestry Reclamation Approach on Water Quality and Hydrology on Appalachian Coal Mines. USDI-OSMRE Applied Science Program. \$195,490. Barton-PI.

C.D. Barton, K. Sena, G. Bell, P. Angel and M. French. 2015-2016. Establishing Native Forests on Surface Mines in a Time of Climate Change. University of Kentucky Sustainability Challenge Grant program. \$18,175. Barton-PI.

C.D. Barton, J. Franklin and M.E. French. 2015-2017. Restoring forests and wildlife habitat on Surface Mines in KY and TN. Appalachian Forest Renewal Initiative, National Fish and Wildlife Foundation. \$149,000. Barton-PI.

J.M. Lhotka, C.D. Barton, and J.W. Stringer. 2015-2017. Effect of grading technique on forest productivity of high-value tree species in reforested surface mine lands. USDI-OSMRE Applied Science Program. \$221,048. Barton-PI.

T. Fearer, C. Barton, M. French, T. Horn (and others). 2015 – 2020. Cerulean Warbler Appalachian Forestland Enhancement. USDA NRCS – Regional Conservation Partnership Program. \$8,000,000. (Approximately \$1,000,000 toward mine reforestation work overseen by Barton). Barton-co PI.

C.D. Barton. 2015-2020. Water resources in a time of climate change. University of Kentucky Agricultural Experimental Station - McIntire-Stennis Program. Barton-PI.

C.D. Barton and J.W. Stringer. 2014-2016. Restoring forests and wildlife habitat at Robinson Forest. Appalachian Forest Renewal Initiative, National Fish and Wildlife Foundation. \$140,000. Barton-PI.

C.D. Barton. 2013-2015. Green Forests Work for Appalachia: Phase II Implementation. Appalachian Regional Commission, \$300,000. Barton-PI.

C.D. Barton, C. Cotton and A.D. Karathanasis. 2011-2014; 2015-2018. Evaluation of acidic atmospheric deposition and its influence on soil solution composition in the Daniel Boone National Forest. USDA Forest Service, \$91,597. Barton-PI

C.D. Barton, S. Eggerud, S. Jones, E. Burks and P. Angel. 2013-2014. Mower Tract Ecological Restoration Project. American Rivers, \$225,000. Barton-PI

C.D. Barton. 2011-2012. Green Forests Work for Appalachia: Phase I Development and Deployment. Appalachian Regional Commission, \$300,000. Barton-PI.

R. Warner, C. Barton, C. Agouridis, J. Unrine. 2011-2013. Appalachian Research Initiative for Environmental Science. Virginia Tech. \$340,239 (\$53,357 sub award to Barton). Barton-co-PI and PI.

C.D. Barton and D.E. Fletcher. 2010-2014. Assessment of Structure, Function and Stability in a Gradient of Disturbed SRS Streams - Phase III. USDA Forest Service, Cooperative Research Grant, \$313,117. Barton-PI.

C.T. Agouridis, C.D. Barton, R.C. Warner, A.A. Gumbert, and S.F. Higgins. 2010-2013. Development and Implementation of Stream Restoration and Riparian Corridor Techniques for Enhancing Water Quality in the Cane Run Watershed. USDA NRCS, \$360,000. Barton co-PI and PI.

Subprojects:

1. C.T. Agouridis, R.C. Warner, C.D. Barton, and S.F. Higgins. Evaluating the Effectiveness of Weep Berm Systems for Treating Runoff from the Composting of Horse Muck: \$216,268.
2. C.D. Barton, C.T. Agouridis and S.F. Higgins. Control and Treatment of Runoff from a Muck Storage Pad using a Permeable Containment Basin and Phytotechnologies: \$109,782.
3. C.T. Agouridis, S.F. Higgins and C.D. Barton. Examining the Effects of Stream Restoration and Riparian Buffer Development on Water Quality of a Small Spring-fed Stream: \$15,428.

C.T. Agouridis, R.C. Warner, C.D. Barton and T.C. Dowdy. 2010-2012. Use of GIS and WATER Model to Identify and Delineate Stream Types in Eastern KY. USDA-National Institute of Food and Agriculture (NIFA), Precision Agriculture: Precision Resource Management, \$48,200. Barton co-PI.

B. Lee and C.D. Barton. 2010-2012. Determining Landscape Areas for Targeted Reforestation Efforts. USDA-National Institute of Food and Agriculture (NIFA), Precision Agriculture: Precision Resource Management, \$45,051. Barton co-PI.

C.D. Barton. 2011-2012. Continued Monitoring of American Chestnuts on Surface Mines in KY. The American Chestnut Foundation, \$5,000. Barton-PI.

D.E. Fletcher and C.D. Barton. 2010 – 2012. Stream System Field Condition Assessment at the Savannah River Site – Phase II. American Recovery and Revitalization Act (administered by USDOE), \$315,000 (\$56,024 subcontract to UK). Barton PI.

C.D. Barton. 2009 -2010. Long-Term Effects of Forestry Best Management Practices on Hydrology, Water Chemistry and Woody Debris in Three Appalachian Headwater Catchments. USDA Forest Service, Cooperative Research Grant, \$14,000 (extension through 2012 and \$6,711 in additional funds). Barton-PI.

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P.D.S. Guimaraes, J. Hartman and C.D. Barton. 2007-2008. Survey for *P. ramorum* in Kentucky Watersheds. USDA Forest Service, Cooperative Research Grant, \$21,000. Barton co-PI.

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C.D. Barton and C. Agouridis. 2006-2009. Evaluating Post-Mined Land Reforestation Through the Spatial Assessment of Soil Genesis. CSREES, Precision Agriculture: Precision Resource Management, \$65,242. Barton-coPI.

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C.D. Barton, C.C. Rhoades and R.K. Kolka. 2004-2007. Hyporheic Zone Development and Water Quality Improvement in a Restored Riparian Area. USDA Forest Service, Cooperative Research Grant, \$100,080. Barton-PI. (extension through 2008).

C.D. Barton, J.W. Stringer, S.A. Grubbs and R.K. Kolka. 2003-2005. Effect of Riparian Zone Width and Disturbance on Water Quality and Stream Communities Following Forest Harvest in Eastern Kentucky Watersheds. Commonwealth of Kentucky, SB 271 Funds, \$185,172. Barton co-PI (\$22,000 extension through 2006).

C.D. Barton. 2005-2010. Evaluating Streamside Management Zone Effectiveness in Forested Headwater Catchments of Central Appalachia. University of Kentucky Agricultural Experimental Station - McIntire-Stennis Program. Barton-PI.

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PUBLICATIONS: (underline indicates student, technician or postdoctoral fellow who participated under my supervision)

Refereed Journal Publications: (*jif* = journal impact factor from Journal Citation Reports®, published by Thomson Scientific)

Kenton Sena, Joshua Metzmeier, Brandon Smith, Beth Hansen, and **Chris Barton**. Climate Change and Invasive Species: Challenges and Opportunities for Forest Establishment on Appalachian Surface Mines. *Journal of Sustainable Forestry*. Accepted for publication May, 2020.

Hutton, J. M., Price, S. J., Bonner, S. J., Richter, S. C., and **Barton, C. D.** Occupancy and Abundance of Stream Salamanders Along a Specific Conductance Gradient. *Freshwater Science*. Accepted for publication April, 2020.

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De Sa, P.B., A. Bateman, J. Hartman, **C. Barton**, R. Patel and K. Adank. 2007. Early detection survey for Phytophthora ramorum in Kentucky. Research Report of the Nursery and Landscape Program. Agricultural Experiment Station. University of Kentucky. PR-554. pp. 24-26.

French, M.E., **C.D. Barton**, D. Graves, F.V. Hebard, S. Fei and K. Adank. 2007. Can surface mine reclamation help to restore American Chestnut? Reclamation Matters: 4(2): 24-28.

Sweigard, R., J. Burger, C. Zipper, J. Skousen, **C. Barton** and P. Angel. 2007. Low Compaction Grading to Enhance Reforestation Success on Coal Surface Mines. U.S. Office of Surface Mining. Forest Reclamation Advisory Number 3. 6 p. <http://arri.osmre.gov/fra.htm>.

Sweigard, R., J. Burger, D. Graves, C. Zipper, **C. Barton**, J. Skousen, and P. Angel. 2007. Loosening Compacted Soils on Mined Sites. U.S. Office of Surface Mining. Forest Reclamation Advisory Number 4. 4 p. <http://arri.osmre.gov/fra.htm>.

Groninger, J., J. Skousen, P. Angel, **C. Barton**, R., J. Burger, and C. Zipper. 2007. Mine Reclamation Practices to Enhance Forest Development Through Natural Succession. U.S. Office of Surface Mining. Forest Reclamation Advisory Number 5. 5 p. <http://arri.osmre.gov/fra.htm>.

Graves, D, **C.D. Barton**, P. Angel and L. Keene. 2006. Reclaiming the Future: Reforestation in Appalachia. UK Extension Pub. DFR-0074. DVD, 29.30 min.

Graves, D, **C.D. Barton**, R. Sweigard, R. Warner and C. Agouridis. 2006. Carbon Sequestration on Surface Mine Lands: Final Report 2003-2006. Department of Energy, Award #: DE-FC26-02NT41624 ESH-ERP. 108 pp.

Barton, C.D. 2006. The Carolina Bay Restoration Project: Status Report II 2000-2004. 2006. US Department of Energy DE-A109-00SR22188US. Department of Energy's Information Bridge: <http://www.osti.gov/servlets/purl/886951-4L0FF4/>. 39 pp.

Barton, C.D., D. Marx, J. Blake, D. Adriano, B.J. Koo and S. Czapka. 2003. 488-D Ash Basin Vegetative Cover Treatability Study. US Department of Energy DE-A109-00SR22188. US Department of Energy's Information Bridge: <http://www.osti.gov/servlets/purl/835125/>. 66 pp.

Barton, C.D. 2003. The Carolina Bay Restoration Project: Status Report 2000-2002. Westinghouse Savannah River Company Pep. No, ESH-ERP-2003-00352. Westinghouse Savannah River Company, Aiken, SC 29802, 61 pp.

Barton, C.D. 2001. The Carolina Bay Restoration Project: SRS Wetland Mitigation Bank Document. Westinghouse Savannah River Company Pep. No, ESH-ESS-2002-00028. Westinghouse Savannah River Company, Aiken, SC 29802, 104 pp.

Seaman, J.C., **C.D. Barton**, and J. Blake. 2000. F- & H - Area tritium application to forested soils: Estimated radionuclide and metal loading rates. Rep. No. SREL-58. Westinghouse Savannah River Company, Aiken, SC 29802, 18 pp.

Barton, C.D., and A.D. Karathanasis. 1997. Ameliorative designs to improve the efficiency of constructed wetlands treating high metal load acid mine drainage in the Rock Creek watershed. Final Report to Kentucky Department for Environmental Protection, Division of Water. Frankfort, KY, 94 pp.

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PROFESSIONAL PRESENTATIONS/ABSTRACTS:

Barton C.D. 2019. "Bringing Back the Forest: Reforestation of Coal Mines Provides New Opportunities." Central Queensland Mining Rehabilitation Group, Dysart, Australia. October 24, 2019 (*invited presentation*)

Lambert, Michaela, **Christopher Barton**, and Steven Price. 2019. "Evaluation Artificial Wetland Effectiveness Using Amphibians as Indicators of Habitat Quality on a Reforested Surface Mine in the Monongahela National Forest, West Virginia." Presentation at Ecological Society of America annual meeting, Louisville, KY, August 11-16.

Drayer, Andrea, Michaela Lambert, **Christopher Barton**, and Steven Price. 2019. "Evaluation Artificial Wetland Effectiveness Using Amphibians as Indicators of Habitat Quality on a Reforested Surface Mine in the Monongahela National Forest, West Virginia." Oral Presentation at Appalachian Regional Reforestation Initiative (ARRI) Annual Meeting, Cambridge, Ohio, July 24-25.

Gerlitz, Morgan, **Christopher Barton** and Carmen Agouridis. 2019. "Evaluating the influence of the forestry reclamation approach on the hydrology of Appalachian coal mined lands." Oral Presentation at Appalachian Regional Reforestation Initiative (ARRI) Annual Meeting, Cambridge, Ohio, July 24-25.

Sena, Kenton, Kevin Yeager, John Lhotka, and **Chris Barton**. 2019. "Development of Mine Soils in a Chronosequence of FRA-reclaimed sites in Eastern Kentucky." Oral Presentation at Appalachian Regional Reforestation Initiative (ARRI) Annual Meeting, Cambridge, Ohio, July 24-25.

Kenton Sena, Michael French, and **Chris Barton**. 2019. "Revisiting Carbon Sequestration Potential on Appalachian Legacy Mines: Review and Synthesis." Oral presentation at the joint meeting of the National Association of Abandoned Mined Land Programs (NAAML), the National Association of State Land Reclamationists (NASLR) and Pennsylvania's Annual Conference on Abandoned Mine Reclamation (PA AMR), Pittsburgh, PA, Sept 9 – 11.

Sarah L. Hall, **Christopher D. Barton**, Patrick N. Angel, and Kenton Sena. 2019. "Reforestation of Appalachian surface mines from seed: A black walnut pilot study." Poster Presentation at Ecological Society of America annual meeting, Louisville, KY, August 11-16.

Sena, Kenton, Kevin Yeager, John Lhotka, and **Chris Barton**. 2019. "Development of Mine Soils in a Chronosequence of FRA-reclaimed sites in Eastern Kentucky." Oral Presentation at American Society of Mining and Reclamation Annual Meeting, Big Sky, Montana, June 3-7.

Sena, Kenton, Kevin Yeager, Tyler Dreaden, and **Chris Barton**. 2018. "Phytophthora cinnamomi colonized reclaimed mined sites in eastern Kentucky." Poster presentation at Appalachian Regional Reforestation Initiative annual meeting, Indiana, PA, August 8-9.

Sena, Kenton, Joseph Frederick, Carmen Agouridis, and **Chris Barton**. 2018. "Spoil type influences soil development and tree growth after ten years." Poster presentation at Appalachian Regional Reforestation Initiative annual meeting, Indiana, PA, August 8-9.

C.D. Barton. 2018. Bringing Back the Forest: University Outreach, Community Engagement, and Partnerships for the Reforestation of Coal Mines in Appalachia. Centre College Convocation. Danville, KY. April 11, 2018. (*invited presentation*)

C.D. Barton. 2017. Restoring red spruce ecosystems on the Monongahela National Forest. Annual meeting of the American Society of Mining and Reclamation. Morgantown, WV. April 9-13, 2017.

C.D. Barton. 2017. Forest restoration at the Flight 93 National Memorial. Earth Day Celebration at the Flight 93 National Memorial, Shanksville, PA. May 19, 2017.

Sena, Kenton, Ellen Crocker, Tyler Dreaden, Chase Clark, and **Chris Barton**. 2017. "Tracking a Tree-killer: Detecting *Phytophthora cinnamomi* in Appalachian forests." Oral presentation at Soil Science Society of America Annual Meeting, Tampa, FL, October 22-25.

Teagan Dolan and Chris Barton. 2016. Long-term Evaluation of Reforestation Success on an Appalachian Surface Coal Mine. National Council on Undergraduate Research. Asheville, NC. April 7-9, 2016.

C.D. Barton. 2015. Challenges for restoring forests on surface coal mines in a time of climate change. Cleanup15. Melbourne Australia. September 13-16, 2015. (*invited Keynote presentation*)

C.D. Barton. 2015. From Butcher Holler to Monkey Broke Creek: Restoring forests on surface coal mines. University of Newcastle Workshop. Newcastle, Australia. September 18, 2015. (*invited presentation*)

C.D. Barton, T.R. Littlefield, C. Hoy and C. Agouridis. 2015. Hydrologic Characterization of Three Headwater Wetlands in Southeastern Kentucky, USA. ASABE Annual International Meeting. New Orleans, LA. July 26-29, 2015 (*invited presentation*)

Whitney Blackburn-Lynch, C. Agouridis, **C. Barton,** and R. Warner. 2015. Impacts of Flooding on Forested Headwater Streams. ASABE Annual International Meeting. New Orleans, LA. July 26-29, 2015

C.D. Barton. 2015. From Butcher Holler to Monkey Broke Creek: Restoring forests on surface coal mines. 38th Council on Forest Engineering. Lexington, KY. July 19-22, 2015. (*invited presentation*)

Angel Hanna, **C.D. Barton,** M. French and P.N. Angel. 2015. Engaging the Public in Mine Land Reforestation: Volunteer Tree Planting Events in Appalachia. 2015 Joint conference of the American Society of Mining and Reclamation (32nd Annual) and the Appalachian Regional Reforestation Initiative (9th Annual). Lexington, KY June 7-11, 2015.

Elizabeth Hansen, **C.D. Barton** and A. Drayer. 2015. Climate Change and Native Forest Establishment: A Case Study from Eastern Kentucky. 2015 Joint conference of the American Society of Mining and Reclamation (32nd Annual) and the Appalachian Regional Reforestation Initiative (9th Annual). Lexington, KY June 7-11, 2015.

Tiffany Heim, **C.D. Barton,** M. French and P.N. Angel. 2015. The Appalachian Forest Renewal Initiative: Demonstrations of Legacy Mine Land Reforestation Across Appalachia. 2015 Joint conference of the American Society of Mining and Reclamation (32nd Annual) and the Appalachian Regional Reforestation Initiative (9th Annual). Lexington, KY June 7-11, 2015.

Whitney Blackburn-Lynch, C. Agouridis, **C. Barton,** R. Warner and R. Maupin. 2015. Hydrologic Assessment of a Stream Created on Mined Land. 2015 Joint conference of the American Society of Mining and Reclamation (32nd Annual) and the Appalachian Regional Reforestation Initiative (9th Annual). Lexington, KY June 7-11, 2015.

Sena, Kenton, **Chris Barton,** Patrick Angel, Carmen Agouridis, and Richard Warner. 2015. "Influence of spoil type on chemistry and hydrology of interflow on a surface coal mine in eastern Kentucky." Oral presentation at Society for Freshwater Science annual meeting, Milwaukee, WI, May 17-22.

Sena, Kenton, **Chris Barton,** Sarah Hall, Patrick Angel, Carmen Agouridis, and Richard Warner. 2014. "Influence of spoil type on afforestation on a surface coal mine in eastern Kentucky." Oral presentation at Restoring Forests: What constitutes success in the 21st century? LaFayette, IN, October 13-16.

Sena, Kenton, **Chris Barton,** Sarah Hall, Patrick Angel, Carmen Agouridis, and Richard Warner. 2014. "Influence of spoil type on afforestation on a surface coal mine in eastern Kentucky." Oral presentation at National Association of State Land Reclamationists Annual Meeting, Newburgh, NY, September 15-17.

Barton, C.B. 2014. Green Forests Work: A reforestation program for Appalachia. IUFRO- 2nd Restoring Forests Congress on 14-16 October 2014 in Lafayette, Indiana USA.

Sena, K.L., **C.D. Barton**, P. Angel, C. Agouridis, S. Hall and R. Warner. Mine spoil type influences growth of planted hardwoods and naturally colonizing understory vegetation on experimental reforestation plots in Pike County, KY. IUFRO- 2nd Restoring Forests Congress on 14-16 October 2014 in Lafayette, Indiana USA.

Adams, M.B., P. Angel, J. Burger, **C. Barton**, C. Zipper and J. Skousen. 2014. Appalachian Regional Reforestation Initiative: Defining successful reforestation of mined lands. IUFRO- 2nd Restoring Forests Congress on 14-16 October 2014 in Lafayette, Indiana USA.

Rich A. Biemiller, DE Fletcher and **CD Barton**. 2014. Evaluating the influence of disturbance on macroinvertebrate colonization and decomposition of leaf packs in Upper Coastal Plain headwater streams. Society of Ecological Restoration, Conference on Ecological and Ecosystem Restoration (CEER), New Orleans, LA, July 28-August 1.

Sarah L. Hall, **Christopher D. Barton** and Patrick N. Angel. 2014. Restoring Appalachian Surface Mines: A Black Walnut Pilot Study. Society of Ecological Restoration, Conference on Ecological and Ecosystem Restoration (CEER), New Orleans, LA, July 28-August 1.

Blackburn-Lynch, W., C.T. Agouridis, **C.D. Barton**, R.C. Warner, and T. Maupin. 2014. A Hydrologic Assessment of a Stream Created on Mined Lands. 2014 ASABE and CSBE/SCGAB Annual International Meeting, Montreal, Quebec Canada, July 13-16.

McMaine, J., C.T. Agouridis, R.C. Warner, C.D. Barton. 2014. Hydrologic Characterization of a Rain Garden Mitigating Stormwater Runoff from a Commercial Area 2014 ASABE and CSBE/SCGAB Annual International Meeting, Montreal, Quebec Canada, July 13-16.

Weatherford, M., C.T. Agouridis, **C.D. Barton**, R.C. Warner, K.L. Sena. 2014. Long-Term Hydrologic Characteristics of Loose-Dumped Mine Spoils. 2014 ASABE and CSBE/SCGAB Annual International Meeting, Montreal, Quebec Canada, July 13-16.

Sena, K.L., **C.D. Barton**, C.T. Agouridis, and R. Warner. 2014. Influence of spoil type on discharged water quality and hydrologic function of experimental reforestation plots in Pike County, Kentucky. American Society of Mining and Reclamation Meeting, Oklahoma City, OK, June 14-19.

Emma Witt, **Christopher Barton**, Jeffrey W. Stringer, Alex Cherry and Randall Kolka. 2014. Impact of forest harvest with variable streamside management zone configurations on hydrologic response in perennial headwater streams. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Christopher Barton, Emma Witt, Jeffrey W. Stringer, Alex Cherry and Randall Kolka. 2014. Influence of variable streamside management zones configurations on water quality following forest harvest. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Kevin Devine, Songlin Fei, Jeffrey W. Stringer and **Christopher Barton**. 2014. The Effect of Microsite on Invasive Species Colonization Associated with the use of Timber Harvesting BMPs. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Daniel Bowker, Jeffrey W. Stringer and **Christopher Barton**. 2014. Forest harvest equipment movement and sediment delivery to streams. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Joshua K. Adkins, **Christopher D. Barton**, Jeffrey W. Stringer and Scott Grubbs. 2014. Assessment of streamside management zone efficacy for conserving benthic macroinvertebrate communities following timber harvest in Eastern Kentucky headwater catchments. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Christopher Reeves, Jeffrey W. Stringer, Daniel Bowker, **Christopher Barton** and Carmen Agouridis. 2014. Effectiveness of Elevated Skid Trail Headwater Stream Crossings in the Cumberland Plateau. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

Thomas Maignet, John Cox, Dylan Schneider, **Chris Barton**, Steven Price and Jeffery Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. SAF-Symposium of Best Management Practice Effectiveness in the Eastern US. Blacksburg, VA. May 12-15, 2014.

McMaine, J., C.T. Agouridis, R.C. Warner, **C.D. Barton**. 2014. Hydrologic Characterization of a Rain Garden Mitigating Stormwater Runoff from a Commercial Area. Oklahoma State University Student Water Conference. Stillwater, OK, April 10-11. Awarded Honorable Mention, Outstanding Graduate Student Oral Presentation

Weatherford, M., C.T. Agouridis, **C.D. Barton**, R.C. Warner, K.L. Sena. 2014. Long-Term Hydrologic Characteristics of Loose-Dumped Mine Spoils. Oklahoma State University Student Water Conference. Stillwater, OK, April 10-11.

Barton, C.D. 2014. From Butcher Holler to Monkey Broke Creek: Restoring forests on surface coal mines. University of Kentucky-Entomology Seminar Series. Lexington, KY. March 13. (*invited presentation*)

Barton, C.D. 2014. From Butcher Holler to Monkey Broke Creek: Restoring forests on surface coal mines. SUNY-Environmental Science and Forestry Seminar Series. Syracuse, NY. February 27. (*invited presentation*)

Tyler Sanderson, **Christopher D. Barton**, Claudia A. Cotton and Anastasios D. Karathanasis. 2013. Monitoring the Influence of Acid Deposition On Soils in the Daniel Boone National Forest, Kentucky, USA. ASA, CSSA, SSSA International Annual Meeting, Nov. 3-6. Tampa, FL.

Maignet, T.A, J.J. Cox, S.J. Price, and **C. Barton**. 2013. Population ecology and habitat

preferences of timber rattlesnakes in an increasingly fragmented landscape of southeast Kentucky. Southeast Partners in Amphibian and Reptile Conservation. Annual Meeting, Feb. 21-24. McCormick, SC.

Sarah L. Hall, **Christopher D. Barton** and Patrick N. Angel. Effects of spoil type on microbial activity following surface mining in central Appalachia, USA. 5th World Conference on Ecological Restoration. Society of Ecological Restoration. Madison, WI. October 9, 2013.

Angel, H., **C.D. Barton** and P. Angel. Third-year response of survival and height growth of American chestnut on post-bond release surface mines in eastern Kentucky. 2013 National Meeting of the American Society of Mining and Reclamation, Laramie, June 1 - 6, 2013.

Kenton Sena, **Christopher Barton**, Carmen Agouridis and Richard Warner. Effect of spoil type on the chemical and hydrologic properties of experimental mine reforestation plots in eastern Kentucky. 2013 National Meeting of the American Society of Mining and Reclamation, Laramie, June 1 - 6, 2013.

Sena, K., **C. Barton**, C. Agouridis, and R. Warner. 2013. Effect of Spoil Segregation on Water Chemistry, Hydrology, and Vegetative Regrowth on a Reclaimed Mine Site. Presentation for the 2013 Kentucky Academy of Sciences Annual Conference. Morehead, KY, November 8-9.

Agouridis, C.T., A.A. Gumbert, S.F. Higgins, **C.D. Barton**, J.F. Fox, G.M. Brion, and A.E. Fryar. 2013. Promoting Environmental Stewardship through Research, Extension and Service-Based Learning Efforts in the Cane Run Watershed. 2013 Kentucky Engagement Conference, Richmond, KY, November 6.

McMaine, J.T., C.T. Agouridis, R.C. Warner, and **C.D. Barton**. 2013. Hydrologic Characterization of a Rain Garden Mitigating Stormwater Runoff from a Commercial Area. . Presentation for the 3rd Annual TFISE Research Showcase. Lexington, KY, October 9. 1st Place Graduate Student Poster.

Sena, K., **C. Barton**, C. Agouridis, and R. Warner. 2013. Effect of Spoil Type on Chemical and Hydrologic Profiles of Experimental Mine Reforestation Plots in Eastern Kentucky. ARRI (Appalachian Regional Reforestation Initiative) 2013 Conference "Mined Land Reforestation", Flatwoods, WV, August 6-7.

Agouridis, C.T., A. Gumbert, S. Higgins, **C. Barton**, J. Fox, G. Brion, and A. Fryar. Combining Research, Extension and Service-Based Learning Efforts in the Cane Run Watershed. 2013 ASABE International Meeting, Kansas City, Missouri, July 20-25.

Barton C.D. Restoring Ecosystem Services on Surface Mines in Appalachia. 5th Midwest-Great Lakes Society of Ecological Restoration Meeting. April 12, 2013. (*invited presentation*)

Barton, C.D. Effectiveness of Streamside Management Zones in Eastern Kentucky. KY Agricultural Water Quality Authority. Frankfort, Kentucky. January 24, 2013.

Barton, C.D. SMZ Effectiveness in Robinson Forest. KY BMP Board. Frankfort, Kentucky. December 11, 2012.

Maigret, T., **C. Barton**, J.J. Cox, J.L. Larkin, and D. Schneider. 2012. Impacts of different silvicultural

treatments on salamander communities in Robinson Forest, Breathitt County, Kentucky. Feb 23-24, Dewey Lake State Park, KY

Barton, C.D. The Forestry Reclamation Approach: A Regional Reforestation Initiative With Global Application. University of South Australia, Cooperative Research Centre for Contamination Assessment and Remediation of the Environment; Adelaide Australia. June 15, 2012.

Barton, C.D. The Forestry Reclamation Approach: A Regional Reforestation Initiative With Global Application. University of Queensland, Centre for Mined Land Rehabilitation; Brisbane, Australia. June 13, 2012.

Barton, C.D. The Forestry Reclamation Approach: A Regional Reforestation Initiative With Global Application. Peabody Energy Australia; Brisbane, Australia. May 25, 2012.

Agouridis, C., T. Maupin, **C. Barton**, D. Edwards, R. Warner, and M. Sama. 2012. Assessing Conductivity Sensor Performance: A Laboratory and Field Study. 2012 Southeast Regional Stream Restoration Conference, Wilmington, NC, October 15-18.

Villines, J., C. Agouridis, T. Williamson, T. Dowdy, R. Warner, and **C. Barton**. 2012. Use of GIS and WATER to Identify and Delineate Stream Types in Eastern Kentucky. 2012 Southeast Regional Stream Restoration Conference, Wilmington, NC, October 15-18.

Maupin, T.P., C.T. Agouridis, **C.D. Barton**, and R.C. Warner. 2012. Conductivity Sensor Performance. Poster# 121336913. 2012 ASABE International Meeting, Dallas, TX, July 29-August 3.

Maupin, T.P., C.T. Agouridis, **C.D. Barton** and R.C. Warner. Laboratory Evaluation of Conductivity Sensor Accuracy and Temporal Consistency 2012 National Meeting of the American Society of Mining and Reclamation, Tupelo, MS Sustainable Reclamation June 8 - 15, 2012.

Angel, H, **C.D. Barton** and P. Angel. Influence of weed mats and tree shelters on survival and height growth of American chestnut on post-bond release surface mines in eastern Kentucky. 2012 National Meeting of the American Society of Mining and Reclamation, Tupelo, MS Sustainable Reclamation June 8 - 15, 2012.

Eiche, N, and **C.D. Barton**. Long-term effectiveness of BMPs in eastern Kentucky. Society of American Foresters National Convention. Hawaii. November 2-6, 2011.

Williamson, T., J. Newson, C. Agouridis, **C. Barton**, R. Warner, J. Villines. Hydrologic Modeling of Ephemeral Stream Channels in Coal Region of Eastern Kentucky. ASA-CSA-SSSA Annual Conference; San Antonio, TX. October 16-19, 2011.

Barton C.D. Restoring Ecosystem Services on Surface Mines in Appalachia. Centre College Convocation; Danville, KY. October 18, 2011. (*invited presentation*)

Barton C.D. Restoring Ecosystem Services on Surface Mines in Appalachia. Midwest Ground Water Conference; Lexington, KY. September 20, 2011. (*invited presentation*)

Barton C.D. Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Prestonsburg, KY. September 7, 2011. (*invited presentation*)

Otte, Hillary, **C.D. Barton** and C. Agouridis. Use of rain garden technologies to control runoff from equine waste. International Phytotechnology Society Conference “Putting Plants to Work where we Live, Labor, Breathe, and Play”. Portland, Oregon; September 13-16, 2011.

Dean E. Fletcher, Garrett K. Stillings, Michael H. Paller, and **Christopher D. Barton**. Legacy disturbances and restoration potential of Coastal Plain streams. American Fisheries Society Annual Conference. Little Rock, Arkansas; September 13, 2011.

Barton C.D. Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Prestonsburg, KY. September 7, 2011. (*invited presentation*)

Hoy, C., **C. Barton** and C. Agouridis. Characterization of Headwater Seep Wetlands in Southeastern Kentucky. Joint Meeting of Society of Wetland Scientists, WETPOL (Wetland Pollutant Dynamics and Control) and Wetland Biogeochemistry. Prague, Czech Republic. July 3-8, 2011.

Barton C.D. Principles for Establishing Ecologically Successful Riparian Corridors. USEPA, USACOE, USDOJ Interagency Stream Mitigation Workshop; Lexington, KY. April 14, 2011. (*invited presentation*)

Dean E. Fletcher, Garrett K. Stillings, Michael H. Paller, and **Christopher D. Barton**. Legacy disturbances and restoration potential of Coastal Plain streams. 2011 Georgia Water Resources Conference; Athens, GA. April 11-13, 2011.

Barton C.D. Green Forests Work for Appalachia. Presentation to Executive Staff of the Appalachian Regional Commission; Washington, DC. April 7, 2011. (*invited presentation*)

Barton C.D. Restoring Ecosystem Services on Surface Mines in Appalachia. USEPA Brownfields Conference; Philadelphia, PA. April 5, 2011. (*invited presentation*)

Barton C.D. Central Appalachia in Transition and the Need for Economic Revitalization. 2011 Good Jobs, Green Jobs National Conference; Washington, DC. Feb. 8-10, 2011. (*invited presentation*)

Barton C.D. Restoring Ecosystem Services on Surface Mines in Appalachia. 2010 ASA-CSSA-SSSA Annual Meeting; Long Beach, CA. Nov. 1-4. (*invited presentation*)

E. L. Witt, **C. D. Barton**, J. W. Stringer and R. K. Kolka. Impact of Streamside Management Zone Width and Canopy Retention on Hydrologic Response Following Forest Harvest in Appalachian Headwater Streams. 2010 AWRA Annual Water Resources Conference; Philadelphia, PA, November 1-4, 2010

Barton C.D., C. Agouridis, R. Warner, K. Ward and P. Angel. Effects of FRA on water quality. 2010 Joint Mining Reclamation Conference: ASMR, ARRI. Pittsburgh, PA. June 5-11, 2010 (*invited presentation*)

Mastin, C., C. Agouridis, **C.D. Barton** and R. Warner. Water Quality Response to Headwater Stream Restoration on a Head of Hollow Fill. 2010 Joint Mining Reclamation Conference: ASMR, ARRI. Pittsburgh, PA. June 5-11, 2010

Barton C.D., D. Graves, C. Agouridis, R. Warner, J. Stringer and P. Angel. Reforestation of Surface Mines in Appalachia. 17th Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010 (*invited keynote presentation*)

Brinks, J., J.M. Lhotka and **C.D. Barton**. One year response of American sycamore (*Plantanus occidentalis*) and black locust (*Robinia pseudoacacia*) to granular fertilizer applications on a reclaimed surface mine in eastern Kentucky. 17th Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Witt, E., **C.D. Barton**, J. Stringer, D. Bowker and R. Kolka. Evaluating best management practices for ephemeral channel protection following forest harvest in the Cumberland Plateau – Preliminary findings. 17th Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

D. Bowker, J. Stringer, **C.D. Barton**, and S. Fei. GIS and GPS analysis of mobile harvesting equipment and sediment delivery to streams during forest harvest operations on steep terrain. 17th Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Patrick Angel, Carl E. Zipper, James A. Burger, and **Christopher Barton**. Restoring Forests on Coal-Mined Land: The Appalachian Regional Reforestation Initiative. Southern Regional Science Association's 49th Annual Meeting. Washington, DC. March 25-27, 2010.

Barton C.D., C. Agouridis, R. Warner and P. Angel. Reforestation of Surface Mines in Appalachia. Environmental Protection Agency (webinar). Atlanta, GA. January 6, 2010 (*invited*)

Mastin, C., C. Agouridis, **C.D. Barton** and R. Warner. Recreating a Headwater Stream on a Head of Hollow Fill. Mid-Atlantic Stream Restoration Conference. Morgantown, WV. November 3-5, 2009.

Barton C.D. Reforestation of Surface Mines in Appalachia. Appalachian Regional Commission – Executive Staff. Washington, DC. November 18, 2009 (*invited*)

Barton C.D., C. Agouridis, R. Warner and P. Angel. Reforestation of Surface Mines in Appalachia. Forum on Coal in Kentucky. Lexington, KY. November 5, 2009 (*invited*)

Barton C.D. Green Forest Works for Appalachia. United Nations Environmental Programme – Billion Tree Campaign Press Conference. New York, NY. Sept. 21, 2009 (*invited*)

Moser, L., and **C. Barton**. 2009. Carolina Bay restoration: Control of undesired hardwood competitors. Society of Wetland Scientists Annual Conference. Madison, WI. June 21 -26, 2009.

DeSteven, D., B. Sharitz and **C. Barton**. 2009. Evaluating success in passively restored depressional wetlands. Society of Wetland Scientists Annual Conference. Madison, WI. June 21 -26, 2009.

Witt, E., **C. Barton**, R. Kolka, D. Bowker and J. Stringer. Evaluating Best Management Practices for Ephemeral Channel Protection during Forest Harvest in the Cumberland Plateau-Preliminary Findings. 2009 ASABE Annual International Meeting. Reno, Nevada. June 21 – June 24, 2009

Agouridis, C., **C.D. Barton** and R. Warner. 2009. Recreating a Headwater Stream on a Head of Hollow Fill. Geomorphic Reclamation and Natural Stream Design at Coal Mines- Technical Forum. Bristol, VA. April 28-30, 2009. (*Invited*)

Warner, R., C. Agouridis and **C.D. Barton**. 2009. Modeling sediment loss on geomorphic regarded forest lands in Kentucky. Geomorphic Reclamation and Natural Stream Design at Coal Mines- Technical Forum. Bristol, VA. April 28-30, 2009. (*Invited*)

Barton, C.D., B.J. Koo, S. Maharaj and D. Graves. 2008. Carbon Sequestration on Reforested Mine Lands in the Appalachian Region of the United States. 5th International Phytotechnologies Conference. Nanjing, China. October 22-25, 2008. (*Invited Keynote Presentation*)

Koo, B.J., D. Fletcher, T. Hinton and **C.D. Barton**. Assessment of Stream Fish Mortality from Short-Term Exposure to Illite Clays used as an *In-Situ* Method for Remediating 137Cs Contaminated Wetlands. 24th Annual International Conference on Soils, Sediments and Water. University of Massachusetts at Amherst. October 20-23, 2008.

French, M. E., **C. D. Barton**, D. Graves, P. N. Angel, and F. V. Hebard. 2007. Direct-seeding versus containerized transplantation of American chestnuts on loose mine spoil in the Cumberland Plateau. USEPA and National Groundwater Association Remediation of Abandoned Mine Lands Conference. Denver, CO. October 2-3, 2008.

Roger Burke, Ken Fritz, Brent Johnson, Stephanie Fulton, and Christopher Barton. 2008. Impact of Mountaintop Mining/ Valley Fill on the Stable Carbon Isotopic Composition and Concentration of Dissolved Organic Carbon and Dissolved Inorganic Carbon in Headwater Streams. The 6th International Conference on Applications of Stable Isotope Techniques to Ecological Studies. Honolulu, Hawaii. August 25-29, 2008.

Reeves, C., J. Stringer, C. Barton and C. Agouridis. 2008. Sedimentation rates of temporary skid trail headwater stream crossings. Addressing Forest Engineering Challenges of the Future. Proceedings of the 31st Annual Meeting of the Council on Forest Engineering. Charleston, SC June 25-28.

Angel, P.N., **C.D. Barton**, R.C. Warner, C. Agouridis, T. Taylor, and S.L. Hall. Tree Growth, Natural Regeneration and Hydrologic Characteristics of Three Loose-Graded Surface Mine Spoils in Kentucky. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

Barton, C.D., D. Marx, R. Sweigard and W. Barton. Evaluating Spoil Amendment Use and Mycorrhizal Inoculation on Reforestation Success in the Eastern and Western Kentucky Coalfields. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

Adank, K.M., **C.D. Barton**, M.E. French and P. DeSa. Occurrence of Phytophthora on Reforested Loose-Graded spoils in Eastern Kentucky. 2008 National Meeting of the American Society of Mining and Reclamation, Richmond, VA, New Opportunities to Apply Our Science. June 14-19, 2008.

Reeves, C., J. Stringer, C. Barton and C. Agouridis. 2008. Sediment delivery from temporary stream crossing technologies. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Angel, P., **C.D. Barton**, R. Warner, C. Agouridis, S. Hall, R. Sweigard and D. Graves. 2007. Tree growth on loose-graded surface mine spoil in Kentucky. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

C. Cotton, **C.D. Barton** and D. Graves. 2007. Growth response of two tree species on reclaimed minelands in eastern Kentucky. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Taylor, T., C. Agouridis, R. Warner, **C. Barton**, D. Graves and P. Angel. 2007 Hydrologic and water quality characteristics of loose-graded mine spoil. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Taylor, T., C. Agouridis, R. Warner, **C. Barton**, D. Graves and P. Angel. 2007 Curve numbers for forested watersheds and loose-graded mine spoil. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Hall, S.L., **C.D. Barton** and C. Baskin. 2007. Seed Banks as restoration tools on surface-mined lands in central Appalachia. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

R. Sweigard, K. Hunt, V. Badaker, D. Graves and **C. Barton**. 2007. Physical characteristics of root growth media on reclaimed mine land and its effect on reforestation. Society of American Foresters 2007 National Convention; Portland , Oregon October 23-27.

Barton, C.D., C. Agouridis and R. Warner. 2007. Recreating a headwater stream system on a head-of-hollow fill. Mid-Atlantic Stream Restoration Conference; Cumberland, Maryland November 6-8.

Edwards, J., **C.D. Barton** and A.D. Karathanasis. 2007. Removal of Mn from an Alkaline Mine Drainage Using a Bioreactor with Different Organic Carbon Sources. ASA-CSSA-SSSA Annual Meeting; New Orleans, LA. Nov. 4-8.

Hall, S.L., **C.D. Barton** and C. Baskin. 2007. Soil Seed Banks as Catalysts for Succession on Surface-mined Lands in Central Appalachia. 92nd Annual Meeting of the Ecological Society of America. San Jose, CA. August 5-10.

Barton, C.D. 2007. Carbon Sequestration by Forests on Reclaimed Mines. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Warner, R., **C. Barton** and C. Agouridis. 2007. Mining and Mine Reforestation: Influences on Watershed Hydrology. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Adank, K.M., **C.D. Barton**, M. E. French, and P. B. de Sá. 2007. Survey of *Phytophthora* on Reclaimed Mine Land Spoils. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8.

French, M. E., **C. D. Barton**, D. Graves, P. N. Angel, and F. V. Hebard. 2007. Direct-seeding versus containerized transplantation of American chestnuts on loose mine spoil in the Cumberland Plateau. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8.

Agouridis, C. T., **C. D. Barton**, R.C. Warner, D.A. Bidelspach, G.D. Jennings, R. Osborne, and J.W. Marchant. 2007. Design of a Headwater Stream System for a Head-of-Hollow Fill. 2007 Mined Land Reforestation Conference. Abingdon, VA, August 7-8. (*Invited*)

Fritz, K., S. Fulton, B. Johnson, **C. Barton**, J. Jack, D. Word, and R. Burke. 2007. Do Post-Mining Constructed Channels Replace Functional Attributes of Headwater Streams? Proceedings: North American Benthological Societies 55th Annual Meeting, Columbia SC, June 3-7.

Michels, A., **C. D. Barton**, T. Cushing, P. Angel, R. Sweigard, and D. Graves. 2007. Evaluation of Low Spoil Compaction Techniques for Hardwood Forest Establishment on an Eastern Kentucky Surface Mine. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

French, M.E., **C.D. Barton**, D. Graves, P.N. Angel, and F.V. Hebard. 2007. Evaluation of Mine Spoil Suitability for the Introduction of American Chestnut Backcrosses in the Cumberland Plateau. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

Angel, P.N., **C.D. Barton**, R.C. Warner, C. Agouridis, R.J. Sweigard, and D.H. Graves. 2007. Tree Growth and Natural Regeneration on Loose-Graded Brown and Gray Sandstone and Mixed Sandstone/Shale Surface Mine Spoils in Kentucky: Preliminary Findings. 2007 National Meeting of the American Society of Mining and Reclamation, Gillette WY, June 2-7.

Andrews, D.M., **C.D. Barton**, R.K. Kolka, and C.C. Rhoades. 2006. Hyporheic zone development and water quality improvement in a restored riparian area. Annual Conference of the Geological Society of America, Philadelphia, PA. October 22-25.

Angel, P.N., D.H. Graves, **C.D. Barton**, R.C. Warner, P.W. Conrad, R.J. Sweigard and C. Agouridis. 2006 Surface Mine Reforestation Research: Evaluation of Tree Response to Low Compaction Reclamation Techniques. National Meeting of the Society of American Foresters. Pittsburgh, PA. October 25-29.

Agouridis, C.T., R.C. Warner, **C.D. Barton**, D.A. Bidelspach, G.D. Jennings, J.W. Marchant, and R. Osborne. 2006. Promoting a Paradigm Shift in Head-of-Hollow Fill Design through Public Education. Abstract for Stream Restoration in the Southeast: Accomplishments and Opportunities, Charlotte, NC, October 2-5.

Agouridis, C.T., R.C. Warner, **C.D. Barton**, D.A. Bidelspach, G.D. Jennings, J.W. Marchant, and R. Osborne. 2006. Design of a Headwater Stream System for a Head-of-Hollow Fill. Abstract for Stream Restoration in the Southeast: Accomplishments and Opportunities, Charlotte, NC, October 2-5.

Kolka, R.K., D.M. Andrews, **C.D. Barton** and C.C. Rhoades. 2006. Vegetation establishment, hyporheic zone and soil development, in a restored stream/riparian area. International Conference on Forests and Waters in a Changing Environment. Beijing, China. August 8-10.

Hall, S.L., and **C.D. Barton**. 2006. From icon to upstart: Seed banks as restoration tools on surface-mined lands. 91st Annual Meeting of the Ecological Society of America. Memphis, TN. August 5-8.

Cherry, A., **C.D. Barton**, J. Stringer, and R.K. Kolka. 2006. Effects of federal environmental protection acts on “pristine” streams in eastern Kentucky. Soil and Water Conservation Society Annual Conference; Keystone, Colorado. July 22-26.

Lee, B.P., **C.D. Barton**, R.A. Katho, and F. Lynch. 2006. Robinson Forest Stream Assessment. KY GIS Conference: Ft. Mitchell, KY. July 17.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2006. Distinguishing and quantifying “new carbon” from “old carbon” on reclaimed mine sites using thermogravimetry: Method development. Conference on Carbon Capture and Sequestration. Alexandria, VA. May 8-11.

Barton, C.D., B.J. Koo, S. Maharaj and D.H. Graves. 2006. Soil carbon accumulation rates on minelands in Appalachia. Conference on Carbon Capture and Sequestration. Alexandria, VA. May 8-11.

Barton, C.D., D.M. Andrews and R.K. Kolka. 2006. Influence of soil physicochemical properties on hydrology and restoration response in Carolina bay wetlands. International Conference on Hydrology and Management of Forested Wetlands. American Society of Agricultural and Biological Engineers, New Bern, NC. April 8-12.

Littlefield, T., **C.D. Barton**, and M.A. Arthur. 2006. Carbon and Nutrient Dynamics in Reforested Mine Sites within the Eastern Kentucky Coal Fields. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Angel, P.N., D.H. Graves, **C.D. Barton**, R.C. Warner, P.W. Conrad, R.J. Sweigard and C. Agouridis. 2006 Surface Mine Reforestation Research: Evaluation of Tree Response to Low Compaction Reclamation Techniques. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Cotton, C., **C.D. Barton** and D.H. Graves. 2006. A comparison of *Quercus Alba* and *Liriodendron Tulipifera* growth on reforested minelands and naturally regenerating forest. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2006. Distinguishing and quantifying “new carbon” from “old carbon” on reclaimed mine sites using thermogravimetry: Field validation. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Taylor, T., C. Agouridis, **C. Barton**, and R. Warner. 2006. Hydrologic and Water Quality Characteristics of Loose-Dumped Mine Spoil. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Barton, C.D., B.J. Koo, S. Maharaj and D.H. Graves. 2006. Carbon sequestration on minelands in Appalachia. National Meeting of the American Society of Mining and Reclamation, and the 7th ICARD. St. Louis MO. March 26-29.

Cotton, C., and **C.D. Barton**. 2006. Developing a method of site quality evaluation for *Quercus alba* and *Liriodendron tulipifera* in the eastern Kentucky coalfields. 15th Central Hardwood Forest Conference; Knoxville, TN. February 27 – March 1.

Maharaj, S., **C.D. Barton**, S.M. Rimmer, H. Rowe and A.D. Karathanasis. 2005. Development of a rapid assessment method for quantifying carbon sequestration on reclaimed coal mine sites. American Geophysical Union Fall Meeting; San Francisco, CA. Dec. 5-9.

Barton, C.D., B.J. Koo and D.H. Graves. 2005. Carbon sequestration on surface mine lands. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

Andrews, D.M., **C.D. Barton**, R.K. Kolka and C.C. Rhoades. 2005. Hyporheic zone development in a restored riparian area. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

Koo, B.J., T.G. Hinton and **C.D. Barton**. 2005. Assessment of fish mortality from short-term exposure to illite clays used as an *in-situ* method for remediating Cs¹³⁷ contaminated wetlands. ASA-CSSA-SSSA Annual Meeting; Salt Lake City, UT. Nov. 6-10.

Barton, C.D., P.N. Angel and P. Rothman. 2005. The Appalachian region reforestation initiative. The American Chestnut Foundations 22nd Annual Meeting; Lexington, KY. Oct. 28-30.

Ter Beest, J., **C.D. Barton**, D. Maehr and J. Larkin. 2005. What are elk doing to our forests? The Wildlife Society Conference; Madison, WI. September 29.

Littlefield, T., **C.D. Barton**, and M. Arthur. 2005. Carbon and nutrient dynamics in regenerating forests within the eastern Kentucky coal field. 90th Annual Meeting of the Ecological Society of America; Montreal, Canada. August 7-12.

Cherry, A., **C.D. Barton**, J. Stringer, and R.K. Kolka. 2005. Evaluating the effectiveness of streamside management zones in forested head water streams of Appalachia: Calibration phase. Soil and Water Conservation Society Annual Conference; Rochester, New York. July 30- Aug 4.

Ter Beest, J., **C.D. Barton**, D. Maehr and J. Larkin. 2005. Effects of a restored elk population on soils, vegetation and water quality in eastern Kentucky. Soil and Water Conservation Society Annual Conference; Rochester, New York. July 30- Aug 4.

Cotton, C., **C.D. Barton**, D. Graves, and P. Angel. 2005. Reforestation of Surface Mined Lands in the Appalachian Coal Fields, USA. The Thin Green Line-Symposium on Reforestation; Thunder Bay, Canada. July 26-28.

Andrews, M.D., and **C.D. Barton**. 2005. Using soil physicochemical data to predict hydrologic response in restored depression wetlands. Society of Wetland Scientists 26th Annual Meeting; Charleston, SC. June 5-10.

Angel, P.N., **C.D. Barton**, D. Graves, R. Sweigard and R. Warner. 2005. Improved Methods for the Establishment of Forests on Surface Mined Lands. American Society of Mine Reclamation Annual Conference; Breckinridge, CO. June 13-16.

Barton, C.D., and M.D. Andrews. 2004. Using soil physicochemical data to predict hydrologic response in restored depression wetlands. Society for Ecological Restoration- Coastal Plain Chapter Meeting; Raleigh, NC. March 25-27.

Barton, C.D., D. Graves, R. Sweigard, R. Warner. 2004. Carbon sequestration and mineland reforestation. 3rd Annual Carbon Capture and Sequestration Conference; ExchangeMonitor Publications 2004; Washington, DC. May 3-5.

Hitchcock, D.R., and **C.D. Barton**. 2004. Tritium phytoremediation at the Savannah River Site, SC USA: Water Management, remediation, and hydrologic research. The 6th Int. Conf. On Hydrosience and Engineering (ICHE-2004), May 30-June 3, Brisbane, Australia.

Koo, Bon-Jun, D.C. Adriano, **C.D. Barton**, and L.A. Newman. 2003. Biogeochemistry of heavy metals in the rhizosphere of pine seedlings (*Pinus taeda* L.) grown on amended coal combustion waste. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2–6, 2003.

Koo, Bon-Jun, D.C. Adriano, **C.D. Barton**, and R.M. Danker. 2003. Use of trees to remediate coal combustion waste sites: plant growth, bioavailability of heavy metals, and water quality. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2–6, 2003.

Barton, C.D., D. Marx, D.C. Adriano, Bon-Jun Koo, and L.A. Newman. 2003. Establishment of a forest to control hydrology and acid generation on a landfill containing coal combustion waste. ASA-CSSA-SSSA Annual Meeting, Denver, CO. Nov. 2–6, 2003.

Wein, Gary, Mark Amidon, **Chris Barton**, Cassie Bayer, Bob Blundy, Robin Brigmon, Carl Fliermans, Michael Heitkamp, Tom Hinton, Dan Kaplan, Pam McKinsey, Gary Mills, Lee Newman, Mark Phifer, Kim Powell, Tracy Punshon, Beth Richardson, Greg Rucker, Frank Sappington, Anja Schank, Steve Serkiz, and Bruce Schappell. Monitored Natural Remediation at U.S. Department of Energy's Savannah River Site, South Carolina. 2003. Ecological Society of America Annual Meeting. Savannah, GA. August, 2003.

De Steven, D., R.R. Sharitz, J.H. Singer, & **C.D. Barton** 2003. "Vegetation response in experimental restorations of Southeastern Coastal Plain depression wetlands." Oral paper, Society of Wetland Scientists Annual Meeting, New Orleans, LA, June 2003.

Barton, C.D. E, McDonald, S. Mockenhaupt and R. Rowell. Applying phytoremediation and bioremediation to brownfield sites. EPA Brownfield 2002 Conference. Charlotte, NC. November, 2002.

Aburime, S.A., J.C. Seaman, T.S. Steenhuis and **C.D. Barton**. Determination of contaminant flow paths in the vadose zone by model analysis. ASA, CSSA & SSSA 94th Annual Meeting. Indianapolis, IN. November, 2002.

Hitchcock, D.R., K.T. Rebel, **C.D. Barton**, J.S. Seaman, S.H. Rhia and J.I. Blake. Estimating efficiencies of tritium phytoremediation at the Savannah River Site. 18th Annual International Conference on Contaminated Soils, Sediments and Water. Amherst, MA. October 2002.

Barton, C.D., R.R. Sharitz, D.D. DeSteven and D.I. Imm. Restoration of Carolina bay depression wetlands in South Carolina, USA. Nanjing International Wetlands Symposium. Nanjing, China. September 2002.

Kolka, R.R, **C.D. Barton**, C.C. Trettin and E.A. Nelson. An assessment framework for restored forested wetlands. Nanjing International Wetlands Symposium. Nanjing, China. September 2002.

De Steven, D., R.R. Sharitz, J.H. Singer, and **C.D. Barton** 2002. "Experimental restoration of Southeastern Coastal Plain depression wetlands." Poster, Ecological Society of America Annual Meeting, Tucson, AZ, August 2002.

Barton, C.D. and A.D. Karathanasis. A method for estimating soil macroporosity using thin section and dye tracer images. ASA, CSSA & SSSA 93rd Annual Meeting. Charlotte, NC. October, 2001.

Paddock, L.S., C.S. Romanek, **C.D. Barton**, J.C. Seaman and M. Denham. Geochemistry of an abandoned fly ash/reject coal pile landfill: Implications for remediation. ASA, CSSA & SSSA 93rd Annual Meeting. Charlotte, NC. October, 2001.

Barton, C.D., D.C. Adriano, F. Seay, and D. Marx. Evaluating techniques for establishing a vegetative cover on an acidic reject coal basin. American Society for Surface Mining and Reclamation 18th Annual National Conference. Albuquerque, NM. June 3-7, 2001.

De Steven, D., **C.D. Barton**, R.R. Sharitz, & J.H. Singer 2001. "A large-scale experiment for restoration of depression wetlands in South Carolina." Oral paper, Association of Southeastern Biologists Annual Meeting, New Orleans, LA, April 2001.

Singer, J.H., **C.D. Barton**, R.R. Sharitz, and D. DeSteven. Evaluating techniques for restoring 16 depression wetlands in South Carolina. Annual Meeting of the Society of Wetland Scientist. Chicago, IL. May 28-June 1, 2001.

Thompson, Y.L., A.D. Karathanasis, and **C.D. Barton**. Soil morphology, redox relationships, and hydrological regimes of seasonally inundated wetlands in western Kentucky. ASA, CSSA & SSSA 92nd Annual Meeting. Minneapolis, MN. November, 2000.

Barton, C.D., and J.H. Singer. Evaluating hydrogeomorphic characteristics in disturbed depression wetlands and predicting restoration response using topographic attributes. Annual Meeting of the Society of Wetland Scientist. Quebec, Canada. June 5-9, 2000.

Barton, C.D. Treatment of acid mine drainage using passive treatment systems. Bioengineering Symposium. Augusta, GA. July 20, 1999.

Barton, C.D., and A.D. Karathanasis. Colloid-enhanced desorption of zinc in soil monoliths. ASA, CSSA & SSSA 91st Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

Barton, C.D., J.H. Singer, C.C. Trettin, and R.K. Kolka. Dissolved organic carbon distribution and water quality attributes in a restored bottomland forest. ASA, CSSA & SSSA 91st Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

Singer, J.H., **C.D. Barton**, C.C. Trettin, R.R. Sharitz, and R.K. Kolka. Techniques for the restoration of isolated depression wetlands in South Carolina.. ASA, CSSA & SSSA 91st Annual Meeting. Salt Lake City, UT. October 31-November 4, 1999.

Barton, C.D., and A.D. Karathanasis. Colloid-facilitated transport of atrazine and zinc through soil monoliths. ASA, CSSA & SSSA 90th Annual Meeting. Baltimore, MD. October 18-22, 1998.

Barton, C.D., and A.D. Karathanasis. Aerobic and anaerobic metal attenuation processes in a constructed wetland treating acid mine drainage. ASA, CSSA & SSSA 89th Annual Meeting. Anaheim, CA. October 26-31, 1997.

Barton, C.D., and A.D. Karathanasis. Speciation and stability of minerals forming in a constructed wetland treating acid mine drainage. Joint meeting of the Eastern Section-American Association of Petroleum Geologist and The Society for Organic Petrology. Lexington, KY. September 29, 1997.

Barton, C.D., and A.D. Karathanasis. Ameliorative design to improve the efficiency of constructed wetlands treating AMD in the Rock Creek watershed, Project close-out. Kentucky Nonpoint Conference. Lexington, KY. September 16, 1997.

Barton, C.D., and A.D. Karathanasis. Renovation of a failed constructed wetland treating high metal load acid mine drainage. ASA, CSSA & SSSA 88th Annual Meeting. Indianapolis, IN. November 2, 1996.

Thompson, Y.L., **C.D. Barton**, and A.D. Karathanasis. Redox, hydrology and morphological characteristics of hydric soils in western Kentucky. ASA, CSSA & SSSA 88th Annual Meeting. Indianapolis, IN. November 2, 1996.

TEACHING AND ADVISING:

Graduate student advising:

Completed:

Michaela Lambert, M.S. Forestry and Natural Resources, Co-major advisor. 2020. Evaluation of created wetlands as amphibian habitat on a reforested surface mine. *Currently*. Watershed Coordinator, KY Division of Water.

Doug Potter, M.S. Forestry and Natural Resources, Co-Major Advisor. 2019. A GIS model for apiary site selection based on proximity to nectar sources utilized in varietal honey production on former mine sites in Appalachia. *Currently*. Forester, Green Forests Work.

Joseph Frederick, M.S. Forestry and Natural Resources, Co-Major Advisor. 2019. Evaluating reforestation options for surface mines in Appalachia.

Kenton Sena, Ph.D. Integrated Plant and Soil Science, Major Advisor. 2018. Tracking a Tree-Killer: Improving detection and characterizing species distribution of *Phytophthora cinnamomi* in Appalachian forests. *Currently*. Lecturer, University of Kentucky Lewis Honor College.

Michael French, M.S. Forestry, Major Advisor. 2017. Establishment of American chestnuts on surface mined lands in the Appalachian Coalfields Region. *Currently*. Director of Operations, Green Forests Work.

Richard Biemiller, Ph.D. Entomology, 2016. Influence of structural disturbance on stream function and macroinvertebrate communities in Upper Coastal Plain headwater streams. *Currently*. Restoration Ecologist at Trout Unlimited.

Chase Clark, M.S. Forestry, 2015. The impacts of logging with current and modified best management practices on watershed characteristics in eastern Kentucky. *Currently*. GIS Specialist at Stantec.

Brenee Muncy, M.S. Forestry, co-Major Advisor with Steven Price. 2014. Thesis: The effects of mountaintop removal mining and valley fills on stream salamander communities. *Currently*. Forest Technician at the Creasey Mahan Nature Preserve.

Kenton Sena, M.S. Forestry, 2014. Thesis: Influence of spoil type on afforestation success and hydrochemical function on a surface coal mine in eastern Kentucky. *Currently*. Lecturer, University of Kentucky Lewis Honor College.

Tyler Sanderson, M.S. Forestry, 2014. Thesis: Monitoring the influence of acid deposition and soil and implications to forest health in the Daniel Boone National Forest. *Currently*. Land Conservation and Stewardship Manager at Greenspaces Alliance.

Tom Maignet, M.S. Forestry, co-Major Advisor with John Cox. 2013. Thesis: Effects of streamside management zone timber harvest on salamander communities in Robinson Forest. *Currently*. Ph. D. student at the University of Kentucky.

Hillary Otte, M.S. Forestry, 2012. Thesis: Control and passive treatment of runoff from horse muck storage structures using rain gardens. *Currently*. Environmental Scientist, Otte Environmental.

Emma Witt, Ph.D. Soil Science, 2012. Dissertation: Evaluating streamside management zone effectiveness in headwater streams of the Cumberland Plateau. *Currently*. Assistant Professor, Richard Stockton College.

Catherine Hoy, M.S. Forestry, 2012. Thesis: Hydrologic characterization of three mountain wetlands in southeastern Kentucky. *Currently*. Forester, USDA Forest Service.

Courtney Mastin, M.S. Forestry, 2010. Thesis: Preliminary evaluation of stream restoration and passive treatment technologies for the improvement of water quality on a surface mine in eastern Kentucky. *Currently*. Reclamation Specialist, USDI Office of Surface Mining.

Lee Moser, M.S. Forestry, 2009. Thesis: The effects of hardwood re-sprout control in hydrologically restored Carolina bay depression wetlands; Major Advisor. *Currently*. Environmental Technician, University of Kentucky.

Kathryn M. Ward, M.S. Earth and Environmental Sciences, 2009. Thesis: Influence of matrix geochemistry on *Phytophthora* detection on reforested mine lands in Appalachia; co-Major Advisor with Dr. Alan Fryar. *Currently*. Geologist, TX Division of Water.

Patrick Angel, Ph.D. Soil Science, 2008. Dissertation: Forest Establishment and Water Quality Characteristics as Influenced by Spoil Type on a Loose-Graded Surface Mine in Eastern Kentucky; Major Advisor. *Currently*. Soil Scientist/Forester, USDI Office of Surface Mining and Reclamation.

Jared Edwards, M.S. Plant and Soil Sciences, 2008. Thesis: Removal of manganese from Alkaline Mine Drainage Using a Bioreactor with Different Organic Carbon Sources; co-Major Advisor with Dr. Tasos Karathanasis. *Currently*. Stream Restoration Specialist, Stantec.

Sarah Hall, M.S. Forestry, 2007. Thesis: Topsoil Seed Bank of an Oak-Hickory Forest in Eastern Kentucky as a Restoration Tool on Surface Mines; Major Advisor. *Currently*: Associate Professor, Berea College.

Tara Littlefield, M.S. Forestry, 2007. Thesis: Factors Controlling the Cycling and Distribution of Carbon on Reclaimed Minelands and Regenerating Clearcuts in Eastern Kentucky, co-Major Advisor with Dr. Mary Arthur. *Currently*: Botanist, Kentucky State Nature Preserves Commission.

Danielle Andrews, M.S. Plant and Soil Sciences, 2006. Thesis: Hyporheic Zone Development and Water Quality Improvement in a Restored Riparian Area; Major Advisor. *Currently*: Associate Professor, University of Pittsburgh.

Alex Cherry, M.S. Forestry, 2006. Thesis: Hydrochemical Characterization of Ten Headwater Catchments in Eastern Kentucky, Major Advisor. *Currently*: Hydrologist, USGS.

Claudia Cotton, M.S. Forestry, 2006. Thesis: Developing a Method of Site Quality Evaluation for *Quercus Alba* and *Liriodendron Tulipifera* in the Eastern Kentucky Coal Field, Major Advisor. *Currently*: Soil Scientist, USDA Forest Service, Daniel Boone National Forest.

Sally Maharaj, M.S. Geology, 2006. Thesis: Distinguishing and Quantifying “New Carbon” From “Old Carbon” on Reclaimed Mine Sites Using Thermogravimetry: Method Development and Field Validation, co- Major Advisor with Dr. Harry Rowe. *Currently*: Chemist and Laboratory Supervisor, Kaizen Environmental Services Trinidad Limited.

In Progress:

Anna Branduzzi, M.S. Forestry and Natural Resources, Major Advisor
 Kyle Howard, M.S. Forestry, Major Advisor

Advisory Committee Member:

David Lyons, M.S. Forestry, 2004
Jason Robinson, M.S. Plant and Soil Science, 2004
Julie Ter Beest, M.S. Forestry, 2005
Marty Acker, M.S. Forestry, 2006
Eric Fabio, M.S. Forestry, 2006
Brian Cook, M.S. Forestry, 2007
Adam Michels, M.S. Forestry, 2007
Jennifer Gentry, M.S. Biology (U of L), 2007
Timothy Taylor, M.S. Biosystems and Agricultural Engineering, 2007
Jarrod Miller, Ph.D. Soil Science, 2008
Luke Cecil, M.S. Forestry, 2009
Matt Weand, Ph.D. Soil Science, 2009
Oakes Routt, M.S. Biosystems and Agricultural Engineering, 2009
Josh Brinks, M.S. Forestry, 2010
David Parrott, M.S. Forestry, 2011
Erin Barding, Ph.D. Animal Science, 2011
Estifanos Haile, Ph.D., Geology, 2011
Kevin Devine, M.S. Forestry, 2011
Josh Adkins, Ph.D. Entomology, 2012
Travis Maupin, M.S. Biosystems and Agricultural Engineering, 2012
Christopher Reeves, M.S. Forestry, 2012
Ross Guffey, M.S. Biosystems and Agricultural Engineering, 2012
Daniel Bowker, M.S. Forestry, 2013
Amanda Gumbert, Ph.D. Soil Science, 2013
John Villines, M.S. Biosystems and Agricultural Engineering, 2013
John McMaine, M.S. Biosystems and Agricultural Engineering, 2013
Carla Landrum, Ph.D. Soil Science, 2013
Mary (Deicher) Weatherford, M.S. Biosystems and Agricultural Engineering, 2014
Wesley Staas, M.S. Forestry, 2015
Whitney Blackburn-Lynch, Ph.D. Biosystems and Agricultural Engineering, 2015
Derek Scott, M.S. Biosystems and Agricultural Engineering, 2015
Meghan Langley, Ph.D. Biology (U of L), 2016
Kameryn Wright, M.S. Biosystems and Agricultural Engineering, 2016
Sara Beth Freytag, M.S. Forestry, 2016
Christian Oldham, M.S. Forestry, 2016
Evan Burks, M.S. Forestry (Evergreen State College), 2016
Devin Black, M.S. Forestry, 2017
Wesley Dement, M.S. Forestry, 2017
Jeremy Eddy, M.S. Earth and Environmental Sciences, 2017
K.C. Birendra, M.S. Forestry, in-progress
Zhijie Yang, Ph.D. IPSS, in-progress
Josh Felch, M.S. Forestry, 2018
Zach Hackworth, M.S. Forestry, 2018
Jake Hutton, M.S. Forestry, 2018
Morgan Gerlitz, M.S. Biosystems and Agricultural Engineering, 2019
William Bond, M.S. Earth and Environmental Sciences, 2019
Kate Love, M.S. Forestry, in-progress

Post-doctoral scholars:

Ashley Bandy. August 2016 – January 2017. Received Ph.D. in Earth and Environmental Sciences from the University of Kentucky in 2016. Scientific area of emphasis: Geohydrology and Environmental Science.

Whitney Blackburn-Lynch. August 2015 – January 2016. Received Ph.D. in Biosystems and Agricultural Engineering from the University of Kentucky in 2015. Scientific area of emphasis: Environmental Engineering and Hydrology. Currently, Instructor, UK Engineering.

Josh Adkins. January 5, 2014 – September 1, 2014. Received Ph.D. degree in Entomology from the University of Kentucky in 2013. Scientific area of emphasis: Entomology and Freshwater Ecology. Currently, Instructor, Transylvania University, Lexington, KY.

Jarrod Miller. June 1, 2008 – March 15, 2009. Received Ph.D. degree in Soil Science from the University of Kentucky in 2008. Scientific area of emphasis: Environmental and Soil Chemistry. Currently, Associate Professor, University of Delaware.

Bon Jun Koo. July 1, 2004 – June 30, 2005. Received Ph.D. degree in Soil and Water Science from the University of California, Riverside in 2002. Scientific area of emphasis: Environmental Biogeochemistry. Currently, Professor, Natural and Physical Sciences Department, California Baptist University.

Courses Taught:

FOR 460G – Watershed Management, 3 credit hours.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation (College Mean)</i>	<i>Teaching Evaluation (College Mean)</i>
Fall 2003 [†]	11	3.6 (3.3)	3.3 (3.4)
Fall 2004	23	3.2 (3.3)	3.4 (3.4)
Fall 2005	9	3.8 (3.3)	3.6 (3.4)
Fall 2006	19	3.8 (3.3)	4.0 (3.4)
Fall 2007	14	3.3 (3.3)	3.5 (3.4)
Fall 2008	16	3.5 (3.3)	3.6 (3.4)
Fall 2009	20	3.5 (3.3)	3.6 (3.4)
Fall 2010	21	3.4 (3.4)	3.3 (3.5)
Fall 2011	29	3.6 (3.4)	3.7 (3.5)
Fall 2012	27	3.8 (3.4)	3.8 (3.4)
Fall 2013	30	3.6 (3.5)	3.7 (3.5)
Fall 2014	37	3.0 (3.2)	2.9 (3.3)
Fall 2015*	28	3.4 (3.2)	3.6 (3.3)
Fall 2016	Admin release		
Fall 2017	Admin release		

Fall 2018♦	30	4.7 (4.4)	4.8 (4.4)
Fall 2019	34	4.6 (4.3)	4.7 (4.3)

† Scale 0 – 4: 2003-2015

♦ Scale 0 – 5: 2018 -

*co-taught with post doc Whitney Blackburn-Lynch

FOR 480 – Integrated Forest Resource Management, 5-credit hours. Co-taught (50% responsibility) with Dr. Mike Lacki (03-06) and Dr. Tamara Cushing (07).

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation† (College Mean)</i>	<i>Teaching Evaluation† (College Mean)</i>
Spring 2003		<i>not rated</i>	<i>not rated</i>
Spring 2004	10	4.0 (3.2)	3.8 (3.4)
Spring 2005	14	3.9 (3.3)	3.9 (3.4)
Spring 2006	6	3.3 (3.3)	3.5 (3.4)
Spring 2007	13	<i>not rated</i>	<i>not rated</i>

† Scale 0 – 4.

FOR 770 – Environmental Monitoring and Data Acquisition, 1-credit hour.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation† (College Mean)</i>	<i>Teaching Evaluation† (College Mean)</i>
Spring 2009	7	4.0 (3.3)	4.0 (3.4)

† Scale 0 – 4.

NRC 320 – Natural Resource Analysis (NRES Summer Camp), 3 credit hours.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation† (College Mean)</i>	<i>Teaching Evaluation† (College Mean)</i>
Summer 2009	10	<i>not rated</i>	<i>not rated</i>
Summer 2010	20	3.9 (3.4)	3.9 (3.5)
Summer 2011	19	3.9 (3.4)	3.9 (3.5)
Summer 2013	9	3.8 (3.8)	3.8 (3.7)
Summer 2014	18	3.8 (3.4)	3.8 (3.4)
Summer 2015			
Summer 2016	Admin release		
Summer 2017	Admin release		
Summer 2018♦			
Summer 2019	12	4.0 (4.5)	4.6 (4.5)

† Scale 0 – 4.

◆ Scale 0 – 5: 2018 -

FOR 356 – Landscape Assessment, 5 credit hours. Co-taught with three others. Barton section evaluation only listed below.

<i>Semester</i>	<i># of Students</i>	<i>Course Evaluation</i> [†] <i>(College Mean)</i>	<i>Teaching Evaluation</i> [†] <i>(College Mean)</i>
Spring 2012	15	3.9 (3.4)	3.9 (3.5)
Spring 2013	17	4.0 (3.5)	4.0 (3.5)
Spring 2014	18	3.5 (3.3)	3.6 (3.4)
Spring 2015	14	3.6 (3.2)	4.0 (3.3)
Spring 2016	Admin release		
Spring 2017	Admin release		
Summer 2018◆			
Summer 2019			

† Scale 0 – 4.

NRC 320-002 – Natural Resource Analysis (NRES Summer Camp in Costa Rica). Developed course with Paratley, Philpott and Price in 2013.

FOR 602 – Renewable Natural Resources in a Global Perspective, Fall, 2003, 2005, 2007, 2009, 2011, 2013, 2015. Responsible for three 50-min class equivalents.

ENV 491 – Soils and Hydrology, 4 credit hours; Summers 1999 - 2005. Responsible for half of the instruction. Operated by Savannah River Environmental Sciences Field Station and South Carolina State University.

PLS 366 – Fundamentals of Soil Science, 3 credit hours; Fall, 1998. Teaching Assistant for Course.

PLS 367 – Soil and Water Analysis, 2 credit hours; Fall, 1998. Teaching Assistant for Course.

Undergraduate Advising/ Internships:

- Madison Mosher, UK NRES. Internship with Green Forests Work. Spring 2019.
- Jordyn Marable, UK CAFÉ Community & Leadership Development. Internship with Green Forests Work. Spring 2019.
- Elizabeth Hansen, Pomona College. Examined tree species performance on ripped mine lands with differing soil amendments. Presentation: Hansen, E, C. Barton and A. Drayer. 2015. Challenges for

Native Forest Establishment on Surface Mines in a Time of Climate Change. 2015 National Meeting of the American Society of Mining and Reclamation, Lexington, KY. June 8 - 12, 2015.

- Teagan Dolan, SUNY College of Environmental Science and Forestry. Examined influence of spoil compaction on tree survival and growth on surface coal mines. Summer 2014.
- Elizabeth Bishop, UK, Ag Communications Major. Green Forests Work Intern. Summer 2014.
- Hannah Angel, UK, Forestry Major. Restoring American chestnut on surface mined lands. Summer and Fall 2011- 2013. Presentation: Angel, H, C.D. Barton and P. Angel. Influence of weed mats and tree shelters on survival and height growth of American chestnut on post-bond release surface mines in eastern Kentucky. 2012 National Meeting of the American Society of Mining and Reclamation, Tupelo, MS Sustainable Reclamation June 8 - 15, 2012.
- Brian Murphy, UK, PLS Major. Working with KDNR on digitizing mining permit maps. Fall 2010.
- Adam King, UK, NRCM Major. Examined alternative techniques for restoring sediment ponds on surface mine lands. NRCM Internship: Spring 2007.
- Nick Baker, UK, NRCM Major. Examined hydrologic differences between created and natural ephemeral streams in Eastern Kentucky. NRCM Internship: Spring 2006. Presentation: N. Baker and D. Dale. 2006. Surface Coal Mining Impacts on Headwater Stream Functions. UK Showcase of Scholars; Lexington, KY. April 25.
- David Dale, UK, NRCM Major. Examined water quality differences between created and natural ephemeral streams in Eastern Kentucky. NRCM Internship: Spring 2006. Presentation: N. Baker and D. Dale. 2006. Surface Coal Mining Impacts on Headwater Stream Functions. UK Showcase of Scholars; Lexington, KY. April 25.
- Francis Lynch, University of the South, Math Major. Examined stream geomorphology in Robinson Forest. Presentation: Lee, B.P., C.D. Barton, R.A. Katho, and F. Lynch. 2006. Robinson Forest Stream Assessment. KY GIS Conference: Ft. Mitchell, KY. July 17.
- Forrest Miller, Centre College, Biology Major. Examined stream chemistry in Robinson Forest. Summer 2005.
- Emma Witt, NRCM Major. Examined hydrology in restored section of Wilson Creek, Bernheim Forest. NRCM Internship: Spring 2004.

Also mentored undergraduate students for senior or summer internships (3 from South Carolina State University, 1 from the University of South Carolina, 1 from University of North Carolina at Asheville, 2 from Tuskegee)

SERVICE AND RECOGNITION

Green Forests Work 501(c)3 Organization:

Green Forests Work exists to re-establish healthy and productive forests on formerly mined lands in Appalachia. Building on lessons learned from research the program has achieved the following:

- 2009: 35,000 trees; 558 volunteers; 9 events; 72 partners
- 2010: 145,000 trees; 931 volunteers; 27 events; 102 partners
- 2011: 352,000 trees; 1,663 volunteers; 28 events; 156 partners
- 2012: 228,000 trees; 2,577 volunteers; 34 events; 190 partners
- 2013: 256,000 trees; 1,949 volunteers; 38 events; 196 partners
- 2014: 201,000 trees; 1,941 volunteers; 34 events; 199 partners
- 2015: 374,038 trees; 2,082 volunteers; 47 events; 231 partners
- 2016: 239,720 trees; 2,140 volunteers; 42 events; 210 partners
- 2017: 258,930 trees; 2,230 volunteers; 43 events; 200 partners
- 2018: 401,650 trees; 1,680 volunteers; 22 events; 220 partners
- 2019: 318,000 trees; 2,377 volunteers; 38 events; 304 partners

Meetings, Presentations, Consultations:

Care of Creation Workshops – Feb. 20, 2019, Morehead KY, 60 participants.

Angels of Apiculture – Performed pollinator workshops, displays and presentations for KY youth. Twenty-five events were held between October 2016 and December 2017 reaching nearly 2,500 students and adults in 14 Kentucky counties.

Organized and participated in a workshop for the Osher Lifelong Learning Institute on February 1, 2016. The topic of the day-long workshop was “Appalachian Natural History and Conservation”. There were 45 participants present.

Co-organized a student service-learning project for 200 8th graders at Leestown Middle School, Lexington, KY in October 2015. The event concentrated on riparian zone restoration at the UK Spindletop Farm. Students were introduced to issues concerning wetland and riparian zone function, pollinator friendly plants and honey bees, and water quality in class and in the field. The students planted 4,000 native plants along the riparian corridor.

Organized the 2015 Joint conference of the American Society of Mining and Reclamation (32nd Annual) and the Appalachian Regional Reforestation Initiative (9th Annual) held in Lexington, KY June 7-11, 2015. Over 200 in attendance. Led and organized day-long field tour for 110 participants.

Co-host of the 38th Council on Forest Engineering held in Lexington, KY. July 19-22, 2015. Led and co-organized field tour of eastern Kentucky for approximately 75 participants.

Trees and Water Quality Workshop. November 9, 2011 and February 5, 2013. UK Arboretum. Instructors: Chris Barton, and Dave Lenard. 18 and 10 attendees, respectively.

Riparian Buffer Restoration Workshop. October 19 and October 21, 2010; April 19, 2011, October 5, 2011 and August 14, 2012. UK Arboretum. Instructors: Carmen Agouridis, Chris Barton, Amanda Gumbert, and Jim Lempky. 20, 24, 23, 19 and 15 attendees, respectively.

Barton, C.D., Panelist: Coal Mining and Reclamation. Governor's Conference on Energy and the Environment. Lexington, KY. September 27, 2011.

Organized the 4th Annual Conference for the Appalachian Region Reforestation Initiative held August 4-6, 2009 at the Jenny Wiley State Park in Kentucky. There were 210 registered participants. Research activities at Robinson Forest, Starfire Mine and the Bent Mountain mine were visited during the conference.

Organized the 24th Annual Central States Forest Soils Conference held in Hazard, KY October 12-14, 2004. There were 92 registered participants from 7 states in attendance. Research activities at Robinson Forest, Robinson Substation at Quicksand, and the Starfire mine were highlighted and visited during the conference.

Mineland Reforestation presentations - Numerous tours have been conducted on our Starfire Mine research site in Perry Co. and the Bent Mt. site in Pike Co. with over 3000 in attendance representing various state and federal agencies, coal companies, forest industries, teachers and citizens. A group of selected tours are listed below:

- Mined Land Reclamation Research: Little Elk Reforestation Tour. Leadership Kentucky, September 13, 2013. 55 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology, Water Quality and Stream Restoration. Presentation for the KY Governors Scholars, Starfire Mine and Guy Cove, July 8, 2011. 22 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology, Water Quality and Stream Restoration. Presentation for the USEPA, Starfire Mine and Guy Cove, April 20, 2010. 16 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Kentucky Future Farmers of America, Bent Mountain Mine, May 11, 2006. 135 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Senator Mitch McConnell's Staff, Bent Mountain, December 14, 2005. 20 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Presentation for the Appalachian Regional Reforestation Initiative Members, Bent Mt. Mine, August 10, 2005. 25 attendees.
- Mined Land Reclamation Research: Reforestation, Hydrology and Water Quality. Report for U.S. Fish and Wildlife Service and Office of Surface Mining Terrestrial Carbon Sequestration and Appalachian Regional Reforestation Initiative Workshop, Hazard, KY, June 21, 2006. 44 attendees.
- Mined Land Reclamation Research: Hydrology and Water Quality. Presentation for the Federal Office of Surface Mining Inspectors, Bent Mt. Mine, July 12, 2005. 41 attendees.

- Congressional Staff Visit to Robinson Forest – Presentations on Mineland Reforestation were highlighted; April 14-16, 2004.

Robinson Forest SMZ project - A group of selected tours are listed below:

- Presentation for EKU public radio; Dec 17, 2012.
- Presentation for KY Farm Bureau; Oct. 27 and December 1, 2011.
- Presentation for Native American group from Montana: Robinson Forest; June 7, 2011, 12 participants.
- Presentation for RCARS Field Day: Robinson Forest; October 2, 2010, 42 participants.
- Presentation to USDA Silviculture Group: Robinson Forest; April 16, 2010, 33 participants.
- Presentation to Kentucky Governor's Scholars Program: Robinson Forest; July, 2009, 20 participants.
- Presentation to Eastern KY Chapter of the Society of American Forests: Robinson Forest; May, 2009, 21 participants.
- Presentation to Southern States BMP Board: Robinson Forest; October, 2007, 34 participants.
- Presentation to Kentucky Chapter of the Society of American Foresters: Robinson Forest; October, 2007, 12 participants.
- Presentation to Kentucky Wood Industry Association: Robinson Forest; July, 2006, 65 participants.
- Presentation to Kentucky Chapter of Soil and Water Conservation Society: Robinson Forest; April, 2006, 20 participants.
- Presentation to Kentucky BMP Board. Clayhole, KY; October, 2003, 14 participants.
- Presentation to Southern States BMP Board. Clayhole, KY; September, 2003

Carolina Bay Restoration Project – Presentation to Savannah River Research Advisory Committee. Aiken, SC; February, 2007; February, 2005 and November, 2003.

Editorship, reviewer service:

Associate Editor, International Journal of Phytoremediation, 2005 - present.

Associate Editor, International Journal of Mining, Reclamation and Environment, 2007 - present.

Associate Editor, Journal of Environmental Monitoring and Restoration, 2002 – 2015.

Manuscript Reviewer:

- Water, Air and Soil Pollution
- International Journal of Phytoremediation

- International Journal of Mining, Reclamation and Environment
- Journal of Environmental Monitoring and Restoration
- Environmental Geochemistry and Health
- USDA Forest Service, General Technical Report
- Journal of Environmental Quality
- Soil Science Society of America Journal
- Forest Science
- Ecological Engineering
- Journal of Hydrology
- Environmental Engineering and Geoscience
- Restoration Ecology
- Journal of Applied Ecology
- Geoderma
- Canadian Journal of Forest Research
- Hydrologic Processes
- Ecohydrology
- Forest Ecology and Management
- Wetlands
- Journal of the American Water Resources Association
- Southern Journal of Applied Forestry
- New Forests
- Journal of Forestry

Moderator:

Forest Hydrology Session: 17th Central Hardwood Forest Conference. Lexington, KY. April 5-7, 2010.

Session 23: Carbon Equivalent Landscapes: Setting the Agenda and Implementing the Details. 10th National Conference on Science, Policy and the Environment. National Council for Science and the Environment. Washington, DC. January 20-22, 2010.

Session VI: Genes and New Frontiers. 5th International Phytotechnologies Conference. Nanjing, China. October 22-25, 2008.

Session E: Mountain Top Removal and Valley Fill. Mid-Atlantic Stream Restoration Conference. Cumberland, Maryland November 6-8, 2007.

National Proposal Review Panels:

USGS National Institutes for Water Resources Grants Program. 2009.

EPA STARS Scholarship Review Panel, Aquatic Systems and Ecology. 2005. Washington D.C.

USDA CSREES National Research Initiative Competitive Grants Program. 2005

NOAA Sea Grant Proposal Review. 2003, 2007.

Committees:

Organizing Committee, Appalachian Studies Association Annual Conference; Lexington, KY; March 12-15, 2020.

Organizing Committee, Appalachia Regional Reforestation Initiative Annual Conference; Elkins, WV; July 29-30, 2020.

CAFÉ Promotion and Tenure Review Committee, 2019 – present.

Steering Committee Member, UK Natural Resource Conservation and Environmental Sciences Program, 2008 – 2015; 2018 -present.

Steering Committee Member, UK Integrated Plant and Soil Science Program, 2018 – present.

UK Graduate Council Committee on Fellowships and Traineeships, 2018 – present.

UK Appalachian Center Academic Committee, 2018-present.

Co-Chair of Planning Committee for the American Society of Mining and Reclamation's 2015 National Conference; Lexington, KY; June 1-5, 2015.

University of Kentucky Federal Uniform Guidance Working Group, 2014.

US Army Corps of Engineers, HGM Validation Project Delivery Team, Validate HGM Guidebook for High Gradient Ephemeral & Intermittent Streams in WV & KY, 2011-2013.

University of Kentucky Agriculture Faculty Council, 2009-2011.

Barnhart Fund for Excellence Committee, 2009-2011.

Committee on Research and Policy, Kentucky Water Resources Institute, 2004-2007, 2008-present.

Steering Committee Member, Precision Agriculture and Natural Resources, 2004-2006.

Appalachian Region Reforestation Initiative's Science Team, 2004-present. Co-team Leader 2007 - present.

University of Kentucky Representative, Consortium of Universities for the Advancement of Hydrological Sciences, 2003 - present.

UK Department of Forestry, Research Committee (chair), 2010 – 2013.

UK Department of Forestry, Graduate Program Committee, 2003 - 2005, 2006 - 2008, 2010 - 2012, 2014 - 2016.

UK College of Agriculture, Robinson Forest Committee, 2003 - present.

US DOE Savannah River Site, Wetland and Aquatic Issues Task Group, 1999-2003.

US DOE Savannah River Site, D-Area CERCLA/RCRA Integration Team, 1999-2003.

US DOE Savannah River Site, Monitored Natural Attenuation and Phytoremediation Task Group, 2000-2002.

Awards:

- American Society of Mining and Reclamation, William T. Plass Award; 2020.
- Kentucky Department of Environmental Protection's Environmental Excellence Award for Resource Caretaker; 2018.
- American Society of Mining and Reclamation, Richard and Lela Barnhisel Researcher of the Year Award; 2015.
- United States Environmental Protection Agency; Scientific and Technological Achievement Award; Providing Science to Inform Decisions on Compensatory Mitigation of Headwater Streams Affected by Surface Mining; 2014.
- United States Department of Interior; Partners in Conservation Award; Appalachian Regional Reforestation Initiative; 2012.
- Association of Public and Land-Grant Universities; Exemplary Program Award; UK Mined Land Reforestation Project; 2011.
- United States Department of Interior; Presidential Migratory Bird Federal Stewardship Award; Appalachian Regional Reforestation Initiative; 2011.
- University of Kentucky, College of Agriculture; High Impact Research/Extension Program Award; Streamside Management Zone Effectiveness Project; 2010.
- United States Department of Interior, Cooperative Conservation Award; Appalachian Region Reforestation Initiative; 2007.
- United States Forest Service, Regional Forester's Award for Natural Resource Stewardship; Carolina Bay Restoration Project; 2006.
- University of Kentucky, Commonwealth Collaborative; 2005.
- United States Department of Agriculture, Forest Service; Southern Regional Forester's Cost Cutter - Entrepreneur Award, SRS Phytoremediation Program; 2000.
- United States Department of Agriculture, Forest Service; Southern Regional Forester's Seamless Government Award, Savannah River Environmental Sciences Field Station Establishment; 1999.
- Savannah River Environmental Sciences Field Station; Excellence in Teaching Award, 1999.
- Kentucky Research Challenge Trust Fund Fellowship; Graduate student fellowship, 1998.

- Soil Science Society of America; Division S6 (soil and water conservation) Graduate Student Award, 1997.
- United States Department of Agriculture Forest Service; Certificate of Appreciation Award, 1996.
- Louis S. Ison Graduate Student Scholarship; University of Kentucky, 1994.

Awards by Students:

- Best poster presentation, Ecological Society of America Annual Conference; Received by Michaela Lambert, September 2019.
- Graduate student participant, USDA Student Diversity Program, USDA Agricultural Outlook Forum, Washington, D.C., 22-23 Feb 2018. Received by Kenton Sena.
- Storkan-Hanes-McCaslin Foundation Award, “Tracking a tree-killer: Modeling *Phytophthora cinnamomi* distribution in eastern Kentucky,” \$8000 Received by Kenton Sena.
- Gamma Sigma Delta-Agriculture Honor Society, Outstanding Ph.D. Award; Received by Kenton Sena, 2015.
- American Society of Mine Reclamation, Best Undergraduate Oral Presentation; Received by Elizabeth Hansen, 2015.
- National Science Foundation, East Asia and Pacific Summer Institutes (EAPSI) summer research fellowship, Received by Kenton Sena, 2014.
- National Association of State Land Reclamationists (NASLR) Educational Grant, Received by Kenton Sena, 2014.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Kenton Sena, 2013.
- American Society of Mine Reclamation, 2nd Place Student Poster Presentation; Received by Kenton Sena, 2013.
- American Society of Mine Reclamation, 3rd Place Student Poster Presentation; Received by Hannah Angel, 2013.
- Ben Meadows Leadership Scholarship; Received by Hannah Angel, 2013.
- Soil Science Society of America, S-06 Soil and Water Conservation Graduate Student Award; Received by Emma Witt, 2012.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Hannah Angel, 2012.
- American Society of Mine Reclamation, 1st Place Student Poster Presentation; Received by Hannah Angel, 2012.

- American Society of Mine Reclamation, Memorial Scholarship; Received by Katy Adank, 2008.
- KY EPSCoR, Research Enhancement Grant; Received by Katy Adank, 2007.
- American Society of Mine Reclamation, 3rd Place Oral Presentation; Received by Michael French, 2007.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Tara Littlefield, 2006.
- American Society of Mine Reclamation, Memorial Scholarship; Received by Claudia Cotton, 2006.
- Soil Science Society of America, Graduate Student Presentation Award, Honorable Mention; Received by Danielle Andrews, 2005.
- American Association of Petroleum Geologists: Graduate Student Assistance Award; Received by Sally Maharaj, 2005.
- American Society of Mine Reclamation: Best Graduate Student Poster Presentation; Received by Patrick Angel, 2005.
- Society of Wetland Scientists: Honorable Poster Presentation; Received by Danielle Andrews, 2005.
- Soil and Water Conservation Society: Best Graduate Student Poster Presentation; Received by Alex Cherry, 2005.

Media Coverage of Program (Selected):

Washington Post. Feb. 13 2020. The Green Miles.
<https://www.washingtonpost.com/graphics/2020/lifestyle/magazine/appalachia-kentucky-reforestation/> (UK publicity value of \$451,680.15)

Associate Press (picked up by Washington Post, NY Times and several dozen other outlets).
 November 1, 2019. Difficult but rewarding work: Planting trees to aid climate.
<https://apnews.com/5c8264cbcb7b4081b4aecf4c442506cc> and
https://www.youtube.com/watch?v=ynAnV8035dY&list=PLnwt1fUa-EVijqJqpVGTekfROhUK0P2iD&index=2&t=0s&utm_medium=AP&utm_campaign=SocialFlow&utm_source=Twitter

Voice of America (VOA). *Former West Virginia Coal Mines Turned into Carbon-sucking Forests*. Nov. 13, 2018. <https://www.voanews.com/a/former-west-virginia-coal-mines-turned-into-carbon-sucking-forests/4657161.html>

Scientific American. *From Defiled to Wild – Can a Spent Coal Mine be Reborn as a Nature Conservation Center?* July 11, 2018. <https://www.scientificamerican.com/article/from-defiled-to-wild-can-a-spent-coal-mine-be-reborn-as-a-nature-conservation-center/>

Yale Environment 360. *Reclaiming Appalachia: A Push to Bring Back Native Forests to Coal Country*. December 2017. <http://e360.yale.edu/features/reclaiming-appalachia-a-push-to-bring-back-native-forests-to-coal-country>

Cool Green Science. *Recovery: Farm Bill Provides Hope for the Cerulean Warbler*. August 15, 2017. <https://blog.nature.org/science/2017/08/15/recovery-farm-bill-provides-hope-for-the-cerulean-warbler/>

The Appalachian Voice. *Restoring Land for Native Plants, Bees and Streams*. June 15, 2017. <http://appvoices.org/2017/06/15/appheadwaters/>

PBS News Hour. Student Reporting Labs. *West Virginia searches for alternatives as coal mines close*. 2016. <https://studentreportinglabs.org/video/west-virginia-searches-alternatives-coal-mines-close/>

The Forest Source. SAF November 2015. *Green Forests Work Leads Return of Forests to Reclaimed Appalachian Coal Mine Lands*
http://media.wix.com/ugd/2806df_d1fd3526f96a46528066786394c6f5e1.pdf

Soil Science Society of America: Soil Horizons. May 2015. *Restoring Appalachian Forests Begins with Restoring the Soil*
<https://www.soils.org/publica.../.../articles/56/3/sh2015-56-3-f>

Al Jazeera English. Earthrise program. *Mountaintop Revival*. October 3rd, 2013. <http://greenforestswork.com/gfw-earthrise-feature>

Yes! Magazine. *A New Deal for Appalachia's Forests: Growing Biofuels?* May 31st, 2013. <http://www.yesmagazine.org/new-economy/could-biofuels-mean-a-new-deal-for-appalachia-s-forests>.

WEKU Radio. *With A Vegetative Buffer Zone, Tributaries to the Kentucky River Can Stay Clean*. August 8, 2013.

The Economist. *Appalachia Terraforming: Restoring Streams and Forests in Coal Country*. February 2, 2012. <http://www.economist.com/blogs/democracyinamerica/2012/02/coal>

Popular Mechanics. *How to Reclaim Land Damaged by Coal Mining*. May 5, 2010. <http://www.popularmechanics.com/science/energy/coal-oil-gas/coal-mining-slide-reclamation>

The Lane Report

- *New Greenhouse Sprouts Learning Opportunities*. June 20, 2012.
- *Heal the Land, Heal the Nation: UK Contingent Plants Trees on 9/11 Site*. May 1, 2012.

Compass. USDA Forest Service-Southern Research Station. *Cleaning up our act: Planting trees to clean water*. Issue 8, March 2007.

Lexington Herald-Leader

- *Kentucky writers, artists are planting trees. This is why.* April 10, 2018
- *Group plants trees in Eastern Kentucky as part of effort to reforest strip-mined land.* March 15, 2015
- *SOAR overlooking economic, job potential of forests.* February 15, 2015
- *Develop skilled work force to reforest strip-mined hills.* December 8, 2013
- *It's always better to err on the side of air.* November 11, 2013
- *The Plan: Plant 125 Million Trees.* August 16, 2009.
- *At Loggerheads.* October 7, 2007.
- *Reforesting the Mountaintop.* May 29, 2005.

The University of Kentucky College of Agriculture “The magazine”

- *Fighting Back from Extinction* (American Chestnut Project), Fall 2018.
- *Rainy Days and Outcomes* (Acid Rain Project), Fall 2014.
- *Heal the Land, Heal the Heart* (Flight 93 Project); Summer 2012.
- *Reforesting the Globe*, Spring 2010.
- *Restoring Kentucky's Streams*; Summer 2009.
- *Bringing Back the Forest*; Fall 2008.
- *Water Quality*; Spring 2006.

Earth & Sky (Public Radio). *Using Trees to Clean Coal Ash.* January 2002.

Habitat Restoration at Flight 93 Memorial Site; US Fish and Wildlife; May 2012.

<http://www.youtube.com/watch?v=fixzXh5aR4>

Flight 93 Memorial Tree Planting; University of Kentucky, College of Agriculture; May 2012.

http://www.youtube.com/watch?v=Qr_3gxXGkQc

Community Service:

- Laudato Si Commission, 2018-present.
- Board of Directors, UK Spindletop Hall, Inc, 2006 – 2010.
- Committee Member, Reforest the Bluegrass, 2003-2005.
- Youth Soccer Coach, 2007 – 2008.
- Youth Basketball Coach, 2006 – 2007.

Professional Organizations:

- American Water Resources Association
- Soil Science Society of America
- American Society for Surface Mining and Reclamation
- American Chestnut Foundation

John Cox

John J. Cox, Ph.D.

University of Kentucky, Department of Forestry and Natural Resources
102 T.P. Cooper Bldg., Lexington, KY 40546-0073; Tel: (859) 257-9507;
E-mail: jjcox@uky.edu; <http://forestry.ca.uky.edu/john-cox>

EDUCATION

2003 Ph.D., Animal Sciences, University of Kentucky
1997 M.S., Biology, Morehead State University
1995 B.S., Major Biology/Minor Chemistry, Morehead State University

RESEARCH INTERESTS

Terrestrial vertebrate ecology, wildlife management, conservation biology, human dimensions in natural resources (particularly behavioral psychology and motivation)

SUMMARY OF SCHOLARLY METRICS

Total grants and amount: 49, \$2,922,141
Extramural grants and amount: 41, \$2,635,148
Advised grad student grants and amount: 27, \$58,138
H-index: 14
Total citations: 575
Total publications: 75
Total peer reviewed journal articles: 57
Journal impact factor (IF) where available: (n = 44, x = 2.25, range = 0.28-15.8)
Journal impact factor (IF) where available, since 2013: (n = 19, x = 2.11, range = 0.16-8.3)

5-Year Impact Factor (IF) of journals most frequently published in; 2013-present in parentheses:

Journal Title	IF	# Papers
Journal of Wildlife Management	1.86	5(3)
Southeastern Naturalist	0.40	6(1)
Journal of Wildlife Diseases	1.39	3(2)
Frontiers in Ecology and the Environment	8.06	2(1)
Wildlife Society Bulletin	1.27	2(0)
Northeastern Naturalist	0.47	2(2)

10 Most Cited Articles (as of 6/30/18)

Article	# in CV	# Citations
Restoration Ecology 12:97-105 (2004)	41	59
Journal of Wildlife Management 67:467-476 (2003)	43	53
Journal of Wildlife Management 70:1778-1785 (2006)	34	52
Southeastern Naturalist 7:401-412 (2008)	31	37
Vaccine 28:F64-F72 (2010)	29	36
Wildlife Biology 8:49-54 (2002)	49	35
Journal of Applied Ecology 48:1324-1332 (2011)	25	31
Trends in Ecology and Evolution 26:627-633 (2011)	24	31
Southeastern Naturalist 5:535-546 (2006)	37	20
Journal of Wildlife Diseases 39:588-592 (2003)	45	19

APPOINTMENTS

- 7/2019-present **Associate Professor of Wildlife Ecology and Conservation Biology**
University of Kentucky Department of Forestry and Natural Resources
Mean Distribution of Effort (DOE): 60% Research, 40% Teaching
- 7/2013-6/2019 **Assistant Professor of Wildlife Ecology and Conservation Biology**
University of Kentucky Department of Forestry and Natural Resources
Mean Distribution of Effort (DOE): 65.3% Research, 34.7% Teaching
- 10/2006-6/2013 **Adjunct Assistant Professor of Wildlife and Conservation Biology**
University of Kentucky Department of Forestry
Duties: Conduct wildlife/conservation-related research, procure research funding, committee service, mentor undergraduate and graduate students. As overload or volunteer, teach conservation biology and other wildlife and conservation-oriented courses.
- 2010-2014 **Adjunct Assistant Professor**
Eastern Kentucky University
- 4/2009-6/2013 **Research Scientist III**
University of Kentucky Department of Forestry
Duties: Conduct wildlife/conservation-related research, procure research funding, committee service, mentor undergraduate and graduate students. As overload or volunteer, teach conservation biology and other wildlife and conservation-oriented courses.
- 7/2006-3/2009 **Research Scientist II**
University of Kentucky Department of Forestry
Duties: From 2008-2009 conduct wildlife/conservation-related research, Procure research funding, committee service, mentor undergraduate and graduate students. As overload or volunteer, teach conservation biology and other wildlife and conservation-oriented courses. 2006-mid-2008 was under the supervision of Dr. David Maehr, including wildlife and conservation biology fieldwork, scientific writing and analysis, and procurement of research funding.
- 3/2005-4/2009 **Research Coordinator and Site Manager**
University of Kentucky College of Agriculture, Griffith Woods Farm
Duties: coordinate research and other activities, site infrastructure and vehicle maintenance, remove exotic species, reintroduce native species, conduct academic and public outreach.
- 1/2004-6/2006 **Research Scientist I**
University of Kentucky Department of Forestry

Duties: Assist with Dr. David Maehr's research, including wildlife and conservation-related fieldwork, scientific writing and analysis, and procurement of research funding.

- 4/1999-12/2003 **Graduate Research Assistant**
University of Kentucky Department of Forestry
Duties: Conduct research on radio-collared white-tailed deer, elk, and coyotes
- 7/1997-6/1998 **Graduate Research Assistant**
University of Cincinnati, Department of Molecular and Cellular Physiology
Duties: Molecular biology research on vitamin D steroid receptor pathways
- 8/1995-5/1997 **Graduate Assistant**
Morehead State University, Department of Biological and Environmental Sciences
Duties: Teach Biology 171 lab, assist with labs in Ecology, Limnology and Animal Physiology

OTHER PROFESSION-RELATED EMPLOYMENT

- 2016 **Wildlife Consultant**
Amec-Foster Wheeler, Inc.
Duties: Peer review and comment on U.S. Fish and Wildlife Services proposal to delist the Greater Yellowstone Ecosystem grizzly bear subpopulation
- 2009 **Wildlife Consultant**
Everglades Foundation
Duties: Advise and comment on proposal to open Big Cypress National Preserve to further fossil fuel extraction; specifically impacts on mammal communities with emphasis on the Florida panther
- 2009 **Wildlife Consultant**
Kentucky Department of Fish and Wildlife Resources, Law Enforcement
Duties: Morphometric analysis of poached canids to determine species
- 2007 **Wildlife Consultant**
University of Florida
Duties: Analyze radio-telemetry location data and create a habitat model of black bears in Florida, with emphasis on the St. John's River corridor subpopulations
- 2003 **Wildlife Consultant**
National Park Service, Yellowstone National Park
Duties: Conduct a literature review of elk-related research and create a conceptual model for elk-centric management of park resources

8/1998-3/1999

Wildlife Technician

Kentucky Department of Fish and Wildlife Resources

Duties: Trapped and translocated ruffed grouse and white-tailed deer in Kentucky. Assisted elk biologist during elk recapture efforts and refitting of radio-collars.

10/1994-4/1995

Academic Tutor

Morehead State University, Upward Bound Program

Duties: traveled to local high schools to tutor Upward Bound (low-income, high college potential) students in the general biological and physical sciences

CURRENT RESEARCH (Advisor or co-advisor for 8 students at UK or abroad; 6 M.S., 2 Ph.D.)

Fieldwork Stage

- Population dynamics of mountain lions in the White Mountains of Arizona
- Spatial, movement, and resource use patterns of elk in Kentucky (w/ Dr. Matt Springer); Mr. Nathan Hooven (M.S. student, Forestry and Natural Resources)
- Survival of elk calves in Kentucky (w/ Dr. Matt Springer); Ms. Kate Williams, (M.S. student, Forestry and Natural Resources)
- Ecology of the Martial Eagle in the Masai Mara region of Kenya; Mr. Stratton Hatfield (Ph.D. student, Wageningen University, Netherlands)

Analysis Stage

- Survival, cause-specific mortality, and social dynamics of cow elk (w/ Dr. Phil Crowley); Ms. Brittany Slabach (Ph.D. student, Biology)
- Disease ecology of elk in southeastern Kentucky; Mr. John Hast (Ph.D. candidate, Animal and Food Science); Ms. Brittany Slabach (Ph.D. candidate, Biology)
- Effects of herbivory, competition, and fire on select trees of the Inner Bluegrass; w/ Dr. John Lhotka and Dr. Scott Gleeson); Mr. Jim Shaffer (Ph.D. student, Biology)
- Effects of timber harvest on breeding bird communities in a mixed-mesophytic forest (2005-present; w/ Dr. Jeffery Larkin, Dr. Chris Barton, Mr. Zach Hackworth, and Ms. Wendy Leuenberger)
- Assessment of sea level rise impacts on black bear populations in Florida; w/ Ms. Allison Davis and Dr. Songlin Fei, Purdue University (based on prior student's study in 2008 but reanalysis using newer data sources)

Publication Stage

- Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky; Mr. John Hast (Ph.D. candidate, Animal and Food Science)
- Ecology and landscape genetics of pit vipers in central Appalachia (w/ Dr. David Wesirock); Mr. Tom Maigret (Ph.D. student, Biology)
- Assessing impact of white-tailed deer on soybean yields (w/ Dr. Matt Springer); Mr. Johnathan Matthews (M.S. student, Forestry and Natural Resources)
- Estimating population size and characterizing diet of a recently reintroduced river otter population in northern New Mexico (w/ Dr. Matt Springer); Ms. Gabie Wolf (M.S. student, Forestry and Natural Resources)

- Characterization of elk body condition and its relationship to capture, handling, and translocation; Mr. Aaron Hildreth (M.S. student, Forestry and Natural Resources)
- Evaluation of elk as potential vectors of invasive plant species in eastern Kentucky forests; Ms. Patricia Regard (M.S. student, Forestry and Natural Resources)
- Survival and cause-specific mortality of white-tailed deer in southeastern Kentucky; Mr. Joe McDermott (M.S. graduate students, Forestry and Natural Resources)
- Population ecology of black bears in eastern Kentucky; Dr. Sean Murphy (post-doc, UK Forestry and Natural Resources)
- Eastern Elk Ecology and Management, edited book, (w/ Dr. Don White, Jr., University of Arkansas, and Dr. Jeff Larkin, Indiana University of Pennsylvania); publisher = Springer

PUBLICATIONS (n = 75)

(*indicates advised or co-advised grad student whose research the manuscript is wholly or partially based; **advised or co-advised undergraduate student, ***I served on their graduate committee in non-major advisory role. Corresponding authors if not listed first are indicated in boldface. If not first or corresponding author, my role is explained in italicized font within parentheses. Note that in my research lab I give graduate students the option of first authorship on all manuscripts from their research if they're willing to take a leading role in writing; usually I'm second or last author. Impact Factor (IF) from Journal of Citation Reports unless otherwise noted.

Peer-Refereed Journal Articles (57)

1. Maigret, T.J.* , J.J. Cox, and D. Wesirock. 2020. A spatial genomic approach identifies time lags and historic barriers to gene flow in a rapidly fragmenting Appalachian landscape. *Molecular Ecology In press.* (IF = 7.05) (*Helped design and implemented research, assisted with writing of manuscript*).
2. McDermott, J.R.* , W. Leunberger, C.A. Haymes*, G. Clevenger, J.K. Trudeau, T.C. Carter, J.T. Hast, G.S. Jenkins, W.E. Bowling, and J.J. Cox. 2020. Safe use of butorphanol-azaperone-medetomidine to immobilize free-ranging white-tailed deer. *Wildlife Society Bulletin In press.* (IF = 1.29) (*Procured a supporting grant, designed and implemented research, assisted with writing of manuscript*).
3. Hackworth, Z.J., J.J. Cox, J.M. Felch*, and M.D. Weegman. 2019. A growing conspiracy: recolonization of Common Ravens (*Corvus corax*) in Central and Southern Appalachia, USA. *Southeastern Naturalist* 18(2) 281-296. (IF = 0.38). (*Procured a supporting grant, designed and implemented research, assisted with writing of manuscript*).
4. Augustine, B.C.* , J.A. Royale, S.M. Murphy*, R.B. Chandler, J.J. Cox, and M.J. Kelly. 2019. Spatial capture-recapture for categorically marked populations with an application to genetic capture-recapture. *Ecosphere* 10(4): e02627. (IF = 2.67)
5. Maigret, T.A.* , J.J. Cox, and J. Yang. 2019. Persistent geophysical effects of mining imperil the biodiversity of Appalachian forests. *Frontiers in Ecology and the Environment.* 17(2) DOI: 10.1002/fee (IF = 8.30). (*Helped develop research concept and the experimental design*)

and provided funding for fieldwork that model is based on, supported via my startup funds, and helped write manuscript).

6. Murphy, S.M.,* B.C. Augustine,* J. Adams, L. Waits, and J.J. Cox. 2019. Integrating multiple genetic detection methods to estimate density of social, territorial carnivores. *Ecosphere* 9(10) doi.org/10.1002/ecs2.2479. (IF=2.49) *(Procured a supporting grant, designed and implemented research on which portions [black bear] of this model are based; assisted with writing of manuscript).*
7. Murphy, S.M., J.T. Hast, B.C. Augustine, D. Weisrock, J.D. Clark, D.M. Kocka, C.W. Ryan, J.J. Sajecki, and J.J. Cox. 2019. Early genetic outcomes of American black bear reintroductions in the Central Appalachians, USA. *Ursus* 29:119-133. (IF = 1.09)
8. Murphy, S.M.,* J.R. Adams, J.J. Cox, and L.P. Waits. 2018. Substantial red wolf genetic ancestry persists in wild canids of southwestern Louisiana. *Conservation Letters* 12(2) doi.org/10.1111/conl.12621 (IF=7.40)
9. Slabach, B.,* J.T. Hast,* S. Murphy,* W. Bowling, R.D. Crank, G. Jenkins, K. Johannsen, and J.J. Cox. 2018. Survival and cause-specific mortality of elk (*Cervus canadensis*) in Kentucky, USA. *Wildlife Biology* 10.2981/wlb.00459. (IF=2.08)
10. Spaulding, S.H.,* J.J. Cox, T.A. Maigret,* A.N. Drayer, J.M. Richards, and J. Treanor. 2018. Low-level *Batrachochytrium dendrobatidis* detection persists in plethodontid salamanders following timber harvest in Kentucky, USA. *Herpetological Review* 49(2):258-262. (IF=0.16) *(Procured grant, designed and implemented research, assisted with data analysis and writing of manuscript).*
11. Haymes, C.A.,* J.R. McDermott,* G.S.W. Jenkins, W.E. Bowling, J.T. Hast,* K.L. Johannsen, and J.J. Cox. 2018. Survival and cause-specific mortality of white-tailed deer in southeastern Kentucky. *Journal of the Proceedings of the Association of the Southeastern Fish and Wildlife Agencies* 5:90-96. (IF=unlisted) *(Procured grant, designed and implemented research, assisted with data analysis and rewrote much of the manuscript after initial submission and revision).*
12. Hackworth, Z.,* J. Lhotka, J.J. Cox, C.D. Barton, and M.T. Springer. 2018. First-year vitality of reforestation plantings in response to herbivore exclusion on reclaimed Appalachian surface-mined land. *Forests* 9(4) 222 9(4), doi.org/10.3390/f9040222 (IF=1.95) *(Helped procure grant, helped design and implement research, assisted with writing of the manuscript).*
13. Mueller, L.I., J.L. Murrow, J.L. Lupardus, J.D. Clark, J.G. Yarkovich, W.H. Stiver, E.L. Delozier, B.S. Slabach,* J.J. Cox, and B.F. Miller. 2018. Genetic structure in elk persists after reintroduction in Tennessee and North Carolina. *Journal of Wildlife Management* *In press*. (IF=2.06) *(Procured grants, designed and implemented research on which portions [KY elk] of this multi-state work is based as collected by my doctoral student B. Slabach; assisted with writing of the manuscript).*

14. Maigret, T.,* and J.J. Cox. 2018. *Agkistrodon contortrix* hibernacula. Herpetological Review. 49(1):123. (IF=0.16) (*Helped develop research concept and the experimental design, provided funding for fieldwork supported via my startup funds, and helped write manuscript*).
15. Slabach, B.,* A. McKinney,** J. Cunningham,** J. Hast,* and J.J. Cox. 2018. A survey of tick species in a recently reintroduced population of elk: implications for interstate translocation of zoonotic vectors. Journal of Wildlife Diseases 54(2):366-370 doi: 10.7589/2017-06-135 (IF=1.19) (*Procured grants, designed and implemented research on which this work is based; assisted with writing of the manuscript*).
16. Kristensen, T., E. Puckett, E. Landguth, J. Belant, J.T. Hast*, C. Carpenter, J. Sajecki, J. Beringer, M. Means, J.J. Cox, L. Eggert, D. White, Jr., and K. Smith. 2018. Spatial genetic structure in American black bears (*Ursus americanus*): female philopatry is variable and related population history. Heredity 120:329-341 (IF=3.96) (*Procured grant, designed and implemented research on which portions [KY black bear] of this multi-state work is based as collected by grad student J. Hast; assisted with writing of the manuscript*).
17. Murphy, S.M.,* W.A. Ulrey, B.C. Augustine,* J.M. Guthrie,* B.K. Scheick, J.W McCowan, and J.J. Cox. 2017. Consequences of severe habitat fragmentation on density, genetics, and spatial capture-recapture analysis of a small bear population. PLoS ONE 12(7):e0181849 (IF=3.54) (*Procured grant, designed and implemented research; assisted with writing of the manuscript*).
18. Cox, J.J., S.M. Murphy*, B.C. Augustine*, J.M. Guthrie*, J.T. Hast*, S.C. Maehr, and J. McDermott*. 2017. Seroprevalence of *Toxoplasma gondii* in American Black Bears (*Ursus americanus*) of the Central Appalachians, USA. Journal of Wildlife Diseases 54: doi: [10.7589/2016-08-188](https://doi.org/10.7589/2016-08-188) (IF=1.19).
19. Murphy, S.M.,* W.A. Ulrey, J.M. Guthrie*, D.S. Maehr, W.G. Abrahamson, S.C. Maehr, and J.J. Cox. 2017. Food habits of a small Florida black bear population in an endangered ecosystem. Ursus 28:92-104 (IF=0.97) (*Procured grants, assisted with writing of the manuscript*).
20. Cox, J.J., B. Slabach,* J.T. Hast,* S.M. Murphy,* O.C. Kwok, and J.T. Dubey. 2017. High seroprevalence of *Toxoplasma gondii* in elk (*Cervus canadensis*) of the central Appalachians, USA. Parasitology Research 116:1079–1083. (IF=2.03)
21. Cilles, S.E.,*** G. Coy, C.R. Stieha, J.J. Cox, P.H. Crowley, and D.S. Maehr. 2017 A comparison of seed predation, seed dispersal, and seedling herbivory in oak and hickory; species with contrasting regenerating abilities in a Bluegrass savanna-woodland habitat. Northeastern Naturalist 23:466-481 (IF=0.57) (*Assisted with study design and implementation, and writing of the manuscript*).
22. Murphy, S.M.* , J.J. Cox, B. Augustine*, J.T. Hast*, J.M. Guthrie*, J. Wright, J. McDermott*, S. Maehr, and J. Plaxico. 2016. Characterizing recolonization by a reintroduced

- bear population using genetic spatial capture–recapture. *Journal of Wildlife Management* 80:1390-1407 (IF=1.73) (*Procured grants, designed and implemented research; assisted with writing of the manuscript*).
23. Treanor, J.T.,* C. Geremia, M.A. Ballou, D.H. Keisler, P.J. White, J.J. Cox, and P.H. Crowley. 2015. Maintenance of brucellosis in Yellowstone bison: linking seasonal food resources, host-pathogen interaction, and life-history trade-offs. *Ecology and Evolution* 5:3783-99. (IF=2.32) (*Assisted with research conceptual and study design; assisted with writing of the manuscript*).
24. Murphy, S.M.*, J.J. Cox, J.D. Clark, J.T. Hast*, B.C. Augustine*, D. Gibbs, and M. Strunk. 2015. Demographic and genetic characteristics of a reintroduced black bear population in the Central Appalachians. *Journal of Wildlife Management* 79:807-818. (IF=1.73) (*Procured grants, designed and implement research; assisted with writing of the manuscript*).
25. Maigret, T.A.*, J.J. Cox, D.R. Schneider*, C.D. Barton, S.J. Price, and J.L. Larkin. 2014. Effects of streamside management zone timber harvest on salamander populations in ephemeral streams of southeastern Kentucky. *Forest Ecology and Management* 324:46-51. (IF=2.67) (*Helped design and implemented research; assisted with writing of the manuscript*).
26. Maigret, T.A.*, and J.J. Cox. 2014. A review of best management practices and the mitigation of stream-breeding salamanders in the eastern deciduous forest. Proceedings of the 21st Central Hardwood Forest Conference. General Technical Report P-142 U.S. Forest Service, Northern Research Station. (*Helped design and implement research portions of salamander project that led to the development of this review; assisted with writing of the manuscript*).
27. Ehlman, S.***, J.J. Cox, and P.H. Crowley. 2013. Evaporative water loss model of white-nose syndrome in the hibernating little brown myotis (*Myotis lucifugus*). *Journal of Mammalogy* 94:572-583. (IF=2.3) (*Helped conduct literature and design model; assisted with writing of the manuscript*).
28. Unger, D.E., J.J. Cox, H.B. Harris, J.L. Larkin, B. Augustine*, S. Dobey, J.M. Guthrie, J.T.Hast*, R. Jensen, S. Murphy*, J. Plaxico, and D.S. Maehr. 2013. A brief history and current status of the black bear in Kentucky. *Northeastern Naturalist* 20(2):289-308. (IF=0.8) (*Performed major rewrite of manuscript, some of which was based on fieldwork performed under grants I received and projects I implemented*).
29. Chambers, D.L., W.A. Ulrey, J.M. Guthrie*, O.C.H. Kwok, J.J. Cox, D.S. Maehr, and J.P. Dupey. 2012. Seroprevalence of *Toxoplasmosis gondii* in free-ranging black bears in Florida. *Journal of Parasitology* 98:674-675. (IF=1.4) (*Analysis based on samples collected from fieldwork funded by grants I received; assisted with writing of the manuscript*).
30. Tedder, S.,* J.J. Cox, P.H. Crowley, and D.S. Maehr. 2012. Black bears, palms, and giant

- palm weevils: an intraguild mutualism. *The Open Ecology Journal* 5:18-24. (IF=1.9) (*Wrote the bulk of this manuscript based on research conceived and fieldwork funded by the late D.S. Maehr*).
31. Crowley, P.H., and J.J. Cox. 2011. Intraguild mutualism. *Trends in Ecology and Evolution* 12:627-633. (IF=15.8) (*Co-wrote this review paper*).
 32. Treanor, J.,* C. Germentia, P.H. Crowley, J.J. Cox, P.J. White, R. Wallen, and D. Blanton. 2011. Estimating probabilities of active brucellosis infection in Yellowstone bison through quantitative serology and tissue culture. *Journal of Applied Ecology* 48:1324-1332. (IF=5.04) (*As co-advisor, assisted with research conceptual and study design; assisted with writing of the manuscript*).
 33. Augustine, B.,* P.H. Crowley, and J.J. Cox. 2011. A mechanistic model of GPS collar fix acquisition. *Ecological Modeling* 222:3615-3625. (IF=2.3) (*Analysis based on primary black bear fieldwork with grants I received; assisted with conceptual development and writing of the manuscript*).
 34. Fei, S., J.J. Cox, and A. Whittle*. 2011. A perfect storm threatens recovery of the Florida panther. *Frontiers in Ecology and the Environment* 9(6):317-318. (IF=9.1) (*Assisted with conceptual design and analysis of this model, and writing*).
 35. Cox, J.J. 2011. Tales of a repatriated megaherbivore: challenges and opportunities for management of reintroduced elk in Appalachia. *Proceedings of the 17th Central Hardwood Forest Conference:632-642*. General Technical Report P-78. U.S. Forest Service, Northern Research Station. (no IF data).
 36. Treanor, J.,* J. Johnson, R. Wallen, S. Cilles, P. Crowley, J.J. Cox, D.S. Maehr, P.J. White, and G. Plumb. 2010. Vaccination strategies for managing brucellosis in Yellowstone bison. *Vaccine* 28F:F64-72. (IF=3.57); (*As co-advisor, assisted with research conceptual and study design; assisted with writing of the manuscript*).
 37. Olsson, P.M.O., J.J. Cox, J.L. Larkin, P. Widen, and A. Olofsson. 2010. Space and habitat use of non-migrating moose in coastal southwestern Sweden. *European Journal of Wildlife Research* doi 10.1007/s10344-010-0418-5 (IF=1.22) (*Reanalyzed data and did much of the writing on manuscript*).
 38. Larkin, J.L., D.S. Maehr, J. J. Krupa, J.J. Cox, K.A. Alexy, D. Unger, and C. Barton. 2008. Response of small mammals to 3 post-coal mining reclamation treatments. *Southeastern Naturalist* 7:401-412 (IF=0.36) (*Helped design study and conduct fieldwork; assist with writing*).
 39. Cox, J.J., and P.S. Crowley. 2007. The Bluegrass restoration program at Griffith Woods. *Ecological Restoration* 25:72-73. (IF=0.28; ResearchGate)
 40. Olsson, P.M.O., J.J. Cox, J.L. Larkin, D.S. Maehr, P. Widen, M.W. Wichrowski. 2007.

Movement and activity patterns of translocated elk (*Cervus elaphus nelson*) on an active coal mine in Kentucky. *Wildlife Biology in Practice* 3:1-8. (no IF listed) (*Assisted with data analysis and writing*).

41. Cox, J.J., J.L. Larkin, and D.S. Maehr. 2006. Florida panther habitat use: new approach to an old problem. *Journal of Wildlife Management* 70:1778-1785. (IF=1.91; ResearchGate)
42. Maehr, D.S., P.S. Crowley, J.J. Cox, M.J. Lacki, J.L. Larkin, T.S. Hoctor, L.D. Harris, and P.M. Hall. 2006. Of Florida panthers and haruspices: genetic intervention in the Florida panther. *Animal Conservation* 9:127-132. (IF=2.6; ResearchGate) (*Conducted all the data analysis and assisted with writing*)
43. Dzialak, M.R., M.J. Lacki, K.M. Carter, K. Huie, and J.J. Cox. 2006. A critical assessment of hacking as a raptor reintroduction technique. *Wildlife Society Bulletin* 34:542-547. (IF=0.45; ResearchGate). (*Assistance with manuscript writing*).
44. Schneider, J., D.S. Maehr, K.A. Alexy, J.J. Cox, J.L. Larkin, and B.C. Reeder. 2006. Food habits of reintroduced elk in southeastern Kentucky. *Southeastern Naturalist* 5:535-546. (IF=0.84; ResearchGate). (*Assisted with study design and manuscript writing*).
45. Seward, N.W., D.S. Maehr, J. Gasset, J.J. Cox, and J.L. Larkin. 2005. Field searches versus vaginal-implant transmitters for locating elk calves. *Wildlife Society Bulletin* 33:751-756. (IF=0.70; ResearchGate). (*Assisted with study design, implementation, fieldwork, and manuscript writing*).
46. Wichrowski, M.W., D.S. Maehr, J.L. Larkin, J.J. Cox, and M. Olsson. 2005. Activity and movements of reintroduced elk in southeastern Kentucky. *Southeastern Naturalist* 4:365-374. (IF=0.65; ResearchGate) (*Assisted with study design, implementation, fieldwork, and manuscript writing*).
47. Cox, J.J., and D.S. Maehr. 2005. Surface mining and wildlife resources: addition and subtraction on the Cumberland Plateau. *Transactions of the North American Wildlife and Natural Resources Conference* 69:234-250. (IF unlisted)
48. Larkin, J.L., J.J. Cox, M. W. Wichrowski, M.R. Dzialak, and D.S. Maehr. 2004. Influences of release site fidelity of translocated elk. *Restoration Ecology* 12:97-105 (IF=2.35; ResearchGate). (*Conducted fieldwork, assisted with data analysis and writing*).
49. Maehr, D.S., J.L. Larkin, and J.J. Cox. 2004. Shopping centers as panther habitat: inferring animal locations from models. *Ecology and Society* 9(2): 9. [online] URL: <http://www.ecologyandsociety.org/vol9/iss2/art9> (IF=1.63; ResearchGate) (*Co-developed concept and study design, conducted all data analysis and assisted with writing*).
50. Larkin, J.L., D.S. Maehr, J.J. Cox, D.C. Bolin, and M.W. Wichrowski. 2003. Demographic characteristics of a reintroduced elk population. *Journal of Wildlife Management* 67:467-476.

(IF=1.86; ResearchGate). (*Assisted with data analysis, conducted fieldwork, and co-wrote manuscript*).

51. Cox, J.J., N.W. Seward, J.L. Larkin, and D.S. Maehr. 2003. Common raven nests in eastern Kentucky. *Southeastern Naturalist* 2:99-104. (closest year 2005, IF=0.65; ResearchGate)
52. Larkin, J.L., K. J. Alexy, D. Bolin, D.S. Maehr, J.J. Cox, M.W. Wichrowski, and N.W. Seward. 2003. Meningeal worm in a reintroduced elk population in Kentucky. *Journal of Wildlife Diseases* 39:588-592. (IF=0.85; ResearchGate) (*Conducted fieldwork and assisted with manuscript writing*).
53. Maehr, D.S., J.L. Larkin, K.J. Alexy, R.J. Warren, N.W. Seward, J.W. Day, T. Toman, J.J. Cox, and M.A. Orlando. 2002. Graduate education should not count more toward TWS certification. *Wildlife Society Bulletin* 30:979-982. (IF=0.66; ResearchGate) (*Assisted with writing*).
54. Larkin, J.L., D.S. Maehr, J.J. Cox, and C. Logsdon. 2002. Reproductive performance of yearling male elk (*Cervus elaphus nelsoni*) in a reintroduced population in southeastern Kentucky. *Southeastern Naturalist* 1:279-286. (closest year 2005, IF=0.65; ResearchGate) (*Conducted fieldwork and assisted with data analysis and manuscript writing*).
55. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2002. The biogeography of faunal place names in the United States. *Conservation Biology* 16:1143-1150. (IF=1.6; ResearchGate)
56. Larkin, J.L., D.S. Maehr, J.J. Cox, M. W. Wichrowski, and R.D. Crank. 2002. Factors affecting reproduction and population growth in a restored elk population. *Wildlife Biology* 8:49-54. (IF=0.56; ResearchGate). (*Conducted fieldwork and assisted with manuscript writing*).
57. Cox, J.J., L. Meade, D. Yancy, and D.S. Maehr. 2001. Taxonomic status of wild *Canis* in Kentucky. *Proceedings of the Annual Conference of the Southeastern Fish and Wildlife Agencies* 55:408-417.

Non-refereed Journal Articles (5)

1. Stringer, J., J.J. Cox, and B. Thomas. 2008. Invasive species hit list: bush honeysuckle. *Kentucky Woodlands Magazine* 3(3) 13-15. (*Helped conduct fieldwork and write article*).
2. Cox, J.J. 2007. Black vulture fledges young in historic Griffith Tavern. *Kentucky Warbler* 83:36-37.
3. Seward, N.W., J.J. Cox, J.H. Brown, and J.L. Larkin. 2005. Use of elk hair as nesting material by the eastern phoebe. *Kentucky Warbler* 81:33. (*Wrote most of the manuscript*).
4. Cox, J.J., and J.L. Larkin. 2004. Monitoring the state-endangered common raven (*Corvus corax*) in southeastern Kentucky. (Invited paper) *Endangered Species Bulletin* 21:109-112.

5. Cox, J.J., R.D. Crank, and D.S. Maehr. 2000. Bald eagle scavenges a white-tailed deer carcass at Redbird Wildlife Management Area. *Kentucky Warbler* 76:51-52.

Book Chapters (4)

1. Maehr, D.S., J.J. Cox, and J.L. Larkin. 2006. North American Elk, or Wapiti, *Cervus Elaphus*. Pages 293-314. *In*, M. Trani, W.M. Ford, and B.R. Chapman (eds.). *The land manager's guide to mammals of the South*. USDA Forest Service, Atlanta, GA and The Nature Conservancy, Durham, NC. 546 pp. (*Co-wrote this article*)
2. Maehr, D.S., M.A. Orlando, and J.J. Cox. 2005. Large carnivores, herbivores, and omnivores in South Florida: An evolutionary approach to conserving landscapes and biodiversity. Pages 293-314. *In*, J. Ray, J. Berger, and K. Redford (eds.), *Large carnivores and biodiversity: does saving one conserve the other?* Island Press, Washington, D.C. (*Co-wrote this article*)
3. Maehr, D.S., J.J. Cox, and J.L. Larkin. 2002. Landscape history: linking conservation approaches for large mammals. Pages 321-340. *In*, J.A. Bissonette and I. Storch (Eds.). *Landscape ecology and resource management: linking theory with practice*. Island Press, Washington D.C. (*Co-wrote this article*)
4. Larkin, J.L., D.S. Maehr, L. Cornicelli, J.J. Cox, and R. Grimes. 2001. Returning elk to Appalachia: foiling Murphy's Law. Pages 101-117, *In*, D.S. Maehr, R. Noss, and J.L. Larkin (editors). *Large mammal restoration: ecological and sociological challenges in the 21st century*. Island Press, Washington D.C. (*Co-wrote this article*)

Book Review (1; 1 since 2013)

1. Cox, J.J. 2013. Book review: *Reintroduction biology: integrating science and management*. *Journal of Wildlife Management* 77(5):1079-1080.

Federal Technical Reports (3; 1 since 2013)

1. Aune, K., J.J. Cox, V. Ezenwa, A. Jolles, T. Kreeger, M. Miller, P. Nara, and S. Olsen. 2013. Brucellosis science review workshop panelist's report. Yellowstone National Park, Mammoth Hot Springs, WY. 20 pp. (*Served on multi-day panel and co-wrote report*).
2. Davis III, S.E., K. Hines, W. Conner, J.J. Cox, D. Gawlik, J. Jackson, J. Jones, F.M. Wilhelm, and J. Richards. 2010. Oil and gas impacts in the Big Cypress Ecosystem: an analysis of impacts associated with proposed activities in the Nobles Grade area. The Everglades Foundation. 269 pp. (*Served on multi-day panel and co-wrote report*).
3. Larkin, J.L., J. Treanor, J.J. Cox, D.S. Maehr, and G. Plumb. 2003. A comprehensive rapid-assessment approach for research agenda: elk (*Cervus elaphus*) at Yellowstone National Park. Technical Report, Yellowstone National Park, Mammoth Hot Springs, Wyoming. 177 pp. (*Co-wrote report*).

Extension Publications (4)

1. Cox, J.J. 2019. Coyotes in the Commonwealth. *Kentucky Woodlands Magazine* 14(4):20-21

2. Cox, J.J. 2015. Kentucky Forests: A World of Wildlife. 2015. Written, directed, and produced video. 25 min. Released 8/15. Used at KY Wood Expo and other extension venues.
3. Cox, J.J. 2014. Ten-thousand or bust: elk research in Kentucky. Kentucky Woodlands Magazine 9(1):10-11.
4. Cox, J.J. 2014. Black bears in Kentucky. Available webinar. 10/21.

GRANTS (Total extra/intramural grants and amount: 49, \$2,922,141)

Extramural Grants Awarded (41, \$2,635,148)

1. Larkin, J.L., C. Fiss, and J.J. Cox. 2020. Factors affecting habitat selection of GPS-collared elk at multiple scales in Pennsylvania. \$399,369. Pennsylvania Game Commission. State Competitive.
2. Cox, J.J., and M. Springer. 2019. Estimating reproductive rates of cow elk and calf survival in southeast Kentucky. \$160,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
3. Springer, M.T., J.J. Cox, W. Leuenberger, and A. Davis. July 2019. Evaluating small mammal populations and their response to cover crop management. \$75,000. USDA, Natural Resource Conservation Service, Kentucky Conservation Innovation Grant. State competitive.
4. Cox, J.J., and S.M. Murphy. Jan 2018. Demographic and genetic status of a reintroduced river otter population in north-central New Mexico. \$49,894. New Mexico Department of Game and Fisheries Sharing With Wildlife Program. Nationally competitive.
5. Cox, J.J., and S.M. Murphy. Food habits of a reintroduced river otter population in north-central New Mexico. \$17,888. Jan 2018. New Mexico Department of Game and Fisheries Sharing With Wildlife Program. Non-competitive.
6. Lhotka, J., J.J. Cox, C. Barton, and Z. Hackworth. 2017. Impacts of mammal browse on reforested surface mines in southeastern KY. \$3,888. Kentucky Forest Industry Association. State competitive.
7. Hatfield, R.S., M.Z Virani, R. Buij, and J.J. Cox. 2017. The ecology of the Martial Eagle in the Maasai Mara region of southern Kenya. \$8,000. (direct award to R. Hatfield in Kenya not routed through UK). Peregrine Fund. Internationally competitive.
8. Cox, J.J. 2016. Survival, cause-specific mortality, and natality of white-tailed deer in southeast Kentucky. \$55,230. Kentucky Dept. Fish and Wildlife Resources. State competitive.
9. Cox, J.J. 2015. Survival, cause-specific mortality, and natality of white-tailed deer in southeast Kentucky. \$140,200. Kentucky Dept. Fish and Wildlife Resources. State competitive.

10. Cox, J.J. 2014. Survival, cause-specific mortality, and natality of white-tailed deer in southeast Kentucky. \$140,200. Kentucky Dept. Fish and Wildlife Resources. State competitive.
11. Cox, J.J. 2013. Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$27,500. Kentucky Dept. Fish and Wildlife Resources. State competitive.
12. Cox, J.J. 2013. Survival, cause-specific mortality, and natality of white-tailed deer in southeast Kentucky. \$134,600. Kentucky Dept. Fish and Wildlife Resources. State competitive.
13. Cox, J.J. 2013. Does logging and surface mining increase the vulnerability of stream-associated salamanders to chytrid fungus infection? \$5,000. Kentucky Water Resources Research Institute. State competitive.
14. Cox, J.J. 2013. Assessing ecological connectivity and genetic structuring of Southcentral Florida black bears. \$25,000. Disney Worldwide Conservation Fund. Internationally competitive.
15. Cox, J.J. 2013. Cow elk survival, cause-specific mortality, natality, and neonate recruitment in southeastern Kentucky. \$54,000. Rocky Mountain Elk Foundation. Regionally competitive.
16. Cox, J.J. 2013. Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$55,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
17. Cox, J.J. 2013. Population growth and expansion of black bears in Kentucky. \$93,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
18. Cox, J.J. 2012. Survival and cause-specific mortality of cow elk in southeastern Kentucky. \$17,879. Rocky Mountain Elk Foundation. Regionally competitive.
19. Cox, J.J. 2012. Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$50,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
20. Cox, J.J. 2012. Characterization of disease risk in a recently established elk population in Kentucky: implications for herd management and regional metapopulation dynamics. \$63,000. Rocky Mountain Elk Foundation. Regionally competitive.
21. Cox, J.J. 2012. Population growth and expansion of black bears in Kentucky. \$90,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
22. Cox, J.J. 2011. Population growth and expansion of black bears in Kentucky. \$90,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.

23. Cox, J.J. 2011. Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$50,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
24. Cox, J.J. 2011. Southcentral Florida black bear conservation. 2011. \$25,000. Disney Worldwide Conservation Fund. Internationally competitive.
24. Cox, J.J. 2010. Resource selection, survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$29,500. Rocky Mountain Elk Foundation. Regionally competitive.
25. Cox, J.J. 2010. Population dynamics and movement ecology of the black bear in eastern Kentucky. \$90,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
26. Cox, J.J. 2010. Survival, and cause-specific mortality of bull elk in southeastern Kentucky. \$50,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
27. Cox, J.J. 2010. Population estimation and genetic diversity of black bear in Highlands and Glades Counties Florida. \$120,000. Florida Fish and Wildlife Conservation Commission. State competitive (expenses administered and paid directly to senior tech in Florida not thru UK).
28. Cox, J.J. 2009. Dispersal and population expansion of the black bear in eastern Kentucky. \$107,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
29. Cox, J.J. and D.S. Maehr. 2008. Calf survival, meningeal worm impacts, dispersal, and population expansion in an eastern Kentucky elk herd. \$70,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
30. Cox, J.J. and D. Maehr. 2008. Dispersal and population expansion of the black bear in eastern Kentucky. \$98,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
31. Cox, J.J. 2008. Terrestrial nuisance species management plan. \$8,500. Kentucky Dept. Fish and Wildlife Resources. State competitive.
32. Cox, J.J. and M. Dzialak. 2007. The common raven in cliff habitat: detectability and occupancy. \$60,000. Kentucky Dept. Fish and Wildlife Resources. State competitive.
33. Campbell, J., B. Thomas, and J.J. Cox. 2007. Bluegrass Invasive Species Partnership Initiative. \$30,000. National Fish and Wildlife Foundation. Nationally competitive. Assumed role of PI after transfer from J. Campbell.
34. Cox, J.J., and P. Crowley. Bluegrass Savanna-Woodland Restoration. 2007. \$41,500. Kentucky Land Heritage Conservation Fund Board. State competitive.

35. Maehr, D., J.J. Cox, K. Alexy, D. Unger, and J. Larkin. 2006. Evaluation of infrared technologies for estimating black bear and elk populations in Kentucky. \$45,000. Turner Foundation. Nationally competitive.
36. Maehr, D., J.J. Cox, K. Alexy, D. Unger, and J. Larkin. 2006. Evaluation of infrared technologies for estimating black bear and elk populations in Kentucky. \$10,000. Rocky Mountain Elk Foundation. Regionally competitive.
37. Maehr, D., C. Rhoades, C. Barton, J. Larkin, and J.J. Cox. 2004. Effects of elk on soil nutrients and vegetation in southeastern Kentucky. \$10,500. Rocky Mountain Elk Foundation. Regionally competitive.
38. Cox, J.J. and D. Maehr. Elk calf ecology in Kentucky. 2002. \$8,500. Durfee Foundation. Internationally competitive.
39. Cox, J.J. and D. Maehr. Elk calf ecology in Kentucky. 2002. \$13,700. Earthwatch Institute. Internationally competitive.
40. Cox, J.J. and D. Maehr. Elk calf ecology in Kentucky. 2001. \$13,700. Earthwatch Institute. Internationally competitive.

Gift Awards

1. Hatfield, R.S., and J.J. Cox. 2018. Mara raptor project. \$150,000 (\$37,500 x 4 years) BAND Foundation.

Extramural Grants Declined (24, \$2,223,382; 9, \$851,087 since 2013)

1. Hickman, J.B., J.J. Cox, D.C. Harris, T.O. Ochuodho, S.J. Price, M.T. Springer, J.W. Stringer, and J. Yang. 2017. Rogersville Shale Energy and Environment Laboratory, ecological assessment of potential development area. \$323,975 portion of a \$5,911,711 grant. U.S. Dept. of Energy.
2. Cox, J.J. 2015. The significance of sociality: linking individuals to population dynamics in large mammals. \$13,299. National Science Foundation. Doctoral Dissertation Improvement Grant Program (B. Slabach). Nationally competitive.
3. Cox, J.J., and J. Krupa. 2015. Using landscape genetics to investigate forest fragmentation impacts on the Northern Copperhead. \$30,000. Kentucky Science and Engineering Foundation. State competitive.
4. Cox, J.J., and J. Krupa. 2014. Using landscape genetics to investigate forest fragmentation impacts on the Northern Copperhead. \$30,000. Kentucky Science and Engineering Foundation. State competitive.
5. Cox, J.J., and B. Slabach. 2014. Assessing the potential toxicity of surface mining reservoir water for wild and domestic ungulates \$4,968. Kentucky Water Resources Research Institute. Regionally competitive.

6. Cox, J.J., and T. Maigret. 2013. Assessing the effects of highways and surface mining on the genetic diversity and structuring of the timber rattlesnake in central Appalachia. \$175,000. The Orianna Society. Nationally competitive.
7. Cox, J.J. 2013. Bears behaving badly: does toxoplasmosis infection increase neophilic behavior? \$30,000. Kentucky Science and Engineering Foundation. State competitive.
8. Hctor, T., J. Morris, and J.J. Cox. 2013. Synthesis of wide-ranging species data and landowner outreach to facilitate Florida panther conservation in south-central Florida. \$218,845. U.S. Fish and Wildlife Service. Nationally competitive.
9. Cox, J.J., and W. Ulrey. 2013. Southcentral Florida black bear conservation. \$25,000. National Geographic Society. Internationally competitive.
10. Sosa, S., J.J. Cox, C. Romanek, and Q.X. Li. 2012. Foraging ecology of pueo on Johnston Atoll. \$40,000. U.S. Fish and Wildlife Services. Nationally competitive.
11. Slabach, B., P.H. Crowley, and J.J. Cox. 2012. Fission-fusion social dynamics in cow elk: implications for disease transmission and information transfer. \$75,000. National Park Service, Yellowstone National Park. Proposal solicitation to research division.
12. Cox, J.J. 2011. Impacts of a naturalized canid, the coyote, on gray fox, white-tailed deer, and elk in Kentucky. \$83,100. Kentucky Department of Fish and Wildlife Resources. State competitive.
13. Cox, J.J., and J. Guthrie. 2010. Southcentral Florida black bear project. \$277,100. Defenders of Wildlife. Nationally competitive.
14. Cox, J.J., M. Dzialak, and D.S. Maehr. 2007. Habitat characteristics and productivity at red-headed woodpecker breeding locations in the Bluegrass Region: implications for management of savanna-woodland. \$72,119. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.
15. Cox, J.J., M. Dzialak, J. Campbell, and D.S. Maehr. 2007. Effects of native grassland restoration on grassland and savanna bird communities in the Inner Bluegrass Region of Kentucky. \$111,378. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.
16. Barton, C., J.J. Cox, and J.L. Larkin. 2007. Best management practice timber harvest (streamside management zones) impacts on mixed-mesophytic forest amphibian and bird communities. \$113,738. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.
17. Cox, J.J., M. Dzialak, J. Campbell, and D.S. Maehr. 2006. Effects of native grassland restoration on grassland and savanna bird communities in the Inner Bluegrass Region of

Kentucky. \$111,378. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.

18. Cox, J.J., M. Dzialak, and D.S. Maehr. 2006. Population monitoring of the gray fox in Kentucky. \$60,000. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.
19. Barton, C., J.J. Cox, and J.L. Larkin. 2006. Best management practice timber harvest (streamside management zones) impacts on mixed-mesophytic forest amphibian and bird communities. \$113,738. State and Tribal Wildlife Program, Kentucky Department of Fish and Wildlife Resources. Nationally competitive.
20. Maehr, D.S., and J.J. Cox. 2006. Highway mitigation passage structures for wildlife on Interstate 65: ecological considerations for Fort Knox Military Reserve and Bernheim Forest Preserve. \$17,000. Bernheim Research Forest. Non-competitive.
21. Maehr, D.S., and J.J. Cox. 2006. Effects of hunter activity and habitat on white-tailed deer movement in southwestern Indiana. \$88,500. Whitetails Unlimited. Nationally competitive.
22. Cox, J.J., K. Alexy, and D.S. Maehr. 2005. Assessing the population status of gray fox in Kentucky. \$150,000. Kentucky Department of Fish and Wildlife Resources. State competitive.
23. Cox, J.J., J.L. Larkin, K. Alexy, and D.S. Maehr. 2004. Elk restoration in southeastern Kentucky. \$27,000. Earthwatch Institute. Internationally Competitive.
24. Cox, J.J. 2003. Evaluating the effects of fire and grazing on the endangered Bluegrass savanna-woodland ecosystem in Kentucky. \$95,000. David H. Smith Conservation Fellowship. The Nature Conservancy.

Extramural Grants Pending

1. Larkin, J.L., and J.J. Cox. 2018. Characterizing spatio-temporal habitat use of elk in Pennsylvania. \$300,000. Pennsylvania Game Commission. Invited proposal.

Intramural Grants Awarded (8, \$286,993; 3, \$52,963 since 2013)

1. Sena, K., H. Wilson, J. Saylor, J.J. Cox, J. Lhotka. 2020. Reforest the Bluegrass: evaluating 20 years of reforestation in Lexington. \$41,038. UK Sustainability Council.
2. Baker, T., M. Contreras, J.J. Cox, J. Lhotka, S. Price, and G. Stainback. 2014. Orientation to early faculty career funding opportunities. \$5,925. Research Activity Award UK CAFE. College competitive.
3. Cox, J.J. 2013. Wildlife and Conservation Biology Courses Equipment. \$6,000. Teaching Innovation Incentive Fund UK CAFE. College competitive.
4. Cox, J.J. and M. Dzialak. 2008. Gray fox ecology and monitoring in Kentucky. \$66,863. USDA CSREES. College competitive.

5. Maehr, D., S. Fei, and J.J. Cox. 2008. Harnessing cell phone technology to track the black bear in eastern Kentucky. \$59,732. USDA CSREES. College competitive.
6. Cox, J.J., C. Barton, and M. Lacki. 2007. Ecological monitoring initiative at Griffith Woods. \$66,262. USDA Hatch. College competitive.
7. Cox, J.J., K. Alexy, D. Unger, D. Maehr, and J. Larkin. 2006. Evaluation of infrared technologies for estimating black bear and elk populations in Kentucky. \$39,913. USDA CSREES. College competitive.
8. Cox, J.J. 1996. Detecting hybridization events in wild Kentucky canids. \$1,260. Roger W. Barbour Fund for Vertebrate and Field Research, Morehead State University. Campus competitive.

Intramural Grants Declined (3, \$115,000; 1, \$17,000 since 2013)

1. Cox, J.J., C. Barton, J. Lhotka, M. Springer, and Z. Hackworth. 2016. Utilizing herbivore exclusion techniques to improve the success of surface mine reforestation efforts. \$17,000. UK Sustainability Grant. Campus competitive.
2. Cox, J.J., R. Frederick, and L. Patton. 2010. That darn cat: tracking the enigmatic bobcat in Kentucky using GPS technologies. \$50,000. USDA CSREES. College competitive.
3. Cox, J.J., P.H. Crowley, D.S. Maehr, and J.L. Larkin. 2006. Fire and large herbivores at Griffith Woods: GPS telemetry and remote sensing in an endangered bluegrass savanna-woodland. \$48,000. USDA CSREES. College competitive.

Student Grants and Financial Awards (under J. Cox co/advisorship; 28; \$53,245)

1. Williams, K., and N. Hooven. 2020. \$2,107. Establishing blood parameter reference ranges for elk calves in Kentucky and quantifying their effects on survival. Karri Casner Environmental Sciences Fellowship. Campus competitive.
2. Wolf, G. 2018. River otter diet in the upper Rio Grande, New Mexico. \$5,000. Student Sustainability Grant. Campus competitive.
3. Matthews, J. 2018. Travel grant award. Wallace Endowment. \$258. UK Department of Forestry. Departmentally competitive.
4. Hatfield, R.S. 2017. Travel grant award. Wallace Endowment. \$1000. UK Department of Forestry. Departmentally competitive.
5. Maigret, T. 2017. Investigating the population genetic consequences of surface mining on copperhead populations in eastern Kentucky. \$1000. UK Appalachian Center Eller and Billings Student Research Award. Campus competitive.

6. Hackworth, Z. 2017. Mammalian herbivory impacts on surface coal mine reclamation and reforestation in southeastern KY. UK Appalachian Center Eller & Billings Student Research Award. \$1,000.
7. Hackworth, Z. 2017. Mammalian herbivory impacts on surface mine reforestation in southeastern KY. \$3500. Karri Casner Environmental Sciences Fellowship. Campus competitive.
8. Hackworth, Z. 2017. Assessing impacts of streamsize management zones on breeding bird communities. \$1000. Burt Monroe Award Avian Research. State competitive.
9. Maigret, T. 2017. Travel grant award. Wallace Endowment. \$1000. UK Department of Forestry. Departmentally competitive.
10. Slabach, B. 2016. Summer institute in statistics and modeling infectious diseases \$1350. Travel grant. University of Washington. Internationally competitive.
11. Slabach, S. 2016. Travel grant. \$450. UK Graduate School. Campus competitive.
12. Hatfield, S. 2016. Long-term genetic consequences of red wolf-coyote hybridization and demographics of a large canid in Kentucky. \$4900. Karri Casner Environmental Sciences Fellowship. Campus competitive.
13. Slabach, B. 2016. Travel grant award. Wallace Endowment. \$555. UK Department of Forestry. Departmentally competitive.
14. Hatfield, S. 2016. The ecology of the Martial Eagle in Southern Kenya. \$6,500. Student Sustainability Grant. Campus competitive.
15. Hatfield, S. 2016. American Kestrel nestbox project. \$970. Kentucky Audubon Society. State competitive.
16. Shaffer, J. 2011-2016. Travel grant awards. Wallace Endowment. \$1525. UK Department of Forestry. Departmentally competitive.
17. Shaffer, J. 2011-2016. G. Flora Ribble Conference Travel Enrichment and summer grant \$6300. Departmentally competitive.
18. Slabach, B. 2015. Travel grant award. Wallace Endowment. \$1000. UK Department of Forestry. Departmentally competitive.
19. Hatfield, R.S. 2015. Hitnes' The Image Hunter talk and mural-making workshop. \$2000. Student sustainability grant. University of Kentucky. Campus competitive.

20. Maigret, T. 2015. \$2650. Landscape genetic of pit vipers in Kentucky. College of Agriculture, Food and Environment, Karri Casner Environmental Sciences Fellowship. Campus competitive.
21. Maigret, T. 2015. \$3500. Theodore Roosevelt Memorial Fund. Nationally competitive.
22. Slabach, B., and J. Hast. 2014. Nutrient supplementation vs. toxicity: A case study of indirect anthropogenic effects. \$1200. College of Agriculture, Food and Environment Karri Casner Environmental Sciences Fellowship. Campus competitive.
23. Maigret, T. 2014. UK graduate student travel award. \$400. University competitive.
24. Hast, T. 2014. Travel grant award. Wallace Endowment. \$875. UK Department of Forestry. Departmentally competitive.
25. Slabach, B. 2013. Social system dynamics inform disease transmission. \$400. Sigma Xi. Nationally competitive.
26. Shaffer, J. 2013. The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass of Kentucky. \$800. G. Flora Ribble Fund. Department of Biology competitive.
27. Hildreth, A. 2013. Travel grant award. Wallace Endowment. \$1000. UK Department of Forestry. Departmentally competitive.
28. Slabach, B. Travel grant award. Wallace Endowment. \$1005. UK Department of Forestry. Departmentally competitive.

Student Grants Declined (under J.J. Cox advisorship; 9; \$105,299)

1. Hackworth, Z.J. 2017. Mammalian Herbivory Impacts on Surface Coal Mine Reclamation and Reforestation in Southeastern KY. KY Native Plant Society. Student Research Grant. \$500. State competitive.
2. Shaffer, J. 2017. Emerti Faculty Endowed Fellowship. \$2000. University of KY. Campus competitive.
3. Shaffer, J. 2017. University of KY Arts and Sciences Graduate Fellowship. \$15,000. College competitive.
4. Shaffer, J. 2016. Emerti Faculty Endowed Fellowship. \$2000. University of KY. Campus competitive.
5. Shaffer, J. 2016. University of KY Arts and Sciences Graduate Fellowship. \$15,000. College competitive.

6. Slabach, B. 2015. The significance of sociality: linking individuals to population dynamics in large mammals. \$13,299. National Science Foundation. Doctoral Dissertation Improvement Grant Program. Nationally competitive.
7. Slabach, B., J.J. Cox, and P. Crowley. 2013. Using remote sensing technology to assess social structure, dynamics, and function in a gregarious mega-herbivore. \$10,000. Graduate Women in Science Fellowship. Nationally competitive.
8. Maigret, T. 2013. Post-partum movements of timber rattlesnake neonates in southeastern Kentucky. \$500. Kentucky Society of Natural History. Statewide competitive.
9. Betancourt, A. 2013. Does toxoplasmosis infection increase neophilic behavior or large carnivores? National Science Foundation Graduate Research Fellowship. \$48,000

PRESENTATIONS (167)

(*indicates award-winning presentations, ^aindicates co/advised undergraduate student primary author, ^bindicates co/advised graduate student primary author)

1. ^bWolf, G., J.J. Cox, and M. Springer. 2018. Diet of recently reintroduced river otters in the upper Rio Grande of New Mexico. Annual Meeting of the Kentucky Chapter of The Wildlife Society. February 22. Cadiz, KY.
2. ^{*b}Matthews, J., M. Springer, and J.J. Cox. 2018. The impact of white-tailed deer browsing on corn and soybean yields in western Kentucky. Southeast Deer Study Group. Feb 19-21. Nashville, TN.
3. ^bMatthews, J., M. Springer, and J.J. Cox. 2018. The impact of white-tailed deer browsing on corn and soybean yields in western Kentucky. 78th Midwest Fish and Wildlife Conference. Jan 28-31. Milwaukee, WI.
4. ^bMatthews, J., M. Springer, and J.J. Cox. 2018. The impact of white-tailed deer browsing on corn and soybean yields in western Kentucky. Annual Meeting of the Kentucky Chapter of The Wildlife Society. February 22. Cadiz, KY.
5. ^bMaigret, T.A., J.J. Cox, and J. Yang. 2018. Persistent geophysical effects of mining threaten ridgetop biota of Appalachian forests. Joint Meeting of Ichthyologists and Herpetologists. 12 July 2018. Rochester, NY.
6. ^bMaigret, T.A., J.J. Cox, and J. Yang. 2018. Landscape-level effects of surface mining on Appalachian biodiversity: from population genetics to ecosystems. Sharing Work on Appalachia in Progress (SWAP). Feb 21. Lexington, KY.
7. ^bHackworth, Z.J., J.J. Cox, J.M. Lhotka, C.D. Barton, and M.T. Springer. 2018. Mammalian Herbivory Impacts on Surface Mine Reclamation and Reforestation. Annual Meeting of the Kentucky Chapter of The Wildlife Society. February 22. Cadiz, KY.

8. ^bHackworth, Z.J. 2018. Mammal Herbivory Impacts on Surface Mine Reclamation and Reforestation in Southeastern KY. UK Appalachian Center. Lexington, KY. Sharing Work on Appalachia in Progress. February 21. Lexington, KY.
9. ^bHackworth, Z.J., J.M. Lhotka, J.J. Cox, C.D. Barton, and M.T. Springer. 2017. Mammal Herbivory Impacts on Surface Mine Reforestation Success. UK Robinson Forest Field Day. June 3. Clayhole, KY.
10. ^bHackworth, Z.J. 2017. Mammal Herbivory Impacts on Surface Mine Reclamation and Reforestation in Southeastern KY. Kentucky Forest Industries Association Annual Meeting. KY Sustainable Forestry Initiative Sustainable Implementation Committee Session. April 5. Lexington, KY.
11. ^bMaigret, T.A., J.J. Cox, and J. Yang. 2017. Persistent geophysical effects of mining threaten ridgetop biota of Appalachian forests. 7th Annual Sustainability Forum. 6 December 2017, Lexington, KY, USA. Poster Presentation.
12. ^bMaigret, T.A., J.J. Cox, and J. Yang. 2017. Surface coal mining removes preferred winter habitat of timber rattlesnakes in the Cumberland Plateau of southeastern Kentucky, USA. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting. 11 February 2017, Little Rock, Arkansas, USA. Oral Presentation.
13. Shaffer, J.D., S.K. Gleeson, and J.J. Cox. 2017. Prescribed fire dynamics in an experimentally reconstructed Kentucky Bluegrass savanna-woodland. Center for Ecology, Evolution, and Behavior (CEEB) Annual Symposium. University of Kentucky, Lexington.
14. ^bHatfield, R.S., R. Buij, M.Z. Virani, and J.J. Cox. 2017. Martial eagle demography, diet, and habitat use in the greater Maasai Mara ecosystem of southwestern Kenya. Invited presentation to the Peregrine Fund Nov 9. Boise, ID.
15. ^bHatfield, R.S., R. Buij, M.Z. Virani, and J.J. Cox. 2017. Martial eagle demography, diet, and habitat use in the greater Maasai Mara ecosystem of southwestern Kenya. Raptor Research Foundation Annual Conference. Nov 7-12. Salt Lake City, UT.
16. Cox, J.J., S. Murphy, B. Slabach, J. Hast, J. McDermott, S.C. Maehr, O.C. Kwok, and J.P. Dubey. 2017. High seroprevalence of *Toxoplasma gondii* in two large mammal populations in Central Appalachia. Annual Conference of The Wildlife Society. Sept 22-26. Albuquerque, NM.
17. ^bSlabach, B., J.T. Hast, P.H. Crowley, W. Bowling, R.D. Crank, G. Jenkins, and J.J. Cox. 2017. Mortality and human predation: how sociality influences probability of mortality of large mammals. Annual Conference of The Wildlife Society. Sept 22-26. Albuquerque, NM.
58. ^bMurphy, S.M., J.J. Cox, B.C. Augustine, J.T. Hast, J.H. Plaxico, T. Curry, M. Strunk, S.C. Maehr, and J.M. Guthrie. 2017. Population viability, reintroduction success, and harvest

sustainability of black bear populations in Kentucky. 2017 Meeting of the Kentucky Chapter of The Wildlife Society, 16-17 February. Barren River State Park, KY.

59. ^bMaigret, T., and J.J. Cox. 2017. Surface coal mining removes preferred hibernacula habitat of timber rattlesnakes in the Cumberland Plateau of Kentucky. Kentucky Chapter of The Wildlife Society. Feb 16-17. Barren River State Park, KY.
60. ^bMaigret, T., and J.J. Cox. 2017. Surface coal mining removes preferred hibernacula habitat of timber rattlesnakes in the Cumberland Plateau of Kentucky. Southeastern Partners in Amphibian Conservation. Feb 18-19. Little Rock, AR.
61. ^bSlabach, B., P.H. Crowley, and J.J. Cox. 2017. How social structure influences probability of mortality in large mammals. University of KY Center for Ecology and Evolution Annual Symposium. May. Lexington, KY.
62. ^bSlabach, B., P.H. Crowley, and J.J. Cox. 2017. How social structure influences probability of mortality in large mammals. Integrating personality, social networks, and collective behavior workshop. March. Lexington, KY.
63. Cox, J.J. 2016. Going wild with science. Presentation to UK STEM Cats program. Oct 10. Lexington, KY.
64. ^bMcDermott, J.R., ^bC.A. Haymes, G. Jenkins, W. Bowling, J.T. Hast, K. Sams, and J.J. Cox. 2016. Southeastern Kentucky white-tailed deer project. Oral presentation. Midwestern Deer and Turkey Study Group Meeting. Aug 22-25. General Butler State Resort Park, KY.
65. ^bMcDermott, J., ^bC. Haymes, ^bJ. Hast, G. Jenkins, W. Bowling, K. Sams, and J.J. Cox. 2016. White-tailed deer fawn survival in a southeastern Kentucky population. Annual Southeastern Deer Study Group Meeting. Feb 15-18. Raleigh, NC.
66. Cox, J.J. 2016. Black bears in Kentucky. Workshop on "The amazing natural resources and biodiversity of Appalachia." Osher Lifelong Learning Institute at University of Kentucky. Feb. 1. Lexington, KY.
67. ^bSlabach, B. and J.J. Cox. 2016. All in the family? linking sociality and relatedness to group dynamics of large mammals. Annual Meeting of The Wildlife Society. Oct 15-19. Raleigh, NC.
68. ^bShaffer, J.D., D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. 2016. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. Experimental Urban Ecology: An NSF-Sponsored Workshop. Ecological Research and Education Center (EREC), Lexington, KY. November 2016.
69. ^bHaymes, C., J. McDermott, J. Hast, G. Jenkins, W. Bowling, K. Sams, and J.J. Cox. 2016. White-tailed deer fawn survival in a southeastern Kentucky population. Annual Southeastern Deer Study Group Meeting. Feb 15-18 Raleigh, NC.

70. ^bShaffer, J.D, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. 2016. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. Ecological Society of America (ESA) Annual Meeting. Ft. Lauderdale, FL.
71. ^{*b}Shaffer, J.D, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. 2016. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland remnant. 2016 Joint Meeting of the Kentucky and Tennessee Prescribed Fire Councils. July. Ft. Campbell, KY.
72. ^bShaffer, J.D, D.J. Reed, C.P. Bate, S.K. Gleeson, and J.J. Cox. 2016. Prescribed fire impacts on tree seedling growth in a Kentucky Bluegrass Savanna-Woodland. Center for Ecology, Evolution, and Behavior (CEEBS) Annual Symposium. May. University of Kentucky, Lexington, KY.
73. ^bSlabach, B., J. T. Hast, C. Barton, and J.J. Cox. 2015. A matter of taste? Geophagic behavior of free-ranging ungulates on a human altered landscape. The Wildlife Society 22nd Annual Conference. Oct.17-20, Winnipeg, Canada.
74. ^bHaymes, C., J. McDermott, J.T. Hast, G. Jenkins, W. Bowling and J.J. Cox. 2015. Immobilization of wild white-tailed deer with BAM. The Wildlife Society 22nd Annual Conference. Oct.17-20, Winnipeg, Canada.
75. ^bMurphy, S.M., J.J. Cox, J.T. Hast, B. Augustine, J. Plaxico, and S. Dobe. 2015. Demographic and genetic characteristics of a reintroduced black bear population in the Big South Fork Area of Kentucky and Tennessee. Kentucky Chapter of The Wildlife Society Annual Meeting. Natural Bridge State Park, Sept. Slade, KY.
76. ^bHaymes, C., J. McDermott, J.T. Hast, G. Jenkins, W. Bowling and J.J. Cox. 2015. Immobilization of wild white-tailed deer with BAM. Kentucky Chapter of The Wildlife Society 22nd Annual Conference. Natural Bridge State Park, Sept. Slade, KY.
77. ^bHamilton, S., J.J. Cox, A. Drayer, J.M. Richards, and J.J. Treanor. 2015. An investigation of chytrid fungus infection in plethodontid salamander communities of logged, surface mined and intact forests of eastern Kentucky. The Annual Water Resources Symposium. March 9. Lexington, KY.
78. ^bHildreth, A., J.J. Cox, J.T. Hast, B. Slabach. 2014. Effects of capture metrics on blood serum profiles of elk in Kentucky. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
79. ^bShaffer, J.D., S.K. Gleeson, J.J. Cox, and J.M. Lhotka. 2014. Mammalian herbivory on fourteen experimentally planted native hardwood tree seedlings of the Kentucky Bluegrass savanna-woodland community. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.

80. ^bFelch, J., and J.J. Cox. 2014. The common raven in cliff habitat of the southern Appalachians: detectability and occupancy. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
81. ^bSlabach, B., J.T. Hast, K. Brunjes, P.H. Crowley, and J.J. Cox. 2014. Selective take, group dynamics, and managed species: individual and group level patterns in a gregarious megaherbivore. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
82. ^bHast, J.T., J.J. Cox, K. Brunjes, R.D. Crank, W.E. Bowling, and G. Jenkins. 2014. Survival and cause-specific mortality of bull elk in southeastern Kentucky. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
83. ^bHamilton, S., J.J. Cox, A. Drayer, J.M. Richards, and J.J. Treanor. 2014. An investigation of chytrid fungus infection in plethodontid salamander communities of logged, surface mined and intact forests of eastern Kentucky. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
84. ^bBetancourt, A., J.J. Cox, B. Tom, E. Lyons, and M. Nielsen. 2014. Efficacy of injectable ivermectin on gastrointestinal helminthes in captive wild elk. The Wildlife Society 21st Annual Conference. Oct. 25-30, Pittsburg, PA.
85. ^bSlabach, B.S., J.T. Hast, P.H. Crowley, G. Jenkins, W. Bowling, D. Crank. K. Brunjes, and J.J. Cox. 2014. Cause-Specific Mortality, Group Dynamics, and VITs: Three Approaches to Cow Elk Management in Kentucky. 19th Annual Eastern Elk Management Workshop, April 27-30, Breaks Interstate Park, VA.
86. ^{*b}Maigret, T., J.J. Cox, D. Schneider, C.D. Barton, S.J. Price, and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. The Annual Meeting of the Association of Southeastern Biologists, April 3-4, Spartanburg, SC.
87. ^aCunningham, J., and J.J. Cox. 2014. Tick species and their potential effects within the elk population of eastern Kentucky. National Conference on Undergraduate Research. April 3-5, Lexington, KY.
88. ^aSchwager, R., A. Betancourt, J.J. Cox, E. Lyons, M. Nielsen. 2014. Parasite prevalence in Kentucky elk as determined by fecal egg counts. Feb. 27, Posters-at-the-Capitol, Frankfort, KY.
89. ^bMaigret, T., J.J. Cox, D. Schneider, C.D. Barton, S.J. Price, and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. The Wildlife Society, Kentucky Chapter State Conference. Feb 20-21, Barren River State Park, KY.

90. ^bMaigret, T.A., J.J. Cox. 2014. A review of best management practices and the mitigation of stream-breeding salamanders in the eastern deciduous forest. 19th Annual Central Hardwoods Conference. March 11, Carbondale, IL.
91. ^bMaigret, T.A., J.J. Cox, D.R. Schneider, C.D. Barton, S.J. Price, and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting. Feb 13-14, Lake Cumberland, KY.
92. ^bShaffer, J.D., S.K. Gleeson, J.J. Cox, and J.L. Lhotka. 2014. The effects of mammalian herbivory on the growth of native hardwood tree seedlings of the Kentucky Bluegrass blue ash-oak savanna-woodland. The Wildlife Society, Kentucky Chapter State Conference. Feb 20-21. Barren River State Park, KY.
93. ^{*b}Shaffer, J.D., S.K. Gleeson, J.J. Cox, and J.L. Lhotka. 2014. The effects of mammalian herbivory on the growth of native hardwood tree seedlings of the Kentucky Bluegrass blue ash-oak savanna-woodland. American Society of Plant Biologists Annual Meeting, March 29-30, Lexington, KY.
94. ^{*b}Hast, J.T., J.J. Cox, K. Brunjes, W. Bowling, D. Crank, and G. Jenkins. 2014. Survival and cause-specific mortality of bull elk in southeastern Kentucky. The Wildlife Society, Kentucky Chapter State Conference. Feb 20-21, Barren River State Park, KY.
95. ^bSlabach, B., J.J. Cox, and P.H. Crowley. 2014. Partnering standard wildlife monitoring and traditional behavioral techniques: understanding group dynamics in managed species. The Wildlife Society, Kentucky Chapter State Conference. Feb 20-21, Barren River State Park, KY.
96. ^bBetancourt, A., J.J. Cox, B.M. Tom, E.T. Lyons, and M.K. Nielsen. 2014. Efficacy of injectable ivermectin on gastrointestinal helminths in captive wild elk (*Cervus canadensis*). The Wildlife Society, Kentucky Chapter State Conference. Feb 20-21, Barren River State Park, KY.
97. Cox, J.J. 2013. The road to recovery? A century of elk management and conservation in the eastern United States. The Wildlife Society 20th Annual Conference. Oct. 6-10, Milwaukee, WI.
98. ^bHast, J.T., J.J. Cox, K. Brunjes, G. Jenkins, D. Crank, and W. Bowling. 2013. Survival and cause-specific mortality of bull elk in southeastern Kentucky. The Wildlife Society 20th Annual Conference. Oct. 6-10. Milwaukee, WI.
99. Kristensen, T.V., E.E. Puckett, J.T. Hast, C. Carpenter, J.L. Sajecki, J.L. Belant, J. Beringer, M. Means, J.J. Cox, R.A. Van Den Bussche, L.S. Eggert, D. White, Jr., and K.G. Smith. 2013. Black bear (*Ursus americanus*) dispersal in expanding populations. Twenty-second Conference of the International Association for Bear Research and Management, Sept 15-20, Provo, UT.

100. ^bShaffer, J.D., S.K. Gleeson, J.J. Cox, and J.L. Lhotka. 2013. Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass blue ash-oak savanna-woodland. 98th Ecological Society of America Annual Conference. August 4-9, Minneapolis, MN.
101. ^bBetancourt, A., B. Tom, M.K. Nielsen, and J.J. Cox. 2013. Efficacy of injectable ivermectin on gastrointestinal helminths in captive wild elk (*Cervus elaphus*). 2013. 58th Annual Meeting The American Association of Veterinary Parasitologists July 20-23, Chicago, IL.
102. ^aHatfield, R.S., and J.J. Cox. 2013. Population dynamics of the African lion (*Panthera leo*) within the Maasai Mara region of southern Kenya. The National Conference on Undergraduate Research. April 11-13, LaCrosse, WI.
103. ^aHatfield, R.S., and J.J. Cox. 2013. Population dynamics of the African lion (*Panthera leo*) within the Maasai Mara region of southern Kenya. Posters-at-the-Capitol. Feb. 21, Frankfort, KY.
104. ^bMaigret, T.A., J.J. Cox, S.J. Price, and C. Barton. 2013. Population ecology and habitat preferences of timber rattlesnakes in an increasingly fragmented landscape of southeast Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, Feb. 21-24, McCormick, SC.
105. ^bHildreth, A. M., J. T. Hast, B. L. Slabach, A. Betancourt, J. J. Cox, K. Brunjes, W. Bowling, D. Crank, and G. Jenkins. 2013. Can body condition and select physiological indicators predict survival of elk post-translocation? April 28-30. 18th Annual Eastern Elk Management Workshop, Cable, WI.
106. ^bTreanor, J.T, C. Germania, P.H. Crowley, J.J. Cox, P.J. White, R.L. Wallen, and D.W. Blanton. 2012. Estimating probabilities of active brucellosis infection in Yellowstone bison through quantitative serology and tissue culture. The Wildlife Society 19th Annual Conference. Oct. 13-17. Portland, OR.
107. ^bShaffer, J.D., S.K. Gleeson, J.J. Cox, and J.M. Lhotka. 2012. The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass of Kentucky. Ecological Society of America Annual Conference. August 5-10. Portland, OR.
108. ^bHast, J.T., J.J. Cox, S. Fei, D. Weisrock, S. Dobey, and J. Plaxico. 2012. Genetic diversity, structure, and recolonization patterns of black bears in eastern Kentucky The Wildlife Society, Kentucky Chapter State Conference. Feb 23-24, Dale Hollow Lake State Park, KY.
109. ^{*b}Maigret, T., C. Barton, J.J. Cox, J.L. Larkin, and D. Schneider. 2012. Impacts of different silvicultural treatments on salamander communities in Robinson Forest, Breathitt County, Kentucky. Feb 23-24, Dale Hollow Lake State Park, KY.

110. ^{*b}Murphy, S.M., J.J. Cox, J.T. Hast, and S. Fei. 2012. Using non-invasive hair sampling to estimate the size and density of a reintroduced black bear population in south-central Kentucky. The Wildlife Society, Kentucky Chapter State Conference. Feb 23-24, Dale Hollow Lake State Park, KY.
111. ^bBetancourt, A., E.T. Lyons, M.K. Neilsen, and J.J. Cox. 2012. Helminths gone wild: conditional responses leading to harmful parasitization of cervids. The Wildlife Society, Kentucky Chapter State Conference. Feb 23-24, Dale Hollow Lake State Park, KY.
112. Cox, J.J. 2012. Black bears return to Western Appalachia: challenges and opportunities. Tri-state wildlife and woodland program. March 24. Cincinnati, OH.
113. ^aEhlmann, S., J.J. Cox, and P.H. Crowley. 2011. Movement and arousal decisions by healthy and diseased cave-dwelling bats during hibernation. Comparative Decision-Making Conference. May 13-15. Lexington, KY.
114. Barton, C.D., J.W. Stringer, E.L. Witt, M.A. Cherry, S.A. Grubbs, J.J. Cox, D.W. Bowker, J. Larkin, B. Lee and R.K. Kolka. 2011. Water quality and yield: effect of riparian zone width and disturbance. Southern Forest Research Partnership, Inc.: Forestry Research in the South. August.
115. ^bTom, B.M., and J.J. Cox. 2011. A comparison of noninvasive genetic survey methods for monitoring mesocarnivore populations in Kentucky. The Wildlife Society 18th Annual Conference. Nov. 5-10. Waikoloa, HI.
116. ^bHast, J.T., B.A. Augustine, J.J. Cox, S.M. Murphy, S. Dobey, and J. Plaxico. 2011. Reproductive ecology and of a recolonizing black bear population in Kentucky. The Wildlife Society 18th Annual Conference. Nov. 5-10. Waikoloa, HI.
117. ^{*b}Murphy, S.M., J.J. Cox, J.T. Hast, and S. Fei. 2011. Using non-invasive hair sampling to estimate the size and density of a reintroduced black bear population in south-central Kentucky. The Wildlife Society 18th Annual Conference. Nov. 5-10. Waikoloa, HI.
118. ^bGuthrie, J.G., J.J. Cox, and W.A. Ulrey. 2011. Modeling road-crossing behavior for the southcentral Florida black bear. The Wildlife Society 18th Annual Conference. Nov. 5-10. Waikoloa, HI.
119. ^bFelch, J., J.J. Cox, and M. Dzialak. 2011. The Common Raven in cliff habitat: detectability and occupancy. The Wildlife Society, Kentucky Chapter State Conference. February 24-25. Lake Cumberland State Park, KY.
120. ^bMurphy, S.M., J.J. Cox, J.T. Hast, B. Augustine, and S. Fei. 2011. South-central Kentucky black bear population parameters. The Wildlife Society, Kentucky Chapter State Conference. February 24-25. Lake Cumberland State Park, KY.

121. Cox, J.J. 2010. Tales of a repatriated megaherbivore: challenges and opportunities for management of reintroduced elk in Appalachia. Proceedings of the 17th Central Hardwood Forest Conference. April 5-7. Lexington, KY.
122. ^bHast, J.T., J.J. Cox, S. Fei, D. Weisrock, S. Dobey, and J. Plaxico. 2010. Genetic diversity, structure, and recolonization patterns of black bears in eastern Kentucky Proceedings of the 17th Central Hardwood Forest Conference. April 5-7. Lexington, KY.
123. ^bAugustine, B.A., P.H. Crowley, J.J. Cox, and D.S. Maehr. 2010. Understanding controllable sources of fix proportion bias in GPS telemetry. The Wildlife Society, Kentucky Chapter State Conference. February 18-19. Mammoth Cave, KY.
124. ^{*b}Hast, J.T., J.J. Cox, S. Fei, D. Weisrock, S. Dobey, and J. Plaxico. 2010. Genetic diversity, structure, and recolonization patterns of black bears in eastern Kentucky. The Wildlife Society, Kentucky Chapter State Conference. February 18-19. Mammoth Cave, KY.
125. ^bFelch, J., J.J. Cox, and M. Dzialak. 2010. The Common Raven in cliff habitat: detectability and occupancy. The Wildlife Society 17th Annual Conference. Oct. 2-6. Snowbird, UT.
126. ^bMurphy, S.M., J.J. Cox, J.T. Hast, B. Augstine, and S. Fei. 2010. Beyond the founders? Using non-invasive hair sampling to estimate the size, density, and genetics of a black bear population in south-central Kentucky. The Wildlife Society 17th Annual Conference. Oct. 2-6. Snowbird, UT.
127. Cox, J.J., L. Dahl, K. Alexy, D. Unger, W. Bowling, D. Maehr, and J. Larkin. 2009. Irruptive growth of reintroduced elk in Kentucky: looming management and conservation challenges. Society for Conservation Biology 23rd Annual Conference. July 10-16. Beijing, China.
128. Cox, J.J. 2009. Elk reintroduction in Kentucky: challenges and opportunities in the 21st century. Apr.22. (Invited) Alice Lloyd College, Hindman, KY.
129. Cox, J.J. 2009. Donuts and dart rifles, coal mines and cabbage palms: challenges and opportunities in studying the black bear in Kentucky and Florida. American Association of Laboratory Animal Science, (Invited) May 16. Louisville, KY.
130. Cox, J.J. 2009. Elk reintroduction in Kentucky: mission accomplished. Now what? (Invited) Indiana University Southeast. Apr. 15. New Albany, IN.
131. ^bWhittle, A., S. Fei, and J.J. Cox. 2008. Global climate change and its effects on large carnivore habitat in Florida. The Wildlife Society 15th Annual Conference. Miami, FL.
132. ^bDahl, L.M., J.J. Cox, K.J. Alexy, J.E. Duchamp, D.S. Maehr, D.E. Unger, W.E. Bowling, J.L. Larkin. 2008. Using FLIR to assess abundance and distribution of elk in eastern Kentucky. The Wildlife Society 15th Annual Conference. Nov. 8-12. Miami, FL.

133. ^bBowling, W., D.S. Maehr, J.J. Cox, L.M. Dahl, and K. Alexy. 2008. Movements, home range characteristics, and demographics of elk in eastern Kentucky. The Wildlife Society 15th Annual Conference. Nov. 8-12. Miami, FL.
134. ^bWhittle, A., S. Fei, and J.J. Cox. 2008. Black bear and Florida panther habitat and the effects of climate change. In proceedings of OFWIM Annual Meeting and Conference: Using innovative technology to move from planning to implementation. Albuquerque, NM.
135. ^bWhittle, A., S. Fei, and J.J. Cox. 2008. Global climate change and its effects on large carnivore habitat in Florida. In, proceedings of Florida's Wildlife: On the Frontline of Climate Change. Orlando, FL.
136. Cox, J.J. 2007. Wildlife reintroductions: a perturbed state of affairs. (Invited) The Wildlife Society 14th Annual Conference. Sept. 22-26. Tucson, AZ.
137. Cox, J.J. 2007. Inconvenient truths? (Invited) Environmental challenges for the 21st century: Appalachian and Minority, Science, Technology, Engineering, & Math Majors, June 11. Lexington, KY.
138. Cox, J.J., D.S. Maehr, Z. Danks, N.W. Seward, and K. Alexy. 2007. Coyote-elk relations in southeastern Kentucky (Invited). Southeastern Furbearers Workshop, May 9-12. Cadiz, Y.
139. Maehr, D.S., D.E. Unger, H.B. Harris, W.A. Ulrey, R. Jensen, J.M. Guthrie, V. Frary, J.L. Larkin, A.N. Schumann, L.M. Dahl, J.J. Cox, and J.H. Harrelson. 2007. University of Kentucky Black Bear Research Summary. Eastern Black Bear Workshop. April. Shepardstown, WV.
140. Cox, J.J., D.S. Maehr, Z. Danks, N.W. Seward, and K. Alexy. 2006. Coyote-elk relations in southeastern Kentucky. The Wildlife Society 13th Annual Conference. Sept. 23-27. Anchorage, AK.
141. Maehr, D.S., J.J. Cox, and J.L. Larkin. 2005. Florida panther habitat use: a new approach to a management dilemma. 12th Annual Conference of The Wildlife Society. September 25-29. Madison, WI.
142. Cox, J.J. 2005. Where do we go from here? The Griffith Woods restoration project. (Invited) Annual Conference of the Kentucky Academy of Science. Eastern Kentucky University. Nov. 10. Richmond, KY.
143. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2005. A Euclidean distance-based habitat use analysis of the endangered Florida panther. Society for Conservation Biology 19th Annual Conference. July 15-19. University of Brasilia, Brazil.
144. Maehr, D.S., J.J. Cox, J.L. Larkin, P.H. Crowley, J. Treanor, T.S. Hoctor, and J.L. Gittleman. 2005. Do life histories and landscape predict colonization success in large mammals? 9th International Mammalogical Congress, August. Sapporo, Japan.

145. Ter Beest, J.M., D.S. Maehr, C.D. Barton, J.L. Larkin, and J.J. Cox. 2005. Effects of a restored elk population on soils, vegetation, and water quality in eastern Kentucky. 12th Annual Conference of The Wildlife Society. September 25-29. Madison, WI.
146. Seward, N.W., D.S. Maehr, J.J. Cox, and J.L. Larkin. 2003. Mortality and survival of elk calves in eastern Kentucky. 10th Annual Conference of The Wildlife Society. September 6-10. Burlington, VT.
147. Larkin, J.L., D.S. Maehr, J. Treanor, J.J. Cox, H. Loring, and G. Plumb. 2003. A comprehensive rapid-assessment for research agenda development: a case study for elk in Yellowstone National Park. 7th Biennial Scientific Conference on the Greater Yellowstone Ecosystem. October 6-8. Mammoth Hot Springs, WY.
148. Maehr, D.S., J.J. Cox, and J.L. Larkin. 2003. Landscape history: dictating the conservation approach for large mammals. 9th Annual Conference of The Wildlife Society. September 6-10. Burlington, VT.
149. Seward, N.W., J.J. Cox, J. Gasset, D.S. Maehr, and J.L. Larkin. 2002. Field searches are superior to vaginal-implant transmitters for locating elk calves. 7th Annual Eastern Elk Management Workshop. May 4-8. Killarney, Ontario.
150. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2002. Send them to the Redbird: elk reintroduction and perturbation analysis in the Daniel Boone National Forest. The Wildlife Society 9th Annual Conference. Sept. 23-28. Bismarck, ND.
151. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2002. The biogeography of faunal place names in the United States. Society for Conservation Biology 16th Annual Conference. University of Kent. July 14-July 18. Canterbury, England.
152. Larkin, J.L., D.S. Maehr, J.J. Cox, M.W. Wichrowski, N.W. Seward, D. Crank, and C. Logsdon. 2002. Restored elk in Kentucky: past trends and future threats to long-term viability. 7th Annual Eastern Elk Managers Workshop, May 4-8. Killarney, Ontario.
153. Cox, J.J., J.L. Larkin, D.S. Maehr, and M.W. Wichrowski. 2001. Colonizing patterns of a restored elk population in eastern Kentucky. Society for Conservation Biology 15th Annual Conference. University of Hawaii, July 29-Aug. 1. Hilo, HI.
154. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2001. Kentucky mountain elk. Earthwatch Institute Annual Conference. Tufts University, Nov.13-16. Boston, MA.
155. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2001. Distribution, density, and historical range fidelity of select place names in the United States. The Wildlife Society 8th Annual Conference. Sept. 25-29. Reno, NV.

156. Cox, J.J., L. Meade, D. Yancy, and D.S. Maehr. 2001. Taxonomic status of wild *Canis* in Kentucky. 55th Annual Conference of the Southeastern Fish and Wildlife Agencies. Oct. 13-17. Louisville, KY.
157. Wichrowski, M., J.L. Larkin, D.S. Maehr, and J.J. Cox. 2001. Colonization patterns of a restored elk population in Appalachia. The Wildlife Society 8th Annual Conference. Sept. 25-29. Reno, NV.
158. Larkin, J.L., D.S. Maehr, J.J. Cox, and M.W. Wichrowski. 2001. Demographic characteristics of a restored elk population. The Wildlife Society 8th Annual Conference. Sept. 25-29. Reno, NV.
159. Larkin, J.L., D.S. Maehr, J.J. Cox, and M.W. Wichrowski. 2001. Demographic characteristics of a restored elk population. Society for Conservation Biology 15th Annual Conference. July 29-Aug. 1. University of Hawaii, Hilo, HI.
160. Larkin, J.L., D.S. Maehr, J.J. Cox, R.D. Crank, M.W. Wichrowski, and E.G. Springborn. 2000. Elk restoration in Kentucky: Current findings and future direction. The Wildlife Society 7th Annual Conference, September 12-16. Nashville, TN.
161. Larkin, J.L., D.S. Maehr, and J.J. Cox. 2000. Elk restoration in Appalachia: Ecological imperative or sociological vanity? Society for Conservation Biology 14th Annual Meeting, June 9-12. Missoula, MT.
162. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2000. Eastern elk restoration: do age and Allee effects determine growth rates? The Wildlife Society 7th Annual Conference. Sept. 12-16. Nashville, TN.
163. Cox, J.J., and D.S. Maehr. 2000. Impacts of reintroduced elk on white-tailed deer and coyotes. Kentucky Natural History Society. Buckhorn Lake State Park, September 22. Chavies, KY.
164. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2000. Kentucky mountain elk. Earthwatch Institute Annual Conference. Harvard University, Nov.15-18. Cambridge, MA.
165. Cox, J.J., D.S. Maehr, and J.L. Larkin. 2000. Eastern elk restoration: do age and Allee effects determine growth rates? Society for Conservation Biology 14th Annual Conference University of Montana, June 9-12. Missoula, MT.
166. Wichrowski, M.W., D.S. Maehr, J.L. Larkin, J.J. Cox, R.D. Crank, E.G. Springborn, M.S. Smith, M. Olsson, and P. Giardot. 2000. Daily and seasonal activity and movement patterns of translocated elk in eastern Kentucky. The Wildlife Society 7th Annual Conference. Sept. 12-16. Nashville, TN.
167. Cox, J.J., C. Tuerk, and L. Meade. 1997. Detection of hybridization events between the coyote, *Canis latrans*, and the domestic dog, *Canis familiaris*, in Kentucky using two

polymorphic microsatellite loci and cranial morphometric analysis. Midwest Ecology and Evolution Conference. University of Louisville, April 17. Louisville, KY.

SYMPOSIA ORGANIZED (2)

1. Cox, J.J., D. White, Jr., and J.L. Larkin. 2013. Elk ecology, conservation, and management in eastern North America: opportunities and challenges in the 21st century. The Wildlife Society 20th Annual Conference. Milwaukee, WI. Oct.
2. Larkin, J., J.J. Cox, and D.S. Maehr. 2002. Restoration of wildlife and their habitats. The Wildlife Society 9th Annual Conference. Bismarck, ND. Sept.

TEACHING (developed and served as lead instructor of 12 courses [10 new, 2 existing courses completely redone] at UK

*Courses Taught at University of Kentucky (2003-present; *indicates overload or teaching outside official duties)*

1. Forestry 101*: Introduction to Wildlife Conservation (Fall 2005-10; correspondence course) (3 credit hrs)
2. Forestry 101: Introduction to Wildlife Conservation (I developed a complete new course, Fall 2014-17, Spring 2019-20) (3 credit hrs)
3. Forestry 230: Conservation Biology (3 credit hrs) (Fall 2010-12*, 2013-15)
Forestry 315*: Conservation Biology (Spring 2008-10; co-instructor/guest lecturer 2003-07) (3 credit hrs)
Forestry 435: Conservation Biology: UK Core Class (Spring 2017-20) (3 credit hrs)
4. Forestry 356: Principles of Forest Wildlife Management section of Landscape Assessment (Spring 2012-16) (1 credit hr)
5. Forestry 365: Forest Wildlife Assessment (co-instructed with Dr. Steven Price and Dr. Matt Springer; I taught 7 of 9 days) (Spring 2017-20) (2 credit hrs)
6. Forestry 550: U.S. Biodiversity Hotspots (Spring 2020) (3 credit hrs)
7. Forestry 599*: Environmentalism: Survey of a Sociopolitical Movement (Spring 2003) (3 credit hrs)
8. Forestry 599/781/791: Independent Work or Special Problems in Forestry (Spring 2008-present) (3 credit hrs)
9. Forestry 599*: The Chihuahuan Desert: Ecology, Conservation Policy and Practice (Spring 2011) (3 credit hrs)

10. Forestry 599*: Florida's Ecosystems: Ecology, Conservation Policy and Practice (Spring 2012) (3 credit hrs)
11. Forestry 599*: Greater Yellowstone Ecosystem: Ecology, Conservation Policy and Practice (Spring 2013) (3 credit hrs)
12. Forestry 602: Renewable Natural Resource Issues in a Global Perspective; (Fall odd years, 2009-19; co-instructor of 3 lectures for this 3 credit hr course); topics: Apex predators: ecological keystones, conservation flagships; African biodiversity)
13. Forestry 770*: Wild Canid Ecology, Management, and Conservation (Fall 2006, 2008, 2010, 2012, 2014, 2017) (1 credit hr)
14. Forestry 770*: Wild Felid Ecology, Management, and Conservation (Fall 2011, 2015) (1 credit hr)
15. Forestry 770*: Ecology and Management of North American Ungulates (Spring 2012) (1 credit hr)
16. Forestry 770*: Ecology and Management of Neotropical Migrant Songbirds (Spring 2013, 2017) (1 credit hr)
17. Forestry 770*: Where in the World is Aldo (Leopold)? (Fall 2016) (1 credit hr)
18. Natural Resource Conservation 301*: Conservation Research and Management (Spring 2003; co-instructor w/ J. Larkin) (3 credit hrs.)
19. Natural Resource and Environmental Science 320*: Natural Resources and Environmental Analysis (3 hrs.): Field-based teaching of wildlife component (one day; 2014-18).
20. Natural Resource Conservation 395* Independent Study (2012-14) (3 hrs.)
21. Natural Resource Conservation 399*: (Internship (Spring-Summer 2010-14,18) (3 hrs.)
22. Biology 395*: Independent Research (Spring 2010-12) (3 hrs.)

Other Teaching Activities at or based out of University of Kentucky (1999-present)

1. Invited teaching lectures in: Advanced Conservation Biology, Natural Resource Conservation, Wildlife Management Techniques, Ecolunch seminar series, Carnivore Conservation and Ecology seminar, Biogeography, Wildlife Habitat Analysis, Ethics in Forestry, Conservation Biology (Indiana University of Pennsylvania 11/07, 11/09; Indiana University 4/09; Alice Lloyd College 4/09)
2. UK Summer Environmental Writing Program guide*, (2-3 days, Summer 2003-04, 06)
3. Field guide for students from historically African-American colleges (Summer 2003)

4. Earthwatch Research Program*, 8-weeks each teaching and guide, (Summers 2001-02)
5. Durfee Foundation High School Student Challenge Awards Program*, 2-weeks teaching and guide (Summer 2002)
6. Mentored ~40 undergraduate students in conducting research and fieldwork (1999-present)

Teaching at Morehead State University as a Graduate Assistant (1993-97)

1. Biology 171L: (1 hr) Principles of Biology Lab; (taught course Fall 1995, 96)
2. Graduate assistant, Animal Physiology (BIO 425; FA 1995, 96), Ecology (BIO 460 SP 96, 97), Limnology (BIO 510 SP 96)
3. Tutor, Upward Bound program (1994)

GRADUATE STUDENT ADVISING/COMMITTEE SERVICE (Advised or co-advised 35 different grad students; served on the committees of 25 others (total graduate committee service = 60 students).

Present Graduate Student Committees at UK (*Advisor/Co-advisor) (11):

- M.S. students (7): Alexandra Betancourt*, Trish Regard*, Pavan Podapati*, Nathan Hooven*, Kathleen Williams*, Kai Davis*, Jena Nieman,
- Ph.D. students (4): Jim Shaffer*, Stratton Hatfield*, Jennifer Cain, Karina Garcia

Past committee advised students (*Advisor/Co-advisor): (50)

- M.S. students (36): Gabriela Wolf*, Johnathan Matthews*, Stratton Hatfield*, Zachary Hackworth*, Josh Felch*, Caleb Haymes*, Aaron Hildreth*, Joe McDermott*, Sarah Hamilton*, Jim Shaffer*, Tom Maigret*, Bryan Tom*, Sean Murphy*, John Hast*, Joe Guthrie*, Ben Augustine*, Shane Tedder*, Rebekah Jensen*, Willie Bowling*, Lauren Dahl*, Andrew Whittle*, Michaela Lambert, Jake Hutton, Jennifer McKenzie, Allie Slusher, Marissa Thalken, Zeb Weese, Wade Ulrey, Sara Cilles, Christian Oldham, Kel Rayens, Mickey Agha, Brenee Muncy, Eastern KY University: Andrea Shipley*, Indiana University of Pennsylvania: Jason Kougher, Dylan Schneider
- Ph.D. students (14): John Hast*, Tom Maigret*, Sean Murphy*, Brittany Slabach*, Ben Augustine*, John Treanor*, Sara Martin, Nate Klar, Patricia Hartman, Erin Barding, Hannah Harris, Bridget Sousa, Jessique Ghezzi (outside examiner), Ben Cloud

Graduate Student Theses, Dissertations, and Non-Thesis Graduate Research Projects as Advisor or Coadvisor, followed by relevant employment or position(s) held if known (26):

1. Gabriela Wolf. 2020. Diet of a recently reintroduced river otter (*Lontra canadensis*) population in Taos County, New Mexico. M.S. Thesis. UK Forestry and Natural Resources. (Doctoral Student, University of Maine)
2. Tom Maigret. 2020. Landscape ecology and population genomics of two sympatric pit viper species across a fragmented Appalachian landscape. Ph.D. Dissertation. UK Biology.

3. Jonathan Matthews. 2019. Quantifying white-tailed deer density and its impacts on agricultural systems. M.S. Thesis. UK Forestry and Natural Resources.
4. Stratton Hatfield. 2018. Diet and space use of the Martial Eagle (*Polemaetus bellicosus*) in the Maasai Mara region of Kenya. M.S. Thesis. UK Forestry and Natural Resources. (Doctoral Student, Wageningen University)
5. Brittany Slabach. 2018. UK Forestry and Natural Resources. The role of sociality and disturbance in shaping elk (*Cervus canadensis*) population structure. Ph.D. Dissertation. UK Biology.
6. Zachary Hackworth. 2018. Efficacy of herbivore exclusion on planted tree seedling vitality on a reclaimed surface mine in eastern Kentucky. M.S. Thesis. UK Forestry and Natural Resources (research tech, University of Kentucky, Dept of Forestry and Natural Resources)
7. Joshua Felch. 2018. Detectability and occupancy of the Common Raven in cliff habitat of Central Appalachia and southeastern Kentucky. M.S. Thesis. UK Forestry and Natural Resources. (wildlife tech, California condor project; Habitat manager, wildlife management area, CA; U.S. Fish and Wildlife Services)
8. Aaron Hildreth. 2017. Establishment of serological reference ranges for elk in Kentucky and effects of quarantine and translocation on elk. M.S. Thesis. UK Forestry and Natural Resources. (elk biologist for Missouri Dept. of Conservation)
9. Caleb Haymes. 2017. Survival and cause-specific mortality of a southeastern Kentucky deer population. M.S. Thesis. UK Forestry and Natural Resources. (founder of his own wildlife and forestry consulting company in Virginia)
10. Joe McDermott. 2017. Survival and cause-specific mortality of white-tailed deer (*Odocoileus virginianus*) neonates in a southeastern Kentucky population. M.S. Thesis. UK Forestry. (cervid biologist Kentucky Dept. of Fish and Wildlife Resources).
11. Sean Murphy. 2016. Ecology of two reintroduced black bear populations in the central Appalachians. Ph.D. Dissertation. UK Animal Sciences. (Large carnivore program coordinator, Louisiana Fish and Wildlife, then same position with New Mexico Dept. of Fish and Game, now an independent consultant seeking academic position).
12. Sarah Hamilton. 2015. An investigation into the occurrence of *Batrachochytrium dendrobatidis* in plethodontid communities of Robinson Forest. M.S. Thesis. UK Forestry. (doctoral student at the University of Louisville, Dept. of Biology)
13. Tom Maignet. 2013. Effects of streamside management zone timber harvest on salamander communities in Robinson Forest. M.S. Thesis. UK Forestry. (doctoral student at the University of Kentucky, Dept. of Biology)

14. James Shaffer. 2013. Factors influencing the establishment and survival of native hardwood tree seedlings of the Kentucky Inner Bluegrass blue ash-oak savanna-woodland. M.S. Thesis. UK Biology. (doctoral student at the University of Kentucky, Dept. of Biology)
15. Joseph Guthrie. 2012. Modeling movement behavior and road crossing in the black bear of south-central Florida. M.S. Thesis. UK Forestry. (Co-director of Florida Wildlife Corridor Project; conservation biologist at Nelson Byrd Wolz Landscape Architect, now private lands biologist with Smithsonian Institute/Virginia Dept. of Wildlife).
16. Bryan Tom. 2012. A comparison of non-invasive survey methods for monitoring mesocarnivore populations in Kentucky. M.S. Thesis. UK Forestry. (Fieldwork coordinator for Pennsylvania wood rat project out of Indiana University of Pennsylvania, unknown current employment).
17. Andrea Shipley. 2012. Space use and habitat selection by bobcats in southeast Kentucky. M.S. Thesis. Eastern KY University Biology. (various wildlife tech positions).
18. John Treanor. 2012. The biology and management of brucellosis in Yellowstone bison. Ph.D. Dissertation. UK Biology. (Wildlife biologist, Yellowstone Center for Resources, National Park Service).
19. Shane Tedder. 2011. Black bears and giant palm weevils: an intraguild mutualism. Non-thesis research project. UK Forestry. (Sustainability coordinator, University of Kentucky).
20. Sean Murphy. 2011. Status of a reintroduced black bear population in the Big South Fork Area of Kentucky. M.S. Thesis. UK Forestry. (See post-doctoral listing above)
21. Ben Augustine. 2010. GPS bias in resource selection studies: a case study using black bears in southeastern Kentucky. M.S. Thesis. UK Forestry. (Doctoral student at Virginia Tech University, recently became post-doc at Cornell University).
22. John Hast. 2010. Genetic diversity, structure, and recolonization patterns of Kentucky black bears. M.S. Thesis. UK Forestry. (Doctoral student at UK and Kentucky Dept. of Fish and Wildlife Resources black bear and wild pig program coordinator).
23. Willie Bowling. 2009. Maternal antibody transfer and meningeal worm infection rates in Kentucky elk. M.S. Thesis. UK Forestry. (Cervid biologist for 9 years with Kentucky Dept. of Fish and Wildlife Resources, then recently became Project Director of Appalachian Conservation Initiative of the KY Chapter of the Nature Conservancy).
24. Rebekah Jensen. 2009. The effects of roads on space use and movements of black bears in eastern Kentucky. M.S. Thesis. UK Forestry. (Various consulting and field tech jobs).
25. Andrew Whittle. 2009. Florida panther and black bear: a road and urban avoidance/utilization analysis and impacts of land use and climate change on large carnivore habitat in Florida.

M.S. Thesis. UK Forestry. (Outreach educator with Kentucky Dept. of Fish and Wildlife Resources, then Lexington-Fayette County KY Urban Parks and Recreation).

26. Lauren Dahl. 2008. Using forward-looking infrared radiography to estimate elk density and distribution in eastern Kentucky. M.S. Thesis. UK Forestry. (Wildlife biologist South Dakota Fish and Game).

Graduate Student Presentation & Academic Awards as Advisor or Co-advisor: (21; 12 since 2013)

1. Hackworth, Z. 2018. Outstanding M.S. Graduate student, UK Forestry and Natural Resources
2. Matthews, J. 2018. 2nd place, poster, Southeast Deer Study Group, Nashville, TN.
3. Shaffer, J. 2018. College of Arts and Sciences Outstanding Teaching Award, UK.
4. Shaffer, J. 2018. College of Arts and Sciences Outstanding Teaching Assistant Award, UK.
5. Slabach, B. 2018. Dean's Competitive Graduate Fellowship, UK College of Arts and Sciences, Spring.
6. Slabach, B. 2017. Certificate of Outstanding Teaching, UK College of Arts and Sciences
7. Maigret, T. 2017. Appalachian Student Research Award. 7th Annual Sustainability Forum. Tracey Farmer Institute for Sustainability and the Environment, Dec. 6.
8. Shaffer, J. 2017. College of Arts and Sciences Outstanding Teaching Assistant Award, UK.
9. Jim Shaffer. 2016. Best student presentation. KY-TN Joint Fire Council Meeting.
10. Brittany Slabach. 2015. Best poster Award. Tracy Farmer Sustainability Forum.
11. John Hast. 2014. Best Student Presentation Award. Annual Meeting of the Kentucky Chapter of The Wildlife Society.
12. Tom Maigret. 2014. Brooks/Cole Student Research Award in Aquatic Biology at the Annual Association of Southeastern Biologists.
13. Tom Maigret. 2013. Outstanding M.S. Graduate Student, UK Forestry
14. Tom Maigret. 2012. Best Student Presentation Award. Annual Meeting of the Kentucky Chapter of The Wildlife Society.
15. Sean Murphy. 2012. Best Student Poster Award. Annual Meeting of the Kentucky Chapter of The Wildlife Society.
16. Sean Murphy. 2011. Best Student Poster Award. National Annual Conference of The Wildlife Society, Snowbird, UT.
17. Josh Felch. 2011. Outstanding M.S. Graduate Student, UK Forestry.
18. Sean Murphy. 2011. Outstanding M.S. Graduate Student, UK Forestry
19. John Hast. 2010. Outstanding M.S. Graduate Student, UK Forestry
20. Lauren Dahl. 2008. Outstanding M.S. Graduate Student, UK Forestry
21. Will Bowling. 2008. Outstanding M.S. Graduate Student, UK Forestry

UNDERGRADUATE ADVISING and MENTORING (14 research/internship courses; 10 since 2013; 2 undergrad advisees)

- HON 398, Adam Waggener (2019)
- BIO 395, Cameron Bate (2013);
- FOR 399, Jessica Lima Guin (2015), Thais Pereira (2015),
- NRES 399 Amanda Stephens (2020), Emily Ingram (2018), Rebecca Schwager (2014), Evie Kester (2014), Daniel Reed (2014), Jansen Cunningham (2013), Stratton Hatfield (2013), Sam Sosa (2012), Kylie Schmidt (2012), Caleb Switzer (2010), Megan English (2009)

- 2 official forestry major undergraduate advisees (2017-present)
- dozens of undergrad students who have inquired about wildlife programming and field of study, and/or have had non-academic life issues and sought out advice

SERVICE

Peer Review

- Editorial Board, *Southeastern Naturalist*. 2012-2016.
- U.S. Fish and Wildlife Service proposal to delist the Greater Yellowstone Ecosystem grizzly population. 2016.
- McIntyre-Stennis proposals (two faculty, Southern Illinois University, UK; 2014, 2016).
- Book chapter review: "Valuation of Biodiversity". *Essentials of Conservation Biology* (6th edition). Sinauer Associates. 2016.
- Book chapter review: "Restoration Ecology". *Essentials of Conservation Biology* (6th edition). Sinauer Associates. 2014.
- Journal manuscripts reviewed from the following journals, 2008-present: *American Midland Naturalist*, *Animal Conservation*, *Journal of Mammalogy*, *Journal of Parasitology*, *Journal of Soil Science and Environmental Management*, *Journal of Wildlife Management*, *PLoS One*, *Proceedings of the Central Hardwood Forest Conference*, *Restoration Ecology*, *Southeastern Naturalist*, *Wildlife Biology in Practice*, *Wildlife Monographs*, *Wildlife Society Bulletin*, *Ursus*. 2008-present.
- Texas Academy of Science Grant Research Proposals. 2014.
- Promotion and tenure dossier, (one candidate, University of Indiana). 2013.
- The Wildlife Society Annual Meeting, Best student poster judge, 2010, Snowbird, UT.
- The Wildlife Society Publication Awards Committee (review of several books, monographs, and peer-reviewed manuscripts per year) 2009-11.
- Bats in Forests: Conservation and Management (one book chapter). 2006.

Professional Panels

- Invited symposium panel member, Brucellosis Science Workshop, Yellowstone National Park, (2/25-2/28 2013)
- Invited panel member, Florida Ecological Greenways Network, review and revision team, University of Florida, (2011-13).
- Invited symposium panel member, Global Climate Change and the Emergence of Infectious Diseases, University of Kentucky (12/2012).
- Invited panel member (mammal expert), Big Cypress National Preserve scientific panel on oil exploration impacts (2009-10)
- Invited panel member, Appalachian Wildlife Initiative, multi-entity meeting, Hazard, KY (2004)

College-level Committee or College-level Representative (Agriculture, Food, and the Environment)

- Panel Member, Sexual Misconduct Hearing Board, University of Kentucky (2019-present)
- Faculty Council, College of Agriculture Food and the Environment (2019-present),
- University contact, Canoe Creek and Polly's Bend Kentucky River palisades tracts as prospective university properties (2008-12)

- Site manager and research coordinator, UK Griffith Woods farm (2009-12)
- Representative, UK Griffith Woods Management and Advisory Committee (2005-2009)
- Representative, UK Griffith Woods, Kentucky Research Station Meeting (2012)
- Representative, UK Griffith Woods, NEON Field Station Meeting, National Science Foundation, Knoxville, TN (2009)

Departmental Committees (UK Dept. of Forestry)

- Chair, Research Committee (2018-present)
- Wildlife Tech Search Committee Chair (2016-17)
- Wildlife Extension Faculty Search Committee (2015).
- Stream Ecologist Faculty Search Committee (2011-12)
- Chair Search Committee (2009-10)
- Wildlife Minor development (2014-17)
- Representative to National Association of University Fish and Wildlife Programs, The Annual Meeting of The Wildlife Society, (2012-13)
- Co-organizer and developer: The Wildlife Society professional undergraduate curricular path (2011-15)
- T.P. Cooper Landscape Committee (2011-2015)
- Strategic Planning Committee (2006-2011)
- Undergraduate Program Committee (2010-present)
- Research Committee (2010-present)
- Graduate Student Committee (2010-12, 14-15)

Extension

(TV, web media, magazines, and newsletters showcasing research, teaching, or wildlife expertise has reached hundreds of thousands if not millions of viewers globally)

Public Mass Media

1. Cox, J.J. 2019. Earth Day. Radio podcast from the University of Kentucky, Department of Forestry and Natural Resources show, From the Woods Kentucky.
<https://forestry.ca.uky.edu/episode-33-earth-day>
2. Wolf, G. 2019. River Otters. Radio podcast from the University of Kentucky, Department of Forestry and Natural Resources show, From the Woods Kentucky.
<https://forestry.ca.uky.edu/episode-32-river-otters>
3. Cox, J.J. 2018. White-tailed Deer. Radio podcast from the University of Kentucky, Department of Forestry and Natural Resources show, From the Woods Kentucky.
<https://forestry.ca.uky.edu/episode-17-deer>
4. Hatfield, S. 2018. Martial eagles. Radio podcast from the University of Kentucky, Department of Forestry and Natural Resources show, From the Woods Kentucky.
<https://forestry.ca.uky.edu/episode-5-martial-eagles>
5. Cox, J.J. 2018. Black bears. Radio podcast from the University of Kentucky, Department of Forestry and Natural Resources show, From the Woods Kentucky.
<https://forestry.ca.uky.edu/episode-4-black-bears>

6. WKYT. 2018. Foxes caught in the limelight at Shilito Park, Lexington.
<https://www.wkyt.com/content/news/Foxes-caught-in-the-limelight-at-Lexingtons-Shillito-Park-489181791.html>
7. Spence, C. 2017. Tracking the elusive Martial eagle. The Magazine: University of Kentucky College of Agriculture. 18:24. https://issuu.com/ukcafe/docs/themagazine_2017-vol18_no1
8. WKYT. 2017. Students take to the sky to survey elk. March 9.
<http://www.wkyt.com/content/news/UK-students-take-to-the-sky-to-survey-Ky-elk-population-415833863.html>
9. KY Afield TV Series: July 5 2016. Capturing white-tailed deer fawns.
<https://www.youtube.com/watch?v=faBVN9BdiOQ>
10. KY Afield TV Series: July 6 2016. Kentucky deer population study.
<https://www.youtube.com/watch?v=qaxgNMKloc8>
11. Natural Born Monsters TV Series. 2016. Season 1 Episode 8: Eastern Cougars. The Weather Channel.
12. WLEX TV Interview: Dec 2014. Interview on cougar shot dead in Bourbon County, KY.
13. Spence, C. 2015. Evermore (Common Raven study). The Magazine: University of Kentucky College of Agriculture. Winter.
<http://www2.ca.uky.edu/agcomm/Magazine/2015/Winter2015/index.html>
14. Cox, J.J. 2015. Kentucky Forests: A World of Wildlife. 2015. Video. 25 min. Used at KY Wood Expo and other extension venues.
15. Cox, J.J. 2014. Ten-thousand or bust: elk research in Kentucky. Kentucky Woodlands Magazine. 9(1):10-11.
16. Cox, J.J. 2014. Black bears in Kentucky. Available webinar on UK Extension. 10/21.
17. America The Wild TV Series. National Geographic Wild Channel. Sept 2013. Episode "Gator Country" Featured 20 minute segment on UK Florida black bear research project.
18. KY Afield TV Series: June 2013. Rattlesnake study at Robinson Forest, KY
<http://www.youtube.com/watch?v=xxtJPMRxx2w>
19. Spence, C. 2013. Friends not foes (timber rattlesnake study). The Magazine: University of Kentucky College of Agriculture. Spring.
http://www.ca.uky.edu/agcomm/magazine/2013/Spring13/friends_not_foes.html
20. Baker, D. 2012. Elk round-up. Kentucky Afield Magazine. Spring.

21. KY Afield TV Series: March 2012. Bull elk research project.
<http://www.youtube.com/watch?v=ZF0isXIGha8&feature=plcp>
22. WYMT TV Interview. June 2012. Black bears in eastern Kentucky.
23. Spence, C. 2011. The bear facts. The Magazine: University of Kentucky College of Agriculture. Fall. <http://www.ca.uky.edu/agcomm/magazine/2011/FALL-2011/Articles/index.htm>
24. White, M. 2011. Bear essentials. Audubon 113:28-32.
25. Jenkins, M. 2011. The Headwaters. Nature Conservancy. Issue 2:44-53.
26. WKYT TV Interview. July 2010. Black bears in Big South Fork, KY.
27. Risch, D. 2010. Andrea the elk spotter. Highlights Magazine. November 2010.
28. KY Afield TV Series: March 2010. Black bear research and denning.
<http://www.youtube.com/watch?v=dzz9LZ554NM>
29. Spence, C. 2009. Elk return to Kentucky. The Magazine: University of Kentucky College of Agriculture. Spring. <http://www.ca.uky.edu/agcomm/Magazine/2009/SPRING-2009/Articles/ElksReturntoKentucky.html>
30. CNN: September 2009 http://articles.cnn.com/2009-09-07/tech/florida.tracking.bears_1_bears-researchers-doughnuts?_s=PM:TECH
31. Spence, C. 2005. Restoring an early landscape. The Magazine: University of Kentucky College of Agriculture 6:23.

Smaller Venue Public Outreach and Student Service

- Presentation: 2016. Going wild with science. Presentation to UK STEMcats freshman students program.
- Presentation: 2016. Black bears in Kentucky. Workshop on “The amazing natural resources and biodiversity of Appalachia.” Osher Lifelong Learning Institute at University of Kentucky. Feb. 1. Lexington, KY.
- Presentation: 2012. Black bears return to Western Appalachia: challenges and opportunities. Tri-state wildlife and woodland program. March 24. Cincinnati, OH.
- Invited wildlife and nature-based presentations (5) and school trips (7) (Rowan County Middle School, Community Montessori, Community Montessori Middle School) (2009-2016)
- Participant, Student-Professional Networking and Advisory Event, The Wildlife Society Annual Meeting, Snowbird, UT (2010)
- Set up and stationed educational kiosks at UK events including student orientation, College/jobs fair, College of Ag Roundup, and one MANRRS event (all since 2013)
- Audubon Christmas Bird Count participant/leader, greater Lexington area (2004-2015)

- Assisted with removal of invasive woody plants and establishment of related outreach at UK Arboretum, Henry Clay High School, and both McConnell Springs and Raven Run natural areas (2006-07)
- Assisted The Nature Conservancy staff with controlled burns on private properties in the Lexington area (2007)
- Guided and helped supervise 100-200 Rocky Mountain Elk Foundation members and other volunteers during elk calf capturing fieldwork (2004-07)
- Supervised 8 teams (~40-50) of Earthwatch volunteers and one team of high school students (Durfee Challenge Program) for two week stints each in assisting with our elk research project (2001-02).

NATURAL AREAS MANAGEMENT (as project manager of UK Griffith Woods natural area, Harrison County, and Lead Contact with The Nature Conservancy on KY River Palisades Property Acquisition, 2005-12)

- Coordinated research and ecological restoration efforts among several state natural resource agencies, non-profit groups, and a local volunteer group
- Created technical documents and reports
- Conducted spatial analyses using GIS software and remote sensing databases
- Managed accounts and expenditures
- Supervised exotic plant species removal crews and resident grad student
- Participated in multi-agency meetings that evaluated research proposals
- Participated in a multi-partner task force that created a site management plan
- Represented the UK College of Agriculture in service on the Griffith Woods Management and Advisory Committee
- Conducted multiple on site management activities (e.g. mowing, exotic plant removal, biotic inventories, plantings, equipment maintenance)
- Supervised over three dozen technicians, numerous volunteers, and one post-doctoral scholar; 2 local high school students mentored on natural resource internship projects
- Worked with UK legal personnel to administrate properties
- Assisted with transition of property management from UK to KDFWR

SCIENTIFIC MEETINGS ATTENDED

- The Wildlife Society Annual Conferences (1999-2003, 2005-2008, 2010, 2012-2014).
- The Wildlife Society Annual KY State Chapter Meetings (2011-2012, 2014)
- Society for Conservation Biology Annual Conferences (2000-2003, 2005, 2009).
- Annual Conference of the Kentucky Academy of Science (1997-1998, 2005).
- Cumberland Regional Black Bear Workshop (2013-2014)
- 9th International Mammalogical Congress. Sapporo, Japan (2005)
- Southeastern Furbearers Workshop. Cadiz, KY (2007).
- Annual Eastern Elk Workshop (2002, 2004, 2010)
- 55th Annual Conference Southeastern Fish & Wildlife Agencies. Louisville, KY. (2001)
- Earthwatch Institute Annual Conference. Near Boston, MA. (2001-2002)
- Midwest Ecology and Evolution Conference. Louisville, KY (1997)

PROFESSIONAL AFFILIATIONS

- Society for Conservation Biology (1999-present)
- The Wildlife Society, National and Kentucky Chapters (1999-present)
- The Aldo Leopold Foundation (2012-present)

CONTINUING EDUCATION

- First Aid and CPR (1/2018)
- QPR Suicide Prevention Gatekeeper Program, UK (9/2016)
- UK CELT Workshop: Cheating: curbing, catching, and consequences (2/2014)
- UK CELT Workshop: Enhancing student success (9/2013)
- Multiple educational modules for IACUC (2006-present)
- Course: Non-invasive techniques in genetics for wildlife conservation; Smithsonian-Mason Global Conservation Studies Program, Front Royal, VA, (2012) (3 credit hr graduate course)
- Course: Chemical immobilization of animals (2 day course); Safe-capture International, Inc. Fort Campbell, KY (11/2011)
- Course: Statistics for ecology and conservation biology; Smithsonian-Mason Global Conservation Studies Program, Front Royal, VA, (2/2011) (6 hr graduate credit course)
- Participant, UK Academy of Teaching and Learning Scholars (2009-10)
- Certified Wildlife Biologist, The Wildlife Society (3/2007-2017)
- DEA licensed Class II and lower controlled substances (8/2008-present)
- Detection and occupancy studies of wildlife; 1-day workshop course (The Wildlife Society Annual Meeting, Miami, FL;11/2008)
- Courses: S-130, S-190 Fire training (1/2007)

AWARDS, SCHOLARSHIPS, HONORS

- University of Kentucky 2002-2003 Gamma Sigma Delta College of Agriculture Outstanding Doctoral Student (3/2003)
- University of Kentucky (2002-2003) Dissertation Fellowship \$16,000/year + tuition
- University of Kentucky (2000-2002) Target of Opportunity Scholarship \$4,000/year
- University of Kentucky (1999-2002) Research Assistantship \$15,000/year
- Morehead State University (1995-1997) Graduate Assistantship \$5000/year
- Morehead State University (1990-1994) Regents Scholarship \$1500/year
- Morehead State University (1990-1994) Alumni Scholarship \$500/year
- Participant, Soviet Union, People to People Youth Science Exchange, Field Biology, July August 1990
- Commonwealth Diploma, West Carter High School, Olive Hill, KY

Ellen Crocker

Ellen V. Crocker, Ph.D.
Forest Health Research and Education Center
Department of Forestry and Natural Resources, University of Kentucky
209 T.P. Cooper Building, Lexington KY 40546
e.crocker@uky.edu, 859-257-3040

EDUCATION

Ph.D. 2009-2015
Plant Pathology and Plant Microbe Biology, Cornell University, Ithaca, NY
Mentor: Dr. Eric Nelson
Minors: Natural Resources, Ecology and Evolutionary Biology

B.A. 2002-2006
Biology and History, Williams College, Williamstown, MA
Graduated with honors (Senior thesis: Plant-insect interactions)
Mentor: Dr. Joan Edwards

EXPERIENCE

Assistant Professor of Forest Health Extension 2019-present
Department of Forestry and Natural Resources, University of Kentucky, Lexington, KY

- Assessing critical ecological, economic, and social issues associated with forest health
- Evaluating stakeholder and forest health needs to develop effective extension programs
- Applied research related to forest health threats such as invasive plants, pathogens, and insects
- Build, maintain, and lead effective partnerships with aligned agencies, organizations, and practitioners

Postdoctoral Scholar 2015-2019
Forest Health Research and Education Center (FHC), Department of Forestry and Natural Resources, University of Kentucky, Lexington, KY
Mentor: Dr. Jeff Stringer
Conducting outreach and research activities in the area of forest health including invasive plants, insect pests, and pathogens. Synthesizing and disseminating forest health information for a broad range of audiences as a member of the UK Forestry Cooperative Extension specialist team.
Projects include:

- Regular presentations to the landowners, industry professionals, the general public, and youth related to forest health and invasive species, integrated with Cooperative Extension
- Development of the citizen science mobile app, TreeSnap, www.TreeSnap.org
- Promoting better public understanding of biotechnology as it applies to forest trees
- Collaboration in forest health-related research projects (ex. the distribution of the pathogen *Phytophthora cinnamomi* and potential impact on chestnut restoration, expert opinion survey of white oak threats and their potential impacts)

Graduate Researcher 2009-2015
Cornell University, Ithaca, NY

Mentor: Dr. Eric Nelson

Investigated the potential for soil pathogens to influence community dynamics and contribute to the success of the invasive plant *Phragmites australis*. Projects included:

- Effects of soil conditioning by invasive *P. australis* on different life stages of competing native plants
- Pathogenicity and virulence of *P. australis*-associated oomycetes
- Viability of overwintering seeds and the role of soil pathogens on germination
- Plant-soil feedbacks in wetlands and corresponding changes in soil pathogen communities

Staff Research Associate

2007-2009

University of California, Berkeley, CA

Studied forest pathogens and assisted with a range of field and lab research. Projects included:

- Distribution and abundance of *Phytophthora ramorum* on Bay Laurel
- *Phytophthora cinnamomi* infection in the endangered Ione Manzanita and potential for treatment with phosphonate application
- Aerial monitoring of *Fusarium circinatum* in pine forests

Honors thesis researcher

2005-2006

Williams College Biology Department, Williamstown, MA

- Plant-insect interactions: “Adaptive significance of cryptic coloration in the sawfly *Empria obscurata* in Isle Royale National Park, MI”

OTHER POSITIONS HELD

President, Kentucky Invasive Plant Council, 2019 to present

Organizing committee lead, Kentucky Forest Health Task Force, 2018 to present

Organizing committee, IUFRO 6th International Workshop on the Genetics of Tree-Parasite Interactions: Tree Resistance to Insects and Diseases: Putting Promise into Practice, 2018.

Founder and chair, UK Ag Biotech Day, Summer 2017. Organized an outreach event for 35 high schoolers, parents, and teachers to visit labs at UK and learn about agricultural biotechnology.

Founder and chair, UK Expanding Your Horizons STEM Conference, 2017-2019. Organized annual STEM outreach event for middle schoolers participating in inquiry-based workshops led by UK undergraduate and graduate students. Attending parents and teachers participated in concurrent sessions on preparing for college.

Program Coordinator of Microbial Friends and Foes NSF REU, Cornell University, Summer 2014. Helped design and run an NSF Research Experience for Undergraduates (REU) program in its first year. Mentored visiting undergraduates, led summer seminar and discussion series, and coordinated an end-of-project poster session for all undergrad researchers.

Graduate Teaching Assistant Fellow, Center for Teaching Excellence, Cornell University, Fall 2012-Spring 2014. Designed and led workshops for graduate students on a range of topics including: Introduction to Experiential Learning, Engaging Approaches to Quantitative Courses, Designing Student Assignments to Evaluate Yourself as a Teacher, Building Communication Skills, Facilitating Class Discussions, and Addressing Learning Styles in the Classroom.

Student Intern, National Plant Diagnostic Network, 2013-2014. Researched emerging plant diseases and created educational modules for non-scientists.

TEACHING EXPERIENCE

- **Instructor, FOR 770, Forest Health Seminar**, Spring 2020, Department of Forestry and Natural Resources, University of Kentucky.
- **Instructor, FOR 310, Introduction to Forest Health**, Spring 2020, Department of Forestry and Natural Resources, University of Kentucky.
- **Instructor, NRE 390, Special Topics, Introduction to Urban and Community Forestry**, Fall 2019, University of Kentucky.
- **Instructor, FOR 602, Renewable Natural Resources in a Global Perspective**, Fall 2019, Department of Forestry and Natural Resources, University of Kentucky.
- **Instructor, FOR 310, Introduction to Forest Health**, Spring 2019, Department of Forestry and Natural Resources, University of Kentucky.
- **Instructor, NRE 390, Special Topics, Introduction to Urban and Community Forestry**, Fall 2018, University of Kentucky. Designed and taught an introduction to urban and community forestry focused on trees and tree health, green infrastructure planning and design, environmental education, and human health, wellness and trees.
- **Instructor, FOR 310, Introduction to Forest Health**, Spring 2018, Department of Forestry and Natural Resources, University of Kentucky. Designed and taught an introduction to forest health, pathology, and mycology for forestry students.
- **Instructor, EXP 396/650 Engaging Girls in STEM: Leadership and Service Learning for the Expanding Your Horizons Conference**, Spring 2018, Experiential Education, University of Kentucky.
- **Instructor, FOR 399**, mentored 2 Forestry Seniors in a white oak sampling internship, Fall 2017, Department of Forestry and Natural Resources, University of Kentucky.
- **Guest lectured “Biotechnology and Forestry,” FOR 400 Human Dimensions of Forestry and Natural Resources**, Oct 18, 2017, Department of Forestry and Natural Resources, University of Kentucky.
- **Guest lectured “Emerging Forest Epidemics,” FOR 602, Global issues in Forestry**, Sept 20, 2017, Department of Forestry and Natural Resources, University of Kentucky.
- **Instructor, EXP 396/650 Engaging Girls in STEM: Leadership and Service Learning for the Expanding Your Horizons Conference**, Spring 2017, Experiential Education, University of Kentucky.

- **Guest Instructor**, FOR 310 (Introduction to Forest Health and Protection), 2016 and 2017 Department of Forestry, University of Kentucky
- **Facilitator, Urban tree workshop series**, Fall 2016 to present. Organized a series of monthly hands-on workshops for the general public related to urban trees. Each month selected a topic, reserved guest speakers, coordinated reservations, and managed continuing education credits for participants.
- **Facilitator, UK Forest Health Journal Club**, Fall 2015- Spring 2017.
- **Guest Lecturer**, introductory mycology component of Forest Entomology course, UK, Sept 26, 2016.
- **Instructor, “Mushrooms 101”** weekend course at Floracliff Nature Preserve, Oct 14-15, 2016.
- **Instructor, UK GEAR UP Program in Tree Health**, July 25-28, 2016. Designed course module in tree health and care and taught to high school students as part of a 3-week summer program to prepare students from low-performing high schools for college.
- **Facilitator, UK300-003 IAmAWomenInSTEM**, Spring 2016. Designed and led class for undergraduates about issues facing women in STEM fields.
- **Guest Instructor**, Invasive Species course, Eastern Kentucky University, Feb 16, 2016.
- **Guest Instructor**, Chemistry department orientation program, Cornell University Summer 2013. Designed and taught a workshop to introduce best teaching practices for all incoming Chemistry Department graduate students.
- **Teaching assistant** for Veterinary and Medical Mycology, Cornell University, Spring 2011 and 2012.
- **Teaching assistant** for Field Botany, Williams College, Spring 2006.

AWARDS, GRANTS, AND FELLOWSHIPS

- **Crocker E**, "Working Toward Restoration of Critically Imperiled Forest Tree Species," Sponsored by KY Division of Forestry, \$26,000.00 granted. Funding Dates: November 1, 2018 - June 30, 2021.
- **Crocker E**, Stanton M, and J Stringer. HealthyWoods: A New Mobile App Tool to Guide Landowners in Forest Health Assessment. USDA RREA NFF, \$100,000, Oct 2018.
- Agouridis C, **Crocker E**, Odom S, and R Hirsh. “Expanding Your Horizons- a STEM Workshop for Middle School Girls” NSF EPSCoR, \$10,000, Sept. 2018.
- **Crocker E** and CD Nelson. Supporting The 2018 Conference "Tree Resistance To Insects And Diseases: Putting Promise Into Practice.” USDA AFRI Foundational Program Area, Pests and Beneficial Species in Agricultural Production Systems, \$35,000, July 2018.
- **Crocker E**, Arthur M, Rieske-Kinney L, Nelson D, Lhotka J, and J Christian. Development of an Undergraduate Certificate in Urban and Community Forestry. USDA HEC, \$149,734, March 2018.

- Arthur M, Williamson N, Coy G, Rieske-Kinney L, Dameron B, **Crocker E**, Borden S, Jennings C, and A Powell. Roots to Branches. UK Sustainability Challenge Grant Program, \$38,890, Nov. 2017.
- Agouridis C, **Crocker E**, Stamper D, Thomas L, Springer M, Sanderson W, Gumbert A, Barton C, Belton C, and W Long. Developing a KY Master Naturalist Program. UK Sustainability Challenge Grant Program, \$14,257, Nov. 2017.
- Agouridis C, **Crocker E**, Odom S, and R Hirsh. “Expanding Your Horizons- a STEM Workshop for Middle School Girls” NSF EPSCoR, \$5,600, Sept. 2017.
- Arthur M, Williamson N, Coy G, Rieske-Kinney L, **Crocker E**, et al... “Mobilizing Tree Ambassadors” Sustainability Challenge Grant, \$49,774, Nov. 2016.
- **Crocker E**, Condon B, and S Odom. “Expanding Your Horizons- a STEM Conference for Middle School Girls” NSF EPSCoR, \$10,000, Sept. 2016
- **Crocker E** and M Seifert. “Using forest health assessment as a tool for citizen engagement and education” Lexington Fayette Urban County Government Sustainable Environmental Grant, \$3,520, May 2016.
- Stringer J, **Crocker E**, Nelson CD, and Gracey E. “Kentucky Oak Genetic Improvement Program” USDA State and Private Forestry Landscape Scale Restoration Grant, \$350,000, April 2016.
- Arthur M, Williamson N, Coy G, Rieske-Kinney L, **Crocker E**, et al... “Creating Tree Ambassadors” Sustainability Challenge Grant, \$32,636, Nov. 2015.
- **Crocker E**. Graduate Teaching Assistant Fellow Program, \$1,000/year, 2012-14
- **Crocker E**. Plant Sciences Outstanding Teaching Assistant Award, 2012
- **Crocker E** and L Martin. Andrew W. Mellon Student Research Grant, \$1,000, 2012
- **Crocker E**. Atkinson Center Sustainable Biodiversity Fund small grant, \$6,000, 2011
- **Crocker E**. State University of New York (SUNY) Fellowship \$29,200 plus tuition, 2009 and 2015
- **Crocker E**. Thesis Research Grant, Williams College Biology Department, \$3,400, 2005

RESEARCH PUBLICATIONS

- Conrad A, **Crocker E**, Thomas W, Li X, Ochuodo T, Holmes T, Nelson CD. (2019) Threats to Oaks in the Eastern United States: Perceptions and Expectations of Experts. *Journal of Forestry*, in press.
- Li X, Holmes TP, Boyle K J, **Crocker E**, Nelson CD. (2019) Hedonic Analysis of Forest Pest Invasion: the Case of Emerald Ash Borer. *Forests* 10(9): 820
- Loyd AL, Chase K D, Nielsen A, Hoover N, Dreaden TJ, Mayfield AE, **Crocker E**, Fraedrich SW. (2019). First Report of Laurel Wilt Caused by *Raffaelea lauricola* on *Sassafras albidum* in Tennessee and Kentucky. *Plant Disease* (18 Dec 2019, <https://doi.org/10.1094/PDIS-09-19-1914-PDN>)
- **Crocker E**, Condon B, Almased A, Abbott A, Nelson CD, and M Staton. 2019. TreeSnap: a citizen science app connecting tree enthusiasts and forest scientists. *Plants, People, Planet*. 00: 1-6

- Fang L, **Crocker E**, Yang J, Yan Y, Yang Y, and Z Liu. 2019. Competition and Burn Severity Determine Post-Fire Sapling Recovery in a Nationally Protected Boreal Forest of China: An Analysis from Very High-Resolution Satellite Imagery. *Remote Sensing*. 11-603: 1-22
- Sena K, Dreaden TJ, **Crocker E**, and C Barton. 2018. Detection of *Phytophthora cinnamomi* in Forest Soils by PCR on DNA Extracted from Leaf Disc Baits. *Plant Health Progress*. 10 (3): 193-200.
- Sena K, **Crocker E**, Vincelli P, and C Barton. 2018. *Phytophthora cinnamomi* as a driver of forest change: Implications for conservation and management. *Forest Ecology and Management*. 409: 799-807.
- **Crocker E**, Nelson EB, and B Blossey. 2017. Soil conditioning effects of *Phragmites australis* on native wetland plant seedling survival. *Ecology and Evolution*. 7(15): 5571-5579.
- **Crocker EV**, Lanzafane J, Karp MA, and EB Nelson. 2016. Overwintering seeds as reservoirs for seedling pathogens of wetland plant species. *Ecosphere*. 7 (3).
- **Crocker EV**, Karp MA, and EB Nelson. 2015. Virulence of oomycete pathogens from *Phragmites australis*-invaded and non-invaded soils to marsh wetland plant species. *Ecology and Evolution*. 5: 2127-2139.

RESEARCH PRESENTATIONS

- Conrad A, **Crocker E**, Thomas W, Li X, Ochuodo T, Holmes T, Nelson CD. Southern Forest Tree Improvement Conference, “Delphi expert opinion survey to assess threats to oaks in the eastern United States,” Accepted, International, Lexington, KY (June 3-6, 2019).
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, Staton MA. Southern Forest Tree Improvement Conference, “TreeSnap: a citizen science tool to help our forests,” Accepted, International, Lexington, KY (June 3-6, 2019).
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Presentation at Tree Resistance Workshop, Aug 9, 2018.
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Presentation at Association of Natural Resource Extension Professionals (ANREP) meeting, Biloxi MI, May 2, 2018.
- **Crocker E**, Conrad A, Thomas W, Li X, Ochuodo T, Holmes, T and CD Nelson. Delphi expert opinion survey to assess threats to oaks in the eastern United States. Poster presentation at Association of Natural Resource Extension Professionals (ANREP) meeting, Biloxi MI, May 1, 2018.
- **Crocker E**. Organized and presented at TreeSnap scientific partners meeting, Lexington KY, July 11-12, 2018.
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Seminar at UK Forestry and Natural Resources Department Seminar Series, University of Kentucky, Feb. 21, 2018.

- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Seminar at UK Biology Department EcoLunch Seminar Series University of Kentucky, Oct 27, 2017.
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Poster presentation Oak Symposium, Knoxville TN, Oct 24, 2017.
- Conrad A, **Crocker E**, Thomas W, Li X, Ochuodo T, Holmes, T and CD Nelson. Delphi expert opinion survey to assess threats to oaks in the eastern United States. Poster presentation at Oak Symposium, Knoxville TN, Oct 24, 2017.
- Sena K, **Crocker E**, Dreaden T, Clark C, Yang J, and C Barton. Tracking a tree-killer: Detecting *Phytophthora cinnamomi* in Appalachian forests. EcoLunch Seminar Series University of Kentucky. Lexington, KY, October 13, 2017.
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Oral presentation at meeting group of “Standards and CyberInfrastructure That Enable "Big-Data" Driven Discovery For Tree Crop Research,” NSF PGRP grant, Storrs, Connecticut, July 31- August 1, 2017.
- Sena K, **Crocker E**, Dreaden T, Clark C, Yang J, and C Barton. Tracking a tree-killer: detecting *Phytophthora cinnamomi* in eastern Kentucky. Lilley Cornett Woods Research Symposium. Skyline, KY, June 8, 2017.
- **Crocker E**, Condon B, Abdullah A, Abbott A, Nelson CD, and M Staton. TreeSnap: a citizen science tool to help our forests. Poster presentations at ECU Biology Department Annual Retreat, Lilly Cornett Woods, June 8, 2017.
- **Crocker E**. An Introduction to the Forest Health Research and Education Center. Poster presentations at ECU Biology Department Annual Retreat, Lilly Cornett Woods, June 8, 2017.
- Sena K, **Crocker E**, Dreaden T, Clark C, Yang J, and C Barton. Tracking a tree-killer: Improving detection and characterizing species distribution of *Phytophthora cinnamomi* in Appalachian forests. Graduate Appalachian Research Community (GARC) Appalachian Research Symposium and Arts Showcase. Lexington, KY, February 19, 2017.
- Sena K, **Crocker E**, Dreaden T, Clark C, Yang J, and C Barton. Tracking a Tree-killer: Improving detection and characterizing species distribution of *Phytophthora cinnamomi* in Appalachian forests. Sharing Work Across Appalachia. University of Kentucky Appalachian Center, Lexington, KY, February 15, 2017
- **Crocker EV**, Lanzafane J, Karp MA, and EB Nelson. Role of fungi and oomycetes in marsh wetland seed bank viability. Poster presentation at American Phytopathological Society, August 2014.
- **Crocker EV**, Karp MA, and EB Nelson. Potential role of oomycete pathogens in the success of the invasive plant *Phragmites australis*. Invited Oral Presentation at Society of Wetland Scientists Annual Meeting, Duluth MN June 2013.

- **Crocker EV**, Karp MA, and EB Nelson. Potential for pathogen mediated invasiveness; Oomycete communities associated with native and non-native *Phragmites australis*. Oral presentation at Ecological Society of America Conference, Austin TX, August 2011.
- **Crocker EV**, Karp MA, and EB Nelson. Virulence of plant-pathogenic oomycetes to freshwater wetland plant species. Poster presentation at the Ecology and Evolution of Infectious Diseases Conference, Santa Barbara, CA June 2011.
- **Crocker EV** and M Garbelotto. Possible use of AgriFos to prevent *P. cinnamomi* infection of *A. myrtifolia* (Ione Manzanita). Poster presentation at the Sudden Oak Death Science Symposium, Santa Cruz, CA. June 2009.

OUTREACH AND EDUCATION PUBLICATIONS

- **Crocker E**, Thomas WT, Niman C, and J Stringer. 2019. White Paper on Economic Loss from the Ash Disaster in KY: Impacts to Landowners from the Emerald Ash Borer. University of Kentucky, College of Agriculture, Food, and the Environment, Department of Forestry and Natural Resources - Extension
- **Crocker E**, Bordas A and D Coyle. 2018. Biology, Ecology, and Management of *Biscogniauxia* (*Hypoxylon*) Canker in the Southeastern U.S. SREF Factsheet, SREF-FH-009
- **Crocker E**, Moore H, Niman C, and J Stringer. 2018. White Paper on Ambrosia Beetle Damage to Dead Ash in KY: Prevalence and Economic Impact to Loggers in Northern Kentucky. University of Kentucky, College of Agriculture, Food, and the Environment, Department of Forestry and Natural Resources - Extension
https://forestry.ca.uky.edu/files/2017_ash_ambrosia_beetle_damage_white_paper.pdf
- **Crocker E**. 2017. The Good, The Bad, and the Unknown: A Close Look at Public Concerns About GE Trees. Kentucky Woodlands Magazine.
- Fountain WM, **Crocker E**, Townsend L and NW Gauthier. 2016. After Your Ash Has Died: Making an Informed Decision on What to Replant. Horticulture Extension Publication (ID-241) <http://www2.ca.uky.edu/agcomm/pubs/ID/ID241/ID241.pdf>
- Fountain WM, and **E Crocker**. 2016. What is Your Tree Worth?" Horticulture Extension Publication (ID-240) <http://www2.ca.uky.edu/agcomm/pubs/ID/ID240/ID240.pdf>
- **Crocker E** and N Gauthier. 2016. "Don't Eat Those Mushroom... Unless You Know What You Are Doing." Forestry and Plant Pathology Extension Factsheet Publication PFFS-GEN14/FORFS-16-01
- **Crocker E**. 2016. Biotechnology: Scientific Advances That Could Save Our Native Forests. Kentucky Woodlands Magazine.
http://www2.ca.uky.edu/KYWoodlandsmagazine/Vol10_No1/GMOS.pdf
- **Crocker E**. 2015. Decline of our Forests and Trees- Can Modern Genetics Provide a Solution? Kentucky Woodlands Magazine
http://www2.ca.uky.edu/KYWoodlandsmagazine/Vol10_No1/GMOS.pdf

- **Crocker E.** 2015. Plant Health: Anthracnose. Online article, UK Urban Forest Initiative Tree Talk Series, Summer 2015 <https://ukntrees.ca.uky.edu/treetalk/planthealth-anthrachnose>
- **Crocker E.** 2015. There's a Fungus Among Us. Online article, UK Urban Forest Initiative Tree Talk Series, Fall 2015 <https://ukntrees.ca.uky.edu/treetalk/fungus-among-us>

OUTREACH AND EDUCATION PRESENTATIONS

- “Invasives of the future” presentation at Farm and Family Night, Mason Co., KY, March 10, 2020
- “What’s killing my tree?” presentation at Farm and Family Night, Mason Co., KY, March 10, 2020
- “Forest health and invasive plants” presentation at annual meeting of Kentucky Organization of Field Stations, Lexington, KY, Feb 29, 2020
- “Invasive plants” presentation on From the Woods KY radio show and podcast, Feb 24, 2020
- “Forest health update” presentation at Ranger conference, Pulaski Co., Feb 26, 2020
- “Happy Trees=Happy Golfers: Basics of Tree Health and Care” presentation at Turf and Landscape Management Short Course, Bullitt Co., Feb 19, 2020
- “Invasives on the Horizon: New Threats to Tree Health” presentation at Turf and Landscape Management Short Course, Bullitt Co., Feb 19, 2020
- “Tree Detectives” presentation at KY Volunteer Forum, Lexington, KY, Feb 14, 2020
- “Forest health update” presentation at Greenup Co. event, Feb 13, 2020
- “Laurel wilt” presentation at Central KY Turf and Ornamental Association meeting, Lexington, KY, Feb 13, 2020
- Presentation at and host of KY Forest Health Conference, Feb 6, 2020
- “Forest health update” presentation at KY and TN Society of American Foresters meeting, Bowling Green, KY, Jan 30, 2020
- “What to do after your ash has died” presentation, Clark Co., Jan 28, 2020
- “Forest health update” at the Habitat Symposium, Franklin Co., Dec 3, 2019
- “Citizen science” presentation for KY Master Naturalist training, Lexington, KY, Nov 7, 2019
- “Insect sounds from the forest” presentation on From the Woods KY radio show and podcast, Nov 6, 2019
- “Forest health” presentation at ANR update east, Oct 23, 2019
- “Maple diseases” presentation at KY Maple School, Floyd Co., October 19, 2019
- “Halloween mushrooms” presentation on From the Woods KY radio show and podcast, October 17, 2019

- “Forest health threats” presentation during TreeWeek, Lexington, KY, Oct 16, 2019
- “Trees and Human health” presentation during TreeWeek, Lexington, KY, October 16, 2019
- “Mushrooms” guided hike, Wolfe Co., October 8, 2019
- “Tree health” presentation and organized event at Advanced Tree Health Workshop, October 4, 2019
- “Invasive species” presentation for KY Master Naturalist training, Lexington, KY, October 3, 2019
- “Invasive Plant Management” presentation on invasive plants and hosted event at KY Wood Expo, Lexington, KY, September 20, 2019
- “Forest Health” presentation at KY Wood Expo, Lexington, KY, September 20 and 21, 2019
- “Forest health” table at KY Wood Expo, Lexington, KY, September 21, 2019
- “Forest Health Training” presentation on tree diseases and hosted event at Lake Barkley State Resort Park, September 4, 2019
- “Mushrooms” guided hike, Lyon Co., September 3, 2019
- “Forest health” presentation at Woodland Owners Short Course East, August 24, 2019
- “Invasive plants of the future” presentation at pesticide applicators training at Natural Bridge State Park, Slade, KY, August 22, 2019
- “Forest health” presentation at Woodland Owners Short Course Central, August 20, 2019
- “Laurel wilt” field visit with county agents and KDF foresters, Christian County, August 8, 2019
- “Forest health” presentation at Woodland Owners Short Course West, July 20, 2019
- “Mushrooms” presentation for Lexington Public Library, Lexington, KY, July 11, 2019
- “Emerald ash borer” interview with Joana Cole, Farm and Home TV show WBKO Channel 13, Bowling Green, KY, July 9, 2019
- “Mushroom cultivation” interview with Joana Cole, Farm and Home TV show WBKO Channel 13, Bowling Green, KY, July 9, 2019
- “Invasive plants” interview with Joana Cole, Farm and Home TV show WBKO Channel 13, Bowling Green, KY, July 9, 2019
- “Forest health” presentation at annual canoeing event, Breathitt Co., June 29, 2019
- “Mushroom ID” presentation at KACAA meeting, Owensboro, KY, June 25, 2019
- Forest health table at Jefferson County Family, Farm, and Forage Day event, June 15, 2019
- “Tree Benefits” presentation at Kenton Co. Master Gardeners meeting, June 11, 2019
- “Forest health” presentation at monthly ANR agents district (D2) meeting, Boyd Co., KY, May 22, 2019
- “Forest health” presentation at monthly agents district (D1) meeting, Quicksand, KY, May 8, 2019

- “Foods from the forest” presentation and panel moderation at UK First Fridays event, Lexington, KY May 3, 2019
- “TreeSnap and Lingering Ash Project” presentation to Kentucky Division of Forestry foresters, Campbellsville, KY, April 30, 2019
- Forest health table at Whitley County Earth Day event, April 22, 2019
- “Invasive plants” presentation on From the Woods KY radio show and podcast, April 15, 2019
- “Forest health” presentation on From the Woods KY radio show and podcast, April 15, 2019
- “TreeSnap and Lingering Ash Project” presentation to Kentucky Division of Forestry foresters, Hazard Co., April 1, 2019
- “Mushrooms” presentation, Louisville, KY, March 30, 2019
- “Invasive plants” presentation at Whitley County tree planting event, March 29, 2019
- “Invasive species to watch for” presentation at Roadside Environmental Update, March 28, 2019
- “Forest health” presentation to Kentucky Woodland Owners Association, Pennyriple, KY, March 27, 2019
- “Urban forest health” presentation in TreeCats program, Lexington, KY, March 23, 2019
- “Forest health” presentation in “Welcome to Your Woodlands” webinar, online, March 21, 2019
- “Invasive plants of the future” presentation at Forest Health Workshop, Boone County, KY, March 16, 2019
- “Forest health” sharing session presentation with county agents, online, March 13, 2019
- “Forest health” presentation, EKSAF meeting, Berea KY, March 7, 2019
- “Mushrooms” lesson with students in NERD SQUAD STEM group, Lexington KY, Feb 6, 2019
- “Fantastic fungi!” lesson with elementary students from Booker T Washington STEM Club, Lexington KY, Dec 17, 2018
- “Citizen Science” radio show on From the Woods Kentucky Program, WRFL Lexington KY, Dec 6, 2018
- Organized and facilitated meeting of KY Forest Health Task Force, Frankfort KY, Dec 5, 2018
- Organized and facilitated “Seeing the Forest Through the Trees: A Panel Discussion and Public Forum on Tree Inventories,” Lexington, KY, Nov 28, 2018
- “Managing Invasive Species” workshop led for KY Master Naturalist student group, Lexington KY, Nov 2, 2018
- “Introduction to Fungi” talk given to WildOnes group, Lexington KY, Nov 1, 2018
- “Introduction to Invasive Species” class led for KY Master Naturalist student group, Lexington KY, Oct 31, 2018

- “Foods of the Forest” demonstration at UK Fresh Food Company Dinning Hall, Lexington KY, Oct 25, 2018
- “Program Development and Delivery Module 2” presentation as a part of the Seeding Success Extension agent onboarding training webinar series developed by Southern Regional Extension Forestry, <https://sref.info/seedingsuccess/module4/> , Oct 23, 2018
- “Program Development and Delivery Module 1” presentation as a part of the Seeding Success Extension agent onboarding training webinar series developed by Southern Regional Extension Forestry, <https://sref.info/seedingsuccess/module4/> , Oct 16, 2018
- “White Oak Threats” presentation at the annual Associated Cooperages Industries of America meeting, Austin TX, Oct 15, 2018
- “Introduction to Invasive Species” workshop led for KY Master Naturalist group, Louisville KY, Oct 11, 2018
- “Revisiting Floracliff’s Old Oaks: A TreeSnap Training and Citizen Science Workshop” led at Floracliff Nature Sanctuary, Lexington KY
- Judging of invasive plant identification competition at Win With Wood youth event, Jackson KY, Oct 2, 2018
- “Invasives of the Future” presentation at the Invasive Plant Species Management Techniques Workshop for Land Managers hosted by KY Chapter of the Wildlife Society, Sept 19, Richmond, KY
- “Citizen Science Apps” workshop at Mountain Ag Day, Clayhole, KY, Sept 18, 2018
- “Citizen Science” workshop led at the annual Kentucky Environmental Educators conference, Berea KY, Sept 7, 2018
- “Introduction to KY Master Naturalist Program” presentation at the annual Kentucky Environmental Educators conference, Berea KY, Sept 7, 2018
- “Forest Health” radio show on From the Woods Kentucky Program, WRFL Lexington KY, August 30, 2018
- Tree health concerns interview by WKYT TV station, Lexington KY, Aug 30, 2018
- “Introduction to Invasive Plants and their Management” talk, Shelby Co. Master Gardeners, Shelbyville KY, July 26, 2018.
- “Tree Detectives” activity, 4H Natural Resource & Environmental Sciences Academy, Lexington, KY, July 24, 2018.
- “TreeSnap Citizen Science Sampling Day” event, Floracliff Nature Preserve, Lexington KY, July 12, 2018
- Organized “Forests of the Future” seminar with 4 invited speakers Fayette Co. Cooperative Extension Office, Lexington KY, July 11, 2018
- “Mushroom Identification” talk and hike, Kenton Co. Cooperative Extension, Ft. Mitchell KY, June 22, 2018.
- “Forest pathology” seminar, Kentucky 4H Forestry Team, Lexington KY, June 19, 2018.
- “We Speak for the Trees” mini-course, 4H Teen Conference, Lexington KY, June 12-13,

2018.

- “Introduction to Forest Health” talk, Kentucky Forest Leadership Program, Jabez KY, June 4, 2018.
- “What to Expect When You Are Expecting EAB” talk, Clemson University, Clemson SC, May 23, 2018.
- Hosted KY Expanding Your Horizons STEM conference for ~160 middle school girls, Lexington KY, April 21, 2018.
- “Woodland mushroom cultivation and identification” workshop, Lyon Co. Cooperative Extension Office, Grand Rivers KY, April 5, 2018.
- “Fungus Among Us” activity at Nerd Squad Park takeover event with elementary and middle school students, Lexington KY, April 6, 2018.
- “Urban tree health and diagnostics” talk to UK TreeCATS program, Lexington KY, March 31, 2018.
- “Asian Longhorned Beetle and Other Invasives to Watch For” talk to Kentucky Woodland Owners Association, March 21, 2018.
- “Ambrosia beetle damage to standing dead ash trees” talk in KY Master Logger TV, Feb. 6, 2018.
- “There’s an App for that: Forest Engagement Through Citizen Science” webinar, KY Forestry Extension Fall Webinar Series, Nov 28, 2017
- “Plant Detectives” workshop at GEMS (Girls in Engineering, Math, and Science) event, Lexington KY, Nov 11, 2017
- Organized “Mulching 101” workshop with Stacy Borden as part of urban forest-focused workshop series, Nov 11, 2017
- “Mushrooms and More From Your Woodland” webinar, KY Forestry Extension Fall Webinar Series, Nov 2, 2017
- Judged invasive plant identification component of Win With Wood competition, Quicksand KY, Oct 3, 2017
- “Mushrooms and More From Your Woodland” presentation, Central Kentucky Woodland Owners Short Course, Sept 23, 2017
- “Kentucky Forest Health Update” Presentation to KY Highway Maintenance Workers meeting, Quicksand, KY, Sept 21, 2017
- “Invasive Plant Species and the Emerald Ash Borer” presentation at Your Backyard Woods session on KY Wood Expo, Sept 16
- “Citizen Science for your Woodland” presentation at Master Woodland Stewards Program, Sept 8, 2017
- “Mushrooms and more from your woodlands” talk, Woodland Owners Short Course Western Kentucky, August 26, 2017
- “Mushrooms and more from your woodlands” talk, Woodland Owners Short Course Eastern Kentucky, August 12, 2017

- “Introduction to Biotechnology” at UK Ag Biotech Day for high school students, July 22, 2017
- “Biotech, Forest Restoration and Conservation” interview with Talking Biotech Podcast, June 3, 2017
- Hosted KY Expanding Your Horizons STEM conference for ~120 middle school girls, April 29, 2017
- Organized “Landscaping with native plants and managing invasives” with John Michler and Joyce Bender as part of urban forest-focused workshop series, April 22, 2017
- “Urban Tree Health” UK Urban Forest Ambassador training, April 1 2017
- “Forest Health Update” at Ohio River Valley Woodland and Wildlife Workshop, March 25, 2017
- “Fantastic Fungi” at Ohio River Valley Woodland and Wildlife Workshop, March 25, 2017
- Organized “Tree Pruning 101 with Stacy Borden as part of urban forest-focused workshop series, March 11, 2017
- Organized “Winter Tree ID” with Doug McLaren as part of urban forest-focused workshop series, Feb 4, 2017
- "An Introduction to Invasive Plants and Pests” talk, Keep Frankfort Forested lecture series, Nov 5, 2016
- “Kentucky Forest Health Update 2016” Webinar through UK Forestry Extension fall series, Nov 1, 2016 <https://www.youtube.com/watch?v=99H0BpGynx4>
- “Ash Tree Identification” Program at Raven Run Emerald Ash Borer awareness event, Oct 8, 2016
- UK Forestry Department Demonstration Booth at Mountain Agriculture Day, Quicksand KY, Oct 1, 2016
- Co-designed and facilitated “Neighborhood Tree Health” workshops, outreach sessions to eight Fayette County homeowners associations to increase awareness of urban tree health problems and care reaching ~100 people, summer 2016.
- “Tree Detectives” Program at Youth Mountain Agriculture Day, Robinson Forest, Sept 29, 2016
- “Tree Detectives” Program at Outdoor Adventure Camp, McConnell Springs, Lexington KY, June 27 and July 18.
- “Tree Detectives” Program at Governor’s Minority Student College Preparation Program, UK, June 27- 28, 2016
- “Tree Detectives” Program at 4H Teen Conference, June 14-15, 2016
- “Introduction to Fungi” Presentation at Kentucky Forestry Leadership Camp, June 7,

2016

- “Tree Detectives” Program at 4H camp in Jabez KY, May 21, 2016
- “Tree Detectives” Program at Tech Savvy at Kentucky State University, May 21, 2016
- “Backyard Bark Beetles” Program at Russell Cave Elementary, April 22, 2016
- “Fantastic Fungi” Presentation at Ohio River Valley Woodlands and Wildlife Workshop, Madison Indiana, April 2, 2016
- “Are Your Woodlands Healthy?” webinar, Forestry Extension Fall Webinar Series, Nov 12, 2015, <https://www.youtube.com/watch?v=SCKXLABUiL0>
- "An Introduction to Invasive Plants and Pests” talk, Keep Frankfort Forested lecture series, Nov 7, 2015
- “Forest Health Research and Education Center: An Interdisciplinary Approach to Address Current and Emerging Threats to Forest Health” poster presentation, Society of American Foresters Annual Meeting, Nov 4, 2015
- “White Oak Threats” talk, Associated Cooperage Industries of America (ACIA) annual meeting, Oct 12, 2015
- "How to take tree measurements” presentations and assessments at 4H field days in the Land Between the Lakes (Sept 15) and Carter Caves (Sept 16), 2015
- Video presentation “Welcome to Kentucky’s Forests,” KY Woodland Expo, Sept 19, 2015
- “Signs of Woodland Health Issues” talk, KY Woodland Expo, One Acre at a Time Program, Sept 19, 2015
- “Managing Woodlands to Deal with Key Invasive Plants in Eastern Kentucky” talk, Woodland Owners Short Course Eastern Kentucky, Sept 26, 2015
- “An Introduction to Invasive Plants and Pests in Eastern Kentucky” talk, Woodland Owners Short Course Eastern Kentucky, Sept 26, 2015
- “Managing Woodlands to Deal with Key Invasive Plants in Central Kentucky” talk, Woodland Owners Short Course Central Kentucky, August 15, 2015
- “An Introduction to Invasive Plants and Pests in Central Kentucky” talk, Woodland Owners Short Course Central Kentucky, August 15, 2015
- Invited speaker for Emerald Ash Borer segment, local TV news noon show, WKYT channel 27, July 6, 2015
- Invited speaker for firewood safety segment, local TV news morning show, WTVQ channel 36, June 25, 2015
- “Threats on Our Doorstep: Emerging pathogens and pests” talk, Ohio Valley Lumber Drying Association meeting, April 16, 2015
- "White Oak Threats" talk, White Oak Sustainability Meeting, March 25, 2015

- Designed and taught “Mushrooms and fungi”, Cornell University Cooperative Extension, Sep 2014. Workshop a component of “Master Naturalist” training.
- Designed and implemented “Plant Detectives!”, Cornell University Spring 2014. Program to increase interest in STEM fields among middle school girls. Cornell University.
- “Serendipity and Science: 30 Minutes with Dr. Sharon Long.” *Scientific American* guest blog, April 2012. <http://blogs.scientificamerican.com/guest-blog/2012/04/12/serendipity-and-science-30-minutes-with-dr-sharon-long/>
- Designed and taught “Fantastic Fungi: Mushrooms and More!”, Cornell University Spring 2011. Mini-course for 1st grade students.
- Citizen-science organizer, UC Berkeley Cooperative Extension, Spring 2009. Educated the public about Sudden Oak Death and coordinated “Sudden Oak Death Sampling Blitz.”
- Workshop organizer, UC Berkeley Cooperative Extension, 2008-2009. Coordinated monthly Sudden Oak Death treatment workshops for general public and arborists.

ACADEMIC SERVICE

- **Seminar Committee Chair**, Department of Forestry and Natural Resources, 2019- present
- **Co-lead**, Urban and Community Forestry Undergraduate Certificate Program, University of Kentucky, 2020-present
- **UK Society of Postdoctoral Scholars**, University of Kentucky, Executive Committee member/Chair. August 2015 – present
- **Biotechnology Strategic Initiative Committee member**, University of Kentucky College of Agriculture, Food and Environment, August 2015 – present
- **Plant Pathology and Plant-Microbe Biology Department Curriculum Committee**. January 2010 – January 2012
- **Graduate Student Association**, Department of Plant Pathology and Plant-Microbe Biology. President, Fall 2011 – 2012
- **Graduate Student Association**, Colloquium Committee Chair, Department of Plant Pathology and Plant-Microbe Biology. Fall 2013

Michael Lacki

CURRICULUM VITAE

1. Name: Michael J. Lacki

2. Address and Contact Information:

207 T.P. Cooper Building
University of Kentucky
Department of Forestry
Lexington, KY 40546-0073
(859) 257-8571 (Office)
(859) 323-1031 (Fax)
mlacki@uky.edu

3. Current Position: Professor of Wildlife Ecology and Management

4. Degrees, with Field, Institution, and Date:

B.S., Biology, University of Dayton, 1978 (*Magna Cum Laude*)

M.S., Zoology, The Ohio State University, 1980

Ph.D., Zoology, North Carolina State University, 1984

5. Experience:

July 2006 – 2020: Professor of Wildlife Ecology and Management, Department of Forestry and Natural Resources, University of Kentucky, Lexington, KY

Apr 2009 – June 2010: Interim Department Chair, Department of Forestry, University of Kentucky, Lexington, KY

July 1995 – June 2006: Associate Professor of Wildlife Ecology and Management, Department of Forestry, University of Kentucky, Lexington, KY

December 1989 – June 1995: Assistant Professor of Wildlife Ecology and Management, Department of Forestry, University of Kentucky, Lexington, KY

July 1986 – November 1989: Program Leader & Assistant Professor of Wildlife Technology, Wildlife Technology Program, The Pennsylvania State University, DuBois, PA

August 1984 – June 1986: Visiting Assistant Professor of Wildlife Ecology, Center for Earth & Environmental Science, State University of New York at Plattsburgh, Plattsburgh, NY

January 1984 – July 1984: Instructor, Department of Zoology, North Carolina State University, Raleigh, NC

January 1981 – December 1983: Graduate Teaching Assistant, Department of Forestry, North Carolina State University, Raleigh, NC

August 1978 – December 1980: Graduate Teaching Assistant, Department of Zoology, The Ohio State University, Columbus, OH

January 1976 – July 1978: Research Assistant, Department of Biology, University of Dayton, Dayton, OH

6. Research Projects: (Total Awarded = \$3,198,000.00)

Extramural:

"Radio-track spring migrating female Indiana bats (*Myotis sodalis*);" USFWS-WNS grant program, Federal, 2017-2019; \$40,000.00; Co-investigator with P. Roby (PI) and N. Sharp (Copperhead Consulting),

“Silvicultural Treatments and Effects on Vertical and Horizontal Stand Structure in Forested Ecosystems of Eastern Kentucky: Response of *Myotis* Bats during the Staging and Maternity Seasons;” USFWS; 2018-2021; \$50,000 (additional \$90,000 anticipated); Co-investigator with J. Stringer (PI), J. Lhotka, and M. Contreras (Forestry-UK).

“Effect of silvicultural treatments on vertical stand structure in forested ecosystems of the Appalachian Mountain Region: implications for foraging and roosting behavior of *Myotis* bats during the staging, maternity, and swarming seasons;” Forestland Group LLC; 2015-2018; \$149,000; Principal Investigator with J. Stringer, J. Lhotka, M. Contreras (Forestry-UK), and L. Dodd (EKU).

“Evaluate habitat utilization and baseline abundance of northern long-eared bats at Mammoth Cave National Park;” National Park Service & Southern Appalachian Cooperative Ecosystems Study Unit; 2014-2017; \$142,000; Principal Investigator with J. Johnson (Bucknell U) and L. Dodd (EKU)

“Assessing potential impact of white-nose syndrome on bats in the Greater Yellowstone Ecosystem: development of a bat monitoring program for Yellowstone National Park;” National Park Service & Southern Appalachian Cooperative Ecosystems Study Unit; 2014-2016; \$35,250; Principal Investigator with J. Treanor (NPS), J. Johnson (Bucknell U), L. Dodd (EKU), M. Baker (CF&FP), G. Falxa (CRC)

“Response of bat populations at Mammoth Cave National Park to white-nose syndrome;” National Park Service & Disneynature; 2014-2015; \$21,660; Principal Investigator with L. Dodd (EKU)

“A long-term evaluation of the interaction of prescribed fire and white-nose syndrome on bats and insect prey at Mammoth Cave National Park: the world’s largest cave system;” USFS Joint Fire Science Program; 2014-2017; \$237,634; co-Principal Investigator with L. Dodd (PI-EKU) and L. Rieske-Kinney (Entomology-UK)

“Pre-WNS habitat assessment of bats during late summer and autumn in Yellowstone National Park;” National Park Service; 2010-2014; \$60,000.00; Co-Principal Investigator with John Treanor

“Fire management and habitat quality for endangered bats in Kentucky’s Mammoth Cave National Park during the swarming and staging periods: predator-prey interactions and habitat use of bats threatened by White-Nose Syndrome;” USDA Joint Fire Science Program; 2010-2013, \$333,265.00; Principal Investigator with Matt Dickinson and Lynne Rieske-Kinney

“Roosting and foraging behavior of Rafinesque’ big-eared bat near the northern limits of the species range;” KDFWR; 2009-2012, \$153,915.00; Principal Investigator

“Ecological monitoring initiative at Griffith Woods;” USDA; 2007 to 2008, \$66,262; Co-Principal Investigator with John J. Cox and Christopher Barton

“Effects of forest practices on insect prey and activity levels of forest-dwelling bats in Tennessee;” Tennessee Nature Conservancy; 2006 to 2007, \$9,900.00; Principal Investigator

“Effects of silvicultural treatments on insect prey and activity levels of forest-dwelling bats in the central Appalachians;” National Council for Air and Stream Improvement, Inc.; 2006 to 2009, \$120,000.00; Principal Investigator with Lynne Rieske-Kinney and Luke Dodd

“Injury and mortality risks from wildland fire smoke and heat exposure for endangered Indiana bats in maternity roosts;” USDA Joint Fire Science Program; 2005 to 2008, \$380,000.00; Co-Principal Investigator with Matt Dickinson, James Norris, Valerie Young, and Anthony Bova

“Survey of forest bats in managed coniferous forest of north-central Idaho;” Idaho Wildlife Conservation and Restoration Program; 2004 to 2006, \$20,000.00; Co-Principal Investigator with Michael Baker

“Diet and prey abundance of the Ozark big-eared bat in northwest Arkansas;” Arkansas Game and Fish Commission; 2004 to 2006, \$50,000.00; Principal Investigator

“Status, distribution, and reproductive characteristics of river otters in Kentucky;” Kentucky Department of Fish and Wildlife Resources; 2003 to 2009, \$245,393.00; Principal Investigator

“Roost-site selection and roost microclimates of tree-roosting bats in coniferous forests Of the Pacific Northwest;” Northwest Bat Cooperative; 2001 to 2007; \$296,175.00; Principal Investigator

“Restoration of the American peregrine falcon to cliff habitats in Kentucky;” Kentucky Department of Fish and Wildlife Resources; 2000 to 2003, \$157,573.00; Principal Investigator

“A comparison of natural versus artificial maternity roosts of *Myotis septentrionalis*;” Bat Conservation International; 1999 to 2000, \$3,750.00; Co-Principal Investigator with Jeff Schwierjohann

“A survey of bird communities on Black and Little Black Mountains, Kentucky;” Manalapan Mining Company; 1997 to 1999, \$12,000.00; Principal Investigator

“Population status of the endangered northern copperbelly water snake in the Pigeon Creek floodplain, Indiana;” Peabody Coal Company; 1992 to 2000, \$145,000.00; Co-Principal Investigator with Joseph Hummer

“Bat fauna of Grayson Lake Wildlife Management Area;” Kentucky Department of Fish and Wildlife Resources; 1997 to 1998, \$22,000.00; Principal Investigator

“Forest fragmentation and nesting success of Neotropical migratory birds in eastern Kentucky;” E.O. Robinson Trust Fund; 1997 to 1998, \$40,560.00; Principal Investigator

“Ecology of Laurel Creek Gorge and surrounding forest ecosystems and the implications for ecotourism in Elliott County, Kentucky;” E.O. Robinson Trust Fund; 1996 to 1998, \$60,994.00; Principal Investigator with Allan Worms

“Impact of rights-of -ways on habitat use of *Corynorhinus rafinesquii*;” East Kentucky Power Cooperative; 1996, \$2,000.00; Principal Investigator

“An assessment of the effects of silvicultural prescriptions on wildlife communities and associated habitats in the Daniel Boone National Forest;” U.S. Forest Service; 1992 to 1996, \$142,530.00; Principal Investigator with Tom Barnes, Jeff Stringer, and Paul Kalisz

“Foraging patterns and habitat use of gray bat summer colonies in the Jessamine Creek Gorge;” The Kentucky Nature Conservancy and Jessamine County; 1993, \$6,113.00; Principal Investigator

“Foraging behavior and summer habitat selection of the endangered Virginia big-eared bat (*Plecotus townsendii virginianus*) in the Daniel Boone National Forest;” U.S. Forest Service; 1990 to 1992, \$45,000.00; Principal Investigator

“Impacts of disturbance in fescue-dominated fields on bobwhite quail (*Colinus*

virginianus) and eastern cottontail rabbit (*Sylvilagus floridanus*) in Kentucky: habitat, food quality and availability;" Kentucky Department of Fish and Wildlife Resources; 1990 to 1992, \$15,000.00; Co-Principal Investigator with Tom Barnes

"Design considerations of proposed AMD-treatment wetlands at Tecumseh Mine;" Atec Associates, Inc.; 1990 to 1991, \$30,000.00; Co-Principal Investigator with Hank Webster and Joe Hummer

"Bioaccumulation of heavy metals in wildlife in constructed wetlands;" DuBois Educational Foundation; 1989 to 1990, \$800.00; Principal Investigator with Hank Webster and Joe Hummer

"Faunal survey of the Simco #4 wetland development site;" American Electric Power Corporation; 1988 to 1990, \$86,000.00; Principal Investigator with Hank Webster and Joe Hummer

"Raccoon depredation on agricultural crops;" Max McGraw Wildlife Foundation; 1988 to 1990, \$1,300.00; Principal Investigator with Ken Adams

"Management of muskrats in fen wetlands;" Theodore Roosevelt Memorial Fund; 1985 to 1988, \$5,355.00; Principal Investigator with Bill Peneston and Dan Vogt

"Trace element levels and growth of selected tree species;" Oak Ridge National Laboratory; 1984 to 1985, \$9,900.00; Co-Principal Investigator with Bill Hafley

"Impact of wild pigs on tree growth and nutrient cycling in Great Smoky Mountains National Park;" Theodore Roosevelt Memorial Fund; 1981 to 1984, \$700.00; Principal Investigator with Richard Lancia

"Undergraduate Research Participation Grant;" National Science Foundation; 1977 to 1978, \$1,650.00; Principal Investigator with Kelly Williams

Other:

"Shifts in the statewide distribution and abundance of forest bats in Kentucky: implications of climate change, white-nose syndrome, and wind power development. College of Agriculture, Food and Environment, Experiment Station Project: 2018 to 2021.

"Forest management and foraging habitat of bats vulnerable to white-nose syndrome;" College of Agriculture, Food and Environment, Experiment Station Project: 2014 to 2019.

"Research Activity Award;" University of Kentucky; 2011, \$3,600.00.

“Distribution and ecology of the North American river otter (*Lontra canadensis*) in Kentucky;” College of Agriculture Experiment Station Project; 2009 to 2013.

“Research Equipment Initiative;” University of Kentucky; 2002 to 2003, \$16,769.00; Principal Investigator

“Restoration of the American peregrine falcon (*Falco peregrinus anatum*) to cliff Habitats in Kentucky;” College of Agriculture Experiment Station Project; 2001 to 2008.

“Selection of day roosts by eastern small-footed bats;” University of Kentucky Research Committee Grant; 2000 to 2001, \$4,330.00; Principal Investigator

“Roost selection of bats in forests in eastern Kentucky;” College of Agriculture Experiment Station Project; 1996 to 2001.

“Research Committee Equipment Grant;” University of Kentucky; 1992, \$1,300.00; Principal Investigator

“Major Research Equipment Fund;” University of Kentucky; 1991, \$3,557.00; Principal Investigator

“Development of conservation strategies for forest-dwelling wildlife dependent on topographic habitat features;” College of Agriculture Experiment Station Project; 1991 to 1995.

“Habitat selection in terrestrial vertebrates;” College of Agriculture Experiment Station Project; 1989 to 1991.

7. Graduate Students Supervised: (n = 72)

*William Peneston, M.S., 1990

Kevin Brooks, M.S., not completed

*Michael Lusk, M.S., 1991

*Michael Adam, M.S., 1992

John Delfino, Ph.D., 1993

Martina Hines, M.S., 1993

Richard Mauro, M.S., 1994

Andrew Madison, M.S., 1994

*Laura Shoemaker (Burford), M.S., 1994

Xiaoqiang Huang, Ph.D., 1995

Brian Arnett, M.S., not completed

James Lane, M.S., 1995

*Timothy Herald, M.S., 1995

Gary Raulerson, M.S., 1996

*Michael Baker, M.S., 1996
Andrew Storfer, Ph.D., 1997
Jeffery Larkin, M.S., 1997
*Tracy Hurst, M.S., 1997
Kevin Hopper, Ph.D., 1998
*Jeffrey Hutchinson, M.S., 1998
Wade Davidson, M.S., 1999
Brian Washburn, Ph.D., 2000
Chris Teutsch, Ph.D., 2000
Judith Smith, M.S., 2001
Michael Wichrowski, M.S., 2001
Elizabeth Springborn, Ph.D., not completed
Herman Mays, Ph.D., 2001
*Jeffery Larkin, Ph.D., 2001
*Dana Secrist, M.S., 2001
*Jeffrey Schwierjohann, M.S., not completed
*Henry Yacek, Jr., M.S., not completed
John Cox, Ph.D., 2003
Dana Secrist, Ph.D., not completed
Elizabeth Ciuzio, M.S., 2003
Michael Orlando, M.S., 2003
Jennifer Rehage, Ph.D., 2003
*Kristina LaDeur (Carter), M.S., 2003
*Matthew Dzialak (Jollick), Ph.D., 2003
Marvin Ruffner, M.S. 2004
Joshua Brown, M.S., 2004
Patricia Hartman, M.S., 2005
Joshua Adkins, M.S., 2006
*Joseph Johnson, M.S., 2006
*Luke Titsworth (Dodd), M.S., 2006
Anthony Miller, M.S., not completed
Amy Courtney, M.S., 2006
Dave Unger, Ph.D., 2007
Wade Ulrey, M.S., 2007
*Lauren Dahl, M.S., 2008
*William Boling, M.S., 2009
*Dan Cox, Ph.D., not completed
*Tiffany Potter, M.S., not completed
*Erin Barding, Ph.D., 2011
*Luke Dodd, Ph.D., 2010
*Hannah Harris, Ph.D., 2011
Marvin Ruffner, Ph.D., 2014
*Zeb Weese, M.S. 2015
*Rebekkah Jensen, M.S., 2010
Rachael Mallis, M.S., 2010
*Joseph Johnson, Ph.D., 2012

Bryan Tom, M.S., 2012; not completed
*Sean Murphy, Ph.D., (2016)
Joshua Felch, M.S., not completed
Alejandra Betancourt, M.S., not completed
Mickey Agha, M.S. (2014)
*John Hast, Ph.D. (2019)
*Alexandra Slusher, M.S. (2017)
*Marissa Thalken, M.S. (2017)
*Phillip Arant, M.S. (active)
*Piper Roby, Ph.D. (2019)
Gabriela Wolf, M.S. (2020)
Ibach, Andrew, M.S. (active)

*Major advisor or co-advisor

8. Post-Doctoral Scholars Supervised:

Michael Baker, Ph.D., Louisiana State University
Laura Lhotka, Ph.D., Auburn University
Luke Dodd, Ph.D., University of Kentucky

9. Teaching and Undergraduate Advising:

University of Kentucky:

Mammals of the Eastern United States (**Graduate Level** - FOR 520); 2018-2020
Wildlife Biology and Management (FOR 370); 2011-2020
Renewable Natural Resources in a Global Perspective (**Graduate Level** - FOR 602);
Lead Instructor: 2017; contributing instructor; 2003, 05, 07, 09, 11, 13, 15
Data Collection Techniques (NRC 320) – contributing instructor; 1994-2001, 2005-2018
Introduction to Wildlife Conservation (FOR 101); 1990
Forest Wildlife Management (FOR 430); 1990-2011
Interdependent Natural Resource Issues (FOR 470); 2013-2014
Integrated Forest Resources Management (FOR 480) – team taught course; 1994-2006
Special Topics in Conservation Biology (**Graduate Level** - FOR 620); 1995
Wildlife Habitat Analysis (**Graduate Level** - FOR 630); 1992, 1994, 1996, 2000, 2006
Forestry Seminar (**Graduate Level** – FOR 770); 2002

The Pennsylvania State University:

Introduction to Wildlife Management (WILDL 101); 1986-1989
Wildlife Mensuration (WILDL 204); 1986-1989
Animal Handling and Care (WILDL 209); 1987-1988
Dendrology (FOR 250); 1989

SUNY @ Plattsburgh:

Ecology (ENV/BIO 210); 1985
Introduction to Soils (ENV 270); 1986
Wildlife Ecology (ENV 330); 1985-1986
Community and Systems Ecology (ENV 331); 1985
Population Ecology (ENV 335); 1986
Habitat Analysis (ENV 435); 1985-1986

North Carolina State University:

Conservation of Natural Resources (FW 221); 1984

Undergraduate Advising:

University of Kentucky: 193 undergraduate advisees; 28 internships.

The Pennsylvania State University: 60 undergraduate advisees.

SUNY @ Plattsburgh: 20 undergraduate advisees.

10. Publications:

Books, Book Chapters & Refereed Proceedings: (n = 17)

Griffitts, R., L.E. Dodd, and M.J. Lacki. 2016. The activity of *Myotis sodalis* and *Myotis septentrionalis* changes on the landscape of Mammoth Cave National Park following the arrival of white-nose syndrome. Pp. 70-75 in S.R. Trimboli (ed.), Celebrating Diversity of Research in the Mammoth Cave Region: Mammoth Cave National Park's 10th Research Symposium, *Mammoth Cave Research Symposia*. Paper1. Mammoth Cave National Park, Kentucky.

Dodd, L.E., N.S. Skowronski, M.B. Dickinson, L.K. Rieske, and M.J. Lacki. 2016. Modeling the activity of the Indiana bat (*Myotis sodalis*) at Mammoth Cave National Park using remotely-sensed descriptors of forest canopy conditions. Pp. 163-165 in S.R. Trimboli (ed.), Celebrating Diversity of Research in the Mammoth Cave Region: Mammoth Cave National Park's 10th Research Symposium, *Mammoth Cave Research Symposia*. Paper1. Mammoth Cave National Park, Kentucky.

Law, B., K.J. Park, and M.J. Lacki. 2015. Insectivorous bats and silviculture: balancing timber production and bat conservation. Pp. 105-150 in C.C. Voigt and T. Kingston (eds.), *Bats in the Anthropocene: conservation of bats in a changing world*. Springer International Publishing, New York, NY (DOI 10.1007/978-3-319-25220-9).

Dodd, L.E., N.S. Skowronski, M.B. Dickinson, M.J. Lacki, and L.K. Rieske. 2013. Using LiDAR to link forest canopy structure with bat activity and insect occurrence: preliminary findings. Pp. 50-57 in Mammoth Cave National Park's 10th Research Symposium: Celebrating the Diversity of Research in the Mammoth Cave Region. Mammoth Cave, Kentucky.

Loeb, S.C., M.J. Lacki, and D.A. Miller, editors. 2011. Conservation and management of eastern big-eared bats: a symposium. Southern Research Station, USDA, GTR-SRS-145, 157pp.

Lacki, M.J., and L.E. Dodd. 2011. Diet and foraging behavior of *Corynorhinus* in eastern North America. Pp. 39-52 in Conservation and management of eastern big-eared bats: a symposium. (Loeb, S.C., M.J. Lacki, and D.A. Miller, eds.), Southern Research Station, USDA, GTR-SRS-145.

Johnson, J.S, and M.J. Lacki. 2011. Foraging and roosting ecology of Rafinesque's big-eared bat at the northern edge of the range. Pp. 129-137 in Conservation and management of eastern big-eared bats: a symposium (Loeb, S.C., M.J. Lacki, and D.A. Miller, eds.), Southern Research Station, USDA, GTR-SRS-145.

Loeb, S.C., M.J. Lacki, and D.A. Miller. 2011. Conservation and management of eastern big-eared bats: an introduction. Pp. 1-11 in Conservation and management of eastern big-eared bats: a symposium. (Loeb, S.C., M.J. Lacki, and D.A. Miller, eds.), Southern Research Station, USDA, GTR-SRS-145.

Dickinson, M.B, M.J. Lacki, and D.R. Cox. 2009. Fire and the endangered Indiana bat. Pp. 51-75 in Proceedings of the 3rd fire in eastern oak forests conference (Hutchinson, T.F., ed.), Northern Research Station, USDA, GTR-NRS-P-46.

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Barding, E.E., and M.J. Lacki. 2012. Status, distribution, diet, and reproductive characteristics of river otters in Kentucky. Pp. 26-35 in Annual Research Highlights 2011: KDFWR, Volume 5. Frankfort, Kentucky.

Johnson, J., J. Treanor, M. Lacki, M. Baker, L. Dodd, and G. Falxa. 2012. Preparing for possible arrival of white-nose syndrome in the western United States: an example from Yellowstone National Park. *Bat Research News* 53: 85.

Lacki, M.J., and E.E. Barding. 2011. Research on North American river otters in Kentucky: recovery, ecological impacts, and population dynamics. *Kentucky Woodlands Magazine* 6: 16-17.

Lacki, M.J. 2011. Book Review: *Bats of Ohio*, by Sparks et al. *Bat Research News* 52: 1-2.

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Johnson, J.S., M.J. Lacki, and G. Langlois. 2010. Social roosting behavior in colonies of *Corynorhinus rafinesquii* in bottomland hardwood and upland karst regions of Kentucky. *Bat Research News* 51: 166.

Watrous, K.S., J.S. Johnson, G.J. Giumarro, T.S. Peterson, S.A. Boyden, and M.J. Lacki. 2009. Seasonal and geographic trends in acoustic detection of tree-roosting bats. *Bat Research News* 50: 151.

Dickinson, M., J. Norris, M. Lacki, V. Young, and A. Bova. 2009. Injury and mortality risks from wildland fire smoke and heat exposures for endangered Indiana bats (*Myotis sodalis*) in maternity roosts. Final report; JFSP Project Number 05-2-1-24.

Lacki, M.J., D.R. Cox, L.E. Dodd, and M.B. Dickinson. 2008. Response of northern bats, *Myotis*

septentrionalis, to prescribed fires in eastern Kentucky forests. *Bat Research News* 49: 139.

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Baker, M.D., and M.J. Lacki. 2006. Survey of forest bat communities and day-roosting ecology of *Myotis volans* in North-central Idaho, 2004-2005 comprehensive report. Final report to the Idaho Fish and Game, State Wildlife Project No. T-1-5 0410. 48 pp.

Cox, D.R., M.J. Lacki, M.D. Baker, and J.S. Johnson. 2006. Effects of sample size on habitat modeling for forest-roosting bats. *Bat Research News* 47:97.

Baker, M.D., and M.J. Lacki. 2006. day-roosting habits of female fringed myotis, *Myotis thysanodes*, in xeric forests of the Pacific Northwest. *Bat Research News* 47:85.

Dodd, L.E., and M.J. Lacki. 2006. Occurrence of prey and diet of the Ozark big-eared bat (*Corynorhinus townsendii ingens*). *Bat Research News* 47:98.

Johnson, J.S., M.J. Lacki, and M.D. Baker. 2006. Foraging ecology of long-legged myotis (*Myotis volans*) in north-central Idaho. *Bat Research News* 47:114.

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Lacki, M.J. 2004. Searching for the long-legged myotis in southern Oregon. *Bats* 22:8-9.

Lacki, M.J., and M.D. Baker. 2004. Variation in choice of day roosts by reproductively-active female long-legged myotis, *Myotis volans* in ponderosa pine forests. *Bat Research News* 45:129-130.

Lacki, M.J., and S.K. Amelon. 2004. Foraging ecology of forest bats – a synthesis. *Bat Research News* 45:60-61.

Baker, M.D., and M.J. Lacki. 2004. Habitat use by day-roosting female long-legged myotis (*Myotis volans*) in Ponderosa Pine Forests. *Bat Research News* 45:49.

Lacki, M.J. 2003. The need for scientific rigor in habitat studies of forest bats. *Bat Research News* 44:17-18.

Baker, M.D., and M.J. Lacki. 2002. Importance of slope position and type of bark in selection of day roosts by *Myotis volans*. *Bat Research News* 43:134.

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Peabody Coal Company. 70 pp, with appendices.

Perkins, J.M., and M.J. Lacki. 2000. An assessment of a snag model for roosting bats in Douglas fir forests. *Bat Research News* 41:134.

Lacki, M.J. 2000. Surveys of habitat of the Indiana bat (*Myotis sodalis*) at Manalapan Mine in Harlan County, Kentucky; Permit area: 648-8003, Amendment No. 5. Manalapan Mining Company. 8 pp.

Lacki, M.J. 1999. Barn owls on Little Black Mountain in Harlan County. *Kentucky Warbler* 75:74-76.

Yacek, H.F., Jr., and M.J. Lacki. 1999. First nest record of the black-throated green warbler in Kentucky. *Kentucky Warbler* 75:30-31.

Lacki, M.J. 1999. Surveys for the Indiana bat (*Myotis sodalis*) at Manalapan Mine in Harlan County, Kentucky; Permit areas: Childs Branch and Pounding Mill Branch. Manalapan Mining Company. 28pp.

Lacki, M.J. 1999. Avifaunal surveys at Nally and Hamilton Enterprises, Inc., Mine Site (Permit No. 848-0189) in Harlan County, Kentucky. Applied Science Corporation. 16pp.

Lacki, M.J. 1999. Avifaunal surveys at Manalapan Mine (Permit No. 848-0172, Amendment #1) in Harlan County, Kentucky. Manalapan Mining Company. 16pp.

Lacki, M.J. 1999. Avifaunal surveys at Manalapan Mine (Permit No. 848-0191) in Harlan County, Kentucky. Manalapan Mining Company. 16pp.

Lacki, M.J. 1999. Avifaunal surveys at Manalapan Mine (Permit No. 848-0192) in Harlan County, Kentucky. Manalapan Mining Company. 14pp.

Lacki, M.J. 1998. Bat fauna of Grayson Lake Wildlife Management Area. Final report to Kentucky Department of Fish and Wildlife Resources. 32 pp, with appendices.

Yacek, H.F., Jr., and M.J. Lacki. 1998. Nesting activity of the Blue-headed vireo in Wolfe County, Kentucky. *Kentucky Warbler* 74:90-91.

Hutchinson, J.T., and M.J. Lacki. 1998. Possible gleaning behavior in *Lasiurus borealis*. *Bat Research News* 39:144.

Lacki, M.J. 1998. Monitoring of Virginia big-eared bats and Rafinesque's big-eared bats at Hood Branch rock shelter, Natural Bridge State Park Nature Preserve, Powell County, Kentucky. Final report to the Kentucky State Nature Preserves Commission. 22 pp, with appendix.

Hurst, T.E., and M.J. Lacki. 1997. Foraging areas and habitat use of Rafinesque's big-eared bat in southeastern Kentucky. *Bat Research News* 38:114.

- Hutchinson, J.T., and M.J. Lacki. 1997. Roost site selection of red bats in mixed meophytic forests. *Bat Research News* 38:115.
- Hurst, T.E., and M.J. Lacki. 1996. Food habits of *Corynorhinus rafinesquii* in southeastern Kentucky. *Bat Research News* 37:135.
- Lacki, M.J. 1993. Foraging patterns, diet preference, and population size of gray bat summer colonies in the Jessamine Creek Gorge, Jessamine County, Kentucky. Final report to The Nature Conservancy and the Friends of Jessamine Creek. 47 pp.
- Shoemaker, L.G., and M.J. Lacki. 1993. Selection of lepidopteran prey by *Plecotus townsendii virginianus* in the Daniel Boone National Forest of Kentucky. *Bat Research News* 34:128.
- Lacki, M.J., and L.G. Shoemaker. 1993. Foraging patterns of *Myotis grisescens* in Jessamine Creek Gorge, Kentucky. *Bat Research News* 34:116-117.
- Lacki, M.J. 1993. Road-rut ponds: new homes for salamanders and other amphibians. *Natural Resource Newsletter* 11:2-4.
- Adam, M.D., and M.J. Lacki. 1992. Home range and habitat selection of an endangered vespertilionid bat, *Plecotus townsendii virginianus*, in Daniel Boone National Forest, Kentucky. *Bat Research News* 33:47-48.
- Lacki, M.J., J.W. Hummer, and H.J. Webster. 1991. Faunal survey of the Simco #4 wetland development site. Final report to American Electric Power Service Corporation. 67 pp.
- Webster, H.J., J.W. Hummer, and M.J. Lacki. 1991. Design considerations of proposed AMD-treatment wetlands at Tecumseh Mine, Warrick County, Indiana. ATEC Associates, Inc., 39 pp.
- Lacki, M.J., J.W. Hummer, and H.J. Webster. 1990. Reptile and amphibian diversity, abundance high in a constructed wetland (Ohio). *Restoration and Management Notes* 8:41-42.
- Lacki, M.J. 1990. Game populations in the 1990's - What might we expect? *Natural Resource Newsletter* 9:6-7.
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- Lacki, M.J. 1987. Response by white birch to road salt applications at Cascade Lakes, New York. Report, School Forest Resources, The Pennsylvania State Univ. 4:10-11.
- Lacki, M.J. 1984. The effects of rooting by wild boar on tree growth and nutrient cycling in Great Smoky Mountains National Park. Ph.D. Dissertation, North Carolina State Univ., Raleigh,

NC. 74pp.

Lacki, M.J. 1982. Assessment of European wild boar impact. *Friend o' Wildlife* 29:5.

Lacki, M.J., and T.A. Bookout. 1982. Factors influencing the efficiency of mist nets at capturing bats in riparian habitat. *Bat Research News* 23:75-76.

Lacki, M.J. 1980. A survey of bats in Wayne National Forest. M.S. Thesis, The Ohio State Univ., Columbus, OH. 70pp.

11. Presentations, Posters, Seminars, and Webinars: (n = 58)

Lacki, M.J., and J.S. Johnson. 2018. Response of Rafinesque's big-eared bats to spring burns in upland oak-hickory forests in Mammoth Cave National Park. Kentucky Prescribed Fire Council Meeting, Cave City, KY.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske. 2017. Modeling the activity of imperiled bats at Mammoth Cave NP using remotely sensed descriptors of habitat conditions. 96th Annual Meeting of the National Academy of Science's Travel Research Board, Washington D.C. **Invited.**

Griffitts, R.E., L.E. Dodd, M.J. Lacki, N.S. Skowronski, L.K. Rieske, and M.B. Dickinson. 2017. Interacting effects of prescribed fire and White-Nose Syndrome on bat activity across the forest landscape of Mammoth Cave National Park. 22nd Annual Meeting of Southeastern Bat Diversity Network and Colloquium on the Conservation of Mammals in the Eastern United States, Asheville, NC.

Lacki, M.J. 2016. Biology, ecology and natural history of threatened and endangered bats in Kentucky. Keynote Speaker. Symposium on Bats and Forest Management in a Changing Environment: a Workshop/Training for Land Managers, Kentucky Chapter of The Wildlife Society, Richmond, KY. **Invited.**

Griffitts, R., L.E. Dodd, and M.J. Lacki. 2016. The activity of *Myotis sodalis* and *Myotis septentrionalis* changes on the landscape of Mammoth Cave National Park following the arrival of white-nose syndrome. Mammoth Cave National Park's 10th Research Symposium, Mammoth Cave National Park, Kentucky.

Dodd, L.E., N.S. Skowronski, M.B. Dickinson, L.K. Rieske, and M.J. Lacki. 2016. Modeling the activity of the Indiana bat (*Myotis sodalis*) at Mammoth Cave National Park using remotely-sensed descriptors of forest canopy conditions. Mammoth Cave National Park's 10th Research Symposium, Mammoth Cave National Park, Kentucky.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske. 2015. Long-term impacts of prescribed fire on bat and insect activity at Mammoth Cave National Park. Proceedings of the 5th Fire in Eastern Oak Forests Conference, Tuscaloosa, AL.

Dodd, L.E., and M.J. Lacki. 2015. Discussing the relationships between fire management and the quality of habitat for bats: a workshop for scientists and land managers. Consortium of Appalachian Fire Managers and Scientists, JFSP Fire Science Exchange Network. www.appalachianfire.org/past-events-webinars/; 30 April 2014.

Lacki, M.J. 2014. Threatened and endangered forest bats in eastern U.S.: implications for forest management. 2014 Annual Meeting of the Kentucky Farm Bureau Federation, Louisville, KY.

Lacki, M.J., and M.L. Bayless. 2014. A conservation strategy for Rafinesque's big-eared bat and southeastern myotis. 19th Annual meeting of the Southeastern Bat Diversity Network and the 24th Colloquium on conservation of mammals in the southeastern United States, Nacogdoches, TX.

Lacki, M.J., D.R. Cox, L.E. Dodd, and M.B. Dickinson. 2014. Response of northern bats to prescribed fires in eastern Kentucky forests. Workshop for scientists and managers: discussing the relationships between fire management and the quality of habitat for bats. Mammoth Cave, KY.

Lacki, M.J., L.E. Dodd, R.S. Toomey, S.C. Thomas, Z.L. Couch, and B.S. Nichols. 2014. Body condition of cave-hibernating bats during staging and swarming in Mammoth Cave National Park. Workshop for scientists and managers: discussing the relationships between fire management and the quality of habitat for bats. Mammoth Cave, KY.

Lacki, M.J. 2012. Status of bats in Yellowstone National Park in advance of white-nose syndrome. Resource Management Division, YNP, Mammoth Hot Springs, WY.

Lacki, M.J. 2011. White-nose syndrome and North American bats. University of Kentucky, Lexington, KY.

Loeb, S.C., M.J. Lacki, and D.A. Miller. 2010. Conservation and management of eastern big-eared bats: an introduction. Proceedings of the Conservation and Management of Eastern Big-eared Bats, Athens, GA.

Dickinson, M.B., M.J. Lacki, and D.R. Cox. 2009. Fire and the endangered Indiana bat. Proceedings of the 3rd Fire in Eastern Oak Forests Conference, Carbondale, IL.

Watrous, K.S., J.S. Johnson, G.J. Giumarro, T.S. Peterson, S.A. Boyden, and M.J. Lacki. 2009. Seasonal and geographic trends in acoustic detection of tree-roosting bats. Annual North American Symposium on Bat Research, Portland, OR.

Lacki, M.J., D.R. Cox, L.E. Dodd, and M.B. Dickinson. 2008. Response of northern bats, *Myotis septentrionalis*, to prescribed fires in eastern Kentucky forests. 38th Annual North American Symposium on Bat Research, Scranton, PA.

Lacki, M.J., D.R. Cox, and M.B. Dickinson. 2008. Response to prescribed fire of tree-roosting bats in eastern oak-hickory forest. International Workshop on Impact of Prescribed Fire in Forest Ecosystems. Athens, OH. **Invited.**

Lacki, M.J., and M.D. Baker. 2004. Variation in choice of day roosts by reproductively-active female long-legged myotis, *Myotis volans* in ponderosa pine forests. 13th International Bat Research Conference, Mikolajki, Poland.

Lacki, M.J., and S.K. Amelon. 2004. Foraging ecology of forest bats – a synthesis. 2nd Bats and Forests Symposium and Workshop, Hot Springs, AR. **Invited.**

Lacki, M.J. 2004. Use of day roosts by *Myotis volans* and *Myotis thysanodes* in coniferous forests on the east side of the Cascade Crest. Oregon Chapter of The Wildlife Society Annual Meeting. Bend, OR. **Invited.**

Lacki, M.J., and D.A. Miller. 2003. The need for scientific rigor in habitat studies of forest bats. 13th Annual Colloquium on Conservation of Mammals in the Southeastern United States. Starkville, MI. **Invited.**

Lacki, M.J. 2001. The 2001 Indiana bat symposium: Introductory remarks. The Indiana Bat Symposium: Biology and Management of an Endangered Species. Lexington, KY.

Perkins, J.M., and M.J. Lacki. 2000. An assessment of a snag model for roosting bats in Douglas fir forests. 30th Annual North American Symposium on Bat Research, Coral Gables, FL.

Lacki, M.J., and J.T. Hutchinson. 1999. Foraging behavior and habitat use of red bats in mixed mesophytic forests of the Cumberland Plateau, Kentucky. 12th Central Hardwood Forest Conference, Lexington, KY.

Lacki, M.J., and J.H. Schwierjohann. 1999. Selection of day roosts by northern bats (*Myotis septentrionalis*) in mixed mesophytic forest. 9th Colloquium on Conservation of Mammals in the South-Central United States.

Lacki, M.J. 1998. Roosting ecology of a Nearctic phytophilic bat. Seminar presented at the University of Kentucky (Dept. of Biological Sciences).

Lacki, M.J. 1998. Biology and management of *Corynorhinus rafinesquii* at Robinson Forest. Seminar presented at the University of Kentucky (Dept. of Forestry)

Hurst, T.E., and M.J. Lacki. 1997. Foraging areas and habitat use of Rafinesque's big-eared bat in southeastern Kentucky. 27th Annual North American Symposium on Bat Research, Tucson, AZ.

Lacki, M.J. 1997. Analyzing bat telemetry data. Workshop on Bat Telemetry. 2nd Annual Meeting, The Southeastern Bat Diversity Network. **Invited.**

Walker, J., and M.J. Lacki. 1997. Stream channel stability in various valley types in eastern Kentucky. Kentucky Water Resources Annual Symposium, Lexington, KY.

Lacki, M.J. 1996. Implications of silvicultural prescriptions for the management of herpetofauna in the Daniel Boone National Forest. Seminar presented at Eastern Kentucky University.

Lacki, M.J. 1995. The role of research on conserving bats in managed forests. Bats and Forests Symposium. Victoria, British Columbia, Canada. **Invited.**

Lacki, M.J., and M.D. Baker. 1995. Long-term monitoring of small mammals on the Daniel Boone National Forest, Kentucky: evaluation of responses to silvicultural prescriptions. 5th Colloquium on Conservation of Mammals in the South-Central United States.

Lacki, M.J. 1995. Some thoughts on the feeding habits of the endangered gray bat (*Myotis grisescens*). 5th Colloquium on Conservation of Mammals in the South-Central United States.

Lacki, M.J. 1994. Bat identification. 1st Eastern Nuisance Wildlife Control Operators Shortcourse, Lexington, KY. **Invited.**

Lacki, M.J. 1993. Foraging patterns of *Myotis grisescens* in Jessamine Creek Gorge, Kentucky. Seminar presented to The Nature Conservancy & the Friends of Jessamine Creek.

Lacki, M.J. 1993. Habitat requirements of Virginia big-eared bats in Daniel Boone National Forest. Seminar presented at Eastern Kentucky University.

Lacki, M.J., and L.G. Shoemaker. 1993. Foraging patterns of *Myotis grisescens* in Jessamine Creek Gorge, Kentucky. 23rd Annual North American Symposium on Bat Research, Gainesville, FL.

Lacki, M.J. 1993. Status of research project on Virginia big-eared bats in Daniel Boone National Forest. Seminar presented to the U. S. Forest Service, DBNF.

Lacki, M.J. 1992. Habitat requirements of Virginia big-eared bats in Daniel Boone National Forest. Seminar presented to the Kentucky Dept. Fish & Wildlife Resources.

Lacki, M.J., and M.D. Adam. 1992. Modeling feeding roost preferences of Virginia big-eared bats: comparison of parametric versus a non-parametric approach. 2nd Colloquium on Conservation of Mammals in the South-Central United States.

Lacki, M.J. 1991. Herpetofaunal use of a mine drainage treatment wetland: does this type of reclamation practice qualify as wildlife habitat enhancement? Seminar presented at University of Kentucky (Dept. of Biol. Sciences).

Lacki, M.J., J.W. Hummer, and H.J. Webster. 1990. Herpetofaunal use of constructed wetland receiving acid mine drainage. Society for Ecological Restoration, Chicago, IL.

Lacki, M.J., J.W. Hummer, and H.J. Webster. 1990. Diversity patterns of invertebrate fauna in cattail wetlands receiving acid mine drainage. The 1990 Mining and Reclamation Conference and Exhibition, Charleston, WV.

Lacki, M.J. 1990. Faunal diversity patterns of the Simco #4 constructed wetland. Seminar presented to the Ohio EPA and the Ohio Department of Natural Resources.

Lacki, M.J. 1988. Effect of European wild boar on tree growth and nutrient cycling in Great Smoky Mountains National Park. Seminar presented at the University of Dayton.

Lacki, M.J. 1986. Impacts of water level drawdowns on the wetland ecosystems at the Chateaugay Lakes, New York. Seminar presented to the New York DEC and the Adirondack Park Agency.

Lacki, M.J. 1986. Muskrat management: effects of drawdowns. Workshop on Furbearer Management in New York: Issues and Progress. The New York Chapter of TWS Annual Meeting. **Invited.**

Lacki, M.J., and W.T. Peneston. 1986. Evidence for predator avoidance in the foraging patterns of muskrats. 66th Annual Meeting of the American Society of Mammalogists, Madison, WI.

Lacki, M.J. 1985. Long-term responses in forest growth to rooting by wild pigs. IV International Theriological Congress, Edmonton, Alberta, Canada.

Lacki, M.J., and R.A. Lancia. 1983. Changes in growth and foliar nutrient levels of *Fagus grandifolia* in relation to soil disturbed by wild boar. National Society of American Foresters Convention, Portland, OR.

Lacki, M.J., and R.A. Lancia. 1983. Changes in soil properties of forests rooted by wild boar. 37th Annual Meeting, Southeastern Association of Fish & Wildlife Agencies.

Lacki, M.J., and R.A. Lancia. 1983. Shoot growth response of *Fagus grandifolia* to rooting by wild boar. 9th Annual Scientific Research Meeting, National Park Service.

Lacki, M.J., and R.A. Lancia. 1982. Effect of wild boar on tree growth: an alternative hypothesis. 8th Annual Scientific Research Meeting, National Park Service.

Lacki, M.J., and T.A. Bookout. 1982. Factors influencing the efficiency of mist nets at capturing bats in riparian habitat. 12th Annual North American Symposium on Bat Research, Louisville, KY.

Lacki, M.J., M.J. Gregory, and P.K. Williams. 1978. Behavioral changes in *Tamias striatus* associated with food availability. 58th Annual Meeting of the American Society of Mammalogists, Athens, GA.

Papers and Posters Presented by Students & Post-Doctoral Scholars: (n = 80)

Roby, P.L., E.S. Vanzant, M.W. Gumbert, and M.J. Lacki. 2019. Torpor-assisted migration: what's good for the Lasiurine is good for the Myotid. 49th Annual Meeting of the North

American Society for Bat Research, Kalamazoo, MI.

Roby, P.L., M.W. Gumbert, M.J. Lacki, E.S. Vanzant, and J. Yang. 2019. Spring migration of myotis sodalis tracked via aerial telemetry. 48th Annual Meeting of the North American Society for Bat Research, Puerto Vallarta, Mexico.

Arant, P.L., M.J. Lacki, J.M. Lhotka, and J.W. Stringer. 2018. Bat and insect responses to shelterwood and patch cut harvests in Appalachian hardwood forests. Annual Meeting of the Southeastern Bat Diversity Network, Roanoke, VA.

Slusher, A., J. Johnson, M. Lacki, and J. Treanor. 2016. Microclimates of roosting structures and the influence on thermoregulation and behavior in female *Myotis lucifugus*. 46th Annual Meeting of the North American Society for Bat Research, San Antonio, TX.

Thalken, M.M., J.S. Johnson, and M.J. Lacki. 2016. Shifts in the composition of bat assemblages during the growing season following arrival of White-Nose Syndrome in Mammoth Cave National Park, Kentucky. 46th Annual Meeting of the North American Society for Bat Research, San Antonio, TX.

Slusher, A., J. Johnson, M. Lacki, and J. Treanor. 2016. Altitude- and sex-specific variation in roosting behavior and thermoregulation of *Myotis lucifugus*. 96th Annual Meeting of the American Society of Mammalogists, Minneapolis, MN.

Arant, P.L., M.J. Lacki, J.M. Lhotka, and J.W. Stringer. (2016) Effects of shelterwood harvests and patch cuts on habitat use of *Myotis* species in the central Appalachians. Presentation to Forestland Group LLC, Charleston, WV.

Thalken, M., M. Lacki, R. Toomey, and S. Thomas. 2015. Roosting behavior of *Myotis septentrionalis* during spring emergence in Mammoth Cave National Park. 45th Annual Symposium of the North American Society for Bat Research. Monterey, CA.

Slusher, A., J. Johnson, M. Lacki, and J. Treanor. 2015. Altitude- and sex-specific variation in roosting behavior and thermoregulation of *Myotis lucifugus* in Yellowstone National Park. 45th Annual Symposium of the North American Society for Bat Research. Monterey, CA.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske. 2014. Investigating the effects of fire & forest canopy conditions on the abundance and diversity of insects at Mammoth Cave National Park. Workshop for scientists and managers: discussing the relationships between fire management and the quality of habitat for bats. Mammoth Cave, KY.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske. 2014. Modeling bat activity across the fire-managed landscape of Mammoth Cave National Park using remotely-sensed forest canopy data. Workshop for scientists and managers: discussing the relationships between fire management and the quality of habitat for bats. Mammoth Cave, KY.

McKenna, M.M., L.E. Dodd, and M.J. Lacki. 2014. Assessing bat activity across the northern tier of Yellowstone National Park (Poster). Annual Meeting of the National Council for Undergraduate Research, Lexington, KY.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske-Kinney. 2014. Developing predictive models of bat activity using remotely sensed forest canopy data. 19th Annual meeting of the Southeastern Bat Diversity Network and the 24th Colloquium on conservation of mammals in the southeastern United States, Nacogdoches, TX.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2013. Exploring prey size and diet breadth of Rafinesque's big-eared bat, a lepidopteran specialist. Annual Meeting of the Entomological Society of America, Austin, TX.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2013. Assessing dietary specialization of Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) from a maternity colony at Mammoth Cave National Park. 2nd International Symposium on the Detection of Trophic Interactions, Lexington, KY.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, M.B. Dickinson, and L.K. Rieske-Kinney. 2013. Predicting bat activity across Mammoth Cave National Park using LiDAR-derived predictors of forest canopy conditions. Annual Meeting of the Kentucky Bat Working Group, Frankfort, KY.

Dodd, L.E., M.J. Lacki, N.S. Skowronski, D.R. Cox, M.B. Dickinson, and L.K. Rieske-Kinney. 2013. Responses of *Myotis* bats & their prey to the effects of prescribed fire in the central hardwood forests of Kentucky. Prescribed Fire and Indiana Bats Workshop, Hosted by the USDA Forest Service, Indiana State University, and the Consortium of Appalachian Fire Managers and Scientists, Fontana Dam, NC.

Dodd, L.E., N.S. Skowronski, M.B. Dickinson, M.J. Lacki, and L.K. Rieske. 2013. Using LiDAR to link forest canopy structure with bat activity and insect occurrence: preliminary findings. Mammoth Cave National Park's 10th Research Symposium: Celebrating the Diversity of Research in the Mammoth Cave Region. Mammoth Cave, Kentucky.

Johnson, J., J. Treanor, M. Lacki, M. Baker, L. Dodd, and G. Falxa. 2012. Preparing for possible arrival of white-nose syndrome in the western United States: an example from Yellowstone National Park. 42nd Annual North American Symposium on Bat Research. San Juan, Puerto Rico.

Dodd, L.E., J.S. Johnson, L.K. Rieske-Kinney, S.C. Thomas, R.S. Toomey, and M.J. Lacki. 2012. Pre- and post-hibernation changes in the body condition of bats susceptible to white nose syndrome at Mammoth Cave National Park. 22nd Colloquium on Conservation of Mammals in the Southeastern United States, Louisville, MS.

Johnson, J.S., S.C. Thomas, and M.J. Lacki. 2012. Winter torpor and movements of *Corynorhinus rafinesquii* in Mammoth Cave National Park, Kentucky. 22nd Colloquium on Conservation of Mammals in the Southeastern United States, Louisville, MS. (**Outstanding**)

Paper Award).

Johnson, J.S., J.N. Kropezynski, and M.J. Lacki. 2011. Social networks of Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) in Kentucky. 21st Colloquium on Conservation of Mammals in the Southeastern United States, Louisville, KY. **(Outstanding Paper Award).**

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2011. First-year response of forest bats and their arthropod prey to prescribed fire during the swarming period at Mammoth Cave National Park. 21st Colloquium on Conservation of Mammals in the Southeastern United States, Louisville, KY.

Dodd, L.E., D.R. Cox, J.S. Johnson, M.J. Lacki, and L. K. Rieske-Kinney. 2011. Regional assessment of prey consumed by bats in Central Appalachia prior to the arrival of white-nose syndrome. 41st Annual North American Symposium on Bat Research. Toronto, Canada.

Johnson, J.S., M.J. Lacki, and J.F. Grider. 2011. Thermoregulatory strategies of Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) roosting in trees, caves, rock shelters, and buildings. 41st Annual North American Symposium on Bat Research. Toronto, Canada.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2010. Impacts of disturbance on bats and nocturnal insects in the hardwood forests of eastern North America. Annual Meeting of the Entomological Society of America. San Diego, CA.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2010. Impacts of disturbance on bats and nocturnal insects in the hardwood forests of Kentucky. Annual Meeting of the Kentucky Native Plant Society. Shakertown, KY.

Johnson, J.S., and M.J. Lacki. 2010. Social roosting behavior in colonies of *Corynorhinus rafinesquii* in bottomland hardwood and upland karst regions of Kentucky. Annual North American Symposium on Bat Research, Denver, CO.

Barding, E.E., M.J. Lacki, and L.L. Patton. 2010. Recovery of the river otter (*Lontra canadensis*) to Kentucky. Proceedings of the Southeastern Association of Fish and Wildlife Agencies, Biloxi, MS.

Lacki, M.J., and L.E. Dodd. 2010. Diet and foraging behavior of *Corynorhinus* in eastern North America. Proceedings of the Conservation and Management of Eastern Big-eared Bats, Athens, GA. **Invited.**

Johnson, J.S, and M.J. Lacki. 2010. Foraging and roosting ecology of Rafinesque's big-eared bat at the northern edge of the range. Proceedings of the Conservation and Management of Eastern Big-eared Bats, Athens, GA.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2010. Occurrence and diversity of nocturnal insects vary across a disturbance gradient in the Central Appalachians of eastern North America. Annual Meeting of the North Central Branch of the Entomological Society of

America, Louisville, KY.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2010. Impacts of disturbance on bats and nocturnal insects in the hardwood forests of Kentucky. Annual Meeting of the Kentucky Native Plant Society, Shakertown, KY.

Dodd, L.E., E.G. Chapman, J.D. Harwood, M.J. Lacki, and L.K. Rieske-Kinney. 2009. Genetic markers offer multiple approaches to infer prey consumption by forest-dwelling bats. Annual Meeting of the Entomological Society of America, Indianapolis, IN.

Dodd, L.E., E.G. Chapman, J.D. Harwood, M.J. Lacki, and L.K. Rieske-Kinney. 2009. Barcoding forest Lepidoptera: development and application of a sequence library. Annual Southern Forest Insect Work Conference, Gulfport, MS.

Cox, D.R., M.J. Lacki, L.E. Dodd, and M.B. Dickinson. 2008. Response of northern bats to prescribed fire in eastern Kentucky forests. 38th Annual North American Symposium of Bat Research. Scranton, PA.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2008. Genetic approaches enhance our understanding of the consumption of insects by forest-dwelling bats. Annual Meeting of the Entomological Society of America, Reno, NV.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2008. Silvicultural disturbance influences bat activity and the occurrence of nocturnal insects in the central Appalachians of eastern North America. 38th Annual North American Symposium on Bat Research, Scranton, PA.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2008. Silvicultural disturbances influence the insect prey base of forest-dwelling bats. 51st Annual Southern Forest Insect Work Conference, Chattanooga, TN.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2008. Application of genetic techniques for detection of prey of forest-dwelling bats. 18th Colloquium on Conservation of Mammals in the Southeastern United States, Blacksburg, VA.

Barding, E.E., M.J. Lacki, and E. Carlisle. 2008. Status of the river otter (*Lontra canadensis*) in Kentucky. Midwest Furbearer Resources Workshop, Olathe, KS.

Barding, E.E., and M.J. Lacki. 2007. Status, distribution and reproductive characteristics of river otters in Kentucky. Southeast Furbearer Managers Workshop, Cadiz, KY.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2007. Novel and traditional approaches for identifying prey of forest-dwelling bats: a comparison of methods. 50th Annual Southern Forest Insect Work Conference, Jeckyll Island, GA.

Dodd, L.E., L.K. Rieske-Kinney, and M.J. Lacki. 2007. Effects of timber harvest on insect prey and the activity of forest-dwelling bats in the central Appalachians. University of Kentucky

graduate Student Interdisciplinary Conference, Lexington, KY.

Dodd, L.E., M.J. Lacki, and L.K. Rieske-Kinney. 2006. Variation of Lepidoptera across forest landscapes – Implications for the Ozark big-eared bat (*Corynorhinus townsendii ingens*) in Arkansas. Annual meeting of the Entomological Society of America, Indianapolis, IN.

Baker, M.D., and M.J. Lacki. 2006. day-roosting habits of female fringed myotis, *Myotis thysanodes*, in xeric forests of the Pacific Northwest. 36th North American Symposium on Bat Research, Wilmington, NC.

Dodd, L.E., and M.J. Lacki. 2006. Occurrence of prey and diet of the Ozark big-eared bat (*Corynorhinus townsendii ingens*). 36th North American Symposium on Bat Research, Wilmington, NC.

Johnson, J.S., M.J. Lacki, and M.D. Baker. 2006. Foraging ecology of long-legged myotis (*Myotis volans*) in north-central Idaho. 36th North American Symposium on Bat Research, Wilmington, NC.

Dodd, L.E., M.J. Lacki, and L. Rieske-Kinney. 2006. Variation in lepidopteran communities across landscapes – implications for forest-dwelling bats in eastern North America. North American Forest Insect Work Conference, Asheville, NC.

Dodd, L.E., and M.J. Lacki. 2006. Landscape variation of moth abundance surrounding roost sites of the Ozark big-eared bat (*Corynorhinus townsendii ingens*) in Arkansas. 16th Colloquium on Conservation of Mammals in the Southeastern United States, Chattanooga, TN.

Dzialak, M.R., M.J. Lacki, J.L. Larkin, K.M. Carter, and S. Vorisek. 2005. Corridors affect dispersal initiation in reintroduced peregrine falcons. 12th Annual Conference of The Wildlife Society, Madison, WI.

Potter, T.M., J.A. Hanna, L. Freer, and M. Lacki. 2005. Agonistic behavior of the North American river otter (*Lontra canadensis*) toward humans: a medical case report & review of literature. 2005 Wilderness Medicine Conference and Annual Meeting, Snowmass, CO.

Baker, M.D., and M.J. Lacki. 2004. Habitat use by day-roosting female long-legged myotis (*Myotis volans*) in ponderosa pine forests. 2nd Bats and Forests Symposium, Hot Springs, AR.

LaDeur, K.M., M.R. Dzialak, and M.J. Lacki. 2003. Characteristics of perch sites used by peregrine falcons reintroduced in Kentucky cliff habitat. 10th Annual Conference of The Wildlife Society, Burlington, VT.

Baker, M.D., and M.J. Lacki. 2002. Importance of slope position and type of bark in selection of day roosts by female *Myotis volans*. 32rd Annual North American Symposium on Bat Research, Burlington, VT.

LaDeur, K.M., M.R. Dzialak, M.J. Lacki, L.S. Burford, and R.E. Bethany. 2002. Comparison of food habits among territorial pairs of peregrine falcons in Kentucky. 9th Annual Conference of The Wildlife Society, Bismarck, ND.

Dzialak, M.R., M.J. Lacki, K.M. LaDeur, and L.S. Burford. 2002. Peregrine falcon restoration in Kentucky: history, research, and applied conservation. 9th Annual Conference of The Wildlife Society, Bismarck, ND.

Jollick, M.R., L.S. Burford, and M.J. Lacki. 2000. Selecting release-sites for restoration of peregrine falcons in cliff habitat in Kentucky. 7th Annual Conference of The Wildlife Society, Nashville, TN.

Schwierjohann, J.H., and M.J. Lacki. 1999. Selection of day roosts by northern bats (*Myotis septentrionalis*) in mixed mesophytic forest. The Kentucky Chapter of TWS Annual Meeting.
Hutchinson, J.T., and M.J. Lacki. 1998. Roost site selection of *Lasiurus borealis* in mixed mesophytic forests. 78th Annual Meeting, American Society of Mammalogists, Blacksburg, VA.

Hutchinson, J.T., and M.J. Lacki. 1997. Roost site selection of red bats in mixed mesophytic forests. 27th Annual North American Symposium on Bat Research, Tucson, AZ.

Hutchinson, J.T., and M.J. Lacki. 1997. A comparison of foraging area estimators using the CALHOME software package. The Kentucky Chapter of TWS Annual Meeting.
(Outstanding Student Paper).

Hurst, T.E., and M.J. Lacki. 1997. Tracking logistics: mountains. Workshop on Bat Telemetry. Second Annual Meeting, The Southeastern Bat Diversity Network.

Hutchinson, J.T., and M.J. Lacki. 1997. Preliminary observations on roost sites and foraging areas of the red bat in Kentucky. 7th Colloquium on Conservation of Mammals in the South-Central United States.

Adams, J.P., M.J. Lacki, and M.D. Baker. 1996. Response of herpetofauna to silvicultural prescriptions in the Daniel Boone National Forest, Kentucky. 50th Annual Meeting, Southeastern Association of Fish and Wildlife Agencies.

Hurst, T.E., and M.J. Lacki. 1996. Food habits of Rafinesque's big-eared bat in southeastern Kentucky. 26th Annual North American Symposium on Bat Research, Bloomington, IL.

Hurst, T.E., and M.J. Lacki. 1996. Food habits of Rafinesque's big-eared bat in Southeastern Kentucky. 6th Colloquium on Conservation of Mammals in the South-Central United States.
(Outstanding Student Paper).

Baker, M.D., and M.J. Lacki. 1995. Composition of breeding avifaunal communities in response to silvicultural prescriptions on the Daniel Boone National Forest, Kentucky. 49th Annual Meeting, Southeastern Association of Fish and Wildlife Agencies.

Baker, M.D., and M.J. Lacki. 1994. Avian community patterns in response to timber harvest methods in Daniel Boone National Forest. The Kentucky Chapter of TWS Annual Meeting. **(Outstanding Student Paper)**.

Shoemaker, L.G., and M.J. Lacki. 1993. Availability and selection of lepidopteran prey by the endangered Virginia big-eared bat in Daniel Boone National Forest. The Kentucky Chapter of TWS Annual Meeting. **(Outstanding Student Paper)**.

Shoemaker, L.G., and M.J. Lacki. 1993. Selection of lepidopteran prey by *Plecotus townsendii virginianus* in the Daniel Boone National Forest of Kentucky. 23rd Annual North American Symposium on Bat Research, Gainesville, FL.

Madison, L.A., T.G. Barnes, J.D. Sole, and M.J. Lacki. 1993. Impacts of disturbance in tall fescue-dominated fields on northern bobwhite habitat. 47th Annual Meeting, Southeastern Association of Fish and Wildlife Agencies.

Madison, L.A., T.G. Barnes, J.D. Sole, and M.J. Lacki. 1993. Impacts of disturbance in tall fescue-dominated fields on northern bobwhite habitat. Annual Meeting, Midwest Fish and Wildlife Conference.

Lusk, M.R., M.J. Lacki, and R.A. Lancia. 1992. Responses of small mammal populations to wild hog rooting in the gray beech forests of Great Smoky Mountains National Park. 18th Annual Scientific Research Meeting, National Park Service.

Adam, M.D., and M.J. Lacki. 1992. Home range and habitat selection of an endangered Vespertilionid bat, *Plecotus townsendii virginianus*, in Daniel Boone National Forest, Kentucky. 22nd Annual North American Symposium on Bat Research, Quebec City, Canada.

Adam, M.D., M.J. Lacki, and T.G. Barnes. 1992. Determining critical habitat requirements of Virginia big-eared bats in Daniel Boone National Forest: application of home range estimates to habitat management guidelines. The Kentucky Chapter of TWS Annual Meeting.

Madison, L.A., T.G. Barnes, M.J. Lacki, and J.D. Sole. 1992. Fescue as northern bobwhite habitat? The Kentucky Chapter of TWS Annual Meeting. **(Outstanding Student Paper)**.

Adam, M.J., and M.J. Lacki. 1992. Home range size and habitat preference of Virginia big-eared bats in Daniel Boone National Forest. 2nd Colloquium on Conservation of Mammals in the South-Central United States.

Adam, M.D., M.J. Lacki, and T.G. Barnes. 1991. Movements and habitat use of Virginia big-eared bats in the Daniel Boone National Forest. The Kentucky Chapter of TWS Annual Meeting. **(Outstanding Student Paper)**.

Peneston, W.T., F.D. Vogt, and M.J. Lacki. 1987. Comparative muskrat (*Ondatra zibethicus*) morphology and physiology: the influence of water level and habitat type. American Society of Zoologists, New Orleans, LA.

12. Membership in Scientific and Professional Societies:

American Society of Mammalogists, 1978 to 2012

North American Society for Bat Research, 1980 to 2016

Society for Conservation Biology, 1990 to 2010

Southeastern Bat Diversity Network, 1992 to 2016

The Wildlife Society, 1978 to 2012

13. Service and Recognition:

Administrative Assignments:

Interim Chair of the Department of Forestry; University of Kentucky; 2009 to 2010

Managed departmental budgets exceeding \$3 million and provided oversight of program activities in instruction, research and extension. Facilitated the transition of management of the school forest (Robinson Forest) from the Department of Forestry to the College of Agriculture unit in eastern Kentucky (RCARS). Lead departmental efforts in successful re-accreditation of the undergraduate curriculum by the Society of American Foresters. Implemented changes to the undergraduate curriculum leading to a BS in Forestry. Steered departmental process for developing a new mission statement and Goals as requested by the Provost Office.

Chair of Robinson Forest Committee; University of Kentucky; 1999 to 2005

Responsibilities included directing the committee that is charged with oversight of instructional, research, and extension activities that occur on the University of Kentucky school forest. Committee chair has oversight of the development and implementation of management actions on the school forest as approved by the Department of Forestry faculty.

Director of Graduate Studies; University of Kentucky; 1995 to 1999

Served as the liaison for the Department of Forestry to the Graduate School. General responsibilities included recruitment, screening, and admission of graduate applicants. Served as Chair of the Department Graduate Committee. Revised the graduate Curriculum as necessary.

Leader of Wildlife Technology Program; The Pennsylvania State University; 1986 to 1989

General responsibilities included hiring staff, assigning teaching loads, student

recruitment, delegating student advising, equipment inventory and purchase, curriculum changes, and instituting University policies that impacted the faculty and operation of the program.

Awards and Honors:

Eagle Scout; Boy Scouts of America; 1973

Outstanding Student Teaching Award; North Carolina State University; 1983

Recognition for Outstanding Service; The Wildlife Society; 2000

Editorships and Reviewer Service:

Associate Editor for Proceedings of the Conservation and Management of Eastern Big-eared Bats
(2009 to 2011)

Associate Editor for 2nd Bats in Forests Symposium
(2003 to 2006)

Associate Editor for Nongame Wildlife Papers
Proceedings of the 12th Central Hardwood Forest Conference
(1998 to 1999)

Associate Editor for Nongame Technical Papers
Proceedings of the 50th Southeastern Association of Fish & Wildlife Agencies
(1996 to 1997)

Associate Editor
Transactions of the Northeast Section of the Wildlife Society
(1989 to 1990)

Reviewer for 35 peer-reviewed journals (1982 to 2013)

Committees, Elected Positions, and Offices Held:

Past-President, Kentucky Bat Working Group, 2016.

Past-President, Southeastern Bat Diversity Network, 2013-2015.

President, Southeastern Bat Diversity Network, 2011-2013.

President-Elect, Southeastern Bat Diversity Network, 2009-2011.

Proceedings Associate Editor and Member of Planning Committee for the Symposium on

Conservation and Management of Big-eared Bats in Southeastern United States, Athens, GA; 2010.

Chair of the Publications Committee for the 2nd Bats and Forests Symposium and Workshop, Hot Springs, AR; 2004.

Host and Chair for The Indiana Bat Symposium: Biology and Management of an Endangered Species, Lexington, KY; 2001.

Chair for Contributed Papers for the 7th Annual Conference of The Wildlife Society, Nashville, TN; 2000.

Organizing Committee for the 7th Annual Conference of The Wildlife Society, Nashville, TN; 2000.

Member of the Ad-Hoc Recovery Team for the Virginia Big-eared Bat, U.S. Fish and Wildlife Service; 1992 to 1998.

Member of the Forest Wildlife Committee for the Southeastern Association of Fish and Wildlife Agencies; 1992 to 1997.

Chair of the Nongame Technical Committee for the Southeastern Association of Fish and Wildlife Agencies Annual Meeting, Hot Springs, Arkansas; 1996.

Board Member at Large for the Southeastern Bat Diversity Network; 1995 to 2003.

Host and Chair of the Program Committee for the 5th Colloquium on Conservation of Mammals in the South-Central United States; 1995.

Member of the Conservation Review and Public Statements Committee for the Kentucky Chapter of The Wildlife Society; 1993.

Board Member at Large for the Kentucky Chapter of The Wildlife Society; 1992.

Member of the Bats and Abandoned Mines Ad-hoc Committee for Bat Conservation International, Inc.; 1992.

Department Representative to the National Association of University Fish and Wildlife Programs; 1990 to 1991.

Member of the Anti-Hunting/Animal-Rights Sentiment Ad-hoc Committee of the Kentucky Chapter of The Wildlife Society; 1990.

Chapter Representative to the Northeast Section of The Wildlife Society for the Pennsylvania State Chapter; 1989.

Member of the Executive Committee for the Northeast Section of The Wildlife Society; 1989.

Member of the Publicity Committee for the North American Wildlife Technology Association; 1988.

John Lhotka

CURRICULUM VITAE

JOHN M. LHOTKA

210 T.P. Cooper Building
University of Kentucky
Department of Forestry and Natural Resources
Lexington, KY 40546-0073
(895) 257-9701
john.lhotka@uky.edu

EDUCATION

Doctorate of Philosophy, 2006. Silviculture, Auburn University
Dissertation: Predicting light transmittance and seedling growth across a gradient of riparian forest canopy structures

Master of Science, 2001. Forest Resource Management, Southern Illinois University
Thesis: The effects of soil scarification on oak regeneration in upland and bottomland forests of southern Illinois

Bachelor of Science, *Summa Cum Laude*, 1999. Forestry, Southern Illinois University

PROFESSIONAL EXPERIENCE

Associate Professor of Silviculture, University of Kentucky, Department of Forestry and Natural Resources, Lexington, KY, July 2014 to present

Assistant Professor of Silviculture, University of Kentucky, Department of Forestry, Lexington, KY, June 2007 to June 2014

Research Associate, Auburn University, School of Forestry and Wildlife Sciences, Auburn, AL, June 2006 to April 2007

Graduate Research Assistant, Auburn University, School of Forestry and Wildlife Sciences, Auburn, AL, May 2003 to May 2006

Forester (GS-9), USDA Forest Service, Rocky Mountain Research Station, Moscow, ID, July 2001 to March 2003

Graduate Research Assistant, Southern Illinois University, Department of Forestry, Carbondale, IL, August 1999 to May 2001

Intern Forester, Tennessee Valley Authority, Land Between The Lakes, Golden Pond, KY, June 1999 to August 1999

Field Research Technician, Southern Illinois University, Department of Forestry, Carbondale, IL, May 1998 to August 1998

RESEARCH

Extramural Research (\$821,926)

J.M. Lhotka, T.O. Ochuodho, and W.R. Thomas. 2019-2022. Informing Management Practice Through Understanding the Effects of Species and Tree Characteristics on Maple Sap Volume and Sugar Content. Natural Resources Conservation Service, FY19 Conservation Innovation Grants (USDA-NRCS-KY-CIG-GEN0010198). \$ 74,335. J.M. Lhotka co-PI

Ochuodho, T.O., **J.M. Lhotka**, and W.R. Thomas. 2019-2022. Economic Analysis of Maple Syrup Production Potential in Kentucky. Natural Resources Conservation Service, FY19 Conservation Innovation Grants (USDA-NRCS-KY-CIG-GEN0010198). \$75,000. J.M. Lhotka co-PI

Stringer, J.W., **J.M. Lhotka**, M. Contreras, and M.J. Lacki. 2017-2019. Silvicultural treatments and effects on vertical and horizontal stand structure in forested ecosystems of eastern Kentucky: Response of *Myotis* bats during the staging and maternity seasons. Imperiled Bat Conservation Fund (IBCF), U.S. Fish and Wildlife Service, Kentucky Ecological Services Field Station. \$150,935. J.M. Lhotka co-PI

Lhotka, J.M., C.D. Barton, and J.W. Stringer. 2015-2017. Effect of grading technique on productivity of high-value tree species in reforested surface mine lands. U.S. Department of Interior, Applied Science Program Cooperative Agreements Related to Coal Mining and Reclamation. \$174,765. J.M. Lhotka PI

J.M. Lhotka co-directed M.S. student (Dement) completing the project. To date this research has resulted in one M.S. thesis and five presentations at professional meetings

Lacki, M.J., J.W. Stringer, **J.M. Lhotka**, and M. Contreras. 2014-2017. Effect of silvicultural treatments on vertical stand structure in forested ecosystems of the Appalachian Mountain Region: Implications for foraging and roosting behavior of *Myotis* bats during the staging, maternity, and swarming seasons. The Forestland Group, LLC. \$150,000. J.M. Lhotka co-PI

J.M. Lhotka co-directed M.S. student (Arant) completing the project.

Lhotka, J.M. Crosswalk and develop GIS mapping applications and accomplishment monitoring geospatial database. 2010-2011. Commonwealth of Kentucky, Energy and Environment Cabinet, Division of Forestry. \$6,000. J.M. Lhotka PI

Lhotka, J.M. and J.W. Stringer. Evaluating seedling development, stand structure, and understory microenvironment six growing seasons following midstory removal. 2009-2010. USDA Forest Service, Southern Research Station, Forestry Research (Federal Domestic Assistance Number: 10.652). \$14,435. J.M. Lhotka PI

J.M. Lhotka directed two M.S. students (Parrott and Craig) whose work was supported by this project. To date, this research has resulted in two M.S. theses, one refereed journal article, one non-refereed proceedings paper, and four presentations at professional meetings

Barton, C.D., **J.M. Lhotka**, R.C. Warner, C.T. Agouridis, D.H. Graves and S. Fei. 2008-2010. Techniques for establishing woody biomass plantations on surface mines as feedstocks for energy production. Kentucky Governors Office of Energy Policy: Energy R&D Program (08-GOEP-01). \$170,773. J.M. Lhotka co-PI

J.M. Lhotka directed M.S. student (Brinks) completing the project. This research has resulted in one M.S. thesis, one refereed journal article, one refereed proceedings paper, and three presentations at professional meetings

Lhotka, J.M. and J.W. Stringer. Evaluating seedling development, stand structure, and understory microenvironment six growing seasons following midstory removal. 2008. USDA Forest Service, Southern Research Station, Forestry Research (Federal Domestic Assistance Number: 10.652). \$5,683. J.M. Lhotka PI

J.M. Lhotka supervised field technician supported by this project. Project yielded one refereed proceedings paper

Extramural Research-Related and Extension (\$295,658)

Lhotka, J.M. and J.W. Stringer. 2020-2021. US Forest Service National Advanced Silviculture Program (NASP) - Session 4 Advanced Silviculture Module for NASP 14 (2020-2021). Subward part of Virginia Tech submitted proposal (J.F. Munsell, Project Director). \$26,429 subaward to co-PI J.M. Lhotka

Stringer, J.W., E.V. Crocker, **J.M. Lhotka**. 2018-2021. Upland Oak Sustainability and Management Project. Kentucky Division of Forestry contract associated with the USDA Forest Service - R8, FY18 Landscape Scale Restoration Program. \$269,229. J.M. Lhotka co-PI

Intramural Research (\$41,317)

Sena, K.L., H. Wilson, J. Saylor, J.J. Cox, **J.M. Lhotka**. 2020-2021. Twenty Years of Urban Reforestation in Lexington. 2020-2021. University of Kentucky, 2020 Sustainability Challenge Grant program. \$41,317.20. J.M. Lhotka co-PI

Other Research Efforts

Lhotka, J.M., A.W. D'Amato, C.D. Nelson, and A.G. Abbott. 2017 to present. Quantifying the effects of climate, silvicultural disturbance, and genetics on the temporal growth response of white oak

J.M. Lhotka is co-PI coordinating the integration tree-ring analysis, long-term plot data, and genetic sampling to understand how white oak climate-growth relationships are affected by thinning method and genetic relatedness among the sample tree population.

Yang, J. and **J.M. Lhotka**. 2016 to present. Microscale spatial heterogeneity of tree mortality in response to macroscale climatic water stress and forest stand development in Appalachia.

J.M. Lhotka is co-PI on the spatially-explicit modeling effort to understand tree mortality in response to forest stand development, site conditions, and climate change in Appalachian forests.

Lhotka, J.M. 2013 to present. Silvicultural approaches to enhance the resiliency of oak-dominated forests to disturbance

University of Kentucky Agricultural Experiment Station Project KY009027

Lhotka, J.M. and T.F. Hutchinson. 2013 to present. Modeling long-term stand density and growth relationships in upland oak stands of Ohio and Kentucky

J.M. Lhotka is the PI directing the analysis of four USDA Forest Service stand density studies that include fifty years of tree growth and yield data

Lhotka, J.M. and J.W. Stringer. 2012 to present. Formulating an expanding-gap irregular shelterwood (*Femelschlag*) system for oak dominated stands

J.M. Lhotka is the project PI and is leading the development of a gap-based silvicultural practice designed to help address the oak regeneration issues present within the Central Hardwood Forest Region of the US. J.M. Lhotka was co-Major Advisor of the M.S. student (Patterson) involved with the project

Lhotka, J.M. 2008 to 2013. Use of underplanting to enhance the health and sustainability of oak-dominated ecosystems in Kentucky and the Central Hardwood Region

University of Kentucky Agricultural Experiment Station Project KY009022

Other Funding Sources (\$8,457)

Lhotka, J.M. Research Activity Award, \$570, Spring 2017, awarded by University of Kentucky, College of Agriculture, Food, and Environment

Lhotka, J.M. and S. Fei. Barnhart Fund Award, \$1,000, 2010, awarded by University of Kentucky, College of Agriculture

Lhotka, J.M. Research Activity Award, \$1,500, Spring 2009, awarded by University of Kentucky, College of Agriculture

Lhotka, J.M. Research Activity Award, \$3,700, Fall 2008, awarded by University of Kentucky, College of Agriculture

Lhotka, J.M. Research Activity Award, \$1,000, Spring 2008, awarded by University of Kentucky, College of Agriculture

Lhotka, J.M. Research Activity Award, \$687, Fall 2007, awarded by University of Kentucky, College of Agriculture

Other Research Proposals Submitted

Extramural Submitted Not Funded

Lhotka, J. M. (Project Director), E.V. Crocker, B.O. Knapp, C.D. Nelson, T.O. Ochuodho, N.C. Poudyal, M.R. Saunders, M.E. Staton. 2019. Advancement of Resilient and Sustainable Forestry

Systems for the Eastern US Oak Resource. USDA-NIFA Sustainable Agricultural Systems Program A9201 (USDA-NIFA-AFRI-006739). \$9,970,240.

Lhotka, J.M., M.R. Saunders, C.D. Nelson, M.V. Coggeshall. 2019. Examining Genetic and Environmental Interactions Driving White Oak Growth Relationships: An Application of Individual-Tree Models Developed from Provenance/Progeny Trials. Hardwood Tree Improvement and Regeneration Center (HTIRC) Grant Program - 2019. \$142,968.

Lhotka, J. M. (Project Director), M.A. Contreras, E.V. Crocker, C.D. Nelson, M.R. Saunders, M.E. Staton, J.W. Stringer. 2018. Sustaining Resilient Forest Industries and Prosperous Rural Communities through Advanced Forestry Systems for the Oak Resource, USDA-NIFA Sustainable Agricultural Systems Program (A9201). \$9,969,817.

Barton, C.D. C.T. Agouridis, K. Jacobson, **J.M. Lhotka**, T.O. Ochuodho. 2017. Integrated Agroenergy Production Systems for Economic and Ecological Transition on Rural Marginal Land. National Science Foundation, CBET-Track 3 Innovations at the Nexus of Food, Energy and Water Systems (NSF 17-530). \$2,489,772.

Stringer, J.W., **J.M. Lhotka**, M. Contreras, C.D. Barton, C.T. Agouridis, and D. Colliver. 2016. Developing a Sustainable Woody Bioenergy System for the Appalachian Coal Basins. Subaward part of Montana Tech of the University of Montana (J.P. Downey, Project Director) EPSCoR Track-2 project titled “RII Track-2 FEC: Center for Sustainable Rural Development”. Research Infrastructure Improvement Program: Track-2 Focused EPSCoR Collaborations (NSF 16-511). \$1,109,393

Carlson, J.E., **J.M. Lhotka**, S. Schlarbaum, K.L. Shumaker, J.L. Wegrzyn. 2015. Landscape genomics of responses to environmental stress and forest management activities in oak-dominated forests. National Science Foundation, Plant Genome Research Project (15-548). \$3,959,657 (\$983,204 subaward to co-PI **J.M. Lhotka**)

Lhotka, J.M. and S.J. Price. 2015. Summer undergraduate fellowships in the science and management of Appalachian forest ecosystems. NIFA Agricultural and Food Research Initiative (USDA-NIFA-AFRI-004797), Undergraduate Research and Extension Experiential Learning Fellowship. \$286,012

Keyser, T.L., C.C. Kern, C.R. Webster, **J.M. Lhotka**, and S.J. Price. 2014. Sustaining productivity and a diversity of species with management strategies based on natural disturbance and ecological theory. FY 2014 National Institute of Food and Agriculture, Agriculture and Food Research Initiative (AFRI): Foundational Program (USDA-NIFA-AFRI-004412). \$491,070 (\$195,437 subaward to co-PIs S.J. Price and **J.M. Lhotka**)

Stringer, J.W., **J.M. Lhotka**, M. Contreras, G.A. Stainback, R. Smith, and T. Mueller. 2013. Toyota sustainable biomass initiative. Toyota Motor Engineering & Manufacturing North America, Inc., K.M. Butt, Chief Environmental Officer. \$840,216

Price, S.J. and **J.M. Lhotka**. 2013. Integrated studies of disturbance in an Appalachian forest ecosystem, the University of Kentucky's Robinson Forest. National Science Foundation, Research Experiences for Undergraduates (NSF 13-542). \$350,721

Price, S.J. and **J.M. Lhotka**. 2012. REU site: Forest ecology and natural resource management in Appalachia. National Science Foundation, Research Experiences for Undergraduates (NSF 12-569). \$337,112

Lhotka, J.M., C.D. Barton, and L. Liang. 2012. Subward for Purdue University (S. Fei, Project Director) Coordinated Agricultural Project (CAP) titled "Optimizing climate change mitigation and adaptation in central hardwood forests". Regional Approaches for Adaptation to and Mitigation of Climate Variability and Change (USDA-NIFA-AFRI-003537). \$778,906 (\$205,400 to J.M. Lhotka)

Lhotka, J.M., S. Fei, G.A. Stainback, and J. Schieffer. 2011. A fuzzy logic based GIS tool for locating economically viable energy crop plantations. Sun Grant Program, Southeastern Region, 2010 Competitive Grants Program. \$90,621

Lhotka, J.M., J.W. Stringer, and T. Conners. 2010. The effect of silvicultural practices on the yield of short rotation woody plantations in north-central Kentucky. Encapital Inc., Ron Reilly, CEO. \$209,500

Lhotka, J.M., C.D. Barton, C. Agouridis, and R.C. Warner. 2009. Using short-rotation technologies to enhance woody feedstock production on reclaimed surface mines in eastern Kentucky. Kentucky Renewable Energy Consortium, 2009 Competitive Grants Program. \$73,121

Lhotka, J.M., J.W. Stringer, M.A. Arthur, and E. Seekamp. 2009. Forest harvesting for renewable bioenergy in the central hardwood region: Impacts to forest ecosystem services and social barriers to implementation. FY 2009 Agriculture and Food Research Initiative Competitive Grants Program (USDA-CSREES-AFRI-002010), Managed Ecosystems program. \$498,952

Fei, S., C.D. Barton, M.A. Arthur, J.W. Stringer, and **J.M. Lhotka**. 2009. Spatial and temporal dynamics of invasive plants and their impact on ecosystem services in Robinson Forest following forest management. FY 2009 Agriculture and Food Research Initiative Competitive Grants Program (USDA-CSREES-AFRI-002010), Biology of Weedy and Invasive Species in Agroecosystems program. \$499,858

Lhotka, J.M., C.D. Barton, and J.W. Stringer. 2009. Effect of grading technique and forest thinning on productivity of high-value tree species in reforested surface mine lands. U.S. Department of Interior, 2009 National Technology Transfer Team Applied Science Program (DOI-SM-255-09). \$167,402

Stringer, J.W. and **J.M. Lhotka**. 2009. Hardwood Forestry Fund grant program. \$26,000

Lhotka, J.M., C.D. Barton, R.C. Warner, C.T. Agouridis, T.L. Cushing, S. Fei, M.D. Coleman. 2007. Techniques for enhancing productivity of woody feedstock plantations on reclaimed surface mines. USDA/DOE Biomass Research and Development Initiative (RD-RBP-Biomass-2007). \$732,590

Intramural Submitted Not Funded

Lhotka, J.M. 2010. Regenerating oak dominated forests using gap-based silvicultural systems. USDA-CSREES Precision Resource Management Phase VI Special Grant. \$49,858

Lhotka, J.M., M.A. Arthur, and R.L. Sherriff. 2008. Impact of forest harvesting on the invasion of non-native plant species. USDA-CSREES Precision Resource Management Phase IV Special Grant. \$74,716

Pre-proposals Submitted Not Invited

Lhotka, J.M., C.D. Barton, M.A. Contreras, G.A. Stainback, J.W. Stringer, and R.B. Rummer. 2012. Developing a sustainable woody bioenergy system for Appalachian coal basins. Biomass Research and Development Initiative (DE-FOA-0000657)

Lhotka, J.M., C.D. Barton, G. Halich, D. van der Lelie, and R.J. Rousseau. 2009. Enhancing woody feedstock production on reclaimed surface mines through application of short-rotation technologies, FY 2009 USDA/DOE Biomass Research and Development Initiative (DE-PS36-09GO99016)

Letter of Intent Submitted Not Invited

Stainback, G.A., J. Schieffer, **J.M. Lhotka**, and M. Contreras. A policy, economic, and spatial analysis of bioenergy feedstock production in northern Kentucky. FY 2012 Agriculture and Food Research Initiative Competitive Grants Program (USDA-NIFA-AFRI-A6122), Sustainable Bioenergy program

Lhotka, J.M., M.A. Arthur, and B.D. Lee. 2008. Impact of forest harvesting on the invasion of non-native weedy species. National Research Initiative Program (USDA-CSREES-NRI-001030), Biology of Weedy and Invasive Species in Agroecosystems program

Graduate Student Advising and Committee Service

Completed Graduate Students (12)

Philip Vogel, M.S. Forest and Natural Resource Sciences, 2020, Major Advisor

Thesis: Long-term effects of crop-tree release on the growth and quality of upland white oak stands

Rachel Thunder, M.S. Forest and Natural Resource Sciences, 2020, co-Major Advisor with J. Yang

Thesis: effects of thinning regimes on genetic variation of white oak (*Quercus alba* L.) in upland oak forests of eastern Kentucky

Joseph Frederick, M.S. Forest and Natural Resource Sciences, 2020, co-Major Advisor with C.D. Barton

Thesis: Evaluating reforestation options for surface mines in Appalachia

Zachary Hackworth, M.S. Forest and Natural Resource Sciences, 2018, co-Major Advisor with J.J. Cox

Thesis: Efficacy of herbivore exclusion on planted tree seedling vitality on a reclaimed surface mine in eastern Kentucky

Currently: Laboratory Technician Senior, University of Kentucky, Department of Forestry and Natural Resources

Wesley Dement, M.S. Forest and Natural Resource Sciences, 2017, co-Major Advisor with C.D. Barton

Thesis: An investigation of tree growth and woody vegetation colonization on a 19 year-old forestry reclamation site

Clinton Patterson, M.S. Forest and Natural Resource Sciences, 2017, co-Major Advisor with J.W. Stringer

Thesis: Initial understory response to gap-based regeneration methods for mature upland oak forests

Currently: Forester, Berea College Forest

Russell Cunningham, M.S. Forestry, 2015, co-Major Advisor with G.A. Stainback

Thesis: Effects of regeneration opening size and simulated crop tree release on volume yields and economic value in oak-dominated stands

Currently: Forester, Domtar Paper Company

Prativa Shrestha, M.S. Forestry, 2013, co-Major Advisor with G.A. Stainback

Thesis: Carbon life-cycle and economic analysis of forest carbon sequestration and woody bioenergy production

Publications: One refereed journal article

Currently: Ph.D. student, Mississippi State University

Jared Craig, M.S. Forestry, 2012, Major Advisor

Thesis: Effects of midstory removal and shoot clipping on the growth and development of three oak species

Publications: One refereed journal article, one refereed proceedings paper, one non-refereed extended abstract,

Currently: Forester, Ohio Division of Forestry

Zachary Leitch, M.S. Forestry, 2012, Major Advisor

Thesis: Private landowner intent to supply forest biomass for energy in Kentucky

Publications: One refereed journal article

David Parrott, M.S. Forestry, 2011, Major Advisor

Thesis: Effects of midstory removal on black oak (*Quercus velutina*) and white oak (*Quercus alba*) regeneration

Publications: Two refereed journal articles, one refereed proceedings paper

Currently: Forester, Ohio Division of Forestry

Joshua Brinks, M.S. Forestry, 2010, Major Advisor

Thesis: Two year response of a woody biofuel plantation to intensive management on a reclaimed surface mine in eastern Kentucky

Publications: Two refereed journal articles, one refereed proceedings paper

Currently: Graduate Fellow and Ph.D. student, Penn State University

Current Graduate Students (2)

Katherine Love, M.S. Forest and Natural Resource Sciences, co-Major Advisor with J. Yang

Philip Arant, M.S. Forest and Natural Resource Sciences, co-Major Advisor with M.J. Lacki

Graduate Committee Service (19)

Fourteen M.S. students, University of Kentucky, Department of Forestry and Natural Resources

One M.S. student, University of Kentucky, Department of Biology

One Ph.D. student, University of Kentucky, Department of Geography

One Ph.D. student, University of Kentucky, Department of Sociology

One Ph.D. student, University of Kentucky, Department of Biology

One Ph.D. student, Auburn University, School of Forestry and Wildlife Sciences

Graduate Student Awards (7)

David Parrott (2011), Jared Craig (2012), Prativa Shrestha (2013), Forestry Graduate Student Awards for Excellence in Research, Academic Performance, and Service, awarded by the University of Kentucky Department of Forestry

David Parrott, Outstanding Graduate Student Poster Award, 2011, awarded at the 16th Biennial Southern Silviculture Research Conference

David Parrott, Student Travel Scholarship, 2011, awarded by the 16th Biennial Southern Silviculture Research Conference committee

David Parrott, Outstanding Student Paper Award, 2010, awarded at 17th Central Hardwood Forest Conference

Joshua Brinks, Second Place Poster Presentation, 2009 University of Kentucky Graduate Student Interdisciplinary Conference

Research Staff Supervision

Zachary Hackworth, Laboratory Technician Senior, January 2019 to present

Publications: Two refereed journal articles

David Parrott, Laboratory Technician Senior, August 2011 to March 2013

Publications: Two refereed journal articles, one extension publication

PUBLICATIONS

† Indicates corresponding author

Underline indicates graduate student or technician who participated under my supervision

JIF denotes journal impact factor from Journal Citation Reports® published by Thomson Reuters

Refereed Journal Articles (37)

Dement, W.T., Z.J. Hackworth, **J.M. Lhotka**†, C.D. Barton. 2020. Plantation development and colonization of woody species in response to post-mining spoil preparation methods. *New Forests*, DOI: <https://doi.org/10.1007/s11056-019-09769-y>. (JIF: 1.598)

Kara, F.† and **J.M. Lhotka**. 2020. Comparison of unmanaged and managed Trojan Fir-Scots pine forests for structural complexity. *Turkish Journal of Agriculture and Forestry* 44(1):62-70. (JIF: 1.731)

Hackworth, Z.J., **J.M. Lhotka**†, and J.W. Stringer. 2019. Midstory removal facilitates growth but reduces competitiveness of oak reproduction prior to and after shelterwood establishment cutting. *Forest Science*, fxz083, <https://doi.org/10.1093/forsci/fxz083>. (JIF: 1.058)

Kara, F.† and **J.M. Lhotka**. 2019. Climate and silvicultural implications in modifying stand composition in mixed fir-pine stands. *Journal of Sustainable Forestry*, DOI: 10.1080/10549811.2019.1686030. (JIF: 1.242)

Yang, Y.†, W.H. Cai, J. Yang, M. White, **J.M. Lhotka**. 2018. Dynamics of post-fire aboveground carbon in a chronosequence of Chinese boreal larch forests. *Journal of Geophysical Research: Biogeosciences* 123(12): 3490-3506. (JIF: 3.480)

Hackworth, Z.J.†, **J.M. Lhotka**, J.J. Cox, C.D. Barton, and M.T. Springer. 2018. First-year vitality of reforestation plantings in response to herbivore exclusion on reclaimed Appalachian surface-mined land. *Forests* 9(4): 222. (JIF: 2.116)

Lhotka, J.M.†, R.A. Cunningham, and J.W. Stringer. 2018. Effect of silvicultural gap size on long-term species recruitment, growth, and volume yields in upland *Quercus* dominated stands. *Forestry* 91(4): 451-458. (JIF: 2.232)

Agha, M.†, B.D. Todd, B. Augustine, **J.M. Lhotka**, L.J. Fleckenstein, M. Lewis, C. Patterson, J.W. Stringer, S.J. Price. 2018. Effects of gap-based silviculture on thermal biology of a terrestrial reptile. *Wildlife Research* 45(1): 72-81. (JIF: 1.290)

Kara, F.†, E.F. Loewenstein, **J.M. Lhotka**, J.S. Kush. 2018. A Gingrich style stocking chart for longleaf pine (*Pinus palustris* Mill.) *Forests*. *Forest Science* 64(3): 307-315. (JIF: 1.782)

Lhotka, J.M.† 2017. Examining growth relationships in *Quercus* stands: An application of individual-tree models developed from long-term thinning experiments. *Forest Ecology and Management* 385: 65-77. (JIF: 2.826)

Lhotka, J.M.[†], D.L. Parrott, and C.M. Ruffner. 2016. A dendroecological investigation of an upland oak-dominated forest within the Grand Prairie region of Illinois. *Natural Areas Journal* 36(3): 310-322. (JIF: 0.659)

Nepal, S., M. Contreras[†], G.A. Stainback, and **J.M. Lhotka**. 2015. Quantifying the effects of biomass market conditions and policy incentives on economically feasible sites to establish dedicated energy crops. *Forests* 6(11): 4168-4190. (JIF: 1.449)

Lhotka, J.M.[†] and E.F. Loewenstein. 2015. Comparing individual-tree approaches for predicting height growth of underplanted seedlings. *Annals of Forest Science* 72(4): 469-477. (JIF: 1.536)

Shrestha, P., G.A. Stainback[†], P. Dwivedi, and **J.M. Lhotka**. 2015. Economic and life-cycle analysis of forest carbon sequestration and wood-based bioenergy offsets in the central hardwood region of United States. Submitted to *Journal of Sustainable Forestry* 34(3): 214-232. (JIF: n/a)

Nepal, S., M. Contreras[†], **J.M. Lhotka**, and G.A. Stainback. 2014. A spatially explicit model to identify suitable sites to establish dedicated woody energy crops. *Biomass and Bioenergy* 71: 245-255. (JIF: 2.975)

Craig, J.M., **J.M. Lhotka[†]**, and J.W. Stringer. 2014. Evaluating initial responses of natural and underplanted oak reproduction and a shade tolerant competitor to midstory removal. *Forest Science* 60(6): 1164-1171. (JIF: 1.523)

J.M. Lhotka[†], and J.W. Stringer. 2013. Forest edge effects on *Quercus* reproduction within naturally regenerated mixed broadleaf stands. *Canadian Journal of Forest Research* 43(10):911-918. (JIF: 1.559)

Catron, J.F., G.A. Stainback[†], **J.M. Lhotka**, J.W. Stringer, and L. Hu. 2013. Financial and management implications of producing energywood in upland oak stands in Kentucky. *Northern Journal of Applied Forestry* 30(4):164-169. (JIF: 0.435)

Parrott, D.L., **J.M. Lhotka[†]**, and J.W. Stringer. 2013. The effect of soil scarification on *Quercus* seedling establishment within upland stands of the Northern Cumberland Plateau. *Northern Journal of Applied Forestry* 30(3):125-130. (JIF: 0.435)

Leitch, Z.J., **J.M. Lhotka[†]**, G.A. Stainback, and J.W. Stringer. 2013. Private landowner intent to supply woody feedstock for bioenergy production. *Biomass and Bioenergy* 56:127-136. (JIF: 2.975)

Lhotka, J.M.[†], and E.F. Loewenstein. 2013. Development of three underplanted hardwood species seven years following midstory removal. *Southern Journal of Applied Forestry* 37(2):81-90. (JIF: 0.320)

Lhotka, J.M.[†] 2013. Effect of gap size on mid-rotation stand structure and species composition in a naturally regenerated mixed broadleaf forest. *New Forests* 44(3):311-325. (*JIF*: 1.636)

Catron, J., G.A. Stainback[†], P. Dwivedi, and **J.M. Lhotka**. 2013. Bioenergy development in Kentucky: A SWOT-ANP analysis. *Forest Policy and Economics* 28:38-43. (*JIF*: 1.638)

Parrott, D.L., **J.M. Lhotka**[†], J.W. Stringer, and D.N. Dillaway. 2012. Seven-year effects of midstory removal on natural and underplanted oak reproduction. *Northern Journal of Applied Forestry* 29(4):182-190. (*JIF*: 0.435)

Parrott, D.L., **J.M. Lhotka**[†], S. Fei, and B.S. Shouse. 2012. Improving woody biomass estimation efficiency using double sampling. *Forests* 3(2):179-189. (*JIF*: 1.094)

Lhotka, J.M.[†] 2012. Height-diameter relationships in sweetgum (*Liquidambar styraciflua*) dominated stands. *Southern Journal of Applied Forestry* 36(2):98-106. (*JIF*: 0.320)

Parrott, D.L., J.S. Brinks, and **J.M. Lhotka**[†]. 2012. Designing Nelder wheel plots for tree density experiments. *New Forests* 43(2):245-254. (*JIF*: 1.636)

Lhotka, J.M.[†], and E.F. Loewenstein. 2011. An individual-tree diameter growth model for managed uneven-aged oak-shortleaf pine stands in the Ozark Highlands of Missouri, USA. *Forest Ecology and Management* 261:770-778. (*JIF*: 2.826)

Brinks, J.S., **J.M. Lhotka**[†], C.D. Barton, R.C. Warner, and C.T. Agouridis. 2011. Effects of fertilization and irrigation on American sycamore and black locust planted on a reclaimed surface mine in Appalachia. *Forest Ecology and Management* 261:640-648. (*JIF*: 2.826)

Lhotka, J.M.[†], and E.F. Loewenstein. 2009. Effect of midstory removal on understory light availability and the 2-year response of underplanted cherrybark oak seedlings. *Southern Journal of Applied Forestry* 33(4):171-177. (*JIF*: 0.320)

Lhotka, J.M.[†], and E.F. Loewenstein. 2008. An examination of species-specific growing space utilization. *Canadian Journal of Forest Research* 38(3):470-479. (*JIF*: 1.559)

Lhotka, J.M.[†], and E.F. Loewenstein. 2008. Influence of canopy structure on the survival and growth of underplanted seedlings. *New Forests* 35(1):89-104. (*JIF*: 1.636)

Lhotka, J.M.[†], and E.F. Loewenstein. 2007. A weighted relative density model applied to loblolly pine (*Pinus taeda* L.) stands. *African Journal of Agricultural Research* 2(7):300-304. (*JIF*: n/a)

Lhotka, J.M.[†], and E.F. Loewenstein. 2006. Indirect measures for characterizing light along a gradient of mixed-hardwood riparian forest canopy structures. *Forest Ecology and Management* 226(1-3):310-318. (*JIF*: 2.826)

Zaczek, J.J.[†], and **J.M. Lhotka**. 2004. Seedling reproduction established with soil scarification within an oak overwood after overstory removal. *Northern Journal of Applied Forestry* 21(1):5-11. (*JIF*: 0.435)

Lhotka, J.M.[†], and J.J. Zaczek. 2003. Effects of scarification disturbance on the seedling and midstory layer in a successional mixed-oak forest. *Northern Journal of Applied Forestry* 20(2):85-91. (*JIF*: 0.435)

Lhotka, J.M.[†], and J.J. Zaczek. 2003. Soil scarification effects on oak reproduction in two mixed-oak bottomland stands of Southern Illinois. *Southern Journal of Applied Forestry* 27(3):164-171. (*JIF*: 0.320)

Books and Edited Volumes (1)

Fei, S., **J.M. Lhotka**, J.W. Stringer, K.W. Gottschalk, and G.W. Miller (eds.). 2011. Proceedings of the 17th Central Hardwood Forest Conference. USDA Forest Service, Newtown Square, PA. General Technical Report NRS-P-778. 678 p

Conference proceedings included 60 refereed research papers and 17 extended abstracts

Refereed Conference Proceedings (5)

Craig, J.M., **J.M. Lhotka**[†], and J.W. Stringer. 2013. Response of naturally regenerated and underplanted white oak (*Quercus alba* L.) seedlings six years following midstory removal. P. 365-372 in Proceedings, 18th Central Hardwood Forest Conference., Miller, G.W., T.M. Schuler, K.W. Gottschalk, J.R. Brooks, S.T. Grushecky, B.D. Spong, and J.S. Rentch (eds.). USDA For. Ser., Northern Research Station, Newtown Square, PA. Gen. Tech. Rep. NRS-P-117.

Brinks, J.S., **J.M. Lhotka**[†], and C.D. Barton. 2011. One-year response of American sycamore (*Platanus occidentalis* L.) and black locust (*Robinia pseudoacacia* L.) to granular fertilizer applications on a reclaimed surface mine in eastern Kentucky. P. 306-313 in Proceedings of the 17th Central Hardwood Forest Conference, Fei, S., J.M. Lhotka, J.W. Stringer, K.W. Gottschalk, and G.W. Miller (eds.). USDA Forest Service, Northern Research Station, Newtown Square, PA. General Technical Report NRS-P-78

Parrott, D.L., **J.M. Lhotka**[†], and J.W. Stringer. 2011. Effects of midstory removal on underplanted black oak and white oak in the western Cumberland Plateau. P. 270-276 in Proceedings of the 17th Central Hardwood Forest Conference, Fei, S., J.M. Lhotka, J.W. Stringer, K.W. Gottschalk, and G.W. Miller (eds.). USDA Forest Service, Northern Research Station, Newtown Square, PA. General Technical Report NRS-P-78

Lhotka, J.M.[†], and J.J. Zaczek. 2003. The development of oak reproduction following soil scarification - implications for riparian forest management. P. 199-202 in Proceedings 13th Central Hardwood Forest Conference, Van Sambeek, J.W., J.O. Dawson, J. Ponder, F., E.F. Loewenstein, and J.S. Fralish (eds.). USDA Forest Service, North Central Research Station, St. Paul, MN. General Technical Report NC-234

Ruffner, C.M. †, A. Trieu, S. Chandy, M.D. Davis, D. Fishel, G. Gipson, **J. Lhotka**, K. Lynch, P. Perkins, S.L. van de Gevel, W. Watson, and E. White. 2003. From savanna to campus woodlot: the historical ecology of farm woodlots in Southern Illinois. P. 333-342 *in* Proceedings 13th Central Hardwood Forest Conference, Van Sambeek, J.W., J.O. Dawson, J. Ponder, F., E.F. Loewenstein, and J.S. Fralish (eds.). USDA Forest Service, North Central Research Station, St. Paul, MN. General Technical Report NC-234.

Non-Refereed Conference Proceedings (5)

Lhotka, J.M. †, and E.F. Loewenstein. 2013. A comparison of canopy structure measures for predicting height growth of underplanted seedlings. P. 289-293 *in* Proceedings of the 15th Biennial Southern Silvicultural Research Conference, Guldin, J.M. (ed.). USDA Forest Service, Southern Research Station, Asheville, NC. e-General Technical Report SRS-175

Cotton, C., C. Barton †, **J. Lhotka**, P. Angel, and D. Graves. 2012. Evaluating reforestation success on a surface mine in Eastern Kentucky. P. 16-23 *in* National Proceedings: Forest and Conservation Nursery Associations - 2011, Haase, D.L., J.R. Pinto, and L.E. Riley (eds.). USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO. Proceedings RMRS-P-68

Lhotka, J.M. †, and E.F. Loewenstein. 2006. Initial response of underplanted yellow poplar and cherrybark oak seedlings to four levels of mechanical midstory removal. P. 275-278 *in* Proceedings of the 13th Biennial Southern Silvicultural Research Conference, Conner, K.F. (ed.). USDA Forest Service, Southern Research Station, Asheville, NC. General Technical Report SRS-92

Lhotka, J.M. †, J.J. Zaczek, and R.T. Graham. 2004. The influence of soil scarification on oak reproduction: Review and management considerations. P. 292-294 *in* Upland Oak Ecology Symposium: History, Current Conditions, and Sustainability, Spetich, M.A. (ed.). USDA Forest Service, Southern Research Station, Asheville, NC. General Technical Report SRS-73

Lhotka, J.M. †, and J.J. Zaczek. 2002. The use of soil scarification to enhance oak regeneration in a mixed-oak bottomland forest of southern Illinois. P. 401-404 *in* Proceedings of the 11th Biennial Southern Silvicultural Research Conference, Outcalt, K.W. (ed.). USDA Forest Service, Southern Research Station, Asheville, NC. General Technical Report SRS-48

Extended Abstracts in Non-Refereed Conference Proceedings (1)

Craig, J.M., **J.M. Lhotka** †, and J.W. Stringer. In Press. Six-year effect of midstory removal on white oak growth and biomass distribution and seedling response one year post-clipping. *in* Proceedings of the 17th Biennial Southern Silvicultural Research Conference. USDA Forest Service, Southern Research Station, Asheville, NC. General Technical Report

Extension Publications (2)

Parrott, D.L. †, **J.M. Lhotka**, and J.W. Stringer. 2012. Using midstory removal to enhance oak development. Kentucky Woodlands Magazine 7(2):16-17

Lhotka, J.M.[†] and J.W. Stringer. 2008. Improving oak regeneration through soil scarification and underplanting. *Forest Landowner* 67(6):38-39

TEACHING AND ADVISING

Extramural Funding

Arthur, M., L. Rieske-Kinney, C. Sass, M. Williams, **J.M. Lhotka**, J. Christian, and C.D. Nelson. 2017. Development of an urban and community forestry undergraduate certificate. USDA-NIFA FY 2017 Higher Education Challenge (HEC) Grants Program. \$149,734.

Bullard, S.H., D.W. Cremeans, T.L. Cushing, S. Fei, **J.M. Lhotka**, and L.R. Lhotka. 2008-2010. Reviving traditional forestry with HP technology. 2008 HP Technology for Teaching Higher Education Award. \$77,000

J.M. Lhotka assumed the project director role in May 2009 and taught the two primary courses involved in this project, FOR 350 and FOR 480

Courses Taught

FOR 350 - Silviculture (4 credits)

Semester	Enrollment	Course Evaluation* (College Mean)	Teaching Evaluation* (College Mean)
Fall 2019	10	4.7 (4.3)	4.6 (4.3)
Fall 2018	16	4.8 (4.3)	4.7 (4.4)
Fall 2017	15	4.6 (4.2)	4.8 (4.3)
Fall 2016	12	4.73 (4.23)	4.82 (4.35)
Fall 2015	10	Not Available [#]	Not Available
Fall 2014	18	3.82 (3.37)	3.91 (3.42)
Fall 2013	23	3.6 (3.5)	3.6 (3.5)
Fall 2012	19	3.8 (3.4)	3.9 (3.4)
Fall 2011	18	3.5 (3.4)	3.5 (3.5)
Spring 2011	12	3.7 (3.4)	3.7 (3.5)
Spring 2010	10	4.0 (3.4)	3.9 (3.4)
Spring 2009	17	3.5 (3.3)	3.4 (3.4)

*Scale 0 to 5 from 2016 to present, 0 to 4 prior to 2016

[#]Not available – Scores not reported by UK when < 5 surveys are completed

FOR 358 - Silvicultural Practices (3 credits, spring field semester course)

Semester	Enrollment	Course Evaluation* (College Mean)	Teaching Evaluation* (College Mean)
Spring 2020	12	-	-
Spring 2019	14	Not Available [#]	Not Available

Spring 2018	16	4.7 (4.2)	4.8 (4.4)
Spring 2017	11	Not Available [#]	Not Available
Spring 2016	8	Not Available [#]	Not Available
Spring 2015	14	3.89 (3.35)	3.89 (3.45)
Spring 2014	18	3.77 (3.31)	3.85 (3.39)
Spring 2013	20	3.9 (3.5)	4.0 (3.5)
Spring 2012	16	3.9 (3.4)	3.8 (3.5)

*Scale 0 to 5 from 2016 to present, 0 to 4 prior to 2016

[#]Not available – Scores not calculated by UK when < 5 surveys are completed

FOR 480 - Integrated Resource Management (5 credits, forestry capstone course). Lead instructor and co-taught (50% responsibility) with J.M. Ringe (2009 to 2018) and T.L. Cushing (2008)

Semester	Enrollment	Course Evaluation* (College Mean)	Teaching Evaluation* (College Mean)
Spring 2020	13	-	-
Spring 2019	15	Not Available [#]	Not Available
Spring 2018	12	Not Available [#]	Not Available
Spring 2017	9	Not Available [#]	Not Available
Spring 2016	14	3.4 (3.35)	3.6 (3.48)
Spring 2015	17	3.58 (3.35)	3.75 (3.45)
Spring 2014	20	3.5 (3.31)	3.72 (3.39)
Spring 2013	16	3.9 (3.4)	3.9 (3.5)
Spring 2012	11	3.9 (3.4)	3.7 (3.5)
Spring 2011	9	3.9 (3.4)	4.0 (3.5)
Spring 2010	17	3.9 (3.4)	3.9 (3.4)
Spring 2009	14	3.7 (3.3)	3.8 (3.4)
Spring 2008	7	2.9 (3.3)	3.1 (3.3)

*Scale 0 to 5 from 2016 to present, 0 to 4 prior to 2016

FOR 770 – Ecology and Silviculture of Oak Dominated Forests (1 credit)

Semester	Enrollment	Course Evaluation* (College Mean)	Teaching Evaluation* (College Mean)
Fall 2014	7	3.4 (3.37)	3.4 (3.42)

*Scale 0 to 4

FOR 770 - Continuous Cover Forestry (1 credit)

Semester	Enrollment	Course Evaluation*	Teaching Evaluation*
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		(College Mean)	(College Mean)
Fall 2009	7	4.0 (3.3)	3.7 (3.4)

*Scale 0 to 4

FOR 399 - Field-based Education in Forestry

Fall 2010, Topic: Advanced forest inventory techniques, Enrollment: 1 (1 credit)

FOR 376 - Silvicultural Practices (2 credits)

Summer 2010, Co-instructor assisting during one week of this two week field course,
Enrollment: 12

Summer 2009, Co-instructor assisting during one week of this two week field course,
Enrollment: 14

FOR 599 - Independent Work in Forestry

Spring 2020, Topic: Undergraduate Tree-Ring Methods and Research, Enrollment: 1 (3 credits)

Fall 2016, Topic: Advanced Silviculture, Enrollment: 2 (3 credits)

Spring 2016, Topic: Introduction to Tree-Ring Methods and Research, Enrollment: 1 (3 credits)

Spring 2011, Topic: Advanced Silviculture, Enrollment: 1 (3 credits)

Spring 2010, Topic: Advanced Silviculture, Enrollment: 2 (3 credits)

FOR 602 - Renewable Natural Resources in a Global Perspective (3 credits)

Fall 2017, Co-instructor responsible for two 50-minute class sessions, Enrollment: 11

Fall 2015, Co-instructor responsible for two 50-minute class sessions, Enrollment: 11

Fall 2013, Co-instructor responsible for two 50-minute class sessions, Enrollment: 16

Fall 2011, Co-instructor responsible for two 50-minute class sessions, Enrollment: 15

Fall 2009, Co-instructor responsible for two 50-minute class sessions, Enrollment: 9

FOR 781 – Special Problems in Forestry

Fall 2016, Topic: Forest stand dynamics, Enrollment: 1 (1 credit)

Fall 2015, Topic: Critique of silvicultural research papers, Enrollment: 1 (1 credit)

Spring 2015, Topic: Silviculture of upland oak stands, Enrollment: 1 (1 credit)

FOR 791 - Research in Forestry

Fall 2011, Topic: Tree-ring analysis, Enrollment: 1 (2 credit)

Fall 2010, Topic: Design of tree density experiments, Enrollment: 1 (1 credit)

Guest Lectures

FOR 357 - Inventory and Measurements II

Introduction to TwoDog forest inventory software, February 3, 2012, February 15, 2013

FOR 375 - Forest Mensuration

Introduction to TwoDog forest inventory software, May 19-20, 2008, May 26-27, 2009,
May 25-26, 2010, May 23-24, 2011

FOR 425 - Forest Management

Introduction to growth and yield modeling, September 26, 2007, October 1, 2007, and September 24, 2008

Professional Development in Instructional Methodology

University of Kentucky Faculty Fellows Program (Cohort 6 – 2016 to 2017 academic year)

Undergraduate Student Research Mentorship

Eaton, D. 2016. The effect of silvicultural gap size on the growth rate of individual trees in a mixed broadleaf forest. Poster presented at the University of Kentucky Showcase of Undergraduate Scholars. April 27, 2016

Undergraduate Organization Advising

Spring 2015 to present: Faculty advisor to the University of Kentucky Forestry Club and Society of American Foresters Student Chapter

Student Academic Advising

2019-2020: nine forestry students

2018-2019: four forestry students

2017-2018: one forestry student

2014-2015: two forestry students

2013: Spring advising, one forestry student

2012: Summer advising, one forestry student

2009: Summer advising, one forestry student

PRESENTATIONS AND CONSULTATIONS

† Indicates presenter

Underline indicates graduate student or technician who participated under my supervision

Invited Presentations (17)

Lhotka, J.M.[†] and Daniel C. Dey. Dynamics Influencing the Future of the White Oak Resource. Society of American Foresters National Convention, Friday Focus On, The White Oak Partnership. November 1, 2020. Louisville, KY.

Lhotka, J.M.[†] White oak silvicultural research post-conference field tour at Berea College Forest. Southern Forest Tree Improvement Committee (SFTIC) 2019. June 3-6, 2019, Lexington, KY.

Lhotka, J.M.[†], J.W. Stringer, J.M. Craig, and C.P. Patterson. Application of midstory removal to enhance oak regeneration potential within uniform and irregular shelterwood systems. Oak Symposium: Sustaining Oak Forests in the 21st Century through Science-based Management. October 24-26, 2017, Knoxville, TN

Lhotka, J.M.[†] Disturbance dynamics in upland oak forests with specific reference to the charcoal iron industry. 36th Annual Central States Forest Soils Workshop. October 12, 2016. Aurora, KY

Lhotka, J.M.[†] Forest community patterns and regeneration ecology of oak-dominated forests within Land Between the Lakes. 36th Annual Central States Forest Soils Workshop. October 11, 2016. Aurora, KY

Lhotka, J.M.[†] Advanced woodland management practices. University of Kentucky Forestry Extension, Woodland Owners Short Course. August 15, 2015. Versailles, KY

Lhotka, J.M.[†] Formulating an expanding-gap silvicultural system to address oak regeneration issues in the Central Hardwood Forest Region. University of Washington, School of Environmental and Forest Sciences, Advanced Silviculture Seminar (SEFS 526). April, 2 2015. Seattle, WA (via video conference)

Lhotka, J.M.[†] Forest edge effects on oak regeneration in gap-based silvicultural systems. Eastern Kentucky University, Department of Biology Seminar Series. February 13, 2015. Richmond, KY

Lhotka, J.M.[†] Forest edge effects on oak regeneration in gap-based silvicultural systems. University of Kentucky Department of Biology, Eco-Lunch Seminar Series. September 5, 2014. Lexington, KY

Lhotka, J.M.[†] Vegetation management and soils (1945 to 1975): Silvicultural systems. Priest River Experimental Forest Centennial Celebration. October 7, 2011. Priest River, ID

Lhotka, J.M.[†] Wood energy harvesting and woodlands – Costs and benefits for woodland owners. Biomass Harvesting in Kentucky Forestry Extension Workshops. Three presentations given on July 12, 13, and 14, 2011 in Princeton, London, and Morehead, KY, respectively

Lhotka, J.M.[†] Faster timber cruising using point double sampling. Association of Consulting Foresters Kentucky Chapter, Spring Continuing Education Program. April 28, 2011. Lexington, KY

Lhotka, J.M.[†] Management of oak in Kentucky. Conducted two field tours for the Association of Consulting Foresters of America, Inc. National Conference. June 29, 2010

Lhotka, J.M.[†] Unintended consequences of biomass harvesting. Kentucky-Tennessee Chapter of the Society of American Foresters Winter Meeting. January 28, 2010. Lexington, KY

Lhotka, J.M.[†] Predicting understory light transmittance and hardwood seedling growth across a canopy structure gradient. University of Missouri, Forestry Graduate Student Association seminar. October 3, 2008. Columbia, MO

Lhotka, J.M.[†] Soil scarification to improve oak establishment. Indiana Society of American Foresters, 2008 Summer Meeting. August 26, 2008. Columbus, IN

Lhotka, J.M.[†] Soil scarification to improve oak establishment. Oak Regeneration and Management Professional Forestry Workshop hosted by University of Kentucky – University of Tennessee Cooperative Extension Partnership. October 3-4, 2007. Lexington, KY

Oral Presentations (25)

Hackworth, Z. J.[†], J.M. Lhotka, J.J. Cox, C.D. Barton, and M.T. Springer. First-year vitality of reforestation plantings in response to herbivore exclusion on reclaimed Appalachian surface-mined land. Annual Meeting of the Kentucky Chapter of the Wildlife Society, Cadiz, KY, United States. 2018.

Lhotka, J. M.[†] Examining growth relationships in *Quercus* stands: An application of individual-tree models developed from long-term thinning experiments. 21st Central Hardwood Forest Conference. Bloomington, IN, May 15, 2018.

Patterson, C. P.[†], **J.M. Lhotka**, and J.W. Stringer. Initial understory response to gap-based regeneration methods for mature upland oak forests. 21st Central Hardwood Forest Conference. Bloomington, IN, May 15, 2018.

Dement, W.[†], **J.M. Lhotka**, C.D. Barton, J.W. Stringer. An investigation of tree growth and colonization on a 19 year-old forestry reclamation site. National Association of Abandoned Mine Land Programs Conference, Lexington, KY, September 24, 2017

Dement, W.[†], **J.M. Lhotka**, C.D. Barton, J.W. Stringer. An investigation of tree growth and colonization on a 19 year-old forestry reclamation site. Joint Conference of the American Society of Mining and Reclamation and Appalachian Regional Reforestation Initiative, Morgantown, WV, April 9, 2017

Lhotka, J.M.[†], R.A. Cunningham, and J.W. Stringer. Effect of silvicultural gap size on long-term species growth, stand yield, and economic value in upland *Quercus* dominated stands. Paper presented at the 10th IUFRO International Workshop on Uneven-aged Silviculture. Little Rock, AR, May 31 to June 2, 2016

Lhotka, J.M.[†] and J.W. Stringer. Forest edge effects on oak regeneration in gap-based silvicultural systems. Society of American Foresters National Convention. October 23-26, 2013. Charleston, SC

Lhotka, J.M.[†] and J.W. Stringer. Formulating an expanding-gap regeneration system for *Quercus* dominated stands. 9th North American Forest Ecology Workshop. June 17-20, 2013. Bloomington, IN

Lhotka, J.M.[†] Formulating an expanding gap system for *Quercus* dominated stands. University of Kentucky Department of Forestry seminar. November 26, 2012

Craig, J.M.[†], **J.M. Lhotka**, and J.W. Stringer. Response of naturally regenerated and underplanted white oak (*Quercus alba* L.) seedlings six years following midstory removal. 18th Central Hardwood Forest Conference. March 26-28, 2012. Morgantown, WV

Lhotka, J.M.[†] Wood energy harvesting and woodlands: Costs and benefits for Kentucky's forest resources. University of Kentucky Department of Forestry seminar. August 29, 2011

Brinks, J.S.[†], **J.M. Lhotka**, and C.D. Barton. Intensive management of a woody biofuel plantation on a reclaimed Appalachian surface mine. 8th North American Forest Ecology Workshop. June 19-23, 2011. Roanoke, VA

Lhotka, J.M.[†] Revisiting the 1960 size of opening oak regeneration study on Robinson Forest. University of Kentucky Department of Forestry seminar. September 13, 2010

Brinks, J.S.[†], **J.M. Lhotka**, and C.D. Barton. One year response of American sycamore (*Platanus Occidentalis*) and black locust (*Robinia Pseudoacacia*) to granular fertilizer applications on a reclaimed surface mine in Eastern Kentucky. 17th Central Hardwood Forest Conference. April 5-7, 2010. Lexington, KY

Parrott, D.L.[†], **J.M. Lhotka**, and J.W. Stringer. Effects of midstory removal on underplanted black oak (*Quercus velutina*) and white oak (*Quercus alba*) in Western Cumberland Plateau. 17th Central Hardwood Forest Conference. April 5-7, 2010. Lexington, KY

Lhotka, J.M.[†] and E.F. Loewenstein. A comparison of canopy structure measures for predicting height growth of underplanted seedlings. 15th Biennial Southern Silviculture Research Conference. November 17-20, 2008. Hot Springs, AR

Lhotka, J.M. and E.F. Loewenstein[†]. Diameter increment models for individual trees within upland oak stands managed using single-tree selection. 6th IUFRO Workshop of Uneven-aged Silviculture, Feasibility of Silviculture for Complex Stand Structures: Designing Stand Structures for Sustainability and Multiple Objectives. October 24-27, 2008. Shizuoka, Japan

Lhotka, J.M.[†] and E.F. Loewenstein. Individual tree based growing space model for quantitative management of uneven-aged stands. IFURO Natural Disturbance-Based Silviculture – Managing for Complexity conference. May 14-18, 2006. Rouyn-Noranda, Québec

Lhotka, J.M.[†] Silvicultural implications of forest canopy structure based light transmittance and seedling growth models. Southern Illinois University Department of Forestry seminar. April 12, 2006. Carbondale, IL

Loewenstein, N.J.[†], E.F. Loewenstein, **J.M. Lhotka** and B.J. Ostrom. Response of *Microstegium vimineum* and *Lonicera japonica* to continuous forest cover forestry practices. 7th annual Southeast Exotic Plant Pest Council symposium. May 3-5 2005. Birmingham, AL

Lhotka, J.M.[†] and E.F. Loewenstein. Initial response of underplanted yellow poplar and cherrybark oak seedlings to four levels of mechanical midstory removal. 13th Biennial Southern Silviculture Research Conference. February 28-March 4, 2005. Memphis, TN

Lhotka, J.M.[†] and J.J. Zaczek. The development of oak reproduction following soil scarification – Implications in riparian forest management. 13th Central Hardwood Forest Conference. April 1-3, 2002. Champaign, IL

Lhotka, J.M.[†] and J.J. Zaczek. Use of soil scarification to enhance oak regeneration in a mixed-oak bottomland forest of southern Illinois. 11th Biennial Southern Silviculture Research Conference. March 19-22, 2001. Knoxville, TN

Lhotka, J.M.[†] and J.J. Zaczek. The enhancement of oak regeneration through the use of mechanical incorporation of acorns in a mixed-oak upland forest in southern Illinois. 62nd Association of Southeastern Biologist annual meeting. April 4-7, 2001. New Orleans, LA

Lhotka, J.M.[†] and J.J. Zaczek. The use of soil scarification to enhance oak regeneration: Five-year results. 61st Association of Southeastern Biologist annual meeting. April 5-7, 2000. Chattanooga, TN

Poster Presentations (15)

Dement, W.[†], **J.M. Lhotka**, C.D. Barton, J.W. Stringer. Effect of grading on productivity of high-value tree species in Appalachian surface mines. 19th Biennial Southern Silviculture Research Conference, Blacksburg, VA, March 13, 2017

Dement, W.[†], **J.M. Lhotka**, C.D. Barton, J.W. Stringer. Effect of grading on productivity of high-value tree species in Appalachian surface mines. 2016 Tracy Farmer Institute for Sustainability and the Environment Forum, Lexington, KY, December 1, 2016

Dement, W.[†], **J.M. Lhotka**, C.D. Barton, J.W. Stringer. Effect of grading on productivity of high-value tree species in Appalachian surface mines. Society of American Foresters National Convention. Madison, WI, November 2, 2016

Patterson, C.P.[†], **Lhotka, J.M.** and J.W. Stringer. Initial understory response to gap-based regeneration methods for mature upland oak forests. 18th Biennial Southern Silvicultural Research Conference. March 2-5, 2015. Knoxville, TN

Lhotka, J.M.[†] and J.W. Stringer. Formulating an expanding-gap regeneration system for *Quercus* dominated stands. Society of American Foresters National Convention. October 24-27, 2012. Spokane, WA

Shaffer, J.D.[†], S.K. Gleason, J.J. Cox, and **J.M. Lhotka**. The influence of grass competition and herbivory on native hardwood seedling establishment in the Inner Bluegrass of Kentucky. 97th Annual Ecological Society of America meeting. August 5-10, 2012. Portland, OR

Craig, J.M.[†] and **J.M. Lhotka**. Using the dendrochronology program library (dplR) to document the influence of environmental conditions and human disturbance on tree growth in a Kentucky forest. 18th Central Hardwood Forest Conference. March 26-28, 2012, Morgantown, WV

Parrott, D.L.[†], **J.M. Lhotka**, J.W. Stringer. Impact of ice damage on overstory canopy structure and oak reproduction established following midstory removal. 16th Biennial Southern Silviculture Research Conference. February 14-17, 2011. Charleston, SC

Brinks, J.S.[†], **J.M. Lhotka**, and C.D. Barton. Biomass accumulation in black locust and American sycamore on reclaimed surface mines in eastern Kentucky. University of Kentucky Graduate Student Interdisciplinary Conference. April 3, 2009. Lexington, KY

Lhotka, J.M.[†], M.R. Saunders, J.M. Kabrick, D.C. Dey. Regenerating oak dominated forests using irregular, gap-based silvicultural systems. 15th Biennial Southern Silviculture Research Conference. November 17-20, 2008. Hot Springs, AR

Lhotka, J.M. and J.J. Zaczek[†]. 2006. Scarification seeding of oak: Reproduction in three case studies. IUFRO Advances in Principles and Practices of Oak Silviculture and Genetics. September 24-27, 2006. Stevens Point, WI

Rawls, R.P.[†], **J.M. Lhotka**[†], E.F. Loewenstein, J.M. McDaniel, and M.F. Smidt. Stakeholder preferences among various forest management regimes at the wildland-urban interface. Emerging Issues along Urban/Rural Interfaces: Linking Science and Society conference. March 13-16, 2005. Atlanta, GA

Lhotka, J.M.[†], J.J. Zaczek, and R.T. Graham. The influence of soil scarification on oak reproduction: Review and management recommendations. Upland Oak Ecology Symposium: History, Current Conditions, and Sustainability. October 7-10, 2002. Fayetteville, AR

Graham, R.T.[†], T.B. Jain, and **J.M. Lhotka**. Physically and biologically enhancing residual decomposition. Joint Fire Sciences Program Principal Investigator Workshop. March 11-14, 2002. San Antonio, TX

Graham, R.T.[†], T.B. Jain, and **J.M. Lhotka**. Structural and fuel treatments for restoring old-growth ponderosa pine forests in the Interior West. Joint Fire Sciences Program Principal Investigator Workshop. March 11-14, 2002. San Antonio, TX

Consultations (7)

November 9, 2017: Field day on the Daniel Boone National Forest (London Ranger District) to discuss oak silviculture as part of public involvement field tour for a proposed research-based vegetation management project

September 26, 2017: Day-long field visit to discuss white oak sustainability with three partnering companies Central Kentucky Forest Management, Elk Cave Timber, and Irish Distillers

August, 20 2013: Day-long field visit to Fort Knox Military Reservation to discuss upland hardwood management strategies with Department of Defense forestry staff and a consultant with Central Kentucky Forest Management

April 22, 2013: Discussed integration of forest inventory software and growth and yield models with Fogarty Forestry, LLC, Consultant from West Newbury, VT

November 18, 2009: Discussed gap-based regeneration approaches for upland oak stands with Kentucky Natural Lands Trust, Forest Steward from Berea, KY

April 6, 2009: Discussed techniques for reforestation of reclaimed surface mines with Chevron Mining Inc., Environmental Engineer from Berry, AL

October 23, 2008: Discussed methods for regenerating oak on productive sites in eastern Missouri with Missouri Department of Conservation, Resource Forester from Perry County, MO

SERVICE AND RECOGNITION

Editorships, Review Panels, Reviewer Service

Journal Reviewer: Canadian Journal of Forest Research, European Journal of Forest Research, Forest Ecology and Management, Forest Science, Forestry Chronicle, Journal of Forestry, Journal of the Torrey Botanical Society, New Forests, Northern Journal of Applied Forestry, Southern Journal of Applied Forestry

Associate Editor, Annals of Forest Science, March 2018 to present

Guest Associate Editor, Forest Science, 2014-2019

Guest Associate Editor, Southern Journal of Applied Forestry, 2011

Co-Editor, 2010, Proceedings of the 17th Central Hardwood Forest Conference

Reviewed silviculture proposal for the McIntire-Stennis Cooperative Forestry Program at Southern Illinois University, 2009

Reviewed manuscripts for Proceedings of 16th Central Hardwood Forest Conference, 2007

Reviewed pre-proposals (18) and full-proposals (4) for the Southern Forest Research Partnership (SFRP) grant program, 2007

Reviewed proposals (11) for University of Kentucky, Precision Resource Management grant program, 2007

Professional Leadership and Service

Society of American Foresters (SAF) national Committee on Accreditation

Committee Chair: January 1, 2018 to December 31, 2019

Member: January 1, 2015 to present

Society of American Foresters (SAF) Eastern Kentucky Chapter, Chair Elect (2016), Chair (2017)

Affiliate Faculty Appointments

Affiliate Associate Professor, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL, November 2010 to present

Conference Planning

Co-Chair of organizing committee for the 2019 Society of American Foresters Silviculture Instructors Field Tour. Kentucky and Indiana, October 27-30, 2019

Member of organizing committee for Bioenergy Symposium associated with 2011 Kentucky Agricultural Summit. Conference held in Louisville, KY on November 17, 2011

Coordinator of meeting titled “Opportunities and Challenges of Woody Biomass for Meeting Kentucky’s Bioenergy Needs”. Event held in Lexington, KY on February 24, 2011

Co-Chair of the 17th Central Hardwood Forest Conference committee. Conference held in Lexington, KY on April 5 to 7, 2010

Professional Affiliations

Society of American Foresters (SAF)

Working Group D2 (Silviculture)

Silviculture Instructors Subgroup of Working Group D2

Media Highlights

USDA Forest Service People, Places, and Things May 3, 2013 newsletter highlighted UK forestry students’ visit to Coweeta Hydrologic Laboratory and Nantahala and Chattahoochee-Oconee National Forests as part of J.M. Lhotka’s Silvicultural Practices (FOR 358) field course

Pontiac Daily Leader, “Condition of Woods Studied”, July 26, 2012 by Luke Smucker, <http://www.pontiacdailyleader.com/article/20120726/NEWS/307269945>

University of Kentucky Cooperative Extension Service’s “Growing Kentucky” TV program, HP Technology Grant, April 2009

Awards and Honors

Outstanding Alumni Mid-Career Award, Southern Illinois University Carbondale, College of Agricultural Sciences, February 22, 2019

A Teacher Who Made a Difference, University of Kentucky, College of Education, April 26, 2014

Outstanding Young Alumnus Award, Southern Illinois University, Department of Forestry, 2007

The James Floyd Goggans Graduate Fellowship, For Excellence in Forest Biology Study and Research, 2005

USDA Certificate of Merit, Outstanding Contributions to National Fire Plan Studies, 2001

Outstanding Graduate Student Paper, 11th Biennial Southern Silviculture Research Conference, 2001

Dean's Certificate of Distinction, Southern Illinois University, College of Agriculture, 1997

Dean's List, Southern Illinois University, 1995-1996, 1996-1997, 1997-1998, 1998-1999 academic years

University Committee Service

University of Kentucky - College of Agriculture, Food, and Environment

Member: Undergraduate Curriculum Committee, August 2016 to present

Member: Faculty Council, May 2015 to August 2017

Member: Precision Resource Management Committee, April 2009 to February 2010

University of Kentucky - Department of Forestry and Natural Resources

Member: Chair's Advisory Committee, December 2017 to Present

Chair: Undergraduate Program Committee, August 2016 to Present (*Member:* August 2010 to Present)

Member: Research Committee, August 2010 to Present (*Co-Chair* August 2014 to August 2016)

Member: Seminar Committee, August 2011 to Present (*Chair* August 2011 to December 2014)

Member: Graduate Program Committee, August 2007 to July 2009, August 2011 to July 2013, August 2015 to July 2017

Chair: Forest Management faculty search committee, December 2019 to present

Chair: Tree Physiology faculty search committee, April 2017 to February 2018

Chair: Forest Economics and Policy faculty search committee, December 2015 to June 2016

Chair: Forest Landscape Ecology faculty search committee, December 2013 to May 2014

Other Service Activities

Forester and Naturalist badge educational programs for Cub Scout group, October 6 and 22, 2015, Lexington, KY

Lexington-Fayette Urban County Government Reforest the Bluegrass program
Coordinator to recruit and train UK student volunteers, 2009, 2010, 2011
Volunteer tree planting crew leader, April 2009, 2011

Faculty Marshal, Spring 2011 University of Kentucky graduation ceremony

PROFESSIONAL DEVELOPMENT

Professional Meetings Attended (45)

Society of American Foresters National Convention. Louisville, KY, October 31, 2019 – November 2, 2019

Society of American Foresters National Convention. Portland, OR, October 4, 2018 - October 5, 2018

21st Central Hardwood Forest Conference. Bloomington, IN, May 15, 2018 - May 16, 2018

Society of American Foresters National Convention. Albuquerque, NM, November 16-18, 2017

Oak Symposium: Sustaining Oak Forests in the 21st Century through Science-based Management. October 24-26, 2017, Knoxville, TN

2017 UTIA and UK Grant Writers Workshop. March 16-17, 2017, Knoxville, TN

Society of American Foresters National Convention. Madison, WI, November 2 to 5, 2016

10th IUFRO International Workshop on Uneven-aged Silviculture. Little Rock, AR, May 31 to June 2, 2016

10th Biennial Conference on University Education in Natural Resources. March 13-15, 2014. Auburn, AL

Society of American Foresters National Convention. October 24-25, 2013. Charleston, SC

Society of American Foresters Silviculture Instructors Field Tour “Silviculture Matters: Silviculture from the Appalachian Mountains to the Atlantic Coastal Plain”. October 19-23, 2013

9th North American Forest Ecology Workshop. June 17-20, 2013. Bloomington, IN

Central Appalachian Early-Career Scientist Retreat. May 1-3, 2013. University of Kentucky Robinson Forest, Clayhole, KY

Society of American National Convention. October 24-27, 2012. Spokane, WA

Society of American Foresters Silviculture Instructors Field Tour of Western Montana and Northern Idaho. October 20-24, 2012

Kentucky-Tennessee Chapter of the Society of American Foresters Winter Meeting. January 25-27, 2012. Lexington, KY

2011 Missouri Bioenergy Tour, co-sponsored by Kentucky Governor’s Office of Agricultural Policy and Energy and Environment Cabinet. May 3-5, 2011

16th Biennial Southern Silviculture Research Conference. February 14-17, 2011. Charleston, SC

Society of American Foresters National Convention. October 28, 2010. Albuquerque, NM

Society of American Foresters Silviculture Instructors Field Tour of Northern New Mexico. October 24-27, 2010. Albuquerque, NM

Association of Consulting Foresters of America, Inc. National Conference. June 28-29, 2010. Louisville, KY

17th Central Hardwood Forest Conference. April 5-7, 2010. Lexington, KY

Invasive Species Conference. December 12-14, 2008. Lexington, KY

15th Biennial Southern Silviculture Research Conference. November 17-20, 2008. Hot Springs, AR

Society of American Foresters National Convention. November 6, 2008. Reno, NV

Society of American Foresters Silviculture Instructors Field Tour of the Sierra Nevada Mountains and Tahoe Basin. November 3-5, 2008. Reno, NV

16th Central Hardwood Forest Conference. April 8-9, 2008. Lafayette, IN

Society of American Foresters National Convention. October 24-26, 2007. Portland, OR

Society of American Foresters Silviculture Instructors Field Tour of Western Oregon and Washington. October 21-23, 2007

Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains. November 13-14, 2007. Knoxville, TN

USDA/CSREES Grantsmanship Workshop. October 9-10, 2007. Washington, DC

Southern Hardwood Forestry Group field tour and meeting. April 2007. Selma, AL

Forest Inventory and Analysis data training workshop. March 1, 2007. Athens, GA

14th Biennial Southern Silviculture Research Conference. February 26-March 1, 2007. Athens, GA

IFURO Natural Disturbance-Based Silviculture: Managing for Complexity conference. May 14-18, 2006, Rouyn-Noranda, Québec

Emerging Issues along Urban/Rural Interfaces: Linking Science and Society conference. March 13-16, 2005, Atlanta, GA

13th Biennial Southern Silviculture Research Conference. February 28 - March 4, 2005. Memphis, TN

Upland Oak Ecology Symposium: History, Current Conditions, and Sustainability. October 7-10, 2002, Fayetteville, AR

13th Central Hardwoods Forest Conference. April 1-3, 2002. Champaign, IL

11th Biennial Southern Silviculture Research Conference. March 19-22, 2001. Knoxville, TN

62nd Association of Southeastern Biologist Annual Meeting. April 4-7, 2001. New Orleans, LA

61st Association of Southeastern Biologist Annual Meeting. April 5-7, 2000. Chattanooga, TN

60th Association of Southeastern Biologist Annual Meeting. April 14-16, 1999. Wilmington, NC

Society of American Foresters National Convention. September 11-15, 1999. Portland, OR

Jacob Muller

Jacob J. Muller

University of Kentucky
College of Food, Agriculture, and Environment
Department of Forestry and Natural Resources
204 T.P. Cooper Building, Lexington, KY 40546
Email – jacob.muller@uky.edu

EDUCATION

- Ph.D. University of Minnesota – Twin Cities, MN** **2014-2019**
Natural Resource Science and Management, Silviculture focus
Advisor – Dr. Linda Nagel Co-Advisor – Dr. Brian Palik
Dissertation title – *Vegetation Response to Adaptive Silviculture Treatment Aimed at Climate Change in Northern Minnesota, USA*
- M.S. University of Montana – Missoula, MT** **2011-2014**
Forest Management, Silviculture focus
Advisor – Dr. John Goodburn
Thesis title – *Strategies to Initialize Landscape-Scale Vegetation Maps from FIA Data to Enhance Resolution of Species-Size Cohort Representation in Forest Modeling*
- B.S. University of Montana – Missoula, MT** **2004-2007**
Forest Resource Management, GIS Certificate

EXPERIENCE

- Assistant Professor of Hardwood Silviculture and Forest Operations Extension** **2020-present**
University of Kentucky, Department of Forestry and Natural Resources
College of Food, Agriculture and Environment, Lexington, KY
- Graduate Research Assistant** **2014-2019**
University of Minnesota, Department of Forest Resources
College of Food, Agriculture, and Natural Resources, St. Paul, MN
Research Topic: Adaptive Silviculture for Climate Change (ASCC)
- Research Technician** **2010-2013**
Rocky Mountain Research Station, Forest & Woodland Ecosystems
USDA Forest Service, Missoula, MT
- Graduate Research Assistant** **2011-2012**
University of Montana, Department of Forest Management,
College of Forestry and Conservation, Missoula, MT
Research Topic: Modeling forest processes at multiple scales
- Research Technician – Crew Leader** **2010-2011 (Summers)**
Inland Northwest Growth and Yield Cooperative (INGY) University of Montana,
Missoula, MT
- Research Technician** **2007-2009 (Summers)**
Inland Northwest Growth and Yield Cooperative (INGY) University of Montana,
Missoula, MT

EXPERIENCE (continued)

Forestry Technician

2006

Idaho Department of Lands, Timber Sales & Forest Management, Saint Maries, ID

RESEARCH & TEACHING INTERESTS

Silviculture; adaptive silviculture and forest management; forest stand dynamics; regeneration forestry; forest measurements and statistics; species range shifts and potential suitable habitats; forest growth, development, and yield modeling; adaptive capacity in the context of environmental and climatic changes

TEACHING EXPERIENCE

Course Co-Developer

2019

F 572 Advanced Silviculture (Online)
Colorado State University, Forest and Rangeland Stewardship
Warner College of Natural Resources, Fort Collins, CO

Instructor and Course Developer (4 credits, 12 to 16 students)

2017-2019

F 526 Multiple Resource Silviculture (Online)
Colorado State University, Forest and Rangeland Stewardship
Warner College of Natural Resources, Fort Collins, CO

Instructor (4 credits, 41 Students)

2013

FOR 349 Silvicultural Practices
University of Montana, Department of Forest Management
College of Forestry and Conservation, Missoula, MT

Graduate Teaching Assistant (3 Credit Hours, 53 Students)

2012

FOR 202 Forest Mensuration
University of Montana, Department of Forest Management
College of Forestry and Conservation, Missoula, MT

PUBLICATIONS

Muller, J. J., Nagel, L.M., & Palik, B.J. (2019). Forest adaptation strategies aimed at climate change: Assessing the performance of future climate-adapted tree species in a northern Minnesota pine ecosystem. *Forest Ecology and Management*, 451, 117539. [10.1016/j.foreco.2019.117539](https://doi.org/10.1016/j.foreco.2019.117539)

Muller, J.J. (2014). Developing strategies to initialize landscape-scale vegetation maps from FIA data to enhance resolution of individual species-size cohort representation in the landscape disturbance model, SIMPPLLE. *University of Montana* 4361.

Muller, J. J., Nagel, L.M., Russell, M.B., & Palik, B.J. Assessing adaptive silvicultural approaches in northern Minnesota using the Forest Vegetation Simulator. *Canadian Journal of Forest Research* . (Under Review)

Muller, J. J., Nagel, L.M., & Palik, B.J. Can Silvicultural Treatments Aimed at Climate Change Adaptation Promote Favorable Microsite Conditions? *Agriculture and Forest Meteorology*. (In Preparation)

Muller, J. J., Nagel, L.M., Russell, M.B., & Palik, B.J. Developing species climate-sensitivities in the Forest Vegetation Simulator for the eastern U.S. (In preparation)

EXTRAMURAL RESEARCH

Muller, J.J., Thomas, W.R., & Snyder, P. 2020-2021. Developing Innovative Online Tools to Recruit and Educate Woodland Stewards and Future Tree Farmers. USDA U.S. Forest Service. Forest Stewardship Grant. \$30,000. J.J. Muller, PI.

PRESENTATIONS

Muller, J.J. Nagel, L.M., & Palik, B.J. (July 2019) Forest response to adaptive silviculture treatment in northern Minnesota: assessing variations in below-canopy microclimate conditions. North American Forest Ecology Workshop, Flagstaff, AZ.

Muller, J.J., Nagel, L.M., & Palik, B.J. (October 2018) Assessing the Performance of Eight Future Climate-Adapted Species in Northern Minnesota. Society of American Foresters National Convention. Portland, OR.

Muller, J.J., Nagel, L.M., & Palik, B.J. (January 2018) Seedling Response to Adaptive Silviculture Treatments Aimed at Climate Change in Northern Minnesota (Flash Talk). Sustainable Forests Education Cooperative, Forestry and Wildlife Research Review. Cloquet, MN.

Muller, J. J., Nagel, L.M., & Palik, B.J. (October 2017) Assessing Seedling Response to Adaptive Silviculture Treatments in Red Pine Forests of Northern Minnesota. Society of American Foresters National Convention. Albuquerque, NM.

Muller, J.J. (October 2017) Short- and Long-term Research Efforts on the Adaptive Silviculture for Climate Change Project in Northern Minnesota. Silviculture Instructors Tour. Chippewa National Forest, MN.

Muller, J.J. & Nagel, L.M. (July 2017) Assessing Seedling Response to Adaptive Silviculture Treatments in Red Pine Forests of Northern Minnesota. National Silviculture Workshop. Flagstaff, AZ. (poster presentation)

Muller, J. J. & Goodburn, J.M. (October 2015) Enhancing Resolution of Landscape Scale Vegetation Projections to Characterize Species-Size Cohort Dynamics. Society of American Foresters Annual Conference. Baton Rouge, LA. (poster presentation)

INVITED SPEAKER

NR 326 Forest Vegetation Management. Colorado State University. (September 2019) Addressing future challenges in forest management through an adaptive silviculture lens. Fort Collins, CO. *Guest lecturer.*

Colorado Forest Research Institute – Science Friday. (March 2019). Forest response to adaptive silviculture treatment: assessing variations in below-canopy microclimate conditions. Fort Collins, CO. *Guest Speaker.*

NR 326 Forest Vegetation Management. Colorado State University. (October 2018) Adaptive Management aimed at Future Environmental Change. Fort Collins, CO. *Guest lecturer.*

Forest and Rangeland Stewardship Departmental Seminar Series. Colorado State University. (February 2018) Seedling Response to Adaptive Silviculture Treatments Aimed at Climate Change in Northern Minnesota. Fort Collins, CO. *Guest speaker.*

NR 326 Forest Vegetation Management. Colorado State University. (October 2017) Assessing Forest Response to Adaptive Silviculture Treatments in the Face of an Uncertain Future. Fort Collins, CO. *Guest lecturer.*

INVITED SPEAKER (Continued)

FNRM 8107 Forest Resources - Graduate Student Seminar. University of Minnesota. (April 2016)
From Macroclimate to Microclimate: An Assessment of Adaptive Silviculture Strategies
Aimed at Climate Change Across Multiple Forest Types. St. Paul, MN. *Guest speaker.*

GEOG8270 The Art of Scientific Presentations. University of Minnesota. (April 2016) Adaptive
Silviculture: What is it and why should we care? *Guest speaker.*

GRAD8101 Teaching in Higher Education. University of Minnesota. (March 2016) Translation of
Forest Science in an Approachable Way that Effectively Communicates Critical and Complex
Topics. Minneapolis, MN. *Guest speaker.*

FOR 447 Advanced Silviculture. University of Montana (October 2012) Simulating Landscape Scale
Patterns and Processes to Aid in Forest Management Decision-making. Missoula, MT. *Guest lecturer.*

TECHNICAL TRAINING

GIS Certification

Forest Vegetation Simulator (FVS) Training

Wilderness EMT- 16-week course

ENGAGEMENT / PROFESSIONAL ORGANIZATIONS

University of Kentucky (Current Affiliations)

2020 – Present – Society of American Foresters (Kentucky/Tennessee)

2020 – Present – Kentucky Woodland Owners Association

2020 – Present – Association of Natural Resource Extension Professionals

Colorado State University (2016-2019)

2016 – 2019 – Society of American Foresters (Colorado/Wyoming)

2016 – 2019 – Ecological Society of American (ESA)

2017 – 2019 – Forest Adaptation Journal Club (Founder and Member)

University of Minnesota (2014-2019)

2014 – 2019 – Society of American Foresters (UMN Chapter)

2014 – 2019 – Natural Resource Association of Graduate Students (NRAGS)

University of Montana (2005-2007 & 2011-2014)

2005 – 2007 – Forestry Club

2010 – 2014 – Society of American Foresters (UM Student & Missoula Chapters)

Silviculture Instructors Tour

2012 – Western Montana, participant and aide

2015 – South Louisiana, participant

2016 – Minnesota-Wisconsin, participant and aide

National Advanced Silviculture Program (NASP)

2014 – Cloquet, MN. Teaching assistant, adaptive forest management section

2015 – Cloquet, MN. Teaching assistant, field tour

Poster Presentation Judging

2014 – Annual Meeting of the Northwest Scientific Association. Missoula, MT

2018 – Front Range Student Ecology Symposium. Fort Collins, CO

Thomas Ochuodho

CURRICULUM VITAE

A. BIODATA

NAME	Thomas Ochuodho, PhD (Forest Economics, Management and Policy)
Contact Address	University of Kentucky Department of Forestry 208A Thomas Poe Cooper Building 730 Rose Street Lexington, KY 40546-0073 Office Phone: 859-257-1770 Email: thomas.ochuodho@uky.edu Webpage / Publications

SUMMARY

Experience: Over **20 years** of cumulative experience in integrated natural resource management in collaborative multi-institutional programs/projects particularly in forestry, agriculture, climate change, renewable energy, integrated land use and environmental management, sustainable development, rural community livelihood systems, sustainable use and management of natural resources, international trade, rural energy programs/projects; teaching, editorial and review work.

Publications: **25** peer-reviewed journal articles and **5** under review; **5** under preparation; several conference presentations; and working/technical papers.

Selected Graduate-Level Courses Completed: Resource Economics, Forest Economics, Forest Management, Forest Policy and Law; Econometrics, Cost-Benefit Analysis, Operations Research, Micro/Macro-economic Theory, Agricultural Statistics.

GPA at PhD level: **3.8/4.2**

Software: GAMS, IMPLAN, R, STATA, SHAZAM, SPSS, MS Office applications.

Modeling: Computable General Equilibrium (CGE); Econometric Analyses

Personal attributes: Work well as an individual, as part of a team and as a team leader.

Professional Memberships: International Society of Forest Resource Economics. International (ISFRE) since November 1, 2016; The Society of American Foresters (SAF). since November 1, 2016.

B. EDUCATION

2013	<p>Doctor of Philosophy (Ph.D.) (Forestry – Economics, Management and Policy) Faculty of Forestry and Environmental Management University of New Brunswick Canada.</p> <p>Dissertation title: “Economic Impacts of Climate Change in Forest and Agriculture Sectors in Canada: A Computable General Equilibrium Analysis”</p> <p>Committee members: Dr. Van Lantz (Advisor), Dr. Donald Floyd, Dr. Rajendra Chaini.</p> <p>Broadly, the study considered changes in total agricultural crop output and timber supply impacts arising from forest fires, pest outbreaks, and net primary productivity in the forest sector and, both as influenced by climate change. Economic impacts of these changes were projected up to 2080 along various IPCC climate change scenarios and economic growth paths using dynamic global multi-regional CGE models. Cost-benefit analysis of various adaptation measures was also evaluated.</p>
2006	<p>Master of Philosophy in Forestry (Economics and Management major) Moi University, Eldoret, Kenya; School of Natural Resources Management Forestry and wood science department</p>
	<p>Thesis title: “Factors Affecting Wood Resource Management and Exploitation in Drylands: A case study of Elangata Wuas, Kajiado, Kenya”</p>
1997	<p>B.Sc. (Forestry), Second Class Honors, Upper division (Best Student overall). Moi University, Eldoret, Kenya; Forestry department</p>
	<p>Dissertation title: “Effect of log procurement, Log handling and Log Processing costs on the profitability of processing different log sizes”</p>

C. SHORT/CERTIFICATE COURSES

July 2018	<p>Grantsmanship Workshop in collaboration with the University of Tennessee Ag Research and Virginia Tech. Practical and conceptual aspects to grant writing proposals for NSF and USDA grant applications. Grant Writers’ Seminars and Workshops, LLC. Knoxville, Tennessee.</p>
June 2017	<p>National Science Foundation (NSF) Grants Conference. Current issues at NSF: the state of current funding; new and current policies and procedures; and pertinent administrative issues. Louisville, Kentucky.</p>
June 2017	<p>Unconscious Bias. Unconscious Bias is the automatic stereotypes or attitudes we hold about groups or people. These biases can be held for or against those most like us and most different from us. This course explore how unconscious biases are demonstrated through our thoughts and workplace behaviors, which have a great impact on the services</p>

	faculty provide to students, staff and one another. University of Kentucky, Lexington, Kentucky.
May 2017	Energy and Environmental CGE Modeling with GAMS. Intensive Course at Advanced Level: Modeling Energy and Greenhouse Gas Emissions; Constructing and Implementing Large-Scale, Dynamic, Multi-Sectoral General Equilibrium Models for Energy and Environmental Policy Analysis. EcoMod Modeling School . Washington, DC.
April 2017	Strategic Grant Writing. Course Module Covered: Comprehensive effective grant development techniques, including: finding best fit funding sources, creating innovative programs, and planning for funding sustainability. Institute for Strategic Funding Development . University of Louisville, Louisville, Kentucky.
February 2017	Human Research Course for Social/Behavioral Investigators and Key Personnel. Course Module Covered: Avoiding Group Harms - U.S. Research Perspectives; Cultural Competence in Research; Belmont Report and CITI Course Introduction; History and Ethical Principles; Defining Research with Human Subjects; The Federal Regulations; Assessing Risk; Informed Consent; Privacy and Confidentiality; Research with Prisoners; Research with Children; Conflicts of Interest in Research Involving Human Subjects; Unanticipated Problems and Reporting Requirements in Social and Behavioral Research. Course offered by Collaborative Institutional Training Initiative (CITI Program) through University of Kentucky.
December 2016	Introductory Economic Impacts Analysis Using IMPLAN® Software. Social versus Economic Impacts, Industries versus Commodities, and Backwards and Forward Linkages; Distinguishing Activities, Events and Scenarios; Framing the Problem and Activity Level; Margins and Local Purchase Percentage; Customizing Events; Spending Patterns; Effect of Assumptions on Study; A Good, Better, and Best Study; Net Impact Analysis; Advanced Modeling Techniques. IMPLAN Group LLC. Huntersville, North Carolina.
June 2016	Computational and Collaboration Skills for Synthesis Science. The Promise of Now: Computers, Internet, and the Web; CLI: Working on the command line; Working on a remote machine; Principles of Open Science; Introduction to R and RStudio; Code versioning - Introduction to git; Data modeling; Introduction to data wrangling with R; Metadata and Semantics; Introduction to Python; Using multiple Cores for your processing; Data preservation and scientific reproducibility; and Introduction to QGIS. Science for Nature and People Partnership (SNAPP), National Center of Ecological Analysis and Synthesis (NCEAS) at University of California, Santa Barbara.
January 2016	Train the Trainer: Classroom Presentation and Delivery. This course teaches how to prepare and deliver the classroom training session. Specifically, the course teaches how to prepare workable training objectives, convert them to lesson plans, support plans with appropriate

	audiovisual aids, prepare the classroom, deliver the material, control the classroom environment, handle difficult situations, assess learning, and evaluate the program. Auburn University Human Resource Development Course (TR300).
March 2007	Practical Techniques in Computable General Equilibrium (CGE) Modeling. EcoMod Modeling School . Washington, DC, USA.
May 2005	Writing Competitive Proposals for Donor Funding. Supported by African Forestry Research Network (AFORNET) and Kenya Forestry Research Institute (KEFRI). Nairobi, Kenya.
May 2004	Writing Funding Proposals and Communicating Results. Training of Trainers Supported by the European Union under the Auspices of the Tropical Biology Association and the National Museums of Kenya, Nairobi, Kenya.
September 2003	Scientific Writing and Publication Training. Supported by SIDA/SAREC through Research Program for Sustainable Use of Dryland Biodiversity in East Africa. National Museums of Kenya, Nairobi.
January-February 2001	Proposal Writing and Donor Fund Sourcing. Sponsored by International Union of Forestry Research Organizations (IUFRO) at University of Nairobi in Partnership with the Kenya Forestry Research Institute (KEFRI). Nairobi.

D. PROFESSIONAL EXPERIENCE AND ACHIEVEMENTS

November 2016 – Current: Assistant Professor, Department of Forestry and Natural Resources; **University of Kentucky.**

October 2015 – October 2016: Postdoctoral Fellow (Under [Dr. Janaki Alavalapati](#)) School of Forestry and Wildlife Sciences, **Auburn University.**

Dr. Janaki Alavalapati and I moved from Virginia Tech to Auburn University and continued working on same three projects:

- (1) Department of Energy-funded project on [U.S.-India Consortium for Development of Sustainable Advanced Lignocellulosic Biofuel Systems](#). My overall task is to conduct total and distributional economic impacts analysis of advanced biofuels using Computable General Equilibrium (CGE) models.
- (2) United States Department of Agriculture-funded project on [Assessing Socioeconomic Impacts of Forest Biomass Based Biofuel Development on Rural Communities in The Southern United States](#). My role in this project is to conduct region-wide distributional economic impact of biomass-based biofuel development using computable general equilibrium modeling analysis. Output of my work in both projects will guide public policy and private investors and land owners in decision making towards sustainability of biofuels industry in the United States.

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- (3) Science for Nature and People (SNAP)-funded project on [Integrating Natural Capital into System of National Accounts: A Case Study of Forestry and Wetland Landscapes in Rwanda](#). As the postdoc fellow in this project, my role is threefold: a) quantify the economic values of natural capital for integration in System of National Accounts; b) explore and identify economic tradeoffs associated with alternative natural resource management and policy options to support natural resource conservation and development planning; c) identify innovative financing mechanisms that encourage investment in natural capital.

January 2014 - September 2015: Postdoctoral Associate (Under [Dr. Janaki Alavalapati](#))
Department of Forest Resources and Environmental Conservation, [Virginia Tech](#).

2010 – 2013: Research Assistant

[Watershed Evaluation of Best Management Practices \(WEBs\): Black Brook Watershed Pilot Study Area, New Brunswick, Canada](#). A project supported by Agriculture and Agri-Food Canada (AAFC) under consortium of several Universities; Government and Research Institutions; Environmental, Farmer and Community Groups.

As the lead research assistant for the socio-economic analysis aspect of the project that encompassed three main areas of production (yield) function analysis; cost-benefit analysis of beneficial management practices; and whole farm enterprise analysis:

- Developed Just and Pope Model, which is a stochastic frontier production function for analysis of impacts of beneficial management practices on potato yield. One of the articles from this work was published in the [Journal of Soil and Water Conservation](#) where I am the lead author.
- Applied Just and Pope Production function to account for effects of climatic and non-climatic variables, beneficial management practices and their interactions on crop yields. An article from this study was published in [Regional Environmental Change](#) Journal where I am the lead author.

2008 – 2011: Graduate/Research Teaching Assistant.

I advised students on appropriate research topics and evaluated their work – assignments and exams.

2006 - 2009: Research Assistant

Faculty of Forestry and Environmental Management, University of New Brunswick, Canada.

Developed input-output (Social Accounting Matrix) database of Canadian provinces as trading partners with each other from Statistics Canada Database; and the United States and rest of the world using Global Trade Analysis Project ([GTAP 7](#)), Bureau of Economic Analysis ([BEA](#)) and other databases. From this developed a dynamic multi-regional Computable General Equilibrium (CGE) model to examine economic impacts of policy and market changes in forestry industries in Canada. This study was subset of a big study under the umbrella of a broader study on “**Market and institutional structures, economic welfare and global competitiveness of the Canadian forest industry**” supported by Sustainable Forest Management Network (SFMN) under consortium of several Universities, Government and Research Institutions, Environmental and Community Groups.

2005-2006: Research Scientist

Center for Biodiversity, National Museums of Kenya, Nairobi.

Provided overall socio-economic expertise to all research scientists and their research projects in the division of research and scientific affairs. This was in terms of research proposals formulations to

incorporate socio-economic aspects in multi-disciplinary projects and also on socio-economic data analysis and interpretation.

1998-2005: Assistant Program Coordinator and Research Fellow

Elangata Wuas Ecosystem Management Program (Funded by IDRC and Ford Foundation) National Museums of Kenya, Nairobi under consortium of Universities, Government and Research Institutions, Environmental and Community Groups. The main focus of the program was to develop alternative livelihood systems for local communities following declining per capita landholding, land tenure transformation, declining water resources, and erratic and adverse climatic trends.

Among the tasks accomplished:

Strategic tasks

- Formulated research proposals for donor funding and ensured their successful implementation for the on-going and newly developed activities.
- Prepared annual work plans and budget for the program in line with the guidelines prepared by the donors and partners and in consultation with the target communities.
- Identified policy, technical and management constraints to the achievement of program objectives and brought them to the attention of partners and the donors.
- Provided strategic guidance to the community micro-enterprise units in the management of their respective units.
- Identified and shared with partners, lessons and best practices emanating from the program and prepared related and other outreach materials.
- Ensured accountability, sustained relevance and performance of the program through timely and proactive monitoring and evaluation for the realization of the program goals.

Management tasks

- Identified and prioritized research and training needs in consultation and in support of the target communities.
- Organized annual meetings of the principal stakeholders and prepared them to participate effectively at the Regional Program Technical Advisory Committee meetings.
- Ensured appropriate linkages and synergies of the program to the existing on-going local and national and international initiatives and other potential programs.
- Assisted in preparing contractual documents and backstopping contractual activities, workshops, appraisals, seminars and field programs.
- Supported field program staff to prepare annual performance plans and thereafter monitor their implementation.
- Prepared quarterly and annual progress, technical and financial reports on the status of the implementation of program activities for the consideration by the program Technical Advisory Committee and the donors.

Program administrative support

- Provided overall administrative support to the Program Coordination and Implementation team which comprised, Program coordinator, collaborating Scientists, volunteers and partners.
- Ensured timely completion and submission of Program reports by partners and volunteers for the attention of the Program management.

- Facilitated dialogues and exchange of information between the Program Coordinator and the collaborating Scientists, volunteers and partners.
- Organized for logistical support to all the Program activities including workshops as necessary.
- Supported the Program team in preparation, packaging and presentation of Program information e.g. for workshops, meetings, newsletters.

January –November 1998: High School Biology Teacher – Gusii Highlights High School (Kenya).

- Taught Biology to grades 9-12
- Prepared, assisted and organized students for regional science congress competitions

E. PROFESSIONAL SKILLS

Programing, Modeling, and Software	Use and application of: <ul style="list-style-type: none"> • GAMS Software in CGE Modeling • IMPLAN Software for Input-Output Analysis • R Software in Trends Forecasting • STATA Software in Econometric Analyses • SHAZAM Software in Econometric Analyses • Remsoft (Woodstock) Optimization Software • LINDO Software for Management and Planning • QUICKSILVER Software for Investment Analyses • Linear Programing and General Modeling
Other skills and Personal Attributes	<ul style="list-style-type: none"> • Superior command of the English language (both spoken and written) • Work well as an individual, as part of a team and as a team leader with minimal supervision, self-motivated, innovative with outstanding organizational and inter-personal skills; ability to adjust to shifting goals and multi-task; capacity to work in difficult environment; strong work ethic and sense of humor.
Field Research	<ul style="list-style-type: none"> • Socio-economic Surveys

F. TEACHING, STUDENT MENTORSHIP AND SUPEVISION

Courses Taught

- FOR 280 Forest Resource Policy and Law (3 credits)
- FOR 320 Forest Valuation and Economics (3 credits)
- FOR 602 Renewable Natural Resources in a Global Perspective (Team-Taught)
- FOR 770: Forestry and Natural Resources Seminar (1 credits)
- FOR 781 Special Problems in Forestry (3 credits)
- FOR 791: Independent Study in Forestry (3 credits)

Graduate Theses and Dissertations Mentoring and Supervision

PhD:

Domena A. Agyeman:

Research Topic: Past, Present, and Future of Kentucky Forest Sector: Structural Change and Economic Impact. Expected graduation May 2021. Committee Chair and Major Advisor.

MS:

Philip Jay Vogel:

Long-Term Effects of Crop-Tree Release On the Growth and Quality of Upland White Oak Stands. Graduated May 2020. Committee Member.

Kamana Poudel:

Forest Sector Dependence and Economic Well-being of Kentucky Communities. Expected graduation August 2020. Committee Chair and Major Advisor.

Gaurav Dhungel:

Sustainability and Economics of White Oak (*Quercus alba*) Timber Supply in Kentucky. Expected graduation May 2021. Committee Chair and Major Advisor.

Steven Nevels:

Economic Analysis of Maple Syrup Production Potential in Kentucky. Expected graduation May 2022. Committee Chair and Major Advisor.

G. RESEARCH GRANTS (Total = \$369,218)

2019:

Project Director: (\$74,973) **Ochoudho, T.O.**, J.M. Lhotka, and W.R. Thomas. 2019-2022. Economic analysis of maple syrup production potential in Kentucky. Natural Resources Conservation Service, Environmental Quality Incentive Program, USDA-NRCS-KY-CIG-GEN0010198. Award Number: NR195C16XXXG005.

Co-PI: (\$74,335) Lhotka, J.M., **T.O. Ochoudho**, and W.R. Thomas. 2019-2022. Informing management practice through understanding the effects of species and tree characteristics on maple sap volume and sugar content. Natural Resources Conservation Service, Environmental Quality Incentive Program, USDA-NRCS-KY-CIG-GEN0010198. Award Number: NR195C16XXXG004.

Co-PI: (\$100,000.) Stringer, J.W., E.V. Crocker, **T. O. Ochuodho**. 2019-2020. Forest Health Research and Education Center - Phase 2. USFS Southern Research Station.

Project Director: (\$49,910) **Ochuodho T., O.**, Contreras M., A. 2019. Wood Bioenergy for Rural Energy Resilience. Statewide Energy Team. USFS. KY Energy and Environment Cabinet.

2017:

Project Director: (\$60,000) **Ochuodho T., O.**, Yang, J. 2017-2018. Assessing Economic Values of Forest Ecosystem Services in Kentucky. University of Kentucky Agricultural Experimental Station and Department of Forestry and Natural Resources

H. UNIVERSITY SERVICE

Department Service:

Committee Chair

Seminar Committee, (May 1, 2017 - December 30, 2019).

Committee Member

Research Committee, (August 1, 2017 - August 30, 2021).

Graduate Program Committee, (August 1, 2017 - August 30, 2021).

Seminar Committee, (May 1, 2017 - August 30, 2021).

Team Leader

Team Leader - Social Sciences Team of Forest Health and Education Research Center, (November 1, 2016 - December 31, 2021).

Technical Support to Extension Staff

Annual State Economic Contributions Report of Forest Sector, (November 1, 2016 - December 31, 2021).

College Service:

Working Group Member

International Programs Working Group, (November 10, 2016 - Present).

I. KEY ASSIGNMENTS UNDERTAKEN

I1: Editorial/Review Work

2020	Reviewer: Revision of the System of Environmental-Economic Accounting 2012-Experimental Ecosystem Accounting (SEEA-EEA); USDA-NIFA-AFRI Panel Reviewer; Everglades Foundation Working Paper; Inter-American Development Bank Working Papers; Forests; Land Use Policy; Journal of Forestry; Journal of Cleaner Production; Scientific African.
2019	Reviewer: Climate Change Economics; Land Degradation and Development; Journal of Benefit-Cost Analysis; Katamonu University Journal of Forestry
2018	Reviewer: Agricultural & Applied Economics Association (AAEA) Annual Conference Abstracts; Ecosystem Service; Journal of Forestry; Peer J; PLoS ONE. Economic Modeling; Agricultural Systems; Economic Modeling.
2017	Reviewer: Resources; Agricultural & Applied Economics Association (AAEA) Annual Conference Abstracts; Biomass and Bioenergy; Resources; Energy Economics; Inter-American Development Bank Working Paper; Forests; Energies; Forest Science; Sustainability.
2016	Reviewer: Small-Scale Forestry; Canadian Journal of Agricultural Economics; Earth and Environmental Sciences; Sustainability; Economic Modelling;
2015	Reviewer: Agroforestry Systems; Canadian Journal of Forest Research
2014	Reviewer: Food Policy; International Forestry Review; Forest Products Journal; Journal of Forest Economics. Reviewer: <i>The Economic Value of Zambia's Forest Ecosystems and Potential Benefits of REDD+ in Green Economy Transformation in Zambia.</i> Report to the United Nations Environment Program on behalf of the Ministry of Lands, Natural Resources and Environmental Protection, Zambia. Reviewer: Dixon, J., Garrity, D., Boffa, J.-M., Williams, T., Amede, T., with Auricht, C., Lott, R. and Mburathi, G. (eds) 2017. <i>Farming Systems and Food Security in Africa: Priorities for Science and Policy under Global Change.</i> Routledge, London and New York.
2009	Reviewer: <i>Society and Natural Resources: An International Journal</i> Published by Routledge, part of the Taylor & Francis Group.
Jan-May 2005	Member: Editorial team of the Proceedings of Regional Workshop on “Biodiversity Research for Livelihood Support and Food Security” for Research Program on Sustainable Use of Dryland Biodiversity in East Africa (RPSUD) November 14-17 2004. Merica Hotel, Nakuru. Kenya.
Mar-Nov 2004	Secretary: Editorial Committee of the Proceedings of Regional Workshop on “Sustainable Biodiversity Management for Reduced Community Vulnerability to Drought” organized by Research Program on Sustainable Use of Dryland Biodiversity in East Africa (RPSUD held at Lake Bogoria Hotel, Kenya.

I2: Other Assignments/Consultancy:

Feb-March 2019	Consultant: “Economics of Natural Capital in East Africa Program for USAID/Kenya and East Africa”. Provided technical support: (a) <i>Preparation of draft text to strengthen relevance in the East African context;</i> (b) <i>Advising and helping engage local partners and drafting text around the local partner engagement strategy;</i> (c) <i>Reviewing potential Team Lead candidates;</i> (d) <i>Supporting the Team Lead interview process</i>
June 2018	Team Member <i>Forum of Experts in Systems of Environmental-Economic Accounting Experimental Ecosystem Accounting (SEEA-EEA).</i> <i>The Forum was organized by the United Nations Statistics Division (UNSD) in collaboration with the United Nations Environment Program (UN Environment) and the Secretariat of the Convention on Biological Diversity (CBD) and funded by the European Union project “Natural Capital Accounting and Valuation of Ecosystem Services.” The Forum’s objectives were to: (i) share best-practices in compiling ecosystem accounts; (ii) showcase methodological and technical advances; (iii) work towards a consensus on methods and practices to be included in practical guidelines; and (iv) provide recommendations for the revision of the SEEA-EEA.</i>
August 2012-February 2013	Consultant for Green Analytics Inc. Guelph, Ontario, Canada. Developed multi-regional CGE model to analyze economy-wide impacts of proposed conservation policy change within the Lower Peace region of Alberta. Within the proposed protected areas (oil sands) are current forest and petroleum production activities, which are assumed, would be constrained if the areas were protected.
2010-2011	Contributed to Environment Canada’s Environmental Valuation Reference Inventory (EVRI) database. The EVRI is database of empirical studies on the economic value of environmental benefits and human health effects. The EVRI is intended as a tool to assist policy analysts using the benefits transfer approach to estimate economic values for changes in environmental goods and services or human health. In the benefits transfer approach, the results of the previous studies held within the EVRI can be used (transferred) to estimate the economic value of changes stemming from current programs or policies. Available online at: https://www.evri.ca/Global/HomeAnonymous.aspx
March-July 2010	Team member in the study on “Paying the Price: The Economic Impacts of Climate Change for Canada. Chapter 3. Timber Supply, 48-59pp. ISBN: 978-1-100-19091-4. Research Report prepared for the <i>National Roundtable on the Environment and Economy (NRTEE)</i> , Ottawa, Ontario. Canada. Study led by Marbek Consulting and Prof. Van Lantz of University of New Brunswick. Available online at: http://www.sustainableprosperity.ca/article1927

August 2004	Team member in the development of “ The Plan of Action for the Development of Regional Guidelines for Environmental Impact Assessment of Shared Ecosystems of East Africa ”. Supported by African Centre for Technological Studies (ACTS) and East Africa Community (EAC), Impala Hotel Arusha, Tanzania.
May 2004	Resource person: Training of Trainers for the Trade Union Workers (Timber, Building and allied; Quarry, Mines and allied; Paper, Printing and Publishing and allied) on Gender issues and Sustainable Forest Management in Kenya. An initiative of the International Federation of Building and Wood Workers (IFBWW), Kenya Forestry Program.
Jan-Mar 2004	Team member in the study on “ The Timber Sector in Kenya With Special Reference to The Furniture Industry in Kenya: Opportunities and Constraints to Application of the Good Wood Approach ”. An Initiative of WWF-EARP. Study led by Dr. Jeff Odera of National Museums of Kenya Nairobi, Kenya.
June-July 2003	Team member in developing of Guidelines for Environmental Impact Assessment for shared ecosystems of East Africa . Impala Hotel Arusha, Tanzania.
Nov 2003- Apr 2004	Team member in the study on “ Lessons Learnt on Sustainable Community Forest Management in Africa ”. A Joint Initiative of the Royal Swedish Academy of Agriculture and Forestry, African Forestry Research Network and Forestry Department, of the Food and Agriculture organization (FAO), of the United Nations. Study led by Dr. Jeff Odera of National Museums of Kenya Nairobi, Kenya.
Oct 2002	Resource person: Program Internal Analysis and Strategic Planning for Madiany Community Development Program in Bondo district supported by Danish International Cooperation Agency (MS-Kenya).
Aug 2002- Nov 2002	Team member in the development of a proposal for implementation of “ Criteria and Indicators for sustainable forest management in Dry-zone Africa Region ” for FAO/UNEP. Study led by Dr. Jeff Odera of National Museums of Kenya Nairobi, Kenya.
1999-2000:	Team member in the development of “ Technical guidelines for the assessment and measurement of Criteria and Indicators (C&I) for sustainable forest management in Dry zone African Region ” for FAO/UNEP/CCD. Study led by Dr. Jeff Odera of National Museums of Kenya Nairobi, Kenya.

J. PUBLICATIONS

J1: Publications in Peer-Reviewed Journals

Access My Publications at: https://www.researchgate.net/profile/Thomas_Ochuodho

Conrad, A.O., Crocker, E., Thomas, W.R., Li, X., Ochuodho, T.O. , Holmes, T.P., Nelson, D.C. 2020.	Threats to Oaks in the Eastern and Southern United States: Perceptions and Expectations of Experts. <i>Journal of Forestry</i> , 2020, 14–27. doi:10.1093/jofore/fvz056
Olale, E. Yiridoe, E.K., Ochuodho, T.O. , Lantz, V. 2019.	The Effect of Carbon Tax on Farm Income: Evidence from a Canadian Province. <i>Environmental and Resource Economics</i> . https://doi.org/10.1007/s10640-019-00337-8
Bai, Y. Ochuodho, T.O. , Yang, J. 2019.	Impact of land use and climate change on water-related ecosystem services in Kentucky, USA. <i>Ecological Indicators</i> 102:51-64 https://doi.org/10.1016/j.ecolind.2019.01.079
Ochuodho, T. O. , Alavalapati, J. R. R., Lal, P., Agyeman, D.A., Wolde, B., Burli, P. 2019.	Potential Economic Impacts of Allocating More Land for Bioenergy Biomass Production in Virginia. <i>Forests</i> 2019, 10, 159. doi:10.3390/f10020159
Joshi, O., Poudyal, N.C., Weir, J., Fuhlendorf, S.D., Ochuodho, T.O. 2019.	Determinants of perceived risk and liability concerns associated with prescribed burning in the United States. <i>Journal of Environmental Management</i> 230 (2019) 379–385.
Withey, P., Lantz, V. A., Ochuodho, T. O. , Patriquin, M.N., Wilson, J., Kennedy, M. 2018.	Economic impacts of conservation area strategies in Alberta, Canada: A CGE model analysis. <i>Journal of Forest Economics</i> 33:33-40. https://doi.org/10.1016/j.jfe.2018.10.004 .
Banerjee, O., Cicowiez, M., Ochuodho, T.O. , Masozera, M., Wolde, B., Lal, P., Dudek, S., Alavalapati, J.R.R. 2018.	Financing the Sustainable Management of Rwanda’s National Protected Areas. <i>Journal of Sustainable Tourism</i> . https://doi.org/10.1080/09669582.2018.1456541
Olale, E., Ochuodho, T.O. , Lantz, V., El Armali, J. 2018.	Environmental Kuznets Curve Model for Greenhouse Gas Emissions in Canada. <i>Journal of Cleaner Production</i> 184:859-868.
Millard, R., Withey, P., Lantz, V., Ochuodho, T.O. 2017.	The General Equilibrium Costs and Impacts of Oil Price Shocks in Newfoundland and Labrador. <i>Energy Economics</i> 68:192-198. https://doi.org/10.1016/j.eneco.2017.09.003
Ochuodho, T. O. , Johnston, C.M.T., Withey, P. 2017	Assessing Economic Impacts of Internet Adoption through Reduced Pulp and Paper Demand. <i>Canadian Journal of Forest Research</i> 47:1381-1391.
Lal, P., Wolde, B., Masozera, M., Burli, P., Alavalapati, J., Ranjan, A., Montambault, J.,	Valuing visitor services and access to protected areas: The case of Nyungwe National Park in Rwanda. <i>Tourism Management</i> 61:141-151.

<p>Banerjee, O., Ochuodho, T. O., Mugabo, R. 2017.</p>	
<p>Ochuodho, T. O., Lantz, V. A., Olale, E. 2016.</p>	<p>Computable General Equilibrium Analysis of Unites States-Canada 2006 Softwood Lumber Agreement. <i>Forest Science</i> 62(6):679–689.</p>
<p>Ochuodho, T. O., Alavalapati, J. R. 2016.</p>	<p>Integrating Natural Capital into System of National Accounts for Policy Analysis: An Application of a Computable General Equilibrium Model. <i>Forest Policy and Economics</i> 72:99-105.</p>
<p>Ochuodho, T. O., Lantz, V. A., Olale, E. 2016.</p>	<p>Economic impacts of climate change considering individual, additive, and simultaneous changes in forest and agriculture sectors in Canada: A dynamic, multi-regional CGE model analysis. <i>Forest Policy and Economics</i> 63:43-51.</p>
<p>Corbett, L. J., Withey, P., Lantz, V. A., Ochuodho, T. O. 2015.</p>	<p>The Economic Impact of the Mountain Pine Beetle Infestation in British Columbia: Provincial estimates from a CGE analysis. <i>Forestry - An International Journal of Forest Research</i> 0: 1–6.</p>
<p>Withey, P., Lantz, V.A., Ochuodho, T. O. 2015.</p>	<p>Economic Costs and Impacts of Climate-induced Sea-Level Rise and Storm Surge in Canadian Coastal Provinces: A CGE Approach. <i>Applied Economics</i> 48 (1) 59-71.</p>
<p>Ochuodho, T. O. and Lantz, V. A. 2015.</p>	<p>Economic impacts of climate change on agricultural crops in Canada by 2051: A global multi-regional CGE model analysis. <i>Environmental Economics</i> 6 (1): 113-125.</p>
<p>Ochuodho, T. O., Olale, E., Lantz, V. A., Damboise, J., Daigle, J. L., Meng, F.-R., Li, S., Chow, T. L. 2014.</p>	<p>How do soil and water conservation practices influence climate change impacts on potato production? Evidence from eastern Canada. <i>Regional Environmental Change</i> 14:1563–1574.</p>
<p>Ochuodho, T. O. and Lantz, V. A. 2014.</p>	<p>Economic impacts of climate change in the forest sector: a comparison of single-region and multiregional CGE modeling frameworks. <i>Canadian Journal of Forest Research</i> 44: 449–464.</p>
<p>Ochuodho, T. O., Olale, E., Lantz, V. A., Damboise, J., Daigle, J. L., Meng, F.-R., Li, S., Chow, T. L. 2013.</p>	<p>Impacts of soil and water conservation practices on potato yield in northwestern New Brunswick, Canada. <i>Journal of Soil and Water Conservation</i> 2013, 68(5): 392-400.</p>
<p>Ochuodho, T. O., Lantz, V. A., Lloyd-Smith, P., Benitez, P. 2012.</p>	<p>Regional economic impacts of climate change and adaptation in Canadian forests: A CGE modeling analysis. <i>Forest Policy and Economics</i> 25 (2012) 100-112.</p>
<p>Ochuodho, T.O., Ogwen, D. O., Imo, M., Senelwa, K. 2007.</p>	<p>Socio-economic Factors Affecting Charcoal Production by Households in Elangata Wuas, Kajiado, Kenya. <i>Discovery and Innovation</i>, 2007. Vol. 19 (RPSUD Special Edition No.3) 365-371.</p>

Ochuodho, T.O., Malo, M. O., Ogweno, D. O., Imo, M. O. 2007.	Factors Affecting Households' Decisions to Produce Charcoal in Drylands: A case study of Elangata Wuas Dryland, Kajiado, Kenya. <i>Discovery and Innovation</i> , 2007. Vol. 19 (RPSUD Special Edition No.1) 69-75.
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G2: Articles under Review/Forthcoming

Agyeman, D.A., Ochuodho, T. O., Joshi, O. 2020.	Sectoral Aggregation Bias in Economic Contribution and Impact Analyses: The Case of Kentucky Forest Sector. Under review in <i>Economic Systems Research</i> .
Sena, K., Ochuodho, T. O., Agyeman, D.A., Contreras, M., Niman, C., Eaton, D., Yang, J. 2020.	Wood Bioenergy for Rural Energy Resilience: Suitable Site Selection and Potential Economic Impacts in Appalachian Kentucky. Under review in <i>Biomass and Bioenergy</i> .
Agyeman, D.A., Ochuodho, T. O. 2020.	Structural Change and Aggregate Economic Growth in Forest-Based Industries: Multi-Country Global Analysis. Under review in <i>Canadian Journal of Forest Research</i> .
Bai, Y. Ochuodho, T.O., Yang, J. 2020.	Bundles and hotspots of multiple ecosystem services for optimized land management in Kentucky. Under review in <i>Ecosystem Services</i> .
Thomas, W.R., Niman, C.F., Springer, M.T., Ochuodho, T.O., Lhotka, L.R., 2020.	Stakeholder Perceptions of White Oak Supply in Kentucky: A SWOT-AHP Analysis. Under revision in <i>Small-Scale Forestry</i> .

J3: Articles under Preparation/In the Pipeline (from Current Projects)

Yang, J. Ochuodho, T.O., Bai, Y. 2020.	Impact of land ownership type and fragmentation on forestland's water-related ecosystem services provision and dynamics in Kentucky. For submission to <i>Ecosystem Services</i> .
Poudel, K. Ochuodho, T.O. 2020.	Econometric Analysis of Forest Sector Dependence and Economic Well-Being in Kentucky. For submission to <i>TBD</i> .
Poudel, K. Ochuodho, T.O. 2020.	Forest Sector Dependence and Economic Well-Being of Kentucky Communities. For submission to <i>Journal of Forestry</i> .
Dhungel, G. Ochuodho, T. O. 2020.	Economy-Wide Impacts of Projected White Oak Timber Supply in Kentucky. For submission to <i>TBD</i> .
Dhungel, G. Ochuodho, T. O. 2020.	Historical and Projected Growth and Yield of White Oak Timber in Kentucky. For submission to <i>TBD</i> .

J4: Edited Proceedings/Other Articles

Banerjee, O., Cicowicz, M., Ochuodho, T.O. , Masozera, M., Wolde, B., Lal, P., Dudek, S., Alavalapati, J.R.R. 2017.	Financing the Sustainable Management of Rwanda's National Protected Areas. Working Document Number 211. May, 2017. ISSN 1853-0168. Center for Distributive, Labor and Social Studies. La Plata National University. La Plata, Argentina.
Kamondo, B., Malo, M., Ochuodho, T. , Opanga, P. (Eds.) 2005	Biodiversity Research for Livelihood Support and Food Security. Proceedings of the 5 th RPSUD Workshop 2004. National Museums of Kenya. Nairobi. ISBN: 9966-955-61-5.
Kamondo, B., Ochuodho, T. , Malo, M. (Eds.) 2005	Strategic Approaches to Sustainable Management and Utilization of Renewable Resources in Drylands in Eastern Africa. Proceedings of the Eastern Africa Dryland Biodiversity Conference 2004. National Museums of Kenya. Nairobi. ISBN: 9966-955-61-6.
Oyieke, H., Khayota, B., B. Kamondo, T.Ochuodho , N.Gichuki, M.Malo, (Eds.) 2003	Sustainable Biodiversity Management for Reduced Community Vulnerability to Drought. Proceedings of the 4 th RPSUD Workshop 2003. National Museums of Kenya. Nairobi. ISBN: 9966-955-60-7
Ochuodho, T.O. and J. A. Odera (Eds.) 2001	Proceedings of a Workshop on Progress in Implementation of EWEM Program activities September 2000 – June 2001. National Museums of Kenya. Nairobi.
Ochuodho, T.O. 2004	Review of Dryland Management, Policy and Programs in Kenya Since Colonial Era. <i>Dryland Biodiversity, Issue No. 6 2004.</i>
Ochuodho, T.O. 2002	Technology Development for Sustainable Management of Community Woodlands. <i>Dryland Biodiversity, Issue No. 4. 2002.</i>
Ochuodho, T.O. 2002	Ecotourism Paradise in a Natural World. <i>NMK Horizons. Volume 6, Issue No.1, 2002. P.7-9</i>

J5: Technical Research Reports

Lantz, V., Ochuodho, T.O. 2010.	Estimating the impact of changes in timber supplies on the Canadian economy. Research Report prepared for Environment Canada, Gatineau, Quebec. Canada
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Ochuodho, T.O. , Ngibuini, H.M., Malo, M.O. 2004	Household Energy Survey Report for Central division Kajiado District. National Museums of Kenya. Nairobi. 94pp.
Ochuodho, T.O. and H. M. Ngibuini 2001	Sustainable Utilization of Dry Woodlands through Biomass Energy Production in Southern Kenya. Centre for Biodiversity, National Museums of Kenya. Nairobi. 67pp.

H6: Invited /Conference Papers/Lectures/Presentations

Ochuodho, T. O. 2019.	Computable General Equilibrium Modeling: A Versatile Tool for Policy Analysis. Research Seminar. Department of Economics, College of Agricultural, Food and Environment University of Kentucky, Lexington, KY. April 22, 2019.
Ochuodho, T. O. 2017.	Forest Health Research and Education Center: Forest Economics and Policy Research Program. An invited presentation at the US Forest Service Southern Research Station Project Leaders Meeting. University of Kentucky. Lexington, Kentucky. April 19, 2017.
Alavalapati, J. R., Ochuodho, T. O. 2016.	Economics of natural capital: Past, present, and future. An invited presentation at the International Society of Forest Resource Economics Meeting. Raleigh, North Carolina. April 3-5, 2016.
Alavalapati, J. R., Ochuodho, T. O. 2016	Integrating Natural Capital into National Accounts (GDP): A case study of Rwanda. An invited presentation to the Rotary Club, Auburn, Alabama. January 27, 2016.
Ochuodho, T. O. , Alavalapati, J. R. 2015.	Integrating Natural Capital into System of National Accounts for Policy Analysis: An Application of a Computable General Equilibrium Model. An invited paper at the International Conference on New Frontiers of Forest Economics (neFFE), Peking University, Beijing, China, August 19-23, 2015.
Ochuodho, T. O. 2010	Kenyan Forestry: Changing times, changing approaches. An invited lecture to Environment and Natural Resource class during the international forestry week in ENR 2004: Social and cultural systems course.
Ochuodho, T. O. 2009	Kenyan Forestry: Changing times, changing approaches. An invited lecture to Forestry class during the international forestry week in FOR 4005: Social values in forest management course.
J. A. Odera; Ochuodho, T. O. 2003	Biodiversity Conservation and Sustainable Development. Paper presented at Biodiversity Conservation and Indigenous Knowledge Workshop. ARC Hotel, Egerton University, Njoro. Kenya. October 14-15 2003.

Ochuodho, T.O. 2001	Participatory Technology Development for Sustainable Management of Dry Woodlands of Kajiado District, Kenya. <i>In</i> : Proceedings of Second Social Forestry Extension Regional Seminar for the promotion of tree planting in arid and semi-arid areas. 24 – 27 September 2001. pp. 79-81.
Ochuodho, T.O. 1999	Sustainable Natural Resource Management of Drylands: Experiences from Elangata Wuas Community. <i>In</i> Proceedings: Regional workshop on farming systems approach to Research on Agricultural Research, Extension and Development. Kajiado, Kenya. 20-30 April 1999. pp.34-46

J7: Conference/Workshop/Seminar & Presentations

Ochuodho, T. O., 2020.	Wood Bioenergy for Rural Energy Resilience in Eastern Kentucky: Spatial and Economic Analyses. Department of Forestry and Natural Resources, Seminar. University of Kentucky. Lexington, Kentucky. April 1, 2020.
Ochuodho, T. O., 2020.	Forest Economic Contributions Summit: Strategies for Development, Communication, and Education on Forest Sector’s Role in the Southern Region. New Orleans, Louisiana. March 9-11, 2020.
Ochuodho, T. O., 2020.	Sustainability of White Oak Timber Supply and the Distillery Industry in Kentucky. Inaugural James B. Beam Institute Industry Conference. University of Kentucky. Lexington, Kentucky. February 27, 2020.
Ochuodho, T. O., 2020.	Overview of Research at the Integrated Biophysical-Economic Analysis and Modeling (IBEAM) Lab, University of Kentucky. Invited Research Collaboration Seminar. Montclair State University. Montclair, New Jersey. February 18-20, 2020.
Ochuodho, T. O., 2020.	How can economic development, human well-being, and environmental sustainability be balanced in the Central Appalachian Coalfields region? Science for Nature and People Partnership (SNAPP) Appalachian Coalfields Working Group. Charleston, West Virginia. February: 5-7, 2020
Ochuodho, T. O., Alavalapati, J. R. R., Lal, P., Agyeman, D.A., Wolde, B., Burli, P. 2019.	Potential Economic Impacts of Allocating More Land for Bioenergy Biomass Production in Virginia. Society of American Foresters (SAF) 2019 Annual Convention. Louisville, Kentucky. Oct 30-Nov3, 2019.

<p>Agyeman, D.A., Ochuodho, T. O., Joshi, O. 2019.</p>	<p>Sectoral Aggregation Bias in Economic Contribution Analysis: The Case of Kentucky Forest Sector. The International Society of Forest Resource Economics (ISFRE) 2019 Annual Conference. Columbus, Ohio. May 14-15, 2019.</p>
<p>Poudel, K., Ochuodho, T. O. 2019.</p>	<p>Forest Sector Dependence and Economic Well-Being of Kentucky Communities. The International Society of Forest Resource Economics (ISFRE) 2019 Annual Conference. Columbus, Ohio. May 14-15, 2019</p>
<p>Ochuodho, T. O., Alavalapati, J. R. R., Lal, P., Agyeman, D.A., Wolde, B., Burli, P. 2019.</p>	<p>Potential Economic Impacts of Allocating More Land for Bioenergy Biomass Production in Virginia. The International Society of Forest Resource Economics (ISFRE) 2019 Annual Conference. Columbus, Ohio. May 14-15, 2019.</p>
<p>Ochuodho, T. O. 2019.</p>	<p>Adequacy of Spatial Databases for Conducting Risk Assessments of Sustainable Wood Sourcing Practices of The U.S. Industrial Wood Pellet Industry Supplying European Energy Demand. International Bioenergy Workshop. University of Georgia, Athens, GA. May 1-3, 2019.</p>
<p>Bai, Y. Ochuodho, T.O., Yang, J. 2019.</p>	<p>Forest Ecosystem Services Assessment in Kentucky. Annual Meeting, Forest Health Center, Department of Forestry and Natural Resources, University of Kentucky, Lexington, KY. April 23, 2019.</p>
<p>Ochuodho, T. O. 2019.</p>	<p>Modeling Economy-wide Impacts of White Oak Timber Supply: Progress and Updates. Annual Meeting, Forest Health Center, Department of Forestry and Natural Resources, University of Kentucky, Lexington, KY. April 23, 2019.</p>
<p>Ochuodho, T. O. 2019.</p>	<p>Science for Nature and People Partnership (SNAPP), National Center of Ecological Analysis and Synthesis (NCEAS) at University of California, Santa Barbara. SNAPP Appalachian Coalfields Project Workshop. Santa Barbara, California. 5-9 February, 2019.</p>
<p>Agyeman, D.A., Ochuodho, T. O., Joshi, O. 2018.</p>	<p>Sectoral Aggregation Bias in Economic Contribution and Impact Analyses: Evidence from Kentucky Forest Sector. Society of American Foresters 2018 Annual Convention. Portland, Oregon. October 2-7, 2018.</p>
<p>Ochuodho, T. O. 2018.</p>	<p>Poverty, Environmental Sustainability, and Regional Economic Development in the Central Appalachian Coalfields. Science for Nature and People Partnership Workshop. Tamarack Conference Center, Beckley, WV. May 30, – June 1, 2018.</p>
<p>Ochuodho, T. O., 2018.</p>	<p>Underutilized Wood Symposium to Address Energy Development Opportunities. West Virginia University, Morgantown, West Virginia, April 30 - May 1, 2018.</p>
<p>Olale, E., Ochuodho, T.O., Lantz, V., El Armali, J. 2018.</p>	<p>Environmental Kuznets Curve Model for Greenhouse Gas Emissions in Canada. Conference presentation at the International</p>

	Society of Forest Resource Economics 2018 Annual Conference. Gatlinburg, Tennessee. March 19 – 21, 2018.
Ochuodho, T. O., Lantz, V. A., Olale, E. 2017.	Economic Analysis of the United States-Canada 2006 Softwood Lumber Agreement. Society of American Foresters 2017 Annual Convention. Albuquerque, New Mexico. November 13-19, 2017.
Ochuodho, T. O., Lantz, V. A., Olale, E. 2017.	Economic Analysis of the United States-Canada 2006 Softwood Lumber Agreement. Conference presentation at the International Society of Forest Resource Economics 2017 Annual Conference. New Orleans, Louisiana. May 30- June 1, 2017.
Ochuodho, T.O. 2017.	Application of Computable General Equilibrium Modeling in Policy Analysis: The Case of US-Canada 2006 Softwood Lumber Agreement. Seminar presentation at the Department of Agricultural Economics, University of Kentucky, Lexington, KY USA. February 3 2017.
Johnston, C. M.T., Ochuodho, T.O., Withey, P. 2016.	Global Computable General Equilibrium Analysis of Economic Impacts of Increased Internet Usage on Paper-Based Media Industries. A paper presentation at the 2016 Society of American Foresters National Convention. November 2-6, 2016. Madison, Wisconsin, USA.
Ochuodho, T. O., Banerjee, O., Alavalapati, J., Cicowiez, M., Masozera, M., Lal, P. 2016.	Evaluating Impacts of Investments in the Tourism Sector as a Poverty Reduction Strategy in Rwanda. A paper presentation at the 19th Annual Conference on Global Economic Analysis. "Analytical Foundations for Cooperation in a Multipolar World". June 15-17, 2016. Washington DC, USA.
Ochuodho, T.O., Lantz, V. A. 2013.	<u>Economic impacts of climate change considering individual, additive, and simultaneous changes in agriculture and forest sectors in Canada: A dynamic, multi-regional CGE model analysis.</u> Paper presentation at the Canadian Resource and Environmental Economics (CREE) Study Group, Brock University, St. Catharines, Ontario, September 29 – October 3, 2013.
Ochuodho, T. O., Olale, E., Lantz, V. A., Damboise, J., Chow, T. L., Meng, F., Daigle, J. L. 2012.	How do soil and water conservation practices influence the impacts of climate change on potato production? Evidence from New Brunswick, Canada? A paper presented at the Science Atlantic 10th Environment conference. Mount Alison University, NB Canada, March 2-4, 2012.
Ochuodho, T.O., Lantz, V. A. 2009.	Modeling Economic Impacts of Reductions in Logging area in Provincial Forest Industries in Canada. A poster presentation at the 2009 Sustainable Forest Management Network (SFMN) Conference. Gatineau, Quebec, Canada. 20-23 April 2009.
Ochuodho, T.O., Odera, J.A. 2008	The Mismatch between Forest Research and Practice: A review on Both sides of the Science/Policy Interface in Kenya. <i>In: Ogweno</i>

	<p>D.O., Opanga P.S. and Obara A.O. (eds 2009). Forest Landscape and Kenya's Vision 2030. Proceedings of the 3rd Annual Forestry Society of Kenya (FSK) Conference and Annual General Meeting held at the Sunset Hotel, Kisumu. 30th September - 3rd October, 2008. Pp 80-92. ISBN: 978-92-9059-263-1</p>
<p>Malo, M., Odera, J., Ochuodho, T.O. 2007</p>	<p>Challenges and Opportunities in Community Based Dryland Natural Resources Management. African Economic Conference 2007: "Opportunities and Challenges of Development for Africa in the Global Arena". 15-17 November 2007, Addis Ababa, Ethiopia. Available online at: http://repository.uneca.org/bitstream/handle/10855/3715/bib-29246.pdf?sequence=1</p>
<p>Ochuodho, T.O., Lantz, V. 2007.</p>	<p>Economic Impacts of Market and Policy Changes in Provincial forest industries: A CGE Modeling Approach. A Workshop on Global Competitiveness of the Forest Industry. Nov 22, 2007, Victoria, BC. Canada.</p>
<p>Ochuodho, T.O., Lantz, V. 2006.</p>	<p>A Computable General Equilibrium Model of Canadian Lumber Trade. A Workshop and the SFMN Project Partners' Meeting On The Global Competitiveness of Forest Industry. October 25-27, 2006, Victoria, BC. Canada.</p>
<p>Ochuodho, T.O. 2004</p>	<p>Binary Choice Predictor Model for Adoption of Charcoal Production by Households in Elangata Wuas, Kajiado, Kenya. Presented at the Eastern Africa Regional Workshop on "<i>Biodiversity Research for Livelihood Support and Food Security</i>". November 14-17 2004. Merica Hotel, Nakuru, Kenya. Pp.57-63.</p>
<p>Ochuodho, T.O. 2002</p>	<p>Sustainable Community Woodland Management in Kajiado Kenya. A paper presented at Forest Action Network Experience sharing Workshop on Natural resource Management Issues. Mombasa, Kenya.</p>
<p>Ochuodho, T.O. 2000</p>	<p>Role of Traditional Knowledge in Sustainable Dryland Woody Resource Management: The Elangata Wuas Experience. Paper presented at FTTP-Kenya Relation Building workshop, October 24-28 2000. Machakos, Kenya</p>
<p>Ochuodho, T.O. 2000</p>	<p>Participatory Dryland Natural Research Management by Local Community: The case of Elangata Wuas, Central Kajiado, Kenya. Paper presented at FTTP-Kenya Relation Building Workshop, April 16-20 2000 Mombasa, Kenya.</p>

Steven Price

Department of Forestry and Natural Resources,
University of Kentucky

Curriculum vitae of

Steven J. Price

Lexington, KY 40546-0073

Phone: 859-257-7610

Fax: 859-323-1031

steven.price@uky.edu

EDUCATION

Doctorate of Philosophy, 2011. Biology, Wake Forest University

Master of Science, 2003. Environmental Science and Policy, University of Wisconsin-Green Bay

Bachelor of Science, 2000. Biology and Environmental Science (double major), University of Wisconsin-Green Bay

RECENT PROFESSIONAL EXPERIENCE

Director of Graduate Studies (Forest and Natural Resource Sciences), Department of Forestry and Natural Resources, University of Kentucky, July 2017-present.

Associate Professor of Stream and Riparian Ecology, Department of Forestry and Natural Resources, University of Kentucky, July 2017-present.

Assistant Professor of Stream and Riparian Ecology, Department of Forestry and Natural Resources, University of Kentucky, July 2012-June 2017.

- Distribution of Effort FY 2013: 83% research, 17% teaching
- Distribution of Effort FY 2014: 59.2% research, 40.8% teaching
- Distribution of Effort FY 2015: 58.7% research, 41.3% teaching
- Distribution of Effort FY 2016: 57.7% research, 42.3% teaching
- Distribution of Effort FY 2017: 68.0% research, 32.0% teaching
- Distribution of Effort FY 2018: 35.95% research, 54.05% teaching, 10% admin
- Distribution of Effort FY 2019: 41.45% research, 48.55% teaching, 10% admin

Post-Doctoral Research Fellow, Davidson College, Department of Biology, Davidson NC, June 2011-June 2012.

Adjunct Instructor/Visiting Assistant Professor, Davidson College, Department of Biology, Davidson NC, 2008-2009, 2011-2012

Research Coordinator, Department of Biology, Davidson College, Davidson NC, 2004-2011.

RESEARCH**Funded Extramural Research (Total to date: ≈ 3.2 million; ≈ \$215,000 to Price as PI)**

Price, S. J. 2019-2021. Assessment of Eastern Hellbender Populations in Kentucky: Distribution and Recruitment. Kentucky Department of Fish and Wildlife Resources. ~\$130,000

Price, S. J. and W. R. Haag. 2019-2022. Assessing the role of invasive Asian Clams (*Corbicula fluminea*) in native mussel declines. Memorandum of Understanding among University of Kentucky Research Foundation, Kentucky Waterways Alliance and US Fish and Wildlife Service. \$53,135.

Price, S.J. and W.R. Haag. 2018. Implementation of a monitoring tool for assessing stream health. US Forest Service. \$6849

Crowley, P., **S.J. Price**, K. Zeidler, L. Higgins-Hord. 2017. A remote-video artificial stream system for the Ecological Research and Education Center. National Science Foundation. \$414,649

Hutton, J.M. and **S.J. Price**. 2017. The effects of specific conductance on stream salamander occupancy and allochthony in southeastern Kentucky. Foundation for the Conservation of Salamanders Daniel M. Digiacomo Grant, 2017. \$5,000.

Price, S.J., A. Drayer, and J. MacGregor. 2017-2018. Occupancy and abundance of the streamside salamander (*Ambystoma barbouri*) in relation to land-use, water chemistry and high-flow events in central Kentucky streams. US Fish and Wildlife Service (Section 6 funding through the Endangered Species Act). \$31,000

Price, S.J. and W.R. Haag. 2016-2021. Using juvenile freshwater mussels as bioindicators in the Rockcastle drainage (Kentucky). Joint Venture with US Forest Service. \$50,000.

Price, S.J. and W. R. Haag. 2016. Using juvenile freshwater mussels as bioindicators to identify causes and sources of stream degradation associated with mussel declines. Memorandum of Understanding among University of Kentucky Research Foundation, Kentucky Waterways Alliance and US Fish and Wildlife Service. \$30,000.

Price, S.J., G.M. Connette, S.J. Bonner and J.M. Lorch. 2016. Evaluating the impact of snake fungal disease on wild snake populations. National Geographic Society. \$15,000.

Price, S.J. and S.B. Freytag. 2016. Dynamics of trace metal and ion concentrations in reclaimed mountaintop removal and reference headwater streams. Kentucky Water Resources Research Institute. \$4,656

Andrews, R., D.N. Taulbee, E.W. Woolery, L. E. Ormsbee, S.K. Hampson, Z. Wang, J. Zhu, G. Rohrbacher, A. Filson and **S.J. Price**. 2016-2021. Kentucky Research Consortium for Energy and Environment (KRCEE). Department of Energy. \$2,500,000. (~\$28,000 to Price for 2016-2021 research and Annual Site Environmental Report with Marshall High School students at West Kentucky State Wildlife Management Area)

Price, S.J., D.W. Weisrock, and W. Haag. 2015. Dispersal congruency and population structure within imperiled host-parasite systems. Kentucky Science and Engineering Foundation. \$30,000

Price, S.J. and T. Kreher. 2015-2016. Amphibian habitat assessment at the Paducah Gaseous Diffusion Plant and the West Kentucky State Wildlife Management Area. Department of Energy. \$26,656

Weisrock, D.W. and **S.J. Price**. 2013. Leveraging novel genetic and genomic technologies to understand and conserve a Kentucky state endangered giant salamander. Kentucky Science and Engineering Foundation. \$30,000.

PUBLICATIONS * undergraduate student, ‡ graduate student, § corresponding author
Books/Book Chapters/Book Reviews (Total to date: 8; since arrival at UK: 3)

8. **Price, S.J.** *In press*. Mink Frog, *Lithobates septentrionalis*. J. Kapfer, E.R. Wild and D. Brown, (eds.), Amphibians and Reptiles of Wisconsin. University of Wisconsin Press.

7. **Price, S.J.** 2017. Book Review: Amphibians and Reptiles of Land Between the Lakes Herpetological Review.

6. **Price, S.J.**, J. L. Snodgrass, and M.E. Dorcas. 2014. Managing aquatic habitats for wildlife in urban areas. In R. McCleery, C. Moorman, and N. Peterson (eds.), Urban Wildlife Science: Theory and Practice. Springer.

5. Dorcas, M.E., **S.J. Price**, S. C. Walls and W. J. Barichivich. 2009. Auditory monitoring of anuran populations. In Dodd, C.K., Jr. (ed.), Conservation and Ecology of Amphibians. A Handbook of Techniques. Oxford University Press.

4. Dorcas, M.E. and **S.J. Price**. 2008. Effective undergraduate-based herpetological research in an urban environment. In R. E. Jung and J. C. Mitchell (eds.), Urban Herpetology. Herpetological Conservation Vol. 3, Society for the Study of Amphibians and Reptiles. Salt Lake City, UT

3. **Price, S. J.** 2008. Painted turtle, *Chrysemys picta*. In J. Jensen, C. D. Camp, J. W. Gibbons, and M. Elliot, (eds.), The Amphibians and Reptiles of Georgia. University of Georgia Press.

2. Dorcas, M. E., **S. J. Price**, J. C. Beane, and S. S. Cross. 2007. The Frogs and Toads of North Carolina. North Carolina Wildlife Resources Commission, Raleigh, NC.

1. **Price, S. J.** 2004. Sea Turtles. In S. Krech III, J. R. McNeill and C. Metchant (eds.), Encyclopedia of World Environmental History. Berkshire Publishing Group, Great Barrington, MA.

Papers in Peer-reviewed Journals (Total to date: 89 accepted or published; 4 in review; 53 accepted since arrival at UK) (If available, Thomson Reuters © Impact Factor follows each reference)

93. Zhang, W., **S. J. Price** and S. J. Bonner. *In review*. Maximum likelihood inference for the band-read error model for capture-recapture data with misidentification. Environmental and Ecological Statistics. (0.54)

92. Haag, W. §, J. Culp, A. N. Drayer, M. McGregor, D. White‡ and **S. J. Price**. *In review*. Abundance of an invasive bivalve, *Corbicula fluminea*, is negatively related to growth of freshwater mussels in the wild. Journal of Applied Ecology. (5.782)

91. Drayer, A.N. §, J.C. Guzy, R. Caro, and **S. J. Price**§. *In revision* (major revisions) Created ephemeral wetlands as habitat for amphibian populations in western Kentucky, USA. Wetlands Ecology and Management. (2.062)

90. McKenzie, J. M. ‡, **S. J. Price**, G. M. Connette, S. J. Bonner and J. M. Lorch. *In revision* (accepted pending minor revision) Effects of snake fungal disease on short-term survival, behavior, and movement in free ranging snakes. Ecological Applications (4.378)

89. Contreras, M. §, W. Staats‡, and **S.J. Price**. *In press*. Predicting and mapping Plethodontid salamander abundance using LiDAR-derived terrain and vegetation characteristics. Forest Systems (1.138)

88. Drayer, A.N. §, J.C. Guzy, and **S.J. Price**§. *In press*. Factors influencing the occupancy and abundance of *Ambystoma barbouri* (Streamside Salamander) in Kentucky streams. Journal of Herpetology. (0.77)

87. Hutton, J.M. ‡, **S.J. Price**§, S.J. Bonner, S.C. Richter and C.D. Barton. *In press*. Occupancy and abundance of stream salamanders along a specific conductance gradient. Freshwater Science. (2.344)

86. Arant, P.L. ‡, D. White‡ and **S.J. Price**§. 2019. *Diadophis punctatus* (Ring-necked Snake) and *Storeria occipitomaculata* (Red-bellied Snake). Predation. Herpetological Review 50:292.

85. Leuenberger, W. [§], A. G. Davis, J. M. McKenzie[‡], A. N. Drayer and **S. J. Price**[§]. 2019. Evaluating snake density using Passive Integrated Transponder (PIT) telemetry and spatial capture-recapture analyses for linear habitats. *Journal of Herpetology*. 53:272-281. (0.77)
84. McKenzie, J. M.[‡], **S. J. Price**[§], J. L. Fleckenstein*, A. N. Drayer, G.M. Connette, E. Bohuski and J. M. Lorch. 2019. Field diagnostics and seasonality of *Ophidiomyces ophiodiicola* in wild snake populations. *EcoHealth*. 16:141-150. DOI: 10.1007/s10393-018-1384-8 (2.225)
83. Stengle, A., T. Farrell, K. Freitas, C. Lind, S.J. Price, B. Butler, T. Tadevosyan, M. Isidoro-Ayza, D. Taylor, M. Winzeler and J. M. Lorch[§]. 2019. Evidence of vertical transmission of the snake fungal pathogen *Ophidiomyces ophiodiicola*. *Journal of Wildlife Diseases*. 55:961-964. (1.150)
82. Agha, M. ^{‡§}, B.D. Todd, B. Augustine, J. M. Lhotka, L. J. Fleckenstein*, M. Lewis*, C. Patterson, J.W. Stringer and **S.J. Price**. 2018. Effects of gap-based silviculture on thermal biology of a terrestrial reptile. *Wildlife Research*. 45:72-81. DOI:10.1071/WR17110 (1.244)
81. Hutton, J. M.^{‡ §}, R. Leloudis* and **S. J. Price**. 2018. *Desmognathus welteri* cannibalism. *Herpetological Review*. 49:296.
80. Hutton, J. M.^{‡ §} and **S. J. Price**. 2018. *Ambystoma barbouri*. Predation. *Herpetological Review*. 49:89.
79. Hutton, J. M.^{‡ §} and **S. J. Price**. 2018. *Eurycea bislineata*. Oophagy. *Herpetological Review*. 49:90-91.
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76. Miller, D. [§], E. Grant, E. Muths, S. Amburgey, M. Adams, M. Joseph, J. H. Waddle, P. Johnson, M. Ryan, B. Schmidt, D. Calhoun, C. Davis, R.Fisher, D. Green, B. Hossack, T. Rittenhouse, S. Walls, L. Bailey, S. Cruickshank, G.Fellers, T. Gorman, C. Haas, W. Hughson, D. Pilliod, **S. J. Price**, A. Ray, W. Sadinski, D. Saenz, W. Barichivich, A. Brand, C. Brehme, R. Dagit, K. Delaney, B. Glorioso, L. Kats, P. Kleeman, C. Pearl, C. Rochester, S. Riley, M. Roth, and B. Sigafus. 2018. Quantifying climate sensitivity and climate driven change in North American amphibian communities. *Nature Communications*. 9:3926 (12.124)

75. Murphy M.O. ‡, K. Jones‡, **S. J. Price**, D.W. Weisrock§. 2018. A genomic assessment of population structure and gene flow in an aquatic salamander identifies the roles of spatial scale, barriers, and river architecture. *Freshwater Biology*. 63: 407-419 DOI: 10.1111/fwb.13071 (3.255)
74. **Price, S. J.** §, S.B. Freytag‡, S.J. Bonner, B. Muncy‡, A.N. Drayer, J.M. Hutton‡ and C.D. Barton. 2018. Mountaintop removal mining alters stream salamander population dynamics. *Diversity and Distributions*. 24:1242-1251. DOI: 10.1111/ddi.12760 (4.391)
73. Relyea, R.A. §, P.R. Stephens, L.N. Barrow, A.R. Blaustein, P.W. Bradley, J.C. Buck, A. Chang, J. P. Collins, B. Crother, J. Earl, S. S. Gervasi, J. T. Hoverman, O. Hyman, E. Moriarty Lemmon, T. M. Luhring, M. Michelson, C. Murray, S. Price, R.D. Semlitsch, A. Sih, A.B. Stoler, N. VandenBroek, A. Warwick, G. Wengert, and J. I. Hammond. 2018. Phylogenetic patterns of trait and trait plasticity evolution: Insights from amphibian embryos. *Evolution*. 72:663-678. DOI:10.1111/evo.13428 (4.201)
72. Agha, M. ‡§, **S.J. Price**, A. J. Nowakowski, B. Augustine and B.D. Todd. 2017. Mass mortality of eastern box turtles (*Terrapene carolina*) due to upper respiratory disease and associated with atypical cold temperatures and Ranavirus. *Diseases of Aquatic Animals*. 124:91-100. (1.752)
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70. Hutton, J.M. ‡§, **S.J. Price** and S. C. Richter. 2017. The diet of the Cumberland Plateau Salamander (*Plethodon kentucki*) in an old growth forest of southeastern Kentucky *American Midland Naturalist* 178:144-150 (0.592)
69. Todd, B.D. §, A.J. Nowakowski, J.P. Rose‡, and **S.J. Price**. 2017. Species traits explaining sensitivity of snakes to human land use estimated from citizen science data. *Biological Conservation* 206:31-36. (3.985)
68. Murphy, M.O.‡, **S.J. Price**§, P.M. Hime‡, A.N. Drayer‡ and D.W. Weisrock. 2016. A review and comparison of common mudpuppy (*Necturus maculosus*) capture methods and the description of a new trap design. *Herpetological Review* 48:575-578.
67. Lorch, J.M. §, J.S. Lankton, S. Knowles, K. Michell, J.L. Edwards, J.M. Kapfer, R.A. Staffen, E.R. Wild, K.Z. Schmidt, A.E. Ballmann, D. Blodgett, T.M. Farrell, B.M. Glorioso, L.A. Last, **S.J. Price**, K.L. Schuler, C.E. Smith, J.F.X. Wellehan Jr., and D.S. Blehert. 2016. Snake fungal disease: An emerging threat to wild snakes. *Philosophical Transactions of the Royal Society B*. 371:DOI: 10.1098/rstb.2015.0457 (5.847)

66. Oldham, C. ‡, J.L. Fleckenstein*, W. Boys*, and **S.J. Price**§. 2016. Enhancing ecological investigations of snakes with Passive Integrated Transponder (PIT) telemetry. *Herpetological Review* 47: 385-388.
65. Kirchberg, J.* , K.K. Cecala§, **S.J. Price**, E.M. White and D.G. Haskell. 2016. Evaluating the impacts of small impoundments on stream salamanders. *Aquatic Conservation: Marine and Freshwater Ecosystems* 26:1197-1206. (2.136)
64. Todd, B.D. §, J.P. Rose‡, **S.J. Price** and M.E. Dorcas. 2016. Using citizen science data to identify the sensitivity of species to human land use. *Conservation Biology*. 30:1266–1276 (4.165)
63. Bonner, S.J. §, M.R. Schofield, P. Noren and **S.J. Price**. 2016. Extending the latent multinomial model with complex error processes and dynamic Markov bases. *Annals of Applied Statistics* 10:246-263. (1.46)
62. Grant, E.H.C. §, D. A.W. Miller, E. Muths, M.J. Adams, S.M. Amburgey, T. Chambert, S.S. Cruickshank, R.N. Fisher, D.M. Green, B.R. Hossack, P.T.J. Johnson, M.B. Joseph, T. Rittenhouse, M. Ryan, B.R. Schmidt, H. Waddle, S.C. Walls, L. L. Bailey, G. Fellers, T.A. Gorman, A.M. Ray, D. Pilliod, **S.J. Price** and D. Saenz. 2016. Quantitative evidence for the effects of multiple drivers on continental-scale amphibian declines. *Scientific Reports* 6:25625 (5.56)
61. **Price, S.J.** §, B.L. Muncy‡, S.J. Bonner, A. Drayer and C.D. Barton. 2016. Effects of mountaintop removal mining and valley fills on occupancy and abundance of stream salamanders. *Journal of Applied Ecology* 53:459-468. (4.564)
60. Murphy, M.O. ‡, M. Agha‡, T.A. Maignet‡, **S.J. Price**§, and M.E. Dorcas. 2016. The effects of urbanization on body size of larval stream salamanders. *Urban Ecosystems* 19:275-286. (2.685)
59. **Price, S.J.** §, C.R. Oldham‡, W.M. Boys*, and L.J. Fleckenstein*. 2015. First record of snake fungal disease in Kentucky. *Journal of the Kentucky Academy of Science* 76:47-48.
58. Cecala, K.K. §, **S.J. Price**, and M.E. Dorcas. 2015. Stream salamanders accurately assess size-dependent predation threats. *Herpetologica* 71:184-189. (1.140)
57. Oldham, C.R. ‡, **S.J. Price**§, W.A. Boys*, and L.J. Fleckenstein*. 2015. *Regina septemvittata* (Queensnake). Defensive behavior/death-feigning. *Herpetological Review* 46:51-52.
56. Agha, M. ‡, B. Augustine‡, J.E. Lovich, D. Delaney, B. Sinervo, M.O. Murphy‡, J.R. Ennen, R. Cooper and **S. J. Price**§. 2015. Using motion-sensor camera technology to infer

seasonal activity and thermal niche of the desert tortoise (*Gopherus agassizii*). *Journal of Thermal Biology* 49/50:119-126. (1.505)

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44. Barrett, K. and **S.J. Price**§. 2014. Urbanization and stream salamanders: a review, conservation options, and research needs. *Freshwater Science* 33:927-940. (1.941)
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39. Cecala, K.K. ‡§, **S.J. Price** and M.E. Dorcas. 2013. Modeling the effects of life-history traits on estimation of population parameters for a cryptic species. *Freshwater Science* 32:116-125. (1.423)
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29. Connette, G.M.*[§], **S.J. Price** and M.E. Dorcas. 2011. Influence of abiotic factors on activity in a larval stream salamander assemblage. *Southeastern Naturalist* 10: 109-120. (0.487)
28. Eskew, E.A.* , **S.J. Price** and M.E. Dorcas. 2011. Survivorship of painted turtles (*Chrysemys picta*) in recently modified suburban landscapes. *Chelonian Conservation and Biology* 9:244-249. (0.913)
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24. Cecala, K.K.*[§], **S.J. Price** and M.E. Dorcas. 2009. Evaluating existing movement hypotheses in linear systems using larval stream salamanders. *Canadian Journal of Zoology* 87: 292-298. (1.254)

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19. Hester, J.M.* , **S.J. Price**[§], and M.E. Dorcas. 2008. Effects of relocation on movements and home ranges of eastern box turtles. *Journal of Wildlife Management*. 72: 772-777. (1.323)
18. **Price, S.J.**, R.W. Howe[§], J. Hanowski, R.R. Regal, G.J. Niemi, and C.R. Smith. 2007. Are anurans of Great Lakes coastal wetlands reliable indicators of ecological condition? *Journal of Great Lakes Research* 33(Special Issue 3): 211-223. (1.18)
17. Cecala, K.K.* , **S.J. Price**, and M.E. Dorcas. 2007. *Pseudotriton ruber ruber*. *Polymelia*. *Herpetological Review* 38:434.
16. Failey, E.L.* , J.C. McCoy* , **S.J. Price** and M.E. Dorcas. 2007. Ecology of turtles inhabiting golf course and farm ponds in the western Piedmont of North Carolina. *Journal of North Carolina Academy of Science* 123: 221-232.
15. Cecala, K.K.* , **S.J. Price**, and M.E. Dorcas[§]. 2007. Diet of larval *Pseudotriton ruber* examined using a non-lethal stomach-flushing technique. *Journal of Herpetology* 41: 741-745. (0.863)
14. McCoy, J.C.* , E.L. Failey* , **S.J. Price** and M.E. Dorcas[§]. 2007. An assessment of leech parasitism on semi-aquatic turtles in the western Piedmont of North Carolina. *Southeastern Naturalist* 6: 191-202. (0.402)
13. Cecala, K.K.* , **S.J. Price**, and M.E. Dorcas[§]. 2007. A comparison of the effectiveness of recommended doses of MS-222 (Tricaine Methane Sulfonate) and Orajel® (Benzocaine) for amphibian anesthesia. *Herpetological Review* 38: 63-66.

12. **Price, S.J.**[§], M.E. Dorcas, A.L. Gallant, R.W. Klaver and J.D. Willson. 2006. Three decades of urbanization: Estimating the impact of land cover change on stream salamander populations. *Biological Conservation* 133: 436-441. (2.854)
11. Budischak, S.A.* , J.M. Hester* , **S.J. Price**, and M.E. Dorcas[§]. 2006. Natural history of box turtles, *Terrapene carolina*, in an urbanized landscape. *Southeastern Naturalist* 5: 191-204. (0.479)
10. Kornilev, Y.K.* , **S.J. Price** and M.E. Dorcas[§]. 2006. Between a rock and a hard place: responses of eastern box turtles (*Terrapene carolina*) when trapped between railroad tracks. *Herpetological Review* 37: 145-148.
9. Kornilev, Y.K.* , **S.J. Price**, E.P. Hill* , and M.E. Dorcas. 2006. *Ambystoma maculatum*. Mortality. *Herpetological Review* 37: 196.
8. Gooch, M.M.* , A.M. Heupel* , **S.J. Price**[§], and M.E. Dorcas. 2006. The effects of survey protocol on detection probabilities and site occupancy estimates of summer breeding anurans. *Applied Herpetology* 3: 129-142.
7. Kirilin, M.S.* , M.M. Gooch* , **S.J. Price**, and M.E. Dorcas. 2006. Predictors of winter anuran calling activity in the North Carolina Piedmont. *Journal of North Carolina Academy of Science* 122:10-18.
6. Dorcas, M.E., **S.J. Price**, and G.E. Vaughan. 2006. Amphibians and reptiles of the Great Falls bypassed reaches in South Carolina. *Journal of North Carolina Academy of Science* 122:1-9.
5. **Price, S.J.**[§], D.R. Marks, R.W. Howe, J. Hanowski, and G.J. Niemi. 2005. The importance of spatial scale for conservation and assessment of anuran populations in coastal wetlands of the western Great Lakes. *Landscape Ecology* 20:441-454. (2.173)
4. **Price, S.J.** and J.M. Jaskula. 2005. *Hemidactylium scutatum*. Nesting Ecology. *Herpetological Review*. 36:159
3. **Price, S.J.** and J.M. Jaskula. 2005. *Hemidactylium scutatum*. Terrestrial Microhabitat. *Herpetological Review*. 36:159.
2. **Price, S.J.** and J.M. Jaskula. 2002. *Hemidactylium scutatum*. Record Size. *Herpetological Review*. 33:298.
1. **Price, S.J.** 2000. Geographic Distribution. *Hemidactylium scutatum*. *Herpetological Review*. 31:249.

Extension/Popular Publications (Total to date: 4)

4. **Price, S.J.** and A.N. Drayer. 2016. Kentucky Snake Identification (UK Extension). <http://kysnakes.ca.uky.edu/>
3. Agha, M., B. Augustine, and **S.J. Price**. 2015. Gap-based forest harvesting and the thermal ecology of eastern box turtles. Kentucky Woodlands Magazine 10:20-21.
2. Williams, J., **S.J. Price** and P. Wood. 2014. Salamanders and surface mining in the Appalachian Mountains. Partners in Amphibian and Reptile Conservation Monthly Newsletter 12:17-18
1. **Price, S.J.** 2013. Salamanders of Kentucky. Kentucky Woodlands Magazine 8: 8-9.

Reports (Total to date: 1)

1. **Price, S.J.** and T. Kreher. 2016. Amphibian habitat assessment at the Paducah Gaseous Diffusion Plant and the West Kentucky State Wildlife Management Area. Prepared for University of Kentucky Center for Applied Energy Research, Kentucky Research Consortium for Energy and Environment. UK/KRCEE Doc# P27.16.2015

RECENT PRESENTATIONS (2013-2020) * undergraduate student, ‡ graduate student, § presenter

Invited Presentations (Total to date: 10)

10. **Price, S. J.** § 2020. Snake Fungal Disease in Kentucky. KY Chapter of The Wildlife Society Annual Meeting (Poster). February 20-21. Lake Cumberland State Resort Park.
9. **Price, S. J.** § 2018. Patterns and processes in urban environments allow for unique ecological investigations: a herpetological perspective. Centre College. 22 October. Danville, KY.
8. **Price, S. J.** § 2016. Patterns and processes in urban environments allow for unique ecological investigations: a herpetological perspective. Experimental Urban Ecology Workshop, Ecological Research and Education Center, University of Kentucky. 12 November. Lexington KY.
7. **Price, S.J.** § 2015. Snake fungal disease in Kentucky. Department of Forestry, University of Kentucky. 30 November. Lexington KY.
6. **Price, S.J.** § 2015. Quantifying the effects of habitat disturbance on amphibian populations in the southeastern United States. Middle Tennessee State University 8 October. Murfreesboro TN.
5. **Price, S.J.** §, Muncy, B.L. ‡, and C.D. Barton. 2015. Mountaintop removal and valley fills reduce stream salamander occupancy, abundances, and richness in eastern Kentucky. Department of Biology and Chemistry, Morehead State University, 24 March. Morehead, KY.

4. **Price, S.J.**[§], Muncy, B.L.[‡], and C.D. Barton. 2014. Effects of mountaintop removal and valley fill on stream salamander populations. Biology Department, Davidson College, 18 November. Davidson NC. 18 November Davidson NC.

3. **Price, S.J.**[§], Muncy, B.L.[‡], and C.D. Barton. 2014. Effects of mountaintop removal and valley fill on stream salamander occupancy and abundance. USFWS, 21 July Frankfort KY.

2. **Price, S.J.**[§], Muncy, B.L.[‡], and C.D. Barton, and 2014. Effects of mountaintop removal and valley fill on stream salamanders. Water Quality Roundtable, Eastern Kentucky University, 11 April Richmond, KY.

1. **Price, S.J.**[§] 2013. Amphibian populations in dynamic and degraded landscapes. Biology Department, Centre College, 3 December. Danville, KY.

Selected Presentations (Total to date: 65)

65. Drayer, A. N.[§], J. C. Guzy, and **S. J. Price**. 2020. Distribution, occupancy and abundance of *Ambystoma barbouri* in central Kentucky streams. KY Chapter of The Wildlife Society Annual Meeting (Poster). February 20-21. Lake Cumberland State Resort Park.

64. Drayer, A. N.[§], **Price, S. J.**, J.C. Guzy, and R. Caro. 2020. Created ephemeral wetlands as habitat for amphibian populations in western Kentucky, USA. KY Chapter of The Wildlife Society Annual Meeting (Poster). February 20-21. Lake Cumberland State Resort Park.

63. **Price, S. J.**[§], Drayer, A.N., J.C. Guzy, and R. Caro. 2020. Created ephemeral wetlands as habitat for amphibian populations in western Kentucky, USA. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 27- March 1. Camp McDowell, Nauvoo, AL.

62. Greene, K. M.[§], **S. J. Price**, J. Van Cleve, and A. N. Drayer. 2020. Dispersal and genetic connectivity of amphibian populations in an altered landscape. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 27- March 1. Camp McDowell, Nauvoo, AL

61. Ibach, A.J.[§] and **S. J. Price**. 2020. Modeling individual growth in two natricine snake species. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 27- March 1. Camp McDowell, Nauvoo, AL

60. Tomke, S.A.[§], S.J. Price and S. Carr. 2020. Hellbenders in Kentucky. Current Status and Research Efforts. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 27- March 1. Camp McDowell, Nauvoo, AL

60: Lambert, M.[§], **S.J. Price** and C. Barton 2019. Evaluation of artificial wetland effectiveness using amphibians as indicators of habitat quality on a reforested surface mine in

the Monongahela National Forest, West Virginia. ESA/USSEE Joint Meeting (Poster), Aug 11-16, Louisville, Kentucky

59. White, D. §, W.R. Haag, **S.J. Price**, J. J. Culp and M. McGregor. 2019. Influence of *Corbicula fluminea* and water temperature on juvenile mussel growth in the wild. Freshwater Mussel Conservation Society Symposium (Talk). April 14-18. San Antonio, TX

58. Haag, W.R. §, **S. J. Price**, A. Darracq, J. J. Culp, and M. M. McGregor. 2019. Biomarker responses of juvenile freshwater mussels to starvation and exposure to ambient stream conditions. Freshwater Mussel Conservation Society Symposium (Talk). April 14-18. San Antonio, TX

57. Ibach, A. §, and **S. J. Price**. Growth Rates of two natricine snake species: differences between sexes, age classes and sites. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Talk), Feb 14-17, Black Mountain, North Carolina

56. **Price, S. J.** §, McKenzie, J.M., G. M. Connette, S. J. Bonner and J. M. Lorch. 2019. Effects of snake fungal disease on short-term survival, behavior, and movement in free ranging snakes. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting), Feb 14-17, Black Mountain, North Carolina

55: Drayer, A. N. §, J. C. Guzy, and **S. J. Price**. 2019. Distribution, occupancy and abundance of *Ambystoma barbouri* in central Kentucky streams. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Talk), Feb 14-17, Black Mountain, North Carolina

54. Davis, A. G. §, W. Leuenberger, A. N. Drayer, and **S. J. Price**. 2019. Ecology of *Siren intermedia* in western Kentucky: Preliminary results using a spatial capture-recapture approach. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Talk), Feb 14-17, Black Mountain, North Carolina

53. Haag, W. R. §, J. J. Culp, M. McGregor, **S. J. Price** and L. Sneed. 2018. Factors related to growth inhibition in juvenile mussels exposed to ambient stream conditions. Freshwater Mussel Conservation Society Symposium (Talk), March 13-15, LaCrosse WI

52. **Price, S.J.** §, S.J. Bonner, J.M. Hutton[‡], A.N. Drayer, B.L. Muncy[‡], S.B. Freytag[‡] and C.D. Barton. 2018. Mountaintop mining and stream salamanders: searching for mechanisms responsible for population declines. The Wildlife Society Annual Meeting (Talk) Oct 8-11, Cleveland, OH.

51. Hutton, J.M. [‡] §, **S.J. Price**, S.J. Bonner S.C. Richter and C.D. Barton. 2018. Plethodontid stream salamander occupancy, abundance and diet along a conductivity gradient. Society of Freshwater Science Annual Meeting (Talk). May 20-34, Detroit, MI.

50. Hutton, J.M.^{‡ §}, **S.J. Price**, S.J. Bonner, S.C. Richter and C.D. Barton. 2018. Population and allochthony threshold responses of Plethodontid stream salamanders to Conductivity. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Talk). Feb 22-25, Helen, GA.
49. Lambert, M.^{‡ §} and **S.J. Price**. 2018. Improving detection of a threatened anuran species, *Lithobates areolatus*, in western Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). Feb 22-25, Helen, GA.
48. Hutton, J.M.^{‡ §}, **S.J. Price** and S.C. Richter. 2018. Diet of the Black Mountain Salamander (*Desmognathus walteri*) in Southeastern Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). Feb 22-25, Helen, GA.
47. Lambert, M.^{‡ §} and **S.J. Price**. 2017. Improving Detection and of a Threatened Anuran Species (*Lithobates areolatus*) in Western Kentucky. Kentucky Academy of Science 103rd Annual Meeting (Poster). November 3. Murray State University, Murray KY.
46. Hutton, J.M.^{‡ §}, **S.J. Price**, S.J. Bonner and C.D. Barton. 2017. Occupancy and Allochthony Threshold Responses of Plethodontid Stream Salamanders to Stream Conductivity. Kentucky Academy of Science 103rd Annual Meeting (Poster). November 3. Murray State University, Murray KY.
45. P.M. Hime^{§ ‡}, S. Unger, **S.J. Price**, L. Williams, J. Briggler, A. McMillan, M. Freake, A. Drayer, M. Foley, E. Lemmon and D.W. Weisrock. 2017. SNP-based species delimitation in North America's largest salamander. Hellbender Symposium. June 19-22. Mississippi Museum of Natural Science, Jackson, MS.
44. McKenzie, J.^{‡ §}, **S. J. Price**, G.M. Connette, L. J. Fleckenstein*, A.N. Drayer and J.M. Lorch. 2017. Snake Fungal Disease in Kentucky. Kentucky Chapter of The Wildlife Society. February 16-17. Barren River State Resort Park, KY.
43. McKenzie, J.^{‡ §}, **S. J. Price**, G.M. Connette, L. J. Fleckenstein*, A.N. Drayer and J.M. Lorch. 2017. Field diagnostics and seasonality of *Ophidiomyces ophidiicola* in wild snake populations. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 16-19. Little Rock, AR.
42. Hutton, J.M.^{‡ §}, **S.J. Price** and S. C. Richter. 2017. The diet of the Cumberland Plateau Salamander (*Plethodon kentucki*) in an old growth forest of southeastern Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 16-19. Little Rock, AR.
41. Weisrock, D.W.[§], P.M. Hime[‡], **S.J. Price**, S. Unger, J. Briggler, A. McMillan, M. Freake, A. Drayer, M. Foley, and E. Lemmon. 2016. What the hellbender? SNP-based species delimitation in North America's largest salamander. Evolution. June 17-21, 2016. Austin, TX.

40. Freytag, S.B. §, **S.J. Price**, S.J. Bonner, B. L. Muncy†, A. N. Drayer and C.D. Barton. 2016. Occupancy dynamics of stream salamanders in degraded and reference headwater streams. Association of Southeastern Biologists Annual Meeting 30 March-2 April, Concord, NC.
39. **Price, S.J.** §, B.L. Muncy†, S.J. Bonner, A. Drayer and C.D. Barton. 2016. Effects of mountaintop removal mining and valley fills on occupancy and abundance of stream salamanders. Association of Southeastern Biologists Annual Meeting 30 March-2 April, Concord, NC.
38. McKenzie, J.M. §‡ **S.J. Price**, L.J. Fleckenstein*, A.N. Drayer and J.M. Lorch. 2016. Assessment of snake fungal disease in Kentucky. Association of Southeastern Biologists Annual Meeting 30 March-2 April, Concord, NC.
37. Freytag, S.B. §‡, **S.J. Price**, S.J. Bonner, B. L. Muncy†, A. N. Drayer and C.D. Barton. 2016. Occupancy dynamics of stream salamanders in degraded and reference headwater streams. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 19-21. Camp McDowell, Nauvoo, AL.
36. Hime P.M. §‡, S.D. Unger, A.M. McMillan, M. Freake, S.O. Nunziata†, A.R. Lemmon, E.M. Lemmon, **S.J. Price**, R.N. Williams and D.W. Weisrock. 2015. Genome-scale resolution of species boundaries and demography in *Cryptobranchus*. Seventh Hellbender Symposium, 14-17 June, Saint Louis, MO.
35. **Price, S.J.** §, B. Muncy†, S. Bonner, C. Barton, and A. Drayer. 2015. Impacts of mountaintop removal mining and valley fills on stream salamander occupancy, abundance and species richness. Society for Freshwater Science annual meeting, 17-21 May, Milwaukee WI.
34. Murphy, M.O. ‡§, **S.J. Price**, W. Haag, and D. Weisrock. 2015. Assessing congruency of population structure and gene flow between freshwater mussels and their hosts: a genomic approach. Society for Freshwater Science annual meeting, 17-21 May, Milwaukee WI.
33. Yates, W.T.* §, M. Agha†, J.R. Ennen, J.E. Lovich, C.H. Ernst, E.M. Ernst, and **S.J. Price**. 2015. Delayed emergence dynamics in Emydid neonate turtles of North America. Association of Southeastern Biologists Annual Meeting 1-5 April, Chattanooga, TN.
32. Agha, M. ‡§, B. Augustine, J.E. Lovich, D. Delaney, B. Sinervo, M.O. Murphy, J.R. Ennen, J.R. Briggs, and **S.J. Price**. 2015. Using motion-sensor camera technology to infer seasonal activity and thermal niche of the desert tortoise (*Gopherus agassizii*). Association of Southeastern Biologists Annual Meeting 1-5 April, Chattanooga, TN.

31. Agha, M. †§, J.E. Lovich, J.R. Ennen, B. Augustine, T.R. Arundel, and **S.J. Price**. 2015. Exploring the spatial dynamics of tortoise burrow placement in an industrial landscape. Association of Southeastern Biologists Annual Meeting 1-5 April, Chattanooga, TN.
30. Murphy, M.O. †§, M. Agha †, T.A. Mairret †, M.E. Dorcas and **S.J. Price**. 2015. The effects of urbanization on body size of larval stream salamanders. Association of Southeastern Biologists Annual Meeting 1-5 April, Chattanooga, TN.
29. Hime, P.M. †§, **S.J. Price**, and D.W. Weisrock. 2014. Genomic insights into amphibian evolution and conservation. SUNY Buffalo Biology Department Seminar Series (Invited Oral Presentation). November 1, 2014. Buffalo, NY.
28. Hime P.M. †§, S.O. Nunziata †, J.T. Briggler, J.S. Reece, **S.J. Price**, and D.W. Weisrock. 2014. Genomic approaches to *Cryptobranchus* conservation. AZA Amphibian Taxon Advisory Group Advanced Amphibian Course in Hellbender Management and Conservation (Invited Oral Presentation). November 9-12, 2014. St. Louis, MO
27. Lewis, M.A. *§, M. Agha †, and **S.J. Price**. 2014. Preliminary analysis of the use of open canopy gaps by the eastern box turtle (*Terrapene.c.carolina*). Natural Resource and Environmental Science Internship/Research Forum. October 9, 2014. Lexington, KY.
26. Agha, M. †§, B. Augustine †, M. O. Murphy †, J. E. Lovich, D. Delaney, J. R. Ennen, B. Sinervo, R. Cooper and **S.J. Price**. 2014. Inferring seasonal activity and thermal niche of Agassiz's desert tortoises (*Gopherus agassizii*) through the application of motion sensor camera technology. Symposium for the Conservation and Biology of Tortoises and Freshwater Turtles, co-hosted by TSA and IUCN. August, 2014. Orlando, FL.
25. Lewis, M.A *§, M. Agha †, and **S.J. Price**. 2014. Preliminary analysis of the use of open canopy gaps by the eastern box turtle (*Terrapene. c. carolina*). Symposium for the Conservation and Biology of Tortoises and Freshwater Turtles, co-hosted by TSA and IUCN. August, 2014. Orlando, FL.
24. Agha, M. †§, M. O. Murphy †, J. E. Lovich, J. R. Ennen, C. R. Oldham †, K. Meyer, C. Bjurlin, M. Austin, S. Madrak, C. Loughran, L. Tennant, and **S.J. Price**. 2014. Research activities and winter precipitation influence voiding behavior in Agassiz's desert tortoise (*G. agassizii*). 57th Annual Meeting of the Society for the Study of Amphibians and Reptiles hosted by Society of Ichthyologists and Herpetologists. July 30-August 3, 2014. Chattanooga, TN.
23. Murphy, M.O. †§, **S.J. Price**, and M.E. Dorcas. 2014. The effects of urbanization on salamander body size using a before-after control-impact design. 57th Annual Meeting of the Society for the Study of Amphibians and Reptiles hosted by Society of Ichthyologists and Herpetologists. July 30-August 3, 2014. Chattanooga, TN.

22. Agha, M. †§, J. E. Lovich, J. R. Ennen, B. Augustine‡, T. R. Arundel, M. O. Murphy‡, D. Delaney, J. Briggs, K. Meyer, C. Bjurlin, M. Austin, S. Madrak, L. Tennant, and **S. J. Price**. 2014. Turbines and terrestrial vertebrates: Variation in tortoise survivorship between a wilderness and wind energy facility in the desert southwest, USA. 57th Annual Meeting of the Society for the Study of Amphibians and Reptiles hosted by Society of Ichthyologists and Herpetologists. July 30-August 3, 2014. Chattanooga, TN.
21. Hime P.M. †§, S.O. Nunziata‡, J.T. Briggler, J.S. Reece, **S.J. Price**, and D.W. Weisrock. 2014. Genomic approaches to *Cryptobranchus* conservation. 57th Annual Meeting of the Society for the Study of Amphibians and Reptiles hosted by Society of Ichthyologists and Herpetologists. July 30-August 3, 2014. Chattanooga, TN.
20. Oldham, C.R. †§, L.J. Fleckenstein III* and **S.J. Price**. 2014. Novel application of passive integrated transponder (PIT) telemetry in natricine snakes. 57th Annual Meeting of the Society for the Study of Amphibians and Reptiles hosted by Society of Ichthyologists and Herpetologists. July 30-August 3, 2014. Chattanooga, TN.
19. Murphy, M.O. †§, **S.J. Price**, and D.W. Weisrock. 2014. Host before Habitat? Assessing congruency in patterns of gene flow in an imperiled freshwater mussel and its vertebrate host. Evolution. June 21-25, 2014. Raleigh, NC.
18. Muncy, B.L. †§, C.D. Barton, and **S.J. Price**. 2014. Effects of mountaintop removal and valley fill on stream salamander communities. Association of Southeastern Biologists Annual Meeting 2-5 April, Spartanburg, SC.
17. Oldham, C.R. †§, L.J. Fleckenstein III* and **S.J. Price**. 2014. Novel application of passive integrated transponder (PIT) telemetry in natricine snakes. Association of Southeastern Biologists Annual Meeting 2-5 April, Spartanburg, SC.
16. Maignet, T.A. †§, J.J. Cox, D.R. Schneider, C.D. Barton, **S.J. Price** and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. Association of Southeastern Biologists Annual Meeting 2-5 April, Spartanburg, SC.
15. Agha, M. ‡, M.O. Murphy‡§, J.E. Lovich, J.R. Ennen, C.R. Oldham‡ and **S.J. Price**. 2014. Research activities influence voiding behavior in desert tortoises (*Gopherus agassizii*). Midwest Ecology and Evolution Conference, 1-2 March, Dayton, OH.
14. Hime, P.M. †§, **S.J. Price**, and D.W. Weisrock. 2014. Leveraging genomics to understand and conserve an imperiled North American giant salamander. University of Kentucky EcoLunch Seminar Series (Oral Presentation). February 28, 2014. Lexington, KY.
13. Hime, P.M. †§, **S.J. Price**, and D.W. Weisrock. 2014. Leveraging genomics to inform *Cryptobranchus* conservation: Sex-linked genes, range-wide phylogenetics and species

delimitation, and field surveys across Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting (Poster). February 13-16, 2014. Lake Cumberland, KY.

12. Maigret, T.A.^{‡§}, J.J. Cox, D.R. Schneider, C.D. Barton, **S.J. Price** and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, 13-15 February, Lake Cumberland, KY.

11. Agha, M.^{‡§}, M. O. Murphy[‡], J. E. Lovich, J. R. Ennen, C. R. Oldham, K. Meyer, C. Bjurlin, M. Austin, S. Madrak, C. Loughran, L. Tennant, **S.J. Price**. 2014 Research activities and winter precipitation influence voiding behavior in Agassiz's desert tortoise (*G. agassizii*). Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, 13-15 February, Lake Cumberland, KY.

10. Muncy, B.L.^{‡§}, C.D. Barton, and **S.J. Price**. 2014. Effects of mountaintop removal and valley fill on stream salamander communities. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, 13-15 February, Lake Cumberland, KY.

9. Agha, M.^{‡§}, M.O. Murphy[‡], J.E. Lovich, J.R. Ennen, C.R. Oldham[‡] and **S.J. Price**. 2014. Research activities influence voiding behavior in desert tortoises (*Gopherus agassizii*). Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, 13-15 February, Lake Cumberland, KY.

8. Oldham, C.R.^{‡§}, L.J. Fleckenstein III^{*§} and **S.J. Price**. 2014. Novel application of passive integrated transponder (PIT) telemetry in natricine snakes. Southeast Partners in Amphibian and Reptile Conservation Annual Meeting, 13-15 February, Lake Cumberland, KY.

7. Maigret, T.A.^{‡§}, J.J. Cox, D.R. Schneider, C.D. Barton, **S.J. Price** and J.L. Larkin. 2014. Effects of timber harvest within streamside management zones on salamander populations in ephemeral streams of southeastern Kentucky. The Kentucky Chapter of the Wildlife Society Annual Meeting. 20-21 February, Barren River Lake State Park, KY

6. Muncy, B.L.^{‡§}, C.D. Barton, and **S.J. Price**. 2014. Effects of mountaintop removal and valley fill on stream salamander communities. The Kentucky Chapter of the Wildlife Society Annual Meeting. 20-21 February, Barren River Lake State Park, KY.

5. Ruder, C.D.^{*§}, C. Akins, **S.J. Price**, L.A. Harden, J.W. Gibbons, and M.E. Dorcas. 2013. Effects of environmental temperature variation on body temperatures and habitat use in free-ranging diamondback terrapins (*Malaclemys terrapin*). 6th Symposium on the Ecology, Status and Conservation of Diamondback Terrapins. September 13-15, 2013. Seabrook Island, SC.

4. Witzcak, L.R.^{*§}, J.C. Guzy, **S.J. Price**, J. W. Gibbons, and M.E. Dorcas. 2013. Creek-specific variation in survivorship and recruitment of *Malaclemys terrapin* over three decades.

6th Symposium on the Ecology, Status and Conservation of Diamondback Terrapins. September 13-15, 2013. Seabrook Island, SC.

3. **Price, S.J.** §, J.C. Guzy and M.E. Dorcas. 2013. Detection and occupancy estimates of anuran amphibians: the manual calling survey and beyond. Symposia on detectability and studying rare species. Joint Meeting of Ichthyologists and Herpetologists. July 10-15, 2013. Albuquerque, NM.

2. Guzy, J.C. §, **S.J. Price** and M.E. Dorcas. 2013. Effects of damming on riparian zone reptiles and amphibians. Symposia on impact of energy development on amphibians and reptiles in North America. Joint Meeting of Ichthyologists and Herpetologists. July 10-15, 2013. Albuquerque, NM.

1. Maigret, T.A. †§ J.J. Cox, **S.J. Price** and C.D. Barton. 2013. Habitat preferences and hibernacula selection of timber rattlesnakes in an increasingly fragmented landscape in southeastern Kentucky. Southeastern Partners in Amphibian and Reptile Conservation Annual Meeting. February 21-24, 2013. Hickory Knob State Park, McCormick, SC.

TEACHING AND ADVISING

Courses Taught

NRE 320. Natural Resources and Environmental Analysis: Costa Rica (3 credits)

Summer 2019, Enrollment: 10
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Summer 2018, Enrollment: 12
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Summer 2017, Enrollment: 19
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Summer 2016, Enrollment: 13
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Summer 2014, Enrollment: 12
Overall Value of the Course 4.0/4.0 (College Mean =3.31)
Quality of Teaching: 4.0/4.0 (College Mean = 3.39)

Summer 2013, Enrollment: 19
Overall Value of the Course: 4.0/4.0 (College Mean =3.5)

Quality of Teaching: 4.0/4.0 (College Mean = 3.5)

FOR 530. Freshwater Ecology (3 credits)

Fall 2017, Enrollment: 12

Overall Value of the Course (4.6/5.0) (College Mean = 4.3)

Quality of Teaching: 4.6/5.0 (College Mean = 4.2)

FOR 540. Urban Ecology (3 credits)

Fall 2014, Enrollment: 5

Overall Value of the Course (4.0/4.0) (College Mean = 3.37)

Quality of Teaching: 4.0/4.0 (College Mean = 3.42)

Fall 2013, Enrollment: 4

Overall Value of the Course (3.9/4.0) (College Mean = 3.5)

Quality of Teaching: 3.9/4.0 (College Mean = 3.5)

FOR 510 Herpetology (4 credits)

Spring 2020, Enrollment: 24

Overall Value of the Course: pending

Quality of Teaching: pending

Spring 2019, Enrollment: 21

Overall Value of the Course 4.9/5.0 (College Mean = 4.2)

Quality of Teaching: 4.9/5.0 (College Mean = 4.4)

Spring 2018, Enrollment: 19

Overall Value of the Course 4.9/5.0 (College Mean = 4.2)

Quality of Teaching: 4.9/5.0 (College Mean = 4.4)

Spring 2017, Enrollment: 12

Overall Value of the Course 4.89/5.0 (College Mean = 4.41)

Quality of Teaching: 4.89/5.0 (College Mean = 4.27)

Spring 2016, Enrollment: 14

Overall Value of the Course 3.5/4.0 (College Mean = 3.35)

Quality of Teaching: 3.67/4.0 (College Mean = 3.48)

Spring 2015, Enrollment: 14

Overall Value of the Course 3.75/4.0 (College Mean = 3.35)

Quality of Teaching: 3.75/4.0 (College Mean = 3.39)

Spring 2014, Enrollment: 10

Overall Value of the Course 4.0/4.0 (College Mean = 3.31)

Quality of Teaching: 4.0/4.0 (College Mean = 3.39)

Spring 2013, Enrollment: 15
Overall Value of the Course 3.5/4.0 (College Mean = 3.5)
Quality of Teaching: 3.7/4.0 (College Mean = 3.5)

FOR 601 – Research Methods in Forestry (3 credits)

Fall 2019, Enrollment: 3
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Fall 2018, Enrollment: 9
Overall Value of the Course 5.0/5.0 (College Mean = 4.3)
Quality of Teaching: 5.0/5.0 (College Mean = 4.2)

Fall 2017, Enrollment: 5
Overall Value of the Course 5.0/5.0 (College Mean = 4.3)
Quality of Teaching: 5.0/5.0 (College Mean = 4.2)

FOR 770 – University Forestry Teaching (1 credit)

Spring 2020, Enrollment: 2
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Fall 2019, Enrollment: 4
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Spring 2019, Enrollment: 2
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Fall 2018, Enrollment: 4
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

FOR 770 – Reptile and Amphibian Conservation and Management (1 credit)

Spring 2018, Enrollment: 6
Overall Value of the Course: Threshold not met
Quality of Teaching: Threshold not met

Spring 2016, Enrollment: 8
Overall Value of the Course 3.88/4.0 (College Mean = 3.35)
Quality of Teaching: 4.0/4.0 (College Mean = 3.48)

BIO 199 – STEMcats Research (1 credit)

Spring 2016, Topic: Herpetological Research, Enrollment: 1

FOR 791 – Research in Forestry

Fall 2019, Topic: Capture-Mark-Recapture Analysis, Enrollment: 2 (2 credits)

Spring 2015, Topic: Population Analysis, Enrollment: 2 (2 credits)

Spring 2014, Topic: Estimating salamander occupancy and abundance, Enrollment: 1 (2 credits)

Spring 2013, Topic: Mark-recapture analyses, Enrollment: 1 (3 credits)

FOR 602 – Renewable Natural Resources in a Global Perspective

Fall 2017, Co-instructor responsible for three 50-minutes class sessions, Enrollment: 12 (3 credits)

Fall 2015, Co-instructor responsible for three 50-minutes class sessions, Enrollment: 10 (3 credits)

Fall 2013, Co-instructor responsible for three 50-minutes class sessions, Enrollment: 16 (3 credits)

NRE 320. Natural Resources and Environmental Analysis: Robinson Forest

Spring 2019, Co-instructor responsible for a 6-hour class session; Enrollment: 13 (3 credits)

Spring 2018, Co-instructor responsible for a 6-hour class session; Enrollment: ~15 (3 credits)

Spring 2017, Co-instructor responsible for a 6-hour class session; Enrollment: 22 (3 credits)

Spring 2016, Co-instructor responsible for a 6-hour class session; Enrollment: 17 (3 credits)

Spring 2015, Co-instructor responsible for a 6-hour class session; Enrollment: 7 (3 credits)

Spring 2014, Co-instructor responsible for a 6-hour class session; Enrollment: 22 (3 credits)

Spring 2013, Co-instructor responsible for a 6-hour class session; Enrollment: 14 (3 credits)

Student Advising and Committee Service*Advised or Co-advised Graduate Students (12)*

Brenee' Muncy, M.S. Forestry, completed degree in 2014, co-major advisor with C.D. Barton
Thesis: Effects of mountaintop removal mining and valley fills on stream salamander communities.

Mickey Agha, M.S. Forestry, completed degree in 2015

Thesis: A long-term investigation of the federally threatened desert tortoise (*Gopherus agassizii*) at a winder energy facility in Southern California.

Mason Murphy, M.S. Biology, completed degree in 2016, co-major advisor with D.W. Weisrock

Thesis: Capture and population structure of *Necturus maculosus* in central and eastern Kentucky.

Sara Beth Freytag, M.S. Forest and Natural Resource Sciences, completed degree in 2016

Thesis: Effects of mountaintop removal mining on population dynamics of stream salamanders.

Christian Oldham, M.S. Forest and Natural Resource Sciences, completed degree in 2016

Thesis: Investigations in cryptic species: considerations and applications for estimating detection, occupancy, and abundance of semi-aquatic snakes.

Jennifer McKenzie, M.S. Forest and Natural Resource Sciences, completed degree August 2018

Thesis: Effects of snake fungal disease on behavior and survival in wild snake populations.

Jacob Hutton, M.S. Forest and Natural Resource Sciences, completed degree August 2018

Thesis: Effects of stream pollution on consumption of terrestrial prey subsidies by salamanders.

Michaela Lambert, M.S. Forest and Natural Resource Sciences, completed degree May 2020

Thesis: Pond-breeding amphibian use of restored wetlands on a surface mine.

Drew White, M.S. Forest and Natural Resource Sciences, completed degree May 2020

Thesis: Food abundance modulates juvenile freshwater mussel (Unionidae) growth responses to the Asian Clam (*Corbicula fluminea*).

Andrew Ibach, M.S. Forest and Natural Resource Sciences, expected degree August 2020

Thesis: Growth of two Natricine snake species: effects of site, sex and disease

Kathryn Greene, Ph.D. Biology, expected degree TBD

Dissertation: Dispersal and gene flow across heterogeneous landscapes

Sarah Tomke, Ph.D. Forest and Natural Resource Sciences, expected degree TBD

Dissertation: Hellbenders in Kentucky: Monitoring and recruitment

Graduate Student Committee (11)

Eight M.S. students, University of Kentucky, Department of Forestry and Natural Resources

One M.S. student, Eastern Kentucky University, Department of Biology

Two Ph.D. students, University of Kentucky, Department of Biology

Undergraduate Students advised (14)

Fourteen undergraduate students, University of Kentucky, Natural Resources and Environmental Science Students

Independent Research Undergraduate Students (15)

Thirteen students, University of Kentucky, Natural Resources and Environmental Science (11), Animal Sciences (2)

One student, Northern Ohio University, sponsored through NSF REU to University of Kentucky, Department of Biology.

Student Awards

Kathryn Greene

- Kentucky Society of Natural History (\$1000)
- National Science Foundation Graduate Research Fellowship Program Receptient (\$34,000/yr for 3 years)
- Eller Billings Summer Research Mini-Grant, UK Appalachian Center (\$500)
- University of Kentucky Biology Department Summer Research Award 2018-2019 (\$4,333)
- Gertrude Flora Ribble Research Fellowship (\$2000)

Sarah Tomke

- Graduate School Congress Research Award (\$500)
- Red Barrington Scholarship Award (\$2000)

Drew White

- Forestry Graduate Student Research Conference Travel Grant (\$1200)
- Forestry Graduate Student Research Conference Travel Grant (\$792)

Andrew Ibach

- Forestry Graduate Student Research Conference Travel Grant (\$364)

Brenee' Muncy

- Forestry Graduate Student Award for Excellence in Research, Academic Performance, and Service, awarded by the University of Kentucky, Department of Forestry
- Forestry Graduate Student Research Conference Travel Grant (\$612)
- Natural History/Biodiversity Grant, Kentucky Society of Natural History (\$500)
- Southeast Partners in Amphibian and Reptile Conservation Travel Award (\$50)

Christian Oldham

- Forestry Graduate Student Award for Excellence in Research, Academic Performance, and Service, awarded by the University of Kentucky, Department of Forestry
- Forestry Graduate Student Research Conference Travel Grant (\$755)

Mickey Agha

- National Science Foundation, Graduate Research Fellowship Program Honorable Mention
- Forestry Graduate Student Research Conference Travel Grant (\$367)
- Desert Legacy Fund, California Desert Research Program and Community Foundation (\$3200)

Mason Murphy

- Kentucky Academy of Science, Marcia Athey Grant (\$933)
- Society for Freshwater Science, Graduate Student Conservation Research Award (\$1000)
- Southeast Partners in Amphibian and Reptile Conservation Travel Award (\$50)
- Forestry Graduate Student Research Conference Travel Grant (\$180)
- Kentucky Society for Natural History (\$500)

Sara Beth Freytag

- Kentucky Society for Natural History (\$500)
- Eller Billings Summer Research Mini-Grant, UK Appalachian Center (\$500)
- Karri Casner Environmental Sciences Fellowship from the Tracy Farmer Institute for Sustainability and the Environment (\$1500)
- Kentucky Academy of Science, Marcia Athey Grant (\$1000)
- UK Forestry Department Travel Award (joint with J. McKenzie) (\$790.58)

Jennifer McKenzie

- American Society of Ichthyologists and Herpetologists, Gaige Award (\$800)
- Herpetologists' League, E.E. Cummings Grant – Honorable mention
- Eller Billings Summer Research, UK Appalachian Center (\$915)
- Chicago Herpetological Society (\$1000)
- Kentucky Wildlife Society (\$250)
- Kentucky Academy of Sciences, Marcia Athey Grant (\$1070.27)
- Association of Southeastern Biologist Graduate Student Travel Award (\$290)
- UK Forestry Department Travel Award (joint with S. Freytag) (\$790.58)

Jake Hutton

- Society for the Study of Amphibians and Reptiles Roger Conant Grants in Herpetology Program, Conservation of Amphibians and Reptiles (\$500)
- Eller Billings Summer Research, UK Appalachian Center (\$1000)
- Karri Casner Environmental Sciences Fellowship from the Tracy Farmer Institute for Sustainability and the Environment (\$1500)
- The ECU Division of Natural Areas' Grant-in-Aid of Student Research Program (\$192)
- Kentucky Academy of Science Marcia Athey Grant (\$1140)
- Society for Freshwater Science, Graduate Student Conservation Research Award (\$1000)
- Southeast PARC travel award (\$250)
- UK Forestry Department Travel Award (joint with M. Lambert) (\$433.90)

- UK Forestry Department Travel Award (joint with J. McKenzie, T. Maigret) (\$1384.80)

Michaela Lambert

- ESA Awards
- Southeast PARC travel award (\$250)
- UK Forestry Department Travel Award (joint with J. Hutton) (\$433.90)
- 2016 - University of Kentucky Undergraduate Research award (\$2000)
- Selected to participate in NSF REU at Savannah River Ecology Lab

Mariah Lewis (undergraduate student)

- 2014 - University of Kentucky Undergraduate Research award (\$2000)

Jonathan Matthews (undergraduate student)

- 2016 - University of Kentucky Undergraduate Research award (\$2000)

EXTENSION AND OUTREACH ACTIVITIES (2013-present)

Select Educational Programs and Activities (by me, my students or staff); 42 events in total; approximately 3,500 individuals impacted

KY State Fair - Ashely Osborne (4-H, August 21, 2019) and Carol Spence (College of Ag Communications, August 19, 2019)

- ~ 700 participants

Marshall County High School, West Kentucky Wildlife Management Area (May 13-15, 2019; September 9-11, 2019)

- 100 students

UK Sustainability Fair at Greg Page (September 4, 2019)

- ~ 200 students

Science Fair for home-school group (January 7, 2019)

- ~75 students

Mason Co. elementary school with (Mason Co. extension- Macy Fawns; March 7, 2019 – K-5)

- ~ 200 students

UK Arboretum – Children’s Garden – (April 6, 2019) Spectacular Spring-

- 100 children and families

UK Arboretum – Arbor Day – (April 27, 2019)

- 100 children and families

Yates Elementary Family Science Night (April 25, 2019)

- ~ 300 K-5th graders

UK Arboretum Children's Garden - (July 13, 2019) – Sizzling Summer

- 50 children

UK Arboretum Children's Garden – (October 5, 2019) – Amazing Autumn

- 50 children

KY State Fair - (August 22-23, 2018) Ashely Osborne (4-H) and Carol Spence (College of Ag Communications)

- ~ 600 general public

Mountain Ag Youth Day (September 18, 2018) - Robinson Forest (Laurie Taylor-Thomas- Extension)

- ~ 300 high school students

Marshall County High School, West Kentucky Wildlife Management Area (October 15-17, 2018, November 12-14, 2018)

- Two day workshop with 50 students.

Floracliff Field Studies Workshop - Herpetology. September 16-17, 2017.

- Two day workshop with 20 students. Co-taught with S. Richter (EKU), A. Drayer

Reptiles and Amphibians of Kentucky. Kentucky State Fair. August 2017.

- Effort resulted in contact with approximately 400 attendees

Reptiles and Amphibians in Kentucky's Forests. Kentucky Wood Expo. September 2017.

- Effort resulted in contact with approximately 200 attendees

Robinson Forest Field Day. June 7, 2017.

- Effort resulted in contact with approximately 150 attendees.

Reptiles and Amphibians. Robinson Center Mountain Ag Field Day. October 2016.

- Effort resulted in contact with approximately 200 people.

Reptiles and Amphibians of Kentucky. Kentucky State Fair. August 2016.

- Effort resulted in contact with approximately 400 attendees

Reptiles and Amphibians in Kentucky's Forests. Kentucky Wood Expo. September 2015.

- Effort resulted in contact with approximately 300 attendees, including approximately 70 middle school students.

Reptiles and Amphibians in Kentucky. Kentucky State Fair. August 2015.

- Effort resulted in contact with approximately 200 attendees

Reptiles and Amphibians in Kentucky. Floracliff and Maywoods Bioblitz event. Fayette and Garrard Counties, KY, June 2015.

- Effort resulted in contact with approximately 70 attendees.

SERVICE AND RECOGNITION

Reviewer Service (Total since arrival at UK: 38)

Biology (1), Biological Conservation (4), Conservation Physiology (1), Copeia (2), Ecology (1), Forest Ecology and Management (1), Herpetologica (2), Herpetological Conservation and Biology (5), Herpetological Review (3), Hydrobiologia (1), Journal of Applied Ecology (1), Journal of Herpetology (3), Journal of North American Herpetology (1), Journal of Wildlife Management (2), Landscape and Urban Planning (2), Northeast Naturalist (2), Wetlands (1), Wildlife Society Bulletin (2), Urban Ecosystems (2), University of West Virginia Press(1)

Current Professional Affiliations

Association of Southeastern Biologists (2003-present), Partnership for Amphibian and Reptile Conservation (2002-present), Society for the Study of Amphibians and Reptiles (2002-present), Society for Freshwater Science (2015-present), The Wildlife Society – Kentucky Chapter (2014-present), The Wildlife Society (2018-present)

Awards (Total to date: 3)

2. Senior Research Award, Association of Southeastern Biologists (2016)
1. A Teacher Who Made a Difference Award, University of Kentucky (2014, 2015)

University Committee Service

Chair, Research Committee (UK, Forestry and Natural Resources)
 Undergraduate Committee (UK, Forestry and Natural Resources)
 Outreach Committee (UK, Forestry and Natural Resources)
 Seminar Committee (UK, Forestry and Natural Resources)
 Graduate Committee (UK, Forestry and Natural Resources)
 Natural Resources and Environment Science Steering Committee
 Ecological Research and Education Center (UK, Biology) Steering Committee

James Ringe

CURRICULUM VITAE

JAMES M. RINGE

PERSONAL DATA

Date and Place of Birth: 24 August, 1955, Ann Arbor, Michigan.

Marital Status: Married, three children.

EDUCATION

Ph.D. 1983, Forestry, Purdue University, West Lafayette, IN. Dissertation Title: Technology Assessment in the Structural Wood Products Industry Through Value Added Simulation.

M.S. 1979, Agriculture, University of Kentucky, Lexington, KY. Thesis Title: Effects of Bark Mulch, Fertilization, and Herbaceous Cover on Survival and Growth of Three Tree Species on Eastern Kentucky Mine Spoil.

B.S. 1977, Forestry (with High Distinction), University of Kentucky, Lexington, KY.

PROFESSIONAL EXPERIENCE

Professor, Forest Products Economics/Marketing. University of Kentucky, Department of Forestry, July 1, 1999 - present.

Associate Professor, Forest Products Economics/Marketing. University of Kentucky, Department of Forestry, December 1, 1990 – June 30, 1999.

Assistant Professor, Forest Products Economics/Marketing. University of Kentucky, Department of Forestry, December 1, 1984 - November 30, 1990.

Temporary Instructor, University of Kentucky, Department of Forestry, August 1, 1983 - December 1, 1984.

Research Instructor, Purdue University, Department of Forestry and Natural Resources, June 1979 - July 1983.

Research Assistant, University of Kentucky, Department of Forestry, May 1977 - May 1979.

DISTRIBUTION OF EFFORT

<u>Fiscal Year</u>	<u>Percent Research</u>	<u>Percent Teaching</u>	<u>Percent Administration</u>
1985-1986	75	25	
1987-1988	70	30	
1989-1992	60	40	
1993	64	36	
1994	63	37	
1995	47	53	
1996	40	60	
1997	27	73	
1998	36.7	43.3	20
1999	17	63	20
2000	39	61	
2001	20	60	20
2002	10	70	20
2003	10	75	15
2004	17	68	15
2005	17	68	15
2006	12	68	20
2007		80	20
2008		80	20

<u>Fiscal Year</u>	<u>Percent Research</u>	<u>Percent Teaching</u>	<u>Percent Administration</u>
2009		79	21
2010		70	30
2011		80	20
2012		72.5	27.5
2013		80	20
2014		80	20
2015		60	40
2016		88	12
2017		72	28

<u>Fiscal Year</u>	<u>Percent Service</u>	<u>Percent Teaching</u>	<u>Percent Administration</u>
2018	15.75	74.25	10
2019	5.35	79.65	15
2020	5.65	79.35	15
2021	5.65	79.35	15

PUBLICATIONS

REFEREED JOURNALS

Ringe, J.M., D.H. Graves, and B.G. Hansen. 1987. Characteristics and marketing methods of Kentucky hardwood lumber exporters. *Forest Products Journal* 37(5):31-34.

Ringe, J.M. and D.H. Graves. 1987. Economic factors affecting mulch choices for revegetating disturbed land. *Reclamation and Revegetation Research* 6(2):121-128.

- Hoover, W.L., J.M. Ringe, C.A. Eckelman, and J.A. Youngquist. 1987. Material design factors for hardwood laminated-veneer-lumber. *Forest Products Journal* 37(9):15-23.
- Hoover, W.L., C.A. Eckelman, J.M. Ringe, and J.A. Youngquist. 1987. Markets for hardwood laminated-veneer-lumber. *Forest Products Journal* 37(10):57-62.
- Ringe, J.M., D.H. Graves, and B.G. Hansen. 1987. Exporting hardwood lumber from Kentucky: species, grades, and markets. *Forest Products Journal* 37(10):72-76.
- Ringe, J.M. 1987. Use of the dominance concept for matching raw material grades of Douglas-fir to lumber production objectives. *Wood and Fiber Science* 19(4):370-380.
- Ringe, J.M. and W.L. Hoover. 1987. Value added analysis - a method of technological assessment in the U.S. forest products industry. *Forest Products Journal* 37(11/12):51-54.
- Hoover, W.L., C.A. Eckelman, J.M. Ringe, and J.A. Youngquist. 1988. Design and specification of hardwood laminated-veneer-lumber for furniture applications. *Forest Products Journal* 38(1):31-34.
- Ringe, J.M. 1988. The feasibility and competitive nature of yellow-poplar structural lumber using value added analysis. *Forest Products Journal* 38(9):22-26.
- Ringe, J.M. 1988. Economic aspects of sawmill residue use for tree seedling establishment on surface mines. *International Journal of Surface Mining* 2(3):129-133.
- Ringe, J.M. 1989. Economic aspects of broadcast fertilizer use for tree seedling establishment on surface mines. *International Journal of Surface Mining* 3(2):93-97.
- Ringe, J.M., D.H. Graves, and J.W. Stringer. 1989. Economics of sawmill residues in the establishment of black locust biomass plantations on surface mines. *International Journal of Surface Mining* 3(4):201-205.
- Ringe, J.M. and D.H. Graves. 1990. The economics of mycorrhizal inoculations and wood-based mulches in the reforestation of surface mines. *International Journal of Surface Mining and Reclamation* 4(2):47-52
- Ringe, J.M. and D.H. Graves. 1990. Mulches derived from wood: an economic comparison of two materials used to reclaim surface mines. *Forest Products Journal* 40(9):35-38
- Davidson, W.H., D.H. Graves, J.M. Ringe, and T.R. Cunningham. 1991. Performance of spot-seeded oaks and walnut on an eastern Kentucky minesoil. *International Journal of Surface Mining and Reclamation* 5(4):163-165.

- Ringe, J.M. and D.H. Graves. 1992. The longer term economics of herbicide use in establishing European alder in herbaceous cover on surface mined land. *International Journal of Environmental Issues in Minerals and Energy Industry* 1(1):27-31.
- Graves, D.H. and J.M. Ringe. 1993. European black alder survival and growth responses to herbicide treatment on an east Kentucky vegetated coal surface mine excess spoil area after three and eight years. *International Journal of Surface Mining and Reclamation* 7(1):37-40.
- Graves, D.H. and J.M. Ringe. 1993. Surface mine sod treatment effects on survival and growth of Virginia pine (*Pinus virginiana*) after two and eight years. *International Journal of Surface Mining and Reclamation* 7(2):47-50.
- Ringe, J.M. and D.H. Graves. 1993. Economic considerations in using herbicides to establish Virginia pine in vegetative cover on surface mined land. *International Journal of Environmental Issues in Minerals and Energy Industry* 2(3):97-100.
- Pelkki, M.H., J.M. Ringe, and D.H. Graves. 1995. Revegetation of an abandoned coal washing site. *International Journal of Surface Mining, Reclamation and Environment* 9(1):31-33.
- Pelkki, M.H., J.M. Ringe, and D.H. Graves. 1996. Evaluating shredded rubber tires as a surface mine spoil amendment. *International Journal of Surface Mining, Reclamation and Environment* 10(2):55-59.
- Pelkki, M.H., J.M. Ringe, D.L. Brown, and D.H. Graves. 1996. Woody plant biodiversity on an abandoned coal washing pond. *International Journal of Surface Mining, Reclamation and Environment* 10(4):161-166.
- Ringe, J.M., D.H. Graves, and J.E. Reeb. 1998. Wood waste biomass co-firing with high sulphur coal for power generation in Kentucky: a case study. *Forest Products Journal* 48(4):88-93.
- Ringe, J.M., M.H. Pelkki, D.H. Graves, and D.L. Brown. 1998. Economic considerations in the revegetation of an abandoned coal washing settlement pond. *International Journal of Surface Mining, Reclamation and Environment* 12(2):67-74.
- Ringe, J.M., M.H. Pelkki, D.H. Graves, and D.L. Brown. 1998. Economics of biomass production on an abandoned coal washing settlement pond. *International Journal of Surface Mining, Reclamation and Environment* 12(3):123-129.
- Hamner, P.C., R.J. Sweigard, J.M. Ringe, M.H. Pelkki, and D.H. Graves. 1999. An economic evaluation of soil bioengineering as a method for slope stability on abandoned mine land in eastern Kentucky. *International Journal of Surface Mining, Reclamation, and Environment* 13(3):117-124.

Pelkki, M.H., J.M. Ringe, W.R. Thomas, and D.H. Graves. 2002. Economically efficient sampling of surface-mined spoils. *International Journal of Surface Mining, Reclamation, and Environment*. 16(1):48-58.

Conrad.P.W., R.J. Sweigard, D.H. Graves, J.M. Ringe, and M.H. Pelkki. 2002. Impacts of soil conditions on reforestation of surface mined land. *Mining Engineering* 54(1):39-46.

REFERREED BOOK CHAPTERS

Ringe, J.M. 2016. Forestry for the curious: majoring in forestry at the University of Kentucky. IN *Forestry for the curious: why study forestry?* (ISBN 978-1-925128-52-9).

REFEREED ABSTRACTS

Ringe, J.M., and R.F. Wittwer. 1978. The effect of fertilizer, bark mulch, and grass competition on the survival and growth of three tree species on surface mine spoil. *Reclamation Review* 1(3&4):172.

Graves, D.H., S.B. Carpenter, and J.M. Ringe. 1978. The use of sawmill residues as a soil amendment on eastern Kentucky surface mines. *Reclamation Review* 1(3&4):173.

REFEREED PROCEEDINGS PUBLICATIONS

Ringe, J.M. and R.F. Wittwer. 1979. Effects of bark mulch and fertilization on grass-legume establishment and dry matter production on eastern Kentucky surface mine spoil. IN *Proc. Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation*. University of Kentucky, Lexington, KY, December 4-7, 1979.

Ringe, J.M., D.H. Graves, and T.W. Richards. 1984. Effects of single-year herbaceous competition control measures on the longer-term survival and growth of Virginia pine seedlings grown on eastern Kentucky mined land. IN *Proc. National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation*. University of Kentucky, Lexington, KY, December 2-7, 1984.

- Ringe, J.M., D.H. Graves, and R.F. Wittwer. 1984. Effects of soil amendments and severe cattle grazing on the long-term survival and growth of tree seedlings on eastern Kentucky surface mined land. IN Proc. National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, December 2-7, 1984.
- Ringe, J.M., D.H. Graves, and C.S. Metcalfe. 1985. Economic considerations in establishing European alder in herbaceous cover on surface mine lands. IN Proc. National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, December 8-13, 1985.
- Ringe, J.M. and D.H. Graves. 1985. Costs of alternative mulching materials for establishing herbaceous vegetation on harsh sites. IN Proc. National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation. University of Kentucky, Lexington, KY, December 8-13, 1985.
- Thomas, W.R., M.H. Pelkki, and J.M. Ringe. 1999. Native high value tree reclamation on surface mined spoils in eastern Kentucky. Pages 79-83 IN Proc. 12th Central Hardwood Forest Conference. U.S.D.A. Forest Service Gen. Tech. Rep. SRS-24. Lexington, KY. Feb. 28 - Mar. 2, 1999.
- Conrad, P.W., R.J. Sweigard, J.C. Yingling, D.H. Graves, and J.M. Ringe. 2002. Use of ripping to alleviate excessive compaction on reclaimed surface mined land. Transactions of the Society for Mining, Metallurgy, and Exploration 312:159-165.
- Byrd, E.J., R.K. Kolka, R.W. Warner and J.M. Ringe. 2003. Soil percolation and erosion on mineland soils. IN Proc. of the 19th American Society for Surface Mining and Reclamation Conference. Lexington, KY. Pp. 1049-1058.
- R.J. Sweigard, P.W. Conrad, V. Badaker, J.C. Yingling, D.H. Graves and J.M. Ringe. 2004. Methodology for evaluating the suitability of spoil conditions for reforestation. Transactions of the Society for Mining, Metallurgy, and Exploration 316:143-148

REFEREED REPORTS

- Ringe, J.M., D.H. Graves, and J.E. Reeb. 1996. Utilizing wood waste biomass to upgrade high sulphur coal for power generation in Kentucky. Final Report for Research Contract TV-86454V. Tennessee Valley Authority. 59pp.

NON-REFEREED PROCEEDINGS PUBLICATIONS

- Ringe, J.M. and R.F. Wittwer. 1978. The effects of fertilizer, bark mulch, and grass competition on the survival and growth of three tree species on surface mine spoil. IN Proc. Third Annual Meeting of the Canadian Land Reclamation Association, Sudbury, Ontario. May 29-June 1, 1978.
- Graves, D.H., S.B. Carpenter, and J.M. Ringe. 1978. The use of sawmill residues as a soil amendment on eastern Kentucky surface mines. IN Proc. Third Annual Meeting of the Canadian Land Reclamation Association, Sudbury, Ontario. May 29-June 1, 1978.
- Hoover, W.L. and J.M. Ringe. 1983. Technological progress in the U.S. forest products industry - formulation of a general model. IN Proc. of the 1983 Society of American Foresters Annual Meeting. Portland, OR. October 16-19, 1983.
- Ringe, J.M. and M.H. Pelkki. 1998. Back to basics - are traditional teaching methods obsolete? IN Proc. of the Second Biennial Conference on University Education in Natural Resources. Utah State University, Logan, Utah. March 7-10, 1998; *Natural Resources and Environmental Issues* 7:174-177.
- Pelkki, M.H. and J.M. Ringe. 1998. Valuing information: potential tree grades for yellow-poplar stands. Pages 181-184 IN Proc. of the Southern Forest Economics Workshop annual meeting. March 25-27, 1998. Williamsburg, VA.
- Graves, D.H., J.M. Ringe, M.H. Pelkki, R.J. Sweigard and R. Warner. 2000. High value tree reclamation research. Pages 413 - 421 IN Proc. Of the Sixth International Conference on Environmental Issues and Management of Waste in Energy and Mineral Production. SWEMP 2000. Calgary, Alberta, Canada. May 30 - June 2, 2000
- Shouse, S., J.W. Stringer, M.Pelkki, J. Ringe, R. Kolka, and M. Smidt. 2001. Machine and labor times required to implement Kentucky's skid trail erosion control and revegetation BMPs. IN Proc. of the COFE (Council on Forest Engineering) meeting, Snowshoe W. Va. July 15-19, 2001.
- Pelkki, M.H. and J. M. Ringe. 2002. Using informatics to value forest stand information. IN Proc. of the 2001 Southern Forest Economics Workshop, March 26-28, 2001, Atlanta, GA. 5pp..
- Stringer, J., S. Shouse, M. Smidt, M. Pelkki, J. Ringe, and R. Kolka. 2002. BMP costs associated with erosion control measures for skid trails. IN Proc. Forestry Best Management Research Symposia. Atlanta, Georgia, April 2002 (Compact disc). Ed. J. Shepard, National Council for Air and Stream Improvement.

Conners, T.E., P. Stiglbauer, S. Banerjee, and J.M. Ringe. 2005. Influence of knife angle and ambient temperature on fines generation from flakers. IN Proc. Ninth European Panel Products Symposium, October 5-7, 2005, Llandudno, Wales. pp. 23-30.

Conners, T.E. and J.M. Ringe. 2010. A case for improving the integration of forestry and wood technology. IN Proc. The International Convention of Society of Wood Science and Technology and United Nations Economic Commission for Europe – Timber Committee. October 11 – 14, 2010, Geneva, Switzerland.

NON-REFEREED ABSTRACTS

Ringe, J.M. and S.J. Chang. 1991. Emerging market opportunities for cut-to-size lumber. IN Biographies and Abstracts, 45th Annual Meeting of the Forest Products Research Society. New Orleans, LA. June 23-26, 1991.

Ringe, J.M., D.H. Graves, and J.E. Reeb. 1993. Utilizing woodwaste biomass to upgrade high sulphur coal for power generation in Kentucky. IN Biographies and Abstracts, 47th Annual Meeting of the Forest Products Society. Clearwater Beach, FL. June 20-23, 1993.

Ringe, J.M., D.H. Graves, and J.E. Reeb. 1994. Economic considerations in the co-firing of woodwaste biomass with high sulphur coal for electric power generation in Kentucky. IN Biographies and Abstracts, 48th Annual Meeting of the Forest Products Society. Portland, ME. June 26-29, 1994.

Thomas, W.R., M.H. Pelkki, and J.M. Ringe. 1999. Soil sampling on surfaced mined spoils : systematic composite vs. systematic vs. random. IN Proc. 12th Central Hardwood Forest Conference. U.S.D.A. Forest Service Gen. Tech. Rep. SRS-24. Lexington, KY. Feb. 28 - Mar. 2, 1999.

EXTENSION PUBLICATIONS

Ringe, J.M., D.H. Graves, and D.B. Hill. 1985. Options for Kentucky farmers: Christmas trees. University of Kentucky Extension Pub. Options-24.

Ringe, J.M., D.H. Graves, and J.R. Shelly. 1985. Options for Kentucky farmers: firewood. University of Kentucky Extension Pub. Options - 25.

Ringe, J.M. and D.H. Graves. 1985. Forestry section (pp. 420-428) IN Prospects for Kentucky Agriculture: A Resource Document. University of Kentucky, College of Agriculture, Special Report.

- Ringe, J.M. and S.J. Chang. 1989. Economic importance of Kentucky's forest products industry. Univ. of KY, College of Agriculture, Cooperative Extension Service, Natural Resources Newsletter 7(4):1-2.
- Ringe, J.M. and S.J. Chang. 1990. Forestry economics is becoming more and more a global issue. Univ. of KY, College of Agriculture, Cooperative Extension Service, Natural Resources Newsletter 9(1):4-5.
- Ringe, J.M. and S.J. Chang. 1990. The globalization of forestry and its vital importance to Kentucky and the United States. Univ. of KY, College of Agriculture, Cooperative Extension Service, Natural Resources Newsletter 9(2):1-2.
- Graves, D.H. and J.M. Ringe. 1993. Surface mining and Kentucky's forests: some economic impacts. Univ. of KY, College of Agriculture, Cooperative Extension Service, Natural Resources Newsletter 11(2): 37-38.
- Conners, T. and J. Ringe. 2006. Grading hardwood logs according to USFS standard log grades. Univ. of KY, College of Agriculture, Cooperative Extension Service, Publication FORFS 06-02.
- Conners, T. and J. Ringe. 2006. Grading hardwood lumber according to NHLA rules. Univ. of KY, College of Agriculture, Cooperative Extension Service, Publication FORFS 06-03.

INVITED POPULAR PRESS PUBLICATIONS

- Pelkki, M.H. and J.M. Ringe. 1994. Marketing mixed stands of pine and hardwood. Forest Farmer 53(1): 18-21.
- Pelkki, M.H. and J.M. Ringe. 1994. Stumpage price trends make selling hardwoods more profitable. Forest Farmer 53(2):10-12.

INVITED REVIEWS IN JOURNALS

- Ringe, J.M. 2000. Book review of Paper Cuts: Recovering the Paper Landscape by J.N. Abramovitz and A.T. Mattoon IN Journal of Natural Resources and Life Sciences Education 29(1).

OTHER PUBLICATIONS

- Chang, S.J. and J.M. Ringe. 1990. A study of the potential of overseas marketing of yellow-poplar pencil slats. Final Report for U.S. D.A. Forest Service National Marketing Initiative Project #423236. April 26, 1990.
- Ringe, J.M. 1990. Statement in support of the allegations in the petition to declare Robinson Forest as lands unsuitable for mining. Commonwealth of Kentucky, Natural Resources and Environmental Protection Cabinet. Lands Unsuitable for Mining Petition No. 90-1.
- Ringe, J.M. 2004. Editor and Co-author of the Interim status report of the professional forestry program at the University of Kentucky. Prepared for the Society of American Foresters Committee on Accreditation.
- Ringe, J.M. 2006. Author of the Interim Progress Report to the SAF Committee on Accreditation. Prepared for the Society of American Foresters.
- Ringe, J.M. 2012. Department of Forestry Undergraduate Advisor's Guide

PRESENTATIONS

INVITED PRESENTATIONS

- Hoover, W.L. and J.M. Ringe. Procedures for assessing potential economic impacts of new technology in the solid and reconstituted wood products industry. Utilization Economics Workshop, U.S.D.A. Forest Products Laboratory, Madison, WI, October 18, 1982.
- Speaker, spring meeting of the East Kentucky Chapter of the Society of American Foresters, March 7, 1986. Topic: hardwood lumber exportation.
- Ringe, J.M. and J.E. Reeb. Commodity situation and trends: forestry. Issues and Outlook: 1991 and Beyond, A Day of Discussion. University of Kentucky, College of Agriculture, Lexington, KY. January 11, 1991.
- Ringe, J.M. Emerging market opportunities for cut-to-size lumber. Plenary Session presentation at the 45th Annual Meeting of the Forest Products Research Society. New Orleans, LA. June 23-26, 1991.
- Moderator, Plenary Session 6, Environmental challenges and opportunities confronting the hardwood lumber industry. 46th Annual Meeting of the Forest Products Research Society. Charleston, SC. June 21-24, 1992.

Ringe, J.M. Wood: its properties, decay processes, and preservation. Wood Preservative Workshop. University of Kentucky, College of Agriculture, Cooperative Extension Service. Elizabethtown, KY. November 21, 1995.

Keynote speaker with T.E. Conners at the 1st Lanzamiento de Maderas Duras de Los Estados Unidos (1st Launching of Hardwoods of the United States). September 17-20, 2003, Havana Cuba. Presented U.S. hardwood species characteristics to government and wood industry officials as part of an initiation of Kentucky hardwood lumber trade with Cuba.

Graves, D. H. and J.M. Ringe. Economic incentives for reclaiming for wildlife habitat as a post-mining land use. U.S. Office of Surface Mining Wildlife Summit. Louisville, KY. June 22-23, 2005.

PAPERS PRESENTED AT MEETINGS

Ringe, J.M., W.L. Hoover, C.A. Eckelman, and J.A. Youngquist. Design of hardwood LVL for furniture applications. 36th Annual Meeting of the Forest Products Research Society. New Orleans, LA, June 20-24, 1982.

Hoover, W.L., C.A. Eckelman, J.M. Ringe, and J.A. Youngquist. Use of laminated-veneer-lumber as a shelf, panel, or corestock material in furniture. 36th Annual Meeting of the Forest Products Research Society. New Orleans, LA, June 20-24, 1982.

Ringe, J.M. The feasibility and competitive nature of yellow-poplar structural lumber using value added analysis. Technical Forum presentation at the 42nd Annual Meeting of the Forest Products Research Society. Quebec City, Canada. June 19-22, 1988.

Participated in a University Studies Program Seminar on Ecological Sustainability, May 15-19, 1989. Made a presentation before faculty from a variety of disciplines concerning the concept of ecological sustainability as it relates to forestry and forest products.

Ringe, J.M., D.H. Graves, and J.E. Reeb. Utilizing woodwaste biomass to upgrade high sulphur coal for power generation in Kentucky. Technical Forum presentation at the 47th Annual Meeting of the Forest Products Society. Clearwater, Florida. June 20-23, 1993.

Pelkki, M.H., J.M. Ringe, D.H. Graves, and M. Mead. Bioremediation of an abandoned coal washing site in western Kentucky. Southern Appalachian Man and the Biosphere Conference. Gatlinburg, TN. Nov. 7-9, 1993.

Ringe, J.M., D.H. Graves, and J.E. Reeb. Biomass energy potentials in Kentucky. Southern Appalachian Man and the Biosphere Conference. Gatlinburg, TN. Nov. 7-9, 1993.

- Ringe, J.M., D.H. Graves, and J.E. Reeb. Economic considerations in the co-firing of woodwaste biomass with high sulphur coal for electric power generation in Kentucky. Technical Forum presentation at the 48th Annual Meeting of the Forest Products Society. Portland, Maine. June 26-29, 1994
- Pelkki, M.H. and J.M. Ringe. Valuing information: potential tree grades for yellow-poplar stands. Southern Forest Economics Workshop annual meeting. March 25-27, 1998. Williamsburg, VA.
- Thomas, W.R., M.H. Pelkki, and J.M. Ringe. Native high value tree reclamation on surface mined spoils in eastern Kentucky. 12th Central Hardwood Forest Conference. Feb. 28 - Mar. 2, 1999. Lexington, KY.
- Thomas, W.R., M.H. Pelkki, and J.M. Ringe. Soil sampling on surfaced mined spoils: systematic composite vs. systematic vs. random. 12th Central Hardwood Forest Conference. Feb. 28 - Mar. 2, 1999. Lexington, KY.
- Conners, T.E. and J.M. Ringe. 2004. Lanzamiento de maduras duras: launching of U.S. hardwood lumber sales to Cuba in 2003. Presented at the 58th annual meeting of the Forest Products Society. Grand Rapids, MI. June, 2004
- True, A., R. Sweigard, D. Graves, V. Badaker, J. Ringe, and C. Barton. 2005. Development of site index curves for high-value trees on reclaimed surface mined land. Presented at the 2005 SME Annual Meeting and Exhibit, Salt Lake City, UT, February 28-March 2, 2005.
- Graves, D.H. and J.M. Ringe. 2005. Economic incentives for reclaiming for wildlife habitat as a post-mining land use. Presented at the U.S. Office of Surface Mining Wildlife Summit, Louisville, KY, June 22-23, 2005.
- Stiglbauer, P., T.E. Conners, S. Banerjee, and J.M. Ringe. 2005. Fines reduction at OSB flakers. Presented at the 59th International Convention of the Forest Products Society, Quebec City, Quebec, Canada, June 19-22, 2005.
- Conners, T.E., P. Stiglbauer, S. Banerjee, and J.M. Ringe. 2005 Influence of knife angle and ambient temperature on fines generation from flakers. Presented at the Ninth European Panel Products Symposium, Llandudno, Wales. October 5-7, 2005.

RESEARCH AWARDS AND HONORS

Co-author of a Featured Presentation at the 1984 National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation. Featured Presentations are the eight submitted papers judged best by a panel of reviewers.

Co-author of a Featured Presentation at the 1985 National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation.

Recipient of one of four "Outstanding Technical Paper" Awards presented at the 1985 National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation.

Pencil slat research featured in "Odyssey - The Magazine of University of Kentucky Research", Winter/Spring 1991, p31.

Pencil slat research featured by the Office of Communication and Advancement in a "UK Science and You" column distributed to editors of 23 daily and 126 weekly newspapers in Kentucky. April, 1992.

Wood waste biomass utilization research featured in "Coal International" magazine, Volume 244, No. 3, May 1996. Reading, England.

Member of the "Reforestation of Surface Mined Lands" research team. Project designated a University of Kentucky Commonwealth Collaborative by University President Lee T. Todd Jr. - 2005

SPONSORED RESEARCH PROJECTS

FUNDED

Impact of Export Marketing on the Organizational, Operational, and Financial Structure of Hardwood Producing Firms; J.M. Ringe, Principal Investigator; D.H. Graves, Co-Investigator; U.S.D.A. Forest Service Co-operative Agreement #23-822, \$25,000; September 20, 1983 - March 31, 1985.

Utilization and Marketing Alternatives for Kentucky's Hardwood Resource; J.M. Ringe, Principal Investigator; McIntire - Stennis Project 636; 1985 - 1991.

A Study of the Potential of Overseas Marketing of Yellow-poplar Pencil Slats; S.J. Chang and J.M. Ringe, Co-Investigators; U.S.D.A. Forest Service National Marketing Initiative Project #423236, \$15,000; September 1, 1988 - March 31, 1990.

Economic Feasibility of Converting Domestic Lumber to High Value Export Material; J.M. Ringe, Principal Investigator; S.J. Chang, Co-Investigator; U.S.D.A. Forest Service Co-operative Agreement #23-308, \$20,000; September 1, 1988 - August 31, 1993.

- Utilizing Wood Waste Biomass to Upgrade High Sulphur Coal for Power Generation in Kentucky; J.M. Ringe, Principal Investigator; D.H. Graves, and J.E. Reeb, Co-Investigators; Tennessee Valley Authority Contract #TV-86454V, \$47,943; July 1, 1992 - August 31, 1995.
- Economic Assessment of Surface Mine Reclamation Alternatives; J.M. Ringe, Principal Investigator; M.H. Pelkki and D.H. Graves, Co-Investigators; McIntire - Stennis Project KY009002; October 1, 1994 - September 30, 1999.
- Stabilization of embankments on AML slopes using soil bioengineering techniques: a field evaluation of cost-effectiveness; R.J. Sweigard, Principal Investigator; D.H. Graves, Co-Principal Investigator; J.M. Ringe and R.C. Warner, Co-Investigators; Bureau of Mines, \$198,771; January 1, 1995 -December 31, 1996.
- An Inter-Disciplinary Approach to Establish and Evaluate Experimental Reclamation of Surface Mine Soil with High Value Tree Species; Member of nine person investigation team representing four academic departments; Robinson Trust Fund, \$1,207,000; 1996-1999.
- Stabilization of embankments on abandoned mine lands slopes using bioengineering techniques: a field evaluation of cost-effectiveness; D.H. Graves, M.H. Pelkki, D.L. Brown, and J.M. Ringe, Co-Investigators. Robinson Forest Initiative. \$9,863; 1996 - 1997.
- Quantifying the costs of best management practices in Kentucky. M.H. Pelkki, J.M. Ringe, M. Smidt, and J.W. Stringer, Co-Investigators. Submitted under the SB-271 request for proposals. \$107,900; 1998-2001.
- Investigation of natural forest forming processes on open-pit coal mines in western Siberia and Kentucky. M.H. Pelkki, Principal Investigator and J.M. Ringe, Co-Investigator. U.S.D.A. Research and Scientific Exchanges Division. \$43,865; 2000-2003.
- Post mining reforestation demonstration project I. D.H. Graves, Principal Investigator; C.D. Barton J.M. Ringe, J.W. Stringer, R. Sweigard, and R. Warner, Co-Investigators. U.S.D.A. Forest Service. \$985,000; 2001-2004.
- Post mining reforestation demonstration project II. D.H. Graves, Principal Investigator; C.D. Barton, J.M. Ringe, J.W. Stringer, R. Sweigard, and R. Warner, Co-Investigators. U.S.D.A. Forest Service. \$985,000; 2002-2005.
- Post mining reforestation demonstration project III. D.H. Graves, Principal Investigator; C.D. Barton, J.M. Ringe, J.W. Stringer, R. Sweigard, and R. Warner, Co-Investigators. U.S.D.A. Forest Service. \$985,000; 2003-2006.

Carbon Sequestration on surface mine lands. D.H. Graves, Principal Investigator; C.D. Barton, J.M. Ringe, J.W. Stringer, R. Sweigard, and R. Warner, Co-Investigators. U.S. Department of Energy. \$1,000,000; 2002-2005.

SUBMITTED, UNFUNDED

The use of organic waste materials in abandoned coal refuse storage area stabilization; D.H. Graves, Principal Investigator, J.M. Ringe, Co-Investigator (one of five). Submitted to the Office of Surface Mining. March 1984.

Economic effects of wood utilization prior to surface mining on the competitive position of Kentucky coal; J.M. Ringe, Principal Investigator, D.H. Graves, Co-Investigator. Submitted to the Institute for Mining and Minerals Research. March 1985.

Economic effects of commercial and non-commercial wood utilization prior to surface mining; J.M. Ringe, Principal Investigator, D.H. Graves, Co-Investigator. Submitted to USDA Forest and Rangeland Renewable Resources. May, 1985.

Quantifying disincentives to reforestation under PL 95-87; J.M. Ringe, Principal Investigator, D.H. Graves, Co-Investigator. Submitted to Resources for the Future, small grants program. February, 1987.

The University of Kentucky Center for International Marketing of Forest Products: A Proposal; S.J. Chang and J.M. Ringe, Co-Investigators. Submitted to the USDA Cooperative State Research Service. March, 1989.

Economic development through biomass integration; J.M. Ringe, Co-Investigator (one of ten). Submitted to the National Renewable Energy Laboratory. June, 1993.

Enhancing rural development through value added to timber resources; M.H. Pelkki, J.M. Ringe, and D.H. Graves, Co-Investigators. Submitted to the USDA Cooperative State Research Service. November, 1993.

Evaluating costs and benefits of forest best management practices on private woodlands; M.H. Pelkki, J.W. Stringer, and J.M. Ringe, Co-Investigators. Submitted to the American Farm Bureau Research Foundation. January, 1994.

Predicting and avoiding long-term volume, grade, and value losses associated with forest fires in hardwood forests of eastern Kentucky; J.W. Stringer, M.H. Pelkki, and J.M. Ringe, Co-Investigators. Submitted to the Robinson Forest Initiative. August, 1996.

Wood moisture content considerations in adhesive strength of water-cured and air-cured glues. J.M. Ringe and K.L. Powell, Co-Investigators. Robinson Forest Initiative. August 1997.

Quantifying barriers to woody biomass fuel markets. M.H. Pelkki and J. M. Ringe, Co-Investigators. Consortium for Plant Biotechnology Research, Inc. March 1998.

TEACHING ACTIVITIES

AWARDS AND HONORS

Recipient of the 1996 Master Teacher Award, sponsored by the Kentucky Chapter of the International Society of Gamma Sigma Delta, College of Agriculture.

Nominee for University Outstanding Advising Award. 1997.

Selected as a Faculty Advisor to the College of Agriculture Ambassadors, 2001-2003.

Selected as the Faculty Advisor of the College of Agriculture China Study Tour, 2002.

Finalist for the Provost's Award for Outstanding Teaching – 2002.

Nominated for the Provost's Award for Outstanding Teaching – 2003.

Finalist for the Provost's Award for Outstanding Teaching – 2006.

TEACHING ASSIGNMENTS

FOR 100 - Introduction to Forestry; 1985 – 2000, 2015 – present.

FOR 200 - Map Reading and Photogrammetry; 1994 - present.

FOR 300 - Forest Mensuration; 1983.

FOR 305 - Harvesting Timber Crops; 1990 - 1993.

FOR 310 - Forest Photogrammetry; 1991.

FOR 260 – Forest Products and Wood Science; 2010 – present.

FOR 320 – Forest Valuation and Economics; 2011 – present.

FOR 359 – Forest Operations and Utilization, Spring Field Semester (jointly taught);
2012 – present.

FOR 360 - Wood Technology and Utilization; 1994 – 1995, 2000 - 2011.

FOR 377 - Forest Surveying, Summer Camp (assisted with course preparation and grading); 1984.

FOR 378 - Forest Mensuration, Summer Camp; 1984.

FOR 379 - Harvesting and Utilization of Wood, Summer Camp (jointly taught); 1988 – 1996, 2000 – 2011.

FOR 400 - Wood Identification and Properties; 1992.

FOR 420 - Wood Products (jointly taught) 1988 - 1991.

FOR 425 - Timber Management; 2001 – 2005, 2009 – 2011, 2019 - present

FOR 455 - Forest Policy and Administration; 1985 - 1989.

FOR 470 Interdependent Natural Resource Issues – Analysis and Solutions; 2013 – 2014.
(Team taught with Mike Lacki)

FOR 480 – Integrated Forest Resource Management (Senior Capstone); 2009 – present.
(Team taught with John Lhotka)

FOR 601 - Research Methods; 1998 - 2000.
(Taught as FOR 620 in Fall 1998)

FOR 602 – Renewable Natural Resources in a Global Perspective; 2005 – present.
Present one lecture for the course.

NRC 381 - Natural Resource Policy Analysis - 2002 (taught 2 weeks of the course).

STUDENT EVALUATION OF TEACHING

Year	Course	Enrollment	Score	Department Average	College Average	University Average
Evaluation basis = 5.0 for 1983 - Spring 1991						
1983	FOR 300	16	4.3			
1984	FOR 377	10	NA			
	FOR 378	10	NA			
1985	FOR 100	30	4.5	4.2	4.2	
	FOR 399	1	NA			
	FOR 455	11	4.2			
1986	FOR 100	16	4.7			
	FOR 455	5	4.2			
1987	FOR 100	32	4.4	4.1	4.2	
	FOR 455	8	4.2			
1988	FOR 100	34	4.4	4.2	4.1	
	FOR 100N	19	4.1			
	FOR 420	6	4.8			
	FOR 455	5	NA			
1989	FOR 100	34	4.5	4.3	4.1	
	FOR 455	3	4.8	4.3	4.2	
1990	FOR 100	56	4.2	3.9	4.2	
	FOR 305	11	4.4			
	FOR 379	6	NA			
	FOR 420	7	NA			
1991	FOR 305	13	4.7	4.3	4.2	
	FOR 310	7	4.8			
	FOR 420	5	4.9			

Year	Course	Department Enrollment	College Score	University Average	Average	Average
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Evaluation basis = 4.0 for Fall 1991 - present

1991	FOR 100	90	3.7	3.5	3.4	
1992	FOR 100	77	3.6	3.4	3.4	
	FOR 400	17	4.0			
1993	FOR 100	97	3.8	3.2	3.4	
	FOR 305	28	3.7	3.3	3.3	
1994	FOR 100	124	3.7	3.4	3.3	3.2
	FOR 200	36	3.6	3.4	3.4	
	FOR 360	18	4.0	3.4	3.4	
	FOR 379	19	NA			
1995	FOR 100	113	3.9	3.5	3.4	3.3
	FOR 200	32	3.8	3.3	3.4	3.3
	FOR 360	20	3.6	3.3	3.4	3.3
	FOR 379	11	NA			
1996	FOR 100	115	3.9	3.4	3.4	3.3
	FOR 200	38	3.8	3.4	3.3	NA
	FOR 379	20	NA			
1997	FOR 100	137	3.8	3.3	3.5	3.3
	FOR 200	37	3.8	3.3	3.4	3.3
1998	FOR 100	124	3.6	3.5	3.5	3.3
	FOR 200	32	3.9	3.5	3.4	3.3
	FOR 620	10	3.8	3.5	3.5	3.3
1999	FOR 100	97	3.9	3.5	3.5	3.3
	FOR 200-1	18	3.8	3.4	3.4	3.3
	FOR 200-2	12	4.0	3.4	3.4	3.3

Year	Course	Enrollment	Score	Department Average	College Average	University Average
2000	FOR 100-1	38	3.7	3.5	3.5	3.3
	FOR 100-2	58	3.8	3.5	3.5	3.3
	FOR 200-1	16	3.7	3.6	3.4	3.3
	FOR 200-2	6	4.0	3.6	3.4	3.3
	FOR 360	19	3.9	3.6	3.4	3.3
	FOR 379	21	3.4		3.9	3.4
	FOR 601	11	3.3	3.5	3.5	3.3
2001	FOR 200-1	7	3.9	3.4	3.4	3.4
	FOR 200-2	14	3.9	3.4	3.4	3.4
	FOR 360	10	3.8	3.4	3.4	3.4
	FOR 379	13	3.2			
	FOR 425	13	3.0	3.6	3.5	3.3
2002	FOR 200-1	10	4.0	3.7	3.4	3.3
	FOR 200-2	9	3.8	3.7	3.4	3.3
	FOR 360	12	3.8	3.7	3.4	3.3
	FOR 379	10	3.5			3.4
	FOR 425	11	3.7	3.3	3.4	3.3
2003	FOR 360	14	4.0	3.3	3.4	3.4
	FOR 379	11	3.9			
	FOR 425	12	3.9	3.4	3.3	3.2
2004	FOR 200-1	20	3.9	3.6	3.4	3.4
	FOR 200-1	10	3.9	3.6	3.4	3.4
	FOR 360	20	4.0	3.6	3.4	3.4
	FOR 379	15	4.0	NA	NA	NA
	FOR 425	20	3.9	3.5	3.4	3.3
2005	FOR 200-1	10	3.8	3.6	3.4	3.4
	FOR 200-2	10	4.0	3.6	3.4	3.4
	FOR 360	10	4.0	3.6	3.4	3.4
	FOR 379	6	4.0		3.7	
	FOR 425	8	4.0	3.6	3.4	3.4

Year	Course	Enrollment	Score	Department Average	College Average	University Average
2006	FOR 200-1	15	3.8	3.5	3.4	3.4
	FOR 200-2	12	3.9	3.5	3.4	3.4
	FOR 360	11	4.0	3.5	3.4	3.4
	FOR 379	13	4.0	3.4	3.4	3.5
2007	FOR 200-1	11	3.9	3.5	3.3	3.3
	FOR 200-2	6	4.0	3.5	3.3	3.3
	FOR 360	11	4.0	3.5	3.3	3.3
	FOR 379	7	3.9		3.7	
2008	FOR 200-1	13	4.0	3.5	3.3	3.4
	FOR 200-2	11	4.0	3.5	3.3	3.4
	FOR 360	11	4.0	3.5	3.3	3.4
	FOR 379	10	3.5		3.3	
2009	FOR 200-1	10	3.9	3.5	3.4	3.4
	FOR 200-2	6	3.8	3.5	3.4	3.4
	FOR 360	18	3.9	3.5	3.4	3.4
	FOR 379	14	3.7	3.5	3.6	3.4
	FOR 425	18	3.9	3.4	3.4	3.4
	FOR 480	14	3.5	3.5	3.4	3.4
2010	FOR 200-1	14	4.0	3.7	3.4	3.4
	FOR 200-2	6	4.0	3.7	3.4	3.4
	FOR 200	25	4.0			
	FOR 260	10	3.7	3.7	3.4	3.4
	FOR 260	23	4.0			
	FOR 379	12	4.0		3.8	3.5
	FOR 425	10	3.6			
	FOR 480	15	3.9	3.7	3.4	3.4
2011	FOR 200	15	3.9	3.7	3.5	3.4
	FOR 200	27	4.0		3.5	
	FOR 260	16	3.8	3.7	3.5	3.4
	FOR 260	28	4.0		3.5	
	FOR 320	25	3.8		3.5	
	FOR 379	10	4.0		3.4	3.4
	FOR 425	11	3.9		3.5	
	FOR 480	9	4.0	3.7	3.5	3.4

Year	Course	Enrollment	Score	Department Average	College Average	University Average
2012	FOR 200	30	3.8	3.4	3.4	3.4
	FOR 260	23	4.0			
	FOR 320	32	3.8			
	FOR 359	16	4.0		3.4	3.5
	FOR 480	10	3.7		3.4	3.4
2013	FOR 200	23	3.9	3.4	3.5	3.4
	FOR 260	22	3.9			
	FOR 320	23	3.8			
	FOR 359	20	3.7			
	FOR 470	19	3.4			
	FOR 480	16	3.7			
2014	FOR 200	11	3.60	3.43	3.42	3.30
	FOR 260	12	3.82			
	FOR 320	23	3.83			
	FOR 359	18	3.46			
	FOR 470	18	NA			
	FOR 480	18	3.83			
2015	FOR 100	21	3.33	3.44	3.4	3.31
	FOR 200	20	NA			
	FOR 260	15	NA			
	FOR 320	15	3.88			
	FOR 359	14	3.78			
	FOR 480	17	3.67			
2016	FOR 100	44	4.79	3.45	3.48	3.34
	FOR 200	25	4.25			
	FOR 320	17	4.86			
	FOR 359	8	NA			
	FOR 480	14	3.8			
2017	FOR 100	51	4.64	4.3	4.5	4.41
	FOR 200	26	4.54			
	FOR 260	29	4.50			
	FOR 320	18	5.0			
	FOR 359	12	4.75			
	FOR 480	9	NA			

Year	Course	Enrollment	Score	Department Average	College Average
2018	FOR 100	50	4.71	4.4	4.4
	FOR 200	22	4.83	4.4	4.4
	FOR 260	18	5.0	4.3	4.4
	FOR 320	18	4.9	4.4	4.4
	FOR 359	14	NA		
	FOR 480	12	NA		
2019	FOR 100	50	4.53	4.3	4.3
	FOR 200	27	4.67	4.3	4.3
	FOR 260	15	5.0	4.6	4.5
	FOR 320	18	4.83	4.3	4.3
	FOR 359	14	NA		
	FOR 425	16	4.8	4.3	4.3
	FOR 480	13	NA		

STUDENT EVALUATION OF ADVISING (4.0 basis)

Spring 2008	3.8
Spring 2010	3.9

GRADUATE THESES DIRECTED

Dickinson, T. M. 1992. Economic analysis of streamside management zones. M.S. in Forestry. Major Professor.

Ning, Yulin. 1993. U.S. direct investment abroad and its influences on the U.S. economy: cases in food and wood industries. Ph.D. in Agricultural Economics. Co-Director with M. Reed (Ag. Econ.)

Evans, J. 1994. Using magnetic resonance imaging to examine moisture in wood. M.S. in Forestry. Committee Member, became Major Professor upon retirement of J.R. Olson.

Thomas, William. 1999. Survival and growth of hardwoods under various soil amendments and compaction regimes on surface mine spoil. M.S. in Forestry. Co-Director with M.H. Pelkki.

Kirilova, Natalia. 2001. Optimal financial management of yellow-poplar-oak stands in the central Appalachian region. M.S. in Forestry. Committee Member, became major professor upon resignation of M.H. Pelkki.

GRADUATE THESIS COMMITTEES

- Hans, J. 1987. The effect of softwood log export restrictions on stumpage price and employment in the Pacific Northwest, U.S.A. M.S. in Forestry. Committee member.
- Alderdice, L. 1988. Topsoil alternatives for surface mine reclamation. M.S. in Forestry. Committee member.
- Lestari, P. 1991. Biomass production and nutrient accumulation on a 22 year old forest plantation on mine spoil in Bell County, southeastern Kentucky. M.S. in Forestry. Committee Member.
- Gracey, E. 1997. Identifying non-industrial private forest landowner characteristics and attitudes in Kentucky. M.S. in Forestry. Committee Member.
- Hilpp, G. 1997. Multiple product volume equations for yellow-poplar in eastern Kentucky M.S. in Forestry. Committee Member.
- Swenk, D.W. 1997. An analysis of the effects on hillside hydrologic processes by forest roads in eastern Kentucky. M.S. in Forestry. Committee Member.
- Hamner, P. 1998. Soil bioengineering as a method for slope stability on abandoned mine land in eastern Kentucky. M.S. in Forestry. Committee Member.
- Woosley, P.B. 2002. Characterization and control of annual bluegrass in the transition zone. Ph.D. in Agronomy. Outside Member of Examination Committee.
- Higgins, S. 2004. PhD in Plant and Soil Science. Served as Outside Member of Examination Committee.
- Broadbeck, Scott, 2007. Property taxation, forest fragmentation and development in Kentucky's Green River and Lower Cumberland River Watersheds. M.S. in Forestry. Committee Member.
- Carr, D.A. 2007. Environmental regulatory policy: political economy, industrial geography, and intergovernmental fiscal effects. Ph.D. Martin School of Public Policy and Administration. Served as Outside Member of Examination Committee.
- Michels, Adam. 2007. Economics of low-compaction reforestation techniques on surface mines. M.S. in Forestry. Committee Member.
- Jia, Haili. 2008. The strategic exercise of options under noisy market conditions: agri-business firms' investments in providing precision agriculture services. Ph.D. in Agricultural Economics. Served as Outside Member of Examination Committee.

- Wang, Xin. 2011. Using linked household-level datasets to explain consumer response to BSE in Canada. Ph.D. in Agricultural Economics. Served as Outside Member of Examination Committee.
- Catron, Jonathan Franklin. 2012. Economic and policy implications of forest-based bioenergy production in Kentucky. M.S. in Forestry. Committee Member.
- Craig, Jared Matthew. 2012. Effects of midstory removal and shoot clipping on the growth and development of three oak species. M.S. in Forestry. Committee Member.
- Birendra K.C. 2012. Socio-economic study of community forests in mid hills region of Nepal. M.S. in Forestry. Committee Member.
- Shrestha, Prativa. 2013. Carbon life-cycle and economic analysis of forest's carbon sequestration and woody bioenergy production. Committee Member
- Cunningham, Russell. 2014. Effects of regeneration opening size and simulated crop tree release on volume yields and economic value in oak-dominated stands. Committee member.

UNDERGRADUATE ADVISING

<u>Year</u>	<u>Number of Advising Conferences</u>
1985	8
1986	8
1987	14
1988	16
1989	39
1990	51
1991	63
1992	35
1993	52
1994	50
1995	68
1996	91
1997	122
1998	120
1999	99
2000	113
2001	104
2002	101
2003	96
2004	94

2005	107
2006	101
2007	114
2008	150
2009	133
2010	106
2011	122
2012	126
2013	136
2014	110
2015	115
2016	135
2017	113
2018	92
2019	99

OUTREACH TEACHING ACTIVITIES

Served on the teaching staff of the 21st Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 22-24, 2007, Terre Haute, IN.

Served on the teaching staff of the 23st Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. August 2-4, 2009. Roanoke, VA.

Served on the College Staff that conducted the State 4-H Forestry Competition. May 26, 2010, Lexington, KY.

Served on the teaching staff of the 25th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 17-19, 2011. Russellville, AK

Participated in the College of Agriculture Open House featuring Forestry, Landscape Architecture, and Natural Resources & Environmental Science sponsored by the Environmental & Natural Resource Institute. July 22, 2011, Lexington, KY

Served on the teaching staff of the 26th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. August 7-9, 2012. Denver, CO

Served as a Judge for the 2013 State FFA Agriscience Fair. June 12, 2013, Lexington, KY.

Served on the teaching staff of the 27th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 30- August 1, 2013. Bossier City, LA

Serve on the Academic Committee of the RTA (Railway Tie Association). 2013-present.

Served as a Judge for the 2014 State FFA Agriscience Fair. June 11, 2014, Lexington, KY.

Served on the teaching staff of the 28th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 29- 31, 2014. Sutton, WV

Served as a Judge for the 2015 State FFA Agriscience Fair. June 10, 2015, Lexington, KY.

Served on the teaching staff of the 29th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 21- 23, 2015. Clanton, AL

Served on the teaching staff of the 30th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. August 2 – 4, 2016. La Crosse, WI

Served on the teaching staff of the 31th Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 31- August 2, 2017. Clarkesville, TN

Served on the teaching staff of the 32nd Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. July 31- August 2, 2018 Galesburg, IL

Served on the teaching staff of the 33rd Annual RTA (Railway Tie Association) Crossties Seminar. Assisted in instructing industry personal in wood identification and crosstie grading. August 5 - 8, 2019. Texarkana, TX

Served as a Judge for the State FFA Agriscience Fair, 2016 – present, Lexington, KY

ADMINISTRATIVE ASSIGNMENTS

Director of Undergraduate Studies: 1987 - 1991
1996 - 1999
2001 - present

Major Accomplishments and Duties:

Secured the pairing of FOR 100 with GEO 210 under the Cross-Disciplinary Requirement of the University Studies Program. (1988)

Authored "Standard II - Curriculum" for the departmental Society of American Foresters (SAF) Accreditation Document. (1989)

Authored statement on the value of Robinson Forest to the undergraduate Forestry program included in the petition to declare Robinson Forest as Lands Unsuitable for Mining. (1990)

Worked with D.B. Wagner and the Vice Chancellor for Minority Affairs to improve departmental efforts to recruit and retain minority students. (1996)

Participated with D. McLaren in the AVID (Advancement through Individual Determination) program sponsored by the Office of Minority Affairs. (1996)

Completed the editing of the "Progress Report of the Professional Forestry Program at the University of Kentucky" for the Committee on Accreditation, SAF authored by D.B. Wagner. (1996)

Oversaw the final editing and release of the Forestry program brochure - work initiated by D.B. Wagner. (1996)

Coordinated the development of a post-summer camp field skills competency test as outlined by the Department faculty in our self-study report. (1997)

Assisted with the Academic Workshop for students on probation conducted by the Associate Dean for Instruction. (1997-present)

Provided input for the periodic review of the Agricultural Economics Department. (1997)

Provided input for the periodic review of the Entomology Department. (1998)

Co-authored “Standard II - Curriculum” for the departmental SAF Accreditation Document. (1999)

Coordinate summer advising duties with the department annually. (1987-1991, 1996-1998, 2001 - present)

Coordinate the Robinson Forest Orientation weekend for new and continuing students.(1996, 1997)

Coordinate the assignment of graduate Teaching Assistants to undergraduate forestry courses. (1996-1998)

Editor and Co-author of the Interim Status Report of the Professional Forestry Program at the University of Kentucky. Prepared for the Society of American Foresters Committee on Accreditation (2004)

Member of the Curriculum Review Team at Hocking Technical College, Nelsonville, OH (2005)

Co-Collaborator with Carol Hanley (Tracey Farmer Center) and other faculty to develop a Forest Health Curriculum under the U.S.D.A. Higher Education Challenge Grants Program (2006)

Member of the Department of Forestry’s Strategic Planning Committee (2006)

Member of the Department of Forestry’s Curriculum Revision Committee (2006)

Forestry Department’s representative (with T. Connors) at the Career Fair sponsored by the Kentucky Department of Fish and Wildlife Resources (February 24-25, 2006)

Author of the Interim Progress Report to the SAF Committee on Accreditation. Prepared for the Society of American Foresters (2006)

Attended the Southern Forestry Programs Recruiting Meeting to confer with 11 southern forestry schools and SAF to discuss recruiting needs, experiences and ideas. March 27, 2008; Knoxville, TN.

Author of the Department of Forestry’s Undergraduate Advisor’s Guide. 2012

Co-Author of the Department of Forestry's Professional guidelines and expectations document.

Chairman of the Department of Forestry Undergraduate Program Committee (UPC). (2010 – present)

Prepare Spring, Summer and Fall semester course schedules for the department.

Consult, on a continual basis, with students and prospective students interested in Forestry. (1987-present)

Consult, on a continual basis, with graduating foresters concerning career placement. (1987-present)

Forestry Summer Field Camp Coordinator: 1995- 1997; 2005 - 2011

Duties include:

Preparation of information packages for students

Preparation of package of signed insurance documents for Forest Director

Securing and issuing safety equipment

Consulting with students concerning camp information

Opening of camp and official welcome

Help plan and coordinate "Friends of Forestry" cookout and family night

Conducting evaluations for the camp courses

Addressing, in cooperation with the Department Chair any problems and concerns that arise.

Forestry Spring Field Semester Coordinator: 2012 – present

Major duties include serving as the communication channel for students, conducting course evaluations, coordination of safety issues, and communication and collaboration with the chair with any “ad hoc” issues that might arise.

INVITED REVIEWS

Proposal reviewer, U.S.D.A. Competitive Research Grants Program, wood utilization area (1985).

Reviewer of the Second Edition of Introduction to Forest Science, R.A. Young, Editor, John Wiley & Sons (1987).

Manuscript referee for the National Symposium on Surface Mining Hydrology, Sedimentology, and Reclamation (now the National Symposium on Mining) (1985-1990).

Manuscript referee for the International Journal of Surface Mining and Reclamation.

Manuscript referee for Wood and Fiber Science

Manuscript referee for the Forest Products Journal.

Reviewer (with M.H. Pelkki) of the Forestry section of Chapter 6 in the Atlas of Kentucky, R. Ulack, Editor, University Press of Kentucky (1997).

PROFESSIONAL ORGANIZATIONS

Forest Products Society (1979-present)

Society of American Foresters (1973-present)

Xi Sigma Pi - National Forestry Honor Society (1976-present)

Gamma Sigma Delta - International Agricultural Honor Society (1977-present)

Alpha Zeta - National Agriculture Honor Society (1976-present)

COMMITTEE ASSIGNMENTS

INTERNATIONAL

Chairman of the Technical Program Assistance Committee for the 1987 Forest Products Research Society's (renamed the Forest Products Society) Annual Meeting (1986-1987).

Secretary of the Production Management Technical Interest Group of the Forest Products Research Society (1988-1990).

Secretary of the Hardwood Lumber Technical Interest Group of the Forest Products Society (1992-1994).

NATIONAL

Advisory Committee for the National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation (renamed the National Symposium on Mining; 1985-1990).

Executive Committee for the National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation (1987).

Chairman of the Computer Applications Technical Review Committee for the National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation (1987).

REGIONAL

Executive Board of the Ohio Valley Section of the Forest Products Society (1988- 2005).

Secretary of the Ohio Valley Section of the Forest Products Society (1986-1987, 1993-1994).

Treasurer of the Ohio Valley Section of the Forest Products Society (1994-2005).

Scholarship Committee of the Ohio Valley Section of the Forest Products Society (1992-1996).

Scholarship Committee of the Kentucky-Tennessee Section of the Society of American Foresters (1998-present).

STATE

Kentucky Forest Industries Advisory Committee (1987)

Forestry Committee of the Kentucky Forest Industries Association (1988).

UNIVERSITY OF KENTUCKY

Scholarship Selection Committee for the Academic Excellence Awards for currently enrolled and transfer students - responsible for reviewing 60 application packages (1991).

University Appeals Board. September 1, 2013 – August 31, 2015

COLLEGE OF AGRICULTURE

Scholarship Selection Committee - responsible for evaluating incoming freshman and + upperclass scholarship applications annually (1987-present).

Undergraduate Curriculum Committee (1987-1990, 2004 - present)

Teaching Advisory Committee (1987-1990)

Dean's committee to investigate agricultural alternatives to tobacco growing (1985).

Faculty steering committee for the College of Agriculture Alumni phonathon fund raising campaign (1987-1988).

Ad Hoc committee on the oral communications requirement (1988).

Planning committee for the Agriculture honors banquet (1988-1989).

Periodic internal review committee for the Department of Forestry (1996, 2001).

Chairman of the Gamma Sigma Delta Master Teacher Selection Committee (1997).

Member of the USP Revision Committee (1997).

Forestry Faculty Representative at the Agriculture Scholarship Banquet (1997 - present).

Faculty Representative to the Agriculture Alumni Board (1998).

Member of the Gamma Sigma Delta Master Teacher Selection Committee (1998).

Member of the Core Group Planning Committee for the College of Agriculture Staff Appreciation Day (2002 - present)

Periodic internal review committee of the Merchandise, Apparel, and Textiles department (2005).

Member of an *ad hoc* committee to develop guidelines for the evaluation of teaching for annual performance review of faculty.

DEPARTMENT OF FORESTRY

Undergraduate Curriculum Committee (1986-present).
Chairman (1987-1991, 1996-1999, 2001-present).

Wood Utilization Center Committee (1986-present).

Space Allocation Committee (1986-1994).

Chairman of committee to develop mission statement for the Department's periodic review by the University (1995)

Chairman of committee to determine faculty needs under the Robinson Forest Initiative (1996)

Search Committees:

Wood Utilization, Extension (1990, 1995, 2001)

Forest Management (1991, 2001, 2005, 2011)

Forest Ecology (1992)

Wood Technology, Teaching and Research (1994, 1995, 1996)

Wood Technicians, Quicksand (1996)

Conservation Biology (1996, 2013)

Forestry and Natural Resources Policy (1996, 1997, 1998, 2006, 2008)

Department Chair (1999) - Served as Committee Chairman

Forest Landscape Ecology (2013)

Forest Economics and Policy (2016)

Review panel for research proposals, Robinson Forest Initiative (1995)

Rules and procedures committee (1996)

Edited and prepared current Rules and Procedures Document (1997)

Chairman's Advisory Committee on Merit Evaluations (1990, 1994, 1997, 2001, 2002, 2006, 2007, 2014)

Member of the Curriculum Committee, Self-Evaluation Report for re-accreditation by the Society of American Foresters (1998).

Edited and prepared the Interim Status Report of the Professional Forestry Program at the University of Kentucky for the Society of American Foresters (2004).

SERVICE ACTIVITIES

United Way Coordinator, UK Department of Forestry (1984, 1996)

Food Committee, UK College of Agriculture annual fall picnic (1984-present)

Mini-course moderator, National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation (1984-1985)

Program committee for the 10th Resources Management Consortium at the Land Between the Lakes (1985)

Recorded an Ag tape and Ag Short Take on Hardwood Lumber Exportation for the Radio-TV service of the UK College of Agriculture (1986)

Forestry faculty representative to the Institute for Future Agricultural Leaders luncheon (1986-

1987)

Faculty advisor to the UK Student Chapter of the Society of American Foresters (1986-1989)

Participant in “A Major Affair” - a University-wide program for undecided students (1989)

Faculty advisor for the 17th Resources Management Consortium at the Land Between the Lakes.
Helped D.B. Wagner and R.N. Muller secure travel funds through the Agriculture
Alumni Association grants (1993)

Accompanied undergraduate students to Society of American Foresters National meetings (1992
with M.H. Pelkki, 1993, 2000 with M.H. Pelkki)

Conducted seminars for Forestry (and later Natural Resource Conservation) students on job
search strategies and resources (1986, 1992, 1995)

Invited speaker at UK SAVE (Students Against the Violation of the Environment) meeting
(1994).

Accompanied undergraduate students of the ASFC Conclave (2010, 2011, 2012, 2013 with T.E.
Connors).

OTHER MEETINGS ATTENDED

Ohio Valley Section Meetings of the Forest Products Society (1984-present).

Kentucky-Tennessee Section Meeting of the Society of American Foresters (1985, 1998).

East Kentucky Chapter Meeting of the Society of American Foresters (1986).

Kentucky Forest Industries Association Meeting (1986).

National Meetings of the Forest Products Society (1982, 1987, 1988, 1991-1994, 2005).

Agriculture and the Economic Outlook - a day of discussion presented by the UK College of
Agriculture (1990).

National Meetings of the Society of American Foresters (1992, 1993, 2000).

The Tenth Annual National Environmental Conference and Career Fair; Sponsored by the
Environmental Careers Organization (1994).

Successful Strategies for Recruitment and Retention: Building an Inclusive University;
University of Kentucky (1996).

A New Dimension in Materials Testing; sponsored by Instron Corp., Louisville, KY (1997)

Rough Mill S.O.S. (Systems and Optimizing Strategies); sponsored by UK Cooperative
Extension and KWPC. Louisville, KY (1997)

The Ninth and Tenth Annual meetings of the European Panel Products Symposium, Llandudno,
Wales. (2005, 2006)

Matthew Springer

Curriculum Vitae

Matthew T. Springer
Assistant Extension Professor of Wildlife Management
Department of Forestry and Natural Resources
206 Thomas Poe Cooper Building
University of Kentucky
Lexington, KY 40546-1031
Email: mattspringer@uky.edu
Phone: 859-257-8633

EDUCATION

Ph.D. Agricultural Sciences, Southern Illinois University Carbondale (2017)
Master of Science in Wildlife Ecology, University of Delaware (2010)
Bachelor of Science in Environmental Science, Juniata College (2006)

ACADEMIC AND PROFESSIONAL EXPERIENCE

Assistant Extension Professor of Wildlife Management, University of Kentucky, Department of Forestry and Natural Resources, February 2016- Present.

Academic Year	Distribution of Effort
2015-2016 (Employment began 2/1/16)	100% Extension
2016-2017	99% Extension 1% Instruction
2017-2018	98.5% Extension, 1% Research, 0.5% Instruction
2018-2019	89.25% Extension, 10.75% Instruction

Graduate Research Assistant, Southern Illinois University Carbondale, 2010 - 2015
Graduate Research Assistant, University of Delaware, 2007 – 2009
Biologist Aide, Pennsylvania Game Commission, 2006 - 2007

GRANTS (Total = \$1,432,818, subcontract to Springer \$883,878)

Extramural Funding (n=15, Total= \$1,403,061, subcontract to Springer \$854,121)

1. **Springer, M.T.** 2019-2020. Black vulture nest success, fledgling movement and survival. United States Department of Agriculture Wildlife Services \$50,000 (PI-Invited Proposal)
2. **Springer, M.T.**, J.J. Cox, A. Davis, and W. Leuenberger. Impact and potential control measures for rodent populations in no-till soybean fields. 2019-2021. Natural Resource Conservation Service Conservation Innovation Grant \$75,000 (Lead PI-State Competitive)
3. J.J. Cox and **M.T. Springer**. Survival and recruitment by juvenile female elk in Kentucky. 2019-2022. Kentucky Department of Fish and Wildlife. \$524,873 (Co-PI)
4. **M.T. Springer**, Thomas, L., L. Lhotka, J. Stringer, and E. Crocker. Growing young conservation leaders and natural resource career exploration. 2019-2022. Kentucky Energy and Environment Cabinet, Division of Forestry. \$60,000 (Invited proposal).

5. **Springer, M.T.** Impact and potential control measures for vole populations in no-till soybean fields. 2018-2019. Kentucky Soybean Board. \$40,810 (PI-State Competitive)
6. **Springer, M.T.** Impact and potential control measures for vole populations in no-till soybean fields. 2018-2019. Kentucky Soybean Board. \$37,870 (PI-State Competitive)
7. **Springer, M.T.** and C. Lee. Deer damage to soybeans in Kentucky. 2018-2019. Kentucky Soybean Board. \$14,105 (PI-State Competitive)
8. Bessin, R, E. Ritchey, W. Dunwell, C. Knott, N.W. Gauthier, E. Pfeufer, and **M.T. Springer**. 2017-2020. Kentucky Extension IPM Implementation Program: 2017-2020. National Institute of Food and Agriculture. \$432,154 (Nationally Competitive; Collaborator in charge of wildlife damage section, \$13,163 to Springer)
9. Larson, L., Lee, K. J., Peterson, M. N., Sharp, R., Ahlers, A., Stedman, R., Siemer, W., Irwin, K., Woosnam, K., Keith, S., Farmer, J., Van Deelen, T., Anhalt-Depies, C., Bruskotter, J., Metcalf, E., **Springer, M.**, Graefe, A., Rodriguez, S., Kelly, M., Winkler, R., Romulo, C., and Quartuch, M. 2018-2019. Evaluating the promise and potential impacts of R3 efforts targeting college students. Association of Fish and Wildlife Agencies, (subcontract to Springer \$4,900, total requested \$134,849).(Co-PI-Nationally Competitive, 13 university survey of college students attitudes of hunting, Springer responsible for coordinating Kentucky surveys and programs)
10. **Springer, M.T.**, Thomas, L., and Osborn, C. 2017-2018. Improving the knowledge of bats in southeast Kentucky through a hands-on program involving building and monitoring bat houses. Kentucky PRIDE Environmental Grant, \$2,450 (PI-State competitive)
11. **Springer, M.T.** and C. Lee. Deer damage to corn in Kentucky. 2017-2018. Kentucky Corn Growers Association. \$12,443 (PI-State Competitive)
12. **Springer, M.T.** and C. Lee. Deer damage to soybeans in Kentucky. 2017-2018. Kentucky Soybean Board. \$13,647 (PI-State Competitive)
13. **Springer, M.T.** The Wildlife Society Student Travel Grant. 2016. Money to attend the TWS Annual Conference in Raleigh, N.C. \$450 (Nationally Competitive)
14. Gauthier, N.W., Bessin, R., Strang J., Wright S., **Springer M.T.**, Loenberger K., Lucas P., D. Becker, C. Smigell, E. Dixon, and C. Kaiser. Crop Profile for Kentucky Apple. 2016-2017. \$3,260. (Regionally competitive; Collaborator- author of the wildlife damage section)
15. **Springer, M.T.**, C.K. Nielsen, E.M. Schaubert. 2011. United Bowhunters of Illinois Conservation Fund Grant. \$1150 (State competitive)

Internal Funding (n= 6, Total= \$29,757, sub-contract to Springer= \$29,757)

1. Phillips, J, A. Huber, and **M.T. Springer**. 2019-2020. Kentucky deer school. Agriculture and Natural Resources Extension Mini-grant. \$2,500.
2. White, S., and **M.T. Springer**. 2019-2020. Kentucky trapping school. Agriculture and Natural Resources Extension Mini-grant. \$2,500.
3. Wolf, G., J.J. Cox, and **M.T. Springer**. 2018-2019. Additional wildlife internships for undergraduates working on diets of a reintroduced otter population in New Mexico. Student Sustainability Council, University of Kentucky. \$5,000.

4. Wolf, G., J.J. Cox, and **M.T. Springer**. 2018-2019. Research experience for undergraduates working on an evaluation of a reintroduced otter population in New Mexico. Student Sustainability Council, University of Kentucky. \$5,000.
5. Agouridis, C., E. Crocker, L. Thomas, **M.T. Springer**, W. Sanderson, A. Gumbert, C. Barton, C. Belton, P. Long, and D. Stamper. 2017-2018. Kentucky Master Naturalist: Promoting Environmental Stewardship through Student and Volunteer Training. Sustainability Challenge Grant, University of Kentucky. \$14,257.
6. Skulls and furs for wildlife extension education. 2017. **M.T. Springer** and L. Thomas. Barnhart Challenge Grant. \$500

Extramural Grants Pending (n=0, Total= \$, sub-contract to Springer \$)

Submitted but Unsuccessful (n=8, \$7,002,942 total, sub-contract to Springer \$1,415,206)

1. Poffenbarger, H., E. Haramoto, C. Bradley, D. Gonthier, **M.T. Springer**, and R. Villanueva. Influence of cover crops on crop yields, soil quality, pathogens, and pests. USDA Southern Sustainable Agriculture Research & Education, Total to Springer \$299,768. (Co-PI-Regionally Competitive)
2. Crocker, E., **M.T. Springer**, and C. Niman. Truffles: A potential high income diversification crop for low value areas. USDA Southern Sustainable Agriculture Research & Education, Total to Springer \$210,000. (Co-PI-Regionally Competitive)
3. **Springer, M.T.**, and W. Leuenberger. Assessing and reducing the impact of Black Vultures on cattle producers in Kentucky. USDA Southern Sustainable Agriculture Research & Education, Total to Springer \$231,239. (Co-PI-Regionally Competitive)
4. **Springer, M.T.**, W. Leuenberger, and W. Thomas. 2018-2021. Assessing and reducing the impact of Black Vultures on cattle producers in Kentucky. Invited for Full Proposal. USDA Southern Sustainable Agriculture Research & Education, Total to Springer \$284,458. (Co-PI-Regionally Competitive)
5. Hickman, J.B., Cox, J. J., Harris, D.C., Ochuodho, T.O., Price, S.J., **Springer, M.T.**, Stringer, J.W., and Yang, J., 2018-2022. Rogersville Shale Energy and Environment Laboratory (RSEEL), Department Of Energy, Total to Department of Forestry and Natural Resources \$323,975 (Total requested from sponsor \$5,911,711). (Co-PI-Nationally Competitive)
6. Utilizing herbivore exclusion techniques to improve the success of surface mine restoration efforts. 2016. Cox, J., Barton, C., Lhotka, J., **Springer, M.T.**, Hackworth, Z. Sustainability Challenge Grant, University of Kentucky. \$15,266.
7. Tools and practices for livestock producers to manage risk from black vulture depredation. 2016. McPeake, R., **M.T. Springer**, A. McClung. Southern Extension Risk Management Education Grant. \$49,500.
8. Telemetry equipment for Kentucky Forest Leadership Program. 2017. L. Thomas, **M.T. Springer**, A. Osborn. Barnhart Challenge Grant. \$1000

Current Research Projects

1. Vole damage on soybeans in cover crop systems in Kentucky. Nierman, J. and **M.T. Springer**. 2018 – 2020 (Data collection stage).

2. Assessing deer damage to corn and soybean producers in Western Kentucky. Matthews, J., **M.T. Springer**, and J. J. Cox. 2017-2019. (1 Manuscript in review, 1 in preparation stage)
3. Strengths, Weaknesses, Opportunities, and Threats as identified by Kentucky Woodland Owners, Kentucky Forest Industry Association, and Kentucky Distillers relating to the white oak supply. Thomas, W., C, Niman, L, Lhotka, **M.T. Springer**, T.O. Ochuodho. (Manuscript in review)
4. Diet of reintroduced river otters in New Mexico. Wolf, G. Cox, J.J., and **M.T. Springer**. 2017-2019. (Analysis stage)
5. Evaluating the promise and potential impacts of R3 efforts targeting college students. Vayer, V.*, Larson, L., Lee, K. J., Peterson, M. N., Sharp, R., Ahlers, A., Stedman, R., Siemer, W., Irwin, K., Woosnam, K., Keith, S., Farmer, J., Van Deelen, T., Anhalt-Depies, C., Bruskotter, J., Metcalf, E., **Springer, M.**, Graefe, A., Rodriguez, S., Kelly, M., Winkler, R., Romulo, C., and Quartuch, M. 2018-2020. (Manuscript preparation stage)
6. Microbeads and other materials in the scat of a reintroduce river otter population in the upper Rio Grande River, New Mexico. Kohen, K., G. Wolf, J.J. Cox, and **M.T. Springer**. 2018 - 2019 (Manuscript preparation stage)
7. Current assessment of black vulture livestock issues in Kentucky using producer driven reporting to FSA and USDA. Marrs, I., **M.T. Springer**, W. Leuenberger, A. Davis. 2018-2020 (Data analysis stage)
8. A Natural Resource Academy for Middle School Students: Understanding the potential impact on student's environmental knowledge and future academic and employment careers. Osborn, A., L. Thomas, **M.T. Springer**, and B. Newton. 2017-Current. (Initial Programmatic Manuscript being prepared for Journal of Extension)
9. Understanding public response to a terminated Farm Bill program; Can persistence be obtained in the conservation legacy of CREP in Kentucky. **Springer, M.T.** and W. Thomas. 2018-2020. (Data analysis stage).

PUBLICATIONS

Referred Research Articles (* graduate or undergraduate student supervised)

1. Hackworth, Z. J., J.M. Lhotka, J.J. Cox, C.D. Barton, and **M.T. Springer**. 2018. First-year vitality of reforestation plantings in response to herbivore exclusion on reclaimed Appalachian surface-mined land. *Forests* 9:222 (<https://doi.org/10.3390/f9040222>).
2. Tosa, M.I., **M.T. Springer**, E.M. Schaubert, and C.K. Nielsen. 2017. Increased fall and winter mortalities of white-tailed deer fawns during drought year. *Canadian Journal of Zoology* 96:55-61.
3. **Springer, M.T.**, R. L. Atkinson, *L. Armit, and C.K. Nielsen. 2016. The utilization and apparent ruminal digestibility of dual-purpose food plots for wildlife and cattle grazing. *Open Agriculture* 1:124-130.
4. *Pfaff, M, M. I. Tosa, **M.T. Springer**, E.M. Schaubert, C.K. Nielsen. 2015. Impact of deer bait sites on *Peromyscus* mice in southern Illinois. In: Groninger, John W.; Holzmüller, Eric J.; Nielsen, Clayton K.; Dey, Daniel C., eds. Proceedings, 19th Central Hardwood Forest Conference; 2014 March 10-12; Carbondale, IL. General Technical

Report NRS-P-142. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 89-91.

5. **Springer, M.T.**, J.L. Bowman, and B.L. Vasilas. 2013. The effect of white-tailed deer browsing on wheat qualities and yields in Delaware. *Wildlife Society Bulletin* 37:155-161.
6. **Springer, M.T.**, A.D. Carver, C.K. Nielsen, N.J. Correa, J.R. Ashmore, J.R. Ashmore, J. G. Lee. 2012. Relative abundance of mammalian species in a central Panamanian rainforest. *Latin American Journal of Conservation* 3:19-26.
7. **Springer, M.T.**, C.K. Nielsen, A.D. Carver, and N.J. Correa. 2011. Harpy Eagle (*Harpia harpyja*) feeding behavior on a Brown-throated Three-toed Sloth (*Bradypus variegates*). *Journal of Raptor Research* 45(1):100-103.
8. **Springer, M.T.** and J.L. Bowman. The effect of deer on bearded and unbearded wheat yield. Proceedings of the 13th Wildlife Damage Management Conference. Saratoga Springs, New York. 13:68-70.

In Review

Thomas, W., C. Niman, L. Lhotka, **M. T. Springer**, and T.O. Ochuodho. Strengths, Weaknesses, Opportunities, and Threats as identified by Kentucky Woodland Owners, Kentucky Forest Industry Association, and Kentucky Distillers relating to the white oak supply. (In revision).

Springer, M.T., C.K. Nielsen, and E.M. Schaubert. Dispersal and excursion rates and path characteristics of white-tailed deer in agricultural landscape. *Wildlife Biology*.(In revision)

*Matthews, J., **M.T. Springer**, J.J. Cox, W. Leuenberger, and A. Davis. Impact of white-tailed deer densities on corn and soybean yields in western Kentucky. *Wildlife Society Bulletin*(In review).

In Preparation

Springer, M.T., *J.M. Meats, C.K. Nielsen, *J. Matthews. Use of capsaicin to deter deer browse on soybeans. *Human-Wildlife Interactions*.

Springer, M.T., C. K. Nielsen, and E. M. Schaubert. Comparison of two least-cost path methods for predicting deer dispersal in an agricultural landscape. *PlosOne*.

*Matthews, J., **M.T. Springer**, and J.J. Cox. Pellets or pictures, which would you prefer to count? A comparison of two white-tailed deer population survey techniques. *Journal of Fish and Wildlife Management*.

Osborn, A., L. Thomas, **M.T. Springer**, and B. Newton. A Natural Resource Academy for Middle School Students: Understanding the potential impact on student's environmental knowledge and future academic and employment careers. *Journal of Extension*.

Kohen, K., G. Wolf, J.J. Cox, and **M.T. Springer**. Microbeads and other materials in the scat of a reintroduce river otter population in the upper Rio Grande River, New Mexico. *Southwestern Naturalist*.

EXTENSION PUBLICATIONS

Extension publications are given a designation at the end of their listing to identify the level of work related to the publication:

O: Original material that is entirely new and created by the authors

MR: Major revision made to an existing publication including adding new sections of information or summarizing new data or relevant research

SR: Slight revision made to update the information and add new graphics, pictures, or videos

Extension Publications

* indicates student supervised, MR represents a minor revision, otherwise original articles

1. Matthews, J* and **Springer, M. T.** 2019. Using camera surveys to estimate white-tailed deer populations. Cooperative Extension Service, University of Kentucky, FOR-133; pp. 8.
2. **Springer, M. T.** 2019. Identifying and mitigating plant damage caused by the Yellow-bellied sapsucker. Cooperative Extension Service, University of Kentucky, FOR-134; pp. 2.
3. Leonburger, K., N. W. Gauthier, R. Durham, L. Townsend, **M. T. Springer**, A. Stith, A. Leonburger, J. Bessin, E. Wood, and S. White. 2019. Kentucky Master Gardener Chapter 7: Diagnosing plant problems. Cooperative Extension Service, University of Kentucky, ID-194; pp. 28.
4. Gauthier, N. W., R. Bessin, J. Strang, S. Wright, **M. T. Springer**, and C. Kaiser. An IPM scouting guide for common problems of Grapes in Kentucky. 2019. (Personal Effort: Wildlife Issues with Grapes) Cooperative Extension Service, University of Kentucky, ID-254; pp. 30.
5. Matthews, J* and **M. T. Springer**. Black vulture effigy directions. Cooperative Extension Service, University of Kentucky, FORFS 18-03; pp. 11.
6. Carr, D. and **M. T. Springer**. 2018. Venomous snakes of Kentucky. Cooperative Extension Service, University of Kentucky, FORFS 18-02; pp. 2
7. Gauthier, N. W., R. Bessin, J. Strang, S. Wright, **M. T. Springer**, and C. Kaiser. An IPM scouting guide for common problems of brambles in Kentucky. 2018. (Personal Effort: Wildlife Issues with Brambles) Cooperative Extension Service, University of Kentucky, ID-251; pp. 30.
8. Pehling, D., T. G. Barnes, and **M. T. Springer**. 2017. Vertebrate Pest Management: Kentucky Master Gardener Manual Chapter 19. Cooperative Extension Service, University of Kentucky, FOR 121; pp. 11. (SR)
9. Neal, J. C., J. Chong, J. Williams-Woodward, **M. T. Springer**. Southeastern U.S. Pest Control Guide for Nursery Crops and Landscape Plantings. 2017. Cooperative Extension Service, North Carolina State University; pp. 197-202. (Springer responsible for Vertebrate Pest Control Section)
10. Jacob, J., **M. T. Springer**, and T. Pescatore. 2017. Predator management for small-scale poultry enterprises in Kentucky. Cooperative Extension Service, University of Kentucky, ID-245; pp. 8.
11. **Springer, M. T.** 2016. Black vulture damage control. Cooperative Extension Service, University of Kentucky, FOR 129; pp. 4.
12. Vijayakumar, P. P., and **Springer, M. T.** 2016. Management of wildlife and domestic animals on your farm. Cooperative Extension Service, University of Kentucky, ID-243; pp. 3.
13. Gauthier, N. W., R. Bessin, J. Strang, S. Wright, **M. T. Springer**, and C. Kaiser. An IPM scouting guide for common problems of strawberry in Kentucky. 2016. (Personal Effort: Wildlife Issues with Strawberry Production) Cooperative Extension Service, University of Kentucky, ID-238; pp. 28.

Non-Numbered Extension Publications or Popular Articles (Sole authorship unless otherwise noted)

1. Selecting, managing, or planting trees for wildlife. 2019. Woodlands Magazine Summer Edition
2. How to incorporate wildlife into your forest management plan. 2018. Woodlands Magazine Summer Edition
3. What wildlife are in your woods and why you should care. 2017. Woodlands Magazine Fall Edition
4. Dealing with black vultures. Cow Country News January Edition 2017.
5. The wily coyote part 1. Cow Country News March Edition. 2017.
6. The wily coyote part 2. Cow Country News May Edition. 2017.
7. Why you should care about your woodlands. Cow Country News July Edition. 2017.
8. Hunt Leasing-What to Know. Cow Country News August Edition. 2017.
9. Excursion movements of white-tailed deer in the Midwest, how far, how often, and why? **Springer, M.T.**, C.K. Nielsen, and E.M. Schaubert. Quality Whitetails. (Quality Deer Management Association invited article for Fall 2016 edition)

Media Contributions (16 total)

<https://news.ca.uky.edu/file/uk-extension-helps-livestock-producers-deter-black-vultures>

<https://news.ca.uky.edu/article/uk-extension-helps-livestock-producers-deter-black-vultures>

Magazine

1. American Vegetable Growers Magazine. (May 3, 2017). Interviewed about ways of dealing with white-tailed deer issues in vegetable production systems. FL, United States.
2. Progressive Forage Magazine. (March 30, 2017). Interview on the impact and problems associated with feral hogs and agriculture. ID, United States.
3. Kentucky Living Magazine. (March 28, 2017). Interview on the impact and problems associated with wildlife in your backyard. KY, United States.

Newspaper

1. Lexington Herald Leader. (June 4, 2017). Interview on the impacts and control of black vultures in Kentucky, republished up from The State Journal. Lexington, KY, United States.
2. The State Journal. (June 3, 2017). Interview on the impacts and control of black vultures in Kentucky. Frankfort, KY, United States.

Radio

1. UK Forestry and Natural Resources Radio show. Wildlife Sounds in the Forest. WRFL 88.1 fm (5 min weekly segment, initiated August 15, 2018 (25 segments recorded to this time)
2. Simpson County Extension Agriculture Report (WFKN 1220 AM; March 9, 2018) Wildlife damage control on your farm and around your house.
3. Simpson County Extension Agriculture Report (WFKN 1220 AM; March 8, 2018) Black Vulture Issues in Kentucky.
4. Butler County Ag. Connection (101.5 fm; October 10, 2017). Interview on how to deal with wildlife damage issues around your home and farm. Morgantown, KY.
5. Across Kentucky (Farm Bureau Radio show). (August 5, 2016). Interview about Black Vulture issues in Kentucky and potential solutions. Syndicated state wide.

TV

1. Farm and Home. (March 1, 2017). Interviewed on KYsnake website and related snake issues in Kentucky. Bowling Green, KY, United States.
2. Farm and Home. (February 28, 2017). Interviewed on vole and mole issues in Kentucky. Bowling Green, KY.
3. Farm and Home. (February 27, 2017). Interviewed on Black Vulture issues in Kentucky. Bowling Green, KY.
4. Farm and Home. (November 13, 2017) Interviewed on deer management and the rut. Bowling Green, KY.
5. Farm and Home. (November 14, 2017) Interviewed on dealing with small mammals in winter around your house and barns. Bowling Green, KY.
6. Farm and Home. (November 15, 2017) Interviewed on feeding birds in winter. Bowling Green, KY.

PROFESSIONAL PRESENTATIONS (n=56 total, * denotes presenter, ^ denotes supervised student)

1. Nierman, J.*^, and **M.T. Springer**. 2019. Holey voley: cover crop modification and the impact on vole population dynamics. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lake Cumberland State Resort Park, KY.
2. **M.T. Springer**, W. Thomas, and D. Williams^. 2019. What happens when the money stops flowing: potential response of Kentucky landowners to the end of CREP payments. American Fisheries Society & The Wildlife Society 2019 Joint Conference, Reno, NV.
3. Wolf, G.*^, J.J. Cox, and **M.T. Springer**. 2019. Diet of a reintroduced population of river otters in the Upper-Rio Grande River, Taos county, New Mexico. American Fisheries Society & The Wildlife Society 2019 Joint Conference, Reno, NV.
4. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2019. Influence of deer density on corn and soybean yields in Western Kentucky. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.
5. Williams, D*^., M.T. Springer, W. Thomas. 2019. What happens when the money stops flowing? Landowners response to the end of CREP payments. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.

6. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2019. Influence of deer density on corn and soybean yields in Western Kentucky. 42nd Southeast Deer Study Group Meeting, Louisville, KY.
7. Thomas, W., C. Niman, **M.T. Springer***, L. Lhotka, and T. Ochuodho. 2018. Woodland owners and forest industry perception of white oak supply. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.
8. Thomas, W.* , C. Niman, **M.T. Springer**, L. Lhotka, and T. Ochuodho. 2018. Woodland owners and forest industry perception of white oak supply. Association of Natural Resource Professionals 2018 Conference, Biloxi, MS.
9. Thomas, W.* , C. Niman, **M.T. Springer**, L. Lhotka, and T. Ochuodho. 2018. Woodland owners and forest industry perception of white oak supply. Kentucky- Tennessee Chapter of Society of American Foresters Annual Meeting, London, KY.
10. Hackworth, Z. J.* , J.M. Lhotka, J.J. Cox, C.D. Barton, and **M.T. Springer**. 2018. First-year vitality of reforestation plantings in response to herbivore exclusion on reclaimed Appalachian surface-mined land. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Cadiz, KY.
11. Tosa, M.I., **Springer, M.T.***, E.M. Schaubert, and C.K. Nielsen. 2018. Increased overwinter mortality of white-tailed deer fawns during a drought year. 78th Midwest Fish and Game Conference, Milwaukee, WI.
12. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2016. Estimating dispersal and excursion movement rates of white-tailed deer using demographic and landscape variables. 40th Midwest Deer and Turkey Group Meeting, Carrolton, KY.
13. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2015. Estimating dispersal and excursion movement rates of white-tailed deer using demographic and landscape variables. 51st Meeting of the Illinois Chapter of The Wildlife Society, Champaign, IL.
14. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2015. Estimating dispersal and excursion movement rates of white-tailed deer using demographic and landscape variables. 38th Southeast Deer Study Group Meeting, Little Rock, AR.
15. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2015. Estimating dispersal and excursion movement rates of white-tailed deer using demographic and landscape variables. 75th Midwest Fish and Game Conference, Indianapolis, IN.
16. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2014. An individual-based movement model to predict white-tailed deer dispersal behavior in an agricultural landscape. 21st Annual Meeting of The Wildlife Society, Pittsburgh, PA.
17. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2014. Use of discrete choice modeling to predict dispersal and exploratory movements of white-tailed deer in an agricultural landscape. 50th Annual Meeting of the Illinois Chapter of The Wildlife Society, Springfield, IL.
18. Pfaff, M.A.* , M.I. Tosa, **M.T. Springer**, E.M. Schaubert, and C.K. Nielsen. 2014. Impact of deer bait sites on small mammals in southern Illinois. Central Hardwoods Symposium, Southern Illinois University Carbondale, Carbondale, IL.
19. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2013. Use of discrete choice modeling to predict dispersal and exploratory movements of white-tailed deer in an agricultural landscape. The Wildlife Society 20th Annual Conference, Milwaukee, WI.

20. **Springer, M.T.***, M.I. Tosa, E.M. Schaubert, and C.K. Nielsen. 2013. External home range movements and effects of localized removal on white-tailed deer. 37th Midwest Deer and Turkey Group Meeting, Monticello, IL.
21. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2012. Exploratory and dispersal behavior of white-tailed deer in central Illinois. 73rd Midwest Fish and Game Conference, Wichita, KS.
22. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2012. Exploratory and dispersal behavior of white-tailed deer in central Illinois. The Wildlife Society 19th Annual Conference, Portland OR.
23. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2012. Preliminary analyses of dispersal behavior of white-tailed deer in east-central Illinois. 48th Annual Meeting of the Illinois Chapter of The Wildlife Society, Makanda, IL.
24. **Springer, M.T.***, C.K. Nielsen, and S.E. Wilson. Demographics and capture efficiency in an unexploited raccoon population. 72nd Midwest Fish and Game Conference, Des Moines, Iowa.
25. Springer, M.T.* and J.L. Bowman. 2009. The effect of deer on bearded and unbearded wheat yield. The Wildlife Society 16th Annual Conference. Monterey, California.
26. **Springer, M.T.*** and J.L. Bowman. 2009. The effect of deer on bearded and unbearded wheat yield. 13th Wildlife Damage Management Conference. Saratoga Springs, New York.
27. **Springer, M.T.*** and J.L. Bowman. 2008. The effect of deer on bearded and unbearded wheat yield. 31st Annual Meeting of the Southeast Deer Study Group. Tunica, Mississippi.

POSTER PRESENTATIONS:

1. Williams, K.*[^], N. Hooven[^], G. Jenkins, K. Sams, J.L. Fusaro, R.J. McDermott, R.D. Crank, C. Casey, J. Hast, **M. Springer**, J. Cox. Survival and Cause-Specific Mortality of Elk Calves in Kentucky. The Wildlife Society Kentucky Chapter Meeting, February 20, 2020, Lake Cumberland State Resort Park, KY.
2. Nierman, J.*[^], and **M.T. Springer**. 2019. Holey voley: cover crop modification and the impact on vole population dynamics. American Fisheries Society & The Wildlife Society 2019 Joint Conference, Reno, NV.
3. Evers, E.*[^], J. Nierman[^], and M.T. Springer. 2019. Home range analysis of small mammal populations: comparison of grid trapping and PIT tagging methods. American Fisheries Society & The Wildlife Society 2019 Joint Conference, Reno, NV.
4. Wolf, G.*[^], J.J. Cox, and **M.T. Springer**. 2019. Scat happens: describing the diet of a reintroduced river otter species in northern New Mexico. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.
5. Cohen, K.*[^], G. Wolf, **M.T. Springer**, and J.J. Cox. 2019. Just bead it: presence of microbeads in New Mexico river otter scat. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.
6. Nierman, J.*[^], and **M.T. Springer**. 2019. Holey voley: cover crop modification and the impact on vole population dynamics. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.

7. Waggener, A., J. Unrine, G. Wolf, **M.T. Springer**, and J.J. Cox. Test your metal: presence and analysis of heavy metals in New Mexico otter scat. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Lucas, KY.
8. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2019. Pellets or pictures, which would you prefer to count? Comparison of two white-tailed deer population survey techniques. 42nd Southeast Deer Study Group Meeting, Louisville, KY.
9. Vayer, V.*, Larson, L., Lee, K. J., Peterson, M. N., Sharp, R., Ahlers, A., Stedman, R., Siemer, W., Irwin, K., Woosnam, K., Keith, S., Farmer, J., Van Deelen, T., Anhalt-Depies, C., Bruskotter, J., Metcalf, E., **Springer, M.**, Graefe, A., Rodriguez, S., Kelly, M., Winkler, R., Romulo, C., and Quartuch, M. 2018. Hunting and fishing participation among college students: Implications for wildlife conservation. The Wildlife Society 25th Annual Conference, Cleveland, OH.
10. Wolf, G.*^, J.J. Cox, and **M.T. Springer**. 2018. Diet of a newly reintroduced river otter species in the upper Rio Grande River, New Mexico. The Wildlife Society 25th Annual Conference, Cleveland, OH.
11. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2018. Comparison of two white-tailed deer population estimation techniques on a localized scale. The Wildlife Society 25th Annual Conference, Cleveland, OH.
12. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2018. Impacts and influences of deer densities on corn and soybean yields in Western Kentucky. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Cadiz, KY.
13. Wolf, G.*^, J.J. Cox, and **M.T. Springer**. 2018. Diet of a newly reintroduced river otter species in the upper Rio Grande River, New Mexico. Annual Meeting of the Kentucky Chapter of The Wildlife Society, Cadiz, KY.
14. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2018. Impacts and influences of deer densities on corn and soybean yields in Western Kentucky. 41st Southeast Deer Study Group Meeting, Nashville, TN.
15. Matthews, J.*^, **M.T. Springer**, J.J. Cox. 2018. Impacts and influences of deer densities on corn and soybean yields in Western Kentucky. 78th Midwest Fish and Game Conference, Milwaukee, WI.
16. Wolf, G.*^, J.J. Cox, and **M.T. Springer**. 2018. Diet of a newly reintroduced river otter species in the upper Rio Grande River, New Mexico. 78th Midwest Fish and Game Conference, Milwaukee, WI.
17. **Springer, M.T.** *, C.K. Nielsen, and E.M. Schauber. 2016. Step selection function for white-tailed deer dispersal in an agricultural landscape. The Wildlife Society 23rd Annual Conference, Raleigh, NC.
18. **Springer, M.T.** *, C.K. Nielsen, and E.M. Schauber. 2016. Step selection function for white-tailed deer dispersal in an agricultural landscape. 39th Southeast Deer Study Group Meeting, Concord, NC.
19. Meats, J.M., **M.T. Springer***, and C.K. Nielsen. 2015. Use of capsaicin as a deer deterrent on soybeans. 51st Meeting of the Illinois Chapter of The Wildlife Society, Champaign, IL.
20. Fogler, W.L.* , **M.T. Springer**, and C.K. Nielsen. 2015. Comparison of four baits for attracting white-tailed deer during the rut in southern Illinois. 38th Southeast Deer Study Group Meeting, Little Rock, AR.

21. Meats, J.M.*, **M.T. Springer**, and C.K. Nielsen. 2015. Use of capsaicin as a deer deterrent on soybeans. 38th Southeast Deer Study Group Meeting, Little Rock, AR.
 22. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2014. Comparison of two least-cost path modeling methods for predicting external home range movements of white-tailed deer in a fragmented agricultural landscape. 99th Ecological Society of America Annual Meeting, Sacramento, CA.
 23. Armit, L*. R.L. Atkinson, **M.T. Springer**, and C.K. Nielsen. 2014. Utilization of dual-purpose food plots for wildlife and cattle grazing. Spring Symposium and Research conference in STEM, Chicago, IL.
 24. **Springer, M.T.***, C.K. Nielsen, and E.M. Schaubert. 2014. Expert opinion models do not accurately predict actual movement paths of deer in an agricultural landscape. 74th Midwest Fish and Wildlife Conference, Kansas City, MO.
 25. Crawford, J.C.*, K.S. Delahunt, C.K. Nielsen, J. van der Merwe, A.M. Jackson, **M.T. Springer**. 2014. GRASS: Bringing wildlife ecologists into the classroom. 74th Midwest Fish and Wildlife Conference, Kansas City, MO.
 26. Pfaff, M.A.*, M.I. Tosa, **M.T. Springer**, E.M. Schaubert, and C.K. Nielsen. 2014. Impact of deer bait sites on *Peromyscus* in southern Illinois. 74th Midwest Fish and Wildlife Conference, Kansas City, MO.
 27. Armit, L*. R.L. Atkinson, **M.T. Springer**, and C.K. Nielsen. 2013. Utilization of dual-purpose food plots for wildlife and cattle grazing. McNair Scholars Research Symposium, Southern Illinois University Carbondale, Carbondale, IL.
 28. Pfaff, M.A.*, M.I. Tosa, **M.T. Springer**, and E.M. Schaubert. 2013. Impact of deer bait sites on small mammals in southern Illinois. Undergraduate Research Forum, Southern Illinois University Carbondale, Carbondale, IL.
 29. Pfaff, M.A.*, **M.T. Springer**, and C.K. Nielsen. 2012. Bait preference of white-tailed deer in central Illinois. Saint Louis Area Undergraduate Research Symposium, Saint Louis, MO.
 30. Pfaff, M.A.*, **M.T. Springer**, and C.K. Nielsen. 2012. Bait preference of white-tailed deer in central Illinois. Undergraduate Research Forum, Southern Illinois University Carbondale, Carbondale, IL.
 31. **Springer, M.T.*** and J.L. Bowman. 2008. The effect of deer on bearded and unbearded wheat yield. The Wildlife Society 15th Annual Conference. Miami, Florida.
- *Denotes presenter

INVITED PRESENTATIONS

*Presentations given prior to being employed at University of Kentucky
Research

1. Connecting human dimensions to conservation, status in Kentucky and how we move forward. Murray State University, Department of Biology Seminar Series, Fall 2019.
2. Springer, M.T., C.K. Nielsen, and E.M. Schaubert. Movement behavior of juvenile white-tailed deer in central Illinois. March 2017. United Bowhunters of Illinois Annual Banquet. Springfield IL.
3. *Springer, M.T., C.K. Nielsen, and E.M. Schaubert. March 2012. Deer in Illinois: What the state is doing to understand the herd; how this research may play into future management decisions. United Bowhunters of Illinois Annual Banquet. Springfield, IL.

Extension

1. M.T. Springer. Wildlife on Your Farm: Problems and Potential Income. Roots to Riches Conference, Madisonville, KY. February 2019.
2. M.T. Springer. Deer management on your woodland property. Kentucky Woodland Owners Association Spring Meeting. March 2018.
3. M.T. Springer. Panel discussion: Options and potential for additional income off your land other than a timber harvest. Kentucky Woodland Owners Association Spring Meeting (Hunt leasing and other wildlife income panel presenter). March 2017.
4. M.T. Springer. Predator control for small and backyard poultry flocks. eXtension National Poultry Webinar Series (Live viewed by individuals in 9 states). February 2017.
5. M.T. Springer. Identifying and dealing with wildlife issues in nurseries and urban landscapes. Kentucky Nursery and Landscape Association 2017 Conference. January 2017
6. M.T. Springer. Dealing with deer, coyote, and raccoons in your produce production systems. 2017 Kentucky Horticulture Conference. January 2017.
7. M.T. Springer. Agriculture damage issues, regulations, and protocols involving deer, elk, and bears in Kentucky. Kentucky Farm Bureau Annual Meeting. December 2016.
8. M.T. Springer. Furbearer research and the direction of wildlife extension activities in Kentucky. October 2016. United Trappers of Kentucky Annual Fall Meeting,
9. *Crawford, J.C., and M.T. Springer. How beneficial is your property for wildlife. August 2013. Ag Center Field Day, University of Illinois Extension Office, Dixon, Il.

Extension Presentations and Programs

Summary of invited county extension program presentations, including field days, or professional trainings

Year	Programs	Presentations	Professional/Agent Trainings
2016 (Feb 1- Dec 31)	16	30	5
2017 (1 Jan - Dec 31)	16	41	2
2018 (1 Jan - Dec 31)	17	38	0

*Programs indicates different presentation topics, Presentations indicate how many total times programs were delivered, and Agent Trainings indicates how many times I delivered training to agents either organized by myself or in collaboration with other specialists

Examples of Extension Programs/Presentations: Black vulture and coyote damage control, Food plots 101, Forest management for wildlife, Hunt leasing: what you need to know, Backyard and garden wildlife damage control, Improving wildlife and pollinator habitat in your backyard, Deer management 101.

Statewide Programs (Organizer (O) or Annual Participant (P))

1. Kentucky Deer School (O, 2019)
2. Kentucky Trapper School (O, 2019)

3. Kentucky Woodland Owner Short Course (P, 2016- present, hosted by 3 counties annually, attendance averages 175 individuals)
4. Kentucky Forestry Fall Webinar Series (P, 2016- present, hosted by 25+ counties annually)
5. Kentucky Master Naturalist (O, 2018- present, Provides programing and materials for wildlife sections/trainings)
6. Kentucky Master Gardener (P, 2016- present, Provides publication support and trainings at county level, ~ 5 trainings/year)

Agent and Professional Trainings

1. Raccoon and Beaver Damage Control Techniques Agent Training- 2019
2. Integrated Pest Management Fruit and Vegetable Wildlife Damage Agent Training-2019
3. Integrated Pest Management Fruit and Vegetable Wildlife Damage Producer Training- 2019
4. Forest Management for Wildlife, Kentucky Department of Fish and Wildlife Resources Biologist/Land Manager Training (J. Stringer co-organizer)- 2017
5. Integrated Pest Management Orchards Wildlife Damage Agent Training-2017
6. Integrated Pest Management Gardens and Landscaping Wildlife Damage Agent Training- 2017
7. GAP Certification- Wildlife Agent and Producer Training-2016

4-H and Youth Programming

Kentucky Forestry, Entomology, and Wildlife Leadership Program (Supervisor of Wildlife Track) - Annual weeklong camp held at the Kentucky Leadership Center in Jabez, Kentucky. Around 25 high school students attend each year and select one of three different focus tracks, forestry, wildlife, or entomology. Wildlife students engage in learning activities related to species surveys for amphibians, reptiles, mammals, and birds, learn about different habitat management techniques including forest management and fire, and the week culminates in an interdisciplinary management project and presentation working with the Forestry and Entomology tracks.

4-H Natural Resource and Environmental Sciences Academy (Wildlife Track) – State wide three year program for students in grades 7th -10th. Students’ progress through 3 distinct environmental tracks focusing on different ecological topics within set years (Year 1 is water, 2 is forestry, and three is wildlife). I organize and execute the third year wildlife track. We focus on understanding ecosystem quality and habitat management, wildlife population surveying techniques, and learning how to use dichotomous keys to identify species (i.e. how to identify mammal species by skull characteristics). Currently 62 students enrolled in the overall program.

AWARDS (\$10,645 total)

2018- Southeast Regional Extension Forestry Youth Education Award-Kentucky Forestry, Entomology, and Wildlife Leadership Program

2015- Best Student Presentation Illinois Chapter of The Wildlife Society (\$150)

2015- 2nd Place Poster Southeast Deer Study Group Meeting (\$250)

2015- Fenske Memorial Award Finalist- Midwest Fish and Wildlife Conference
2014- Dissertation Research Award – SIUC Graduate School (\$7245)
2014- National Wild Turkey Federation Illinois Land of Lincoln Scholarship (\$1500)
2013- National Wild Turkey Federation Illinois Land of Lincoln Scholarship (\$1500)

Supervised graduate/*undergraduate student awards and travel grants (\$10,154.81 total)

*Evers, E. (2019)-Undergraduate Travel Award, Chellgren Center (\$604)
Nierman, J. (2019)- Department of Forestry and Natural Resources Graduate Student Travel Grant (\$594.00)
Gabriela Wolf (2019) - Conservation Leaders for Tomorrow travel grant (\$2500)
*Keely Kohen (2019) - Best student poster at Kentucky Chapter of The Wildlife Society Annual Meeting (\$100)
Jonathan Matthews (2019) - Best student presentation at Kentucky Chapter of The Wildlife Society Annual Meeting (\$200)
*Keely Kohen (2019) - Undergraduate Travel Award, Chellgren Center(\$150)
*Deanna Williams (2019) - Undergraduate Travel Award, Chellgren Center(\$150)
Jonathan Matthews (2019) – Department of Forestry and Natural Resources Graduate Student Travel Grant (\$235.04)
Gabriela Wolf (2018) – United Trappers of Kentucky Scholarship (\$2000)
Jonathan Matthews (2018) – 2nd Place Poster Southeast Deer Study Group Meeting (\$250)
Jonathan Matthews (2018) – Wildlife Damage Management Working Group Travel Scholarship (\$500)
Jonathan Matthews (2018) – Department of Forestry and Natural Resources Graduate Student Travel Grant (\$254.43)
Gabriela Wolf (2018) – Garden Club of Kentucky Scholarship (\$1500)
Gabriela Wolf (2018) – Department of Forestry and Natural Resources Graduate Student Travel Grant (\$296.96)
Gabriela Wolf (2018) – Department of Forestry and Natural Resources Graduate Student Travel Grant (\$328.15)
Jonathan Matthews (2018) – Department of Forestry and Natural Resources Graduate Student Travel Grant (\$492.23)

TEACHING EXPERIENCE

FOR 602: Global Issues in Forestry and Natural Resources (3 hr: Fall 2019)
FOR 770: Introduction to Wildlife Damage Management (1 hr: Spring 2019)
FOR 365: Forest Wildlife Assessment (2 hrs; co-instructed with Drs. John Cox and Steven Price; taught 4 of 9 days) (Spring 2019)
- Springer responsible for teaching wildlife forest habitat management and damage management sections.
FOR 770: Forestry and Natural Resource Department Seminar (1 hr: Fall Semester 2017-Present)
Forestry 365: Forest Wildlife Assessment (2 hrs; co-instructed with Drs. John Cox and Steven Price; taught 1 of 9 days) (Spring 2017-2018)
- Springer responsible for teaching Wildlife Damage Management section.

Forestry 405: Forest Management for Wildlife (Fall 2013 at Southern Illinois University Carbondale)

- Students learn about the principles of forest management, and how these management strategies can affect wildlife diversity and populations.
- **Instructor Evaluations from Students mean score for ICE Q 1-20: 4.22 ***

*5 point scale: 5=Excellent, 4=Very good, 3=Good, 2=Weak, 1=Improvement definitely needed

Invited Teaching Lectures

1. ASC 205: Animal Science Department, University of Kentucky. November 2019.
2. FOR 400, Department of Forestry and Natural Resources, University of Kentucky. September 2019.
3. ASC 205: Animal Science Department, University of Kentucky. February 2019.
4. FOR 400, Department of Forestry and Natural Resources, University of Kentucky. November 2018.
5. ASC 205: Animal Science Department, University of Kentucky. October 2018.
6. FOR 400, Department of Forestry and Natural Resources, University of Kentucky. November 2017.
7. FOR 602, Department of Forestry and Natural Resources, University of Kentucky. November 2017.
8. ZOOL 469, Department of Zoology, Southern Illinois University Carbondale. October 2014
9. FOR 100, Department of Forestry, Southern Illinois University Carbondale. November 2014
10. FOR 405, Department of Forestry, Southern Illinois University Carbondale. September 2014
11. FOR 310C, Department of Forestry, Southern Illinois University Carbondale. November 2013
12. ZOOL 469, Department of Zoology, Southern Illinois University Carbondale. November 2013
13. ZOOL 469: Department of Zoology, Southern Illinois University Carbondale. October 2013
14. ZOOL 469, Department of Zoology, Southern Illinois University Carbondale. November 2012
15. ZOOL 469, Department of Zoology, Southern Illinois University Carbondale. October 2012
16. FOR 500, Department of Forestry, Southern Illinois University Carbondale. April 2012
17. ZOOL 462, Department of Zoology, Southern Illinois University Carbondale. April 2012
18. FOR 100, Department of Forestry, Southern Illinois University Carbondale. October 2011
19. FOR 451, Department of Forestry, Southern Illinois University Carbondale. April 2011
20. ZOOL 462, Department of Zoology, Southern Illinois University Carbondale. April 2011
21. ZOOL 469, Department of Zoology, Southern Illinois University Carbondale. October 2010
22. FOR 405, Department of Forestry, Southern Illinois University Carbondale. October 2010

STUDENTS SUPERVISED

Master's Students

1. Nate Hooven, Survival of juvenile female elk cows and calves within Kentucky. Status: Project design stage, Co-advised with John J. Cox, Expected Completion Date: June 30, 2021. (July 1, 2019 - Present).
2. Jena Nierman, Ecology and impact of vole spp. in cover crop agricultural systems in Kentucky. Expected Completion Date: June 30, 2020. (July 16, 2018-present)
3. Gabriela Wolf. Diet of a reintroduced river otter population in New Mexico. Status: Study design stage, Co-advised with John J. Cox, Expected Completion Date: June 30, 2019. (August 8, 2017 - Present).
4. Jonathan Matthews, Impacts of white-tailed deer on corn and soybean yields in western Kentucky. Status: Data Collection, Co-advised with John J. Cox, Expected Completion Date: June 30, 2019. (July 1, 2017 - Present).

Graduate Committee Member

Andrew Ibach, (M.S. University of Kentucky), Garrett Clevenger (M.S. Ball State University), Zachary Hackworth (M.S. University of Kentucky)

Undergraduates (9 students on 10 projects resulting in 2 publications and 10 professional presentations)

*Co-Supervised with faculty member(s)

^ Indicates student supervised prior to University of Kentucky

1. Elizabeth Evers (2019)- Home range behavior of small mammals within cover crop agricultural systems in Kentucky.
2. Deanna Williams (2018) – Response of CREP contract holders to the termination of conservation payments.
3. Keely Kohen (2018) – Occurrence of microbeads and other materials in the scat of a re-introduced river otter population in the upper Rio Grande River, New Mexico. (NRES internship and independent research project)
4. Mikayla Ojeda (2017) – Detection rate of male white-tailed deer using trail cameras in western Kentucky. (NRES internship)
5. Willie Graas (2017) – Socioeconomic assessment of reintroduced elk species in Kentucky. (Chellgren Scholar)
6. Wilson Fogler*^ (2014) – Bait preference of white-tailed deer across the breeding seasons.
7. Jonathan Meats *^ (2014) – Effectiveness of Millers Hot Sauce at reducing deer damage to soybean yield.
8. Lacey Armit *^ (2013) – Utilization of dual-purpose food plots for wildlife and cattle grazing.
9. Madeleine Pfaff *^ – (2012) Bait preference of white-tailed deer in central Illinois.
– (2013) Impact of deer bait sites on small mammals in southern Illinois.

Service

State

Kentucky Department of Fish and Wildlife Resources Deer Alliance Committee Member (2017-current)

Kentucky State Fire Council I&E Committee Member (2017-current)

Farm Bureau Natural Resources Committee Ex-Officio Member (2017-current)

Farm Bureau Forestry Committee Ex-Officio Member (2017-current)

Kentucky Department of Fish and Wildlife Resources Feral Hog Task Force Member (2018-current)

College

College of Agriculture, Food, and Environment Faculty Council (2018-2020)

Member- Grain and Forage Center of Excellence (2017- Current)

College of Agriculture, Food, and Environment (CAFÉ) Public Value Vetting Committee Member – 2016, 2017

CAFE Faculty Council New Faculty Orientation Panelist -2017

Department

Silviculture/Forest Operations Extension Faculty Search Committee-Spring 2019

Forest Health Extension Faculty Search Committee- Summer 2018

New student summer advising- 2017, 2019

Supervisor of Hall's Prairie Property- Logan County Kentucky- 2016-Present

PROFESSIONAL ORGANIZATIONS and SERVICE

- The Wildlife Society- National, Sectional, and State
 - Wildlife Damage Management Working Group
 - Conservation, Education, and Outreach Working Group
- Southeast Deer Study Group Meeting 2019
 - Paper and Poster Selection Committee

PEER-REVIEWER FOR JOURNALS

Journal of Wildlife Management, Human-Wildlife Interactions, National Quail Symposia Proceedings, Journal of Mammalogy

Professional Development

2008-09, 15-18- Southeast Deer Study Group Meetings

2008-10, 13-16, 19 The Wildlife Society Annual Conferences

2014- Ecological Society of America Conference

2013,16- Midwest Deer and Turkey Group Meeting

2013- Adehabitat Workshop (TWS Wisconsin)

2013- Illinois Trapper Education

2011- Explosive Certified (Illinois)

2009- Rocket Net/Explosives Workshop (Delaware)

1996- PA Hunter and Trapper Education

Jeffrey Stringer

Curriculum Vitae

Jeffrey W. Stringer
Department of Forestry
University of Kentucky
Lexington, KY 40546-0073
stringer@uky.edu

Chair, Department of Forestry and Natural
Resources
Professor, Hardwood Silviculture and Forest
Operations

EDUCATION

Ph.D. Plant Physiology/Biochemistry/Molecular Biology Program, University of Kentucky
(1993)
Master of Science in Forestry, Department of Forestry, University of Kentucky (1981)
Bachelor of Science in Forestry, Department of Forestry, University of Kentucky (1979)
Forestry Pre-Professional Program, Western Kentucky University, College of Agriculture (1975-
1977)

ACADEMIC AND PROFESSIONAL SERVICE

Chair, Department of Forestry and Natural Resources, 2018 to present
Professor, University of Kentucky, Department of Forestry, 2007 to present
Associate Extension Professor, University of Kentucky, Department of Forestry, 2000 to 2006
Assistant Extension Professor, University of Kentucky, Department of Forestry, 1995 - 2000
Research Specialist in Hardwood Silviculture, University of Kentucky, Department of Forestry,
1980 - 1994
Research Assistant, University of Kentucky, Department of Forestry 1978 - 1980
Forestry Consultant, 1977 – 1980

Academic Vitae

GRANTS

Extension Grants

Pilot mobile app to generate automated access routes from timber harvesting sites to emergency
personnel locations. 2019. National Institute of Occupational Safety and Health \$20,584
Forest Health Research and Education Center – Phase 2, Joint Venture Agreement. 2019. USDA
Forest Service, Southern Research Station. PI- J. Stringer, \$100,000.
Forest Stewardship Public Awareness, Publicity, and Training. 2019-2020. Kentucky
Environmental and Public Protection Cabinet. PI, J. Stringer. \$10,000
Oak Genetic Improvement Program. 2018-2020. US Forest Service State and Private. Landscape
Scale Restoration Program. PI-E. Crocker. Co-Investigator – J. Stringer. \$200,000
Upland Oak Sustainability. 2019-2021. USDA US Forest Service State and Private. Landscape
Scale Restoration Program. PI- J. Stringer. \$396,000
Healthy Woods, A New Forest App Tool to Guide Landowners. 2018. USDA-NIFA. 2018-2020.
Co PI – Ellen Crocker, J. Stringer. \$100,000

Southeast Center for Agricultural Health and Injury Prevention. 2018. National Institute of Occupational Safety and Health. 2018-2012. PI, W. Sanderson, Co-Investigators, J. Stringer, J. Mazur, W. Christian, M. Swan. \$582,287

Winter Feeding and Other Cattle Best Management Practices. 2017-2018. Kentucky Department of Environmental Protection. PI, S. Higgins, Co-Investigator J. Stringer. \$221,363. \$30,000 allocation.

Expanding and enhancing a web-based application to generate automated access routes from timber harvesting sites to emergency personnel locations to the state of Kentucky. 2017-2018. Southeast Center for Agricultural Health and Injury Prevention. Co PI – M. Contreras, J. Stringer. \$14,580

Winter Feeding and Other Cattle Best Management Practices. 2017-2018. Kentucky Department of Environmental Protection. PI, S. Higgins, Co-Investigator J. Stringer. \$221,363.

Forest Stewardship Public Awareness, Publicity, and Training. 2017-2018. Kentucky Environmental and Public Protection Cabinet. PI, J. Stringer, \$10,000.

ABR-PG Standards and Cyber Infrastructure that Engage “Big-Data” Driven Discovery. 2017-2019. NSF - Washington State University. PI, A. Abbott, Co-Investigator J. Stringer. \$146,038

Land Restoration - Forest Stewardship Outreach. 2016-2017. Kentucky Environmental and Public Protection Cabinet. PI, B. Thomas, Co-PI J. Stringer. \$16,000

Forest Stewardship Public Awareness, Publicity, and Training. 2015-2016. Kentucky Environmental and Public Protection Cabinet. PI, J. Stringer, \$10,000.

Cultivating a Healthy Woodlands. Kentucky Energy and Environment, 2015–2016. PI, J. Stringer, Co-Investigator, B. Thomas. \$16,000.

Invasive Plant Cost-Share Project. Kentucky Energy and Environment, 2014–2016. PI, Billy Thomas, Co-Investigator, J. Stringer. \$156,225.

Triplett Creek Stewardship Project. Kentucky Energy and Environment, 2014–2016. Principal Investigator, B. Thomas, Co- Investigator, J. Stringer. \$60,000

Triplett Creek Stewardship Project. 2014–2016. Kentucky Energy and Environmental Cabinet. \$60,000. PI – B. Thomas, Co-Investigator – J. Stringer.

How to Maintain a Healthy Forest. 2014-2015. Kentucky Energy and Environmental Cabinet. \$16,000. PI – J. Stringer, Co-Investigator – B. Thomas.

Best Management Practices for Kentucky Master Loggers. 2014. Kentucky Energy and Environment Cabinet. \$20,000. PI – J. Stringer,

Restoring Native Forests and Wildlife Habitat on Mined Land at Robinson Forest, Kentucky. 2014-2016. National Fish and Wildlife Foundation. \$140,950. PI- C. Barton, Co-Investigator- J. Stringer.

Invasive Species Education (Not All Green is Good). 2013-2014. Kentucky Energy and Environment Cabinet. \$16,000. PI - J. Stringer. Co-Investigator – B. Thomas.

Kentucky Woodlands Magazine, Storm Damage, Invasives. 2013-2014. Kentucky Energy and Environment Cabinet. \$16,000. PI - J. Stringer

Forest and Wood Certification. 2012-2014. USDA US Forest Service, Kentucky Environmental and Public Protection Cabinet. 45,000. PI- J. Stringer.

Forest Stewardship Public Awareness, Publicity, and Training. 2012-2014. Kentucky Environmental and Public Protection Cabinet. \$20,000. PI - J. Stringer

What’s Up with White Oaks. 2012. 2012. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$16,000. PI – J. Stringer. Co-Inv., B. Thomas.

Kentucky Woodlands Magazine - FireWise Issue. 2012. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$16,000. Co-PI – J. Stringer, B. Thomas.

Forest Management Assistance on State Wildlife Management Areas and Private Lands Technical Assistance. 2011-2012. Kentucky Department of Fish and Wildlife Resources. \$10,000. PI – J. Stringer

Urban Vs. Rural Forest Issues. 2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$18,300. PI – J. Stringer, Co-Investigator – B. Thomas.

Wood Borer Issues. 2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$20,000. PI- J. Stringer, Co-Investigator – B. Thomas

Forest Certification and Forest Health. 2010-2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$30,000. PI- J. Stringer, Co-Investigator – B. Thomas

Forest Management Assistance on State Wildlife Management Areas and Private Lands Technical Assistance. 2010-2011. Kentucky Department of Fish and Wildlife Resources. \$15,000. PI – J. Stringer

Regional Non-Native Invasive Plant Species Workshops. 2010-2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$12,000. PI- J. Stringer

Forest Stewardship Public Awareness, Publicity, and Training. 2010-2012. Kentucky Environmental and Public Protection Cabinet. \$20,000. PI - J. Stringer

Kentucky Woodlands Magazine – Forest Certification and Forest Health Issues. 2010-2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$30,000. PI – J. Stringer, Co-PI – B. Thomas.

Emerald Ash Borer Public Conference. 2010-2011. Kentucky Energy and Environment Cabinet, Kentucky Division of Forestry. \$35,000. P.I. - B. Thomas, Co-PI. – J. Stringer.

Forest Management Assistance on State Wildlife Management Areas and Private Lands Technical Assistance. 2009-2010. Kentucky Department of Fish and Wildlife Resources. \$15,000. PI – J. Stringer

Cane Run and Royal Spring Watershed and Basin Plan Project. 2007-2013. Kentucky Energy and Environment Cabinet. \$666,564. PI – S. Higgins, C. Agouridis, A. Gumbert. Co-Investigators -J. Stringer, L. Orsmsbee.

Economic Impact of Fire on Forest Product Values in Appalachian Regions of Kentucky and Tennessee. 2009-2010. Kentucky Energy and Environment Cabinet. \$294,000. PI – J. Stringer.

Long-Lived Wood Products: Carbon and Competitive Advantages for Hardwood Mills. USDA Forest Service. \$79,566. PI – J. Stringer, Co-PI's T. Conners, S. Bullard.

Kentucky Woodland Magazine – Degraded Stand Revitalization and Small Woodland Management Issue. 2009-2010. Kentucky Energy and Environment Cabinet. \$30,000. PI - J. Stringer.

Forest Biomass Training for Kentucky. 2008. Southern Forest Research Partnership. \$17,000. PI's T. Conners and J. Stringer.

Certified Master Logger Program. 2007-2008. NewPage Corporation. \$40,000. PI – J. Stringer

Kentucky Woodland Magazine Special Pine Management Issue. 2008-2009. Kentucky Energy and Environment Cabinet. \$20,000. PI – J. Stringer

Kentucky Woodland Magazine Special Forest Health Issue. 2008-2009. Kentucky Energy and Environment Cabinet. \$20,000. PI – J. Stringer

Forest Stewardship Public Awareness, Publicity, and Training. 2008-2010. Kentucky Environmental and Public Protection Cabinet. \$20,000. PI - J. Stringer

Silvicultural Prescriptions and Guidelines for Managing Degraded Upland Hardwood Stands. 2008. Appalachian Hardwood Forest Research Alliance \$10,000. PI- J. Stringer, Co-PI, G. Miller.

Degraded Upland Hardwood Stand Management. 2008. USDA Forest Service Northern

Experiment Station. \$7,500. PI- J. Stringer.

Kentucky Woodlands Magazine II. 2007-2008. Kentucky Environmental and Public Protection Cabinet. \$30,000. PI - J. Stringer, B. Thomas.

Certified Master Logger Program. 2007-2008. NewPage Corporation. \$40,000. PI – J. Stringer

Kentucky Woodlands Magazine I. 2007. Kentucky Environmental and Public Protection Cabinet. \$16,000. PI - J. Stringer, B. Thomas.

Forest Stewardship Public Awareness, Publicity, and Training. 1999-2008. Kentucky Environmental and Public Protection Cabinet. \$90,000. Annually renewed \$10,000 per year. PI - J. Stringer

Forest Land Enhancement Program: Public Awareness, Publicity, and Training. 2004-2008. Kentucky Environmental and Public Protection Cabinet. \$52,500. PI - J. Stringer

National Fire Plan Economic Action Program for Timber Harvesting and Silvicultural Systems to Promote Forest Health in Kentucky. 2005-2007. Kentucky Environmental and Public Protection Cabinet. \$25,000. PI - J. Stringer.

Water Quality and BMPs National Web Based Learning Center. 2004-2005. University of Tennessee – National Web Based Learning Center. \$15,000 PI - J. Stringer, Co-Investigators C. Blinn, B. Jackson

Best Management Practice Education and Training for Timber Harvesting Operators, Technical Assistance Providers, and Forest Owners. 2000-2003. US EPA 319 Nonpoint Source Program. Kentucky Natural Resources Environmental Protection Cabinet. \$173,081. PI - J. Stringer.

Forest Stewardship. 1999-2001. Kentucky Natural Resources Environmental Protection Cabinet. \$10,000. PI - J. Stringer.

Environmental Education: Impacts of Harvesting Practices on Water Quality in Forested Ecosystems. 1994-2000. US EPA 319 Nonpoint Source Program - Kentucky Natural Resources Environmental Protection Cabinet. \$100,000. PI - M. Arthur, co-PI - J. Stringer.

Kentucky Logger Education in Best Management Practices and Nonpoint Source Pollution. 1995-2000. US EPA 319 Nonpoint Source Program - Kentucky Natural Resources Environmental Protection Cabinet. \$236,451. PI - J. Stringer.

Demonstration of High Technology Methods of Implementing BMPs for the Practicing Logger. 1993-1995. US EPA 319 Nonpoint Source Program - Kentucky Natural Resources Environmental Protection Cabinet. \$41,580. PI - J. Reeb, co-PI – J. Stringer.

Kentucky Master Logger Education Program. 1992- 1995. Tennessee Valley Authority. \$50,000. PI - J. Reeb, co-Investigator - J. Stringer.

Technical Multiple Disciplinary Forest Stewardship Assistance to Kentucky Nonindustrial Private Landowners. 1996-1998. Kentucky Natural Resources Environmental Protection Cabinet. \$30,000. PI - J. Stringer.

Timber Harvesting Operator Education. 1996-1999. American Forest and Paper Association, Sustainable Forestry Initiative. \$5,000. PI - J. Stringer.

Silvicultural (Agricultural Water Quality Act) Training for Technical Providers, Operators, and Forest Landowners. 1997-1998. Commonwealth of Kentucky 1990 Senate Bill 271, Water Quality Research and Education. \$50,000. PI - J. Stringer.

Forest Management and Silviculture Education Initiative: An Internship Program for County Extension Agents in Eastern Kentucky. 1995-1998. University of Kentucky, Robinson Forest Initiative. \$39,280. PI - J. Stringer, co-PI - A. Worms.

Robinson Forest Silvicultural Demonstration Area. 1995-1997. University of Kentucky, Robinson Forest Initiative. \$67,200. PI - J. Stringer, co-PI - D. Brown.

Research Grants

Forest Management Research Cooperative

Vertical and Horizontal Stand Structure Associated with Silvicultural Treatments in Forested Ecosystems of Eastern Kentucky: Response of *Myotis* Bats during the Staging and Maternity Seasons. 2018-2020. U.S. Fish and Wildlife Service, Imperiled Bat Conservation Fund. \$150,000. PIs - J. Stringer, J. Lhotka, M. Contreras, M. Lacki.

Effect of Silvicultural Treatments on Vertical Stand Structure in Forested Ecosystems of the Appalachian Mountain Region. 2014-2017. Forestland Group LLC. \$150,000. PIs - M. Lacki, J. Stringer, J. Lhotka.

Federal/State Funding

Effect of grading technique on forest productivity of high-value tree species in reforested surface mines. 2015-2017. Department of Interior. 2015-2017. PI, J. Lhotka, Co-Investigators, C. Barton, J. Stringer. \$174,765.

Developing a web-based application to generate automated access routes from timber harvesting sites to emergency personnel locations. 2014. Center for Disease Control/National Institute of Occupational Safety and Health, Central Appalachian Regional Education & Research Center, \$9,638. PI – J. Stringer, co-PI – M. Contreras.

Silvicultural Approaches for Regenerating Upland Stands in the Northern Cumberland Plateau. 2009-2010. USDA Forest Service, Southern Research Station. \$14,435. PIs J. Lhotka, J. Stringer.

Evaluating Seedling Development, Stand Structure, and Understory Microenvironment Six Growing Seasons Following Midstory Removal. 2008. USDA Forest Service, Southern Research Station. \$5,683. PI – J. Lhotka, co-PI - J. Stringer.

Effectiveness of Improved Skid Trail Ephemeral Channel Crossings. 2007-2008. US Geological Survey 104b, Kentucky Water Resources Research Institute. \$4,991. PI – C. Reeves, co-PI - J. Stringer.

Assessing Invasive Exotic Plants in Urban Forests. 2006-2010. National Urban and Community Forestry Advisory Council. \$242,992 (\$121,005 federal dollars). PI - S. Fei, co-PI - T. Barnes, J. Stringer, B. Lee, W. Thomas.

Post-Mining Reforestation Demonstration Projects I-V. 2001-2008. USDA Forest Service. Total \$4,420,000. PI - D. Graves, co-PI - C. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner.

Monitoring of Best Management Practices. 2005-2006. US EPA 319 Nonpoint Source Program. Kentucky Natural Resources Environmental Protection Cabinet. \$30,280. PI - J. Stringer.

Timber Harvesting Analysis using GPS and GIS. 2004-2007. USDA/CSREES Special Research Grants Program. \$133,909. PI - J. Stringer, co-PI - C. Barton, co-Investigators - M. Schmidt, T. McDonald.

Evaluation of Two-Aged Silviculture Options for Upland Hardwoods. 2003-2004. USDA Forest Service, Southern Experiment Station. \$5,000. PI - J. Stringer.

Silvicultural and Topographic Controls on American Chestnut Establishment. 2002-2004. USDA Forest Service, Southern Experiment Station. \$25,000. PI - C. Rhoades, co-Investigator - J. Stringer.

Carbon Sequestration on Surface Mine Lands. 2002-2004. US Department of Energy. \$1,000,000. PI - D. Graves, co-PI - C. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner. (extended through 2006).

Effects of Riparian Zone Width and Disturbance on Water Quality and Stream Communities following Forest Harvest in Eastern Kentucky Watersheds. 2001-2004. Commonwealth of

Kentucky 1990 Senate Bill 271, Water Quality Research and Education. \$165,104 PI - C. Barton, co-PI - J. Stringer, S. Grubbs, R. Kolka.

Post-Mining Reforestation Demonstration Project I. 2001-2004. USDA Forest Service. \$985,000. PI - D.H. Graves, co-PI - C.D. Barton, J. Ringe, J. Stringer, R. Sweigard, R. Warner.

Defining Perennial, Intermittent and Ephemeral Channels in Eastern Kentucky: Application to Forestry Best Management Practices. 2000-2001. US Geological Survey and Kentucky Water Resources Research Institute. \$6,000. PI - R. Kolka, co-PI - J. Stringer.

Quantifying the Costs of Forestry Best Management Practices in Kentucky. 1998-2001. Commonwealth of Kentucky 1990 Senate Bill 271, Water Quality Research and Education. \$107,900. PI - J. Stringer, co-PI - M. Pelkki, J. Ringe, M. Smidt.

An Inter-disciplinary Approach to Establish and Evaluate Experimental Reclamation of Surface Mine Soil with High Value Tree Species. 1997. Robinson Forest Initiative. \$225,000 startup, \$448,000 continuation. PI - D. Graves, co-PI - M. Pelkki, J. Ringe, J. Stringer, R. Sweigard, R. Warner, L. Wells.

Silvicultural Methods for Establishing Woody Riparian Zones. 1996-1998. USDA Natural Resource Conservation Service. \$7,000. PI - J. Stringer.

Evaluation of Current Silvicultural Best Management Practices Guidelines: Effects of Road Drainage on Hillslope Stability. 1996-1998. Robinson Forest Initiative. \$17,592. PI - D. Brown, co-PI - J. Stringer.

Genetic Consequences of Silvicultural Practices in Eastern Kentucky. 1995-1998. Robinson Forest Initiative. \$204,766. PI - D. Wagner, co-PI - J. Stringer.

Growth and Stem Quality Evaluation of Two-Aged Small Sawtimber White Oak Stands. 1994-1997. USDA Forest Service, Northeast Experiment Station. \$5,200. PI - J. Stringer.

Establishment of *Paulownia tomentosa* on Surface Mined Lands. 1994-1997. Western Pocahontas Properties. \$15,000, PI - J. Stringer, co-PI - D. Graves.

Genetic and Environmental Effects on Growth and Wood Quality of Northern Red Oak. 1994-1996. USDA Forest Service, Northcentral Forest Experiment Station. \$10,000, PI - D. Wagner, co-PI - J. Stringer.

Assessment of the Effects of Silvicultural Prescriptions on Wildlife Communities and Associated Habitats in Daniel Boone National Forest. 1994-1996. USDA Forest Service, Daniel Boone National Forest. \$99,000. PI - M. Lacki, co-PI - J. Stringer, T. Barnes, P. Kalisz.

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- University of Kentucky, Department of Forestry, Cooperative Extension Service. University of Kentucky, Cooperative Extension Service. www.ukforestry.org (team project Forestry Extension, webmaster René Williams)
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Extension Training Manuals and Workshop Materials

- Hardwood Tree Grading Manual. 2013. Cooperative Extension Service, Department of Forestry. 74pp.
- Timber Sale Administration. 2010. Cooperative Extension Service, Department of Forestry. 83pp.
- Silvicultural Prescriptions for Degraded Hardwood Stands. 2009. Cooperative Extension Service, University of Kentucky, Department of Forestry. 113pp.
- Training Manual for Individual Tree Herbicide Applications. 2003. Cooperative Extension

Service, University of Kentucky, Department of Forestry. 20pp. J. Stringer

Professional Forestry and Silviculture Training Series: Level Two Ranger Technician Training Manual. 1997-revised 2005. Cooperative Extension Service, University of Kentucky, Department of Forestry. 37pp. J. Stringer

Hardwood Tree Grading Training Manual: a Training Program for USFS Hardwood Tree Grades. 1998. Cooperative Extension Service, University of Kentucky, Department of Forestry TM-4. 26pp. J. Stringer

Silvicultural Contractors in Western Kentucky, Kentucky Forestry Practices for Water Quality Management Training. 1997. Timber and Water Training Program. Cooperative Extension Service, University of Kentucky, Department of Forestry. 18pp. J. Stringer.

Use of Two-Age Systems for Regenerating Oak. 1997: Oak Regeneration Workshops. Cooperative Extension Service. University of Tennessee. 3pp. J. Stringer.

Understanding the Forests of Eastern Kentucky, Forest Management and Silviculture Internship In-Service Training Program for Cooperative Extension Agents. 1996. University of Kentucky, Department of Forestry. 11pp. J. Stringer

Basic Forest Management and Silviculture, Forest Management and Silviculture Internship In-Service Training Program for Cooperative Extension Agents. 1996. University of Kentucky, Department of Forestry. 15pp. J. Stringer

Timber and Water Training Manual. 1996. University of Kentucky, Department of Forestry. 77pp. J. Stringer and V. Hilpp.

Forest Regeneration in Eastern Kentucky, Forest Management and Silviculture Internship In-Service Training Program for Cooperative Extension Agents. 1997. University of Kentucky, Department of Forestry. 11pp. J. Stringer

Principals of Forest Management. Private Lands Wildlife Management: A Technical Guidance Manual and Correspondence Course pp. III-9 - III-18. 1996. University of Kentucky, Department of Forestry. D. McLaren, and J. Stringer

Proceedings 15th Annual Meeting of the Walnut Council. 1993. Lexington, KY. 35pp. J. Stringer.

USFS Tree Grading Card. 1992. University of Kentucky, Department of Forestry. A Dichotomous Key for Field Application of, and Training, in USFS Hardwood Tree Grades. J. Stringer and D. McLaren

TreeGrade Manual: A Program for Teaching and Determining USFS Hardwood Tree Grades. 1991. University of Kentucky, Department of Forestry. J. Stringer and D. Cremeans.

Extension Satellite/Webinar Programs

Stringer, J. 2018. Kentucky Logger WebTV. March. Cooperative Extension Service. University of Kentucky. 405 participants.

Stringer, J. 2015. Kentucky Logger WebTV. March. Cooperative Extension Service. University of Kentucky. 231 participants.

Stringer, J. 2014. What is Killing our Trees – what we can and can't do about it. Cooperative Extension Service, Department of Forestry University of Kentucky Fall Webinar Series. October 28, 2014.

Stringer, J. 2014. Forest Certification for Forest Owners in the Eastern U.S. Forestry and Natural Resources Webinars. May 7, 2014.

Stringer, J. 2013. Hardwood Silviculture. Master Tree Farmer. March-April. Cooperative Extension Service, Clemson University.

Stringer, J., and Morehead, D. 2008. Master Tree Farmer, Risk and Risk Management. Southwide Satellite Forestry Conference. September 2008. Cooperative Extension Service,

- Clemson University.
- Stringer, J. and Jackson, B. 2006. Forestry Best Management Practices. Master Tree Farmer II. Satellite Forestry Conference. February – March 2006. Cooperative Extension Service, Clemson University.
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- Dubois, M., Hubbard, B., Johnson, J., and Stringer, J. 2001. Forest Certification Systems in the U.S. Forest Certification - A Landowner Update. Eastern US Satellite Workshop. Cooperative Extension Service, Auburn AL.
- Stringer, J., and Clatterbuck, W. 2001. Hardwood Silviculture. Master Tree Farmer 2000 Satellite Forestry Conference. February - March 2001. Cooperative Extension Service, Clemson University.

Extension Invited Presentations

Web Conferences / Webinars / Virtual Conferences

- White Oak and Bourbon Production. Business News Network - Commodities. July 22, 2016. BNN.ca
- Are Your Woodlands Healthy? Stringer, J. and E. Crocker. Fall Forestry Webinar Series, Cooperative Extension Service, University of Kentucky, Department of Forestry, November 12, 2015.
- Landowners and Federally Protected Species – What you Need to Know. Fall Forestry Webinar Series, Cooperative Extension Service, University of Kentucky, Department of Forestry, October 29, 2015.
- Certification for Forest Owners. Forestry and Natural Resource Webinars. Southern Regional Webinar Series. www.forestrywebinars.net. May 2014.
- Hardwood Forest Management. Natural Resources Opportunities for Landowners – A Southern Regional Webinar Series: Release the Potential of Your Land. November 2012.
- Site Preparation for Hardwoods. Capital Ideas. Alabama Treasure Forest. January 2011.
- Sustainable Forests, Wood Products, and Buildings - An Overview of Certification Systems. USFS Sustainable Operations Summit. November 2010.
- Common Forest Conditions and Prescriptions. NRCS/KDF Joint Farm Bill Forestry Practices Workshops. September 2010.
- Improving Hardwoods Through Crop Tree Release. Forestry and Natural Resource Webinars. Southern Regional Extension Forestry. www.forestrywebinars.net. June 2010.
- Hardwood Regeneration Options for Private Woodlands. Forestry and Natural Resource Webinars. Southern Regional Extension Forestry. www.forestrywebinars.net. April 2010.

Face-To-Face Meetings / Workshops (Not including County Extension Presentations)

Recent Legislative Committee Presentations

Sustainable Timber Production in Eastern Kentucky. 2016. Senate/House Committee on Natural Resources. London, KY.

White Oak Sustainability in Kentucky. 2016. Senate/House Interim Committee on Natural Resources. Frankfort, KY.

Timber Trespass and Theft. 2015. House Committee on Natural Resources. Frankfort, KY.

Forestry Invited Presentations

Certification and Preferential Purchasing Policies. Kentucky Distillers Association. September 24, 2019. 25 participants.

The Importance and Sustainability of Kentucky's White Oak and the White Oak Initiative. Governors' Conference on the Environment. Lexington, KY. September 20, 2019. 350 participants.

White Oak Sustainability, West Virginia Society of American Foresters, Summersville, WV, September 12, 2019. 45 participants.

Sustainability of White Oak Resources, American Forest Foundation Annual Board Meeting, Louisville, KY, July 8, 2019. 35 participants.

White Oak Sustainability, National Association of Consulting Foresters Annual Meeting, French Lick, IN, June 24, 2019. 135 participants.

Oak Sustainability in Kentucky, Green River Logging Council, Central City, KY, November, 2018, 58 participants.

White Oak Sustainability, Forest Resources Association Annual Meeting, Lexington, KY, October, 2018. 63 participants.

Sustainability of White Oak Supplies, Associated Cooperage Industries of America Annual Meeting, October 2018, Austin, TX, 101 participants.

Forestry – State of the Union Address – Challenges for the Future. Jackson, TN. January 26, 2018.

Management of Degraded Stands. Oak Symposium: Sustaining Oak Forests in the 21st Century through Science-based Management. Knoxville, TN. October 24, 2017.

White Oak Sustainability and Certification. Sustainable Spirits Summit. Louisville, KY. 2017.

White Oak Sustainability in Kentucky. Bourbon Grains Field Day. Fayette Co. KY. 2017

Silvicultural Prescriptions for Degraded Stands. Asheville, NC. May 2016.

New BMP Standards. Kentucky Association of Consulting Foresters. Nov. 2016

Wood, Bourbon and Forest Management. KWOA Meeting. Berheim Forest. Oct. 2016

Managing Degraded Woodlands. 3rd Annual Botanical Symposium and 2nd Annual Kentucky Habitat Management Symposium. September 27-28, 2016. Frankfort, KY

White Oak Markets and the Bourbon Industry. National Council of Forestry Association Executives. July 26-29, 2016. Lexington, KY. 120 participants.

White Oak Sustainability and Management. Southeast Region Annual Farm Bureau Commodity Meeting. Louisville, KY. June 2016.

The White Oak Resource. Kentucky Interim Joint Agriculture and Natural Resource Committee, Kentucky Legislative Research Committee. Frankfort, KY May 2016.

Forest Health in Kentucky and Timber Harvesting BMPs. Kentucky Forest Industries Association Annual Meeting. Louisville, KY. April 2016.

Timber Theft and Best Management Practices in Kentucky. Kentucky/Tennessee Society of American Foresters Annual Meeting. Bowling Green, KY. January 2016.

Techniques for Herbicide Applications for Woody Plant Control. Commercial Pesticide Applicator Continuing Education Training. Morehead, KY. December 2015.

Kentucky's Forestry Sector Economic Report and Outlook 2015 – 2016. 2015 Farm Bureau

Commodity Press Conference. Louisville, KY. December 2015.

Reforestation-Planning and Management for Long-term success. Kentucky Habitat Management Symposium. Tom Sawyer State Park, Louisville, KY December 1-2, 2015.

BMP Changes for Loggers in Kentucky. Green River Logging Council Annual Meeting. Central City, KY. November 2015

Endangered Species Act and Timber Harvesting in Kentucky. Green River Logging Council Annual Meeting. Central City, KY. November 2015

Herbicide Applications for Invasive Plant Control. Commercial Pesticide Training Workshop. Henderson, KY. October 2015

Individual Tree and Woody Plant Herbicide Applications. Commercial Pesticide Training Workshop. Henderson, KY. October 2015

FM and CoC Certification in the South. U.S. Family Forest Project Meeting. Rainforest Alliance, Fort Mill, SC. October 2015.

White Oak Sustainability. Annual Meeting Association of Cooperages in America. St. Louis, MO. August 2015.

Kentucky Forest Industry and Logging Economic Report. 38th Annual Meeting of the Council on Forest Engineering. Lexington, KY. June 2015.

Forest, Wood, and Logging Certification. 38th Annual Meeting of the Council on Forest Engineering. Lexington, KY. June 2015.

Managing Low Quality Stands at Upland Hardwood Silviculture & Habitat Workshop. USDA Forest Service, Southern Research Station, Asheville, NC. June 2015.

Low Quality Stand Prescriptions. USDA Forest Service Silvicultural Certification Training: NASP Training, Local Mountain Module, Southern Research Station, Asheville, NC. May 2015.

Developing a Web-based Application to Generate Automated Access Routes from Timber Harvesting Sites to Emergency Personnel Locations. Southeastern States Occupational Network (SouthON) Fourth Annual Meeting CARERC/Sunshine ERC. April 16-17, 2015, Lexington, Kentucky

Forestry Economic Outlook and Insect and Disease Update. Green River Logger Council Meeting, Hartford, KY, Nov. 1, 2014

Forest Biomass – Logistics and Potentials. Second Annual National Bioenergy Day. Murray, KY, Oct. 22, 2014.

Forest and Chain-of-Custody Certification at Forest Certification: From the Woods to the Mills and Beyond, Rogersville, AL, July 31, 2014.

Forest Certification Systems and Chain-of-Custody at Forest Certification: From the Woods to the Mills and Beyond, Tifton GA, Apr. 10, 2014.

Rehabilitation of Degraded Hardwood Stands. Society of American Foresters, Flatwoods WV, April 1, 2014.

Forest Certification Systems and Chain-of-Custody at Forest Certification: From the Woods to the Mills and Beyond, Columbiana, AL, January 16, 2014.

Threats to Kentucky's Timber. 94th Annual Meeting of the Kentucky Farm Bureau, Louisville, KY. Dec. 5, 2013.

Forest Certification Systems and Chain-of-Custody at Forest Certification: From the Woods to the Mills and Beyond, Athens GA, Dec. 3, 2013.

Forest Certification Systems and Chain-of-Custody at Forest Certification: From the Woods to the Mills and Beyond, Statesboro GA, June 20, 2013.

Forest Certification Systems and Chain-of-Custody at Forest Certification: Forests, Labels, Mills and More Workshop, Quincy FL, Oct. 17, 2013.

Forest Certification Systems and Chain-of-Custody at Forest Certification: From the Woods to the Mills and Beyond, Athens GA, Dec. 3, 2013.

Forestry Economic Report. 37th Governor's Conference on Energy and the Environment. September 18, 2013. Lexington Convention Center, Lexington, KY.

Silvicultural Prescriptions for Degraded Stands. USFS SILVA Oak Workshop. Venton Furnace Experimental Forest, OH. September 12, 2013.

Low Quality Stand Prescriptions. USDA Forest Service Silvicultural Certification Training: PASS Local Mountain Module, Southern Research Station, Asheville, NC. June 2013.

Kentucky Forestry Economic Report. Annual Meeting of the Kentucky Woodland Owner Association, April 10, 2013. Blue Licks State Park, Carlisle, KY.

Kentucky Forestry Economic Report. Annual Meeting of the Kentucky Forest Industry Association, April 4, 2013. Lexington, KY.

Forestry Economic Report and Outlook 2012-2013. Commodity Press Conference. 2012 Annual Meeting of Farm Bureau. Louisville, KY

Building Sustainable Supply Chains: Strategic FM and CoC Development. Forest Stewardship Council Southeast Meeting: FSC in the Southeast United States A Maturing Market. Atlanta, GA. October 24, 2012.

Building Sustainable Certification through Supply Chain Integration. Society of American Foresters 2012 Annual Meeting. Spokane, WA. October 26, 2012.

Certified Working Forests – A Model for Conservation Easements. Society of American Foresters 2012 Annual Meeting. Spokane, WA. October 26, 2012.

Individual Tree and Bush Control for Rights of Ways. Montgomery Co. September 14, 2012.

Certification – Logging Business Participation. Virginia Forestry Summit. Wintergreen, VA. April 27, 2012.

Damaged Timber Management. Farm Disaster Resources. Morgan Co. April 24, 2012.

Clean Water Act – The Supreme Court and Forestry in Kentucky and Tennessee. January 24, 2012. Kentucky/Tennessee Society of American Foresters 2012 Annual Meeting. Lexington, KY.

Building Sustainable Certified Supply Chains. January 5, 2012. FSC Procurement Group Meeting. Princeton, WV.

Chain-of-Custody Group Certification Program. September 22, 2011. Forest Resource Association, Appalachian Region Annual Meeting. Gettysburg, PA.

Harvesting Woody Biomass in Kentucky. July 12,13,14, 2011. Princeton, London, and Morehead, KY. 301 attendees.

Silviculture Prescriptions: Natural Regeneration and Intermediate Treatments. Robinson Forest. April 2011.

Timber Marketing. Ohio Valley Woodland and Wildlife Program. Carrolton, KY. March 2011.

Potential Impact on Kentucky's Forest Resources. Opportunities and Challenges of Woody Biomass for Meeting Kentucky's Bioenergy Needs. Lexington, KY. February 2011.

Forest Certification. Southern Group of State Foresters, Management Chiefs Annual Meeting. Gainesville, FL. December 2010.

Forest and Woodland Certification. Kentucky Association of Consulting Foresters 2010 Annual Meeting. Lexington, KY November 2010.

Silvicultural Prescriptions for Degraded Stands. USFS Bent Creek Experimental Forest. Asheville, NC. July 2010

Degraded Stand Management. USFS Regional Silvicultural Certification Module. Asheville, NC. June 2010.

Forest, Wood, and Logging Certification in Kentucky. East Kentucky Society of American

Foresters. Morehead, KY. May 2010.

Certified Logging Programs. Certification, Biomass, and Carbon: Forests and Forestry in a New Age. Kentucky/Tennessee Society of American Foresters. Lexington, KY. January 2010.

Biomass, Safety and Timber Theft Updates for Logger. Green River Logging Council. Hartford, KY. October 2009.

Silvicultural Prescriptions for Degraded Stands. USFS Ohio Oak Silviculture Workshop. Athens, OH. June 2009.

Introduction to Streamside Management Zone Hydrologic Study. Society of American Foresters East Kentucky Chapter. Quicksand, KY, May 2009.

Silvicultural Prescriptions for Degraded Hardwood Stands. Annual Meeting of the Appalachian Hardwood Manufacturers, Incorporated. Princeton, WV, May 2009.

Certified Forest and Wood. Annual Meeting of the Kentucky Woodland Owners Association, Warsaw, KY, March 2009.

Certified Master Logger Program. Certification for Kentucky Forests and Products, Lexington, KY, January 2009.

Global and Economic Ramifications of Certification. Certification for Kentucky Forests and Products, Lexington, KY, January 2009.

Carbon Credits for NIPF Owners, Joint Meeting Southern Forestry Extension and Southern Group of State Foresters Management Chiefs, Athens GA, December 2008

Timber Marketing and Theft, Kentucky Farm Bureau, Louisville, KY, December 2008

Timber Theft, Kentucky House Legislative Task Force on Forestry, Frankfort, KY, November 2008

Certified Master Logger Program. Tennessee Forestry Association. October 2008.

Basics of Oak Regeneration and Mid-Story Removal Indiana SAF. August, 2008.

Oak Shelterwood Methods for White and Black Oak. Indiana SAF. August, 2008.

Low Quality Stand Prescriptions. USDA Forest Service Silvicultural Certification Training: PASS Local Mountain Module, Southern Research Station, Asheville, NC. May 2008.

Degraded Stand Management Options. USDA Forest Service, Southern Region Upland Hardwood Silviculture Training Workshop. Asheville, NC. (annually 1997-2008).

Regeneration and Best Management Practices. USDA Forest Service, National Silviculture Certification School. Robinson Forest. April 2008

Crop Tree Release. Ohio River Valley Woodland and Wildlife Workshop. Highland Heights, KY. March 2008.

Marketing Timber. Kentucky Farm Bureau Annual Meeting. Louisville, KY, December 2007.

Research on Two-Age Management Alternatives for Cumberland Plateau Forests. Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains. Knoxville, TN, November 2007.

Southern Group of State Foresters. Water Quality Monitoring Working Group. Robinson Forest, October 2007.

Kentucky Master Logger Program. Best Management Practices for Logging and Timber Harvest Planning Workshop. Ohio Division of Forestry, Portsmouth, OH. October 2007.

Balancing Science and Technology Transfer between Cooperative Extension and the Southern Research Station. USDA Forest Service Southern Station. Hot Springs AK. August 2007.

Crop Tree Release and Timber Stand Improvement. KY Woodland Owners Association Annual Meeting. Blue Licks State Park. March 2007.

Managing Timber to Maximize Income. Ohio River Valley Woodland and Wildlife Workshop. Lawrenceburg, IN. March 2007.

Hardwood Management Options for Wildlife. Kentucky Chapters of the Wildlife Society and

American Fisheries Society Annual Meeting. Caneyville, KY. February 2007.

Practicing Forestry in the Future in Kentucky. Kentucky/Tennessee Society of American Foresters. Jackson, TN. January 2007.

Low Quality Stand Prescriptions. USDA Forest Service Silvicultural Certification Training: PASS Local Mountain Module, Southern Research Station, Asheville, NC. May 2006.

One Pass Forest Management Practice. Annual Meeting of the Kentucky Woodlands Owners Association. Harrodsburg, KY. March 2006.

Silvicultural Prescriptions for Degraded Stands. USDA Forest Service, SILVAH: Oak Ecology and Silviculture Workshop. Brookville, PA. September 2005.

Kentucky's Forest Stewardship Program. Non-Federal Forest Lands: Partnerships for the 21st Century. National Association of State Foresters. Atlanta, GA. June 2005.

Oak Regeneration: Fire, Herbicides, and other Control Measures. Annual meeting Kentucky Woodland Owners Association. Mammoth Cave, KY. April 2005.

Forest Planning on the Daniel Boone National Forest. Society of American Foresters, Kentucky-Tennessee Annual Meeting. Kingsport, TN. January 2005.

Kentucky Forests: Woods Overview and Management Options. National Farmers Union 2004 Agroforestry Workshop Series. Jackson, KY. November 2004.

Healthy Forests – Healthy Watersheds. 2004 Kentucky Watershed Roundtable. Lexington, KY. July 2004.

Silviculture for Low Quality Stands. USDA Forest Service, PASS - Silviculture Certification Workshop. Asheville, NC. July 2004.

Low Quality/Degraded Stand Management. USDA Forest Service Silviculture School, Bent Creek, Asheville, NC. July 2003 and July 2004.

Development, Delivery, and Evaluation of a Multi-Client Forestry BMP Education Program. USDA/CSREES National Water Quality Conference: Integrating Research, Extension, and Education. Clearwater, FL. January 2004.

A Comparison of Forest Certification Systems. USDA Forest Service Southern Roundtable on Sustainable Forests. Charleston, SC. November 2003.

Forestry BMPs for Private Forest Owners. 62 Annual Forest Landowners Conference. Forest Landowners Association. Asheville, NC. May 2003.

Forestry Education Programs in Kentucky. 2003 Annual Conference of the Kentucky Woodland Owners Association. Bernheim Forest, KY. April 2003.

Forestry BMPs for Tree Farmers. National Tree Farm Association Annual Meeting. Asheville, NC. November 2002.

Low Quality Stand Management. USDA Forest Service Hardwood Silviculture Workshop, Jamison, AL. October 2002.

Herbicides for Individual Tree Treatments. Kansas Forest Service Workshop for Field Foresters. Emporium, KS. October 2002.

Introduction to Forest Certification. Forest Certification: Its Changing. Annual Kentucky/Tennessee Society of American Foresters. January 2002. Pineville, KY.

Forest Certification Systems in the U.S. Kentucky/Tennessee Society of American Foresters. Pineville, KY. January 2002.

Crop Tree Release. Kansas Forest Service Landowner Field Day. Emporium, KS. October 2002.

Basic Application Equipment. Annual Meeting of the Vegetation Management Association of Kentucky. March 2001.

Best Farm Management Practices. Breaking New Ground: Managing Change. Kentucky Women Involved in Agriculture. November 2000.

Forestry BMPs and Water Quality. Working Toward Solutions: Extension Water Quality

Conference. Southern Rural Development Center. Raleigh, NC. April 1999.

Oak Regeneration with Two-Age Methods. Oak Regeneration Workshop. A State of the Art. Knoxville, TN. April 1999.

The What's and Why of Best Management Practices. Annual Meeting of the Kentucky Woodland Owners Association. Lake Barkley. March 1999.

Water Quality and Forestry. Income Opportunities for Woodlot Owners. Ft. Mitchell, KY. March 1999.

Implementation and Effectiveness of Timber Harvesting BMPs in Kentucky. Kentucky/-Tennessee Society of American Foresters Annual Meeting. Jackson, TN. January 1999.

Continuing Logger Education In Kentucky. National Meeting of the American Pulpwood Association, National Logger Education Forum. New Orleans, LA. January 1998.

Mechanisms for Sharing Extension Innovations. Central Hardwood Extension Workshop. Nashville, IN. June 1997.

Presentation Technologies. Central Hardwood Extension Workshop. Nashville, IN. June 1997.

Kentucky's Best Management Practices for Silviculture. Annual Meeting of the Kentucky Woodland Owners Association. Fleming Co. February 1997.

Logging Farm Woodlots-Using BMPs and Kentucky Master Loggers. Kentucky Farm Bureau 77th Annual Convention. December 1996.

GPS/GIS/Laser Sampling in Forestry. Symposium on Information Technologies in Natural Resource Management. Louisville, KY. August 1996.

Kentucky's Master Logger Program. American Pulpwood Association, Logger Education Forum. Atlanta, GA. March 1996.

Logger Education in Kentucky. Enhancing Logger Education - Partnerships at Work. USDA/CSREES Indianapolis, IN. February 1996.

Paulownia Plantation Cultivation. American Paulownia Association Annual Meeting Knoxville, TN. 1990.

The State of Black Walnut Research. National Walnut Council, Kellog, MI. June 1989.

Paulownia Plantation Establishment and Cultivation. Royal Paulownia: A Cash Crop for the Future, Jackson, TN. 1989.

Extension Poster Presentations

Conrad, A.O., Crocker, E.V., Li X., Abbott, A.G., Stainback G.A., Stringer J.W., Nelson C.D., and T.T. Baker. 2015. An Interdisciplinary Approach to Address Current and Emerging Threats to Forest Health. Society of American Forester Meeting. Baton Rouge, LA

Thomas, W., Stringer, J., and Fei, S. 2010. Influencing Woodland Management Using Web-Based Technology. 17th Central Hardwood Forest Conference.

Thomas, W., Stringer, J., and J. Cox. 2008. Research and Demonstration of Control Methods for Amur (Bush) Honeysuckle in the Bluegrass. University of Kentucky, Invasive Species Conference, Lexington, KY, December 12-13, 2008.

Fei, S., Thomas, B., and Stringer, J. 2007. Empowering Forestry Extension with Geospatial Technology. Society of American Foresters Annual Meeting. Portland, OR. October 2007.

Stringer, J. 1997. Broad-Based Programming in Silviculture. 1997 State Extension Conference, Lexington, KY, January 1997.

Stringer, J. 1995. Kentucky Master Logger Program. Annual Meeting of the Kentucky Forest Industries Association, March 1995.

Stringer, J. 1994. The Kentucky Master Logger Program. Kentucky's Forests: Thinking Beyond Today, 19th Annual Governor's Conference on the Environment. Louisville, KY. September 1994.

- Stringer, J. 1994. Stewardship Incentive Program and the Kentucky Master Logger Program. Kentucky Wood Expo. London, KY. September 1994.
- Stringer, J., Kimmerer, T., and Dunn, J. 1992. Decline of Oak Sawtimber. Kentucky Forest Industries Association Annual Meeting. Louisville, KY. March 1992.

Extension Education and Trainings Produced and/or Instructed

Education Programs for Woodland Owners

- Fall Woodland Owner Webinar Series. Webinar program for 15 counties. Sept. – Dec. 2012
- Harvesting Woody Biomass in Kentucky. July 12,13,14, 2011. Princeton, London, and Morehead, KY. 301 attendees.
- Fall Woodland Owner Webinar Series. Webinar program for 17 counties. Sept. – Dec. 2010
- Fall Woodland Owner Webinar Series. Webinar program for 15 counties. Sept. – Dec. 2009
- Master Tree Farmer – Risk and Risk Management. Webinar/DVD based Program for 11 counties. Feb-Mar 2009.

Training for Foresters and Natural Resource Professionals

Professional Forestry Workshops

- Silvicultural Prescriptions for Degraded Stands, US Forest Service, Mountain Module – NASP, London, KY, May 9, 2019, 9 participants.
- Hardwood Silviculture and Operations – US Forest Service, National NAPS Training, University of Kentucky, Robinson Forest, March 2019
- Silviculture Prescription of Upland Hardwoods. NRCS – RCPP Program. Campbellsville and Morehead, KY. 38 participants.
- Hardwood Silviculture and Operations – US Forest Service, National NAPS Training, University of Kentucky, Robinson Forest, March 2018
- Hardwood Tree Grading Workshops. October 2016. Forsythe, GA. 31 participants.
- Hardwood Tree Grading Workshops. October 2016. Texarkana, TX. 42 participants.
- Hardwood Tree Grading Workshops. October 2016. Robinson Forest. 28 participants.
- Logging Best Management Practices - Research and Minimum Requirement Changes. July 19-20, 2016. Robinson Forest. 33 participants.
- Logging Best Management Practices - Research and Minimum Requirement Changes. July 20-21, 2016. Robinson Forest. 34 participants.
- Silviculture Practices for Kentucky. Jackson. KY Sept. 2016 (14)
- Hardwood Tree Grading Workshops. October 2013. Forsythe, GA. 35 participants.
- Hardwood Tree Grading Workshops. October 2013. Texarkana, TX. 40 participants.
- Hardwood Tree Grading Workshops. October 2013. Robinson Forest 35 participants.
- Kentucky Invasive Species Workshops. August 2010. Robinson Forest, Princeton, Lexington. 83 participants.
- Silvicultural Prescriptions for Degraded Hardwood Stands. Webinar, May 2009.
- Invasive Shrub Cost Share Training. Centra Webinar. March 2009. 35 participants.
- Forest and Wood Certification. Jackson, KY. Aug 2012 (31)
- Forest and Wood Certification. Dawson Springs, KY. Aug 2012 (15)
- Forest and Wood Certification. Elizabethtown, KY. Aug 2012 (24)
- Basic Forestry. Robinson Forest, KY. June 2011 (19)
- Basic Forestry. Elizabethtown, KY. June 2011 (21)

Basic Forestry. Princeton, KY. Pennyrile State Forest, KY. June 2011 (10)

Invasive Species, Identification and Control. Lexington, KY. August 2010 (45)

Invasive Species, Identification and Control. Madisonville, KY. August 2010 (25)

Invasive Species, Identification and Control. Robinson Forest, KY. July 2010 (35)

Timber Sale Administration. Kentucky Department of Fish and Wildlife Resources. Pennyrile State Forest, KY. May 2010. (20)

Timber Sale Administration. Morehead, KY. Kentucky Department of Fish and Wildlife Resources. May 2010 (20)

Level II Silviculture Training. Kentucky Division of Forestry, Frankfort, KY. April 2010. (6)

Certification, Biomass, Carbon: Forests and Forestry in a New Age. Lexington, KY. January 2010. (143).

Hardwood Plantings- Site Preparation and Competition Control. Lexington, KY. December 2009. (75)

Hardwood Plantings- Site Preparation and Competition Control. Pennyrile State Park, Dawson, Springs, KY. December 2009. (35)

Silvicultural Prescriptions for Degraded Hardwood Stands. Appalachian Hardwood Manufactures, Inc. May 2009. (18)

Level II Silviculture Training. Kentucky Division of Forestry, Frankfort, KY. April 2009. (12)

*Pesticide Application for Forestry. University of Kentucky, Lexington, KY. December 2008. (16)

Level II Silviculture Training. Kentucky Division of Forestry, Robinson Forest, KY. April 2008.

Oak Regeneration and Management. Radisson Hotel, Lexington KY. October 2007.

Applied Hardwood Silviculture for Kentucky. Kentucky Division of Forestry, Pennyrile State Forest, KY. April 2007.

Professional Training in Artificial Regeneration. University of Tennessee, Caryville, TN. May 2006.

Applied Hardwood Silviculture. Kentucky Division of Forestry, Robinson Forest, KY. April 2006.

Professional Training in Artificial Regeneration. University of Tennessee, Jackson, TN. March 2006

Professional Training in Artificial Regeneration. University of Tennessee, Carthage, TN. March 2006

Applied Hardwood Silviculture for Kentucky. University of Kentucky, Pennyrile, KY. September 2005.

Hardwood Silviculture for Western Kentucky and Tennessee. University of Kentucky and University of Tennessee, Pennyrile, KY. February 2005

Hardwood Silviculture for Western Kentucky and Tennessee. University of Kentucky and University of Tennessee, Jackson, TN. January 2005.

Level II Silviculture Training. Kentucky Division of Forestry, Pennyrile, KY. September 2004.

Hardwood Silviculture for Eastern Tennessee and Kentucky. University of Kentucky and University of Tennessee, Oak Ridge, TN. September 2004.

Hardwood Silviculture for Eastern Tennessee and Kentucky. University of Kentucky and University of Tennessee, Crossville, TN. September 2004.

Level II Silviculture Training. University of Kentucky, Pennyrile, KY. September 2003.

Site Preparation for Tree Planting. University of Kentucky and University of Tennessee, Winchester, KY. January 2003.

Site Preparation for Hardwood Establishment. University of Kentucky and University of Tennessee, Princeton, KY. January 2003.

Site Preparation for Tree Planting. University of Kentucky and University of Tennessee, Elizabethtown, KY. January 2003.

Site Preparation for Hardwood Tree Planting. University of Kentucky and University of Tennessee, University of Kentucky, Research and Education Center, Princeton, KY. August 2002.

Site Preparation for Hardwood Tree Planting. University of Kentucky and University of Tennessee, University of Tennessee, West Tennessee Experiment Station. Jackson, TN. August 2002.

Hardwood Silviculture for Eastern Kentucky and Tennessee. University of Kentucky and University of Tennessee, Robinson Forest, KY. April 2002.

In-Service Training for County Agents

Total Conducted:	22		
Attendance:	153		
<u>Average Overall Program Score (1-3)</u>		<u>Dept. Avg.</u>	<u>CAFE Avg.</u>
2.72		2.45	2.58

Summary of Woodland Owner and Logger Workshops: personally directed and conducted

2018: 3 training day.

2017: 5 training days.

2016: White Oak Supplies and Our Woodlands. Morehead and Benton, KY, October 2016. 343 attendance.

McLean Co. Forestry and Selling Timber, August 2016

2016: 8 training days. Six three day programs for the Kentucky Master Logger Program, two woodland owner field days.

2015: 10 training days. Six three day programs for the Kentucky Master Logger Program, two Kentucky Master Logger CEC, two woodland owner field days.

2014: 16 training days. Six three day programs for the Kentucky Master Logger Program, two woodland owner field days, two forestry professional trainings.

2013: 21 training days. Eight three day programs for Kentucky Master Logger Program, two CEC KML programs and three woodland owner field days.

2012: 23 training days. Eight three day programs for Kentucky Master Logger Program, four CEC KML programs, and three woodland owner field days.

2011: 16 training days. Eight three day programs for Kentucky Master Logger Program, two CEC KML programs and three field days for woodland owners.

2010: 13 training days. Six three day programs for the Kentucky Master Logger Program and three field days for woodland owners.

2009: 14 training days. Six three day programs for the Kentucky Master Logger Program and five field days for woodland owner including Ice Damage Workshops.

2008: 14 training days. Six three day programs for the Kentucky Master Logger Program and two woodland owner field days.

2007: 11 training days. Six one-day program for the Kentucky Master Logger Program and five landowner field days.

2006: 21 training days. 15 one-day programs for the Kentucky Master Logger Program and six landowner field days including the Kentucky Woodland Owner Short Course.

2005: 19 training days. 10 one-day programs for the Kentucky Master Logger Program and nine field days for landowners including the Kentucky Woodland Owner Short Course.

2004: 31 training days. 10 one-day programs for the Kentucky Master Logger Program and 21

field days
for landowners including the Kentucky Woodland Owner Short Course.

2003: 31 training days. 16 one-day programs for the Kentucky Master Logger Program and 15 field days for landowners.

2002: 27 training days. 18 one-day programs for the Kentucky Master Logger Program and three field days for landowners, 6 professional forestry trainings.

2001: 33 training days. 20 one-day programs for the Kentucky Master Logger Program, 13 field days and workshops for landowners including the Woodland and Water Short Course Program.

2000: 19 training days. 16 one-day programs for the Kentucky Master Logger Program and three field days for landowners including the Woodland and Water Short Course Program.

1999: 33 training days. 20 one-day programs for the Kentucky Master Logger Program, 13 field days and workshops for landowners including the Woodland and Water Short Course Program.

1998: 37 training days. 14 one-day programs for the Kentucky Master Logger Program, four two-day Timber and Water Training Programs, 13 field days and workshops for landowners, and two one-day Cooperative Extension In-Service trainings.

1997: 38 training days. 12 one-day programs for the Kentucky Master Logger Program, seven two-day Timber and Water Training Programs, four field days and workshops for landowners, and four two-day Cooperative Extension Service In-Service trainings.

1996: 34 training days. Seven, one-day programs for the Kentucky Master Logger Program, Five two-day Timber and Water Training Programs, 13 field days and workshops for landowners, and two two-day Cooperative Extension Service In-Service trainings.

1995: 17 training days. Eight one-day programs for the Kentucky Master Logger Program, and four two-three day Cooperative Extension Service In-Service trainings.

1994: 11 training days. 10 one-day programs for the Kentucky Master Logger Program, and one Cooperative Extension Service In-Service training.

1993: Nine training days. Five one-day programs for the Kentucky Master Logger Program, and four field days and workshops for landowners.

1992: Six training days. One one-day program for the Kentucky Master Logger Program and five field days and workshops landowners.

Extension Radio and TV

Regular Extension Radio Series – three per year. Cooperative Extension Service, College of Agriculture. 1994-2011.

Timber Talk – Four Invited Presentations. Reynolds Forestry Service, Magnolia, AK. 2000-2011.

Forest Management and Logging in Eastern Kentucky - 1.5 hour call-in, Whitesburg, Appalshop, 1999.

Salvage Cutting in National Forests, 30 min. special program, WUKY-TV. 1995.

Forest Management in Eastern Kentucky and Best Management Practices for Timber Harvesting, WYMT-TV. 1995.

Extension Press Releases

Timber, Bourbon Demands White Oak. The Magazine. University of Kentucky College of Agriculture. 17(1): 20-21 contributor

Kentucky Agriculture cash receipts off in 2016; expected to stabilize in 2017. November 2016.

UK study helps bats come home to roost—and recover. Cooperative Extension Service, University of Kentucky. October 2016

UK research validates, tweaks BMPs for woodlands. Cooperative Extension Service, University of Kentucky. October 2016

Trees and Storm Damage. Cooperative Extension Service, University of Kentucky. January 2013.

Woodland Owners Can Protect Land from Timber Trespass, Theft. Cooperative Extension Service, University of Kentucky. January 2008

Pilot Logging Program Has Possibilities. Cooperative Extension Service, University of Kentucky. January 2008.

Logging in Kentucky. Cooperative Extension Service, University of Kentucky. April 2000.

Plan Now for Winter Trees. Cooperative Extension Service, University of Kentucky. August 1999.

Master Logger Training Focused on Long Term Improvements for Kentucky Timber Industry. Cooperative Extension Service, University of Kentucky. April 1999.

Logging and Water Quality in Kentucky-UK Researchers Complete Survey. Cooperative Extension Service University of Kentucky. October 1997.

Three Steps to Profitable Woodland Management. Prairie Farmer. September 1997.

Improve the Value of Your Woodlands. Cooperative Extension Service, University of Kentucky. August 1997.

4-H and Other Youth Activities

May 1997	Junior Forestry Field Day, Rowan Co. (57)
August 1997	4-H Teen Environmental Summit, Erlanger, KY (25)
September 1997	Junior Forestry Field Day, Dawson Springs, KY (77)
January 1996	Forestry in Kentucky, Presentation to Leslie Co. 4-H Youth (16)
May 1996	Junior Forestry Field Day, Rowan Co. (54)
May 1996	Junior Forestry Field Day, London (47)
September 1996	Junior Forestry Field Day, Mammoth Cave (64)
September 1996	Forest Evaluation and Forestry Bowl (Senior Forestry Judging) Leadership Center, Jabez (65)

Other Professional Meetings (Extension and Research) Organized

38th Council on Forest Engineering (COFE) Annual Meeting - Engineering Solutions for Non-industrial Private Forest Operations, July 19 – 22, 2015, Lexington, KY

Society of American Foresters Annual Meeting, Silviculture and Forest Ecology Track Chair, Honolulu, HI. November 2011.

Certification for Kentucky Forests and Products. Lexington, KY. January 2009.

2003 State Extension Specialist and Associates Meeting and Annual Kentucky Association of State Extension Professionals Meeting. Clark Co. Extension Office. March 2003.

Forest Certification: It's Changing. KY/TN Society of American Foresters. Pineville, KY. January 2002.

Forest Certification - A Landowner Update. East U.S. Satellite Workshop. Broadcast from studios at Auburn University. December 2001.

Forestry Leadership Workshop. KY/TN Society of American Foresters. Nashville, TN, January 2001.

Master Tree Farmer 2000. State Coordinator. Southwide Satellite Broadcast. KY. February-March 2000.

Fire, People and the Central Hardwood Landscape. Organizational Committee. Richmond, KY. March 2000.

National Walnut Council Meeting. Program Chair. Lexington, KY. August 1999.

12th Central Hardwood Forest Conference. Program Chair. Lexington, KY. February-March 1999.

Kentucky Forest Resource Professional Training. Director. Kentucky Division of Forestry, Dawson Springs, KY. September 1997.

Hardwood Silviculture Extension Workshop. Co-Chair. Nashville, IN. June 1997.

National Cooperative Extension Logger Education Workshop. Co-Chair. Louisville, KY. June 1997.

Management Practices for Silvicultural Operators in Kentucky. Chair. Lake Barkley, KY. September 1996.

INSTRUCTION SUMMARY

Instructor:

FOR 359 Forest Operations and Utilization (3 hr). Co-Instructor. Required course for B.S. in Forestry (annually 2011 to present).

FOR 376 Silvicultural Practices (2 hr) required course for B.S. in Forestry (2001-2010).

Annual Lecturer:

FOR 400 Human Dimensions of Forestry and Natural Resources (four lectures annually)

NRC 320 Data Collection Technique (instructor forest measurements)

FOR 350 Silviculture (2000-2006 two lectures annually)

FOR 599 Ethics (2000–2010 one lecture annually)

FOR 100 Introduction to Forestry (four lectures annually)

FOR 602 Research Methods (two lectures annually)

Other Formal Courses (taught or assisted)

FOR 599 Independent Work in Forestry (instructor) 1994, 1996, 1998, 2001, 2006

FOR 379 Harvesting and Utilization of Wood (assisted 1992-1998)

FWV 262 Silviculture - Hazard Community College (assisted 1998-2000)

FWV 264 Timber Harvesting - Hazard Community College (assisted 1998-1999)

FOR 300 Forest Measurements (instructor 1990)

FOR 219 Dendrology (instructor 1993)

RESEARCH

Graduate Students

Major Advisor

Dhungel, G. 2019. Sustainability and Economics of White Oak (*Quercus alba*) Timber Supply in Kentucky. MS in Forest and Natural Resource Sciences.

Vogel, P. 2019. The effects of a crop-tree release on a white oak stand. MS in Forest and Natural Resource Sciences.

Poudel, K. 2019. Forest Sector Dependence and Economic Well-Being of Kentucky Communities. MS in Forest and Natural Resource Sciences.

Patterson, C. 2017. Expanding Gap Management. M.S. in Forestry (Co-Advisor)

Bowker, D. 2013. GPS/GIS Monitoring of Timber Harvesting Impacts on Sediment Delivery. M.S. in Forestry

Reeves, C. 2012. Skidding Options for Headwater Streams in Steep Terrain. M.S. in Forestry.

Perry, J. 2010. Efficacy and Costs of Site Preparation Treatments for Natural Regeneration of Upland Hardwood Stands. M.S. in Forestry.

Cecil, L. 2009. Pre-Commercial Stand Growth Dynamics on Surface Mined Lands in Eastern Kentucky. M.S. in Forestry.

Lewis, J. In Progress. Multi-Level Spatial Analysis of Natural Canopy Disturbances in Eastern Deciduous Forests. M.S. in Forestry.

Cook, B. 2006. Invasion Dynamics of Woody Plants on Surface Mines in Eastern Kentucky. M.S. in Forestry. (non-thesis option).

Dillaway, D. 2005. Effects of Oak Shelterwood and Mid-Story Removal on *Quercus alba* and *Quercus velutina*. M.S. in Forestry

Shouse, S. 2001. Cost Analysis of Timber Harvesting Best Management Practices. M.S. in Forestry

Committee Member – Masters of Science in Forestry and PhD, University of Kentucky

Chad Niman. Effects of Environment on Dynamics of Stave Drying. MS in Forest and Natural Resource Sciences. In Progress.

Phillip Vogel. The Effects of a Crop-tree Release in White Oak Stands. MS in Forest and Natural Resource Sciences. In progress.

Kamana Poudel. Forest Dependence and Economic Wellbeing of Kentucky Communities. MS in Forest and Natural Resource Sciences. In progress.

Rafael Freitas. 2019. Evaluation of productivity of forest harvesting operations in Eastern Kentucky -Application of security camera systems as a novel method for time and motion studies of logging operations. MS in Forest and Natural Resource Science

Ben Rasp. Spatio-temporal patterns of invasive exotic plant species in response to timber harvesting in Robinson Forest, Kentucky. MS in Forest and Natural Resource Sciences, In progress.

Arant, Phillip. 2017. Effect of shelterwood harvests and patch cuts on *Myotis* spp. habitat use and roosting behavior in the central Appalachians. In progress

Dement, Wesley. 2017. An Investigation of Tree Growth and Woody Vegetation Colonization on a 19 Year-Old Forestry Reclamation Site. MS in Forestry

Logan, Ray. 2016. Assessment of Workplace Injury in Kentucky's Commercial Logging Industry. Master of Public Health

Prativa Shrestha. Carbon Life-Cycle and Economic Analysis of Forests Carbon Sequestration and Woody Bioenergy Production. MS in Forestry

Catron, J. 2012. Cost-Benefit Analysis and Stakeholder Opinions of Bioenergy Production from Private Kentucky Forestland. MS in Forestry

Leitch, J. 2013. Private Landowner Intent to Supply Forest Biomass for Energy in Kentucky. MS in Forestry

Devine, K. 2011. Invasive Species Occurrence Associated with Timber Harvesting. MS in Forestry

Shouse, M. 2010. Identifying Spatial Patterns of Exotic Plants in Urban Ecosystems. MS in Forestry

Parrot, D. 2013. Effects of Midstory Removal on Natural and Underplanted White Oak (*Quercus alba* L.) and Black Oak (*Quercus velutina* L.) Seedlings. MS in Forestry

- Witt, E. In Progress. Barton Evaluating Streamside Management Zone Effectiveness in Appalachian Forested Watersheds. PhD Integrated Plant and Soil Science
- Peilin, Y. 2010. Change of Forest Composition in the Eastern United States in Last Two Decades. MS in Forestry
- Spaulding, H. 2010. Forests of the future: Simulating the effects of exotic invasive species on forest structure and composition. MS in Entomology
- Clark, H. In progress. The Movement of Invasive Exotic Plant Species through Remnant Bluegrass Forest Systems with a Focus on Amur Honeysuckle. MS in Forestry
- Royce, J. 2007. The Effects of Prescribed Fire on Fuels and Seedling Dynamics in East Kentucky. MS in Forestry
- Cherry, A. 2006. Hydrochemical Characterization of Ten Headwater Catchments in Eastern Kentucky. MS in Forestry
- Cotton, C. 2006. Developing a Method of Site Quality Evaluation for *Quercus Alba* and *Liriodendron tulipifera* in the Eastern Kentucky Coal Field. MS in Forestry
- Green, S. 2005. The Effects of Prescribed Fire on Stand Structure, Canopy Cover and Seedling Populations in Oak Dominated Forests on the Cumberland Plateau, KY. MS in Forestry
- Svec, J. 2003. Flow Duration of Hydrologic Channels in Eastern Kentucky. MS in Forestry
- Brosi, S. 2000. American Chestnut Seedling Establishment in the Knobs and Eastern Coalfield Regions of Kentucky. MS in Forestry
- Hilpp, G. 1997. Multiple Product Volume Equations for Yellow-poplar in Eastern Kentucky. MS in Forestry
- Swank, D. 1997. An Analysis of the Effects on Hillslope Hydrological Processes by Forest Roads in Eastern Kentucky. MS in Forestry

Research Publications

Refereed

- Bowker, D., J. Stringer, and C. Barton. 2020. Influence of Timber Harvesting Operations and Streamside Management Zone Effectiveness on Sediment Delivery to Headwater Streams in Appalachia. *Forests* 2020, 11, 623; doi:10.3390/f11060623
- Hackworth, Z., Lhotka, J. and J. Stringer. Midstory Removal Facilitates Growth but Reduces Competitiveness of Oak Reproduction Prior to and After Shelterwood Establishment Cutting. *Forest Science* Accepted
- Bellamy, P., Sanderson, W., Winter, K., Stringer, J., Kussainov, N., and S. Cummins. 2020. Prevalence of Type I Sensitization to Alpha-gal among Kentucky Timber Harvesting Professionals and Forestry and Wildlife Practitioners. *Journal of Allergy and Clinical Immunology in Practice*
- Lhotka, J.M, Cunningham, R.A., and J. Stringer. Effect of silvicultural gap size on year species recruitment, growth and volume yields in *Quercus* dominated stands of the Northern Cumberland Plateau, USA, *Forestry: An International Journal of Forest Research*, Volume 91, Issue 4, October 2018, Pages 451-458, <https://doi.org/10.1093/forestry/cpy003>

- Agha, M., Price, S.J., Todd, B.D., Augustine, B., Lhotka, J., Fleckenstein, L.J., Lewis, M., Patterson, C. and J. Stringer. 2018. Gap-based silviculture provides suitable thermal environments for a terrestrial reptile. *Wildlife Management*: 1-10pp.
doi.org/10.1071/WR17110
- Lhotka, J., Cunningham, R., and Stringer, J. 2018. Effect of silvicultural gap size on 51 year species recruitment, growth, and volume yields in *Quercus* dominated stands of Northern Cumberland Plateau, USA. *Forestry: An International Journal of Forest Research*,
<https://doi.org/10.1093/forestry/cpy003>.
- Brandeis, T., Zarnochb, S., Oswalt, C., Sringer, J. 2017. The lack of adequate quality assurance/quality control data hinders the assessment of potential forest degradation in a national forest inventory. *For. Ecol. and Mgt.* 396: 176-183.
- Contreras, M., Freitas, R., Ribeiro, L., Stringer, J.W., Clark, C. 2016. Evaluating the feasibility of using a security camera system for time and motion studies of timber harvesting equipment. *Computers and Electronics in Agriculture* 135:208-215.
- Adkins, J., Barton, C., Grubbs, S., Stringer, J., and R. Kolka. 2016. Assessment of Streamside Management Zones for Conserving Benthic Macroinvertebrate Communities Following Timber Harvest in Eastern Kentucky Headwater Catchments. *Water* 8, 261: 1-15pp
doi:10.3390/w8060261
- Witt, E.L., C.D. Barton, J.W. Stringer, and R.K. Kolka. 2016. Influence of Variable Streamside Management Zone Configurations on Water Quality after Forest Harvest. *J. For.* 114(1):41-51.
- Schweitzer, C., Clark, S.L., Gottschalk, K.W., Stringer, J., and R. Sitzlar. 2014. Proactive Restoration: Planning, Implementation, and Early Results of Silvicultural Strategies for Increasing Resilience against Gypsy Moth Infestation in Upland Oak Forests on the Daniel Boone National Forest, Kentucky. *J. For.* 112(5): 401-411
- Craig, J.M., Lhotka, J.M., and J.W. Stringer. 2014. Evaluating Initial Responses of Natural and Underplanted Oak Reproduction and a Shade-Tolerant Competitor to Midstory Removal. *For. Sci.* 60(6): 1164-1171.
- Lhotka, J.M., and J.W. Stringer. 2013. Forest edge effects on *Quercus* reproduction within naturally regenerated mixed broadleaf stands. *Canadian J. For. Res.* 43: 911-918.
- Parrot, D., Lhotka, J.M., and J.W. Stringer. 2013. The Effect of Soil Scarification on *Quercus* Seedling Establishment within Upland Stands of the Northern Cumberland Plateau. *North. J. Appl. For.* 30(3): 125-130.
- Leitch, Z.J., Lhotka, J.M., Stainback, G.A., and J.W. Stringer. 2013. Private Landowner Intent to Supply Woody Feedstock for Bioenergy Production. *Biomass and Bioenergy* (56) 127-136.
- Parrott, D., Lhotka, J., Stringer, J., and Dillaway, D. 2012. Seven-Year Effects of Midstory Removal on Natural and Underplanted Oak Reproduction. *North. J. Appl. For.* 29(4): 182-190.
- Witt, E. L., C. D. Barton, J. W. Stringer, R. K. Kolka, and D. W. Bowker. 2012. Evaluating best management practices for ephemeral channel protection following forest harvest in the Cumberland Plateau. *South. J. Applied For.* 37(1): 36-44.
- Witt, E.L., Barton, C.D., Stringer, J.W., Bowker, D.W., and R.K. Kolka. 2010. Evaluating Best Management Practices for Ephemeral Channel Protection Following Forest Harvest in the Cumberland Plateau - Preliminary Findings. In *Proceedings 17th Central Hardwood Forest Conference*. USDA Forest Service GTR-NRS-P-78:365-374. (referred proceedings).
- Bowker, D.W. and J. W. Stringer. 2010. Efficacy of Herbicide Treatments for Controlling Residual Sprouting of Tree-of-Heaven (*Ailanthus altissima*). In *Proceedings 17th Central*

- Hardwood Forest Conference. USDA Forest Service GTR-NRS-P-78:128-133. (referred proceedings).
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Departmental Research Seminars

Eight research seminars in the University of Kentucky's Department of Forestry Seminar Series through 2017.

Posters, Abstracts, and Presentations

- DeWald, L., Nelson, D., and J. Stringer. 2019. Genetic Improvement for White Oak (*Quercus alba*). Society of American Foresters Annual Meeting. Louisville, KY.
- Witt, E., Barton, C., Stringer, J.W., and Kolka, R. 2016. Impact of Streamside Management Zones on Soil Temperature Changes Following Forest Harvesting. Soil Science Society Meeting. Nov., 2016.
- Dement, W., Lhotka, J.M., Barton, C.D., and J. Stringer. 2016. Effect of Grading on Productivity of High-Value Tree Species in Appalachian Surface Mines. Society of American Foresters Meeting, Madison, WS.
- Lhotka, J., Cunningham, R., and J. Stringer. 2016. Effect of silvicultural gap size on long-term species growth, stand yield, and economic value in upland *Quercus* dominated stands. Presentation at IUFRO, 10th Annual Uneven Aged Management Working Group Meeting.
- Freitas, R., Ribeiro, L., Contreras, M., Stringer, J., Osborne, C., Reeves, C. 2015. Evaluating the Feasibility of Using a Security Camera System for Time and Motion Studies of Timber Harvesting Equipment. Poster Presentation at 38th Annual Council on Forest Engineering (COFE) Meeting, Lexington, KY
- Adkins, J.K., Barton, C.D., Stringer, J.W., Grubbs, S. 2014. Assessment of streamside management zone efficacy for conserving benthic macroinvertebrate communities following timber harvest in Eastern Kentucky headwater catchments. Presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Reeves, C., Stringer, J.W., Bowker, D., Barton, C., Agouridis, C. 2014. Effectiveness of Elevated Skid Trail Headwater Stream Crossings in the Cumberland Plateau. Presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National

- Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Witt, E., Barton, C., Stringer, J.W., Cherry, A., Kolka, R. 2014. Influence of variable streamside management zone configurations on water quality following forest harvest. Presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Devine, K., Fei, S., Stringer, J.W., Barton, C. 2014. The Effect of Microsite on Invasive Species Colonization Associated with the use of Timber Harvesting BMPs. Presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Witt, E., Barton, C., Stringer, J.W., Cherry, A., Kolka, R. 2014. Impact of forest harvest with variable streamside management zone configurations on hydrologic response in perennial headwater streams in eastern KY. Poster presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Bowker, D., Stringer, J.W., Barton, C. 2014. Forest harvest equipment movement and sediment delivery to streams. Poster presentation at Symposium on Forestry Best Management Practice Effectiveness in the Eastern US, National Council for Air and Stream Improvement, Inc., Society of American Foresters, Virginia Tech, Blacksburg, VA.
- Contreras, Parrott, Stringer. 2013. Quantifying potential benefits of implementing computer generated skid-trail networks. IUFRO
- Lhotka, J.M., and J.W. Stringer. 2013. Forest edge effects on oak regeneration in gap-based silvicultural systems. Presentation National Society of American Foresters Meeting. Charleston, WV.
- Lhotka, J.M., and J.W. Stringer. 2012. Formulating an Expanding-Gap Regeneration System for *Quercus* Dominated Stands of the Central Hardwood Forest Region. Poster 2012 National Society of American Foresters Meeting. Spokane, WA.
- Witt, E.L., C. D. Barton, J. W. Stringer, and R. K. Kolka. November 2010. Impact of Streamside Management Zone Width and Canopy Retention on Hydrologic Response Following Forest Harvest in Appalachian Headwater Streams. Presentation at the 2010 American Water Resources Association Annual Water Resources Conference, Philadelphia, PA.
- Thomas, W.R., and J. Stringer. 2011. Influencing Woodland Management using Web-Based Technology. In Proceedings 17th Central Hardwood Forest Conference. USDA Forest Service GTR-NRS-P-78:671-672.
- Parrott, D., J. Lhotka, and J. Stringer. (2011) Impact of ice damage on overstory canopy structure and oak reproduction established following a midstory removal. In Proceedings 16th Biennial Southern Silvicultural Research Conference (BSSRC) February 15-17, 2011 Charleston, SC
- Witt, E.L., C. D. Barton, J. W. Stringer, and R. K. Kolka. (November, 2010). Impact of Streamside Management Zone Width and Canopy Retention on Hydrologic Response Following Forest Harvest in Appalachian Headwater Streams. Presentation at the 2010 American Water Resources Association Annual Water Resources Conference, Philadelphia, PA.
- Witt, E. L., C. D. Barton, J. W. Stringer, D. W. Bowker, and R. K. Kolka. June 2009. Evaluating Best Management Practices for Ephemeral Channel Protection during Forest Harvest in the Cumberland Plateau-Preliminary Findings. Presentation at the 2009 American Society of

- Agricultural and Biological Engineers Annual International Meeting, Reno, NV. Paper no. 095840.
- Bowker, D., Stringer, J., Barton, C., and S. Fei. 2010. GPS and GIS Analysis of Mobile Harvesting Equipment and Sediment Delivery to Streams During Forest Harvest Operations on Steep Terrain. In Proceedings 17th Central Hardwood Forest Conference. USDA Forest Service GTR-NRS-P-78:648-649.
- Stringer, J. 2007. Research on Two Age Management Alternatives for Cumberland Plateau Forests. Scientific Foundations of Conservation Planning in the Cumberland Plateau and Mountains. Knoxville, TN. November 2007.
- Reeves, C., Stringer, J., Barton, C., and C. Agouridis. Society of American Foresters Annual Meeting. Portland OR, October 2007.
- Michels, O., Smidt, M., and Stringer, J. 2007. GPS and GIS application and analysis of timber harvesting operations on steep terrain. Southern Region Council on Forest Engineering, Hot Springs, AK. April 2007.
- Stringer, J. 2007. Performance of high value tree plantings on loose spoil regimes in eastern Kentucky. The Paulownia Research Symposium, American Paulownia Association. Hazard, KY. April 2007.
- Stringer, J. 2006. Effect of ground skidding on oak advance regeneration. 13th Biennial Southern Silvicultural Research Conference. USDA Forest Service, Memphis, TN. February 2006.
- Stringer, J., Dillaway, D., and Loftis, D. 2006. Oak shelterwood: a silvicultural tool for successfully regeneration oaks. Proceedings of the Annual Meeting of the Society of American Foresters. Pittsburg PA. (cd)
- Cecil, L., and Stringer, J. 2006. Stem diameter and horizontal crown area correlations for hardwood tree seedlings planted on reclaimed surface-mines in eastern Kentucky. 15th Central Hardwood Forest Conference. Knoxville, TN.
- Fie, S., Stringer, J., and Steiner, K. 2006. Influential factors of potential oak regeneration in the Appalachians. IUFRO Oak Silviculture Conference. Stevens Point, WI. September 2006.
- Perry, J., and Stringer, J. 2005. Comparison of site preparation alternatives for natural hardwood regeneration. 13th Biennial Southern Silvicultural Research Conference. USDA Forest Service, Knoxville, TN.
- Dillaway, D., and Stringer, J. 2005. Response of white and black oak seedlings to a mid-story removal. Proceedings of the Ninth Workshop on Seedling Physiology and Growth Problems in Oak Plantings. USDA Forest Service GTR NC-292. 4.
- Stringer, J. 2005. Harvest survivability of oak advance regeneration. In: Proceedings of the Ninth Workshop on Seedling Physiology and Growth Problems in Oak Plantings. USDA Forest Service GTR NC-292. 26.
- Dillaway, D., and Stringer, J. 2004. Response of white oak and black oak to a mid-story removal. Proceedings of the Ninth Seedling Physiology and Problems in Oak Plantings. USDA Forest Service GTR NC-292. 27.
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- Svec, J., R. Kolka, and Stringer, J. 2002. Stream classification: perennial, intermittent, and ephemeral channels in eastern Kentucky and implications for streamside management zones. Proceedings Kentucky Water Resources Symposium, Lexington, KY.
- Svec, J., Kolka, R., and Stringer, J. 2002. Defining perennial, intermittent and ephemeral

- channels in eastern Kentucky: application to forestry best management practices. Proceedings Forestry Best Management Research Symposia. Atlanta, Georgia. (Compact disc) Ed. J. Shepard, National Council for Air and Stream Improvement.
- Stringer, J., and Queary, T. 2002. Voluntary implementation and effectiveness measures for timber harvesting BMPs on non-industrial private forest lands in Kentucky. Proceedings Forestry Best Management Research Symposia. Atlanta, Georgia (cd) Ed. J. Shepard, National Council for Air and Stream Improvement.
- Stringer, J., Shouse, S., Smidt, M., Pelkki, M., Ringe, J., and Kolka, R. 2002. BMP costs associated with erosion control measures for skid trails. Proceedings Forestry Best Management Research Symposia. Atlanta, Georgia. (cd) Ed. J. Shepard, National Council for Air and Stream Improvement.
- Stringer, J. 1999. Two-age systems for eastern hardwoods. National Society of American Foresters Meeting. Portland, OR.
- Wagner, D., David, D., and Stringer, J. 1999. Simple sequence repeat loci in white oak (*Quercus alba*). Proceedings Plant and Animal Genome Conference VIII. San Diego, CA.
- Fogler, E., David, D., Stringer, J., Patel, R., and Wagner, D. 1999. Simple sequence repeat markers of interspecific hybridization of white oak (*Quercus alba*). Proceedings Plant and Animal Genome Conference VIII. San Diego, CA.
- Stringer, J. 1997. Use and effectiveness of timber harvesting BMPs in Kentucky. Nonpoint Source Pollution Conference, Lexington, KY.
- Stringer, J., and Graves, D. 1996. Tree shelters overcome initial establishment problems for containerized seedlings of *Paulownia tomentosa* over a wide range of planting conditions. Proceedings of the Tree Shelter Conference, USDA Forest Service GTR NE-221: 74.
- Stringer, J., and Wagner, D. 1994. Analysis of the TVA and NC-99 northern red oak provenance test series. North Central Fine Hardwoods Tree Improvement Cooperative Annual Meeting. West Lafayette, IN.
- Stringer, J. 1994. Oak mortality on the Cumberland plateau. 1994. New Technology for Practical Forestry, K/T SAF Annual Winter Meeting. Corbin, KY.
- Stringer, J. 1993. Groundfire effects in a sapling-sized oak-maple stand. pp. 514-515, IN: Proceedings of the Ninth Central Hardwoods Forest Conference, USDA Forest Service GTR NC-161.
- Stringer, J., Kimmerer, T., and Dunn, J. 1992. Decline of oak sawtimber. Kentucky Forest Industries Association Annual Meeting, Louisville, KY.
- Stringer, J., and Cremeans, D. 1991. TREEGRAD: a grading program for eastern hardwoods. Eighth Central Hardwood Forest Conference Pennsylvania State University, College Station, PA.
- Stringer, J. 1991. New research in paulownia plantation establishment. Third Annual Paulownia Conference on Paulownia Production. Paducah, KY.
- Stringer, J. 1991. Wood properties of black locust. International Conference on Black Locust: Biology, Culture, and Utilization. Michigan State University, East Lansing, MI.
- Stringer, J., and Kimmerer, T. 1991. Remetabolism of respiratory CO₂ in woody plants. Annual Meeting of the Southern Section of the American Society of Plant Physiologists. Lexington, KY.
- Stringer, J., Kimmerer, T., and MacDonald, B. 1989. Translocation of respired CO₂ and its refixation in *Populus deltoides*. International Union of Forestry Research Organizations Workshop "Dynamics of Ecophysiological Processes in Tree Crowns and Forest Canopies". Rhinelander WI, USA.
- Stringer, J., Kimmerer, T., and MacDonald, B. 1989. Remetabolism of transpirational ethanol by

- the leaves of eastern cottonwood (*Populus deltoides*). International Union of Forestry Research Organizations Workshop Dynamics of Ecophysiological Processes in Tree Crowns and Forest Canopies. Rhinelander, WI.
- Stringer, J., and Kimmerer, T. 1989. Transport and use of CO₂ in the xylem Sap of *Populus deltoides*. American Society of Plant Physiologists Annual Meeting. Indianapolis, IN.
- Stringer, J., Liu, C., and McClaren, D. 1989. A key for hardwood tree grading. Seventh Central Hardwood Forest Conference. Carbondale, IL.
- McLaren, D., Stringer, J., and Liu, C. 1988. A methodical approach for hardwood tree grading. pp.297, IN. Proceedings Seventh Central Hardwood Forest Conference. Carbondale, IL. 313pp. .
- Stringer, J., Kimmerer, T., Dunn, J. 1987. Oak mortality in eastern Kentucky. Sixth Central Hardwood Forest Conference. Knoxville, TN.

ACADEMIC AWARDS AND RECOGNITION

Awards

- 2019 Gold Award for Excellence in Research Technology Transfer, Southern Regional Extension Forestry
- 2017 Forest Stewardship Council - National Leadership Award
- 2012 2012 Henry Hardtner Award for Forest Sustainability, Southern Group of State Foresters
- 2012 Award for Excellence in Forestry (over 35 years). Kentucky/Tennessee Society of American Foresters
- 2011 Gold Award for Excellence for Extension Publication. A peer award from the Sponsored by Southern Region Extension Forestry.
- 2011 Outstanding Graduate Student Poster, 16th Biennial Southern Silvicultural Research Conference (BSSRC) February 15-17, 2011 Charleston, South Carolina
- 2010 High Impact Research/Extension Program Award, College of Agriculture for Streamside Management Zone Project PI's C. Barton, J. Stringer
- 2010 Laura Clay Award – Kentucky Women in Agriculture for the collaborative project Agriculture Development Team Training for Afghanistan
- 2010 University of Kentucky, Commonwealth Collaborative Award for the Cane Run Watershed Assessment and Restoration Initiative
- 2010 Silver Award for Excellence for Newsletter or Series of Articles. A peer award from the Sponsored by Southern Region Extension Forestry.
- 2009 Gold Award for Excellence for Exceptional Programming in the Area of Shortcourse Production. A peer award from the Sponsored by Southern Region Extension Forestry.
- 2009 National Family Forests Education Award – joint award from the National Associate of Woodland Owners and National Association of University Forestry Resource Programs
- 2009 University of Kentucky Work Life Supervisor of the Year - finalist
- 2008 Fellow Society of American Foresters
- 2008 University of Kentucky Forestry Graduate Student Award of Excellence for Christopher Reeves, MS Student.
- 2008 Gold Award for Excellence with High Distinction for Exceptional Programming in the Area of Extension Publications. A peer award from the Sponsored by Southern Region Extension Forestry.
- 2006 Outstanding Student Paper Award, Biennial Southern Silviculture Research Conference for Dillaway, D., and Stringer, J. Release of suppressed oak advance regeneration. Presented at the 13th Biennial Southern Silvicultural Research Conference in Memphis,

- TN.
- 2005 University of Kentucky, Commonwealth Collaborative Award (for the Surface Mine Reforestation Initiative)
- 2004 University of Kentucky, Faculty Futures Award - The Kentucky Forestry Best Management Practices Board. Kentucky Natural Resources and Environmental Protection Cabinet.
- 2003 Governors Award for Environmental Excellence in Forestry - The Kentucky Forestry Best Management Practices Board. Kentucky Natural Resources and Environmental Protection Cabinet.
- 2002 Extension Forester of the Year - sponsored by the Forest Landowners Association for "Commitment to and Delivery of Excellent Learning Experiences While Achieving A Superior Standard of Continuing Education and Assistance to Forest Landowners".
- 2002 National Technical Writing Award - sponsored by the Forest Resources Association for: Stringer, J. 2002. Kentucky's Logging BMP Gauge. Forest Resources Association Technical Release 00-R-20. 2pp.
- 2002 Appalachian Regional Technical Writing Award - sponsored by the Forest Resources Association for Stringer, J. 2002. Times and Costs for Skid Trail Retirement and Revegetation.
- 2001 Student Paper Award, Council of Forest Engineering for; Shouse, S., Stringer, J., Smidt, M., Pelkki, M., Ringe, J., and Kolka, R. 2001. Machine and Labor Time Required to Implement Kentucky's Skid Trail Erosion Control and Revegetation BMPs. Proceedings of 24th Annual Meeting Council on Forest Engineering, Appalachian Hardwoods: Managing Change.
- 2001 Award for Excellence for Multi-State or Regional Project - sponsored by Southern Region Extension Forestry for the Master Tree Farmer 2001 Satellite Workshop.
- 2001 Award for Excellence for Exceptional Programming in the Area of Extension Video - sponsored by Southern Region Extension Forestry for the Hardwood Management Section of the Master Tree Farmer Program by Stringer, J., and Clatterbuck, W.
- 2001 Award for Excellence for Exceptional Programming the Area of Extension Newsletter - sponsored by Southern Region Extension Forestry for the Kentucky LogJam Newsletter, Cooperative Extension Service, University of Kentucky, Department of Forestry. Ed. J. Stringer.
- 2001 Appalachian Regional Technical Writing Award -sponsored by the Forest Resources Association for; Stringer, J. 2000. Kentucky's Logging BMP Gauge. Forest Resources Association Technical Release 00-R-20. 2pp.
- 2000 Outstanding New Specialist Award, Association of Kentucky Extension Specialists.
- 2000 Award for Excellence for Exceptional Programing in the Area of Video- sponsored by Southern Region Extension Forestry for the Kentucky Timber Harvesting Training Series: Effects of Timber Harvesting on Water Quality and Aquatic Habitat; Best Management Practices for Timber Harvesting Roads, Trails, and Landings; Streamside Management Zones. Executive Producer J. Stringer. Cooperative Extension Service, University of Kentucky. .
- 1999 Outstanding Program Award, Kentucky Master Logger Program. Association of Kentucky Extension Specialists.
- 1999 Award for Excellence for Exceptional Programming in the area of Extension Publication or Series - sponsored by Southern Region Extension Forestry for; Stringer, J., Perkins, C., Lowe, L., Smidt, M. Field Guide to Best Management Practices for Timber Harvesting in Kentucky. University of Kentucky, Cooperative Extension Service. FOR-69. 71pp.

- 1999 Award for Excellence for Exceptional Programming in the area of Extension Publication or Series - sponsored by Southern Region Extension Forestry for; Stringer, J., and Perkins, C. 1998. Kentucky Forest Practice Guidelines of Water Quality Management. University of Kentucky, Cooperative Extension Service. FOR-67. 110pp.
- 1994 Governors Award for Environmental Excellence in Forestry - The Kentucky Master Logger Program. Kentucky Natural Resources and Environmental Protection Cabinet.
- 1985 Forestry Outstanding Service Award (under 35). Awarded by the Kentucky/Tennessee Society of American Foresters.
- 1981 Forester of the Year. Zi Sigma Pi. University of Kentucky Student Chapter.

Other Professional Recognition

- 2000. Featured in The Ag Magazine 2000. University of Kentucky, College of Agriculture 1(2): pp.2-5.
- 1997. Featured in the KIOSH section of Odyssey: the magazine of University of Kentucky Research. XV (1):28p.
- 1999. Featured in the Society of American Foresters Recruitment Video: Foresters: Growing Forests for Our Future..
- 1998. Featured in Business Monday section of the Herald-Leader Newspaper.

Professional Membership

- National Association of University Forest Resource Programs
- Society of American Foresters CF
- Association of Kentucky Extension Specialists
- Association of Natural Resource Extension Professionals
- Kentucky Forest Industries Association (Associate Member)
- Kentucky Woodland Owners Association
- National Woodland Owners Association
- Forest Landowners Association
- Forest Guild
- Forest Stewardship Council
- American Paulownia Association
- National Walnut Council
- Vegetation Management Association of Kentucky
- International Union of Forestry Research Organizations, Whole Plant and Canopy Processes Working Groups
- Gamma Sigma Delta
- Xi Sigma Pi
- Kentucky Woodworkers Association

Professional Service

Board, Appointments, Professional Elected Offices – National/Regional

- White Oak Initiative – Executive Committee Member and Founder
- National Association of University Forest Resource Programs – National Extension Chair, 2019
- Southern Region Extension Forestry – Executive Committee, 2018 to present
- Co-Director, Forest Health Research and Education Center, 2018 to present

FSC-US Controlled Wood Working Group – appointed member 2012 – 2013.
Hardwood Tree Improvement and Research Center (US Forest Service, Purdue University) 2005 to present.
U.S. Forest Stewardship Council National Family Forest Working Group – appointed member 2007-2009
Forest Landowners Association – board member 2005–2007
U.S. Forest Stewardship Council, National Technical Standards Committee – appointed member 2000-2005
Society of American Foresters – Daniel Boone National Forest Task Force – appointed chair 2003-2004
U.S. Forest Stewardship Council Appalachian Working Group – appointed chair 2002-2003
Society of American Foresters Kentucky/Tennessee Society – elected chair 2001
U.S. Forest Stewardship Council Lakes States and Central States Working Group - appointed member 1999 -2003
Biennial Southern Silvicultural Conference - invited steering committee 1997
Society of American Foresters (Kentucky/Tennessee) - elected secretary/treasurer 1997
National Walnut Council - silviculture committee 1990-1993, university research committee – chair 1994-1996

Board, Appointments, Professional Elected Offices – Kentucky

Kentucky Farm Bureau Federation – Forestry Committee – ex-officio member 2010
Kentucky Forestry Best Management Practices Board – elected chair 2006-2017
Kentucky Forestry Best Management Practices Board - governor appointment 1998 to present
Kentucky Agriculture Water Quality Authority/Silviculture Committee - member 1999 to present
Natural Resource Conservation Service – State Technical Committee – 2007 to present
Association of Kentucky Extension Specialists – elected chair 2003
Kentucky Forest Health Task Force – charter member 2005
Vegetation Management Association of Kentucky – advisory board member 1998 to present
Kentucky Woodland Owners Association – ex-officio board member 2005 to present
Kentucky Forest Stewardship Coordinating Committee – invited member 2000 to present
American Forest and Paper Association, Sustainable Forestry Initiative Kentucky State Implementation Committee - ex-officio 2000 to present
Kentucky Forest Industry Association – communication committee member 2000 to present
Kentucky Agricultural Water Quality Authority – technical advisor 1996-1999
Society of American Foresters East Kentucky Chapter – elected chair 1996
Kentucky Woodworkers Association – elected president 1987-1990

Reviewer

Forest Science
USDA Forest Service Northern Research Station
USDA Forest Service Southern Research Station
Northern Journal of Applied Forestry
Southern Journal of Applied Forestry
Physiologia Plantarum
Journal of Bioelectrics
Tree Physiology

International Journal of Surface Mining
USDA Nat. Res. Initiative Comp. Grants Program Forest/Rangeland/Crop/Aquatic Ecosystems
Program
Central Hardwood Forest Conference Proceedings

Administrative Assignments

University

Academic Area Advisory Committee for the Extension Title Series, 2012-2013

College

Appointment, Promotion and Tenure Advisory Committee, chair, 2015
Robinson Forest Technical Committee, chair, 2005 to present
Department of Forestry Chair search committee, 2009- 2010
Robinson Center for Appalachian Resource Sustainability Implementation and Development
Committee, 2009 to present
Natural Resources Planning Committee, member 2007-2008
Department of Forestry Chair search committee, 2002 - 2004
Extension Team Leader Goal 4 Government Performance Review Act, 2002-2003
Renewable Resource Extension Act (3-D) Reporting, 2001 to present
Barnhart Fund for Excellence, committee member 2001

Department

Interim Chair, Department of Forestry and Natural Resources, April 2017 to present
Forestry Extension Committee – Chair, 2001 to present
Faculty Search Committee 2014-2015 Chair, Extension Wildlife (extension)
Extension Associate Search Committee 2014-2015, Primary Forest Industry
Faculty Search Committee 2013 – Forest Landscape Ecologist (teaching/research)
Faculty Search Committee 2011 – Aquatic Ecologist (teaching/research)
Forestry Research Committee 2010 - Member
Faculty Search Committee 2010 - Chair, forest and natural resource management
(teaching/research)
Forestry Representative – Assistant to Interim Chair 2009-2010
Forestry Representative – National Association of University Forest Resource Programs 2009-
2010
Faculty Search Committee chair, Forest Hydrologist (teaching/research)
Faculty Search Committee chair, silviculture (teaching/research)
Faculty Search Committee chair, timber harvesting specialists (extension)
Search Committee member, Cooperative Extension wood products specialist
Search Committee member, Cooperative Extension staff assistant

Non-Academic and Community Service

Administrator, Caragua Baptist Seminary Inc. 501(c)(3) providing overseas missions support for
Seminario Batista Caragua, Caraguatatuba, Brazil. www.cbseminary.org, www.sbcaragua.org.
2013 to present.
Mentor for the Lexington Rescue Missions Life Renewal Program (now Nehemiah House at the

Lighthouse Ministries). 2000 to present.
Deacon and Deacon Chair, Gardenside Baptist Church, Lexington, KY. 1998 to present.
Director of Men's Ministries, Gardenside Baptist Church, Lexington, KY. 1995 to present.
Lexington/Fayette County Government: Public Works Avon Landfill and Tree Evaluation, 1998
Lexington/Fayette County Government: Parks and Recreation, Research for Removal of Invasive
Exotic Species from Raven Run Nature Sanctuary, 1996-1997
Lexington/Fayette County Government: Monitoring of Commercial Wood Composting Facilities
1994-1997
International Science Fair, Botany Judge, Louisville, Kentucky
Kentucky Forestry Forums, Moderator Regional Forums for the Kentucky Division of Forestry,
1995-1996

Jian Yang

CURRICULUM VITAE

JIAN YANG

Department of Forestry and Natural Resources
College of Agriculture, Food and Environment
University of Kentucky
T.P. Cooper Building (office: 202), Lexington, KY, 40546-0073
Phone: 859-257-5820; Fax: 859-323-1031
Email: jian.yang@uky.edu
Profile URL: <https://forestry.ca.uky.edu/jian-yang>
Google Scholar URL: <https://scholar.google.com/citations?user=IYImh08AAAAJ&hl=en>

EDUCATION

2005 Ph.D. in Forestry
University of Missouri, Columbia, MO, USA
2000 M.S. in Ecology
Institute of Botany, Chinese Academy of Sciences, Beijing, China
1997 B.S. in Geography
Shaanxi Normal University, Xi'an, China

ACADEMIC APPOINTMENTS

2014 – Present: Assistant Professor, Forest Landscape Ecology, Department of Forestry and Natural Resources, University of Kentucky
2015 – 2020: Adjunct Professor, Chinese Academy of Sciences
2010 – 2014: Senior Research Scientist, Principal Investigator, Chinese Academy of Sciences
2012 – 2012: Research Assistant Professor, University of Nevada-Reno
2008 – 2010: Postdoctoral Research Fellow, University of Nevada-Reno
2006 – 2008: Research Associate, University of Missouri-Columbia

RESEARCH INTERESTS

Landscape Ecology, Disturbance Ecology, Ecosystem Services
Ecological Modeling, Spatial Statistics, GIS and Remote Sensing

SUMMARY OF SCHOLAR METRICS

H-index: 25 (Google Scholar as of 06/06/2020)
Total citations: 2017 (289 in 2019)
Peer reviewed journal articles: 77
Peer reviewed journal articles since start of UK's position in October 2014: 39
Extramural funding to my program as PI or Co-I: \$2.43 million (\$425,935 since UK)

10 most cited articles (as of 02/14/2020)

	Citations	# in CV
<i>Forest Science</i> 53(1): 1-15 (2007)	177	75
<i>Global Change Biology</i> 18(6): 2041-2056 (2012)	161	56
<i>Remote Sensing of Environment</i> 119: 62-71 (2012)	138	57
<i>Ecological Applications</i> 18(5): 1212-1225 (2008)	73	72

<i>Global Change Biology</i> 19(11): 3502-3515 (2013)	69	52
<i>Global Ecology and Biogeography</i> 23(2): 144-155 (2014)	69	44
<i>Ecological Modeling</i> 180(1): 119-133 (2004)	66	77
<i>Scientific Reports</i> 4: 3819 (2014)	58	43
<i>Forest Ecology and Management</i> 307: 20-29 (2013)	58	50

Journal impact factors (JIF) and rankings of most frequently published journals

Journal	JIF	Ranking	# papers
<i>Landscape Ecology</i>	4.349	6/50 in Physical Geography	8
<i>Forest Ecology and Management</i>	3.126	6/67 in Forestry	5
<i>Science of the Total Environment</i>	5.589	27/251 in Environment Sci.	4
<i>Remote Sensing</i>	4.118	7/30 in Remote Sensing	3
<i>Global Change Biology</i>	8.880	6/165 in Ecology	3
<i>International Journal of Wildland Fire</i>	2.656	11/67 in Forestry	3

PUBLICATIONS

* indicates the corresponding author (also a senior author) when not the first author. Role explained in parenthesis if not the first author. Student or postdoc author is underlined. Student or postdoc author under my mentorship is underlined and indicated with the symbol §. JIF denotes journal's impact factor as of publication date.

Peer Reviewed Journal Articles (**Total to date: 77 – 39 since arriving at UK**)

1. Fang, L. §, Yang, J. *, Zhang, W., Zhang, W. and Yan, Q., 2019. Combining allometry and landsat-derived disturbance history to estimate tree biomass in subtropical planted forests. *Remote Sensing of Environment*, 235, p.111423. (JIF = 8.218) (**Helped write the paper and served as postdoc/visiting scholar mentor**)
2. Maigret, T.A., Cox, J.J., Yang, J. 2019. Persistent geophysical effects of mining threaten ridgetop biota of Appalachian forests. *Frontiers in Ecology and the Environment* 17(2): 85-91. (JIF = 10.935; **Cover Article**) (**Helped transform the student's class project to the paper, helped synthesize the results and write the paper**)
3. Bai, Y. §, Ochuodho, T., Yang, J. * 2019. Impact of land use and climate change on water-related ecosystem services in Kentucky, USA. *Ecological Indicators* 102: 51-64. (JIF = 4.49) (**Co-PI of the project that funded this research, oversaw the analyses, helped write the paper and served as postdoc mentor**)
4. Sena, K., Yang, J., Kohlbrand, A., Dreaden, T.J., Barton, C. 2019. Landscape variables influence *Phytophthora cinnamomi* distribution within a forested Kentucky watershed. *Forest Ecology and Management* 436: 39-44. (JIF = 3.126) (**Conducted landscape-scale analysis of the field data, helped synthesize the results and write the paper, served on the PhD committee**)

5. Bai, X.[§], Huang, Y., Ren, W., Coyne, M., Jacinthe, P., Tao, B., Hui, D., **Yang, J.**, Matocha, C. 2019. Responses of soil carbon sequestration to climate smart agriculture practices: A meta-analysis. *Global Change Biology* 25(8): 2591-2606 (JIF = 8.88) **(Helped write the paper and served as PhD advisor)**
6. Fang, L.[§], Crocker, E.V., **Yang, J.**, Yan, Y., Yang, Y., Liu, Z. 2019. Competition and burn severity determine post-fire sapling recovery in a nationally protected boreal forest of China: an analysis from very high resolution satellite imagery. *Remote Sensing* 11:603. (JIF = 4.118) **(Helped write the paper and served as postdoc/visiting scholar mentor)**
7. Kong, J.[§]; **Yang, J.***, Cai, W. 2019. Topography controls post-fire changes in soil properties in a Chinese boreal forest. *Science of the Total Environment* 651: 2662-2670. (JIF = 5.589) **(Designed the research, provided the funding for the fieldwork, helped write the paper and served as PhD advisor)**
8. Kong, J.[§], **Yang, J.***, Liu, B., Qi, L. 2019. Wildfire alters spatial patterns of available soil nitrogen and understory environments in a valley boreal larch forest. *Forests* 10(2): 95. (JIF = 2.116) **(Provided the funding for the fieldwork, helped write the paper and served as PhD advisor)**
9. Liu, B.[§], Chen, H.Y.H., **Yang, J.*** 2019. Linking understory species diversity, community-level traits and productivity in a Chinese boreal forest. *Journal of Vegetation Science* 30(2): 247-256. (JIF = 2.944) **(PI of the projects that funded this research, helped synthesize the analysis and write the paper, served as PhD advisor)**
10. Yang, Y.Z.[§], Cai, W.H.[§], **Yang, J.***, White, M., Lhotka, J.M., 2018. Dynamics of post-fire aboveground carbon in a chronosequence of Chinese boreal larch forests. *Journal of Geographical Research: Biogeosciences* 123(12): 3490-3506. (JIF = 3.48; **Cover Article**) **(PI of the projects that funded this research, oversaw the analyses, helped write the paper and served as PhD advisor)**
11. Thalken, M.M., Lacki, M.J., **Yang, J.** 2018. Landscape-scale distribution of tree roosts of the northern long-eared bat in Mammoth Cave National Park, USA. *Landscape Ecology* 33(7): 1103-1115 (JIF = 4.349) **(Conducted spatial analysis of the data, helped write the paper and served on the MS committee)**
12. Gurung, K.[§], **Yang, J.***, Fang, L.[§] 2018. Assessing ecosystem services from the forestry-based reclamation of surface mined areas in the north fork of the Kentucky River watershed. *Forests* 9(10): 652. (JIF = 2.116) **(Designed this research, oversaw the analyses, helped write the paper and served as MS advisor)**
13. Li, X.[§], Stainback, A., Barton, C., **Yang, J.** 2018. Valuing the environmental benefits from reforestation on reclaimed surface mines in Appalachia. *Journal of the*

American Society of Mining and Reclamation 7(1): 1-29. **(Helped write the paper, created the figure and served as postdoc mentor)**

14. Yu, L., Xu, Y., Xue, Y., Li, X., Cheng, Y., Liu, X., Porwal, A., Holden, E.J., **Yang, J.**, Gong, P., 2018. Monitoring surface mining belts using multiple remote sensing datasets: a global perspective. *Ore Geology Reviews* 101:675-687 (JIF: 3.387) **(Helped synthesize the results and write the paper)**
15. Cai, W.H.[§], Yang, Y.Z.[§], **Yang, J.***, He, H.S. 2018. Topographic variation in the climatic change response of a larch forest in Northeastern China. *Landscape Ecology* 33(11): 2013-2029. (JIF = 4.349) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
16. Cai, W.H.[§], Liu, Z.*[§], Yang, Y.Z.[§], **Yang, J.*** 2018. Does environment filtering or seed limitation determine post-fire forest recovery patterns in boreal larch forests? *Frontiers in Plant Science* 9: 1318. (JIF = 4.106) **(PI of the projects that funded this research, helped write the paper and served as PhD advisor)**
17. Bai, X.[§], **Yang, J.***, Tao, B., Ren, W. 2018. Spatio-temporal variations of soil active layer thickness in Chinese boreal forests from 2000 to 2015. *Remote Sensing* 10(8):1225. (JIF = 4.118) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
18. Kong, J.[§]; **Yang, J.***, Bai, E. 2018. Long-term effects of wildfire on available soil nutrient composition and stoichiometry in a Chinese boreal forest. *Science of the Total Environment* 642: 1353-1361. (JIF = 5.589) **(Helped design the research, provided the funding for the fieldwork, helped write the paper and served as PhD advisor)**
19. Fang, L.[§], **Yang, J.***, White, M., Liu, Z. 2018. Predicting potential fire severity using vegetation, topography and surface moisture availability in a Eurasian boreal forest landscape. *Forests* 9(3): 130. (JIF = 2.116) **(PI of the projects that supported the research, helped synthesize results and write the paper)**
20. Liu, B.[§], Chen, H.Y., **Yang, J.** 2018. Understory community assembly following wildfire in boreal forests: shift from stochasticity to competitive exclusion and environmental filtering. *Frontiers in Plant Science* 9:1854. (JIF = 4.106) **(PI of the projects that funded this research, helped write the paper and served as PhD advisor)**
21. Wang, J.[§], Zhao, F., **Yang, J.***, Li, X., 2017. Mining site reclamation planning based on land suitability analysis and ecosystem services evaluation: A case study in Liaoning province, China. *Sustainability* 9(6): 890. (JIF = 2.075) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**

22. Liu, B.[§], **Yang, J.***, Johnstone, J.F. 2017. Understory vascular plant community assembly in relation to time-since-fire and environmental variables in a Chinese boreal forest. *Journal of Mountain Science* 14(7): 1317-1328. (JIF = 1.135) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**

23. Yang, Y.Z.[§], Cai, W.H.[§], **Yang, J.*** 2017. Evaluation of MODIS land surface temperature data to estimate near-surface air temperature in Northeast China. *Remote Sensing* 9(5): 410. (JIF = 3.406) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**

24. Shifley, S.R., He, H.S., Lischke, H., Wang, W.J., Jin, W., Gustafson, E.J., Thompson, J.R., Thompson, F.R., Diak, W.D., **Yang, J.** 2017. The past and future of modeling forest dynamics: from growth and yield curves to forest landscape models. *Landscape Ecology* 32(7): 1307-1325. (JIF = 3.833) **(Helped write the paper)**

25. Contreras, M.A., Staats, W., **Yang, J.**, Parrott, D. 2017. Quantifying the accuracy of LiDAR-Derived DEM in deciduous eastern forests of the Cumberland plateau. *Journal of Geographic Information System* 9(3): 339-353. **(Helped write the paper)**

26. Qi, L., **Yang, J.*** 2017 Microbial community composition regulates SOC decomposition response to forest conversion in a Chinese temperate forest. *Ecological Research* 32(2): 163-172. (JIF = 1.531) **(Helped cultivate the research concept, synthesize results, and write the paper)**

27. Liu, Z., **Yang, J.**, Dwomoh, F. 2016. Mapping recent burned patches in Siberian larch forest using Landsat and MODIS data. *European Journal of Remote Sensing* 49(1), 861-887. (JIF = 1.533) **(Helped write the paper)**

28. Cai, W.H.[§], **Yang, J.*** 2016. High-severity fire reduces early successional boreal larch forest aboveground productivity by shifting stand density in north-eastern China. *International Journal of Wildland Fire* 25(8), 861-875. (JIF = 2.748) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**

29. Qi, L., **Yang, J.***, Yu, D., Dai, L. and Contreras, M., 2016. Responses of regeneration and species coexistence to single-tree selective logging for a temperate mixed forest in eastern Eurasia. *Annals of Forest Science* 73: 449-460. (JIF = 2.101) **(Helped cultivate the research idea, analyze the data, and write the paper)**

30. Liu, W.[§], **Yang, J.***, Sun, J. and Li, X., 2016. Species turnover of wetland vegetation in northeastern China: disentangling the relative effects of geographic distance, climate, and hydro-geomorphology. *Flora-Morphology, Distribution, Functional Ecology of Plants* 220: 1-7. (JIF = 1.125) **(Oversaw data analysis, helped write the paper and served as PhD advisor)**

31. Chu, H., Xiang, X., **Yang, J.**, Adams, J. M., Zhang, K., Li, Y., Shi, Y. 2016. Effects of slope aspects on soil bacterial and arbuscular fungal communities in a boreal forest in China. *Pedosphere* 26: 226-234. (JIF = 1.734) **(Helped develop original idea)**
32. Van Gunst, K. J., Weisberg, P. J., **Yang, J.**, Fan, Y. 2016. Do denser forests have greater risk of tree mortality: A remote sensing analysis of density-dependent forest mortality? *Forest Ecology and Management* 359: 19-32. (JIF = 3.064) **(Helped analyze the remote sensing data and helped write the paper)**
33. Zhao, F., Qi, L., Fang, L.[§], **Yang, J.*** 2016. Influencing factors of seed long-distance dispersal on a fragmented forest landscape on Changbai Mountains, China. *Chinese Geographical Science* 26(1): 68-77. (JIF = 1.154) **(PI of the project funded the project, designed the project, oversaw data analysis, and assisted in writing the paper)**
34. Xiang, X., Gibbons, S., **Yang, J.**, Kong, J., Sun, R., Chu, H. 2015. Arbuscular mycorrhizal fungal communities show low resistance and high resilience to wildfire disturbance. *Plant and Soil* 397: 347-356. (JIF = 2.969) **(Helped develop original idea)**
35. **Yang, J.**, Weisberg, P.J., Shinneman, D.J., Dilts, T.D., Earnst S.L., Scheller, R.M., 2015. Fire modulates climate change response of simulated aspen distribution across topoclimatic gradients in a semi-arid montane landscape. *Landscape Ecology* 30:1055-1073. (JIF = 3.657)
36. **Yang, J.**, Weisberg, P.J., Dilts, T. E., Loudermilk, E. L., Scheller, R. M., Stanton, A., Skinner, C. 2015. Predicting wildfire occurrence distribution with spatial point process models and its uncertainty assessment: a case study in the Lake Tahoe Basin, USA. *International Journal of Wildland Fire* 24:390-390. (JIF = 2.078)
37. Fang, L.[§], **Yang, J.***, Zu, J.[§], Li, G., Zhang, J. 2015. Quantifying influences and relative importance of fire weather, topography, and vegetation on fire size and fire severity in a Chinese boreal forest landscape. *Forest Ecology and Management* 356: 2-12. (JIF = 2.826) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
38. Kong, J.[§], **Yang, J.***, Chu, H., Xiang, X. 2015. Effects of wildfire and topography on soil nitrogen availability in a boreal larch forest of northeastern China. *International Journal of Wildland Fire* 24(3): 433-442. (JIF = 2.078) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
39. Wu, Z., He, H.S., **Yang, J.**, Liang, Y. 2015. Defining fire environment zones in the boreal forests of northeastern China. *Science of the Total Environment* 518: 106-116. (JIF = 3.976) **(Helped develop the original idea)**

40. Liu, Z., **Yang, J.***. 2014. Quantifying ecological drivers of ecosystem productivity of the early-successional boreal *Larix gmelinii* forest. *Ecosphere* 5(7): art84. (JIF = 2.255) **(PI of the projects that partly funded this research, helped formulate the research idea, synthesize results, and write the paper)**
41. Fang, L.[§], **Yang, J.*** 2014. Atmospheric effects on the performance and threshold extrapolation of multi-temporal Landsat derived dNBR for burn severity assessment. *International Journal of Applied Earth Observation and Geoinformation* 33:10-20. (JIF = 3.47) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
42. Zhao F., He H.S., Dai L., **Yang, J.*** 2014. Effects of human disturbances on Korean pine coverage and age structure at a landscape scale in Northeast China. *Ecological Engineering* 71: 375-379. (JIF = 2.58) **(Helped cultivate the research concept, synthesize results, and write the paper)**
43. Xiang, X., Shi, Y., **Yang, J.**, Kong, J.J.[§], Lin, X., Zhang, H., Zeng, J., Chu, H., 2014 Rapid recovery of soil bacterial communities after wildfire in a Chinese boreal forest. *Scientific Reports* 4: Art3829. (JIF = 5.578) **(Helped develop original idea and helped design the overall project)**
44. Zhang, Y., Yu, G., **Yang, J.**, Wimberly, M. C., Zhang, X., Tao, J., Jiang, Y., Zhu, J. 2014. Climate-driven global changes in carbon use efficiency. *Global Ecology and Biogeography* 23(2):144-155. (JIF = 6.531) **(Helped analyze the data and helped write the paper)**
45. Wu, Z., He, H.S., **Yang, J.**, Liu, Z., Liang, Y. 2014. Relative effects of climatic and local factors on fire occurrence in boreal forest landscapes of northeastern China. *Science of the Total Environment* 493: 472-480. (JIF = 4.099) **(Helped develop original idea and helped write the paper)**
46. Liang, Y., He, H.S., Wu, Z., **Yang, J.** 2014. Effects of environmental heterogeneity on predictions of tree species' abundance in response to climate warming. *Environmental Modelling & Software* 59:222-231. (JIF = 4.420) **(Helped write the paper)**
47. Loudermilk, E.L., Stanton, A., Scheller, R.M., Dilts, T.E., Weisberg, P.J., Skinner, C., **Yang, J.** 2014. Effectiveness of fuel treatments for mitigating wildfire risk and sequestering forest carbon: A case study in the Lake Tahoe Basin. *Forest Ecology and Management* 323:114-125. (JIF = 2.660) **(Helped develop original idea and helped in model parameterization)**
48. Zhao, F., **Yang, J.***, He, H.S., Dai, L. 2013. Effects of natural and human-assisted regeneration on landscape dynamics in a Korean pine forest in northeast China. *PLoS ONE* 8(12): e82414. (JIF = 3.534) **(Helped cultivate the research concept, synthesize results, and write the paper)**

49. Wang, W.J., He, H.S., Spetich, M.A., Shifley, S.R., Thompson III, F.R., Larsen, D.R., Fraser, J.S., **Yang, J.** 2013. A large-scale forest landscape model incorporating multi-scale processes and utilizing forest inventory data. *Ecosphere* 4(9): art106. (JIF = 2.595) **(Helped develop the model)**
50. Cai, W.[§], **Yang, J.***, Liu, Z., Hu, Y., Weisberg, P.J. 2013. Post-fire tree recruitment of a boreal larch forest in Northeast China. *Forest Ecology and Management* 307: 20-29. (JIF = 2.667) **(PI of the projects that funded this research, oversaw the analysis, helped write the paper and served as PhD advisor)**
51. Liu, Z., **Yang, J.***, He, H. 2013. Identifying the threshold of dominant controls on fire spread in a boreal forest landscape of Northeast China. *PLoS ONE* 8(1): e55618. (JIF = 3.534) **(Helped to formulate the research concept, synthesize results, and write the paper)**
52. Loudermilk, E.L., Scheller, R.M., Weisberg, P.J., **Yang, J.**, Dilts, T.E., Karam, S.L., Skinner, C. 2013. Carbon dynamics in the future forest: The importance of long-term successional legacy and climate-fire interactions. *Global Change Biology* 19(11): 3502-3515. (JIF = 8.224) **(Helped develop original idea and helped in model parameterization)**
53. Hanberry B.B., **Yang, J.**, He, H.S. 2013. Evaluating functions to describe point patterns. *Community Ecology* 14(1): 1-7. (JIF = 1.220) **(Helped develop the model)**
54. Liu, Z., **Yang, J.**, He, H. 2012. Studying the effects of fuel treatment based on burn probability on a boreal forest landscape. *Journal of Environmental Management* 115:42-52. (JIF = 3.057) **(Helped develop original idea and helped write the paper)**
55. Liang, Y., He, H.S., **Yang, J.**, Wu, Z.W. 2012. Coupling ecosystem and landscape models to study the effects of plot number and location on prediction of forest landscape change. *Landscape Ecology* 27: 1031-1044. (JIF = 2.897) **(Helped develop original idea and helped analyze the data)**
56. Liu, Z., **Yang, J.***, Chang, Y., Weisberg, P.J., He, H.S. 2012. Spatial patterns and drivers of fire occurrence and its future trend under climate change in a boreal forest of Northeast China. *Global Change Biology* 18: 2041-2056. (JIF = 6.910) **(PI of the projects that funded this research, oversaw the analysis, and helped write the paper)**
57. **Yang, J.**, Weisberg, P.J., Bristow, N. 2012. Landsat remote sensing approaches for monitoring long-term tree cover dynamics in semi-arid woodlands: comparison of vegetation indices and spectral mixture analysis. *Remote Sensing of Environment* 119: 62-71. (JIF = 5.103)

58. Hanberry, B.B., **Yang, J.**, Kabrick, J.M., He, H.S. 2012. Adjusting forest density estimates for surveyor bias in historical tree surveys. *The American Midland Naturalist* 167(2): 285-306. (JIF = 0.667) (**Helped analyze the data**)
59. Liu, Z., He, H.S., **Yang, J.** 2012. Emulating natural fire effects using harvesting in an eastern boreal forest landscape of Northeast China. *Journal of Vegetation Science* 23: 782-795. (JIF = 2.818) (**Helped develop original idea and helped write the paper**)
60. Dilts, T.E., Weisberg, P.J., **Yang, J.**, Olson, T.J., Turner, P.L., Condon, L.A. 2012. Using historical general land office survey notes to quantify the effects of irrigated agriculture on land cover change in an arid lands watershed. *Annals of the Association of American Geographers* 102(3): 531-548. (JIF = 2.110) (**Helped analyze the data**)
61. **Yang, J.**, He, H.S., Shifley, S.S., Thompson, F.R., Zhang, Y. 2011. An innovative computer design for modeling forest landscape change in very large spatial extents with fine resolutions. *Ecological Modelling* 222 (15): 2623-2630. (JIF = 2.326)
62. **Yang, J.**, Dilts, T.E., Turner, P.L., Condon, L.A., and Weisberg, P.J. 2011. Longitudinal- and transverse-scale environmental influences on riparian vegetation across multiple levels of ecological organization. *Landscape Ecology* 26: 381-395. (JIF = 3.061)
63. Zhao, F., **Yang, J.***, Liu, Z., Dai, L., He, H.S. 2011. Balancing multiple objectives of a classification-based forest management in Changbai Mountains, China. *Environmental Management* 48(6):1136-1147. (JIF = 1.744) (**Helped cultivate the research concept, synthesize results, and write the paper**)
64. He, H.S., **Yang, J.**, Shifley S.R., Thompson F.R., 2011. Challenges of forest landscape modeling - Simulating large landscapes and validating results. *Landscape and Urban Planning* 100 (4): 400-402. (JIF = 2.660) (**Helped write the paper**)
65. Zhang, Y., He, H.S., Shifley, S.R., **Yang, J.**, Palik, B.J. 2011. Evaluating the effects of alternative forest management plans under various physiographic settings using historical records as a reference. *Journal of Environmental Management* 92 (6): 1618-1627. (JIF = 2.173) (**Helped analyze the data**)
66. Hanberry, B.B., Fraver, S., He, H. S., **Yang, J.**, Dey, D.C., Palik, B.J. 2011. Spatial pattern corrections and sample sizes for forest density estimates in historical tree surveys. *Landscape Ecology* 26: 59-68. (JIF = 3.061) (**Helped analyze the data**)
67. Dilts, T.E., **Yang, J.**, Weisberg, P. J. 2010. The Landscape Similarity Toolbox: new tools for optimizing the location of control sites in experimental studies. *Ecography* 33: 1097-1101. (JIF = 4.417) (**Helped develop the model**)
68. Wang Y.Q., Zhou Y., **Yang J.**, He H.S., Zhu Z., Ohlen D. 2009. Simulation of short-term post-fire vegetation recovery by integration of LANDFIRE data products,

DNBR data and LANDIS modeling. *Annals of GIS* 15:47-59. **(Helped analyze the data)**

69. Zhang Y., He, H.S., Dijak, W.D., **Yang, J.**, Shifley, S.R., Palik, B.J. 2009. Integration of satellite imagery and forest inventory in mapping dominant and associated species at a regional scale. *Environmental Management* 44:312-323. (JIF = 1.408) **(Helped analyze the data)**
70. Miranda B.R., Sturtevant, B.R., **Yang, J.**, Gustafson, E.J. 2009. Comparing fire spread algorithms using equivalence testing and neutral landscape models. *Landscape Ecology* 24:587-598. (JIF = 3.293) **(Helped develop the model)**
71. Sturtevant B.R., Miranda, B.R., **Yang, J.**, He, H.S., Gustafson, E.J. 2009. Studying fire mitigation strategies in multi-ownership landscapes: balancing the management of fire-dependent ecosystems and fire risk. *Ecosystems* 12: 445-461. (JIF = 3.586) **(Helped develop the model)**
72. **Yang, J.**, He, H.S., Shifley, S.R. 2008. Spatial controls of occurrence and spread of wildfires in the Missouri Ozark Highlands. *Ecological Applications* 18(5): 1212-1225. (IF = 3.672)
73. **Yang, J.**, He, H.S., Sturtevant, B.R., Miranda, B.R., Gustafson, E.J. 2008. Comparing effects of fire modeling methods on simulated fire patterns and succession: a case study in the Missouri Ozarks. *Canadian Journal of Forest Research* 38:1290-1302. (IF = 1.434)
74. Zhang Y, He, H.S., **Yang, J.** 2008. The wildland-urban interface dynamics in the southeastern U.S. from 1990 to 2000. *Landscape and Urban Planning* 85:155-162. (IF = 2.004) **(Helped analyze the data)**
75. **Yang, J.**, He, H.S., Shifley, S.R., Gustafson, E.J. 2007. Spatial patterns of modern period human-caused fire occurrence in the Missouri Ozark Highlands. *Forest Science* 53:1-15. (IF = 1.258)
76. Syphard, A.D., **Yang, J.**, Franklin, J., He, H.S., Keeley, J.E. 2007. Calibrating forest Landscape model to simulate high fire frequency in Mediterranean-type shrublands. *Environmental Modelling & Software* 22:1641-1653. (IF = 2.099) **(Helped develop the model)**
77. **Yang, J.**, He, H.S., Gustafson, E.J. 2004. A hierarchical fire frequency model to simulate temporal patterns of fire regimes in LANDIS. *Ecological Modelling* 180:119-133. (IF = 1.652)

Peer Reviewed Non-English Publications (3 in total)

1. **Yang, J.**, Kong, J-J., Liu, B. 2013. A review of effects of fire disturbance on understory vegetation in boreal coniferous forest. *Chinese Journal of Plant Ecology* 37 (5): 474-480. (In Chinese with English abstract).
2. Cai, W-H., **Yang, J.***, Liu, Z-H., Hu, Y-M., Liu, S-J., Jing, G-Z., Zhao, Z-F. 2012. Controls of post-fire tree recruitment in Great Xing'an Mountains in Heilongjiang Province. *Acta Ecologica Sinica* 32(11): 3303-3312. (In Chinese with English abstract).
3. **Yang, J.**, Chi, H., Mo, M. 2002. Vegetation classification of multispectral remotely sensed data using neural network. *Chinese Journal of Plant Ecology* 26: 185-188. (In Chinese with English abstract)

Translated Books (1 in total)

1. Forman, R.T.T. 2014. *Urban Ecology: Science of Cities*. Cambridge University Press. [Chinese edition translated by Wu, J., Liu, Z., Huang, G., Huang, L., Liu, Y., Shen, W., **Yang, J.**, Zhao, Y., Zhou, W., Zhu, W. 2017, Higher Education Press, Beijing. 579 pp.]

Conference Proceedings (1 in total)

1. Shifley, S.R., **Yang, J.**, He, H.S. 2009. Modeling fire and other disturbance processes using LANDIS. In: Hutchinson, Todd F., ed. Proceedings of the 3rd fire in eastern oak forests conference; 2008 May 20-22; Carbondale, IL. Gen. Tech. Rep. NRS-P-46. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station: 107-115.

Technical Reports (1 in total)

1. He, H.S., Li, W., Sturtevant, B.R., **Yang, J.**, Shang, B.Z., Gustafson, E.J., Mladenoff, D.J. 2005. LANDIS, a spatially explicit model of forest landscape disturbance, management, and succession — LANDIS 4.0 User's Guide. Gen. Tech. Rep. USDA Forest Service, North Central Research Station NC-263.

GRANTS

Intramural Grants Awarded (1 project; \$60,000)

1. Ochuodho, T., **Yang, J.** 2017. Assessing economic values of forest ecosystem services in Kentucky. CAFE Associate Dean for Research and Department of FNR. **\$60,000**. 2017-2018. (Co-PI)

Extramural Grants Awarded Since UK (4 projects; \$425,935)

1. **Yang, J.** 2019. LiDAR-derived forest stand characteristics for use in ruffed grouse habitat suitability modeling. Commonwealth of Kentucky, Kentucky Department of Fish and Wildlife Resources. **\$33,000**. 2019-2020. (PI)
2. Li, X., Yu, L., Liu, X., **Yang, J.**, He, H., Liang, Y., Fang, L. 2017. High spatial resolution simulation of global land use change in a coupled human-natural framework and its ecological applications. Ministry of Science and Technology of

China. **\$2,047,000**. (RMB 13,000,000) 2017-2021. (Co-PI) (Section of funding designated for Yang's research is **\$217,000**).

3. Stringer, J.W., Lhotka, J.M., Contreras, M.A., Lacki, M., **Yang, J.** 2017. Silvicultural treatments and effects on vertical and horizontal stand structure in forested ecosystems of eastern Kentucky: Response of Myotis bats during the staging and maternity seasons. Imperiled Bat Conservation Fund (IBCF), U.S. Fish and Wildlife Service, Kentucky Ecological Services Field Station. **\$150,935**. 2017 – 2019. (Co-Investigator)
4. **Yang, J.** 2016. Estimating Kentucky's forest inventory at the county level with improved precision by combining FIA data with remote sensing, GIS, and small-area-estimation techniques. USDA Forest Service, Southern Research Station (SRS), Forest Inventory Analysis (FIA) Unit. **\$25,000**. 2016-2017. (PI)

Extramural Grants Awarded Prior to UK (7 projects; \$2,005,109)

1. **Yang, J.** 2013. Excellent Young Scientist Award. National Natural Science Foundation of China (NSFC). **\$160,712** (RMB 1,000,000). 2013-2015. (PI)
2. **Yang, J.** 2013. Influence of wildfire on understory vegetation's structure, function, and dynamics in a Chinese boreal forest. National Natural Science Foundation of China (NSFC). **\$134,998** (RMB 840,000). 2013-2016. (PI)
3. **Yang, J.** 2011. Responses of fire disturbance and forest NPP to climate change in Great Xing'an Mountains. National Natural Science Foundation of China (NSFC). **\$64,285** (RMB 400,000). 2011-2013. (PI)
4. **Yang, J.** 2010. Fire disturbance and forest landscape dynamics in the northeastern China under a global change context. Hundred Talent Program, Chinese Academy of Sciences (CAS). **\$433,922** (RMB 2,700,000). 2010-2014. (PI)
5. Scheller, R. M., Weisberg, P. J., **Yang, J.**, Stanton, A., Skinner, C. N. 2010. Management options for reducing wildfire risk and maximizing carbon storage under future climate changes, ignition patterns, and forest treatments. Southern Nevada Public Land Management Act (SNPLMA) **\$309,140**. (Co-PI)
6. Earnst, S., Shinneman, D., Weisberg, P. J., **Yang, J.** 2009. Quantifying vulnerability of quaking aspen woodlands and associated bird communities to global climate change in the northern Great Basin. National Climate Change and Wildlife Science Center (NCCWSC), USGS. **\$857,652**. (Co-PI)
7. He, H. S., **Yang, J.** 2007. Making R&D Fire and Fuel Simulation Technology Accessible to Regional National Forests. US Forest Service. **\$44,400**. (Co-PI)

Research Proposals Under Consideration

1. **Yang, J.** GCR: Collaborative Research: Artificial Intelligence Enabled Studies of Natural and Anthropogenic Impacts on Forest Landscape. National Science Foundation. \$643,225 (PI)
2. Renfro, M.W., Hoagg, J.B., Jacobs, N., Sama, M.P., Smith, S.W., **Yang, J.** Guzman, M., Bailey, S., Brehm, C., Sampson, S. NRT: Intelligent Sensing for Data-Driven Understanding of Complex Systems. National Science Foundation. \$3,000,000 (Senior Personnel)
3. Lhotka, J.M., Croker, E.V., Knapp, B.O., Nelso, C.D., Ochuodho, T.O., et al. Advancement of Resilient and Sustainable Forestry Systems for the Eastern US Oak Resource. USDA-AFRI SAS Program. **\$9,970,240.** (Co-Investigator)

Research Proposals Submitted Not Funded

1. **Yang, J.** 2019. CAREER: Fine-Grain Spatial Heterogeneity of Tree Demography Mediated by Microclimate and its Critical Role in Maintaining Ecological Resilience of Appalachian Forests. National Science Foundation. **\$737,657.** (Submitted in July 2019)
2. Ochuodho, T. Contreras, M., **Yang, J.** 2018. Integrated Geospatial-Economic Fiber Supply and Management Decision Support System (IGFS-DSS). International Paper. **\$105,469.** (Submitted in April 2019)
3. Rignall, K., Taylor, B., Ochuodho, T., **Yang, J.**, Shade, L. 2019. CNH2-L: Surface mining impacts at the mature phase of coal extraction: how social and environmental systems interact to produce extractive resource dependency. National Science Foundation. **\$1,376,142.** (Submitted in February 2019)
4. Rignall, K., Taylor, B., Ochuodho, T., **Yang, J.**, Shade, L. 2018. CNH-L: Coupled natural-human systems in changing energy landscapes: Assessing the role of land in economic and energy transition in Central Appalachia. National Science Foundation. **\$1,598,165.** (Submitted in January 2018)
5. Stuart, W., **Yang, J.**, Contreras, M., Conner, T. 2017. Identifying landowners for forest management and restoration potential through extension outreach programs: A pilot study using geospatial information and support systems in the SOAR region of eastern Kentucky. State and Private Forestry FY2018 Southern Region LSR Competitive Program Proposal. **\$158,460.** (Submitted in October 2017)
6. **Yang, J.** Dreaden, T., Randolph, K., 2016. Spatio-temporal analysis of laurel wilt disease spread in the eastern U.S. USDA Special Technology Development Program. **\$59,039** 2017-2018, PI (Submitted in September 2016)
7. Barton, C.D., Crocker, E., Dreaden, T., Sena, K.L., **Yang, J.** 2016. Tracking a tree-killer: Characterizing current and predicting future distribution of *Phytophthora*

cinnamomi in Appalachia. National Science Foundation, Division of Environmental Biology. (Submitted in April 2016)

8. **Yang, J.**, Abbott, A., Rieske-Kinney, L., Liang, L., Lhotka, J., Conrad, A., 2016. Patterns and driving mechanisms of oak species spring phenology and its cascading effects on host-herbivory relationship using an integrated landscape genomics approach (Proposal no. 17-RC01-037). Department of Defense, Strategic Environmental Research and Development Program (SERDP). **\$1,957,575** (Submitted in January 2016)
9. **Yang, J.**, Ren, W., Li, X., Clark, C., 2015. Assessing Robinson Forest ecosystem services and sustainable management. University of Kentucky's Sustainability Challenge Grant Program. **\$24,457** (Submitted in October 2015)
10. McDonough, J. M., Bailey, S. C., Jacobs, N., Saito, K., **Yang, J.**, 2015. Fire brands and fire whirls in large-scale wildland fires. National Science Foundation, Interdisciplinary Research in Hazards and Disasters. **\$1,350,000** (Submitted in January 2015)

TEACHING

Course Taught

1. *FOR 330 GIS and Spatial Analysis* (3 credits)

Spring 2019, Enrollment: 12

Overall Value of the Course (4.4/5.0) (College Mean = 4.30)

Teaching Quality (4.6/5.0) (College Mean = 4.50)

Spring 2018, Enrollment: 18

Overall Value of the Course (4.4/5.0) (College Mean = 4.20)

Teaching Quality (4.4/5.0) (College Mean = 4.40)

Spring 2017, Enrollment: 19

Overall Value of the Course (4.6/5.0) (College Mean = 4.27)

Teaching Quality (4.2/5.0) (College Mean = 4.41)

Fall 2016, Enrollment: 14

Overall Value of the Course (3.4/5.0) (College Mean = 4.15)

Teaching Quality (3.4/5.0) (College Mean = 4.24)

Fall 2015, Enrollment: 10

Overall Value of the Course (NA due to low number of responses)

Teaching Quality (NA due to low number of responses)

2. *FOR/GEO 570 Landscape Ecology for Natural Resources* (3 credits)

Fall 2019, Enrollment: 5

Overall Value of the Course (4.8/5.0) (College Mean = 4.30)

Teaching Quality (5.0/5.0) (College Mean = 4.30)

Fall 2018, Enrollment: 8

Overall Value of the Course (4.7/5.0) (College Mean = 4.30)

Teaching Quality (4.8/5.0) (College Mean = 4.40)

Fall 2017, Enrollment: 7

Overall Value of the Course (5.0/5.0)

Teaching Quality (4.9/5.0)

Spring 2016, Enrollment: 6

Overall Value of the Course (3.5/4.0) (College Mean = 3.35)

Teaching Quality (3.8/4.0) (College Mean = 3.48)

3. *FOR 200 Basics of Geospatial Technology* (3 credits, co-teaching)

Fall 2019, Enrollment: 27

Overall Value of the Course (4.7/5.0) (College Mean = 4.30)

Teaching Quality (4.3/5.0) (College Mean = 4.30)

Fall 2018, Enrollment: 20

Overall Value of the Course (5.0/5.0) (College Mean = 4.30)

Teaching Quality (3.5/5.0) (College Mean = 4.40)

4. *FOR 770-003 Spatial Data Analysis for Natural Resources with R* (1 credit)

Fall 2019, Enrollment: 1

Overall Value of the Course (NA due to low number of enrollment)

Teaching Quality (NA due to low number of enrollment)

Fall 2016, Enrollment: 10

Overall Value of the Course (NA due to low number of responses)

Teaching Quality (NA due to low number of responses)

5. *FOR770-002 Forest Disturbance and Resilience in Appalachia* (1 credit)

Fall 2018, Enrollment: 2

Overall Value of the Course (NA due to low number of enrollment)

Teaching Quality (NA due to low number of enrollment)

6. *FOR 602 Renewable Natural Resources in a Global Perspective* (3 credits)

Fall 2019, Guest instructor responsible for one 50-minutes class sessions

Fall 2017, Guest instructor responsible for two 50-minutes class sessions

Fall 2015, Guest instructor responsible for two 50-minutes class sessions

ADVISING

Undergraduate Student Advising

1. William Wittenbraker. July 2019 – Present

2. Brandon Foley. Summer research internship. University of Kentucky. May 2018 – August 2018
3. Michael Ammerman. Summer research internship. University of Kentucky. May 2017 – July 2017.
4. Daniel Eaton. Research Internship. University of Kentucky. February 2019 – June 2019.
5. Alex Murphie. Research Internship. University of Kentucky. March 2019 – June 2019.

Graduate Student Advising

Current Graduate Students (2)

1. Kate Love, MS in Forestry (August 2018 - present), University of Kentucky, Co-Advisor with Dr. John Lhotka. Thesis Title: *Assessing the climate water balance model's ability to predict soil moisture variability and species distribution at a landscape scale.*
2. Rachel Landham, MS in Forestry (August 2015 – present), University of Kentucky, Co-Advisor with Dr. John Lhotka. Thesis Title: *Effects of thinning regimes on genetic variation of white oak (Quercus alba L.) in eastern hardwood forests.*

Completed Graduate Students (11)

1. Benjamin Rasp, MS in Forestry (August 2016 – May 2019), University of Kentucky, Co-Advisor with Dr. Marco Contreras. Thesis Title: *Spatial and temporal patterns of invasive plant species in response to timber harvesting in a mesophytic forest of Eastern Kentucky.*
2. Douglas Potter, MS in Forestry (January 2017 – May 2019), University of Kentucky, Co-Advisor with Dr. Chris Barton. Thesis Title: *A GIS model for apiary site selection based on proximity to nectar sources utilized in varietal honey production on former mine sites in Appalachia.*
3. Kumari Gurung, MS in Forestry (January 2016 – August 2018), University of Kentucky. *Assessing ecosystem services from the forestry-based reclamation of surface mined areas in the north fork of the Kentucky river watershed.*
4. Xiongxiong Bai, PhD in Ecology (August 2014 – June 2018), Chinese Academy of Sciences. *Recent changes of soil active layer in a Eurasian boreal permafrost system: a remote sensing approach.*
5. Bo Liu, PhD in Ecology (August 2013 – December 2017), Chinese Academy of Sciences. *Understory vegetation's productivity and diversity relationship in Chinese boreal larch forests.*
6. Jiali Wang, PhD in Ecology (August 2014 – June 2017), Chinese Academy of Sciences. *Mining reclamation planning based on landscape ecology and ecosystem service evaluation.*
7. Yuanzheng Yang, PhD in Ecology (August 2013 – June 2017), Chinese Academy of Sciences, Advisor. *Post-fire carbon dynamics in Chinese boreal forests.*
8. Weili Liu, PhD in Ecology (August 2012 – June 2016), Chinese Academy of Sciences. *Stable isotope analysis of wildfire effects on ecosystem nitrogen cycling in a Chinese boreal larch forest.*

9. Jianjian Kong, PhD in Ecology (August 2011 – December 2014), Chinese Academy of Sciences. *Soil nutrients dynamics in response to wildfire disturbance in the boreal forest of northeastern China.*
10. Lei Fang, PhD in Ecology (August 2011 – June 2014), Chinese Academy of Sciences. *Remote sensing assessment of forest fire disturbance regime of northeastern China.*
11. Wenhua Cai, PhD in Ecology (August 2010 – June 2014), Chinese Academy of Sciences. *Post-fire tree recruitment in Eurasian boreal larch forests.*

Graduate Student Committee (9) (* graduated)

1. Jeeyen Koo, PhD, Martin School of Public Policy and Administration
2. Adnan Darwish Ahmad, PhD, Department of Mechanical Engineering
3. Pier Roby*, PhD, Department of Animal Sciences
4. Kenton Sena*, PhD, Integrated Plant and Soil Sciences Program
5. Zhijie Yang, PhD, Integrated Plant and Soil Sciences Program
6. Tingting Tang*, PhD, Department of Mechanical Engineering
7. Dakota Coomes*, MS, Department of Biology
8. Marissa Thalken*, MS, Department of Forestry and Natural Resources
9. Stratton Hatfield*, MS, Department of Forestry and Natural Resources

Student Awards

1. Kate Love - UK Appalachian Center Eller & Billings Student Research Award 2019
2. Kate Love - CAFE Department of Forestry and Natural Resource Sciences Graduate Student Conference Travel Award 2019

Post-doctoral Scholars/Visiting Scholars Advising

1. Yang Bai, University of Kentucky, Post-doctoral Scholar (September 2017 – September 2018)
2. Xiaoshu Li, University of Kentucky, Post-doctoral Scholar (October 2016 – September 2017)
3. Wuxin Wan, Visiting Scholar (January 2018 – January 2019)
4. Lei Fang, Visiting Scholar (September 2017 – September 2018)
5. Jinting Guo, Visiting Scholar (September 2017 – March 2018)
6. Wenhua Cai, Visiting Scholar (September 2015 – December 2015)

HONORS and AWARDS

1. 2015 Excellent Assessment of Hundred Talent Program Final Review, Chinese Academy of Sciences
2. 2013 Outstanding Young Scientist Award, Ecological Society of China
3. 2012 Excellent Young Scientist Award, National Natural Science Foundation of China
4. 2010 Hundred Talent Program Award, Chinese Academy of Sciences
5. 2005 NASA-MSU Professional Career Enhancement Award

PRESENTATIONS

Recent Presentations at Conferences

1. **Yang, J.** 2019. Surface mining and harvest disturbances interact with landform to shape spatial distribution of invasive exotic plant species in a central Appalachian forest landscape. Oral presentation at the 2019 SAF (Society of American Foresters) National Convention. November 1, 2019. Louisville, KY, United States.
2. **Yang, J.,** Foley, B., Danks, Z., Wethington, K., Sprandel, G. 2019. Use of the statewide Kentucky LiDAR point cloud data for characterizing ruffed grouse habitats. Oral presentation at the 2019 KAMP (Kentucky Association of Mapping Professionals) Annual Conference. October 11, 2019. Louisville, KY, United States.
3. Love, K., **Yang, J.** 2019. The impacts of GIS flow accumulation algorithms on spatial autocorrelation structures of the topographic wetness index. Poster presentation at the 2019 ESA (Ecological Society of America) Annual Meeting. August 13, 2019. Louisville, KY, United States.
4. **Yang, J.,** Ochuodho, T.O., Bai, Y. 2019. Forest ecosystem services assessment in Kentucky. Oral presentation at the 2019 Annual Meeting of the Forest Health Center, Department of Forestry and Natural Resources, University of Kentucky. April 23, 2019. Lexington, KY, United States.
5. **Yang, J.,** Rasp, B. 2019. In-situ and ex-situ disturbances interact with landform to determine landscape distribution of invasive exotic plant species in a temperate deciduous forest of eastern US. Oral presentation at the 2019 US-IALE (International Association of Landscape Ecology - US Chapter) Annual Meeting. April 10, 2019. Fort Collins, CO, United States.
6. Love, K., **Yang, J.** 2019 Topographic Wetness Index Algorithms Yield Different Spatial Autocorrelation Structures. Poster presentation at the 2019 US-IALE (International Association of Landscape Ecology - US Chapter) Annual Meeting. April 10, 2019. Fort Collins, CO, United States.
7. **Yang, J.,** Weisberg, P.J., Dilts, T. 2016. Integration of climatic water deficit and fine-scale physiography in process-based modeling of forest landscape resilience to large-scale tree mortality. Poster presentation at the 2016 AGU (American Geophysical Union) Annual Meeting. December 12, 2016.
8. **Yang, J.,** Wang, J., Zhao, F. 2015. Mine reclamation schematic design based on ecosystem services and landscape ecology: A case study in Liaoning province, China. Oral presentation at the 9th IALE (International Association of Landscape Ecology) World Congress. July 7, 2015. Portland, Oregon, USA.
9. **Yang, J.,** Weisberg, P., Dilts, T. 2015. Integration of climatic water deficit and fine-scale physiography in process-based modeling of forest landscape dynamics. Oral presentation at the Symposium *Modeling Forest Landscapes in a Changing Climate: Theory and Application* of the 9th IALE (International Association of Landscape Ecology) World Congress. July 8, 2015. Portland, Oregon, USA.
10. **Yang, J.** Wenhua Cai, Zhihua Liu. 2014. Response of Wildfire to Climate Change and its Implications in Vegetation Dynamics in Northeast Chinese Boreal Larch Forest. Oral presentation at the Session of Forests, Fire and Climate Change Dynamics in the 24th International Union of Forest Research Organizations (IUFRO) World Congress. October 7, 2014. Salt Lake City, USA.
11. **Yang, J.,** Z. Liu, and W-H. Cai. 2012. How climate change affects fire disturbance in Chinese boreal forests and its implications in tree recruitment and succession. The 4th International EcoSummit. September 30, 2012. Columbus, OH.

12. **Yang, J.**, P. J. Weisberg, T. Dilts, L. Loudermilk, R. Scheller, A. Stanton, and C. Skinner. 2012. Predict future spatial distribution of fire occurrence in the Lake Tahoe Basin in response to climate change. Tahoe Science Consortium - Manager's Workshop. May 22, 2012. Incline Village, NV.
13. **Yang, J.**, Z. Liu, and W-H. Cai. 2012. Response of fire disturbance to climate change, and its implications in succession and management of Chinese boreal forests. The 27th US-IALE Annual Symposium. April 8, 2012. Newport, RI.

Invited Seminars and Lectures

1. **Yang, J.** 2019. Linking disturbance research in landscape ecology to earth system science. Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. June 14, 2019. Beijing, China (*Invited*).
2. **Yang, J.** 2018. Disturbance drives forest landscape structure and dynamics. Northeast Forestry University. June 15, 2018. Harbin, China (*Invited*).
3. **Yang, J.** 2018. Linking disturbance research in landscape ecology to earth system science. Tsinghua University. June 13, 2018. Beijing, China (*Invited*).
4. **Yang, J.** 2016. Department of Earth Science, Indiana University-Purdue University Indianapolis. September 26, 2016. Indianapolis, IN, USA (*Invited*).
5. **Yang, J.** 2015. USDA Forest Service Eastern Forest Environmental Threat Assessment Center (EFETAC). August 17, 2015. Asheville, NC, USA (*Invited*).
6. **Yang, J.** 2015. USDA Forest Service Southern Research Station (SRS) Forest Inventory and Analysis (FIA) Research Work Unit. August 6, 2015. Knoxville, TN, USA (*Invited*).
7. **Yang, J.** 2015. Joint Sino-US Workshop on Forest, Soil, and Landscape Modeling. June 22, 2015. Northeastern China Normal University, Changchun, China (*Invited*).
8. **Yang, J.** 2014. Research Salon of Principals, Models, and Practices of Landscape Ecology. Nanjing University. August 5, 2014. Nanjing, China (*Invited*).
9. **Yang, J.** 2014. International Workshop of Geospatial Technology and its Applications in Environment Management. Osaka University and Hokkaido University, March 24, 2014. Sapporo, Japan (*Invited*).
10. **Yang, J.** 2013. Progress of forest landscape models. Peking University. October 15, 2013. Beijing, China (*Invited*).
11. **Yang, J.** 2013. Disturbance drives forest ecosystem and landscape dynamics in northern Chinese forests. University of Saskatchewan. October 3, 2013. Saskatoon, Canada (*Invited*).
12. **Yang, J.** 2013. Keynote speech for the 7th conference of International Association of Landscape Ecology-China Chapter. September 15, 2013. Changsha, China (*Invited*).

SERVICES

Journal Editing

1. Guest Editor of Special Issue “Applications of Remote Sensing and GIS Integration in Natural Resources and Environmental Science” in the journal *Remote Sensing* (January 2019 – April 2020)
2. Frontier in Plant Science, Topic Editor (June 2017 – July 2018)
3. PLoS ONE, Member of Editorial Board (2014 - Present)
4. Journal of Arid Land, Member of Editorial Board (2014 – 2016)

Manuscript Referee (Total Since UK: 28)

Recent Review services for the manuscripts submitted to *Landscape Ecology* (2020.02; 2019.09), *Ecological Applications* (2019.08), *Ecological Indicators* (2019.07; 2019.04), *Fire Ecology* (2019.05), *Forest Ecology and Management* (2019.04), *Land Degradation & Development* (2019.03), *Land Use Policy* (2018.06), *Landscape Ecology* (2018.03; 2016.09; 2015.09), *Global Change Biology* (2017.11; 2016.12), *Forest Ecology and Management* (2018.01), *Nature Climate Change* (2017.01), *International Journal of Applied Earth Observation and Geoinformation* (2018.01), *Journal of Plant Ecology* (2017.03; 2016.01), *Environmental Pollution* (2016.11), *Ecosystems* (2016.10; 2015.08), *International Journal of Remote Sensing* (2016.02; 2015.07), *Biogeosciences* (2015.10), *Scientific Reports* (2015.08; 2015.02), *Canadian Journal of Forest Research* (2015.05), *Frontiers in Ecology and the Environment* (2014.12), *Journal of Mountain Science* (2014.12), *Journal of Soils and Sediments* (2014.09), *Ecological Application* (2014.08), *Science of the Total Environment* (2014.07)

Grant Proposal Reviewer

1. USDA-AFRI (Agriculture and Food Research Initiative) Physiology of Agricultural Plants Program, Ad-hoc proposal review (October 2018)
2. Natural Sciences and Engineering Research Council of Canada, NSERC Strategic Project, Ad-hoc proposal review (June 2017)
3. National Natural Science Foundation of China, Ad-hoc proposal review (March 2017)
4. US DoD (Department of Defense), SERDP (Strategic Environmental Research and Development Program), Ad-hoc proposal review (April 2015)
5. National Natural Science Foundation of China, Ad-hoc proposal review (March 2015)

Panel Review

1. USDA-NIFA Panel Review for the Higher Education Challenge (HEC) Program (September 2019)
2. National Natural Science Foundation of China, Foundational Program Panel Review (July 2018)
3. National Natural Science Foundation of China, Large-scale Program Panel Review (July 2016)

Workshop Organizer

1. International Congress of Ecology, Symposium *Wildfire Ecology and Life Evolution: from Ancient Time to Present*, Beijing, China (August 20, 2017 - August 25, 2017).
2. World Congress of the 9th IALE (International Association of Landscape Ecology), Symposium *Integration of Landscape Ecology into Ecosystem Service Assessment for Sustainability of Coupled Human-Environment Systems*, Portland, Oregon, USA (July 7, 2015).

Professional Affiliations

- American Association for the Advancement of Science (AAAS)

- International Association of Landscape Ecology (IALE)
- Southern Appalachian Biodiversity Consortium (SBAC)
- Kentucky Association of Mapping Professionals (KAMP)

Outreach Activities

1. *Radio interview* about Landscape Ecology in the program “*From the Woods Kentucky*” on WRFL 88.1 FM Lexington (Air date: January 28, 2019)
2. *Guest Speaker* at the public field trip organized by Daniel Boone National Forest for the South Redbird Integrated Resource Management Area, Covering topics of Oak Recruitment Issues and Landscape Management. (May 2, 2017)

University Committee Service

1. Chair, Department Research Committee (UK FNR, 2017 – 2018)
2. Chair, Department Seminar Committee (UK FNR, 2015 – 2017)
3. Committee Member, Department Seminar Committee (UK FNR, 2017 – 2019)
4. Committee Member, Department Graduate Committee (UK FNR, 2015 – 2017)

*Zoom links provided by
email to participants from
Tricia Coakley*

Date: March 15, 2021	
Day 1: Monday	
10:00 – 10:30 am ET	Committee test Zoom meeting
10:30 – 11:30 am ET	Meeting with College of Agriculture, Food and Environment Dean Cox and Associate Dean for Faculty Resources, Planning and Assessment Dr. Brian Lee. Committee receives their charge from Dean Cox and Dr. Lee reviews rules and procedures.
11:30am – 12:30pm ET	Break
12:30 – 2:30 pm ET	Meet Dr. Jeff Stringer, department chair, and other department members for discussion and virtual facilities tour.
2:30 – 3:00 pm ET	Committee discussion of next steps

Date: March 16, 2021	
Day 2: Tuesday	
8:00 – 9:00 am ET	Meeting with departmental staff, departmental faculty committee member recused. Meeting attendees include administrative, instruction, extension, and research staff.
9:00 – 10:00 am ET	Meeting with Extension agents, departmental faculty committee member recused.
10:00 10:30 am ET	Break
10:30 – 11:30 am ET	Meeting with departmental faculty.
11:30am – 5:00pm ET	Break until evening session with stakeholders
5:00 – 6:00 pm ET	Meeting with stakeholders and industry partners.

Date:	March 17, 2021
Day 3:	Wednesday

12:00 – 1:00 pm ET	Meeting with departmental undergraduate students. Departmental faculty committee member recused.
1:00 – 2:00 pm ET	Meeting with departmental alumni from all programs
2:00 – 2:30 pm ET	Break
2:30 – 3:30 pm ET	Meeting with departmental graduate students and post-doctoral scholars, departmental faculty committee member recused.
3:30 – 4:30 pm ET	Committee discussion of next steps in process (continuation using prior Zoom link)

Date:	March 18, 2021
Day 4:	Thursday

9:00 – 10:00 am ET	Meeting with Associate Deans. Dr. Bob Houtz, Research Dr. Carmen Agouridis, Instruction Dr. Laura Stephenson, Extension Dr. Orlando Chambers, Administration (facilities) Dr. Brian Lee, Faculty Resources, Planning and Assessment Note- additional college administrators may be invited to attend if available at the committee's discretion.
10:00 – 11:00 am ET	Break
11:00am – 3:30pm ET	Committee working session. This meeting is at the committee's discretion and may be shortened as needed.
3:30 – 4:30 pm ET	Committee presents preliminary findings to Dean Cox and college leadership.

Review Committee

Dr. Vanessa Jackson	Committee Chair and Chair of UK Retailing and Tourism Management
Dr. Don Hodges	Forestry, Wildlife and Fisheries Dept. Head, University of Tennessee
Dr. Robert Wagner	Forestry Dept. Head, Purdue University
Dr. Ann Kingsolver	Faculty, UK Dept. of Anthropology
Brandon Howard	Director, Kentucky Division of Forestry
Susan Fox	UK Cooperative Extension, Lyon County ANR Agent
Dr. Laura Lhotka	Academic Coordinator, UK Dept. of Forestry and Natural Resources
Dr. John Lhotka	Faculty, UK Dept. of Forestry and Natural Resources
Nate Hooven	Graduate Student, UK Dept. of Forestry and Natural Resources

Support for Review
Committee
Dr. Brian Lee
Tricia Coakley

Office Phone #
859-218-7991
859-257-7041

Cell #
859-489-9913



Department of Forestry and Natural Resources

2021 Periodic Program Review

Review Committee remote site visit March 15–18, 2021

Conducted via Video Zoom Meetings

Review Committee Report Submitted on May 14, 2021 by Dr. Vanessa Jackson:

Dr. Vanessa Jackson	Committee Chair and Chair of Department of Retailing and Tourism Management
Dr. Don Hodges	Forestry, Wildlife and Fisheries Department Head, University of Tennessee
Dr. Robert Wagner	Forestry Dept. Head, Purdue University
Dr. Ann Kingsolver	Faculty, UK Dept. of Anthropology
Brandon Howard	Director, Kentucky Division of Forestry
Susan Fox	UK Cooperative Extension, Lyon County ANR Agent
Dr. Laura Lhotka	Academic Coordinator, UK Department of Forestry and Natural Resources
Dr. John Lhotka	Faculty, UK Department of Forestry and Natural Resources
Nate Hooven	Graduate Student, UK Department of Forestry and Natural Resources

Executive Summary

The department is in a very strong position across each of the mission areas, instruction, research, and extension. Listening sessions revealed that faculty, staff, students, and stakeholders are very proud of the department's exceptional work, and see many of its activities as benchmark examples for other units to follow—especially among Extension programs and practices. The department has support from an engaged stakeholder group, many of whom are alumni of the academic programs, and they desire additional opportunities to support the department going forward. Key challenges identified include outdated facilities; inadequate faculty, staff, and Teaching Assistant positions to support current and future goals; and human diversity limitations of the field. It is clear that the department is aware of these challenges and is working to address them. The following recommendations were developed as a committee following the reading of the department's self-study, listening sessions with interested parties over four days, and extensive committee discussion. These recommendations collectively can provide aid to the department's efforts and support enhancements over the six-year cycle of Periodic Program Review.

Brief description of external review committee process

- Prior to the review, all committee members received and studied the departmental Self-study Report submitted by Dr. Jeff Stringer (Forestry and Natural Resources Department Chair).
- The committee received their charge from Dean Cox, and Dr. Lee, Associate Dean for Faculty Resources, Planning and Assessment, conducted listening sessions via Zoom video conference with departmental faculty, staff, students, as well as partners and stakeholders including broad input from industry March 15 – 18.
- On Thursday, March 18, the committee held virtual working sessions and drafted talking points about the program's strengths, challenges, and potential committee recommendations.
- Immediately following the working sessions, the committee presented draft recommendations to Dean Cox and CAFE leadership.
- The Committee Chair, Dr. Vanessa Jackson, worked with the committee to prepare this report, which all members of the committee have approved.

Please note: The review committee has indicated where our recommendations address goals of the College of Agriculture, Food and Environment Strategic Plan 2015 – 2020 in the text following the recommendation (e.g., Goal #).

Goal 1: Prepare highly motivated and culturally adaptive graduates who are competitive in a global economy and support societal values.

Goal 2: Build and nurture relationships with the people of the Commonwealth and across the world.

Goal 3: Recruit, develop, and retain exceptional faculty and staff who are leaders in expanding knowledge to improve the quality of life and sustainability of the human and physical environment.

Goal 4: Show CAFE commitment to diversity and inclusion to attract and retain students, staff, and faculty, and provide a culturally aware environment for successful engagement in a global society.

Goal 5: Produce innovative solutions through multidisciplinary collaborations.

Goal 6: Build state-of-the-art facilities equipped with cutting-edge technology.

We begin the following report with our recommendations for the department to act on over the coming six-year program review cycle. We then provide a bullet list of departmental strengths, challenges, and opportunities the committee observed through review of the departmental self-study and listening sessions with each group, which were considered for development of our recommendations.

Committee Recommendations

1. Continue building on DE&I efforts in the department and take advantage of new initiatives created by the college, as well as new constituencies that have been reached with online programming during the pandemic. (CAFE 2015 – 2020 Goals #2 & 4)
2. Work with college leadership to develop and coordinate a structured platform such as an advisory board for stakeholder engagement in philanthropy, student instruction/engagements/curriculum review, and public education regarding the significance and economic impact of the forest sector for the Commonwealth. (CAFE 2015 – 2020 Goal #2)
3. Consider additional opportunities for staff professional development and recognition, and review MJRs annually and update periodically to ensure the actual activities of staff positions are adequately reflected. If not reflected in MJRs, acknowledge overload activities in the unscored general supervisor comments section of annual performance evaluations. (CAFE 2015 – 2020 Goal #3)
4. Ensure that short handedness does not prevent faculty and staff from accessing regular professional development opportunities such as sabbaticals or adjustment of DOEs and JAQs to learn new skills / publish (could lead to retention issues). (CAFE 2015 – 2020 Goal #3)
5. Formalize instructional opportunities for graduate students as Ph.D. program develops to help with career paths. (CAFE 2015 – 2020 Goal #1)
6. Develop a formal mentoring process for faculty in the department; drawing on college and university resources as appropriate. (CAFE 2015 – 2020 Goal #3)

7. Identify and secure funding for additional graduate assistantships and research technician lines in support of the departmental mission. (CAFE 2015 – 2020 Goal #3)
8. Collaborate with college and university administrations, legislators, and stakeholders to address the critical need for new facilities to meet the current and future missions of the department, college, university, and the Commonwealth. (CAFE 2015 – 2020 Goal #6)
9. Consider options to address needs created by the loss of motor pool (e.g., leasing). The loss of faculty and staff time addressing the issue is a real cost issue.
10. Formalize and communicate a plan with enough details to address the crisis of faculty lines and succession planning, which threatens SAF accreditation core competencies and the department’s education, research, and extension programs. (CAFE 2015 – 2020 Goal #3)

Note that numbers listed above are provided to aid communication about the recommendations and do not imply order nor ranked importance.

Facilities

Strengths

- Ongoing upgrades to TP Cooper Building promise to improve the student, faculty, and staff experience. Upgrade of windows throughout TP Cooper building along with air conditioning / heat in classrooms and conference room constitute a promising trend in facilities improvement that needs to continue.
- Student lounge in TP Cooper Building is helpful but small.
- Unique contributions of Robinson Forest, RCARS, and the Wood Utilization Center and their staffing for undergraduate instruction, research, continuing education, etc.
 - Strong Internet/Wi-Fi at remote location with excellent classroom facilities.
 - Facilities for overnight stays for visiting scientists, students, graduate students, and technicians.
 - Collaboration with The Nature Conservancy to explore carbon credit and income opportunities for Robinson Forest.

Challenges

- Inferior conditions with TP Cooper Building hinders recruitment of students and faculty, as well as procurement of modern laboratory equipment requiring reliable climate control.
- Underutilization of Dimock building due to its age and infrastructure issues.
- Lack of sufficient lab and storage space for specimen collections negatively affecting instruction of lab-based courses, and insufficiency of teaching collections.
- Reliance on laboratories with precision equipment in other departments to meet analytical needs, often with low priority for FNR access.

Opportunities

- Strong support from alumni and stakeholders for fund-raising and political support. Increase endowment for Robinson Forest operating expenses through potential carbon credit funding. Consider any funds raised from carbon credits should contribute directly to FNR programming rather than being diverted to other uses.

Instruction

Strengths

- Listening sessions clarified the department's high quality of instruction and in particular:
 - Strong relationships exist between an engaged industry stakeholder group with campus faculty and staff, providing an array of opportunities for student engagement in real-world activities appreciated by all constituencies.
 - Employers indicated that students graduating from the program are well-prepared for first jobs because of their direct experience.
 - Bringing in industry and government representatives provides a good perspective of opportunities after students receive their degree.
 - Experiential learning provides hands-on training and team building required for the forestry profession.
 - Real-world collaboration with organizations and industry.
 - Strong employment record for students.
 - Fire Cats, Forestry and Wildlife, SAF accreditation provide networking and additional training.
 - RCARS provides hands-on training in woodworking and lumbering.
 - Strong feedback from students on quality of instruction, consistent and clear advising, positive relationships with faculty and staff, welcoming environment, and rigor of curriculum.
 - Good student-faculty ratio.
 - Graduate students appreciate the FNR 601-Research Methods in Forestry course, which provides valuable assistance and feedback on the selection and design of graduate research projects.
 - Staff, research assistants, and extension associates contribute technical expertise to instruction.
 - Great service-centered faculty who will go out of their way to help in any way possible.
 - Faculty and staff create a sense of community and family. A huge strength of the undergraduate curriculum in the core areas of dendrology, ecology, silviculture, and harvesting systems.
 - Students feel the staff and faculty make the very best use of classrooms and equipment that they have - "staff are outstanding."
 - Advising:
 - Faculty do a great job of enabling students to navigate the curriculum flexibly, given the limited number of faculty to offer required courses.
 - Advising at the undergraduate and graduate levels is excellent.
 - There is an open-door policy with administration.

- Undergraduate and Graduate Students feel academic program(s) is laid out very clearly on website.
- Current and impending strengths for recruiting new students and supporting career outcomes including a user-friendly website, forthcoming \$5M endowment for scholarship support, and engagements for students in field-focused instruction vital for career preparation and is appreciated by stakeholders.
 - Career outcomes
 - Use of Robinson Forest for field-focused undergraduate and graduate instruction is vital for career preparation.
 - Recruitment
 - Committed \$5,000,000 endowment for scholarships upon the death of the benefactor at 4% return, \$200K per year
 - Website for enrollment is great, easy to reference.
- FNR faculty support of NRES instruction is a strength, and the relationship has been clarified by MOU to improve transparency and communication.

Challenges

- Concern over current and anticipated instruction capacity limitations resulting from recent and pending faculty retirements, budget cuts, minimal TA positions, and constraints on time commitments of staff who also have teaching responsibilities. This is a growing concern for quality of instruction and recruitment success because it is critical to program accreditation as well.
 - Loss of 1.5 Faculty FTEs due to COVID-related budget cuts; shrinking faculty stretched thin. This also reduced the breadth of faculty expertise, which will have short- and long-term impacts on effectiveness and productivity relating to teaching, research, and extension.
 - Priority area mentioned in the Self Study (pg 8) - *“Due to hiring freezes and budget cuts during the pandemic, we have lost funding for 1.5 positions, resulting in the functional loss of two faculty members, one in research/teaching and one in extension. Filling these faculty lines is critical to the instruction, research, and extension needs of the forestry sector of Kentucky.”*
 - Retirement of three or four faculty in next 3-5 years creates a critical juncture for faculty. Picking up more courses will be challenging and most are serving in administrative roles of some kind. There is concern that this will lead to decreased research activity.
 - Staff who teach courses are also retiring, creating ‘invisible’ lost teaching capacity that will compound the overall capacity issue and will need to be addressed.
 - Competitive salaries – concern for recruitment/retention.
 - Concern for funding staying in place / uncertainty of funding model affects curricular planning.

- Limited graduate assistantships available to support both MS program and newly established PhD program.
 - Priority area mentioned in the Self-Study (pg 8) - *“The number of teaching assistants (TAs) has been reduced. We need to increase the number of TAs to cover instructional needs adequately.”*
 - Concerns over sustaining historic FNR commitment to NRES due to faculty/staff loss (past or future) due to budget support for faculty and staff lines.
 - Staff teaching FOR courses that are required for accreditation is a possible future concern.
 - Loss of remote sensing expertise in department with the departure of a faculty member a few years ago.
 - Concern about loss of positions and shift of teaching loads in the future having negative effects on research and work/life.
- Instruction quality is challenged by insufficient physical resources including classrooms and teaching labs, as well as field transportation, specimen collections, and laboratory equipment.
 - Insufficient teaching collections and labs for taxonomy and other wildlife biology courses.
 - Lack of a dedicated teaching lab requires faculty to use all-purpose rooms for labs, and there is not sufficient storage space for hands-on lab materials in the all-purpose rooms. These rooms require faculty to set-up equipment and take it down after each class meeting. Poor lab facilities for learning to use new updated equipment result in students only learning skills second-hand when tasks are subbed out to other labs on campus.
 - Recruitment limitations stemming from facilities. Adequate space, but poor quality or the ability to have it dedicated to a use, embarrassing for potential students and parents.
 - Poor climate control in buildings
 - Lack plant and animal collections
 - Poor wildlife teaching laboratory spaces
 - Loss of motor pool has been a problem, but as Enterprise stabilizes campus operations, the situation needs to improve in order to be of value.
 - Forest health not covered as well as it should be (based on student feedback) in curriculum.
 - Limited opportunity for experiential learning during COVID-19 pandemic.

Opportunities

- There is room for improvement around communication and coordination to keep graduate students, undergraduate students, and faculty informed—and enhance inclusion of underrepresented faculty, staff, and students.
 - Improved communication between graduate students and faculty on important meetings.

- Strengthen relationship with underrepresented populations by building a sense of belonging – this includes students welcoming more diverse faculty and perspectives (DEI training and broad curricular inclusion of diverse perspectives is badly needed, especially for undergraduates – reconsider how UK Core requirements are being met in this regard)
- Students would like to learn about forestry outside of Kentucky to strengthen their education – more regional collaborations/exchanges/field trips?
- There is a need for retaining of faculty lines in order to create the opportunity for strengthening graduate and undergraduate quality of instruction and recruitment success and is critical to program accreditation as well as curriculum rigor.
 - If faculty lines retained/obtained after retirement, opportunity to recruit more diverse faculty which would support overall DEI plan and on-going efforts.
 - Consider nutrition education collaboration between FNR and DHN specific to forestry products in support of SNAP-Ed grants. Examples would include the nutritional value of hazelnuts, pawpaws, and pecans.
 - Look for more ways to build recurring funding for graduate and Ph.D. student support into assistantships (e.g., in MOUs with interdisciplinary programs, large training grants with community engagement components).
- Enhancement of student participation in organizations and trainings before and after graduation can continue their learning and career building networks to be fully competitive.
 - Encourage graduates to stay involved in SAF even after graduation. Students are not recognizing the value of this networking system. They do not realize that there is more to it than journal and dues.
 - Diversity training for undergraduates is very much needed.
 - Provide soft skills improvements including oral and written communication skills – alumni and stakeholders have said communication skills and technologies are vital to successful career progression.
- Infusion of diversity equity and inclusion into curriculum that uses SAF resources.
- Address the need for entry-level job skills for students starting new jobs (e.g. use of a chain saw, safely operate/drive an ATV, four-wheel drive vehicle in off road settings).
- Enhance students’ understanding of what is unique about them that they can contribute to a new employer.
- Courses such as Quantitative Ecology.
- Field trips outside of KY on occasion to strengthen the understanding of other forest types.
- Provide opportunities for students to participate in environmental policy document creation, such as NEPA (legislative requirements and reporting) - take advantage of alumni offer to help with this “real world” instruction by virtual visits to classes. Topics and documents recommended include:
 - NEPA, ESA, and environmental impact documents
 - Natural resources law
 - Conflict resolution and communication
 - Role playing with landowners re: conflict

Research

Strengths

- Strong research programs that are field based, valued by industry stakeholders and government agencies, which provide applied experience for students.
 - Strong field-based research programs already in place
 - Strong collaborations with industry, sharing of data collected with state and regionally including water data from a system of weirs and from Mesonet sites.
 - Researchers work well with state and federal agencies, industry.
 - Uses practical approaches to reflect the real world conditions and needs.
 - Researchers have autonomy in determining their research initiatives.

Challenges

- Aging to obsolete infrastructure has an increasingly negative impact on research opportunities and efficiency of research operations.
 - Age of labs and equipment make it difficult to hire faculty and conduct research in ‘high tech’ areas of this field.
 - Specifically, vents and hoods are not used following failed lab inspections making that safe to be used
 - Poor to non-functional climate control makes it virtually impossible to support upgraded equipment.
- There are challenges for prioritizing faculty research efforts given the constraints of overall faculty size. Faculty indicated need for improved mentoring processes to better understand expectations. Research prioritization is further challenged by the loss of funding for a critical technician position.
 - Concern that teaching/administrative workload takes away from research responsibilities, potentially affecting future promotion and tenure outcomes.
 - Faculty need a more formal mentoring process, guidelines for research required for tenure and promotion to Associate and Professor at the *departmental* level.
 - Atrophy of technical skills, new and refining old skills, with heavy demands on time.
 - Priority area mentioned in the Self-Study (pg 8) - *“In the funding loss, we also lost half of a research technician position. There is an overall shortage of technicians in the department. Increasing the number of research technicians is critical for the maintenance and growth of our research enterprise.”*

Opportunities/Recommendations

- Build on and market field-based research opportunities for new faculty and doctoral students (with Robinson Forest, RCARS, and Extension) – will be important to define and strengthen shared research focus during that transition to new faculty/Ph.D. training.
- Implement formal mentoring on how to protect research time as other demands grow. Integrate research with instruction and engagement, being explicit about research productivity expectations for professional advancement.

Extension/Outreach

Strengths

- Extension exhibits exceptional utilization and leveraging of available resources and partnerships.
 - Extension is engaged with forestry and natural resource stakeholders in Kentucky and the region.
 - Excellent collaboration between extension staff and faculty.
 - Nationally award-winning forestry education program that punches way above their weight class relative to size of program (and within the college, according to stakeholders outside UK).
 - Innovative use of technology/Zoom prior to and strengthened under COVID – Extension to be celebrated for ability to “turn on a dime” to meet public needs during the pandemic.
 - RCARS is a tremendous asset.
 - Extension Agents appreciated the Tree Health Certificate and Master Naturalist Trainings. Both of these can be used for career ladder applications.
- Relationship between extension, staff, faculty, and department administration is excellent and enables work that is well-respected in the Commonwealth, the region, and across the U.S.
 - Extension faculty are appreciative of Extension staff support.
 - Extension agents said FNR Extension faculty/staff were “tremendous” and modeled how UK departments should work with extension agents and community members (“meet the kids where they are”). Social media resources “phenomenal.”
 - Extension programming made available through FNR during the COVID-19 pandemic brought in new, diverse constituencies that can continue to broaden FNR’s relevance across the Commonwealth.
 - Extension faculty and staff bring their connections with stakeholders and Extension work to the classroom.
 - Strong and independent extension staff, highly dedicated and enthusiastic.
 - Staff indicated good support from leadership (chair and Dean Cox) when needed. Verbal support good, but tangible involving money is less so.
 - Department is very engaged in well-respected and heavily utilized outreach programs such as the White Oak Initiative, Beam Spirits Institute, Forest Health Research and Education Center, maple syrup initiative.
 - Significant adult continuing education out of the Wood Utilization Center.
 - Very strong support from county Extension staff for department and department chair (Stringer).

Challenges

- Professional development and career opportunities lack balance with job responsibilities across faculty and staff Extension specialists.
 - Need for streamlining of extension reporting process.
 - Agent participation in strong row crop and traditional agriculture counties, less familiar with forestry.

- Lack of forestry background in extension agents.
- Keeping popular pandemic online programming going while returning to in-person activity – will need to find a balance (overstretched).
- Life circumstances make driving long distances to trainings hard to manage, but continuing education is desired.
- Extension budgets and time required to obtain a vehicle have been particularly hard-hit by dissolution of the college motor pool.
- Balancing work and family life.
- Limited forestry backgrounds by extension staff in counties – need more extension foresters, perhaps at the regional (multi-county) level.
- Staff recognition career ladder availability could/should be enhanced.
- Staff sometimes teaching, but this is not in their MJRs.
- Extension reporting and other reporting load very high – can this be streamlined?
- No mentoring committees for promotion process – should this be made more formal?
- Associate professor mentoring and path to professor needs to be clarified.

Opportunities

- Consider training, reward systems, and the collaboration between administration, Extension agents, and faculty to broaden opportunities related to professional development and career opportunities.
 - Consider diversity training on how to understand who your clients are and what their needs would be.
 - Consider training Extension agents about forestry.
 - Expand Extension activities to larger audiences with experience gained with COVID programming (on-line delivery) as well as new audiences.
 - Consider providing higher-ed opportunities to agents broken up into weekends or other manageable forms of delivery for those with children, etc.
 - Utilize pandemic-created programming in hybrid model going forward – support agents with media they could incorporate into county programming (urban forestry, master naturalist programs are popular).
 - Learn from extension agents who have created programs reaching diverse audiences (tree seminars for public workers, urban citizen scientists) and broadening programming support across the state for more diverse constituencies, including recruitment and training of future extension agents.
 - Add regional Extension forestry agents to strengthen capacity for county agents without forestry expertise to expand the forestry Extension presence across the state, including urban forestry expertise.
 - Create a video for high-school students sharing what former attendees of the Summer Forestry Leadership Institute have ended up doing as careers.
 - Survey extension agents to find out what they would like prioritized concerning online/in-person support post-pandemic.
 - Opportunities for leveraging from enthusiastic stakeholders / alumni
 - Some minor funding from stakeholders in collaborations with FNR now, but not the kind of support received from agriculture industry. Are there opportunities for greater financial support from wood products industry?

- When questioned, stakeholders do not engage in seeking political support from state legislature or federal delegation to support FNR, but indicated interest. Is there an opportunity for more political philanthropy from the forest products sector for new faculty positions or support for a new building?

Administration

Strengths

- Departmental leadership has fostered strong teamwork and a welcoming atmosphere across the department, with increasing attention to diversity, and is praised for being able to pivot to meet challenges like the pandemic excellently.
- Departmental leadership has worked to address challenges raised in last review – e.g., MOU with NRES, enhancements to the classroom building, looking toward long-term financial sustainability for Robinson Forest and RCARS (establishing carbon offset agreement with The Nature Conservancy).
- Departmental leadership has supported pivot of Extension staff and faculty during pandemic, for example, through “From the Woods Today” and other vital programming that reaches a much broader and more diverse constituency than before pandemic.
- Department members work well as a team at all levels--staff feel supported by current administration, good verbal recognition.
- Staff strongly support experiential education within and beyond the university.
- The welcoming atmosphere in the department is acknowledged and appreciated by students.
- Increasing representation of students with diverse backgrounds (underrepresented minorities 13.6% of undergraduates in the fall of 2020; female student enrollment has grown from 11.5% in 2014 to 31.8% in the fall of 2020; 11 veterans participated in the program fall of 2019; underrepresented minorities made up 31% of master's students, fall 2019).

Challenges

- Field-based instruction offered by department highly valued by stakeholders, but is not always visible to, or recognized, by the university and is under-resourced – particularly in terms of investments in facilities and faculty, graduate assistantships, and staffing.
 - Forestry department is relatively young, instituted in 1972, compared with other land grant universities.
 - There is concern that upper administration does not see how much field-based instruction is done by the department, and its value.
- Limited faculty available for critical administrative positions.
- Growing number of constituencies (now Ph.D. students) served by limited faculty and staff, who already expressed difficulty with maintaining work/life balance in the prior review.

- Career ladder or system for monetary rewards for increasing years in position and/or significant addition of responsibilities for staff assistants; it is hard to advance without leaving UK.
- Loss of full-time biometrician research technician staff position.
- MJRs do not reflect activities/hours staff are actually working (including formal instruction).
- The staff seize on new opportunities and work to get things done. However, this leads to work continually being added and other responsibilities are not removed. Staff stretched too thin is a long-term problem.
- Loss of university Motor Pool is a major logistical challenge.
- Upgrade in computers and technology. Technology has outgrown available computers, and requires constant new training/skills development for which there is no time.

Opportunities

- Integrate and recognize activities of faculty/staff/students/public constituents further in research, teaching, and engagement through intentional succession planning and matching descriptions of positions with actual activity.
- Build opportunities for technology enhancement while working (e.g., media produced from continuing education sessions).
- Recognition of staff's hard work in multiple ways.
- Career ladder or system for support of individual staff career goals and/or significant addition of responsibilities for staff.
- Revise MJRs to reflect actual staff activities and expertise (including instruction) or ensure adequate overload pay and acknowledgment in staff evaluations of instructional skills development for a path to argue for higher-paid positions (matching what they actually do).
- Revision of MJRs that increase responsibilities without implementation of a revised system of advancement/career growth may only exacerbate the issue. These two items need to be addressed together.
- Consider Special Title Series faculty positions for some current staff positions – this provides a way to recognize instruction but build in other roles staff occupy.
- Similar to staff MJRs, review annually and periodically update faculty DOEs to be more aligned with what they are actually doing so they can be evaluated/promoted based on those activities needed and recognized by the department.
- Address how to promote the department and what it provides to the community.

UK Program Review Implementation Plan

This required form is described as Appendix A in AR II-I.0.6.

College/Unit: Forestry and Natural Resources Department Date: September 29, 2021

Recommendation/ Suggestion	Source I/E/H*	Accept / Reject*	Unit Response (resulting goal or objective)	Actions (including needed resources)	Time Line
<p>1. Continue building on DE&I efforts in the department and take advantage of new initiatives created by the college, as well as new constituencies that have been reached with online programming during the pandemic. (CAFE 2015 – 2020 Goals #2 & 4)</p>	E	A	<p>To build an undergraduate student body that understands, appreciates, and recognizes the importance of diversity, equity and inclusion with the capacity to personally and professionally address these issues as part of their responsibility to better society and the forestry profession.</p>	<p>Development and implementation of an Undergraduate DEI plan that provides a structured approach to provide awareness and education on these issues throughout the undergraduate degree program. The plan will:</p> <ul style="list-style-type: none"> - require DEI instruction to be infused in specific courses for both incoming and upper-level students, - DEI resources provided to all instructors and advisors in the Department with the expectation of integrating into courses and advising. 	<p>Plan development 2021-22 academic year and implementation in 2022-22</p>
<p>2. Work with college leadership to develop and coordinate a structured platform such as an advisory board for stakeholder engagement in philanthropy, student instruction/engagements/curriculum review, and public education regarding the</p>	E	A	<p>To have our critical stakeholders and partners engaged with the department using their expertise and perspective to improve our philanthropic efforts and provide thoughtful and valued input across our mission areas.</p>	<p>Develop a stakeholder/partner structure that provides for assessment, evaluation and input for:</p> <ol style="list-style-type: none"> 1. development and deployment, in collaboration with CAFE Development Office of a philanthropic plan to build department capacity 2. strengthening instruction to provide society ready graduates 3. marketing the importance of the 	<p>Plan development 2022 and implementation in 2023</p>

<p>significance and economic impact of the forest sector for the Commonwealth. (CAFE 2015 – 2020 Goal #2)</p>				<p>forest sector to Kentucky.</p>	
<p>3. Consider additional opportunities for staff professional development and recognition, and review MJRs annually and update periodically to ensure the actual activities of staff positions are adequately reflected. If not reflected in MJRs, acknowledge overload activities in the unscored general supervisor comments section of annual performance evaluations. (CAFE 2015 – 2020 Goal #3)</p>	<p>E</p>	<p>A</p>	<p>To have staff working effectively towards understood and codified responsibilities in a work environment that fosters their professional development.</p>	<p>1. Develop an annual staff evaluation and development checklist used by supervisors to aid in:</p> <ul style="list-style-type: none"> a. discussing professional development with staff and establishing and implementing development plans on an individual basis, b. assessing MJRs against work effort and develop adjustments were appropriate, c. assessing, where appropriate, overload responsibilities and impacts on MJR specified work, professional development, and work-life issues (when staff indicate an interest in doing so). <p>The completed checklist will be submitted to the chair annually, by the end of the annual evaluation period, and reviewed to determine that the department as a whole and individual staff and supervisors are working towards the department's</p>	<p>Evaluation checklist developed 2021 and implemented in evaluation cycle in 2022</p>

				<p>implementation goal.</p> <p>2. Periodically review current staff positions and associated MJRs along with staff development plans to determine the effectiveness of position type to meet department needs and the ability of the department to address development goals of individual staff.</p>	
<p>4. Ensure that short handedness does not prevent faculty and staff from accessing regular professional development opportunities such as sabbaticals or adjustment of DOEs and JAQs to learn new skills / publish (could lead to retention issues). (CAFE 2015 – 2020 Goal #3)</p>	E	A	<p>To maintain an environment where faculty can balance research, teaching, and extension responsibilities with professional development goals.</p>	<p>When developing new hires and assessing established faculty, work towards:</p> <ol style="list-style-type: none"> 1. providing equitable distribution of instructional DOE across the faculty so that all are contributing to required undergraduate and graduate instruction, 2. developing expertise within the faculty allowing DUS, DGS, Extension Coordination to be shared on a regular basis, 3. ensure familiarity and aptitude among faculty for instructing required FOR courses including FOR 601, 602, 603 and aligned to their discipline. 	<p>Progressive plan initiated in 2022 and on-going through 2026</p>
<p>5. Formalize instructional opportunities for graduate students as Ph.D. program develops to help with career paths. (CAFE 2015 – 2020 Goal #1)</p>	E	A	<p>Ph.D. students afforded opportunities to work towards professional development goals.</p>	<p>Ph.D. advisors confer with candidates to assess career goals and develop a plan to provide experiential opportunities enhancing their ability and aptitudes associated with their career path.</p>	<p>Initiate process in 2022</p>

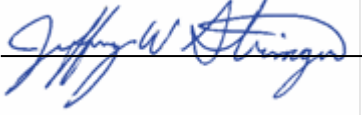
<p>6. Develop a formal mentoring process for faculty in the department; drawing on college and university resources as appropriate. (CAFE 2015 – 2020 Goal #3)</p>	E	A	<p>To establish an environment where all faculty actively participate in the development of early and mid-career faculty.</p>	<p>1. Establish department mentoring policy and guidelines that includes:</p> <ul style="list-style-type: none"> a. establish mentoring teams for early career faculty to continuously assess, discuss, and provide experienced input, b. chair with the aid of late-career faculty discuss, develop, and help implement professional career goals with mid-career faculty (reference #4). 	<p>Policy and guideline development 2022.</p>
<p>7. Identify and secure funding for additional graduate assistantships and research technician lines in support of the departmental mission. (CAFE 2015 – 2020 Goal #3)</p>	E	A	<p>Stipends available to adequately support research enterprise.</p>	<p>1. Include stipend funding acquisition in Department Philanthropic plan.</p> <p>2. Annually evaluate distribution of departments McIntire-Stennis funds to determine the potential to increase number of or adjust stipend amount as required to remain competitive.</p> <p>3. Determine if cooperative research avenues are available within CAFE to ensure adequate use of McIntire-Stennis funds to support graduate research work.</p>	<p>2023-2026</p>
<p>8. Collaborate with college and university administrations, legislators, and stakeholders to address the critical need for new facilities to meet the current and future missions</p>	E	A	<p>To have a clear path for the development of facilities adequate to support and grow the department across all mission areas.</p>	<p>1. Conduct an evaluation of infrastructure needs for the department across all mission areas.</p> <p>2. Include the infrastructure needs evaluation in the department's</p>	<p>Evaluation 2022</p>


<p>of the department, college, university, and the Commonwealth. (CAFE 2015 – 2020 Goal #6)</p>				<p>philanthropic plan.</p>	
<p>9. Consider options to address needs created by the loss of motor pool (e.g., leasing). The loss of faculty and staff time addressing the issue is a real cost issue.</p>	<p>E</p>	<p>A</p>	<p>Research, instruction and Extension enterprises have adequate transportation options to efficiently and effectively work towards goals and objectives.</p>	<ol style="list-style-type: none"> 1. Determine transportation needs for each mission area. 2. Assess and implement the following to address transportation needs: <ol style="list-style-type: none"> a. purchase vehicles b. maintain active federal surplus acquisition program c. develop fiscal structure and mechanism(s) to charge grants for department vehicle use. 	<p>Initiate implementation of elements in 2021</p>
<p>10. Formalize and communicate a plan with enough details to address the crisis of faculty lines and succession planning, which threatens SAF accreditation core competencies and the department’s education, research, and extension programs. (CAFE 2015 – 2020 Goal #3)</p>	<p>E</p>	<p>A</p>	<p>Faculty replacements occur in a manner that:</p> <ul style="list-style-type: none"> • minimally impacts the professional development of early and mid-career faculty • maintains strength across all disciplines needed to address accreditation requirements • builds upon program strengths providing leveraging opportunities for all faculty and mission areas • improves research, 	<p>Develop and implement approved faculty succession plan that:</p> <ol style="list-style-type: none"> 1. addresses FOR undergraduate and FNR graduate instructional needs, 2. maintains discipline areas required for SAF accreditation, support of the wildlife minor, and the breadth of stakeholder needs in Kentucky, 3. addresses department’s responsibility to shared undergraduate degree and certificate programs, 4. provides hiring timelines that minimizes impacts to early and mid-career faculty. 	<p>Develop plan 2021 – implementation of approved plan in 2022</p>

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* Source of Recommendation (I = Internal recommendation; E = External Review Committee recommendation; H = Unit Head recommendation)

** Accept/Reject Recommendation (A=Accept; R=Reject)

Unit Head Signature: 

Unit Head Supervisor Signature: 

Date: 12/21/2021