

Sea Lamprey in the Bad River Watershed: *Is the cure worse than the problem?*

Editor's Note: Recently, some Bad River watershed residents expressed concern about lamprey treatment in local rivers. Introducing chemicals into the environment is always a concern, but lamprey are a particularly troublesome species. So Watershed Waves asked Volunteer Coordinator Bob Rice to brief us all on the issue.

By Bob Rice

What are sea lamprey?

Sea lamprey are invasive (non-native) parasites with eel-like bodies and mouths that consist of a sucking disk and sharp, rasp-like “teeth” with which they attach themselves to their prey. Each adult lamprey can destroy as much as 40 pounds of fish during the one to one-and-a-half years that they spend in the lakes as adults.

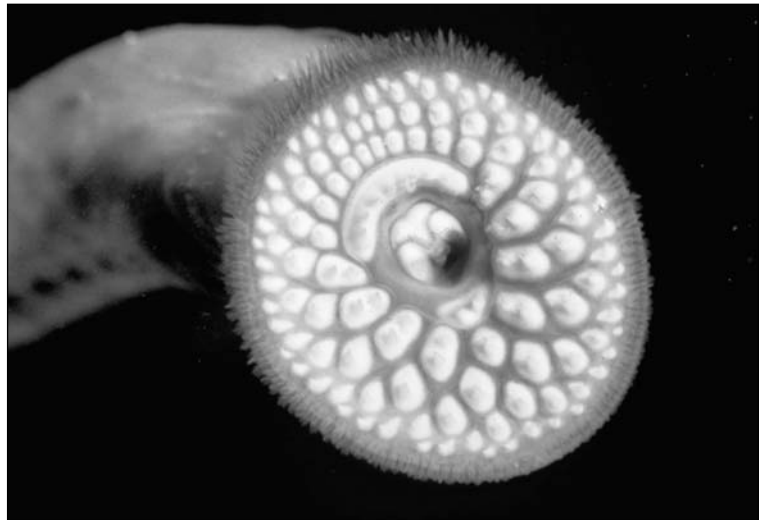
When they reach sexual maturity they cease feeding, detach from their prey and begin their spawning migration into tributaries to the Great Lakes. During the spring and summer months the young hatch and spend their larval lives in those tributaries. Adult females lay between 30,000 and 100,000 eggs. Lamprey die after spawning, but the eggs hatch, and the larval lamprey burrow into soft sediment in areas of streams with slow-moving water.

Where did sea lamprey come from and how have they affected the Great Lakes?

Sea lamprey are native to the northern Atlantic Ocean. Prior to the construction of the Welland Canal on the St. Lawrence Seaway, Niagara Falls created an impassable barrier for sea lamprey. But during the late 19th and early 20th century, they entered the Great Lakes, and since 1938 have been found in Lake Superior. With no natural predator in the Great Lakes, lamprey quickly devastated native game fish species, primarily lake trout. Today natural reproduction of lake trout has recovered in Lake Superior but has all but ceased in Lakes Huron and Michigan.

What is being done to control lamprey in the Great Lakes?

Efforts to control lamprey populations include the installation of mechanical and electric weirs (nets) to prevent adults from entering waterways, chemical treatments targeting larval lamprey, and sterilization of adult spawning males. To date, chemical treatments of larval lamprey have been most effective in killing lamprey. Lamprey are most vulnerable to these chemical treatments during their larval phase, when they are burrowed in the



A sea lamprey with disc and rasp-like “teeth” visible.



silt and sediment of tributaries.

Chemical pesticides, called lampricides because of their strong effect on lamprey with minimal effect on other species, are used in these treatments. The primary lampricide used is 3-trifluoromethyl-4-nitrophenol (TFM). TFM is applied in streams in concentrations that are lethal to larval lamprey but not to other aquatic species. Where tributaries are too large for effective chemical treatment, trapping and sterilization are both used.

Are chemical treatments really safe for other species?

Some aquatic species other than lamprey—most notably lake sturgeon—can be adversely affected by TFM. “For the Bad River

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Reflections on Five Years of Water Quality Monitoring

By April Stone Dahl

I became involved with the Bad River Watershed Association in the fall of 2002 when I started monitoring two sites: Gilman Park in Mellen and the Bad River just outside of Morse. Even though Morse was a bit of a drive from my home, it was definitely the favorite of the two. A year later, I dropped down to one site and then eventually switched altogether in order to monitor the Tyler Forks, just off of Hwy 169,

which is just a few miles from my home. Eventually, some fundraising and bacteria sampling were added to my list.

So, the first weekend of every month was spent suiting up the children, maybe grabbing the ice chisel if it was winter, and heading to the site to collect my water sample and run those 6 tests that sat in my kit. Sometimes my husband, Jarrod, would join us but for the most part we were on our own. I felt it was important to expose my children to something that we all should do at some point in our lives - volunteer. Also, since they are home schooled, I looked at chemical monitoring as a scientific addition to their studies. But regardless of what the reason was for me, it was an expedition for them. They would don their mud boots when it was warm or in full-on winter gear when it was cold and head downstream to explore whatever they could. They made "forts" (which were really just grasses growing or small shrubs, trees, or rocks) and could sit and play for hours...checking out the small fish swimming around, the crayfish hiding or eating the algae growing on the rocks, the different birds, the sky, the wind or the calmness, and the smells. Everything.

Spring was always a lively time for it meant growth and the smells were new. Summer always seemed a little hot and sometimes buggy. Fall was a favorite time to monitor as the colorful leaves would blow all around and the geese would start



to fly south. As it got colder, we would sit above the bridge or on the stream bank and watch the swirls in the water move slower and slower. The foretelling of winter was in those swirls and in the smells at that time.

One time we saw a weasel running down the frozen river at Gilman Park.... another time the snort of the deer as he let us know we were getting too close to him... the ducks swimming just upstream...the

eruption of newly hatched winged ones as they sat in the sunniest, most well protected spot just east of the bridge. All of these beautiful moments, too many to list, were discovered and shared with my children.

I am forever grateful for those moments. Even though my original intention was twofold, my children ended up teaching me much more than I could have imagined. They wanted to play first, stay longer, throw rocks, and ALWAYS get wet. Enamored, all of us, by the wildlife, the water and the moment and it didn't matter if it was raining, shining or snowing. I realized after a while that I wasn't exposing them to anything new for they were children. I thought I was doing something for them but we were really doing something for each other. Isn't that what it's all about anyway?

I started to monitor when my youngest wasn't yet two years of age. She is now seven and my youngest is three. I will surely miss not monitoring the first weekend in every month and I will definitely have to get used to the adjustment. I have met many wonderful people over the years and since we all live in the watershed, I'm sure we'll still be seeing each other around. I know that my kit and this responsibility were handed off to another volunteer, in a good way, and the work will still be done. I appreciate this. miigwech. ♦

Will You Help Us?

You receive this newsletter because we think you are someone who wants to take care of the place we call "home." We hope you find information and inspiration in these pages to help you.

As you know, Bad River Watershed Association does not charge for membership or newsletter subscriptions, because we want to involve all citizens in assessing, maintaining and improving the Bad River watershed. That is our mission!

We will continue to keep you involved and informed at no cost. However, it does cost us about \$4.00 a household every year to send you this newsletter. Would you do your share to free up this money for other projects? If you have not sent us a donation this year, would you consider sending us \$25 so that we can cover the cost of your newsletter, and also send it to a few others? Thank you!



Our Bad River Watershed

CULVERT UPDATE

Editor's Note: This past fall BRWA worked with a class of students at Northland College to move our Culvert Program forward. The following two articles were written by some of those students, and summarize their contributions this semester. Thanks Northland!

Restoration Sites for 2009 — The Results Are In!

By Northland College Centers Project Students

On October 22, 2008, the Sentry Room in the Sigurd Olson Environmental Institute on the Northland College campus was filled with the delicious smell of freshly cooked salmon, caught that morning by student John French.

French's fish was a fitting refreshment at the summit of the most important players in area culvert affairs, which included representatives of various agencies in the Bad River Watershed. It was at this newly created workshop that the culverts to be replaced in the upcoming 2009 season were decided. Facilitated by BRWA Director Michele Wheeler and Northland Professors Grant Herman and Mark Leach, the meeting was observed by 10 students, who had planned the gathering.

Wheeler presented the most problematic culverts in the watershed, with concerns of fish passage, pipe blowouts, erosion, and sedimentation. This was the priority list from which culverts were chosen to be replaced in 2009.

On the table was over \$40,000 in grant money, from funders such as the National Fish and Wildlife Foundation and the U.S. Fish and Wildlife Service. Careful deliberation resulted in the decision to fund eight different crossings in 2009. Culvert replacements will take place in all three counties, and four of the

eighteen townships in the Bad River Basin. Fish in Lincoln, Marengo, and Anderson Townships will be happier in 2009 knowing they are passing through shiny new corrugated metal pipes. The road crews may also find comfort knowing they will not be dealing with flooded roads and eroded stream banks in the future at these sites.

The BRWA's culvert program has proven that culvert replacement is a complex process involving many important players. Coordinating these players in culvert replacement is now happening more often and more fluidly because of the BRWA and the partnerships formed at this workshop.

As first time observers of local culvert politics, we students were surprised by the scale of the local culvert scene. We were especially excited about the role of the BRWA knowing that they contributed such an impressive amount of money towards culvert remediation. Concerned citizens, acting through the BRWA, are paying attention to watershed integrity and fish friendly culverts. Even though there are over a thousand culverts in the Bad River watershed, knowing that eight more will be better next year, is proof that grassroots organizations can make significant changes. ♦

Adventures in the Watershed

We stand apart from each other across an electric fence.

"I don't know... you touch it."

"Oww- yep."

Just before, we had unloaded from the truck and headed down toward the stream under the road—only it was a jungle. We crept through the thicket, battled 30 foot pythons, and boxed with the mosquitoes before at last coming up to the stream. Next, we let the water guide us through the tunnel— to the light! Opening up before us was the Great Plains—a wide area where mega fauna roam. Golly, this sure is an adventure.

"What's the height?" Chuck asked as I snapped back to reality. I retrieved the measuring stick and gave the measurement.

Chuck and I made up just one of the groups from a class at Northland College who went out to check up on culverts amidst the fall colors. The class is called the "Centers Project," where every year we pick a—well, a project to work on that seeks a meaningful connection between classroom and community. This year we ventured through swamps, places of grass taller than your head (and very possibly with tigers lurking behind), over spring-fed mountains, climbed through valleys, and battled the fluctuating, and sometimes deadly, weather. We risked our lives (pinky toes included) for the coat of arms of the Bad River Watershed Association, and the pursuit of



Matt Velie measures a culvert.

culvert assessments. Everyone in class went out with a partner to collect vital information concerning their 10 culverts, with only some of us returning at the end of the day, trotting on a horse back to class. Those who had arrived rarely had an intact eight-foot measuring staff with them; most had been broken in fighting off the land-dwelling sea lamprey to aid the fish on their way to the spawning grounds.

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Side by Side Monitoring

By Naomi Tillison

Both the Bad River Watershed Association (BRWA) and the Bad River Natural Resources Department (BRNRD) collect water quality data within the Bad River watershed. Mainly, we sample at different locations within the watershed with the BRNR sampling mostly on the reservation, and BRWA sampling mostly off the reservation. However there are three sites that both organizations sample throughout the year. These are the Marengo River at Reimer Road, the Potato River at Highway 169, and the Bad River at Highway 2.

Our two organizations test similar parameters (temperature, pH, dissolved oxygen, phosphate, nitrate, turbidity, and E. coli), but we use different methods to conduct the tests. The kits BRWA uses are better suited for volunteers. The methods BRNR uses are better suited for water quality technicians.

So the question is: do our different methods give us the same results? To answer this question, we have volunteers of the BRWA and staff members of the BRNRD go out together to sample the same rivers, at the same time so that we can compare our results.

During this past year, BRWA and BRNR went out together on multiple occasions to sample sites located throughout the watershed. These sites included Bad River at Highway 2, Bad River at Gilman, Marengo River at Reimer Road, Marengo River at Altamont, Potato River at Highway 169, Vaughn Creek at Curry Road, and White River at Long Lake Branch.

Both the BRWA and the BRNRD are committed to collecting high quality data. In addition to sampling side by side, we both send our samples to a certified lab for additional testing. Certified labs have the most reliable equipment for analyzing water samples. Certified labs must meet the specific requirements outlined in the appropriate regulations. Certified labs have proven through external audits they have the appropriate systems in place to generate reliable data. By comparing our data to the lab's analysis, we provide an additional quality control check for our organizations.

If the results collected by both groups are consistent with each other, and consistent with the certified lab, then we can feel more confident in our data. If the results are inconsistent, then the organizations can evaluate the reasons for these inconsistencies and fix the problem.

Over the winter, BRWA and BRNRD will work together to analyze this summer's side by side and certified lab testing. The results will be included in a future newsletter article. ♦

—Naomi Tillison is Water Resources Specialist at the Bad River Natural Resources Department



The Potato River at Highway 169, one of the side-by-side monitoring sites this past summer.

Adventures in the Watershed *(Continued from page 4)*

However, we had not done all this alone against the tide; the rest of the cavalry consisted of the United States Fish and Wildlife Service, road crew members and town chairmen, county conservationists and highway department crews—the decision makers, convened at the round to name which ones, and when; who pays, and how? And thus the streams were cared for and the lamprey kept at bay, preserving order and justice amidst culvert affairs.

These are but a few of the events that have been written in the book of adventures; there are many more pages to be written. All of the things that we, Northland College students,

have done, such as assessing culverts, hosting a workshop, writing for the newsletter, improving the website, helping to better work with the culvert replacement process, and reporting to the community while working with the BRWA help it continue its mission to “promote the healthy interconnection between the human and natural communities of the watershed by involving all citizens in maintaining the integrity of the Bad River watershed for future generations.”

This may have been a tall tale, but we as students are doing our part to preserve the watershed. And a mighty adventure we've had. ♦

Lamprey (Continued from page 1)

watershed, the protection of sturgeon populations is always at the forefront of scheduling treatments,” says Henry Quinlan of U.S. Fish and Wildlife Service. In streams with spawning runs of sturgeon, chemical treatments are conducted at a time that will have the least impact on sturgeon while still causing the maximum mortality of lamprey. That window of time can be quite short and, in the Bad River watershed, necessitates late summer/early fall treatments.

Lamprey treatments are conducted by the US Fish and Wildlife Service in cooperation with tribal and state fisheries offices throughout the Great Lakes basin in a manner that evaluates the unique requirements of each watershed. TFM is applied in 3- to 5-year cycles in order to maximize the effect of the chemical on the lamprey but minimize exposure of the chemical to other aquatic species.

Is it working?

In order to check on the effectiveness of chemical control, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) traps both male and female lamprey to monitor their numbers. The results of their studies are published annually on their web site (see below).

Data from both the GLIFWC research and US Fish and Wildlife studies indicate that lamprey populations have generally increased over the last decade and that populations are above

the targeted levels. Terry Morse, Lamprey Control Treatment Supervisor for the U.S. Fish and Wildlife Service in the Marquette Biological Station says “The Bad River watershed is the largest lamprey producer on the U.S. shoreline of Lake Superior, and that the Marengo and Brunswailer rivers produce more than any other tributaries.”

However, in the last two years there have been declines in population estimates. Given that each adult female lamprey will deposit 30,000 to 100,000 eggs in its spawning cycle, and given the lack of significant natural predators of adult sea lamprey, effectively managing the population is a difficult and ongoing task needing a great deal of cooperation and attention from all of the tribal, state and federal agencies addressing the problem.

Where can I go for further information about sea lamprey?

- <http://www.fws.gov/midwest/Marquette/>
- <http://www.dnr.state.wi.us/fish/lakesup/lampreybarrier.htm>
- <http://www.glifwc.org/biology/greatlakes/GreatLakes.html> ◆

—Special thanks to Bill Mattes of the GLIFWC and Henry Quinlan and Terry Morse of the U. S. Fish and Wildlife Service for providing information for this article.

Thank You!

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MORE UPCOMING EVENTS

Dec. 16-17: Culvert Program Monitoring Workshop. Now that we know which sites we are going to fix in 2009, regional professionals will gather to decide how we can assess the affects those replacements will have on streams and fish. Northern Great Lakes Visitors Center.

Feb. 18, 2009: Environmental Open House at the Bad River Casino, 1:00—7:00 p.m. Come learn about environmental efforts in the area.