



Kentucky Resources Council



A Love Letter to Mussels

by Lesley Sneed, Environmental Permitting Specialist

In Kentucky, we have over 100 species of freshwater mussels, a number that changes frequently as research is conducted, genetic testing becomes more cost-effective, and all too often, as species become extinct. I am passionate about mussels, so I was excited when the U.S. Fish & Wildlife commissioned a Species Status Assessment for the Kentucky Creekshell (*Leaunio ortmanni*), Mountain Creekshell (*Leaunio vanuxemensis*), and the Dwarf Rainbow (*Leaunio pataecus*) to clarify species diversity and find their distribution.

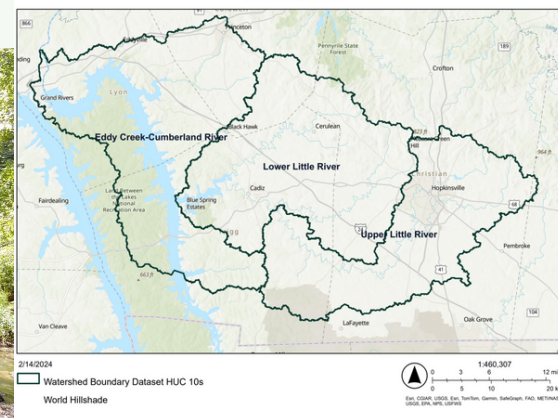
This presented me with the rare opportunity to search for the Dwarf Rainbow in both Little River and Eddy Creek across Christian, Trigg, and Caldwell counties. I was in western Kentucky working as an Environmental Biologist Specialist at the time, which meant scooping a lot of water samples and occasionally getting to do some cool biological surveys. I had fallen in love with mussels: I focused exclusively on them in my studies since 2012, and I had 5 years of mussel survey experience at the time.

Facts to Love About Mussels

- Freshwater mussels are important to Kentucky's water quality due to their valuable abilities to filter water, stabilize substrate in the river, and provide a habitat for other invertebrates.
- Mussels are filter-feeding organisms that are proven to be great at removing things like e-coli and nitrogen from our water.
- Ongoing research is working to figure out why streams are consistently seeing declines in mussels.



Dwarf Rainbow





I set into motion a plan to survey 28 sites in the Little River and 7 sites in Eddy Creek in 2019, reaching out to everyone I knew in western Kentucky that could help survey. On several days, we had a good-sized team all looking for this elusive mussel with masks, snorkels, and clear bottom buckets, and we found dead shells of the Dwarf Rainbow at many sites.

There were other species of live mussels occasionally, and once, a fresh dead shell of the Dwarf Rainbow was found, which gave the team some hope. Fall was arriving, and the window for surveys was closing. Those last few surveys were frantic, as we knew what this ultimately could mean: this mussel may be functionally extinct. A rare mussel, with few to no descriptions recorded of their host fish, host infections strategies, reproductive traits, or even whether this species was genetically unique to Little River and Eddy Creek. Our findings, or lack thereof, were heartbreaking.

A continuation of this work by the Office of Kentucky Nature Preserves did locate a few live individuals from the Little River, and they were sent for genetic testing and a small batch were propagated by The Center for Mollusk Conservation. More work is being done—and much more work needs to be done—to ensure that we do not lose any more species of mussels to extinction. We have yet to hear an Endangered Species Act Determination for these species, but I write this love letter for those mussels like the Dwarf Rainbow. They may be gone before we get the chance to know them.

- Propagation is one avenue that has been used to supplement our mussel population (re-mussel), this process helps in protecting our species from extinction.
- If we protect mussels through better regulation of pollution, and make a concerted effort to 're-mussel' our streams, we could have cleaner water for everyone in our future.
- Propagation alone is not the solution to the larger problem that mussels could ultimately solve.

