



THE GREAT LAKES INVASION

Doorway to North America

just the facts

- After habitat destruction, invaders are the second leading cause of species extinctions in the world.
- Invasive species directly contribute to the decline of 49 percent of the nation's threatened and endangered species.
- These harmful invaders cost the U.S. economy \$137 billion a year.
- More than 180 aquatic invasive species now call the Great Lakes home, and a new invasive plant or animal arrives every seven months.
- Throughout the world, the spread of aquatic invasive species has exponentially increased over the last 200 years and shows no signs of slowing as transportation of goods and people has risen.
- Scientists predict the number of established invasive species will continue to increase unless people work to reduce their transport.
- When people take action to stop the spread or introduction of invasive species, the impact can be dramatic. For example, by the mid-1950s the sea lamprey had greatly diminished the Great Lakes fish populations, particularly trout. Efforts to control them succeeded, and today fishing is a \$4 billion industry that employs nearly 84,000 people.



Zebra Mussels © Detroit River Center for Great Lakes & Aquatic Sciences.

As humankind treks from continent to continent, making new discoveries and expanding trade, hitchhikers often stowaway. They are plants, animals and organisms—in short, living creatures that travel from their homes to a faraway place. Scientists call them alien species. Some of these species are harmful, wreaking havoc on the environment. These are referred to as invasive species.

Consider zebra mussels, native to Asia's Caspian Sea. More than a decade ago, a transoceanic tanker dumped its ballast water—and these tiny mussels—into the

Great Lakes. They spread, first tiling the shallow waters of the Great Lakes, then reaching beyond the lakes and into the mighty Mississippi River. Along the way, they clogged intake pipes from factories and utilities, diminishing productivity and in some cases bringing work to a standstill. Today, the United States and Canada lose at least \$140 million in economic activity annually to the mussels.

Invasive species are the second leading cause of species extinctions in the world, according to renowned Harvard biologist Edward O. Wilson, winner of two Pulitzer Prizes.



Round Goby © Center for Great Lakes and Aquatic Sciences Archives, University of Michigan

Most “invaders are relatively innocuous: only a small fraction build populations large enough to become agricultural pests or harm the natural environment. But the few that do break out are capable of enormous damage,” writes Wilson in *The Future of Life*.

The ability of species to move great distances on their own is limited. By moving species over natural barriers, such as with international travel, Wilson argues, we forever change wild places.

Leading the Way

North America’s Great Lakes alone are home to more than 180 aquatic invasive species. About three-fourths of these species hail from Europe’s Baltic Sea. The same vessels transporting aliens here have taken a tremendous number of Great Lakes species there. The threat of alien invaders is a global problem. Solutions discovered in places where natural systems and commerce intersect, such as the Great Lakes, could revolutionize our ability to combat this global threat. That’s why The Nature Conservancy is working to find solutions that can be used here and elsewhere. At the heart of this initiative is a new collaboration with the University of Notre Dame, which will connect David M. Lodge’s groundbreaking research with the Conservancy’s on-the-ground work. This joint effort

will apply research directly toward management and policy solutions needed to address one of society’s most vexing environmental challenges. This work can provide powerful tools to educate the public, inform debate about new policies and guide strategic decisions about ways to manage invasive species.



Sea Lamprey © U.S. Fish and Wildlife Service Archives, U.S. Fish and Wildlife Service

Spotlight on Shipping and Recreational Boating

Cargo ships take in tens of thousands of gallons of water—often called ballast water—for stabilization while at sea. Once in port, however, they dump these waters, which often come from distant places. In a single day, thousands of different species are transported this way. That’s how the zebra mussel came to call the Great Lakes home, along with a host of other species, including the round goby.

The Great Lakes often are just the first stop for these species, which continue their travel via canals and on boats throughout North America. So, the lakes act as a *doorway* to our continent’s freshwater habitats.

Recreational boats are one of the pathways invasives use to escape from the Great Lakes and spread elsewhere, according to scientists. About one-third—or 4.2 million—of the recreational boats in the United States reside in the Great Lakes region, with another 2 million in Canada.

The Conservancy’s Great Lakes Program and the University of Notre Dame are studying this pathway, and others, to better understand how species spread. Scientists are generating plans of action, such as strategically located boat inspections, to contain them. And, at the highest levels of government, the Conservancy is engaging policymakers on the issue of ballast water as the main pathway for invading species.

By preventing invasives from arriving in the Great Lakes, or stopping their spread, the Conservancy hopes to not only protect the Great Lakes, declared a national treasure in a recent presidential executive order, but also to protect other North American freshwater habitats from the ravage of invasive species. The biologically rich aquatic systems of the United States stand to benefit from this work, as do many freshwater habitats connected with the world’s great ports.

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