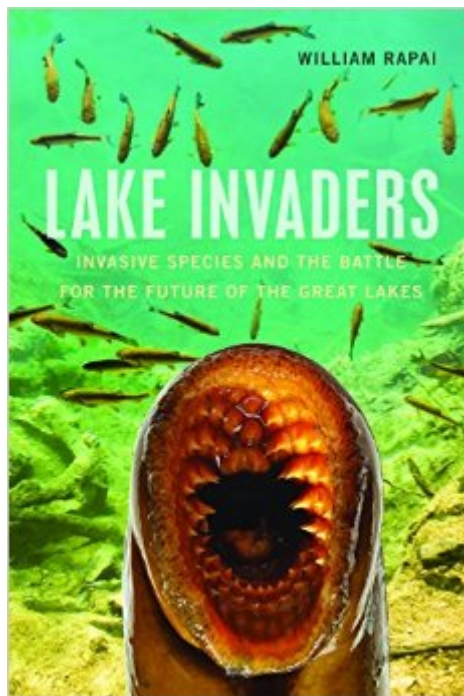


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# Lake Invaders: Invasive Species And The Battle For The Future Of The Great Lakes (Great Lakes Books Series)



## **Synopsis**

There are more than 180 exotic species in the Great Lakes. Some, such as green algae, the Asian tapeworm, and the suckermouth minnow, have had little or no impact so far. But a handful of others—sea lamprey, alewife, round goby, quagga mussel, zebra mussel, Eurasian watermilfoil, spiny water flea, and rusty crayfish—have conducted an all-out assault on the Great Lakes and are winning the battle. In *Lake Invaders: Invasive Species and the Battle for the Future of the Great Lakes*, William Rapai focuses on the impact of these invasives. Chapters delve into the ecological and economic damage that has occurred and is still occurring and explore educational efforts and policies designed to prevent new introductions into the Great Lakes. Rapai begins with a brief biological and geological history of the Great Lakes. He then examines the history of the Great Lakes from a human dimension, with the construction of the Erie Canal and Welland Canal, opening the doors to an ecosystem that had previously been isolated. The seven chapters that follow each feature a different invasive species, with information about its arrival and impact, including a larger story of ballast water, control efforts, and a forward-thinking shift to prevention. Rapai includes the perspectives of the many scientists, activists, politicians, commercial fishermen, educators, and boaters he interviewed in the course of his research. The final chapter focuses on the stories of the largely unnoticed and unrecognized advocates who have committed themselves to slowing, stopping, and reversing the invasion and keeping the lakes resilient enough to absorb the inevitable attacks to come. Rapai makes a strong case for what is at stake with the growing number of invasive species in the lakes. He examines new policies and the tradeoffs that must be weighed, and ends with an inspired call for action. Although this volume tackles complex ecological, economical, and political issues, it does so in a balanced, lively, and very accessible way. Those interested in the history and future of the Great Lakes region, invasive species, environmental policy making, and ecology will enjoy this informative and thought-provoking volume.

## **Book Information**

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## Customer Reviews

I had to think hard about four or five stars. Rapai's writing is informative and generally good, but in a few places it drags and overall, a few more photos of the species concerned would be helpful. But the topic is important, and it's one that desperately needs more people to know about. So in the hope of encouraging readers, five stars. The ugly creature on the cover is a sea lamprey, getting to the Lakes via probably the St. Lawrence Seaway (opened 1959). The much earlier Welland Canal (Canada) and a number of American canal systems have allowed invasive species to get into the Lakes--Niagara Falls between Erie and Ontario was once an effective barrier. No longer; and there are a number of sources. For one, ocean-going ships discharging water ballast let a lot of species loose, including the zebra mussel, the quagga mussel and the spiny water flea. The Lakes vary in size, depth and temperature, so different areas may experience differing circumstances. Invaders are nothing new: the alewives arrives in the later 1800s, outcompeting native species, and by the middle 1900s becoming the basis of a salmon fishery (coho mostly). Salmon have reduced the alewives so much the salmon population is down (they were intentionally introduced, but can't reproduce in the Lakes, so they are the creation of fish hatcheries--start to see a pattern? Reminder: the Great Lakes contain something like 40% of the world's freshwater, and are about 100,000 square miles in total area, this is a very big and very important system. Much of the Lakes' ecosystem was altered by overfishing and pollution. Split between two nations, a number of states and provinces, regulation has and remains difficult (the Coast Guard seems to do a good job). The cycle of a fishery has typically been boom and bust, even before the lamprey and other species that outcompete native species. Some have gone extinct and some, like the lake sturgeon, have become fairly rare. Chapter 2 could stand on its own, detailing the arrival, discovery, explosive population growth and consequent problems. The round goby sounds harmless but the consequences are not amusing. Rapai suggests the species arrived in ballast on Russian ships come to carry grain back to the USSR, grain subsidized by the US in a large and special program in the Reagan years. Chapter 4 could also be a stand-alone case study, on the zebra mussel (and the

related and slightly later quagga mussel). These have had some peculiar results: they filter water and the populations are so huge as to create a water clarity the best since the tribal peoples dominated the region. Good result--but they can quickly and massively clog pipes in power plants and other vital facilities. The invading mussels are eaten by many native fishes, by cormorants and other water birds, and may have saved the rare Lake Erie water snake (no, that is not a joke). The mussels outcompete the once-rich native mussel species and appear to be altering the very base of the food chain by their preferences. This some good/ some bad complicates the issues--but the mussels are here to stay. There's plenty of discussion of other threats, including several species of carp (grass carp, black carp, silver and bighead), rusty crayfish, hydrilla and others. The carp would outcompete many of the remaining native species and disrupt the ecosystems in other ways. That crayfish is an internal migrant, from the Ohio valley. Other dangers are from live animals used in school classes--they order from national bio supply houses, and may get potentially dangerous species that they then let loose at the end of a school year (dangerous here does not mean to people but a potential disruption of the Lakes ecosystems). The carp have acclimated to much of the US and the problem of preventing them from getting into the Lakes is central to the book; invasive species can travel not just in ballast of ocean-going ships, but in bait buckets or in fishing boats transported from lake to lake. Rapai describes working with several different groups and organizations, nicely illustrating potential problems and how they are being dealt with. The book describes some of this, and the reader is likely to better appreciate the work of fish and game outfits (but the EPA doesn't come across so well). One problem may be the names of potential invaders. Three are the monkey goby, killer shrimp and water lettuce. These do not carry much weight of worry. But! The goby carries dangerous parasites, the shrimp are not killers but are voracious and the water lettuce can clog waterways.

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