Shortnose Sturgeon

by Karl Blankenship

large photo-Bob Meadows, small inset photo-Hal Brundage, Environmental Research and Consulting, Inc.

Last winter, two scientists began setting gill nets in the Delaware River to catch one of the rarest fish in the state. They pulled them up by the dozens. Sometimes even faster: One day more than 500 shortnose sturgeon were netted. The fish were tagged and released with the hope that they would be recaptured later so that scientists could figure out how many remain in the river.

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The National Marine Fisheries Service shortnose sturgeon recovery plan describes the need to clean up spawning rivers, improve passages at dams, curb the kill of sturgeon in other fisheries and even stock fish in places where they've vanished.

photo-Hal Brundage, Environmental Research and Consulting, Inc.

The answer, they say, will tell a lot more than just how many shortnose sturgeon remain in the Delaware. "It is sort of a report card of what human activities are doing," said John O'Herron, an environmental consultant. "It may be a hallmark species; its presence indicates the overall health of the system."

O'Herron and another consultant, Hal Brundage, are tagging and releasing Delaware River shortnose sturgeon as part of a project funded by the National Marine Fisheries Service and the U.S. Army Corps of Engineers. These agencies are interested in shortnose sturgeon because of the effect harbor or channel dredging could have on the species. The shortnose, which can grow to lengths of more than 3 feet and live for decades, is the only Pennsylvania state-listed fish also listed as an endangered species by the federal government.

Their work comes at a time when interest in the long-neglected fish is growing. Thirty-two years after being placed on the endangered species list, the National Marine Fisheries Service in January released a "recovery plan" for the shortnose, which, in general terms, describes the need to clean up spawning rivers, improve passages at dams, curb the kill of sturgeon in other fisheries and even stock fish in places where they've vanished.

Shortnose sturgeon, though, have often been on the short end of any research effort. Far less is known about them than their larger cousin, the Atlantic sturgeon, which at the turn of the century was the target of intense fishing pressure to support a thriving caviar industry. Also unlike the Atlantic sturgeon, which spends much of its life migrating along the coast, the shortnose spend almost all of their lives in large coastal rivers and the upper reaches of tidal estuaries.

In the Delaware, for example, O'Herron and Brundage say shortnose appear to spend most of their time in the tidal river and upper part of Delaware Bay. They make a spring spawning run into nontidal water near Scudders Falls, upstream of Trenton, although there are occasional reports of finding them even farther upstream.

As a result, shortnose sturgeon from one river rarely mix with those from another. The recovery plan identified 19 different "population segments" that live in various river systems along the coast. Little is known about the health of any of those individual populations.

That's where the work by O'Herron and Brundage comes in. Both studied the Delaware shortnose in the early 1980s, when the population in the river was estimated to be somewhere between 6,000 and 14,000, making it one of the healthiest populations on the coast. They hope to learn whether the population has grown, shrunk or stayed the same. Their initial success at catching fish, they say, is no indication of the population size. Because both are veterans of shortnose studies on the river, they know where to look. "I think the Delaware population has a lot going for it," Brundage said. "But I think it's safe to say they were historically much more abundant than they are today."

Age of dinosaurs

The shortnose is a survivor of the age of dinosaurs. Its roots date back more than 70 million years. It is, to be sure, an ancient-looking fish. It is covered with bony plates instead of scales. Yet, recent history has not been kind to the fish. Its problems date at least to the booming sturgeon fishery of the late 1800s and early 1900s. While the Atlantic sturgeon was the focus of the attention, the luckless shortnose was often caught and killed as well. The Delaware was the center of the East Coast's caviar business at the time. "This was the sturgeon capital of the world," O'Herron said. "We used to send sturgeon over to Russia."

The boom days of the sturgeon fishery quickly died because sturgeon can't reproduce rapidly enough to support intense fishing pressure. Meanwhile, shortnose continued to be killed in other ways. Anecdotal reports suggest that they would become entangled in gill nets targeting shad, sometimes in large numbers. Fishermen would also kill the sturgeon to protect their gear. Booming development sent huge loads of pollution from rivers, fouling sturgeon habitat.

Once the population was driven down, it had a hard time rebounding. Shortnose sturgeon in the region don't reach maturity until they are 6 to 7 years old. Even then, it may take several years for them to begin spawning, and they don't appear to spawn every year. Sometimes, they take as much as a 10-year break between spawns. The federal government listed it as an endangered species in 1967, although it took until 1999 to write a road map for recovery.

Recovery plan

For some populations, the recovery plan may be too late. Prospects of a shortnose comeback in the Susquehanna River, for instance, are gloomy. Surveys by the U.S. Fish and Wildlife Service (USF&WS) in the upper part of Chesapeake Bay have found only a handful of shortnose sturgeon in recent years. Genetic analysis of those fish shows that almost all of them are actually from the Delaware Bay. Whether they are fish that periodically move between the two bays through the Chesapeake and Delaware Canal, or whether they are fish that have permanently relocated and now breed in the Chesapeake, is unknown. "Either way," said USF&WS biologist Jorgen Skjeveland, "there's probably very few left of the old Chesapeake Bay stock."

Shortnose are considered to be vulnerable to contaminants. But so little is known about their biology and environmental tolerances that the recovery plan found it difficult to make specific recommendations for habitat protection. "There is much speculation about the factors that affect the recovery of shortnose sturgeon populations yet not much conclusive evidence," the plan said.

Another worrisome sign is the lack of small sturgeon found either during the 1980s or in work done this year. Shortnose sturgeon can live decades–the longest-lived shortnose on record survived 67 years–and it is likely they live up to 50 years in the Delaware. And those older fish keep turning up in the nets. "We're catching a lot of fish that John and I tagged back in the 80s," Brundage said. "So we are finding a lot of old fish."

In their work, the scientists said, they have seen only one young-of-the-year sturgeon. "If you don't know anything about the juveniles, you don't know anything about the future for the organism," O' Herron said. "Any living thing depends on its reproduction." They hope to look for the juveniles in the future, and to determine which habitats they are using. "If we can identify critical habitat for the juveniles," Brundage said, "that would be a very important thing for their recovery."

Recovery may not happen any time soon, because of a lack of money and priority. The recovery plan doesn't have a price tag, but it indicates the cost of rebuilding the shortnose population all along the coast to be in the millions. In addition, just having a plan doesn't mean it will be funded. "Sturgeon do not compete well for funds with marine mammals, sea turtles and Pacific salmon," said Marta Nammack, fisheries biologist with the National Marine Fisheries Service Office of Protected Resources.

Even if that money were to become available, don't expect to see a lot more of the fish anytime soon. If the recovery plan were aggressively carried out, the plan says that the shortnose sturgeon probably couldn't be removed from the endangered list coastwide before 2024, largely because it takes the population so long to rebuild. But the biologists working in the Delaware say the sturgeon may be worth the effort. Already, O'Herron noted, the Delaware River has lost two fish species: the rainbow smelt and the longnose gar.

"It would be a shame to lose this one also," he said. "There is no reason to lose it. There is no reason to do things to cause it to go. I think if you do, you are doing things that are harmful to yourself as well. We drink this water. So the question is greater than the sturgeons themselves. It is, what are we doing to ourselves? That is probably the invisible question."