



# FACT SHEET

Office of Water Resources / June 2009

## Aquatic Invasive Species in Rhode Island: Water Chestnut



Floating rosette



Woody fruits of water chestnut



Dense floating mat of water chestnut

### Species Description/General Information

Water chestnut (*Trapa natans*) is a rooted floating aquatic plant with both floating and submerged leaves. Floating leaves are arranged in a rosette pattern attached to the main stem by leaf stems with air-filled bladders to provide buoyancy. Floating leaves measure 1/4 inch to 1.5 inches near the base and are green, glossy, triangular and toothed. Submerged leaves are alternate and feathery. Flowers are small, white and located towards the center of the rosette. The fruit is large and woody and contains four sharp barbs. Fruits appear by late summer and are released as the plants die off with the advent of frost. Seeds remain viable for up to twelve years, though most germinate within two years. Water chestnut prefers soft sediments and quiet, nutrient rich waters.

### Why is Water Chestnut Considered a Nuisance Species?

Water chestnut can form dense, monotypic floating mats over large areas of water. These mats limit the amount of light available to other aquatic plants, allowing it to quickly displace native species. The bloom and decomposition of these mats may lower the dissolved oxygen in the water, creating the potential for fish kills. Dense mats also impede recreation such as boating, fishing and swimming. The USGS reports that many previously fished bays in Lake Champlain are now completely inaccessible as a result of a severe water chestnut infestation. The barbed fruits wash up along the shore line posing a hazard for humans and pets.

### How Did Water Chestnut Become Established in Rhode Island?

Water chestnut was introduced to New England from Asia as an ornamental plant that spread into natural water bodies. Water chestnut was first observed in Rhode Island in 2007 in Belleville Pond, North Kingstown and several subsequent infestations are known. Once introduced into a water body, water chestnut can establish and spread rapidly. Each seed may produce 10 to 15 rosettes and each rosette may produce 15-20

seeds. Plants disperse primarily through seeds but also by rosettes that detach from their stems and float to another area.

### What Methods Can Be Used to Control Water Chestnut?

Water chestnut management is most effective through physical control. Hand pulling is effective for small populations. Because seeds can remain viable for up to 12 years, yearly monitoring of pulled water bodies is necessary. Water chestnut can spread rapidly. Thus, early detection and rapid response to infestations is important. Severe infestations may require large scale mechanical harvesting. By law, the manual removal of submerged 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 (for more information, contact the Water Quality and Wetlands Restoration Team noted below).



Chemical control may be effective for large populations. The DEM Division of Agriculture licenses the applicators that can apply the regulated herbicides to treat invasive plants. Each herbicide treatment requires a specific permit from the Division of Agriculture to ensure proper use. The most appropriate means of selecting a specific treatment plan is to consult a lake manager or licensed herbicide applicator, who can provide targeted treatment options and estimate associated costs. 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 Aquatic Invasive Species in Rhode Island!

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 cove covered with plants so early detection is key! The University of Rhode Island Watershed Watch Program, in cooperation with the Rhode Island Natural History Survey (RINHS) and DEM, has hosted training workshops for volunteers interested in learning how to survey and identify plants, including invasives, in lakes. For information on the anticipated availability of AIS training, contact the URI Watershed Watch Program or RINHS (see below).

RIDEM also encourages the use of clean boat hygiene practices. Boats (trailers and motors too) should always be inspected for plant fragments before launching in the water and again after boats have been hauled out of the water. See posted reminders at state boat ramps:

#### 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](http://www.uri.edu/ce/wq/ww)
- The Rhode Island Natural History Survey  
<http://www.rinhs.org/>

