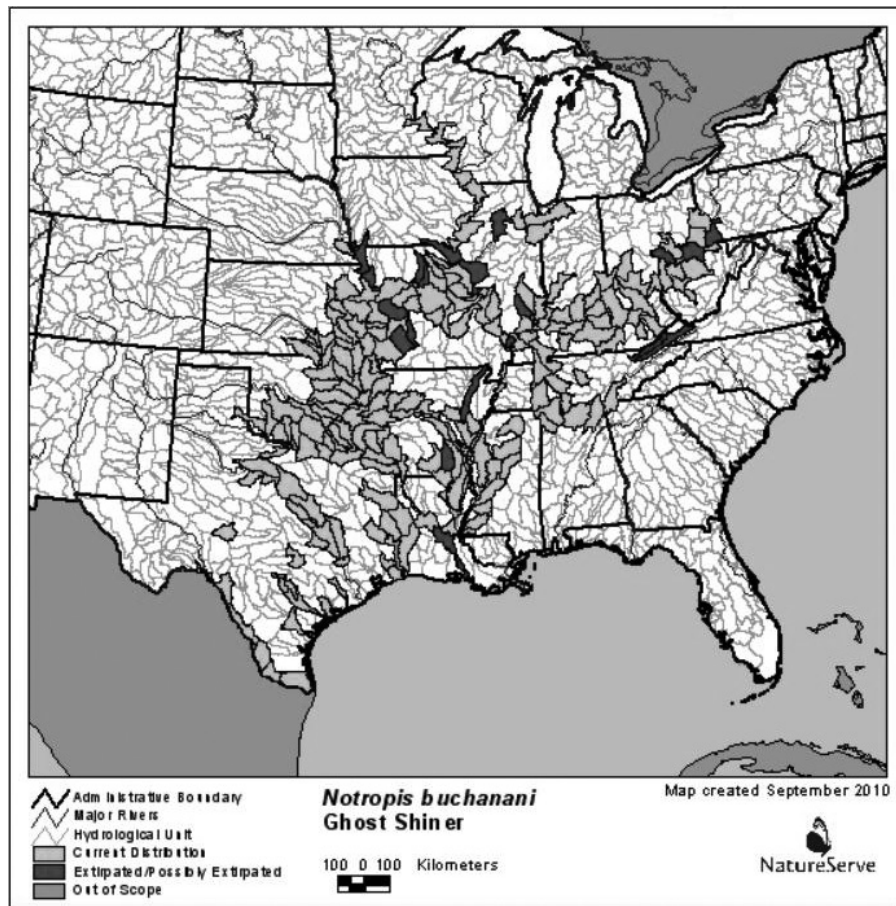


# Tiny See-through Ghosts of the Deep and Dark Rivers...

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*Ghost Shiner distribution in North America. Map Source: NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>.*

Ghost Shiners *Notropis buechanani* (see page 15) are a very small and rather secretive species of minnow. I first encountered them in graduate school while living in Bowling Green, Ohio, near the Maumee River. At first I did not notice them and just overlooked them as being small young of either Sand Shiner *Notropis stramineus* or Mimic shiners *Notropis volucellus*. As I got to know my fish better, I realized that these little see-through fish that were so abundant in the Maumee were actually a little bit different in shape (deeper bodied) than Sand or Mimic Shiners. They also have rather long fins with the pelvic fins reaching to or beyond the beginning of the anal fin and the dorsal, and the anal fins are falcate, or have a hook to them with a concave rear edge. Other features that help identify them are the near lack of pigment except for a few melanophores along the base of the fins (particularly the anal fin),

extremely narrow and tall scales along the lateral line behind the head, and a vertically-thick caudal peduncle. Additionally they are rather see-through and typically are only about 1-1.5" in length. They are Ohio's smallest cyprinid and one of the smaller ones found throughout North America. They were not found in the Maumee River until relatively recent times (late 1970s or early 1980s) and not much before that for the entire Great Lakes Basin. Some people may think that this recent discovery may imply a recent introduction to the Great Lakes and until recently I as well may have gone along with this theory.

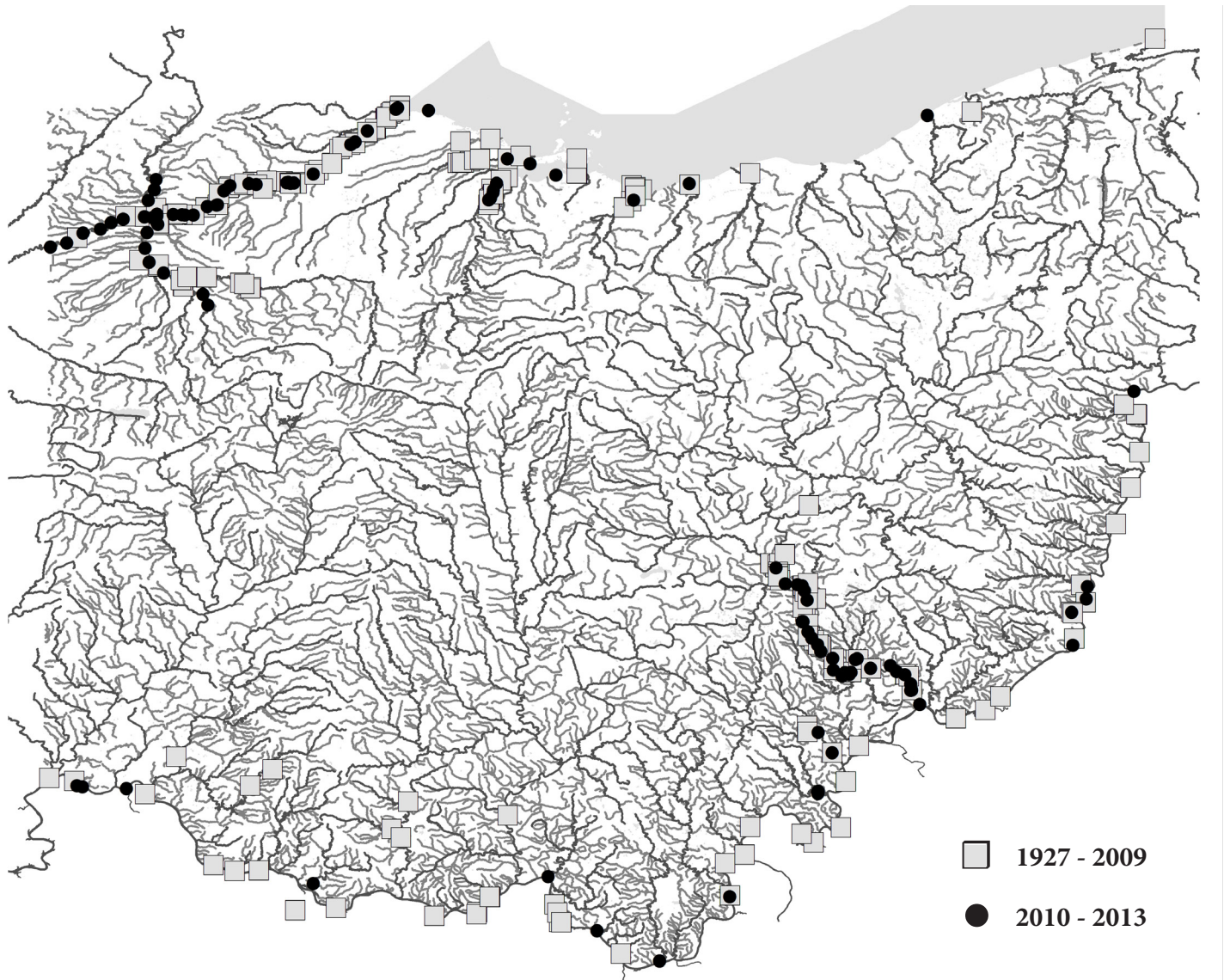
Outside of the Maumee River, Muskingum River, and a few sporadic records in the Ohio River, the Ghost Shiner was not known to be a widespread species in Ohio. They have recently been found in several other large tributaries to Lake Erie in the lower

pooled stretches, but in most cases the numbers reported are rather low. In 2011, I began a project through The Ohio State University, funded by the Ohio Division of Wildlife, to inventory the distribution of all Ohio fish species by compiling various sources of data and doing additional sampling to fill in data gaps. One such gap that we identified, from the onset of the project, was the under-sampled benthic community in large river systems, including the mainstem Ohio River. To resolve this issue, we decided to sample with a Missouri benthic mini-trawl. Ghost Shiners were not one of the species I had in mind when we devised a plan to get better sampling coverage of Ohio's large rivers, but it didn't take long to discover that they were indeed a big part of that community.

The Muskingum River was the first place we started with our new boat and trawl set up. This river has a series of ten very old lock and dams that were constructed in the 1840s and we decided to sample each tailwater section. We also sampled at least one location in each pool between the dams. This sampling was conducted in the summer of 2012 and we captured a wide variety of species below the dams, with over 30 species at several of them. We did get the occasional Ghost Shiner in these areas, but it wasn't until

we moved down to the pooled stretches that we realized just how abundant this little fish was. We routinely pulled up hundreds of these tiny little see-through shiners from the depths of the pooled sections of the Muskingum River. I recall one afternoon where we decided to trawl in a deep pool on the outside of a sharp bend that was a little over 30 feet deep. We pulled up well over 100 Ghost Shiners out of this deep pool with a single one-minute pull of our trawl.

As the project went on we found that Ghost Shiners were by far the dominant cyprinid, often the only one, living in the depths of the pooled stretches of the Muskingum River. Later in 2012, we trawled a lot on the mainstem of the Ohio River. We only found an occasional Ghost Shiner in the Ohio River, but nearly every time we tried sampling in the pooled portion of the lower end of a tributary in depths of 12 to 20 feet, or even deeper, we caught them. We have continued to find them in 2013 where most recently we found them to be abundant in the lower Hocking River. Needless to say when our project is complete the Ohio distribution of the Ghost Shiner, and many other species, will look significantly different from what was historically known.



*Ohio Ghost Shiner records. Map by Brian Zimmerman.*



Konrad Schmidt



Brian Zimmerman

*Trawling the Muskingum River*

After finding that these unique shiners are so abundant in deep, dark places and when they are captured in shallower water it is often quite turbid, their lack of pigment and see-through appearance started to make more sense to me. They simply are just blending in with their surroundings. Imagine if you were living in deep water or muddy water with very little light all the time, then there is no need to have any coloration. Being a very small fish and living in very large schools where you all blend together because you are practically see-through probably also goes a long ways in avoiding predators. I now think this fish has probably always been a part of the Great Lakes fish community and was just not as abundant, historically, as it is now. Since the Maumee River undoubtedly was once clearer before intensive farming in its watershed, which caused a lot of sediment to run off into the river, it probably had less suitable habitat for the Ghost Shiner and they probably were only found in deep, dark pools. Now that the river is turbid

almost all the time this little fish no longer only stays in the deep pools because the entire river is a low light environment. In short, Ghost Shiners like dark places whether that is a deep pool or just murky water not allowing much light penetration. This seems to be a species that has actually benefited from human disturbance, at least in Ohio. This, of course, is just my personal observations and an educated guess, but I feel rather confident I'm on to something.

I have found this small shiner to also be a rather suitable aquarium fish and usually have at least a few around in some of my tanks. They are not picky eaters and do just fine feeding on standard flake food. They do like to stay in fairly tight schools when kept in a large aquarium and seem to avoid bright lights, often congregating in a dark corner. I would compare them to Neon Tetras just without the flashy colors. So if you're looking for a very small tightly-schooling minnow to keep in a community tank, the tiny ghosts of the deep and dark might be for you. 🐟

Brian Zimmerman

*Trawling catch: mostly Ghost Shiners*

Brian Zimmerman

*Habitat: Muskingum River (Muskingum County, OH)*



*Ghost Shiner - Brian Zimmerman*



*? gell Yg River (Muskingum County, OH)*



*Licking River (Muskingum County, OH)*

*Ghost Shiner - Konrad Schmidt*



*Marais Des Cygnes River (Bates County, MO)*