



Water Chestnut

Trapa natans
(Water Chestnut Family)

Threats to Native Habitats

Water chestnut is a highly competitive floating-leaved aquatic plant that forms dense, continuous mats over the water surface of lakes and slow moving waters. The mats are so dense that they impede fishing, hunting, swimming, boating and even commercial navigation. The plants disrupt and replace native aquatic plant communities while providing little or no value to wildlife.

Decomposition of the large volume of plants may also contribute to lower levels of dissolved oxygen in shallower waters. The resulting control measures necessary to clear waterways can be expensive: \$3.7 million to manage this species in Lake Champlain from 1982 to 2000.

Description

Water chestnut is an aquatic annual that grows as a rooted floating plant. Its leaves are dimorphic, having two forms: a floating, broad form, and a highly dissected, submerged form. Floating leaves are triangular to rhombic in shape, one to two inches long, and have sharp pointed teeth on the margins. They are arranged in a broad rosette that sits on the water surface. The submerged leaves are alternate and coarsely feather-like, growing up to six inches in length. Tiny white flowers emerge from the center of the rosettes and produce large (about one inch) hard, horned fruits. Fruits ripen in about a month and soon sink to the bottom. Most fruits germinate within the first two years, although a few may wait up to 12 years. One seed can give rise to ten to fifteen rosettes, and each rosette may produce as many as twenty seeds. With high rates of germination, growth can be explosive.

Habitat

Habitat in the U.S. includes lakes, ponds, slower sections of rivers and streams, and freshwater tidal estuaries. Preferred habitat is nutrient-rich water with a neutral to slightly alkaline pH.



Water chestnut (photo by Jean S. Baxter, courtesy of the New England Wild Flower Society)

Distribution

Water chestnut is native to the warm temperate regions of Eurasia. In the United States it has been documented from 11 states, all in the northeast. Water chestnut was introduced into the wild sometime before 1879 by a gardener at the Cambridge Botanical Garden in Cambridge, Massachusetts. The gardener reported planting it in several ponds. It was also distributed in Concord, Massachusetts, where it was planted in a pond adjacent to the Sudbury River. By the turn of the century, it was extremely invasive in the pond and the river. Since then, water chestnut has spread to other states and other river and estuary systems including the Connecticut River, the Hudson River and the Chesapeake Bay. It has been recently

documented in both Quebec and Ontario. As of 2002, water chestnut has not been reported in Maine.

Prevention and Control

The best way to control this species or any aquatic invader is to prevent it from being introduced in the first place. Anyone engaged in activities in Maine's waters should be aware of the potential for spreading invasive plants and take steps to prevent their introduction. Your actions can make a difference. Simple things you can do include inspecting boats, motors and trailers at the boat ramp before launching, and again after hauling them out. Prevent plant material from getting into bait buckets and live wells, and from getting tangled up in anchor ropes or fishing gear. Plants cleaned from boats and gear should be disposed of in a trash receptacle or away from water on dry land.

Once established, invasive aquatic plants are extremely difficult to eradicate. Control has been attempted with water level manipulations, mechanical control and herbicides. In most cases these plants have survived attempts at control. Biological controls for invasive aquatics are still being researched and may help limit growth of some species in the future. Note that the use of herbicide in Maine waters is strictly regulated. Only licensed professionals with a permit from the Department of Environmental Protection may carry out herbicide treatments in Maine's waters. Hand-pulling of invasive aquatic plants also requires a permit. Also note that in Maine it is illegal to possess, import, cultivate, distribute or transport *Trapa natans* (Department of Environmental Protection, Chapter 722 - *An Act to Prevent the Spread of Invasive Aquatic Plants*). If you think you have found an invasive aquatic plant, contact ME DEP (1-800-452-1942) or the Maine Natural Areas Program (1-207-287-8041).

References:

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Gleason, H.A. and A. Cronquist. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition*. New York: New York Botanical Garden, 1991.

For more information or for a more extensive list of references on invasive species contact:

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