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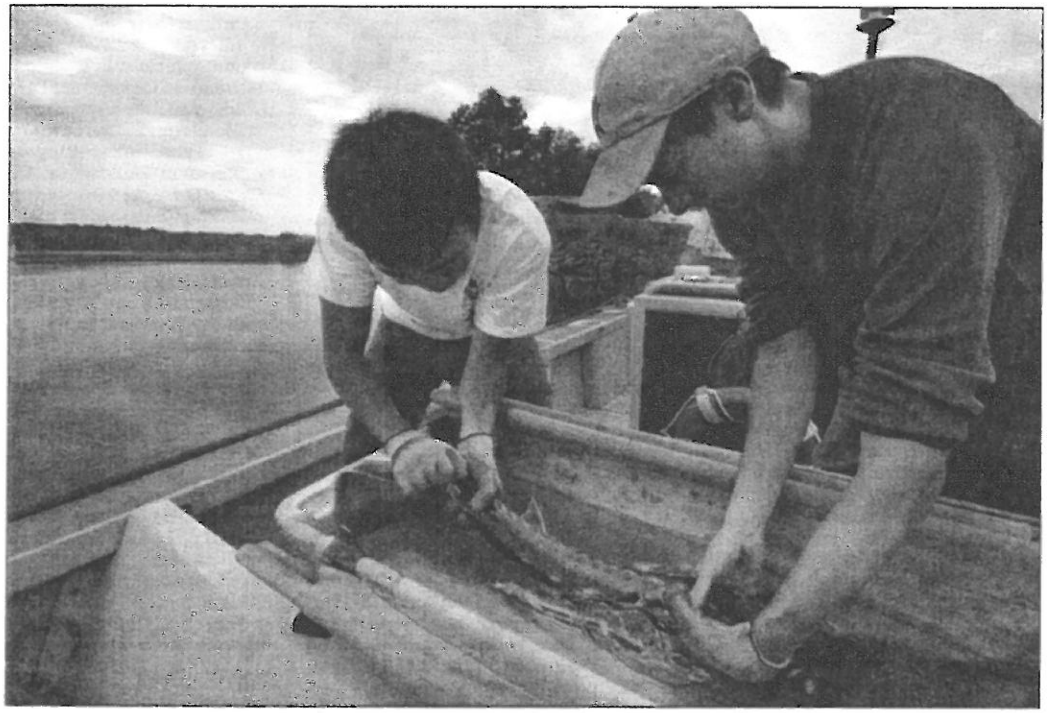


Maine Sunday Telegram photos by Gregory Rec

TAG TIME: Matt Altenritter, left, and Kevin Lachapelle, graduate students at the University of Maine, insert a tag Wednesday into a short-nosed sturgeon that they netted in the Penobscot River in Hampden. Their research on the fish will be used by the Penobscot River Restoration Trust to establish a base line of information on the fishery in the river before two dams are removed over the next two years.

RIVER RESTORATION

Penobscot plan might influence dams elsewhere

BY TOM BELL
State House Bureau

GREENBUSH — Ian Kiraly gently nudges the bow of an alien-like vessel along the banks of the Penobscot River. The electro boat, with its cathode tentacles dangling in the water, delivers 600 to 800 volts of electric current, stunning any fish in the "shock zone," a 100-square-foot area that runs 8 feet deep.

Two of his assistants scoop up immobilized fish and drop them into a holding tank in the center of the boat. Kiraly tallies them — chain pickerel, smallmouth bass, fallfish, white sucker, common shiner minnow — before releasing them.

It's a typical catch here, 11 miles north of Orono and upstream of the three dams that stand between this portion of the river and the sea.

Since he began the study in the spring of 2010 as part of his graduate work at the University of Maine, Kiraly hasn't caught any shad, alewives, blueback herring or striped bass.

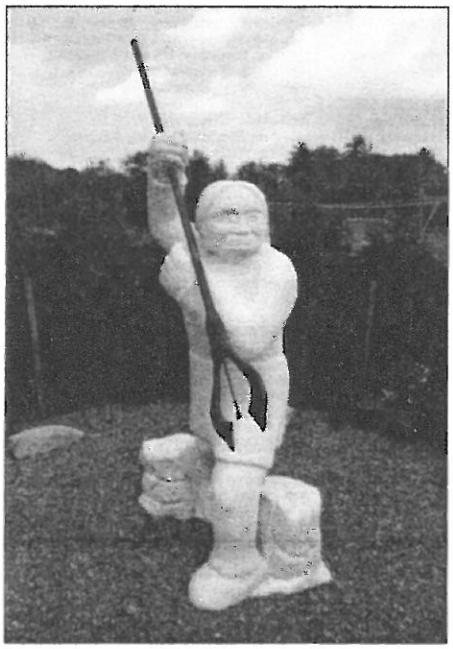
That could change by the spring of 2014, after two of the dams are removed and a state-of-the-art fish lift is installed at the third.

"I'm really curious about what happens when the dams come out, for sure," he said.

So are a lot of other people.

The river restoration effort is among the most ambitious and

PLEASE SEE **PENOBSCOT** B3



THE RETURN OF THE FISH: This sculpture on Indian Island of a native fisherman standing ready to spear a fish symbolizes the return of fish to their native spawning grounds in the Penobscot River. When two dams are removed on the river during the next two years, it is expected that more salmon will reach spawning areas farther upstream.

Penobscot

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complex ever attempted, and it's already apparent that it could affect rivers far from Maine.

Unprecedented research

The amount of scientific work being down on Maine's largest river is unprecedented.

The research eventually will be used to evaluate dam removal options elsewhere, said Charlie Baeder, who is coordinating the research for the Penobscot River Restoration Trust.

No similar research was done before the 1999 removal of the Edwards Dam on the Kennebec River in Augusta. As a result, he said, it's difficult to document the effect the dam's removal had on the environment.

In another respect, the restoration project is widely viewed as a model for how environmentalists, hydropower companies, native tribes and state and federal agencies can benefit when they reach agreements that cover an entire river system, rather than fighting one another, one dam at a time, said Jeff Opperman, a senior adviser on sustainable hydropower for The Nature Conservancy.

A groundbreaking agreement reached in 2004 allowed the Penobscot River Restoration Trust to buy three dams from the PPL Corp. and plan to remove two of them: Veazie and Great Works.

State fisheries managers this summer already are taking steps in anticipation of the removals. Thousands of juvenile alewives have been released in ponds upstream from the dams.

The alewives will swim downstream through existing passages in the dams and spend the next few years in the ocean. In five years, when the females make the more difficult trip up the Penobscot River to spawn, the dams will be gone.

Yet while the public focus is on dam removal, the project is also an example of how to build new hydroelectric dams properly, Opperman said.

Developing nations around the world are building dams aggressively to produce energy for their growing populations, and environmental groups have little power stop them, Opperman said. The Penobscot restoration project shows that it's possible to build dams and preserve sea-run fish access to rivers.

When he works abroad in countries such as Mexico, Colombia and Costa Rica, Opperman often points to the Penobscot River as an example of both failure and success.

Sea-run fish returning

When the river's dams were built in the 1800s, Opperman said, the builders never thought about balancing energy production and habitat by taking a view of the entire river basin. As a result, the river has experienced massive declines in populations of sea-run fish such as salmon.

In the early 1800s, about 100,000 salmon, 6 million alewives and 2 million shad annually swam from the sea into the Penobscot to spawn, according to state estimates.

So far this year, slightly more than 3,000 salmon have returned. Spawning shad and alewives number fewer than a thousand each.

Now Maine is getting a second chance to do it right, Opperman said.

The Great Works Dam in Old Town will be removed next year; and the Veazie Dam, upstream from Bangor, will be removed in 2013.

In exchange, federal regulators will allow six other dams in the Penobscot watershed to increase power generation, thus maintaining hydropower production in the area at about current levels.

Three of the dams that will remain are on river channels outside the Penobscot's main stem. Two dams will get significantly improved fish passages: an elevator to lift fish over the Milford Dam and a fish bypass at the Howland Dam. The West Enfield Dam already has a modern fish ladder.

The project will improve access to nearly 1,000 miles of historic river habitat for endangered Atlantic salmon and other species of native sea-run fish, such as alewives and shad.

"The lesson here is that there was more than one way to get a certain energy objective," Opperman said. "The first way results in a dramatic loss of migratory fish habitat. The second way has much less impact on fish."

The agreement put an end to former dam owner PPL Corp.'s legal battles with environmental groups and the Penobscot tribe about whether federal regulators should continue licensing the dams.

In 2009, Blackbear Hydro Partners LLC bought those PPL dams in the Penobscot watershed that hadn't been sold to the Penobscot River Restoration Trust.

Scott Hall, a former PPL Corp official who is now an executive with Blackbear Hydro Partners, said the agreement gave the dam owners certainty about future federal regulation of the river and allowed them to make investments.

"From our standpoint, the agreement provides the best of both worlds — clean and renewable hydro energy and restored runs of fish," he said.

Research paying off

On the river, Kiraly's electric fishing project is part of an effort to document today's conditions and enable scientists to determine how the river change once the dams are removed including the movement an composition of fish populations the shape and geological charac ter of the river, water quality marine nutrients and wetlands.

About $1.3 million is bein spent on the largest study eve done in the United States of river basin before dams ar removed, said Baeder, with th Penobscot River Restoratio Trust.

Already, the research is payin off.

Few people believed tha many sturgeon lived in th Penobscot, but researchers wh have been tagging the fish in th river since 2006 have found tha about 600 live below the firs dam, in Veazie.

In winter, the endangered fis gather in a large group down stream from the Bangor Wast Water Treatment Plant.

The prehistoric-looking stur geon are covered with bon plates and grow to more than feet long. Researchers hav found that the fish travel to th ocean to reach other rivers, par ticularly the Kennebec River said Matthew Altenritter, who i studying the species for his doc toral thesis at the University o Maine.

He said it appears that stur geon prefer to spawn in th Kennebec River, perhap because they can swim farthe upstream to where the water i less influenced by tides and less salty.

The dam removals and fis passage improvements wil allow sturgeon to migrate farthe upstream in the Penobscot, said Kevin Lachapelle, a graduate student at the University o Maine who is working on the sturgeon study.

"We hope it will restore the spawning habitat," he said.

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Tribe's status influenced river deal

BY TOM BELL
State House Bureau

INDIAN ISLAND — In 1835, when the new dam at Veazie was closed in the winter, blocking all fish passage, the Penobscot tribe protested that the dam would destroy the annual runs of salmon and other sea-run fish.

Their complaints went unheeded, even as thousands of shad and alewives the following spring lingered about the new dam and died there, filling the air with a powerful stench.

The sea-run fish that once journeyed up the river by the millions to spawn have dwindled to the hundreds. It's been more than 25 years since the Penobscot Indian Nation formally harvested a salmon for a ceremony.

However, tribe members are looking forward to the day when they will harvest salmon once again, thanks to the 2004 multi-party settlement that will make way for the removal of two dams downstream from Indian Island and improved fish passage on a third dam.

For the Penobscots, the anticipated return of sea-run fish is more than just an important victory for an environmental cause. It will allow tribe members to embrace their cultural heritage, said John Banks, director of the Penobscot Nation Department of Natural Resources.

Standing on a bluff overlooking the river, he recounted the tribe's decades-long battle to improve fish passage in the river — first blocking the construction of hydropower dam at Basin Mills, then serving as a key player in negotiations that led to the settlement.

The hard work is done, and now the tribe can look to the future with hope, he said.

"We are waiting for the fish to come back," he said.

The Penobscot Nation has about 2,500 members, about 500 of whom live on Indian Island, one of 200 reservation islands in the Penobscot watershed.

The Penobscots are a federally recognized sovereign Indian tribe. The tribe's legal status was a crucial factor in the settlement agreement because it gave the tribe leverage during the federal license renewal process for the hydroelectric dams in the watershed.

Collaborating with environmental groups, such as the Atlantic Salmon Federation, the tribe argued that the federal government is required to ensure proper management and protection of tribal natural resources, such as the right to harvest fish within the waters of their jurisdiction.

The tribe's arguments — contested by then-dam owner PPL Corp. — threatened the company's ability to continue winning licenses from the federal government to produce power on the river.

Banks gives credit to Scott Hall, who was operating the Maine dams for PPL Corp., for taking the initiative to seek a multi-party agreement for the entire Penobscot River basin.

In December 1999, Banks said, a critical meeting took place in a tribal administrative building, a log building on Indian Island. Attending were tribal leaders, government officials, representatives of PPL and several environmental groups.

That meeting opened the way for talks that concluded with the 2004 settlement.

Without the agreement, the issue would have been tied up in court for many years with no predictable outcome for either side, Banks said.

"Both sides wanted something more certain," he said. "We wanted certainty in the future ecological health of the river, and the company wanted some financial security to be able maintain its generation business."

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