



WNY PRISM

Partnering to Protect Western New York from Invasive Species

Best Management Practices: Water Chestnut

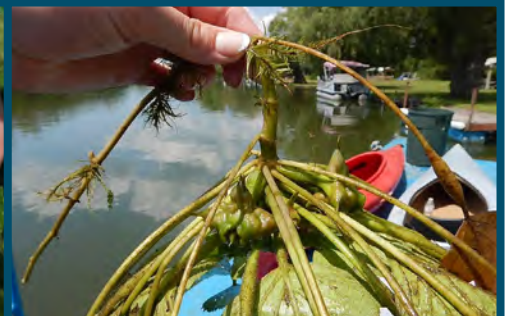
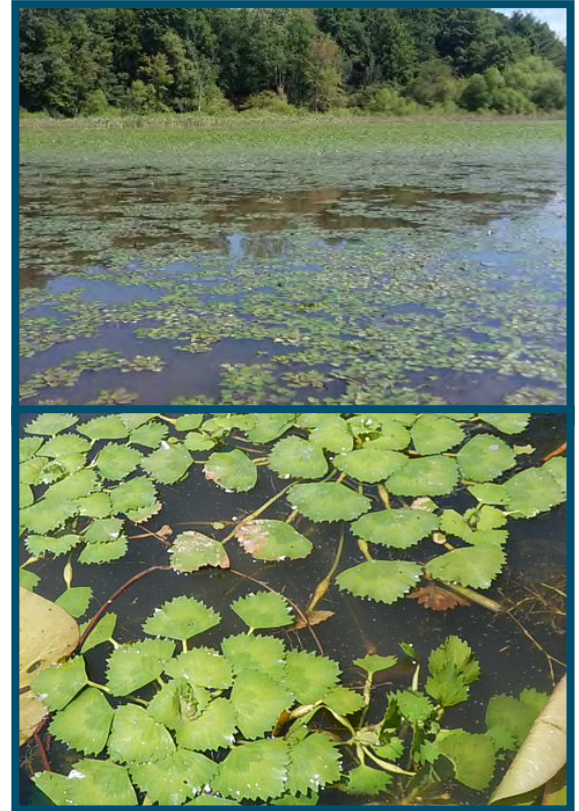
Water chestnut (*Trapa natans*) is a floating aquatic plant often found in lakes, ponds and slow-moving sections of rivers. Its characteristic rosettes are comprised of triangular, toothed leaves with bulbous bladders on the leaf stems. It also has submerged leaves on the root stalk, which are feathery and fan-like. Small, white flowers bloom in the center of the rosette from June to July. In mid-summer, green, spiked seeds (nutlets) form and hang from the underside of the rosette. These nutlets mature in late summer and turn black in color.

Water chestnut spreads through nutlets and plant fragments that are transported by water, waterfowl and boats.

Water chestnut forms dense mats on the water's surface, which hinders native aquatic plant growth and water recreation. Dissolved oxygen levels are greatly lowered in water chestnut infested waters, potentially leading to fish kills. Stepping on the sharp, barbed nutlets, which are often found along the shore, can cause painful puncture wounds.

Integrated Pest Management (IPM) is an adaptive approach to invasive species management that involves the selection of multiple control methods and appropriate timing to meet the needs of each specific site and species. The goal is to maximize effective control and to minimize any potential negative impacts.

Management efforts should begin with an invasive species survey and site assessment. This allows for the development of a management plan and selection of appropriate removal methods. Management for most well-established species and/or infestations will require dedication over a number of years, often 2-5. Once initial control is achieved, restoration and continued monitoring will be required to maintain success.



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Management

Manual

Individual plants and small infestations can be hand pulled. The plants should be removed before nutlets develop, generally in mid-July. When pulling, use a slow, steady motion to remove the entire root stalk and prevent regrowth. Pulls will need to be repeated because seeds can remain viable in the seedbank for up to 12 years.

Mechanical

Large infestations can initially be managed mechanically, using barge cutting systems/harvesters, to reduce the biomass to a level that may be effectively managed manually. Harvesting should be done before nutlets develop, generally in mid-July.

Chemical

For large, established infestations where manual and mechanical removal methods are not available or recommended, herbicides are an effective alternative. Multiple treatments will be needed to reduce the size of the infestation to a level manageable through manual methods.

Spread Prevention

Clean, drain and dry all watercraft when both launching and retrieving to prevent the spread of aquatic invasive species.

Disposal

It is important to collect all plant fragments, especially when using manual or mechanical removal. For small to medium infestations, plants should be placed in thick, black plastic bags and disposed of in a landfill. If the harvested material cannot be moved, plants should be composted upland at least 50 feet away from shore to prevent re-entry into the water body.

Restoration

Creating competition will protect against future infestations and reestablishment of water chestnut. Some native plants, including white water lily (*Nymphaea odorata*), have been found to outcompete water chestnut. Arthropod communities are positively affected by restoration and increased food web diversity. Restoring shoreline and riparian areas to native vegetation will limit reestablishment and improve water quality allowing native aquatic species to thrive.

USE PESTICIDES WISELY: Always read the entire pesticide label carefully and follow all instructions. Pesticide regulations can vary widely between regions; please contact local authorities for additional pesticide use requirements, restrictions or recommendations. Mention of pesticide products by WNY PRISM does not constitute endorsement of any material.



Photos Front: Top- water chestnut infestation; Middle- free-floating plants; Bottom (left to right)- mature nutlet, flower, roots and leaf stems.

Photos Back: Top- water chestnut manual removal; Bottom- water chestnut mechanical removal (Photo Credit: Mike Goehle, USFWS).

Additional Resources

New York Invasive Species Information

http://nyis.info/invasive_species/water-chestnut/



PARTNERSHIP FOR REGIONAL
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