Updates from Our Natural Areas

Taylor Fork Ecological Area

Over the past year, the use of TFEA by students, faculty, and the local community has continued to grow. The Nature Exploration Series has provided opportunities for community members to join in guided nature walks to explore topics such as bird banding, monarch tagging, and herpetology. The annual blackberry picking is also a popular event. In total, 130 people participated in these nature-themed events at TFEA.

Management efforts continue to focus on trail maintenance and invasive plant species control. The current TFEA student assistant managers are Morgan McKinney and Josh Castle. Both are wildlife management majors and certified pesticide applicators. They’ve made significant progress in reducing Osage orange, Bradford pear, multiflora rose, and bush honeysuckle. Also, they’ve been working to create an early successional, pollinator-friendly habitat. They’ve removed shrubs and mowed two separate one-acre plots where they’ll be planting a mix of native wildflowers in early spring. Natural areas will be working with AP environmental science and 7th grade Model Laboratory students to plant and maintain the pollinator habitat as part of our environmental education and outreach efforts.

Maywoods Environmental and Education Laboratory

It was another exciting year at Maywoods. We supported environmental education programming for K–12 students from schools across the region. We also provided facilities for educational meetings by 41 groups, including EKU biology, recreation and park administration, and education, Kentucky Environmental Education Council, Kentucky Association for Environmental Education, and Kentucky Student Environmental Coalition. Maywoods hosted three interns from EKU recreation and park administration, Kenna Smith, who built pollinator homes with interpretive signage, and Jonathan Boone and Robert Beaty, who assisted with trail maintenance and construction of a bridge along the Ridge Trail. Next time you’re at Maywoods, check out our new information board in the parking area. Major thanks to Shannon McCarthy, assistant professor of art and design at EKU, for creating an eye-catching sign for Maywoods featuring plants, wildlife, geographic facts, rules, and cool images.

Lilley Cornett Woods Appalachian Ecological Research Station

Curtis Cox and his family moved on site in late July. Curtis continues the legacy of daily weather observations and acid rain monitoring, which has been conducted at LCW for 45 years! Our mission is to strengthen support from LCW in the local community and the Cornett family, and to broaden the influence and reach of LCW in the region. This includes continuing to provide guided hikes and educational programming for K–12 schools.

This winter, the main task has been updating and remodeling facilities, including reno-vating the manager’s house, and upgrading the well water system for the Visitor’s Center and other structures. Once these improvements are completed, the next focus will be on controlling invasive species, such as autumn olive, tree of heaven, and hemlock woolly adelgid, throughout the property. White ash trees received their second treatment for emerald ash borer this year. Twenty-four of the original twenty-five “seed” trees treated are still viable, with sixty percent showing improvement or no change in health due to the borer’s impact.

Upcoming Events

**April**
- April 4: Bird Banding, TFEA
- April 18: Pollinator and Wildflower Walk, TFEA
- April 25: Nature Summit iNaturalist Bioblitz, LCW

**May**
- May 2: Family Nature Day, Maywoods

**June**
- Jun 1-3: Field Camp & 5th Annual William Martin Appalachian Research Symposium, LCW

Change of Leadership, Welcoming New Faces

Following last summer’s retirement of Dr. Melinda Wilder (director of natural areas since 2005) and Robert Watts (manager of Lilley Cornett Woods since 1999, but began working on-site in 1972), the Division of Natural Areas saw a change in leadership and welcomed many new staff members. Beginning in August, Dr. Stephen Richter became the director of natural areas and Dr. Kelly Watson became the associate director. Dr. Richter is a professor of biological sciences at Eastern and served as the associate director of natural areas since 2016. Dr. Watson is an associate professor of geosciences and will oversee environmental education and outreach in the division. Additionally, Karen Pratt was promoted from administrative assistant to program specialist due to her important role in environmental education programs.

Curtis Cox, who was the assistant manager at Lilley Cornett Woods (LCW) since 2015, was promoted to manager in July. Curtis has a degree in recreation and park administration from EKU and was the Maywoods attendant from 2011–2015. He has strong interests in citizen science, resource management, and environmental education.

In November, Robert Brown filled the assistant manager position at LCW. Robert has lived in Letcher County for 25 years and brings a new influence to LCW with his degree in sociology from University of Virginia, Wise. He sees the importance of society working together in protecting the environment for the future, and using LCW to inspire that ethos.

Aida Bermudez was hired in September as the College of Science’s STEM recruitment and outreach coordinator, replacing Jose Algarin, who took a new position in Washington, D.C. Aida will be working with natural areas in environmental and science education. Previously she was planetarium educator at the EKU Hummel Planetarium.

Haley Hogan, who has volunteered and interned with natural areas for two years, became an AmeriCorps Environmental Education Leadership Corps (EELCorps) member on our staff. She has a degree in recreation and park administration from EKU and is passionate about environmental education. She will be working with Model Laboratory School students and AP science students throughout the region and continuing with environmental programming at Maywoods, LCW, and Taylor Fork.

Continuing on for a second year with Natural Areas is EELCorps member Mahala Watts, who just completed her master’s degree in recreation and park administration at EKU, advised by Dr. Michael Bradley. Her thesis involved developing and administering an instrument to evaluate teacher perceptions of our K-12 educational programming at Maywoods. Mahala will continue improving our programming curriculum and working with Model Laboratory School students.

We also welcomed two new work study students, Mackenzie Cornett and Brooklyn Be- hymer, both wildlife biology undergraduates.
Natural Areas Highlights

Environmental Education
A key part of the Division of Natural Areas’ mission is environmental education and outreach. To this end, 1,024 students in grades K-12 took part in hands-on, outdoor programming at both Maywoods and Lilley Cornett Woods in 2019. During the College of Science’s Celebration of Science and Mathematics week, natural areas worked with four high school groups on an outdoor activity to calculate carbon sequestration rates in different species of trees on campus. The fall Family Nature Day, in which we invite families from the public to Maywoods to learn about the outdoors, is now also a highlight of Science and Math week.

In July 2019, 26 high school students investigated local watershed health and its impact on biodiversity during the first-ever Appalachian Mountain Ecology summer camp, held at Pine Mountain Settlement School. The camp was the vision of Dr. Melinda Wilder, who organized and ran the event in partnership with Natural Areas. Students gained valuable STEM skills in field-based data collection and analysis through this week-long experience.

Two EKU recreation and park administration students completed internships with natural areas in 2019. Haley Hogan, alongside Mahala Watts, worked with Mr. Adrian Nick’s AP environmental science and 7th grade science classes at Model Laboratory school. Haley and Mahala developed and taught curriculum on the importance of pollinators. Jade Maynard’s internship collaborated with students and teachers at Glenn Marshall Elementary to improve their outdoor classroom by reestablishing trails used to sample their stream and wetland and by removing invasive plant species.

Natural areas continued to offer Saturday Morning Science, a STEM-outreach program for elementary students, which allows kids to explore science, technology, engineering and mathematics-topics through interactive, hands-on activities. Beginning in fall 2019, Saturday Morning Science curriculum is now aligned with Kentucky Science Standards.

Future science and environmental education initiatives include collaborating with AP science teachers across the region for outreach and educational programming. We will be working closely with Aida Bermudez and the College of Science in this endeavor, which supports the college’s goal of public service and increasing science and mathematics literacy in our region. Additionally, we plan to strengthen the capacity of the Center for Environmental Education, which currently has a vacant Director position. Dr. Kelly Watson serves as Interim Director.

Research Experiences for Undergraduates (REU)
This past summer was the third year of the REU program, Disturbance Ecology in Central Appalachia, funded by the National Science Foundation. The 2019 cohort included 13 student participants from 12 universities. In addition to their research projects, students in the program participated in a variety of workshops including: responsible conduct in science, how to apply for graduate school, an introduction to disturbance ecology, bird banding, statistics with Program R and GIS. Also, students participated in the Perry County Juneteenth Celebration, a community gathering at Campbell’s Branch/Linfork Community Center in Lester County, and a trip to Great Smoky Mountain National Park. Eight students from the 2019 cohort will be presenting their research at the Association of Southeastern Biologists conference in March 2020.

Available Student Research Grants and Awards
Our Student Grant in Aid Program provides funding for students, up to $500 plus free lodging, to conduct research at EKU’s natural areas as part of the study. The deadline to apply is 1 April 2020, but we also have a rolling deadline that allows funding of time-sensitive or solicited projects. To date, we have funded 22 projects!

Through a generous annual contribution by Glen Kalisz, a biology alumnus who loves Maywoods, we established the Paul John Kalisz Conservation Award of $500 to recognize undergraduate students whose scholarly projects are focused at Maywoods and/or include elements of road ecology or Geographic Information Systems (GIS) and other technologies (wildlife camera traps, aerial drones, etc.). Students can receive both; see our website for details.

Ongoing and Recently Completed Research and Publications
* = student grant-in-aid; ** = undergraduate student; *** = graduate student

Maywoods Environmental and Educational Laboratory
Making bat boxes a more effective mitigation tool for WNS-impacted bats: Dr. Luke Dodd (EKU Biology).
Assessing potential shifts in the nightly activity patterns of bats during the maternity season: Joseph Lightsey*, REU student (Winston Salem State University), and Dr. Luke Dodd.

Taylor Fork Ecological Area
*Urban wildlife land-use mapping using camera trapping in Taylor Fork Ecological Area, Richmand, KY: Makenzie Payton* (EKU Biology), and Dr. Kelly Watson (EKU Geosciences and Natural Areas).

Impacts of invasive honeysuckle, Lonicera maackii, on embryonic and larval anurans and their associated invertebrate communities: Lexi Robison*, REU student (Clarin University of Pennsylvania), and Dr. Cy Mott (EKU Biology).
Wildlife population surveys using camera traps: Dr. David Brown (EKU Biology and Natural Areas), and students in WLD 489 (EKU Biology).

Lilley Cornett Woods Appalachian Ecological Research Station
Collection of scionwood from American Chestnut for range-wide conservation: Trent Deason*, and Dr. Hill Craddock (University of Tennessee Chattanooga).

*Habitat suitability analysis for American Chestnut (Castanea dentata) restoration in Kentucky: Rebecca Moyer* (EKU Biology), Drs. Watson, Allison Jones (EKU Geosciences), and Jennifer Kosalow (EKU Biology).

Bacterial communities in acidic mine drainage and control streams using environmental DNA: Dr. William Staddon (EKU Biology)
The importance of Eastern Hemlock on Acadian Flycatcher home range use: Jasmine Kelly*, REU student (University North Carolina Pembroke), and Dr. David Brown.
Field assessment and niche modeling of populations of Microstegium vimineum at Lilley Cornett Woods: Nick Koenig*, REU student (EKU Biology), and Drs. Jennifer Kosalow and Kelly Watson.
Impacts of invasive Ailanthus altissima on an old growth forest of southeastern Kentucky: Haili Maywood*, REU student (Marlboro College), and Dr. Jennifer Kosalow.

Peer-reviewed Publications: 57 have resulted from research in Natural Areas to date