



SECTION #2

Aquatic Invasive Species: Why Should We Care?



AIS: Hydrilla



What are Aquatic Invasive Species (AIS)

The New York State Invasive Species Task Force defines AIS as aquatic organisms (plants, animals, and pathogens) that are not native to the aquatic ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

The number of AIS in any specific waterbody in New York State varies. More than 180 nonnative and invasive aquatic species have been identified in the Great Lakes Basin alone. AIS are often well-adapted to spread throughout an ecosystem. They can limit food and habitat for, and compete with, and displace, native species. Annual AIS costs in environmental losses and economic damages for the United States are estimated at more than \$100 billion; the Great Lakes region accounts for more than \$100 million of the total (Rosaen *et al.*, 2012). NYS expenditures to address AIS in 2009 and 2010, excluding Great Lakes Restoration Initiative funds, were more than \$2 million (Rosaen *et al.*, 2012).

Reasons to Be Concerned About AIS

Economics: The federal, state, and local costs to manage AIS increase each year as AIS populations continue to grow and spread. Infestations of AIS that limit recreation, clog waterways, prevent boating, and obstruct water pipes may impact the value of public and privately-owned property.

Health: AIS can carry pathogens and parasites that are harmful to native species and potentially to human health. For example, Botulism (type E) is a bacterial disease that has caused die offs in fish (e.g., freshwater drum, smallmouth bass, lake sturgeon) and water-birds (e.g., ring-billed gulls, common loons, long-tailed ducks) in NY's Lakes Erie and Ontario. Since 1960 there are no reports of human poisoning from type E botulism, however, precautionary measures are recommended when handling animals affected by the



Coping with aquatic invasive species can be expensive in terms of funding: at left, a mechanical harvester at work on Sodus Bay, and in terms of time and manpower: at right, a Rotary Club member helps at a water chestnut hand-pull on Oneida Lake.



toxin (*U.S. Environmental Protection Agency Great Lakes National Office, 2013*). Zebra and quagga mussels (AIS) likely play an important role in two transmittal pathways of botulism. Beds of zebra and quagga mussels change ecosystem conditions, creating suitable offshore habitat for the toxin and the mussels accumulate the toxin. Zebra and quagga mussels also create clearer water conditions, allowing light to better penetrate the water, causing prolific growth of the native *Cladophora* algae. The dense algal mats decay, creating anaerobic conditions that promote botulism bacteria accumulation in near shore habitats.

Ecology: AIS can out-compete and displace native species, disrupting food webs and altering native aquatic species population abundance and composition. These ecosystem changes may make once suitable habitat less favorable for native aquatic animals such as sport fish and macro invertebrates.

Recreation: With the ability to grow faster and reproduce more frequently than many native aquatic species, and lacking natural predators, AIS can overwhelm the natural habitats. Aquatic invasive plants can form dense mats of vegetation, making it difficult or impossible to boat, swim, or fish. Species such as spiny and fishhook waterfleas are a nuisance to anglers. These invasive waterfleas attach on fishing lines and nets forming cotton-like globs. Zebra mussels can cut the feet of swimmers and encrust historic shipwrecks.

What Can We Do to Limit the Spread of AIS?

- Develop watercraft inspection programs to intercept the introduction of AIS by teaching boaters how to look for, remove, and properly dispose of aquatic hitchhikers using watercraft inspection.
- Educate boaters on how they can help prevent the spread of AIS by regularly inspecting boats, trailers, and other recreational equipment for hitchhiking organisms and debris, and by draining all spaces that can hold water every time boats enter and leave a waterbody.
- Inspect and **Clean~Drain~Dry** all watercraft and related items; specific examples include, but are not limited to, fishing boats, houseboats, cabin cruisers, ski boats, sail boats, row boats, trailers, personal watercraft, canoes, kayaks, paddleboards, inflatables, and scuba gear.



Above: Clean~Drain~Dry practices help prevent and slow the spread of invasive species from one body of water to another.

Below: Aquatic invasive species can have a major impact on the ecology of an area where they become established.

