RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

FACT SHEET

Office of Water Resources December 2010

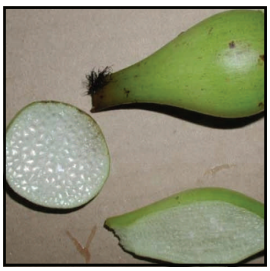
Freshwater Invasive Species in Rhode Island

Water Hyacinth

Purple flowers arise from the center stalk [1]

Thick, glossy leaves radiate from center of plant[2]

Inflated stems act as buoys enabling plants to float[3]



Inside of its thick stem looks like styrofoam[1]

Plant growth can quickly cover entire lakes[5]

Species Description and General Information

Water hyacinth (*Eichhornia crassipes*) is a large aquatic plant with thick, glossy, oval-shaped leaves. The plants freely float on the surface of the water and leaves can stand 1 to 3.5 feet up above the water. The curled leaves are 4-8 inches across and branch out from the center of the plant on modified stems. The enlarged stems are spongy, bulbous stalks called petioles that contain light, air-filled tissues that keep the plant afloat. When flowering, water hyacinth has a tall stalk in the center that supports several purple flowers with six petals each. Its long, feathery roots dangle in the water, hanging from the underside of the center and are dark purple or black with small, white root-hairs like a pipe cleaner. Water hyacinth reproduces by way of runners or stolons to form new daughter plants and also through seeds. When large quantities of its seeds are produced, they may be viable for up to 30 years. When not in bloom, water hyacinth may be mistaken for frog's-bit (*Limnobium spongia*), another glossy, floating invasive aquatic plant, but frog's bit does not have bulbous petioles like water hyacinth and its leaves generally lay flat on top of the water's surface.

Why is Water Hyacinth Considered an Invasive Species?

Water hyacinth is considered invasive throughout the world because it grows rapidly and can spread easily over vast expanses of water. It has been known to double its population within two weeks and infest large areas. After establishing in Africa's Lake Victoria in 1989, water hyacinth eventually grew to cover approximately 77 square miles of the water body!

Water hyacinth grows in mats and populations covering large areas can cause a variety of environmental and economic problems. Thick layers of water hyacinth on the surface shade out native aquatic plants below, and reduce nutrient availability to native species. The plant mats reduce light and oxygen in the water column, changing water chemistry, degrading plant and animal habitat and harming fish populations. Large infestations also cause practical problems for boating, fishing, or swimming through dense plant masses. This not only dampens fun recreational activities but also depresses local tourism and in other countries has threatened the heath of subsistence fishermen that depend on clear access to open water and thriving fish populations. Plants may also clog intake pipes for the supply of drinking water, hydropower or irrigation causing further economic damage. Because the large plants have ample surface area, lake water levels may decrease due to evapo-transpiration, when water evaporates from the lake surface and is lost through plant leaves as vapor. Globally, water hyacinth is considered a serious threat to biodiversity and human health, creating prime habitat for mosquitoes which carry a variety of infectious diseases including Eastern Equine Encephalitis Virus ("triple E") and West Nile Virus.

Photo credits (L-R): [1] Leslie J. Mehrhoff, University of Connecticut, IPANE; [2] Katie DeGoosh, RIDEM; [3] Ted Center, http://www.ars.usda.gov/is/graphics/photos/mar00/k8801-2.htm [4] Karen Brown, University of Florida, Bugwood.org

How Did Water Hyacinth Become Established in Rhode Island?

Water hyacinth originated in South America and has been introduced as an ornamental water garden plant to all parts of the world except Europe. It was first introduced to North America in 1884 and has since spread to most areas of the United States including Rhode Island, likely planted here as an ornamental. Although accustomed to more tropical climates and often considered intolerant of freezing weather conditions, water hyacinth appears to be adapting to the climate in southern New England and surviving mild winters. Over-wintering populations have been found living in Connecticut, and as winter temperatures rise due to climate change it is more likely than previously expected to become established in Rhode Island.

What Methods Are Currently Being Used to Control Water Hyacinth?

Since water hyacinth can spread rapidly and produces a copious amount of seeds, it is very difficult to control once it becomes fully established. Thus constant monitoring to detect small infestations early before they become established is essential to avoiding a long term battle with this invasive plant. An infestation is seldom completely eradicated and must be continually managed.

Management techniques to control populations in other areas have included coordinating manual beach cleanup efforts in the local community to remove plants before they produce seeds. However, in order to ensure protection of native or rare wetland plants and animals, this type of project requires approval from the RIDEM Office of Water Resources Wetlands Permitting Program. By law in Rhode Island, the manual removal of aquatic vegetation is restricted to that area adjacent to, but no more than fifteen feet from existing or permitted docks, beaches or swimming areas under the RI Fresh Water Wetlands Regulations (Rule 6.02). Manual plant removal outside this area or physical control of larger patches via mechanical cutting or harvesting requires a DEM wetlands permit (or special permission from the Water Quality and Wetlands Restoration Team, see contact info below). Other states have also introduced insects into the lake ecosystem to eat the plant. Introducing insects as a form of biological control must be approved by the RIDEM Department of Fish and Wildlife to ensure that introducing the new species will not threaten other parts of the ecosystem.

Chemical control of plants using herbicides may be effective for large populations but has not been used for water hyacinth in Rhode Island as of 2011. Each herbicide treatment requires a specific permit from the DEM Division of Agriculture to ensure the federally-regulated chemicals are used properly to treat invasive plants. Additionally, due to the volatile nature of herbicides, they can only be applied by a person properly licensed by the DEM Division of Agriculture. An herbicide treatment plan designed specifically to target the invasive plant should be developed by a certified lake manager or licensed herbicide applicator who is knowledgeable about the invasive. Consulting a certified lake manager or licensed herbicide applicator is appropriate to estimate associated treatment costs, outline the possible control options, comply with regulations, ensure environmental impacts are avoided, and complete the project safely. To develop this type of comprehensive strategy to treat invasive species in a lake a more detailed survey of the entire water body will likely be needed to assess the severity of the infestation and develop the most effective and cost efficient long-term management plan.

Please Help Prevent the Spread of Water Hyacinth in Rhode Island!

Prevention is key to stopping the spread of water hyacinth to other water bodies. It is important to avoid planting or disposing it from water gardens. Learn to identify invasive plant species and be on the lookout for new plants in your lake. It is much easier to manage a small patch of invasive plants than an entire lake covered with plants, so early detection is key! Identification resources are available on the RIDEM website at http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/aisindex.htm.

For more information also see:

- Guide to Understanding Freshwater Aquatic Plants, RIDEM http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/pdfs/aquaplnt.pdf
- Aquatic Invasive Species in Rhode Island http://www.dem.ri.gov/programs/benviron/water/quality/surfwq/aisindex.htm
- RI DEM Herbicide permit application http://www.dem.ri.gov/programs/bnatres/agricult/pesticide.htm
- RI DEM Water Quality and Wetland Restoration Team http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/wqwrteam.pdf
- RI DEM Wetlands permit application http://www.dem.ri.gov/programs/benviron/water/permits/fresh/index.htm
- The URI Watershed Watch Program www.uri.edu/ce/wq/ww
- The Rhode Island Natural History Survey http://www.rinhs.org/
- Center for Invasive Species and Ecosystem Health http://www.invasive.org/