Gilt Darters Return to New York's Allegheny River

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Gilt Darters (*Percina evides* Jordan and Copeland 1877) disappeared from New York decades ago, but still occur farther south in Pennsylvania. These pretty little darters are a valued component of the Allegheny River system because of their contribution to biodiversity and their yet-to-be-fully-understood links within the river ecosystem. The New York State Bureau of Fisheries would like to see them returned to their historic range!

The Gilt Darter's U. S. distribution historically included the largest streams of the Appalachian region of western New York and Pennsylvania. Due to poor water quality and habitat degradation that followed landscape development, industrialization, and dam construction of many decades ago, the abundance of the Gilt Darter was greatly reduced. Gilt Darters are listed as endangered in New York and threatened in Pennsylvania. Elsewhere, they are presumed extirpated in Iowa, Illinois and Ohio. Status ranks include critically imperiled in Mississippi; imperiled in Alabama, Georgia, West Virginia, Virgina, and Wisconsin; and vulnerable in Minnesota (NatureServe 2013). However, populations in the southern highland regions within the Appalachians and Ozarks seem to have fared comparatively well.

In New York, the earliest and only Gilt Darter occurrence records came from 1937 when the New York Biological Survey (NYBS) caught them at three places near Salamanca in the Allegheny River. A total of 37 sites were surveyed on the river and the entire catch tallied in at over 1,200 fish with 240 being darters. Of those, only six were Gilt Darters. The first record of Gilt Darters in Pennsylvania also came from this period and it too was attributed to a NYBS worker and future pillar of ichthyology, Dr. Edward C. Raney.

Among those many talented NYBS fish surveyors was Dr. Udell B. Stone, who recounted an interesting Gilt Darter story a few years ago. It was common practice to use in-stream cages to hold captured fishes for the artists Ellen Edmonson and Hugh Chrisp so that likenesses could be painted. The fish illustration series eventually numbered over 130 works, but the Gilt Darter was not included. As the story goes, Gilt Darters were being held for this purpose, but the cage's tether loosened overnight during a rain storm, the fish were lost, and there was never a chance to paint their likeness. The art series was a significant part of the NYBS (George and Daniels 1986) and they are widely used in internet features.

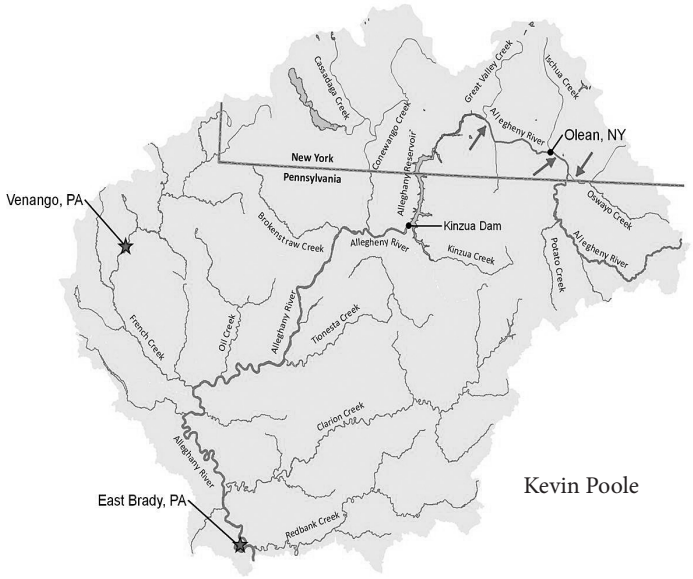
Now, fast forward 75 years. The pollution that historically ailed the upper Allegheny River has largely given way to environmental remedies. The Allegheny's life blood and its arteries now hark back to more natural conditions. Unfortunately for fishes reinvading previously polluted waters, the Kinzua Dam was constructed on the Allegheny River in Warren County, Pennsylvania in the 1960s and acts as an effective barrier.

After making substantial strides in recovery efforts with several other species (Carlson and Holst 2013), the New York State Department of Environmental Conservation (NYSDEC) has now made a similar commitment to the Gilt Darter. New York's initial strategy was modeled after a successful Gilt Darter reintroduction project on Tennessee's Pigeon River where fish were captured from a healthy population and translocated. Obstacles to our use of this strategy quickly became apparent. First, Gilt Darters were considered rare and afforded legal protection in Pennsylvania, the closest known population to New York. Second, genetic issues made abundant populations from further away less desirable. For assistance, we consulted with researchers at Conservation Fisheries, Incorporated (CFI) in Knoxville, TN and potential propagation using a limited number of individuals from Pennsylvania was proposed.

Doug Carlson

Missouri trawling the Allegheny River for darters near East Brady, PA.

The feasibility of the project increased when use of the Missouri benthic trawl was implemented. Dave Herzog of the Missouri Department of Conservation provided a demonstration of its utility for representatives from New York and Pennsylvania in 2005 (Herzog et al. 2005). This new gear increased our ability to capture benthic fishes and allowed us to collect data which indicated the abundance of Gilt Darters in Pennsylvania was actually greater than initially thought (Freedman et al. 2009a; Koryak et al. 2011). Researchers from the Pennsylvania State University took the Missouri trawl one step further and added electrofishing gear to its mouth, increasing its effectiveness (Freedman et al. 2009b). As biologists in Pennsylvania gathered more information about the Gilt Darter population, they decided they were sufficiently abundant to share with New York. This laid the groundwork for a restoration program.



Kevin Poole

2012 release sites on Allegheny River and Oswayo Creek.

Partners for the project included NYSDEC, SUNY Cobleskill, CFI, Pennsylvania Fish and Boat Commission (PFBC), Seneca Nation of Indians and the New York State Museum. A propagation plan was developed to rear Gilt Darters in conjunction with CFI and Dr. John Foster's aquaculture program at SUNY Cobleskill. Funding for this effort was obtained from the federal State Wildlife Grants program. The Division of Environmental Services of the PFBC helped secure permits, locate collection sites, and helped collect brood stock. By 2011, CFI had made gradual progress, however production was behind schedule due to the suitability of the brood stock. During the second year major success was had with the hatching of 1,200 larvae and their transfer to the SUNY Cobleskill facility for rearing. Until that big step of progress, we had worried that propagation would not likely produce enough fish for the recovery effort, so we began asking if Pennsylvania would agree to permit the additional trap and transfer of wild fish. They agreed and we did. These Gilt Darters received elastomer injections under the skin (Coombs 2003) at SUNY Cobleskill to help determine which age groups had a better survival rate. Stocking sites were chosen based on previous records of Gilt Darters, habitat suitability studies by staff at the New York State Museum (Morse, et al. 2009), and on current records of species which prefer similar habitats like the Bluebreast Darter (*Etheostoma camurum* Cope 1870) (Hatch 1986; Koryak et al. 2009; Koryak et al. 2011). The stocking of 800 hatchery juveniles and 400 yearling wild fish occurred in November 2012.

Will Elliot

Release site on Allegheny River at Olean, NY on November 7, 2012.

Public relations specialist Megan Gollwitzer assembled journalists and outdoors men and women to witness this landmark event. A video produced by Buffalo's Channel 2 television station can be seen at http://www.wgrz.com/news/local/story.aspx?storyid=188601. A similar stocking is planned for 2013. Stream sampling is also planned for the summer of 2013 and will be the first opportunity to see whether efforts were successful from 2012.

Acknowledgements

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NANFA News continued from page 7

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Gilt Darter images provided by J. R. Shute (CFI)

Gilt Darter males

Gilt Darter female

Doug Carlson

Gilt Darter historic locality on Allegheny River and 2012 release site at South Carrollton, NY