

How Native Lampreys Are Portrayed by State Agencies: Positive and Negative Examples

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Lampreys are a widespread and fascinating group of fishes. Some species are parasitic or predatory upon other fish, but in most cases they seem to have little impact on the populations of their hosts, and in many parts of the world they have been prized by local cultures as a source of food. Many lamprey species are non-parasitic and do not feed as adults. These smaller forms are referred to as “brook lampreys” and tend to go unnoticed by the general public. Like their parasitic relatives, however, brook lampreys may be easily observed during their brief spring spawning season as small groups dig pits and lay eggs in shallow, gravel-bottomed areas of streams. Both parasitic and non-parasitic lampreys have been used as bait by anglers, and both groups have become increasingly important as indicators of habitat of relatively high quality.

Unfortunately, the public's perception of lampreys throughout much of North America has been negatively biased by the presence of just one species—the exotic sea lamprey (*Petromyzon marinus*)—in the Great Lakes. The sea lamprey is native to the Atlantic coasts of North America and Europe, where the parasitic adults feed primarily on relatively large marine hosts and apparently cause little mortality. When canals were constructed to provide ships access around Niagara Falls to the Great Lakes, they also permitted sea lampreys to colonize a system where spawning habitat in streams was abundant but hosts were not as large as those in marine habitats. Sea lamprey-induced mortality, along with overfishing, led to the collapse of important fish stocks during the mid-1900s, and the story of the sea lamprey in the Great Lakes became the first case study of the devastation caused by an exotic species in a system that would see the arrival of many more.

International, federal, and state and provincial agencies have expended considerable money, time, and labor in the development and application of methods to reduce sea lamprey populations in the Great Lakes and minimize their effects on fish stocks. It is understandable that these organizations have produced over the years a variety of pamphlets, leaflets, and other written materials to educate the public about these efforts. However, native lampreys also occur in the Great Lakes region. A total of eight species occur in states and provinces that border the Great Lakes, although only four of these occur in the Great Lakes basin proper. It is imperative that government agency publications do not confuse the public by portraying native lampreys in the same negative light by which sea lampreys are depicted. Unfortunately, some examples fall short in this regard.

A Negative Example

My first example is distributed by the Wisconsin Department of Natural Resources (WDNR, 2002). In what was apparently an attempt to take advantage of the trading card craze, this agency has released a set of “Wisconsin Wildcards” that includes a series on “Alien Invaders.” The sea lamprey card shows a close-up photograph of a sea lamprey's oral disc on one side. The reverse side contains written information, but it unfortunately provides an example of how the “soundbite” approach can backfire. Under the heading “What Can I Do?” are the following suggestions:

- Learn how to identify lampreys.
- If you catch a lamprey, kill it.
- Don't throw it back into the water alive.

Because the existence of native lampreys is mentioned nowhere on the card, the uninformed reader who follows these directions will kill any lamprey that is encountered. It would have been better to refer specifically to “sea lampreys” rather than “lampreys” in the first two suggestions, delete the third suggestion (which is redundant), and replace it with the statement, “Do not harm native lampreys.” In this way it might be possible to avoid a situation such as the one I encountered along Jambo Creek in Manitowoc County, Wisconsin, where landowners had encouraged a Cub Scout pack to catch and kill American brook lampreys (*Lampetra appendix*) spawning on their property because they assumed they were sea lampreys (Cochran et al., 1993).

A Positive Example

My second example is a brochure distributed by the Minnesota Department of Natural Resources at Whitewater State Park in Winona County (MDNR, 1999): “Answers to your Questions about Fisheries in the Whitewater Valley.” The last question and answer are as follows:

I saw a lamprey. Do they kill trout? No, brook lampreys are the most common lamprey in the Whitewater streams. They are non-parasitic filter feeders which actually help to clean the streams.

This is a positive example, although it might be a bit misleading to some readers. It would have helped to identify the lampreys specifically as American brook lampreys, the species that occurs in the vicinity of the park. Both parasitic and non-parasitic lampreys are filter feeders during their larval or ammocoete stage; non-parasitic lampreys do not feed as adults. I’m not aware of any actual evidence that filter feeding by lampreys has had a demonstrable effect on water quality.

It is perhaps not surprising that this brochure portrayed native lamprey species in a positive light; American brook lampreys in southeastern Minnesota have been well studied in recent years (Mundahl 1994, 1996, 1998).

Two Steps Forward and One Step Back

My final example is a four-page fact sheet produced by the Michigan Sea Grant program: “The Five Lampreys of Michigan’s Great Lakes” (MSG, 1997). It was a great idea to prepare a pamphlet for the general public that not only points out the existence of native lampreys, but also shows how to identify them. Much of the information provided is

accurate, and the illustrations of each lamprey species and its oral disc are helpful. Unfortunately, however, some statements that were included are vague, equivocal, or inaccurate:

1. The fact sheet states that the ancestors of the four lamprey species native to the Great Lakes region arrived there approximately 300 million years ago. Maybe so, but the Great Lakes region was glaciated repeatedly during the Pleistocene, and it would not have been possible for lampreys to colonize the area for good until approximately 10,000 years ago.
2. To say that sea lampreys “drifted” into Michigan’s waters from the Atlantic is potentially misleading, at least to those who equate the term with a passive movement dictated by currents or waves. To the extent that the term implies a gradual dispersal into a new area, it may be adequate.
3. From the wording used to contrast lampreys and eels, it might be incorrectly inferred that lampreys lack vertebrae.
4. The table that purports to list the average total adult length for each species actually provides a range of lengths for post-metamorphic individuals. It’s true that lamprey biologists will sometimes use the term “adult” as a kind of informal shorthand to refer to post-metamorphic individuals, especially when comparing them to ammocoetes (larvae). For non-parasitic lampreys, it makes little difference, but a four-inch long silver lamprey (*Ichthyomyzon unicuspis*) just beginning to feed parasitically is not an adult in the sense of a sexually mature individual. For parasitic species, terms such as “parasitic-phase,” “upstream migrant” and “spawning-phase” permit more precise descriptions of individual lampreys at various points in their life cycle.
5. I would have stated that chestnut lampreys (*Ichthyomyzon castaneus*) feed on suckers in addition to trout.
6. I’m not sure what was meant by the statement that silver lampreys usually migrate farther upstream than chestnut lampreys to spawn and feed. I associate parasitic-phase silver lampreys with larger bodies of water than I do chestnut lampreys, and would expect them to move farther *downstream* when they begin to feed parasitically.
7. This pamphlet emphasizes competition between lamprey species as if it is an established fact, although to be fair it does suggest that more studies would be desirable. Although different lamprey species often inhabit different

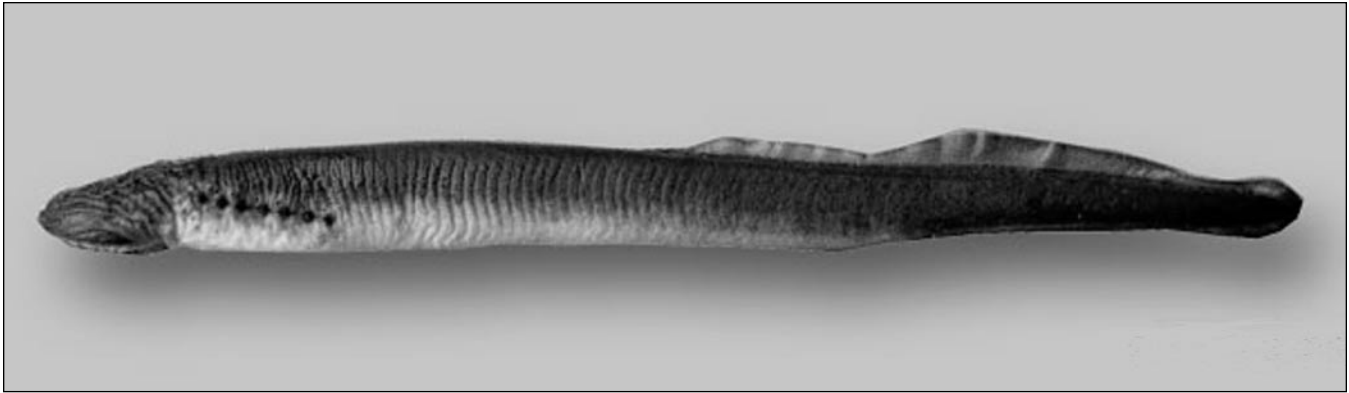


Fig. 1.
Silver lamprey (*Ichthyomyzon unicuspis*). Photo by John Lyons © Wisconsin DNR.

geographic areas, different streams within the same geographic area, or different portions of the same river system, it has not been clearly demonstrated that they compete for food, spawning habitat, or larval habitat in cases where their distributions overlap. In fact, different species often spawn in the same pits, and Cochran and Lyons (2004) have speculated that smaller species may benefit from the ability of larger species to construct spawning pits in areas of greater depth and faster current where the bottom substrate is coarse.

Conclusion

Close et al. (2002) suggested that the conservation of native lampreys has not been a fisheries management priority in the United States, due at least in part to a cultural bias toward perceiving lampreys as pests. That has been changing, albeit slowly, as management agencies have taken on greater responsibility for the welfare of nongame species. One of the most important tools of resource management is public education, and management agencies can do much to address the cultural bias against lampreys with appropriate communications to the general public. These efforts may be ineffective if the information provided to the public is not edited for accuracy, or if the public's ability to handle sophisticated natural history is underestimated.

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