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Sea lamprey control on Vermont side of Lake Champlain sparks debate

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BURLINGTON, Vt. The ancient creature attaches itself to the body of its prey with the rasplike teeth lining its jawless maw, punctures the skin with its chisel of a tongue, and then slowly sucks out the victim's blood.

This 20-inch monster, the sea lamprey, is the subject of endless fascination for scientists: an eel-like fish that evolved in the ocean tens of millions of years before the first dinosaurs, but is thriving today in freshwater Lake Champlain. It has become so abundant in these waters that it is wreaking havoc on the salmon and trout prized by people who fish the 120-mile-long lake.

There isn't a fisherman on the lake without a story: once-prized catches that are now bizarrely scrawny; fish marred by distinctive bull's-eye wounds; salmon and trout pulled from the lake with live sea lampreys hanging off them like sinister-looking streamers.

How the sea lampreys got there, how humans unwittingly contributed to their proliferation, and whether they should be eradicated or venerated are questions that have spawned acrimonious discussion in Vermont. Underlying the debate are larger questions: Whether, and how, humans should reconstruct ecosystems that our ancestors altered.

One person's invasive menace is another's biological wonder, even though no one denies, as one environmentalist put it, that sea lampreys are "hard to love," or, as a fisheries official said, they're "not like baby seals."

In part, the debate turns on whether the sea lamprey has been in the lake for thousands of years, or whether it arrived much more recently, and with human help.

As the sea lamprey population has grown, Vermont has expanded its effort to control it.

Earlier this month, a team of biologists poured a yellow-brown chemical, TFM, into the Missisquoi River from a dam in Swanton, about 6 miles south of the border with Canada. The concoction kills lamprey larvae on the silty bottom where the river flows into Lake Champlain.

It was the latest in a series of treatments of the lake's tributaries, said Bradley Young, fishery biologist with the Lake Champlain office of the U.S. Fish and Wildlife Service.

He said the lampricide is the most effective way to end the reign of an invasive species that could cost the state millions in lost revenue from tourism and fishing.

"We can kiss goodbye salmonid fishing in Lake Champlain," Young said. "Or we can help restore a healthy ecosystem, and have a healthy fishery."

In the ocean, the sea lamprey is a parasite that grows up to 3 feet long and feeds on the bodily fluids of fish many times larger than itself, but leaves them alive and healthy. Lake Champlain sea lampreys are smaller up to 20 inches long but so are the fish they prey on. In the Great Lakes, studies have shown that the mortality rate for fish they attack is from 40 percent to 60 percent.

Some in Vermont say that in pumping pesticides into the lake, humans are meddling where they do not belong.

They say sea lampreys might have been in Lake Champlain since the last ice age. They suggest that humans have made the creature an ecological scapegoat for their failure to restore the population of salmon and trout after overfishing in previous centuries wiped out the native strains of these fish. And they say lampricide threatens other endangered species in the lake.

"If you believe the sea lamprey has been here 10,000 years, it's been playing a part in the ecosystem," said Mollie Matteson, conservation advocate for the Center for Biological Diversity, a Tucson-based environmental nonprofit that has an office in Richmond, Vt. "At a gut, irrational level, people are just really repelled by them. It's really hard to love a blood-sucking, eel-like creature."

Eric Palmer, director of fisheries for the state Department of Fish and Wildlife, says the treatments do kill native species of freshwater lampreys, which do not prey on large fish. But the lampricide causes minimal harm to other species, he said: After treatments, fisheries biologists generally find that the lampricide kills only handfuls of fish, compared with tens of thousands of lamprey larvae.

"Our concern is not to kill sea lampreys, it's to restore a balance on the lake," he said.

Vermont's sensitivity about the lake's habitat reflects a broader reconsideration of the role humans have played in shaping it. If the sea lamprey is invasive, it probably made its way into the lake through canals, the way it arrived in the Great Lakes. But recent research suggests the Champlain sea lamprey is genetically distinct from the ocean species, and may have entered the lake as the glaciers receded 10,000 years ago.

If this is true, the eradication by humans of native strains of fish, which may have been better adapted to survive alongside sea lampreys, helped cause the current imbalance.

Deforestation and cultivation of the land filled the lake's tributaries with sediment that made them better suited for sea lamprey larvae to survive.

Since fisheries began restocking the lake with nonnative strains of trout and salmon in the 1970s, the sea lamprey population, judging from the number of wounds on fish, has skyrocketed.

"We're feeding the lampreys by restocking their favorite food," said Ellen Marsden, a biology professor at the University of Vermont who has researched them. "And we're competing for the same fish."

Local fishermen willingly share tales of a lamprey-infested lake. At Datillio's Sunoco, a gas station in South Burlington with a well-stocked hunting and fishing section that is a somewhat of a hangout for outdoorsmen, Bill Kirkpatrick described catching "pencil-thin" trout with numerous suction wounds.

"We used to catch 100 trout in a morning," pitched in Reg Hawthorne. "Now, we're lucky to find 15 to 20, and they're all scrawny."

Vermont and New York both started using lampricide to control sea lampreys in 1990. But when federal funding ended in 1997, only New York could afford to continue the treatments. Vermont rejoined the effort in 2002.

But Vermont, which lists more endangered species in its tributaries than New York does on its side of the lake, uses a lower concentration of lampricide in most streams.

As the sea lampreys have expanded their territory, New York has been quicker to respond with expanded treatment, because Vermont requires more time, and more public involvement, to issue permits to apply lampricide to tributaries.