

Electrofishing Surveys Shed Light on Dynamic Millstone River Fishery

By Shawn Crouse, Principal Fisheries Biologist

It is June, 2018 and American Shad have been on the move! Great efforts are being made to restore migratory routes of anadromous fish species, including river herring and American Shad. A flurry of dam removals have taken place along the Raritan, Musconetcong, and Millstone Rivers, in recent years, with more on the way, including those along the Paulins Kill (ie. Columbia Lake). Shad fishing on the Delaware River has been hot the last few springs, in fact even novice shad fishermen are currently catching more than a dozen per trip while wading its banks. This is not the case throughout the state, as fishing for American Shad is prohibited on all other New Jersey waters, as populations recover.

In continued efforts to restore American Shad (and other migratory fishes) by reconnecting historic migratory pathways, the Millstone River's Weston Causeway dam was removed during the summer of 2017 (www.nj.gov/dep/newsrel/2017/17_0078.htm). The Weston Causeway Dam, located just downstream of the Wilhousky Street bridge in Manville, was the first impediment to fish passage on the Millstone River. The 133 feet long and 5 feet high dam was originally a mill dam at the Weston Mill. The site included a gristmill, sawmill, the dam, and associated waterpower features. The dam had no current purpose; the mill buildings were claimed by arson in July 1983. In recent years, the dam had partially failed and was removed in August of 2017 as part of a Natural Resource Damage Assessment settlement agreement.

The Division of Fish and Wildlife (with assistance from the US Fish and Wildlife Service and the Watershed Institute (formerly Stonybrook-Millstone Watershed Association)) committed to monitor changes to the fish assemblages above and below the dam, before and after dam removal. Efforts will continue for the next several years. Electrofishing surveys are conducted during the spring and fall at five monitoring locations: 1) near the confluence with the Raritan River, 2) immediately below the former Weston Causeway Dam, 3) immediately upstream of the former Weston Causeway Dam, 4) below the Blackwells Mills Dam, and 5) below the Griggstown Causeway.

Like the mainstem of the Raritan River, its 38 mile-long tributary, the Millstone River, boasts a wide array of fish diversity, with over fifty species found in recent years. Migratory species including American Shad, Gizzard Shad, Blueback Herring, Striped Bass, and American Eel have been documented passing the Island Farm Weir fish ladder on the Raritan River near its confluence with the Millstone River, approximately 1.5 miles downstream of the former Weston Causeway Dam. They have also been documented in the Millstone River as part of this project. It was exciting to find adult American Shad during spring sampling and even more invigorating to document young-of-the-year fingerlings in the fall of 2016. Due to the fragile nature of these species, capture and handling are limited to minimize mortality.

The Millstone River offers a rich assortment of resident gamefish including both Largemouth and Smallmouth Bass, a ton of panfish, and trophy-sized carp. The river is stocked annually with Northern Pike, however those who fish it benefit from some of other nearby waterways stocked by the Hackettstown State Fish Hatchery. Channel Catfish are plentiful in the Millstone,

which are presumably transplants from the neighboring annually-stocked Delaware & Raritan (D&R) Canal. Muskies are occasionally captured, possibly originating from the D&R Canal or Carnegie Lake stockings. Transient Walleye, which are not stocked in the watershed, are likely making their way from the Delaware River via the D&R Canal. In fact, sizable Walleye, up to 6 pounds, were found in most surveys in the lower Millstone River. Stocked Rainbow Trout appear as well, coming from any number of trout stocked waters in the watershed. A rigorous fish stocking program is not necessary, as a respectable fishery currently exists, in fact additional stocking of top predators may be contrary to the recovering American Shad population.

In the lower reaches, the most numerous species captured were American Eel, Common Carp, Redbreast Sunfish, Bluegills, and Spottail Shiner, with moderate numbers of Large and Smallmouth Bass and Channel Catfish. The surveys near Blackwells Mills and Griggstown, where the river is noticeably smaller in every measurable way, yielded large numbers of American Eel, Redbreast Sunfish, Bluegill, and native forage species such as Spottail Shiner and Tessellated Darter. Less commonly known species such as the Comely Shiner and Shield Darter (potential for listing as a Species of Special Concern) are also found in the Millstone, along with the Bridle Shiner in its tributaries, a potential State Endangered Species. Other fishes of conservation interest, and more often found in the Pinelands, are found in the southern-most headwaters including the beautiful Bluespotted Sunfish, Mud Sunfish (potential Species of Special Concern), Swamp Darter, Tadpole Madtom, and the Pirate Perch.

Although the removal of dams is considered an environmental win, negative impacts also may occur, such as expanding the range of several invasive species including Grass Carp, Flathead Catfish, Green Sunfish, and Oriental Weatherfish. Other non-desirable fishes, such as Mosquitofish and Common Carp, which have been found in the lower Millstone River, may also extend their range upstream. By rule, anglers are actually required to humanely destroy species regulated as “Potentially Dangerous Fish” (see page 17 of the 2018 Freshwater Fishing Digest / <http://www.njfishandwildlife.com/pdf/2018/digfsh18.pdf>). Unfortunately, large Grass Carp are fairly common in the lower Millstone River, with five encountered during 12 hours of electrofishing, the largest of which measured 46 inches and weighed over 51 pounds.

Fishing access on the Millstone River is plentiful, particularly through the Delaware and Raritan Canal State Park. Most of the river is wadable or can be fished from its banks, but the best approach is drifting in a kayak, canoe or small jon boat. The river can be fished easily by boat from the primitive boat launch at the southern end of Lincoln Avenue Park, downstream of the Wilhousky Street / Weston Causeway bridge in Manville. Be sure to scope out the river in advance and plan your access and portage locations wisely as you will encounter a combination of shallow water, dams, and rapids that can endanger your outing.

With improved fish passage and the river reverting back to a more natural flow regime, one might anticipate several responses in the fish assemblage. The most beneficial change would be opening additional stream mileage to migratory species such as American Shad, Blueback Herring, and Striped Bass. Additional game species such as Walleye and Musky may also move upstream, although so may several undesirable species. As habitat shifts from lake-like to a more stream-like habitat, species such as Smallmouth Bass might outnumber Largemouth Bass. There might also be changes in Species of Conservation Concern such as Comely Shiner and

Shield Darter. All reasons why it is important to continue to monitor the dynamic fish populations of the Millstone River. There is no doubt that the “Mighty Millstone” is an underrated fishery, but don’t just take my word for it. Enjoy the array of photos taken on the Millstone over the last two years.



Adult American Shad captured by NJDFW during electrofishing surveys to monitor changes in the fish assemblage in the Millstone River



Weston Mill Dam (photo by John Jengo) (left) and after removal of dam (right).



Captain's view... during boat electrofishing survey on the lower Millstone River, approximately ½ mile upstream from confluence with Raritan River.



Blackwells Mills Dam, located approximately 4.5 miles upstream of former Weston Causeway Dam. Low flows conditions during fall of 2017



Crew of ten using electrofishing barge to capture fish near the Griggstown Causeway



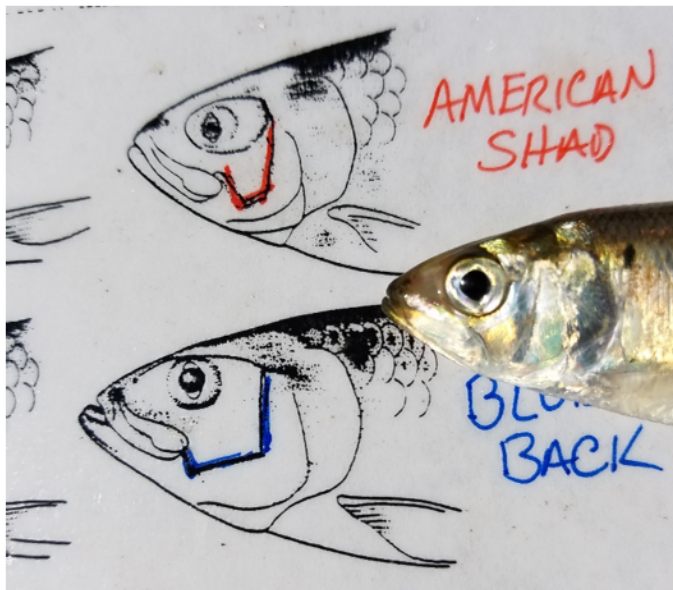
Field crew sorting through hundreds of fish near Griggstown Causeway.



Male American Shad held by Fisheries Biologist Eric Boehm



Confirmed Blueback Herring run in the Millstone River



Q: Name that species?

A: One of approximately 50 juvenile American Shad observed during the Fall 2017.



Smallmouth Bass measuring 17.5 inches and weighing 2.6 pounds, held by Hourly Fisheries Technician Kyle Civalier



Beautiful Millstone River Walleye over 26 inches and 6.4 pounds held by Fisheries Biologist Shawn Crouse (Author)



Mixed bag of Largemouth Bass (left) and Smallmouth Bass (right), held by Steve Tuorto of the Watershed Institute.



Hearty Millstone River Chain Pickerel



Northern Pike held by Fisheries Technician Chuck Sedor.



Surprise Musky captured in the lower Millstone River



Chain Pickerel held by Fisheries Biologist Eric Boehm



Sizable Channel Catfish held by Hourly Fisheries Technician Maria Berezin



10-inch Striped Bass from Millstone River



Yearling Largemouth Bass captured in Millstone River
(captured August 2017 / born spring 2016)



35-inch Common Carp from Millstone River
estimated at over 25 pounds



Robust 13.7 inch Largemouth Bass from Millstone River



There is no shortage of Channel Catfish on the Millstone River, with most measuring 16-24 inches



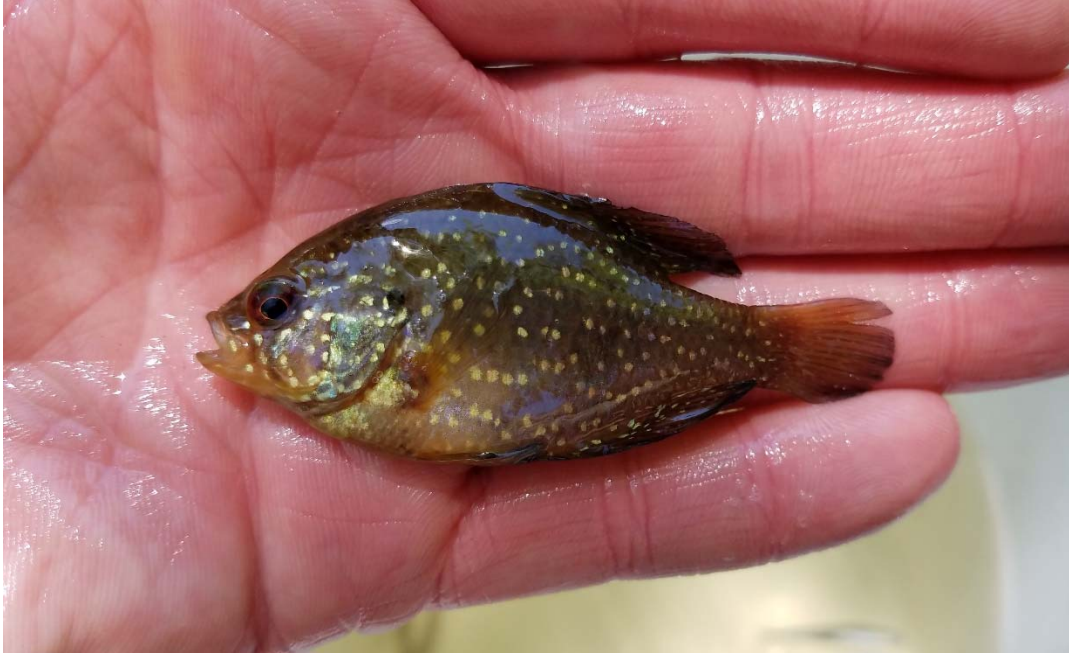
Young Brown Bullhead in hand (with aquatic insects known as Water Scorpions in background)



Abundance of young American Eels being counted and released following Millstone River electrofishing survey



Fallfish captured during electrofishing survey



Native Bluespotted Sunfish encountered from Millstone River May 2018.



Comely Shiners, a potentially listed state Species of Special Concern



That's no Walleye! However it's in the same family... the Shield Darter, is an uncommon species potentially to be listed as a state Species of Special Concern



First Flathead Catfish documented upstream of former Weston Causeway Dam during fall of 2017 electrofishing survey on Millstone River.



Emily Powers (NJDEP Hourly Fisheries Technician) and Cathy Marion (USFWS Biologist) holding 46 in. / 51.8 lb. invasive Grass Carp