

Aquatic Invasive Species

in the Chesapeake Bay

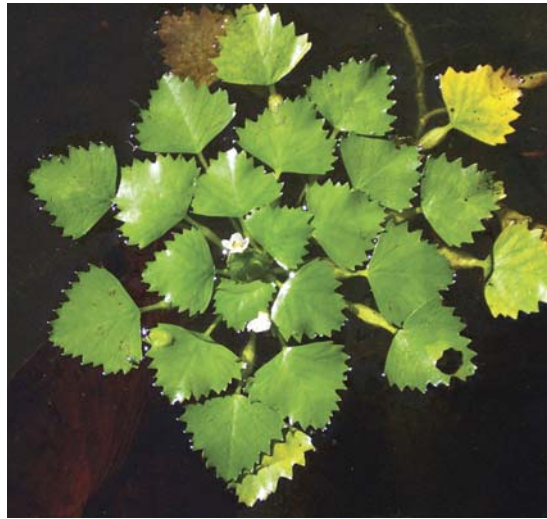
A M A R Y L A N D S E A G R A N T B R I E F

Water Chestnut

What Is Water Chestnut?

Water Chestnut (*Trapa natans*) is an aquatic plant native to Europe. This annual herb displays a floating rosette of triangular shaped leaves surrounding a central stem that stays rooted in the sediment. Water chestnut reproduces at a fast rate, producing up to 20 nuts per rosette each growing season. The mature nuts are woody with four sharp, pointed spines that can remain dormant for up to 12 years.

Water chestnut grows in shallow, nutrient-rich rivers and lakes. It was first recorded in North America near Concord, Massachusetts, in 1859. Originally used as an ornamental plant in ponds, water chestnut escaped to local waterways, establishing wild populations throughout the northeastern United States. Water chestnut first appeared in the Chesapeake Bay watershed in 1923 on the Potomac River near Washington, D.C. The plant spread rapidly, covering 40 miles of the river within a few years. By 1993, 10,000 acres of dense beds extended from Washington, D.C., to just south of Quantico, Virginia. Water chestnut was also discov-



ered in Maryland on the Bird River in 1955 and on the Sassafrass River in 1964.

Why Is It Harmful to the Chesapeake Bay?

As water chestnut spreads, it forms dense, floating mats that keep sunlight from reaching native Bay grasses growing in the sediment below. That has impacts on wildlife habitats because the region's native aquatic plants provide food and shelter to native waterfowl, fishes, and other organisms. Water chestnut is also a nuisance: the pointed spines on its seeds are sharp enough to penetrate shoe leather and can impede boat navigation and other water activities.

What Is Being Done to Control Water Chestnut?

During the 1950s and 1960s, managers relied on mechanical removal and herbicides to control water chestnut. These methods initially proved successful, but the plant was rediscovered on the Bird and Sassafrass rivers in 1997. By the summer of 1999, water chestnut had spread across 30 acres of the Bird, and a slightly larger population was documented in the Sassafrass.

A substantial eradication effort utilizing mechanical harvesting by boat and hand removal by volunteers began in the summer of 1999. The campaign succeeded in removing an estimated 400,000 pounds of water chestnut from both rivers. A follow-up harvest took place the following summer, resulting in the removal of less than 2,000 pounds of plants. That much smaller number indicated that control efforts had been successful at reducing the population.

In 2002 the Chesapeake Bay Program (CBP), in partnership with Maryland Sea Grant, sponsored a workshop aimed at developing Baywide management strategies for problematic invasive species, including water chestnut. A Chesapeake Bay Working Group on Water Chestnut, comprised of natural resource managers, jurisdictional representatives, and federal partners, was appointed in 2002 to develop a regional management plan to halt the spread of the species in the region and to support native plants and animals.

What Is Its Status?

Control efforts have continued in the Bird and Sassafrass rivers in Maryland and have succeeded in keeping the water chestnut populations low without the use of herbicides. Since water chestnut seeds can remain viable for up to 12 years, harvesting efforts must continue indefinitely to prevent populations from rebounding.

For More Information

Water chestnut, Chesapeake Bay Program Field Guide
http://www.chesapeakebay.net/fieldguide/critter/water_chestnut

Water Chestnut Eradication Report: 1999-2012
(Maryland Department of Natural Resources)
http://dnr.maryland.gov/bay/sav/water_chestnut_report.asp

Publication UM-SG-PI-2013-05
September 2013

This brief was written by Jenny Allen and Daniel Strain; it was published by Maryland Sea Grant.

Photograph credits: Michael D. Naylor

Maryland Sea Grant
4321 Hartwick Rd., Suite 300
College Park, MD 20740
301.405.7500
www.mdsg.umd.edu



Maryland Sea Grant is jointly funded by the state of Maryland and the National Oceanic and Atmospheric Administration.