



WATERSHED

CONSERVATION RESEARCH CENTER

ALLEGHENY COLLEGE

September 2024 Newsletter

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New Equipment in Action: Sampling the French Creek

This summer the WCRC utilized new equipment, including a electrofishing towed barge (also known as as a tote barge) purchased with support of the Richard King Mellon Foundation. The towed barge allows our crew to sample larger streams, such as the mainstem of French Creek. With three anodes, different segments of a waterway can be targeted at once. We have used this new piece of equipment to assess darter diversity, which includes endangered and threatened species such as the spotted (*Etheostoma maculatum*) and sand darters (*Etheostoma pellucidum*) as well as the distribution and spread of the invasive round goby (*Neogobius melanostomus*).



WCRC staff and 2024 Allegheny students sample French Creek for darters (small fishes in the perch family) with the electrified towed barge, a new piece of equipment

Mission Statement

Our mission at the WCRC is to engage in strategic conservation activities and train future watershed stewards to protect, restore and enhance our land and water resources for future generations in the upper Allegheny River basin, focusing on the French Creek Watershed.



Third In-Stream Habitat Restoration is Complete at Stainbrook Park



WCRC summer students put on safety gear to prepare to help with the construction

This past June, WCRC staff and students assisted with the completion of our third instream habitat improvement project. This restoration, a collaboration with the Crawford County Conservation District (CCCD), the PA Fish and Boat Commission (PFBC), and a local contractor, was completed on Woodcock Creek near Stainbrook Park. Pre-restoration, this site was experiencing degradation of the stream-bank itself and instability, erosion, and increased sedimentation.

To help mitigate the issues mentioned above, our crew assisted with the installation of a series of sill, face, and frame logs, in addition to large grade and footer rocks, which will help support the streambanks and improve stream flow.

Riparian vegetation was also added along the banks to aid in improving water quality and filtration.

The WCRC has already conducted pre-restoration surveys at this site, and will soon conduct multi-year post-restoration surveys to track changes in fish and macroinvertebrate assembles, as well as water quality. This data will be important in evaluating the effectiveness of these restorations, and how the ecosystem responds overtime.



Left: Instream habitat improvement during the last phase of construction

Right: Students assist with the installation of the sill, face, and frame logs



Goby Tracking: PIT Tagging and eDNA Analysis



Round Gobies, captured from Lake LeBoeuf wait to be tagged

Working with the Pennsylvania Fish and Boat Commission (PFBC), our co-directors Casey Bradshaw-Wilson and Kelly Pearce tagged over a hundred adult Round Gobies (*Neogobius melanostomus*) to track movement from Lake LeBoeuf into LeBoeuf Creek, and vice versa.



WCRC and PFBC staff work to assemble the array

Our team installed an “array” which works by recording the tagged fish as it crosses over the cord, located on the streambed. This information is critical to understand behavior in the French Creek watershed population of Round Gobies and inform potential management strategies.

In addition, we have continued our partnership with the Erie National Wildlife Refuge (ENWR) and United States Fish and Wildlife Service (USFWS) to collect water samples and detect Round Goby DNA in the water (environmental DNA or eDNA). Results from eDNA are specifically being used as a detection tool, helping prioritize survey efforts to characterize range and population densities. The survey efforts have continued again this year with WCRC staff/students and PFBC.



Co-Director, Dr. Casey Bradshaw-Wilson collects an eDNA sample



WCRC Staff and Students Showcase Research Across North America

Joint Meeting of Ichthyologists and Herpetologists (JMIH)



Students and staff attend the conference

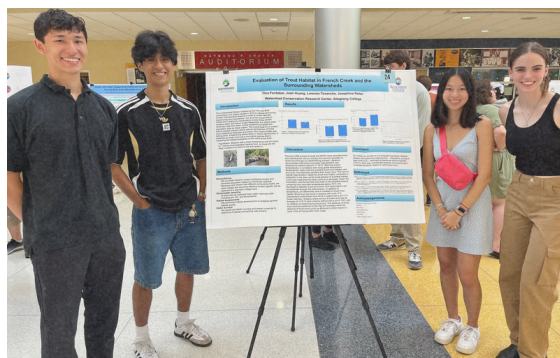
In July, WCRC summer students and staff traveled to Pittsburgh, PA to attend the annual Joint Meeting of Ichthyologists and Herpetologists. This meeting is a way for researchers all across the country to share their work on marine, freshwater, and terrestrial environments.

For many of our students this was their first scientific conference, and it allowed them to see real world applications of scientific research.

Head research scientist Mark Kirk presented on "Habitat Characteristics of terrestrial environments for vernal pool breeding amphibians." Assistant Research Scientist Meredith Barney presented on "Evaluating the long-term success of two stream-bank restorations in the French Creek Watershed."

Celebration of Summer Research Poster Session

Before the start of the semester, our students presented on the research that they conducted this summer. Lorenzo Tovanche ('26), Josephine Reiter ('26), Josh Huang ('25), and Thia Ferderbar ('26) presented on "Evaluation of Trout Habitat in French Creek and the Surrounding Watersheds." This work looked at quantifying the water quality and stream conditions that supported trout populations. Libby Babcock ('26) showcased her work on "Wild River Otter Microbial Sequencing." Her work is aimed at assessing the microbiomes of river otters. Lauren Dougherty ('25) and Julia DeSanto ('25), gave a summary of their work regarding their multiple various environmental ArcGIS projects.



WCRC summer students, Josh Huang ('25), Lorenzo Tovanche ('26), Thia Ferderbar ('26), and Josephine Reiter ('26)

Libby Babcock ('26) with summer mentors, Professors Jenn Houtz (Bio) and Kelly Pearce, WCRC Co-Director





WCRC Staff and Students Showcase Research Across North America cont.

Casey Bradshaw-Wilson, presented at the International Conference on Aquatic Invasive Species in Nova Scotia this past May.

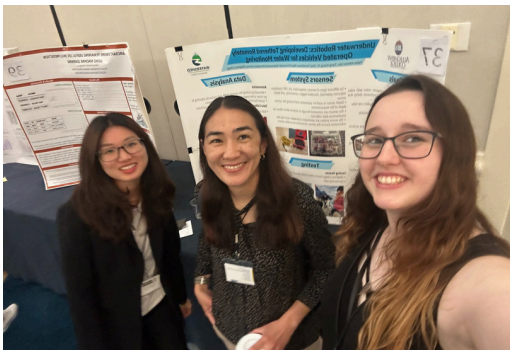


The study provided information on the use of eDNA as a detection tool, helping prioritize

survey efforts to characterize range and population densities of Round Gobies. The talk also highlighted the work that been done thus far on survey efforts and documented range expansion of Round Gobies in the past 3 years. Collaborators on this project and presentation were Doug Fischer from PFBC, Vicki Muller from ENWR and USFWS Northeast Fishery Center.

FLAIRS-37 Conference

Funded through a mini-grant provided by the WCRC, students Pallas-Athena Cain ('25), Trang Huang ('24), and Professor Jumadinova from the computer science department, traveled to Florida to attend and present their research at the annual FLAIRS-37 conference. Our group's



Trang Huang ('24), Professor Jumadinova, and Pallas-Athena Cain ('25)

research focused on the development of their cost effective underwater robot that is designed to monitor water quality. Their robot is an important tool in assessing the health of aquatic communities. The conference focused on research involving new and upcoming achievements in computer science and artificial intelligence, and provided students with an opportunity to learn about emerging topics within technology.

Senior Spotlight: Jake Folaron

This past spring and summer, senior Jake Folaron began collection of data for his senior comp. His project involves utilizing camera traps to investigate the influence of lure type (skunk essence, sardine oil, or no lure) on carnivore species detections on Foundation for Sustainable Forest properties. Jake has already detected over 11 different mammal species including *black bear (Ursus americanus)*, *coyote (Canua latrans)*, *red fox (Vulpes vulpes)*, *raccoon (Procyon lotor)*, and *fisher (Pekania pennanti)*. Jake's work will provide researchers with information on the best type of lure to use when trying to capture and study mammals on camera traps.



Black Bear (*Ursus americanus*)



Fisher (*Pekania pennanti*)



Unassessed Waters Update

The WCRC sampled stream fish communities in 23 streams within the French Creek watershed during the summer of 2024 for their annual participation in the Unassessed Waters Initiative (UAW). The UAW is a partnership between the Pennsylvania Fish and Boat Commission (PFBC) and colleges and universities across the state with an objective to identify unknown, wild trout populations.

Eighteen streams were sampled that drain directly into the mainstem of French Creek and only two streams with naturally reproducing non-native brown trout (*Salmo trutta*) were discovered. Three streams were also sampled in the Little Conneauttee and Warden Run watersheds, and naturally reproducing brown trout were only found in the latter.

Indeed, PFBC performed an intensive follow-up survey of Warden Run in 2024 to determine its potential for earning a "Class A" trout stream status. No new naturally reproducing populations of native brook trout (*Salvelinus fontinalis*) were discovered during our sampling.



Junior Thia Ferderbar holds a brown trout (*Salmo trutta*)



Students and staff measure and collect morphological data from caught trout

WCRC Student Experience

By: Thia Ferderbar ('26)

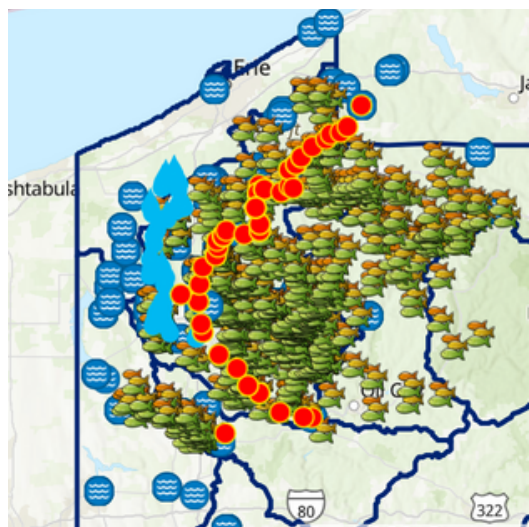
I wanted to work with the WCRC because I saw it as a great opportunity to gain experience in wildlife conservation and be more hands-on in the field. This past summer I worked mainly with surveying/sampling unnamed tributaries, aiding in electroshocking, collecting water chemistry data, and identifying the various species we came across. I also helped with the construction of a stream restoration project. I learned a lot about what wildlife conservation looks like as a career and how it's a challenging but very rewarding field. My favorite part was seeing and learning more about hellbenders. These projects provided me with inspiration for my future comp, and gave insight of the workings of wildlife conservation and ecology.



A Mosaic of Environmental GIS Research in the French Creek Watershed

Students Lauren Dougherty ('25) and Julia DeSanto ('25) under the supervision of GIS Manager Chris Shaffer tackled many important projects this summer. Their most ambitious initiative involved developing the Watershed Management Network (WMN). The creation of this interface makes data on water quality, previous fish, mussel, and macroinvertebrate surveys, flow gauges, weather conditions, and more available in a single place. The interface can easily be updated with new data as it is collected, and can be shared with our collaborators.

Two other projects were in collaboration with the French Creek Valley Conservancy. The first involved updating the “water trail” map and quantifying the amount of river miles available for recreation within the watershed. The second project utilized drones to take aerial images of a new property obtained by the conservancy. At this property a future herbicide treatment is planned to reduce Phragmite populations. The images will be useful in comparing conditions before and after treatment.



Example of the interactive map and available data



GIS Manager Chris Shaffer flies the drone

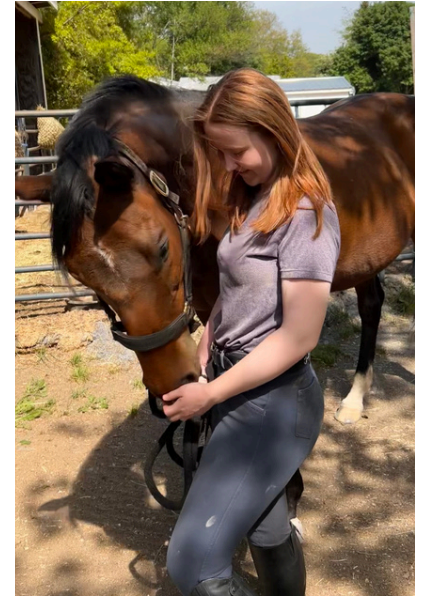


Aerial images taken of Conservancy property before treatment

Other projects include updating the hiking trail maps at the Bousson Environmental Research Reserve. These maps had not been updated in over 25 years. Our crew used GPS receivers and ArcGIS fieldmaps to map over 3.7 miles of trails.



2024 - 2025 Work Study Students

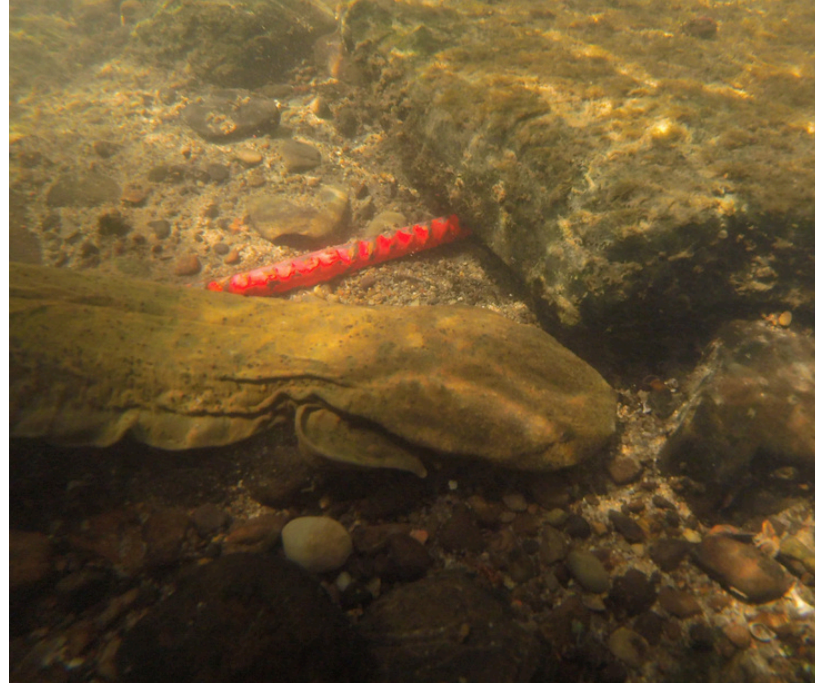
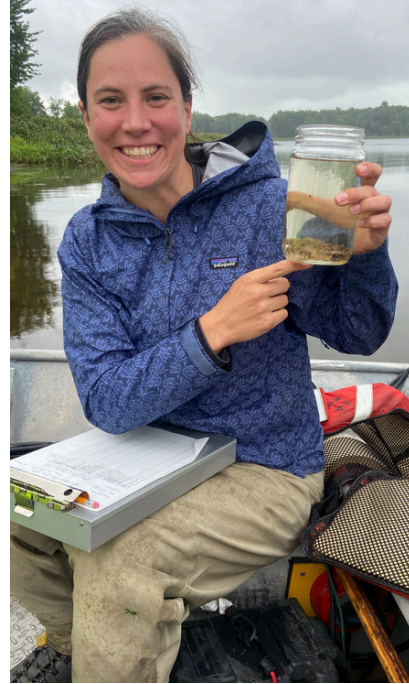


Name: Madison Hulse
Year: Sophomore
Hometown: San Diego, California
Major/Minor: Environmental Science and Biology Double Major
Clubs/Activities: Softball team, Outing club, Students for Environmental Action
Favorite animal: Whale Shark

Name: Natalie Opauski
Year: 2027
Hometown: Sykesville, MD
Major: Environmental Science
Minor: Global Health Studies
Clubs/activities: Allegheny Equestrian Club, Students for Environmental Action, Outing Club, and Allegheny Christian Outreach
Favorite Animal: Horse

Name: Ryan Cox
Year: Junior
Hometown: Simi Valley, CA
Major: Environmental Science
Minor: Studio Art
Clubs/Activities: Students for Environmental Action, Bird Club, and Student Art Society
Favorite Animal: Red Pandas





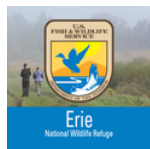


A Note from our Co-Directors

This summer has been one to remember! With newly funded projects and expanding partnerships, we've been busy working throughout the watershed—on the water, on land, and even in the air! Our team truly went above and beyond in the field, especially with the addition of our electrofishing towed barge. Learning to use the new equipment was a challenge, and we're incredibly thankful for Dr. Mark Kirk's leadership in this effort, along with Meredith and our dedicated students who embraced the learning curve with enthusiasm. This October, we also say farewell to Meredith, our Assistant Research Scientist, who has been an important part of our team for over a year. We wish her all the best in her future endeavors and know she will continue to achieve great things.

Looking ahead, we're excited to host an upcoming workshop, bringing together potential collaborators from a range of disciplines at Allegheny College. Through these partnerships, we hope to support new projects that expand our impact within the French Creek watershed, as well as explore topics that go beyond the scope of ecology.

- Casey and Kelly



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 [facebook.com/WCRCAlegheny/](https://www.facebook.com/WCRCAlegheny/)

 sites.allegheny.edu/WCRC/

