

Hancock Biological Station



On Kentucky Lake



CONFLUENCE

Director's Overflow by Michael Flinn

Recently, Hancock Biological Station restored a small chunk of native prairie in the circle drive (See Fall Confluence 2021). Observations of new plant species are still occurring at a surprising rate, with Rattlesnake Master (*Eryngium yuccifolium*) popping up just this year. As expected, the juicy tissues and beautiful blossoms attract a wide range of colorful insects and a beyond-expected variety of birds. Altogether, the goal of this restoration is far exceeding even what I envisioned. However, I recently had to stop and ponder two things: The first, how can such a small patch of native prairie be so attractive to all this new biodiversity? Are these plants, the nectar, the pollen, and the unique arrangement of the greater offering that rare on the landscape?

The second: my own realization that I hadn't considered the many layers to this newfound biodiversity. The field of science is not immune to bias. This includes taxonomic bias, or what is sometimes referred to as taxonomic chauvinism. It has given me great pleasure to see the species that we hoped would germinate and populate our grassland. But, it has left me wondering just how many species of soil mites, fungi, aphids, nematodes and spittlebugs are now finding elbow room in their niche space? For those of you who study the rare, small and uncharismatic, I extend a big thanks. And to the rare, small and uncharismatic, I welcome you to our new prairie and wish you a hearty good luck!

Lastly, and to support my earlier point, it turns out that the aforementioned plant Rattlesnake master is host to a root borer moth (*Papaipema eryngii*). This moth feeds solely on the roots of this single species of plant. So, without the plant, there would be no *Eryngium* root borer. Come see our prairie in full bloom now! And take a moment to turn a leaf or look close for the rare, small and uncharismatic.



Spring 2024

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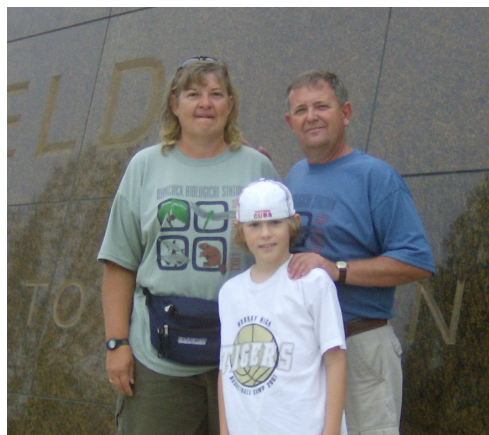
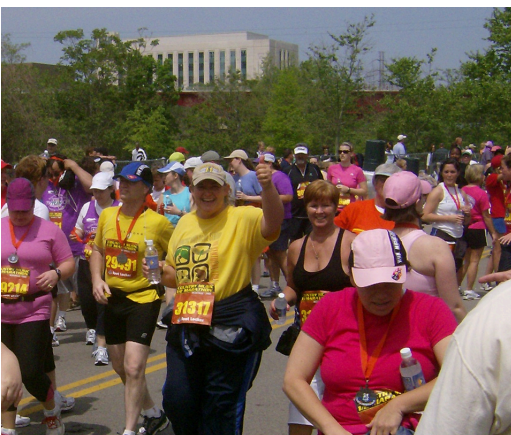
Featured Staff: Gerry Harris



I have worked at the Hancock Biological Station and the Watershed Studies Institute for the past 23 years. I have been involved as an administrative assistance and now the research coordinator. I have participated in many events supporting our facility promoting our educational and research opportunities. I have been able to help manage accounts for many faculty members with their research grants. I am presently involved with the Murray Girl Scouts as a leader and the Murray Tiger Band as a volunteer.



Since being employed at Murray State University, I have earned my Bachelor of Science in Business (2009), Masters of Business Administration (2011), Bachelor of Science in Agricultural (2016), Masters of Science in Sustainability (2019). Presently working on a Bachelor of Science in Finance.



Featured Student: Justin Graben

Hi, my name is Justin Graben and I have been living in Murray, Kentucky for the past 12 years. I enjoy fishing, working on cars, and spending time with my wife and kids. I have two beautiful daughters; one is six and the other is two. I obtained my undergraduate degree from Murray State University in 2016. During my time there, I was president of the Murray State Bass Anglers, an FLW All-American, and a two-time Angler of the Year.

After college, I worked as a millwright and traveled across the southeast, working in various steel mills. Eventually, I obtained a position with the Kentucky Department of Fish and Wildlife Resources as a sportfish technician. Working with the department for about six years really piqued my interest in fisheries research and the science behind it. Motivated by the question "why," I decided to further my education and am now a Master's student at Murray State in the Biological Sciences Department, specializing in Fisheries Biology.

My research focuses on the Redear Sunfish, *Lepomis microlophus*, a Kentucky Lake native species and the largest fish of the sunfish family. The world record for the species, caught on rod and reel, weighed 2.9 kg and measured 43 cm long. Equipped with pharyngeal teeth, they have the ability to eat mollusks and snails. The Black Carp, *Mylopharyngodon piceus*, also a molluscivore and an invasive species, could potentially compete with the Redear Sunfish. Unfortunately, there is little scientific literature on these fish. Our goal is to help fill some of these information gaps. We plan to surgically insert ultrasonic and pressure-sensing transmitters into ~25 fish in the spring and another ~25 more in the fall. Then track them using mobile and stationary telemetry. Some objectives we aim to study include daily movement rates, habitat selection, and home range size and location.

In conclusion, our exploration into the movements of the Redear Sunfish might help us understand habitat selection, behavioral patterns, and spawning sites. Our goal is to foster a deeper understanding of these species' interactions with their environment. Armed with this knowledge, we can implement targeted strategies, such as habitat enhancements or spawning site protection, to ensure a balanced and sustainable coexistence. By adopting this proactive approach, we strive not only to manage effectively but also to contribute to the long-term health and resilience of our aquatic ecosystems.

Picture 1 (left to right): Redear Sunfish, Picture 2: Dr. Spier supervising in surgery, Picture 3: Redear sunfish sutures after insertion of acoustic transmitter, Picture 4: Redear Sunfish recovering after surgery getting ready to be put back into Kentucky lake.



Conclave 2024

March 2024

Southeastern TWS Conclave was hosted by Murray State University this year with 310 attendees, 34 MSU student volunteers, and approximately 75 professional volunteers involved at some point during the week.



Conclave (HBS group)

March 2024



Family Day

April 2024



Prescribed Fire

April 2024



The students in Dr. Andrea Darracq's Principles of Wildlife Management class (BIO 580) had the awesome opportunity to receive training on prescribed fire during an 8-hour workshop given by members of the Kentucky Prescribed Fire Council. This was followed by a perfect burn day where students implemented a burn on Hancock Biological Station under the close supervision of a trained fire crew that included professionals from the the Kentucky Department of Fish and Wildlife and the Kentucky Forestry Commission.



Fisheries Techniques lab @ HBS

April 2024



Pulling trap nets and extracting otoliths from fish.



Grant Research Project

April 2024

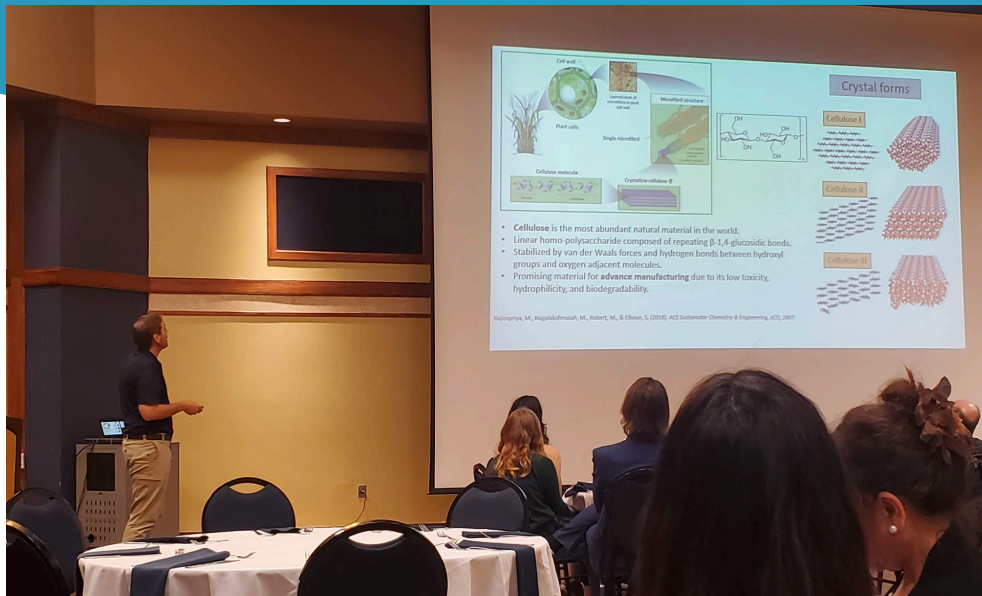


Part of Justin Graben's grant research was an afternoon filled with fish surgery to implant tagging devices in Redear Sunfish.



Sigma Xi Award Banquet

April 2024



Sigma Xi Award night was led by Dr. Howard Whiteman, President of MSU Chapter and supported by Jones College of Science, Engineering and Technology and the ORCA Office.

Guest Speaker this year was Dr. Kevin Miller, Professor and Chair of the Department of Chemistry. Student awards for outstanding research and best student poster were presented by Dr. Gary ZeRuth.



WSI Symposium

April 2024



Pictured above (left to right): Garret Gallion, Elliot Clouse, Marissa Miles, Megan Brandt and Clay Thompson.

The 15th Annual Research Symposium presented by the Watershed Studies Institute was held on April 17th in the Curris Center. Ten students in the Department of Biological Sciences presented their research during the event. Listed below are those students and their presentation titles:

- **Megan Zerger** – Assessing the Interaction of Stress Physiology and Bd Infection in Arizona Tiger Salamanders (*Ambystoma mavortiu nebulosum*)
- **Marissa Miles** – The Relationship Between Hydrogeomorphic Settings and Greenhouse Gas Emissions from Soils and Stems in Western Kentucky’s Freshwater Mineral Soil Wetlands
- **Cord Lemons** – Can Red Wolf Audio Cues Establish a Landscape of Fear Within a Naive Mesopredator Population?
- **Melissa Ocampo** – Does Climate Change Promote Cannibalism?
- **Isiah Radford** – The Effects of Organic Matter Distribution on Microbial Community Composition, Mass Loss, and Methane Emissions
- **Andrew Brown** – Will Climate Change Affect Eco-evolutionary Feedbacks?
- **Elliot Clouse** – Assessing Multi-scale Patterns of Woodpecker Density and Community Structure in a Bottomland Hardwood Forest
- **Clay Thompson** – Kentucky Lake Zooplankton Analysis
- **Garret Gallion** – Assessing Spatio-temporal Patterns of Habitat Quality and Availability for Interior Mid-Continental Shorebird Stopover Sites
- **Megan Brandt** – Can eDNA Be Used to Locate Shawnee Hills Cavefish?

Environmental Math and Science Day at Bee Creek

April 2024

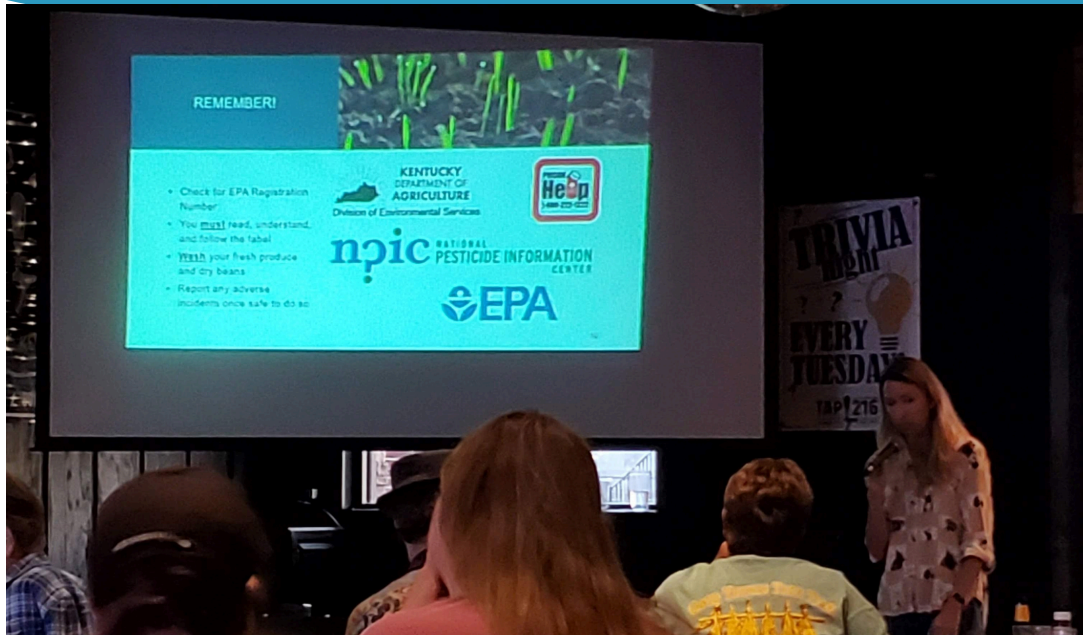
HBS staff lead educational sessions about water quality, invasive species, and zooplankton communities of Kentucky Lake.



Science Cafe

April 2024

Science Café is a great way to learn about topics that affect the community and environment. These are once a semester and open to the public.



Guest Scientist: Catherine Aubee is a Senior Advisor for the US Environmental Protection Agency's Endocrine Disruptor Screening Program (EDSP) and serves as US Head of Delegation to the OECD Working Party on Pesticides. Catherine gave a short presentation followed by questions and answers. Title: Risky business: A conversation about science, values, and why you should always read the label.



Biodiversity Art Contest

April 2024



Winner list:

Susan Krieb - Best Overall

Alexus DeVaul - First Place

Phyllis Russell - Second Place

Paul Grumley - Third Place

Amanda Kaler - Honorable Mention

Barbara Like - Honorable Mention

Dena Weinberger - Honorable Mention



Beast Feast

April 2024



The Annual Beast Feast is sponsored by MSU Student Chapters of The Wildlife Society and Backcountry Hunters and Anglers, located in Central Park Pavilion at Murray City Park. The menu consisted of deer, elk, pronghorn, wild turkey, Invasive carp, catfish, and a variety of other delicacies.



Improvements

Spring 2024



Recent improvements to our Campus include the donated extra large stove for the Graduates kitchen, signs for items purchased with donation money and the shade enclosure over the research mesocosms.





700th Cruise Celebration

You're Invited!

Come celebrate the 700th
Lake Monitoring Cruise
1988-2024

When: Friday August 2
Lunch provided at 12:30 p.m., Presentation
and Program from 1-2p.m.

Where: Hancock Biological Station
561 Emma Drive, Murray

Have questions? Email us at:
blike@murraystate.edu
or call at 270-809-2272



EXPLORE

Giving

DONATIONS HELP US IN MANY WAYS! YOUR SUPPORT PROVIDES OPPORTUNITIES FOR STUDENTS IN THE FORM OF SCHOLARSHIPS AND RESEARCH SUPPLIES. YOUR DONATIONS HELP FUND PROJECTS THAT IMPROVE OUR INFRASTRUCTURE: UPDATING LABS, RENOVATING STUDENT AND GUEST HOUSING, AND PROVIDING FUNDS FOR ITEMS NOT COVERED BY GRANTS. LISTED BELOW ARE PROJECTS WE ARE WORKING ON.

- *Monitoring Kentucky Lake Water Quality every 16 days
- *Native and invasive fish tracking on lake and streams
- *eDNA research
- *Backpack electric fishing stream surveys
- *Threatened species tagging and population estimate
- *Shad population age studies
- *Methane emissions from Cypress Trees
- *Golden mouse habitat research
- *Monitoring Armadillo burrows
- *Toad monitoring and tagging
- *Native Beetle surveys
- *Ecology, Herpetology and Wildlife management classes

For a list of Current Needs click QR code:



CONTACT US

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