

12/9/08

## Secrets of the deep

New research finds Penobscot River sturgeon population burgeoning



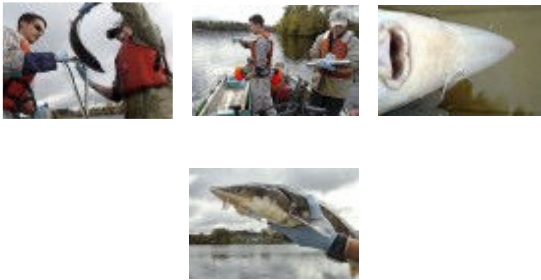
**By Kevin Miller**  
BDN Staff

Twenty feet down in the dark, ice-cold muck of the Penobscot River near Bangor lurks a creature so reclusive and so mysterious that for decades no one knew it was there.

Armorlike plates run the length of its body, which can exceed 3 feet. It has the undermouth barbels of a catfish, but a tailfin more akin to a shark's. A living fossil, the shortnose sturgeon was apparently around during the latter days of the dinosaurs 70 million years ago.

BANGOR DAILY NEWS PHOTO BY BRIDGET BROWN  
University of Maine graduate assistant Phillip Dionne (left) and technician Kevin Lachapelle untangle a shortnose sturgeon from a gill net while doing research recently on the Penobscot River near Bangor. (Photographs taken under the authority of NMFS Permit No. 1595-02)

Now, thanks to modern technology and a dedicated crew of University of Maine researchers, the peculiar habits of the shortnose sturgeon finally are coming to light. The key, researchers have learned, is having a hunch about where to look for this secretive fish and then the time, patience and equipment to find them.



"After we caught that huge batch of fish this fall ... we suspected there were a lot more in the river," said Phillip Dionne, a UMaine master's degree student.

That "huge batch" was 57 fish in a single gill netting. Not bad considering that the first Penobscot population of shortnose sturgeon in nearly three decades was documented just 2½ years ago.

Shortnose sturgeons are small compared to their cousins, the Atlantic sturgeons, which can reach lengths of 10 feet. Both types of sturgeon have been harvested since Colonial times for their meat and eggs, which are prized as caviar. Populations of the fish also have suffered from pollution and dams that disrupted spawning.

Once abundant in rivers from Florida to the St. John in Canada, shortnose sturgeons now are protected as an endangered species by the federal government. Atlantic sturgeons are considered a "species of special concern."

Dionne and his research colleagues were having few problems finding shortnoses one recent, frigid afternoon on the Penobscot south of Bangor (although maintaining feeling in their fingers and noses may have been a challenge).

Rather than gill nets, however, the team was using sonar to nose around the muddy river bottom.

The process began by Dionne and research technician Kevin Lachapelle dropping the heavy, \$70,000 to \$80,000 sonar system — on loan from the National Oceanic and Atmospheric Administration in Woods Hole, Mass. — and its tripod into the ice-cold river.

Gayle Zydlewski, a professor at UMaine's School of Marine Sciences, then would attempt to interpret the splotches the sonar broadcast to a laptop on the boat. Because the sonar showed all objects — whether fish, rock or piece of river junk — as whitish marks on the screen, Zydlewski paid close attention to shapes and any motion from the objects.

Inevitably, the stealthy sturgeons revealed their presence by showing up as long white bands with tails that gently waved in the current. And where Zydlewski found one sturgeon, she almost always found a lot more.

"There's one there, and one there. And maybe one there," said Zydlewski, pointing to the screen. "It's harder to tell when they slow down" during winter.

But it's the shortnose's lethargic nature during winter that makes them easier to find and, more crucially, to count. Shortnose sturgeons apparently spend most of the winter hunkered down on the river floor in groups of anywhere from just a few to a few hundred.

In this case, dozens upon dozens of sturgeons — identifiable by the size of the white smudges on sonar — crowded together on the river bottom.

"When people have done this and gotten good video, they say they look like cord wood just stacked one on top of another," Zydlewski said.

"We're not sure if it has to do with depth or what is drawing them to these particular spots," Dionne said at one point. "I suspect it has to do with river flow where they can conserve energy."

After scanning for fish in each swath of sonar images, Zydlewski would rotate the camera a turn, scrutinize the screen again and then repeat the steps until she had a 360-degree view of the bottom. The crew then would haul up the sonar contraption, move to the next carefully plotted survey spot and begin the process again.

Lachapelle was present back in 2006 when Dionne's predecessor on the research project at UMaine, Stephen Fernandes, hauled the first shortnose sturgeon out of the Penobscot. He has since spent countless hours searching for sturgeons on the river, which isn't a bad job on beautiful Maine summer days when the dress code is shorts and T-shirts.

On this particular day, however, the crew members were covered head-to-toe in hats, gloves and cold-water survival suits as they hauled the sonar, anchors and other equipment from the 37-degree water.

The laptop recorded the sonar images, which an analyst back at their lab would carefully review to count each fish. The information will be used to begin to estimate the population of sturgeons spending the winter in the Penobscot.

"I think we should get a lot of good information," Zydlewski said.

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