

Listening to the Lake Radio Program
Sea Lamprey
6/15/05, KUMD Radio, Duluth, MN
9:15 minutes

(Opening music)

Welcome to Listening to the Lake. This is Marie Zhuikov with Minnesota Sea Grant, which is part of UMD. Sea Grant is bringing you this show through the generous support of KUMD twice a month to help keep you in touch with what's happening with the big pond in our front yards – Lake Superior.

The focus of today's program is sea lamprey. Lampreys are an eel-like fish considered an invasive species in Lake Superior and the Great Lakes. Researchers estimate about one hundred and four thousand lampreys are swimming around in Lake Superior. Lamprey control costs millions of dollars every year.

Sea lamprey spawn in Lake Superior rivers and streams. This spring's spawning run has set a record on the Brule River and the run is just about over. Not many people have heard what lampreys sound like and I'll give you a listen to that. But first, I'd like to let you know what the lake had to say yesterday morning at Canal Park.

(Enter lake sounds)

It was nasty by the lake – cold and rainy. The water temperature on the western end averages 41 degrees. The nearshore marine forecast calls for a northeast wind 10 to 15 knots, becoming northerly. Partly cloudy with waves 2 to 4 feet, subsiding to 1 to 3 feet in the afternoon. Tonight it will be partly cloudy with waves at 2 feet or less. A north wind will continue at 5 to 10 knots and will switch to the northwest.

(Fade out lake sound)

Frank LePera has a job worthy of the TV show Fear Factor. Each spring, he descends into a watery concrete vault seething with hundreds of blood sucking sea lampreys. Even though the blood those lampreys usually suck is a lake trout's, the job of walking thigh-deep among masses of the creature is not exactly appealing.



"The first day we had 24 hundred down there. The first time I went down, like I couldn't step anywhere because it was full of lamprey. I'd have to like clean out a spot and kind of kick them out of the way and clean out a little spot to put my feet and make a scoop and bring them out."

LePera works for the U.S. Fish and Wildlife Service's sea lamprey control division. His job is to assess how many lampreys are swimming in the Brule and Amnicon rivers in northern Wisconsin. I accompanied him to the Brule River, where he was in the vault scooping up lampreys with a net next to a low concrete barrier. The barrier is designed to short-circuit the lampreys' annual spring spawning run up the river.

"There's quite a few down there today. Might have a couple hundred down there."

LePera checks the traps daily, and he's found more lampreys than usual this year. The Brule River barrier has trapped 9,000 - a record number since counting began in 1986. Is that good news or bad news for this unwanted species? LePera's not sure.

"Are we just catching more because conditions are right this year? Or are we catching more because there's a lot more in here? So I think we'll find out more once we look at our numbers. I mean, we'll learn more when the numbers come in at the end of the year."



LePera the lamprey trapper then deposits the squeaking creatures into a



(audio of lampreys seething and squeaking)

LePera puts his gloved hands into the squirming mass and pulls out lampreys with clipped fins. These lampreys have been caught before and need to be checked for wire tags that are coded with special information. LePera funnels the lampreys into a machine a little bigger than a breadbox, which is designed to check for the tags. They drop out the other end and into a bucket.

(audio of lampreys thudding into bucket)

No wire tags this time.

"We've only had about 9 out of the 9,000 that we've caught so far. So it's pretty rare to get one that has the coded wire tag. So we just keep on looking. Hopefully we'll find one."

LePera then clips the fins of other lamprey lucky enough to be released back into the river. If they are caught again, their clipped fins help the Fish and Wildlife Service assess their growth and travel patterns. He weighs and measures all of the clipped animals.

Of the remaining lamprey, LePera separates out the females for disposal and the males for later use in a sterilization program. The Great Lakes Fishery Commission, which oversees lamprey control, chemically sterilizes the males so they cannot reproduce. When they are later released back into rivers, they compete with normal males and help lower the lamprey population.

Another control technique the commission uses is toxic chemicals applied to rivers and streams. The chemicals are designed to target young lampreys that live in the sediment of riverbeds. However, this technique is not perfect, and very costly, so the commission is looking to reduce the amount of chemicals it applies to rivers. The commission also wants to increase alternative methods like the male sterilization program so that 50 percent of suppression efforts do not involve pesticides.



Why all this trouble over sea lamprey? Minnesota Sea Grant's aquatic invasive species program manager, Doug Jensen, describes why they are such a problem.

"Sea lamprey are probably the most destructive invasive species ever to hit the Great Lakes. They caused the eradication of lake trout in all of the Great Lakes except for Lake Superior."

And just how did this fish, which is native to the Atlantic Ocean, get here?

"The most plausible explanation for the sea lamprey arriving into the Great Lakes was the Welland Canal that was opened up, and that bypassed a natural barrier around Niagara Falls back in the 1830s. ... By 1938 they had invaded Lake Superior."

Peter Sorensen, a researcher at the University of Minnesota, is exploring one alternative to using pesticides for lamprey control. His research team has discovered that sea

lamprey follow their noses in choosing spawning streams. They found that young lamprey living in riverbeds release several pheromones that help migrating lamprey find their way. Some of these compounds are so new that they don't have names yet. Instead, Sorensen refers to them by their molecular weights.

"The compound we're most interested in is the 704 compound. That compound is detected and will actually attract lamprey strongly in laboratory conditions repeatedly and consistently at 10 to the minus 13 molar and likely lower. ... What that means is that a single gram can activate about 50,000 Olympic swimming pools. Just to put that in other terms that would be 1 gram, which is about the size of about a penny weighs a gram, in a lake a mile wide and 6 feet deep."

"Of course, that makes sense. Because for a long-distance pheromonal attractant to work in the Great Lakes naturally, it has to kind of be detected at those kinds of very low concentrations."

Trials in a Michigan stream look promising. Sorensen describes how the pheromones could be useful for current lamprey control efforts.

"Most of those traps are out there to count sea lamprey, to see how many are there. They're not actually trying to remove them for control. And the reason is you have to remove so many, it's not particularly effective unless you get very very high efficiencies. But perhaps with this pheromone we'll be able to get to those kinds of levels. And certainly, and this is what I think the greatest promise is, we'll be able to get those kinds of levels to trap males, male lamprey, that can then be sterilized and re-released. So it will have sort of a double-whammy, a real amplifying effect."

Sorensen is also hopeful the pheromone-lure method could be used for controlling other invasive fish.

"Things like ruffe and round goby, there's nothing, and Asian carp, there's not a single method now – nothing – to control them. This kind of idea might work there."

Whenever Sea Grant staff give public programs about lamprey, the question always comes up: will lamprey attack people? Doug Jensen responds.

"There's really no risk of sea lamprey attacking humans. The risk would almost be negligible for a sea lamprey to encounter a person and then for that sea lamprey to actually attach to someone that's out there swimming in Lake Superior."

"Through the evolutionary process, sea lamprey have evolved to search for cold-blooded fish, not necessarily warm-blooded humans."

There you have it. Don't worry.

For tips on how to avoid spreading invasive species, visit the protectyourwaters.net web site. This has been Marie Zhuikov for Listening to the Lake from the Minnesota Sea Grant Program at UMD.