WATERSHED
CONSERVATION RESEARCH CENTER
ALLEGHENY COLLEGE

September 2023 Newsletter

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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.

A Summer of Research Achievement

The WCRC had an incredibly successful and eventful summer of research and fieldwork. The center kept busy by hiring five summer students to participate in a variety of projects and fine-tune their ecological research skills. The students worked heavily on the Unassessed Waters initiative and evaluated trout populations, participated in setting up and reviewing camera-trap images, and the second instream habitat restoration site was completed. The WCRC also took on a new initiative in monitoring amphibian presence at a number of vernal pools at various sites. Staff and students are very proud of the work that was completed, and are looking forward to continuing this work, as well as starting new projects this upcoming semester!

Some of the WCRC staff pose with students in the field

WCRC Bids Farewell and Embraces New Staff

Farewell to Briana Sebastian

At the end of the summer, we said a heartfelt goodbye to our Assistant Research Scientist, Briana Sebastian who accepted and started her PhD in Ecology and Evolutionary Biology at Texas A&M where she will researching the effectiveness of wetland restoration. Briana is extremely grateful for her time with us, and enjoyed getting to know and guiding students in the WCRC. Her favorite memories are holding a hellbender, running on Ernst trail, and performing educational outreach with students in the community. She hopes to take her experience and knowledge and continue to mentor and teach students through hands-on learning, on the importance of aquatic ecosystems and conservation.

Introduction to Meredith Barney

Our new Assistant Research Scientist, Meredith Barney is a 2021 Allegheny graduate of environmental science & sustainability. Her senior comp involved collecting baseline macroinvertebrate data from areas of French Creek that have not been invaded with round gobies. Since graduating, she has worked professionally in a research lab at Penn State Behrend, studying the insect pest the grape berry moth. Additionally, she also spent time with the PA Department of Agriculture monitoring the spotted lanternfly. Meredith is extremely excited to return to Allegheny, and support the WCRC, something she wishes existed when she was a student. She values the incredible diversity of the French Creek Watershed, and is looking forward to supporting research that aids in its protection, and guiding students in completing important environmental work. Welcome Meredith!

Exploring Unassessed Waters

The WCRC sampled fish communities of 46 streams within the French Creek Watershed during the summer of 2023, as a part of their annual participation in the Unassessed Waters Initiative (UAW). The UAW is a partnership between the Pennsylvania Fish and Boat Commission (PFBC) and colleges/universities across the state, with the objective of identifying unknown wild trout populations.

Students Isaiah Davidson. ‘25, Marrin Crist ‘25, and Celia Cocca ‘25 pose with a brook trout *(Salvelinus fontinalis)*

A total of 23 streams were sampled in the Little Sugar Creek basin, revealing only a single stream with naturally reproducing non-native brown trout (*Salmo trutta)*. An additional 10 and 13 streams were surveyed in the West and East branches of Sugar Creek respectively. 13 of those streams contained naturally reproducing brown trout.

No new naturally reproducing populations of native brook trout *(Salvelinus frontinalis)* were discovered. The American brook lamprey (*L. appendix)*, an ecologically important species in need of conservation, was reported in 6 of the 13 streams in the East Branch of Sugar Creek. The WCRC is expected to continue assessing needed streams next summer.

Left: Students assist head research scientist Mark Kirk in electrofishing

Right: Four brown trout *(Salmo trutta)* of various age classes

The Latest Restoration Site Update

Instream habitat improvement at German Run

The WCRC continued their instream habitat improvement projects this summer following the first project which was completed on Woodcock Creek in 2022. This particular site at German Run was experiencing issues regarding erosion, shifts in stream channel structure, and sedimentation. By partnering with the PA Fish and Boat Commission and the Crawford County Conservation District, the WCRC was able to aid in placing log vane deflectors to redirect stream flow, as well as additional logs along the streambanks to minimize erosion. Important data including water quality measurements, surveys of macroinvertebrate and fish communities, nutrient content, water velocity, and substrate material, was and still is being collected both pre and post habitat improvment.

This data will be important in evaluating the effectiveness of restorations similar to ours in the French Creek Watershed, and how the ecosystem responds overtime. The WCRC is currently planning a third instream habitat improvement project in close proximity to the other two.

Top Image : Stream bank conditions pre-restoration at German Run.

Bottom Image: Post-restoration showcasing log vane deflectors added to stabilize stream banks

Unveiling Student Research Initiatives

Eden Brody '24

Eden Brody '24

Eden Brody's summer research focused on evaluating the effectiveness of the lower Woodcock Creek restoration by comparing water quality, macroinvertebrate, and fish communities of two restoration sites with nine control sites. Brody also compared pre-restoration and early post-restoration fish data from the recently restored sites. Results indicated that the restoration sites exhibited impaired macroinvertebrate communities, supporting that these locations suffered from poor instream habitat and high sedimentation before the restorations took place. Brody also found that the diversity of darter species increased after the site restorations were performed. Early conclusions support the idea that the restorations have been successful, but monitoring is still ongoing. Brody's research was partially supported by Allegheny College URSCA program.

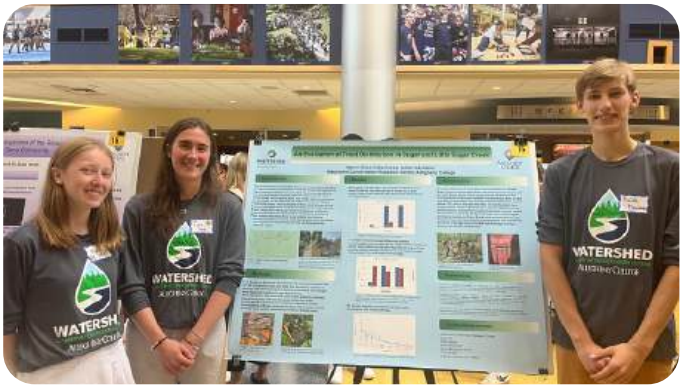
Pete Siebler '25

In conjunction with the Network for Community Engaged Learning and Maurice K. Goddard State Park, Pete Siebler conducted preliminary research on water quality and aquatic macroinvertebrates, with WCRC staff conducting a mussel survey in Sandy Creek. The goal of this project was to gather baseline data, and gain a sense of whether the mussel population is in decline and how water quality may be affecting mussels. Results from this study can be used to help park Staff with future management decisions for the stretch of Sandy Creek below the outflow of the dam.

Top: Pete Siebler '25
Bottom: WCRC Staff collect mussels from Sandy Creek

ACRoSS Presents: Celebrating Summer Research Achievements

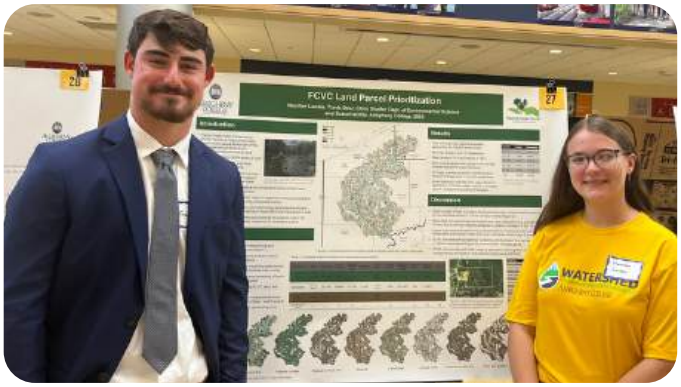
Three WCRC students, Marrin Crist, Celia Cocca, and Isaiah Davidson presented their research at the Allegheny College Research Seminar Series (ACRoSS) earlier this summer on June 20th. The presentation was entitled, "An evaluation of trout distributions in Sugar Creek and Little Sugar Creek." This forum takes place weekly throughout the summer for students to showcase their research projects.



Marrin Crist ‘25, Celia Cocca ‘25, and Isaiah Davidson ‘25

Students also participated in the Celebration of Summer Research and Scholarship Poster Session on August 28th. The purpose of this event is to showcase and celebrate student research conducted during the 2023 summer for faculty, staff, and community partners. Marrin, Celia, and Isaiah presented again on "An evaluation of trout distributions in Sugar Creek and Little Sugar Creek." Eden Brody '24 presented on "Restoration of Lower Woodcock Creek: A Multi-Year Assessment of Biotic Changes" and Pete Siebler '25 on "Sandy Creek Water Quality."

Our final group poster, consisting of Heather Landis and Travis Dear, was entitled "FCVC Land Parcel Prioritization."



Travis Dear ‘24 and Heather Landis ‘24

WCRC Student Experience
By: Marrin Crist ('25)

This summer, I was fortunate enough to join the WCRC for 8 weeks to work as a student researcher. During those 8 weeks, I assisted in the Unassessed Waters Initiative led by Mark Kirk and the PA Fish and Boat Commission.
This was the first time I had the opportunity to engage in professional fieldwork. I had a lot of fun learning techniques for aquatic sampling, and I loved learning to identify the types of fish in our local watershed. I also learned a lot about camera trapping, and it was fascinating to observe all the types of terrestrial animals in the Meadville area. This work was incredibly valuable to me as I will be able to use this experience to aid in my senior comp, and other potential projects in the future.

Tracking wildlife and fish: Camera Trapping and Round Goby Updates

Students and WCRC staff continued their partnership of surveying French Creek Valley Conservancy (FCVC) properties using camera traps. These traps give insight on the types of mammals and other animals living within these areas. Monitoring began in 2021, and this season was the most successful yet. Six total sites across a wide variety of locations including areas of French and Cussewago Creeks were selected. A total of 24 species were detected, including the first sightings ever of the fisher (*Pekania pennanti)* and long-tailed weasel *(Mustela frenata)*. The surveyed areas so far are showcasing high levels of biodiversity. The WCRC will continue to survey new locations to further explore these areas.

Photo 1: Casey with walleye (*Sander vitreus*) caught by boat electrofishing in French Creek
Photo 2: Looking through benthic trawls to identify hundreds of larval fish.

Right: Fisher (*Pekania pennanti*)

Right: Kelly Pearce, Briana Sebastian, and students Marrin Crist and Pete Sibler set up camera traps

Our Co-Director, Casey, worked this summer to complete surveys looking for round gobies throughout the mainstem of French Creek. With the PA Fish and Boat Commission, and at times the PA Department of Environmental Protection, the three organizations worked to boat electrofish and use benthic trawls to gain a better understanding of round goby range in the watershed. This was the first time a survey of this size was conducted since round gobies were first discovered in Lake LeBoeuf in the fall of 2013. This information has led to upcoming projects for Casey and the WCRC staff and Allegheny students. Future round goby studies include the use of PIT (Passive Integrated Transponders) tags to monitor movement in addition to work predicting more detailed impacts to native fauna are currently in the planning stages for the next field season with additional student projects in mind.

Exploring Vernal Pools and Amphibian Communities

The WCRC began monitoring twelve vernal pools on a French Creek Valley Conservancy (FCVC) property this year throughout the spring and summer, in order to observe the capacity of the pools to support amphibian life.

Example of a partially dried vernal pool

This project involved noting evidence of egg masses of spotted salamanders *(Ambystoma maculatum)* and wood frogs *(Lithobates sylvaticus)*. Three vernal pools contained salamander eggs, and only one had a presence of wood frog eggs. Another component of this study included hydroperiod surveys to determine the extent of the drying of the pools, as well as noting general terrestrial amphibian presence.

We determined that two of the ponds did not experience complete drying, while the pond that had the highest egg mass abundance in the spring completely dried. High densities of eastern spotted newts *(N. v. viridescens)* were recorded near ponds that experienced drying. The largest frog densities came from one of the ponds that did not completely dry. Green frogs *(Rana clamitans)*, wood frogs, and bullfrogs *(Lithobates catesbeianus)* were all seen or heard across the sites. The WCRC plans to continue to conduct egg mass, temperature, and hydroperiod surveys, as well as use acoustic wildlife monitors to detect amphibian calls in spring 2024. Vernal pools remain a sensitive and critical habitat for spring breeding amphibians and provide a food source for various mammals.

Five red-spotted newts (*Notophthalmus viridescens viridescens*) found near one of the dried pools










TAMARACK
SUBSTATION
1-403-252-0314


White River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A Note from our Co-Directors

The summer field season was busier than ever with 6 ongoing research projects alongside Allegheny undergraduate students, community partners and WCRC personnel. Our latest addition to the WCRC team, Meredith, assumed the role of assistant research scientist in August. We are thoroughly pleased to welcome her valuable expertise and passion for conservation within the upper Allegheny watershed. Before the commencement of classes, our summer students presented four posters at Allegheny's Summer Research Symposium showcasing WCRC's research initiatives and also highlighted the students' dedication to our summer projects. As we transition into the fall season and semester, a fresh cohort of work-study students will join us for the academic year with the opportunity to gain exposure to both field and lab work. As always, we are excited to continue fulfilling the WCRC mission to create watershed stewards and protect, restore and enhance our land and water resources for future generations in the upper Allegheny River basin. Please stay connected through our social media sites and thank you for your continued support of the WCRC.

- Casey and Kelly

Find us on social media
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sites.allegheny.edu/WCRC/