

Search for the Redside Dace in Michigan's most Polluted River

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Seining the Rouge

Michigan's Rouge River was made famous by Henry Ford and the Detroit auto industry. Ford built his home on its banks upstream from his famous Rouge Plant, which at the time was the world's largest industrial facility. The Rouge, like several other rivers, caught fire back in the 1960s, but it didn't make the Detroit newspapers because it really wasn't news. Metro Detroit is bordered on the north by the Clinton River and on the south by the Huron River. Both those rivers have been cleaned up to the point you can swim in them and the NANFA 2002 convention sampled the Huron. The Rouge has come a long way, but it's still one of the most polluted rivers in Michigan. No one's first pick to plan a collecting trip!

The Rouge also flows through the University of Michigan Dearborn campus and both of us needed internships for our degrees. We approached Friends of the Rouge (FOTR), an organization that promotes the restoration, protection, and recreational use of the river, with our proposal of conducting a fish survey.

Thankfully, they accepted our offer and following several meetings discussing the survey's scope, we decided to concentrate on the headwaters of the Middle and Upper Rouge where Redside Dace (*Clinostomus elongatus*) [see page 16] historically had been found. Redside Dace are a Michigan-endangered species with a very odd distribution. They occur in Bean Creek (Maumee River system) that flows out of Michigan into Ohio, Rouge River system, and a few streams in the far western edge of the Upper Peninsula near the Wisconsin border. The Department of Natural Resources (DNR) conducted the last major survey of the Rouge River about a decade ago and no funding is currently available for future efforts.

Sites for the survey were researched using data from FOTR macro-invertebrate surveys, as well as a reconnaissance of the area for sampling locations. Access can sometimes be challenging because the area is now almost entirely developed suburbs with the creek running through backyards. The Upper Rouge forms from the confluence of Seeley Creek and Minnow Pond

Creek. Five sites were picked on each and two sites in the first few miles of the Upper Rouge. We selected seven additional sites on Johnson Creek, which is at the headwaters of the Middle Rouge, and two sites on Sump Creek (Johnson Creek tributary).

Michigan's southeast corner is unusual because the area was once under several much larger predecessors of Lake Erie. The Defiance Moraine runs along the western edge of the largest of these ancient lake shores. This is where the headwater streams of the Rouge begin. There is a significant drop in elevation on both of the surveyed areas. Redside Dace inhabit cool water and these streams, being fed by groundwater, likely provide the environment the species requires.



**Rogue River survey crew (left to right):
Philip Kukuski, Kristina Blott, and Robert Muller.**

Habitat information was gathered on substrate, aquatic vegetation, temperature, flow rate, and more. All fishes sampled were identified. The DNR requested the length of specimens be measured to tenths-of-an-inch. Philip Kukuski came on board as the manager of sampling and was the best seining strategist we knew. The three of us directed numerous volunteers from FOTR and their staff. Sampling ran from the middle of May through the middle of June. Approximately 300 feet at each site was sampled. In the end, we sampled, identified, and measured 4,371 fishes representing 26 species. The catch also included *Lepomis* hybrid sunfish. As with many surveys, the results raised more questions than they answered.

Both areas were very similar, but in the upper Rouge we sampled 900 Common Shiners [see page 16] but only two in Johnson. Several other species had significant differences in their populations, but nothing as off-balance as the Common Shiner's. On our second day of the survey, we caught a fish we identified as a male Western Banded Killifish (*Fundulus diaphanus menona*) in one creek which had never been found in the Rouge River before [see page 17]. On two subsequent visits to this site, we caught three females and some fry. During the review of this paper, the editors disagreed with our identification, arguing that it most

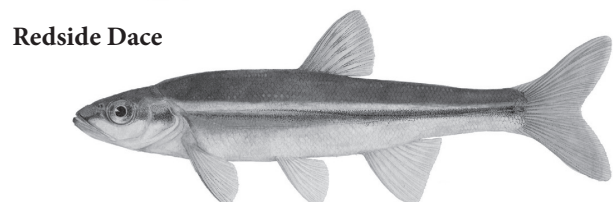
closely resembled the Mummichog, *Fundulus heteroclitus*, which naturally occurs along the Atlantic coast from Labrador to north-east Florida. Unfortunately, no specimens were saved. Hopefully, we can return next spring to collect more individuals to determine if Michigan has yet another invasive species. This locality is also near the southern edge of Northern Redbelly Dace's [see page 16] range in Michigan. At one upstream site on Johnson Creek in a gravel riffle, we sampled 81 Northern Redbelly Dace in basically one seine haul. This is interesting as all the books state these fish breed in filamentous algae. The author, Robert Muller, has bred Michigan Northern Redbelly Dace and found they always select gravel over plants. At this site, we likewise sampled them over a bed of loose gravel during their spawning season.

Redside Dace were collected at four sites in the upper Rouge system and one site in Johnson. The Redside Dace in Seeley Creek 20 years ago created an environmental conflict. One community wanted to build a sewage treatment facility that would add two-million gallons of water per day to Seeley's normal one-million gallon flow. A community downstream got an injunction stopping the project in fear of harming the Redside Dace. Two years later, after much study, it was built. We found the Redside Dace at three locations affected by this increased flow, both adults and juveniles. On Johnson Creek, we found Redside Dace and small Brown Trout (*Salmo trutta*). We worked our way downstream to four historic sites where Redside Dace had been collected in the past, but none were found. At each of these sites the size of the Brown Trout increased until at least one 11-inch specimen was caught. At the site on Johnson Creek with Redside Dace and trout, minnow species represented 63% of the catch. At the site with the 11-inch trout, minnow species represented 9% of the catch. Redside Dace is the only minnow in the Rouge that eats terrestrial insects, and the Brown Trout directly competes with the Redside Dace and, when adults, Browns can also eat them. It seemed strange that in one tributary the Redside held up a 10 million dollar project and in another the state stocks Brown Trout.

The downstream areas of the Rouge River may have had to withstand the heaviest of industrial pollution for almost a century, but its headwater reaches hold some aquatic jewels that have so far held out against the influx of human development. Hopefully we will have the opportunity to resample these tributaries and other areas of the Rouge River to develop a benchmark of the fish diversity that can be used to monitor the direction the creeks are taking in the future. 🐟



Brown Trout



Redside Dace

Redside Dace



Southern Redbelly Dace



Common Shiner



Mummichog male



Mummichog female

