

DUSKY DARTERS: A NORTH AMERICAN NATIVE FISH NEW TO MICHIGAN



Robert Muller

The subject of this paper evolved as an offshoot of my survey work on Michigan's Rouge River looking for the Redside Dace (*Clinostomus elongatus*). I was aware that fellow NANFA member Brian Zimmerman had done his Masters work on this fish so I initiated what became a string of emails. Redside Dace are endangered in Michigan and only found in three rivers, one of which is Ohio's Maumee River where it is found in Bean Creek, a tributary of the Maumee River. Brian told me that this is the only tributary of the Maumee containing Redside Dace. When attending the Ohio 2012 NANFA convention, I had a chance to discuss Bean Creek with Brian and in the conversations asked what else lives in Bean Creek. I do not remember the whole list, but one species jumped out at me: Dusky Darters (*Percina sciera*) (Figure 1). The first NANFA convention I attended was Urbana, Illinois in 1999 and at that time I thought of native fishes as those only coming from Michigan. I brought home exotic Dusky Darters from far off Illinois, spawned them and wrote about this for *American Currents* (Muller, 2001). So while I knew Dusky Darters were not supposed to be native to the Great Lakes Watershed, Brian insisted they were native at least on the Ohio side of the state line.

When I got home from the convention I asked Dr. Gerald R. Smith at the University of Michigan if Dusky Darters had ever been collected here, and his reply was no. I met with

Brian again at the 2013 NANFA Kentucky convention, where he offered to send me collection information from Ohio. The information he sent showed Dusky Darters in Bean Creek (as early as 1987) and the Saint Joseph River (as early as 1992). Both of these rivers are tributaries of the Maumee flowing out of an area in Michigan called the Irish Hills. Dusky Darters, a fish supposedly not occurring in Michigan, had been found within a few miles of the state line. This could be an adventure: how often do you get a chance to add a species to the list of what lives in your state? Now the trick was to find some time to go and look at the two streams. There was a break in our Rouge River survey work, so on July 1, 2013, Philip Kuku-ski and I headed out on the great Dusky Darter hunt.

Bean Creek flows through the town of Morenci, Michigan, which is located almost on the state line. The name of the creek is sort of odd being that the Bean was at least thirty feet wide; I would call it a river. When it does cross into Ohio, its name instantly becomes the Tiffin River. There is a park just north of Morenci providing easy access to the Bean; water depth here ranged from our waist to chests with a strong current. We slowly worked our way upstream with a 12-foot seine, hitting deep holes and areas with woody debris. Thirty minutes in the water and under a small tangle of branches mid-river, a darter with a black stripe was in our seine. We took a quick look, since there could be some confusion. Blackside Darters (*Percina maculata*) are also found here and common throughout Michigan, so we checked the field marks. No suborbital bar, a cluster of three spots at the base of the tail, no black spot in the

Photos by the author unless otherwise indicated.

Robert Muller became interested in nongame native fish over 50 years ago. He has spent years collecting and attempting captive propagation of species, and recording data on their spawning methods and the development of eggs, larvae and fry. He joined NANFA in 1999 and began writing articles for *American Currents*. He serves on the NANFA Board of Directors and is finishing a degree in Environmental Studies at the University of Michigan, Dearborn. This has led to work with Friends of the Rouge, where he conducts fish surveys and monitors the migration and potential impacts of invasive Round Gobies (*Neogobius melanostomus*) heading up the Rouge from the Great Lakes.



Figure 1. Dusky Darter from Bean Creek (Lenawee County).



Figure 2. Dusky (top) and Blackside Darters, Saint Joseph River (Hillsdale County, MI).



Figure 3. Dusky Darter habitat on East Branch Saint Joseph River (Hillsdale County, MI).

first dorsal (Figure 2). So with a handshake in the middle of the river, we had found our quarry, the first Michigan Dusky Darter. We worked further upstream with no success, but on our way back downstream we collected another Dusky Darter at the same spot as the first. I did not want to preserve the fish streamside because I wanted good photographs, a task best done at home where I have more control over lighting. The car was equipped with two ice chests to keep fish separated from each collecting site. They were plumbed for air and equipped with sponge filters. The ice chests work better than buckets because of the greater water surface area; I was taking no chances on their not surviving the trip home. Half-a-bucket of fresh water and the darters were added, the air pump plugged into the inverter and the lid secured.

Now on to the Saint Joseph, about twenty miles down the road to the west. The Saint Joseph at this point was a straight channelized river with banks about 6 feet high and a thin riparian zone as it ran through agricultural fields (Figure 3). It had lots of woody debris along its sides and the current was slower than the Bean. We sampled about 100 yards and collected seven darters with a black line. Looking at them back at the car we had three Dusky and four Blackside Darters. They were placed in the second ice chest, we changed out of our waders and started back home.

At home, the darters were placed in three different aquariums and labeled as to species and the river they were collected in. The next day photos were taken of each individual fish and much more scrutiny was applied, both looking at live fish and their photographs. From personal experience, full-grown Dusky Darters have a deeper body than Blackside Darters; the largest fish from the Bean and two from the St. Joseph had deep bodies. Blackside Darters have a suborbital bar and a single dark spot at the origin of the tail fin. Close-ups of the

heads showed the mouth of the Blackside extending past the front of the eye; it ended before the eye on the Dusky Darters. No question in my mind that we had both species. Photos were sent to Brian, who congratulated us on our find and thanked us for adding our collection data and photos to the Ohio records. These are Michigan fish, but still fish from the headwaters of Ohio's Maumee River. Dr. Gerald Smith also received photos; he was out of town, but when he returned at the end of July we took the specimens to him to be housed in the University of Michigan's collection. Jerry was the host of the 2002 Michigan NANFA convention along with Leo Long and myself. He is always the first person I go to when I have a question on what I am finding in my survey work. Since Blackside and Dusky Darters look similar, we wondered if any Blackside Darters collected in the Bean and St. Joseph could be Dusky Darters misidentified in the past. Dr. Smith checked and the darters in their collection from the Bean were all Blackside Darters.

We used a freezer to anesthetize the fishes before placing them in preservatives, whereupon two unusual things occurred. First, when the water temperature was low enough to have incapacitated the Dusky Darters, the Blackside Darters did not seem to be affected by the temperature. Blackside Darters can be found up into Canada, while these Dusky Darters were captured at the furthest north locality ever sampled (Figure 4). Second, the Dusky we were about to freeze had changed to its spawning display pattern. When I had spawned Dusky Darters, I had observed that the male, in his efforts to attract the female, turned a dusky black color while the black horizontal line down the length of his body disappeared.

Michigan is a little different from the rest of the country. Ours is the only state to be completely covered by the

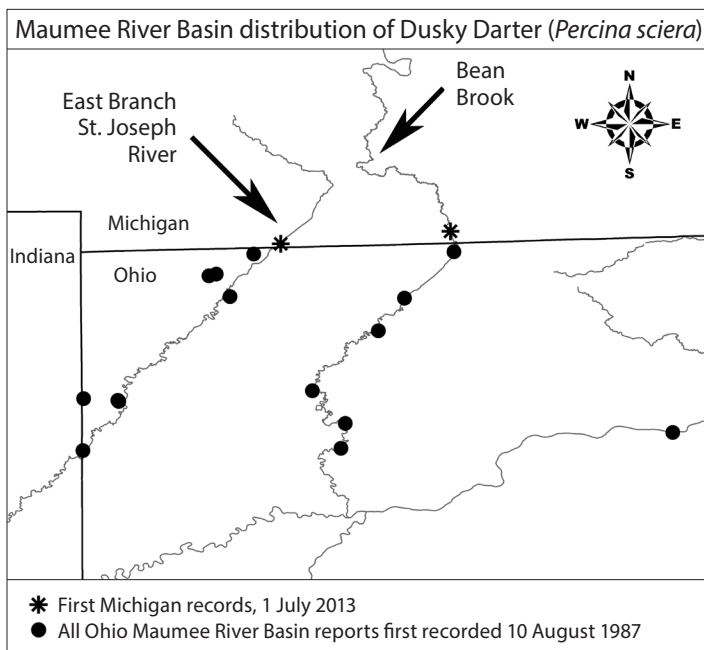


Figure 4. First Dusky Darter collections from Michigan. (Map prepared by Brian Zimmerman)

glaciers. All of our fishes had to find a way here in the last 14,000 years. So I feel it is important to try and figure the path that a species of fish used to get into the Great Lakes Watershed. Looking at the range of Dusky Darters, they are found in a wide band coming up the Mississippi from the Gulf to the Ohio River. Their range extends into the upper Ohio River system in two tributary river systems: the Scioto River in Ohio and the Wabash River in Indiana (Lee et al., 1980). The Wabash River system and Lake Erie's Maumee River system almost meet at Fort Wayne Indiana. At present, Dusky Darters are found in the Wabash River north to and up the Tippecanoe River, but is absent in the Wabash above the confluence (Lee et al., 1980 and Simon, 2011). The Wabash and Maumee come to within less than a mile from each other near Fort Wayne, in Eagle Marsh Nature Preserve. This occurs at the site of the only portage between Niagara Falls and New Orleans back in the fur trade days. It was reported that at high water you could paddle from one river to the next without a portage. In the mid-1800s there was also a canal connecting these two rivers. A fence was placed across Eagle Marsh in 2010 near Fort Wayne as a barrier to prevent Asian carp crossing from the Wabash to the Maumee (Anonymous, 2013). There seems to be both natural and man-made connections between river systems that could account for southern species gaining access to the Great Lakes Watershed. A possibility that can never be discounted is that a bait-bucket release got the Dusky Darter into the Great Lakes Watershed, but in this instance, with this species, I think it is more logical that the fish swam here on its own.

When the Ice Age began to end, post-glacial Lake Maumee was formed where Lake Erie is today. Metro Detroit

and the southeast corner of Michigan are on a lake plain, the exposed bottom of long-gone Lake Maumee. Moraines run from near Fort Wayne, Indiana, to north of the west side of metro Detroit. Approximately 122 fish species occur in this lake plain and fifteen have reached Lake Erie where they have spread into eight streams to the north (i.e., Raisin, Stoney, Huron, Rouge, Clinton, Belle, Pine, and Black) (Bailey et al., 2004). Moraines block the further expansion of these species beyond the extreme southeast corner of Michigan. The Redside Dace in the Rouge River seems to be thermally trapped in cool headwater streams. Possibly they never got far enough north before the climate warmed? Other species like the Dusky Darters, Orangespotted Sunfish (*Lepomis humilis*), and Orangethroat Darters (*Etheostoma spectabile*) seem to be at their northern temperature limits, but climate change may someday allow their spread north. In addition, Northern (*Chrosomus eos*) and Southern Redbelly Dace (*C. erythrogaster*) ranges meet here in the Huron River. Perhaps a combination of temperature and competition are limiting these species' advances. I find these random variables in play are fascinating to ponder.

I have lived my entire life on this lake plain and done my majority of fish sampling here. I had always thought that the local waters were not that interesting. There are so many species of fish to the south that do not occur here. It was always looking at individual species that attracted me, but now it is fish communities. My main focus has become the Rogue River watershed, but it also has expanded into the communities of the Maumee lake plain in Michigan. It seems that I live on a major cross road of fish distribution between major watersheds in North America.

Literature Cited

- Anonymous. (May 2013). Great Lakes and Mississippi River Interbasin Study, Eagle Marsh, Indiana, Wabash-Maumee Basin Connection. U.S. Army Corps of Engineers. <http://glmrms.anl.gov/documents/docs/interim/EagleMarshPathwayReport.pdf> (Accessed 31 December 2013). 115 p.
- Bailey, R. M., Latta, W. C., and Smith, G. R. 2004. An Atlas of Michigan Fishes with Keys and Illustrations for their Identification. Miscellaneous Publication No. 192, Museum of Zoology, University of Michigan. Ann Arbor MI. 215 p.
- Lee, D. S., Gilbert, C. R., Hocutt, C. H., Jenkins, R. E., McAllister D. E., and Strauffer, J. R. 1980. Atlas of North American Freshwater Fishes. Publication #1980-12 of the North Carolina Biological Survey. 867 p.
- Muller, B. 2001. Raising Dusky Darters. American Currents 27(3): 23–24. North American Native Fishes Association.
- Simon, T. P. 2011. Fishes of Indiana: a Field Guide. Indiana University Press, Bloomington IN. 347 p.