

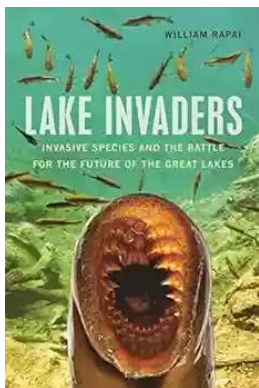
# Invasive Species And The Battle For The Future Of The Great Lakes Great Lakes

The Great Lakes, known for their stunning beauty and vastness, are faced with a grave threat that could change the ecosystem forever. Invasive species have taken a stronghold in these freshwater bodies, posing a serious challenge to the delicate balance that has existed for centuries. This battle for the future of the Great Lakes is not just about preserving a natural wonder but about the survival of numerous species and livelihoods that depend on them.

## The Great Lakes' Unique Ecosystem

The five Great Lakes – Superior, Michigan, Huron, Erie, and Ontario – make up the largest freshwater system on Earth, boasting a combined surface area of over 94,000 square miles. This expansive ecosystem is home to numerous plant and animal species, some of which are found nowhere else in the world.

The Great Lakes region supports a thriving commercial fishing industry, generates billions of dollars in tourism revenue, and provides drinking water for millions of people. It's not just the physical grandeur but also the economic importance that makes protecting the Great Lakes invaluable.



## Lake Invaders: Invasive Species and the Battle for the Future of the Great Lakes (Great Lakes Books Series) by William Rapai(Kindle Edition)

★★★★☆ 4.4 out of 5

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Screen Reader : Supported

Enhanced typesetting : Enabled



## The Threat of Invasive Species

Invasive species, also known as non-native or exotic species, are plants, animals, or organisms that are introduced into an ecosystem where they are not naturally found. Their arrival often occurs through human activities such as international trade, travel, or intentional releases for ornamental or agricultural purposes. Once established, these invaders can outcompete and displace native species, causing extensive damage to the ecosystem.

The Great Lakes have fallen victim to numerous invasive species, wreaking havoc on the delicate balance of the ecosystem. One of the most well-known invaders is the zebra mussel. Native to Eastern Europe, these small freshwater mollusks were first discovered in Lake St. Clair in 1988. Since then, they have rapidly spread, attaching themselves to surfaces and outcompeting native species for food and habitat.

Another formidable enemy is the sea lamprey, an eel-like parasite that attaches itself to other fish, sucking their blood and eventually killing them. Sea lampreys migrated from the Atlantic Ocean to the Great Lakes via manmade shipping canals, and their impact on the native fish populations has been devastating.

The Asian carp, particularly the bighead and silver carp species, pose an imminent threat to the Great Lakes. Originally imported to the southern United States to control algae in aquaculture facilities, floods and human negligence allowed them to enter the Mississippi River and its tributaries. Their remarkable ability to reproduce and rapid growth have caused significant damage to native

fish populations, and efforts to prevent their entry into the Great Lakes are ongoing.

## **Environmental and Economic Consequences**

The invasion of these non-native species has had disastrous consequences for the environment and economy of the Great Lakes region. As invasive species spread, they alter habitats, outcompete native species for food and resources, and disrupt the intricate web of interactions that sustain ecological balance.

For example, the zebra mussel invasion has negatively impacted commercial fishing, as they have caused a decline in fish populations. Native fish species, such as yellow perch and smallmouth bass, have experienced significant reductions in their food supply due to competition with zebra mussels.

The economic toll of invasive species is staggering. According to a study by the Great Lakes Commission, the estimated annual economic impact of invasive species in the Great Lakes region exceeds \$200 million. This figure includes costs associated with control and management measures, as well as the loss of revenue in industries such as fishing, tourism, and water management.

## **The Battle for the Future**

The battle against invasive species in the Great Lakes is a complex and ongoing struggle. Various organizations, government agencies, researchers, and concerned individuals are working tirelessly to develop strategies and implement measures to prevent further invasions and mitigate the damage caused by existing invaders.

One approach is the development of effective ballast water management systems. Ballast water, which is often carried by ships to maintain stability, has

been a major pathway for the of invasive species. Implementing technologies that treat or clean ballast water before it is discharged into the Great Lakes could significantly reduce the risk of new invaders.

Another initiative is the construction of physical barriers, such as electric fish barriers or underwater fences, to prevent the migration of invasive species. This method has been used to great effect in the Chicago Area Waterway System to prevent the Asian carp from reaching Lake Michigan.

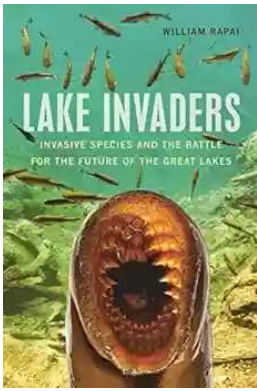
Public education and outreach initiatives are also crucial components of the battle. Raising awareness about the detrimental impact of invasive species and promoting responsible behaviors, such as not releasing pet fish or plants into the wild, can help prevent further s.

## **A Call to Action**

The battle for the future of the Great Lakes is not limited to a select few – it requires collective efforts from governments, communities, and individuals. Engaging in responsible ecological practices, such as inspecting and cleaning recreational watercraft before moving them between water bodies, can significantly reduce the risk of unintentionally introducing invasive species.

Supporting organizations dedicated to invasive species control and management, volunteering in restoration efforts, and staying informed about the latest developments are all ways individuals can contribute. Together, we can protect the Great Lakes, safeguard its unique ecosystem, and ensure a sustainable future for generations to come.

Let us join forces and take action against these invasive species. The battle for the future of the Great Lakes has only just begun, and our planet's most magnificent freshwater system is depending on us.



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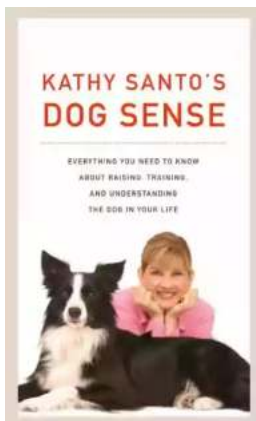


There are more than 180 exotic species in the Great Lakes. Some, such as green algae, the Asian tapeworm, and the suckermouth minnow, have had little or no impact so far. But a handful of others—sea lamprey, alewife, round goby, quagga mussel, zebra mussel, Eurasian watermilfoil, spiny water flea, and 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 species 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

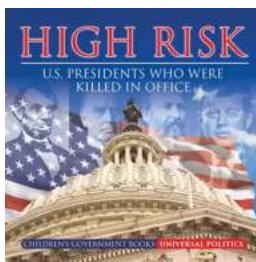
scientists, activists, politicians, commercial fishermen, educators, and boaters he interviewed in the course of his research. The final chapter focuses on the stories of the largely unnoticed and unrecognized advocates who have committed themselves to slowing, stopping, and reversing the invasion and 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.



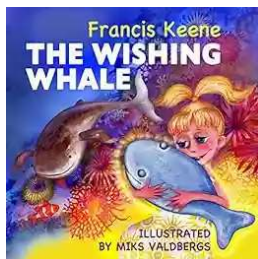
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