Close Encounters with Prehistory

To know the sturgeon is to love it

by Lynn Teo Simarski and Guy G. Guthridge

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Chesapeake Winter

Fanned by a warm afternoon wind, our trawler turns from the Chesapeake into the Choptank River.

From the depths of the Bay we have just crossed, something is missing: a giant denizen called the Atlantic sturgeon. Scientists at the Horn Point Laboratory in Cambridge, where we dock, are working with scientists in several states to restore the dinosaur-age fish to its ancestral Bay haunts. The species was fished almost into oblivion in the Bay less than a century ago.

The lab's goal is to boost captive sturgeon broodstock by learning to feed and maintain, then breed, enough fish to restore wild populations one day. A lab full of tanks teems with sturgeon. Getting these wild-caught fish to accept food in captivity is the first obstacle.

Erin Markin, a slightly built scientist who leads the Horn Point project, grabs a three-foot fish from a tank with both hands, keeping a firm grip as it flexes its powerful body against her.

With a long snout, sleek silhouette and body armor, the fish looks fierce. Sturgeon have been known to break a keeper's nose or cheekbone, Markin says. In the wild, the big fish's unexplained habit of leaping out of the water can be a navigational hazard to jet-skis.

Markin turns over the sturgeon in her hands to display its whiskery barbels, or feelers, and she protrudes its pink, vacuum-like mouth. Belying their predatory looks, the fish are bottom-feeders, sucking up copious amounts of sand and mud along with their food: insects, shrimp and worms.

Teaching a Prehistoric Fish New Tricks

Sturgeon research is not for those with a short attention span. Just keeping the fish alive and growing in the lab required devising new aquaculture techniques. Wild sturgeon must be painstakingly trained onto a commercial diet or they may starve to death.

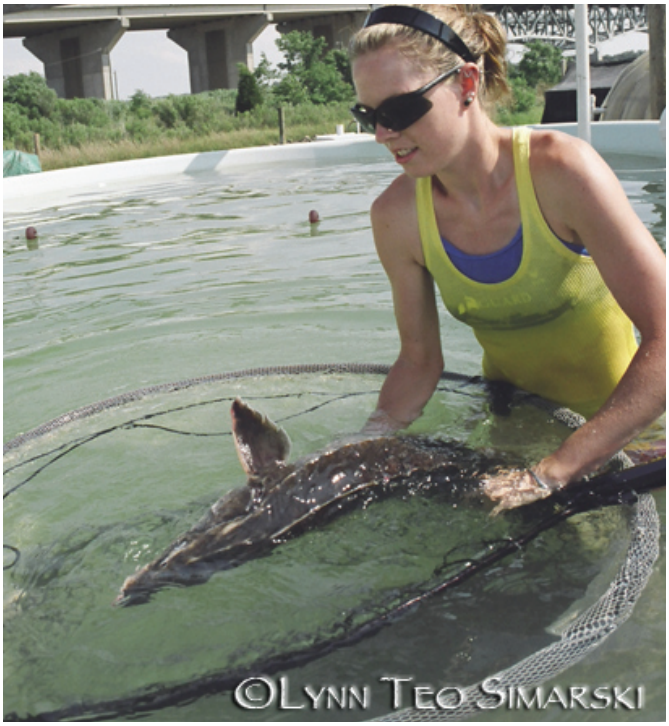
Feed training — a process that can take several months — begins with natural sturgeon fare. Markin thaws blocks of frozen shrimp — low-cost, easy to use and acceptable to the fish — and throws bits into the tank. Smelling the food, the fish swim more actively.

After several weeks comes an intermediate diet with a combined natural and commercial flavor: gelatin with ground shrimp, fish and pellets, along with carrots, spinach and vitamins. Finally, the fish graduate to commercial fish pellets alone. Every two weeks, each fish is lifted in a protective rubber stretcher to scales for a growth-tracking weigh-in.

In another tank, a long shadow circles. This six-foot-long male is one of the lab's largest sturgeon. Such larger and older fish take longer to feed-train. Nearby a 14-foot cutout of a sturgeon mimics the largest one caught in the Chesapeake.

Maintaining these fish in captivity is the first step to producing fish old enough to spawn. The lab has feed-trained more than 50 fish so far.

"We'd like to think that we're one to three years from spawning our first fish," says Andrew Lazur, Markin's partner in the project. He can't be more exact because it's tough to figure out a sturgeon's age or if a female is ripe for spawning. In



Lindsey North, biology student at College of William and Mary, tests Atlantic sturgeon's response to different types of fishing nets, at Virginia Institute of Marine Science.

any case, the lab's females are not yet sexually mature, and that milestone can't be predicted precisely. Captive Atlantic sturgeon have been spawned only once before.

"This is all new stuff," Lazur says.

Preserving the Species

The Atlantic sturgeon once ranged from Labrador to Florida. Like the salmon, it is anadromous, spawning in freshwater, then returning to the sea. In the Chesapeake, the annual sturgeon harvest, mainly for roe or eggs, peaked at 700,000 pounds in the 1880s, then plummeted to 2,200 pounds. Overfishing, damming of rivers and declining water quality all took their toll in the Bay, which accounted for one-tenth of the species' total harvest. Since 1998, fishing for sturgeon in U.S. waters has been prohibited.

"Some think the sturgeon should be left to restore itself naturally," Lazur says. "I think we have 100 years of history that says it ain't gonna happen."

The sturgeon has some daunting strikes against it. It matures slowly, reaching sexual maturity only after 10 to 15 years. It spawns just every two or three years, for which it prefers a hard bottom — more difficult than ever to find in the Bay. Moreover, juveniles are sensitive to waters with low oxygen, a problem in the Bay's nutrient-rich depths.

A decade ago, biologists carried out a trial to see whether captive fish might flourish. Lacking Chesapeake fish, they tagged and released 3,300 sturgeon, from Hudson River stock, into the Nanticoke River.

"The fish survived and grew very well, which proves the Bay can still function as a nursery for sturgeon," says Steve Minkkinen, a biologist with the U.S. Fish and Wildlife Service.

But will these fish remember their birthplace when it is time to spawn? "We don't know if they imprinted to the Nanticoke, since they were a year old when stocked," Minkkinen says.

It is not time to expect any homing fish back, but a program that rewards fishermen who turn in sturgeon might turn up research tags in coming years.

Minkkinen hopes for more experimental releases, but that would require boosting captive numbers, and that's what Horn Point is up to: establishing a broodstock population based on local fish from the Bay or adjacent estuaries.

Unlike Bay icons such as crabs, oysters or striped bass the sturgeon is little known. That may hamper sufficient support for long-term programs to restore the fish.

To Lazur, people need only know the sturgeon to love it. "The sturgeon has a lot of charisma," he says. "It's from the Jurassic, and it survived what the dinosaurs didn't."

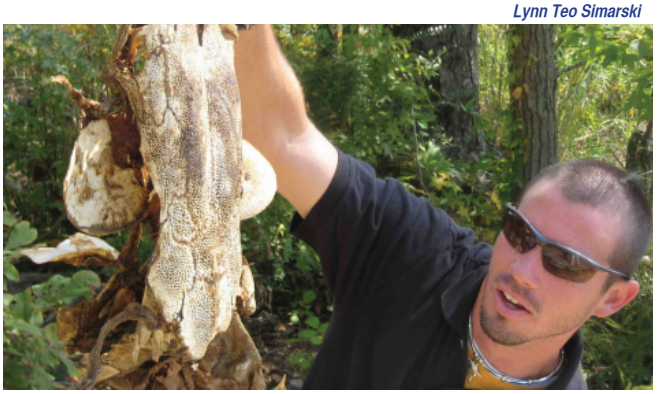
The big fish's endurance makes it a good indicator of Bay health. "The idea is that a healthy sturgeon equals a healthy Bay," Lazur says.

Thus we can love the sturgeon not only for itself alone but also as evidence of a long life lived in robust habitat on the bottom.

There's one more reason to love a sturgeon; they jump for joy. "They're just happy fish," Lazur says, reporting a colleague's opinion on why they leap out of the water. "Let them jump. Get the numbers back up. We'll have more jumping. That will be my reward."

Given the sturgeon's slow growth and the many puzzles of culture and restocking, that reward is likely decades in the future.

Lynn Teo Simarski



Matt Balazik, biology student at Virginia Commonwealth University, displays carcass of James River sturgeon possibly killed by a ship.