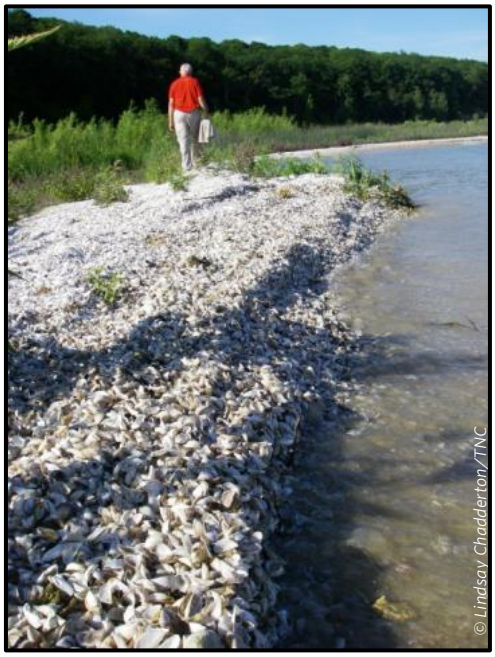
A STRATEGIC, FOUR-PRONGED APPROACH TO ADDRESSING AQUATIC INVASIVE SPECIES IN THE GREAT LAKES



Tiny mussels wash up on beaches and attach to boats, piers and underwater pipes; mats of vegetation blanket lakes; tall grasses invade shorelines. Aquatic invasive species are not only a nuisance, but pose a serious threat to the Great Lakes economy.

Nothing has so fundamentally changed the Great Lakes over time as the introduction of non-native aquatic species like zebra mussels, Eurasian water milfoil, and *Phragmites* (common reed). More than 180 non-native species have now become established, with a number of them being classified as "invasive" because they have serious economic or environmental impacts.

To better understand the true cost of aquatic invasive species in the basin, The Nature Conservancy commissioned the Anderson Economic Group (AEG) to research and analyze the available economic studies. AEG reported that the direct cost of aquatic invasive species to the Great Lakes basin is on the order of hundreds of millions of dollars annually.

The brunt of these out-of-pocket costs are born by the sport and commercial fishing industry, power generation companies, industrial facilities, shipping-related businesses, tourism and recreation businesses, and public water supply facilities. But the costs trickle down to all of us in higher water and energy bills as well as food costs.

The Nature Conservancy's Great Lakes Project and partners are approaching the aquatic invasives threat with a four-pronged strategy:

1. **Prevention**
2. **Early Detection & Rapid Response**
3. **Management of Established Species**
4. **Unified Policies**

1. Prevention
The Conservancy is targeting four high-risk pathways to prevent the further introduction or transfer of invasive species to or from the Great Lakes Basin.

Maritime Shipping*:* In the last 60 years, maritime shipping has been the most prolific pathway of unintentional introduction to the region—it connects Great Lakes freshwater communities with ports across the globe. We are supporting efforts to implement protective state and federal ballast water treatment standards that require the rapid adoption of protective treatment systems and working with industry and the scientific community to identify pragmatic and protective management solutions.

Artificial Connections: Man-made canals artificially connect formerly separate watersheds, enabling the movement of aquatic invasive species between them. One of the most significant canal systems is the Chicago Area Waterway System, which links the Mississippi River and Great Lakes basins. It functions as a two-way highway for invasive species including Asian carp, which now threaten to invade the Great Lakes via this waterway. We are working with agencies, stakeholders, and canal users to facilitate ecological separation of the two basins to prevent this disastrous transfer of live organisms, while maintaining the canals' other functions.

Trade in Live Organisms*:* Importation and sale of live organisms results in non-native aquatic species being accidentally or deliberately released into the Great Lakes, where some of them can reproduce and become invasive. We are partnering with the University of Notre Dame, Illinois-Indiana Sea Grant, U.S. Fish & Wildlife Service, and Fisheries and Oceans Canada to develop risk assessment tools that identify species likely to become invasive if released. We are also working with state and provincial agencies to build policy and legislative support for more consistent and protective regulations and to develop prohibited species lists based on scientifically-defensible methods.

Phragmites (common reed) encroach upon coastal wetlands where American lotus blooms in southeastern Michigan.

Trailered Boats*:* Some invasive species can hitchhike to the Great Lakes on trailered boats. We are working with others to eliminate this pathway by promoting the adoption of programs that prevent the inadvertent spread of invasive species through inspection and cleaning of boats and trailers. We are also partnering with university researchers to identify priority sites for surveillance.

2. Early Detection and Response
Existing surveillance techniques are limited in their ability to detect aquatic species while populations are small and eradication is still possible. We are playing a critical role in the research and development of new tools for early detection of aquatic invasives and advising public agencies on rapid response efforts when new introductions are detected.

The Conservancy, the University of Notre Dame, and others are:

- **Improving** the effectiveness of government and community surveillance programs by developing and disseminating improved detection methods.
- **Designing** and piloting innovative surveillance programs such as a Great Lakes Basin Asian carp environmental DNA monitoring program.
- **Continuing** surveillance efforts for invasive plants and invertebrates in inland lakes.
- **Contributing** technical advice to improve the effectiveness of the Asian carp response plan.

3. Management of Established Species

Managing the impacts of established invasive species is required to reduce their negative economic impacts and to restore native species populations and Great Lakes food webs. To accomplish this will require:

- Cost effective control and eradication tools.
- Demonstration projects to prove the effectiveness of emerging methods to decision-makers.
- Adequate state and federal funding and strategies to sustain management actions.

The Conservancy and state, federal, and tribal partners have established a demonstration project in Grand Traverse Bay on Lake Michigan to develop and test sustainable methods for reducing the population and impacts of invasive round goby and rusty crayfish on lake herring, lake trout, and lake white fish spawning reefs. The goal is to increase spawning success and recruitment of these native fish, replicate the approach across other habitats such as wetland nurseries for vulnerable life stages of native species, and empower local communities or agencies to take ownership and actively restore and protect these critical habitats.

4. Unified Policies

The Great Lakes are shared waters, and invasive species can only be effectively managed through consistent, coordinated policies and management across all relevant state, provincial, and federal jurisdictions. The Conservancy is designing strategies to engage private and public constituencies in the development of regionally consistent policies and management of aquatic invasive species across the Great Lakes states and provinces.

A consistent approach is essential to stem new invasive introductions, prevent the establishment and spread of new arrivals, and minimize the impact of already abundant and widespread non-native species. The states, provinces, private citizens, and industries must act in unison, because the weakest link becomes the pathway for AIS to enter the Great Lakes. AIS is a shared problem and will require a shared solution.

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