

AIIS

Aquatic Invasive Species

WATER CHESTNUT



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COMMON NAMES: Water Chestnut, European water chestnut, horned water chestnut, water caltrop

SCIENTIFIC NAME: *Trapa natans*

The water chestnut family only contains one genus.

DISTRIBUTION: Water chestnut is native to the tropical and warm temperature regions of Eurasia. It has also become naturalized in Australia and northeastern North America. In the United States, this species has been found in Connecticut, Delaware, Maine, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Virginia and Vermont.

Indiana: Although not currently detected in Indiana waters, *Trapa natans* is a species that needs to be kept under close watch in order to prevent its introduction into our state.

DESCRIPTION: Usually rooted in the mud, this aquatic plant has a rosette of floating leaves, ½ to 1 inch long, at the tip of a submersed stem, which can reach over 15 feet in length. The flowers of this species have four white petals about 1/3 of an inch long. The fruit is a black, four-horned, nut-like structure that is about an inch wide and weighs approximately 6 grams. Water chestnut can grow in wet, mucky substrates, but prefers shallow, nutrient-rich lakes and rivers.

LIFE CYCLE BIOLOGY: Within the United States, this species is an annual that can reproduce both by vegetative means and through seed production. Each flower is bisexual and once the insect-pollinated flowers are fertilized the flower stalks curve downward with the result that the fruits develop underwater. Fruits fall to the floor of the water body, overwinter, and seeds germinate in the spring. One acre of water chestnut can produce enough seeds to cover 100 acres the following year. Each seed can give rise to 10-15 rosettes and each rosette can produce as many as 20 seeds. Seeds can remain viable for up to 12 years.



Water chestnut seeds
Photo compliments of
The Concord Magazine.
<http://www.concordma.com/magazine/june98/weeds.html>

PATHWAYS/HISTORY: These plants were apparently introduced into Switzerland around 3000 B.C. and were first introduced into North America in 1874. Water chestnuts were cultured in 1877 in the botanical garden of a Harvard University botanist. In 1879, water chestnut plants were found to be established in the Charles River in Massachusetts and have since been found in many locations in the northeastern United States.

DISPERSAL/SPREAD: The fruit of water chestnut may be dispersed when individual plants are uprooted and float downstream. These plants can also be dispersed by fragmentation. Due to the large size and weight of the sinking seeds, it is unlikely that waterfowl or water currents can transport seeds to any great extent.

RISKS/IMPACTS: Because of their ability to reproduce rapidly forming extensive floating mats, this species has become a nuisance in the United States, hindering navigation of waters and inhibiting the growth of native aquatic plant species. The hard spines on the fruit can impact swimming. Decomposition of this abundant plant species can also lead to lower oxygen levels in the water.

MANAGEMENT/PREVENTION: To help control the spread of this species, the sale of all species of *Trapa* has been banned in most of the southern United States. Mechanical control or repetitive harvesting of this species can be employed, however this will not prove to be effective in the long-term due to the rapid reproductive rate of this plant. Attempts to control water chestnut with the aid of biological insects have been tried with no success.

The best means of control is prevention! Like all invasive species, the key to preventing their spread is knowledge! You can help by practicing a few good techniques to stop the spread of any aquatic invasive plant.

- ✓ Learn to correctly identify water chestnut and other invasive aquatic plants.
- ✓ Rinse any mud and/or debris from equipment and wading gear and drain any water from boats before leaving drainage areas.
- ✓ Remove plant fragments from all equipment. The transportation of plant fragments on boats, trailers, and in livewells is the main introduction route to new lakes and rivers.
- ✓ Immediately report the sighting of water chestnut to the Indiana Department of Natural Resources, Division of Fish and Wildlife and save some plant material for identity verification.
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REFERENCES:

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