

INVASIVE PLANT ALERT

EARLY DETECTION INVASIVE PLANT SPECIES IN VIRGINIA

Two-horned Trapa, Two-horned Water Chestnut

(*Trapa bispinosa* var. *iinumai*)

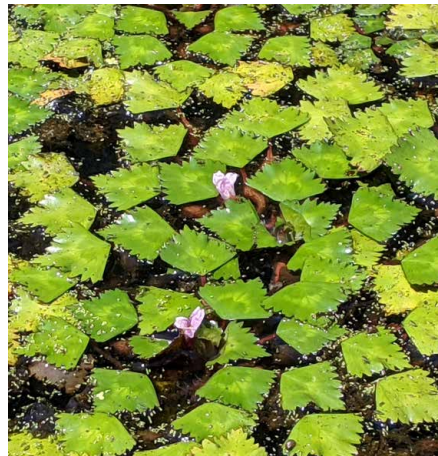
Threat

Two-horned trapa is an invasive aquatic plant first identified in the U.S. in Pohick Bay, Fairfax, Virginia, in 2014. Originally thought to be the first colony of the highly invasive Eurasian water chestnut (*Trapa natans*) in Virginia in decades, differences in the seeds of the two plants led experts to believe this was a new threat. Eurasian water chestnut bears four-horned seed pods. The Virginia colony of the new water chestnut – with seed pods of only two “horns” – was identified as *Trapa bispinosa* var. *iinumai* in 2019 (Chorak et. al, 2019).

Two-horned trapa may have already been spreading in the Potomac watershed for over a decade. Its spread threatens to undo the multi-million dollar, decades-long efforts to eradicate Eurasian water chestnut. As of late 2021, this is the only watershed in the country known to contain two-horned trapa, but this plant has the potential to spread throughout Virginia and beyond.

All *Trapa* species are non-native in the U.S and are considered early detection-rapid response invasive plants. The United States Department of

Agriculture Animal and Plant Health Inspection Service ranks Eurasian water chestnut as a high-risk “major invader” (USDA-APHIS 2016). Both *Trapa* species form dense floating mats that spread and cover slow-moving bodies of water. The barbed *Trapa* seed pods can attach to waterfowl and disperse into neighboring waters. Like Eurasian water chestnut, two-horned trapa has the potential to obstruct water flow, inhibit recreational and commercial use of waterways, shade out submerged aquatic vegetation and outcompete native aquatic plants.



Report Sightings

If you believe you have found two-horned trapa **or** the related Eurasian water chestnut, please report your sighting. Accurate location information and detailed photos (leaves, fruit, seeds, flowers, rosette and landscape context) are very helpful.

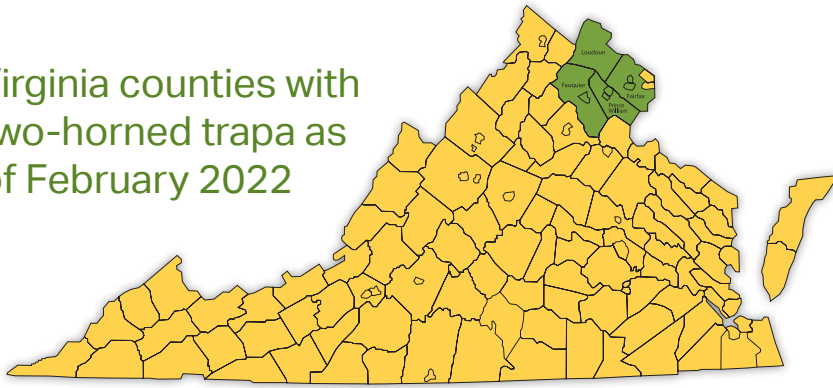
- Use the online mapping tool *Early Detection and Distribution Mapping System* (www.eddmaps.org) by creating a free account and following the instructions.
- Smartphone users may use the free **EDDMapS** app, which can be found in the Apple App Store or Google Play Store.
 - Negative reports (water bodies where you did **not** find *Trapa*) are also useful. Negative reports can be submitted using **EDDMapS**.

Description

Two-horned trapa is a floating, annual, aquatic plant with submerged stem and roots. The long roots anchor the plant into the mud in waters up to 12 feet deep (Pfungsten, 2021). The fan-shaped, central leaves have doubly serrated margins and form a rosette. Floating leaves are green above with red undersides, each leaf having a distinct “inflated” petiole that allows the plant to float. Small, four-petaled, pink flowers emerge from the rosette center beginning in June. Two-horned trapa may flower and fruit from June until frost. The seed pod is large (1.5-2 inches) with two opposing “horns.” Due to cold temperatures, two-horned trapa dies back in late autumn. Seeds can lie dormant for at least two years. Two-horned trapa can be confused with the invasive Eurasian water chestnut, which produces a four-horned seed pod, white flowers and entirely green leaves. Two-horned trapa has a two-horned seed pod, pink flowers and leaves with red undersides. The non-native mosaic plant (*Ludwigia sedioides*) has a similar leaf and growth form, but is significantly smaller with yellow flowers. Creeping water primrose (*Ludwigia peploides*) is a floating, non-native plant with lance or oval-shaped leaves. Its elongated stems sprawl across the water’s surface. (Though they share a common name, *Trapa* species are unrelated to the water chestnut popular in Chinese cuisine.)

INVASIVE PLANT ALERT – Two-horned Trapa

Virginia counties with two-horned trapa as of February 2022



Distribution

As of late 2021, two-horned trapa is known to occur at over 70 locations in northern Virginia, including the counties of Fairfax, Fauquier, Prince William, and most recently, Loudoun County. Some historic observations recorded before 2014 thought to be Euroasian water chestnut have since been reclassified as two-horned trapa. Stafford and Westmoreland counties have records from 1995 retroactively identified as two-horned trapa, but those counties have not been monitored to determine if those colonies persist today. Two-horned trapa has not been found outside of Virginia, and management efforts are underway at many sites.

Habitat

Any freshwater body such as tidal rivers, streams, ponds, reservoirs, lakes and wetlands. Relatively shallow, slow moving or still water.

Control

Proceed with caution: barbs of Trapa seed pods are sharp and may pierce gloves or shoes and cause injury.

Two-horned trapa colonies may be removed by hand or mechanically. Hand-pulling has been shown to reduce Trapa sp. effectively, but waters should be monitored yearly for plants emerging from seed. Removing all plants before they go to seed in late June to early July will help reduce the population over time. Continued control efforts will likely be necessary for several years. Plants may be left in the sun to dry out, then burned, buried or bagged. For private pond management, see <https://dwr.virginia.gov/fishing/private-pond-management/>.

Two-horned trapa look-alike plants

Eurasian water chestnut



Mosaic plant



TO REPORT A SIGHTING:

Online mapping and reporting tool:
<http://eddmaps.org>

Smartphone app:
EDDMapS

DCR online form:
www.invasivespeciesva.org/report-sightings

SOURCES

Chorak, Gregory M., et al. "Cryptic Introduction of Water Chestnut (Trapa) in the Northeastern United States." *Aquatic Botany*, vol. 155, Apr. 2019, pp. 32–37.

Maryland Department of Natural Resources. "Water Chestnut," on the website: <https://dnr.maryland.gov/waters/bay/Pages/Water-Chestnut.aspx>. [Accessed November 2021]

Pfingsten, I.A., and N. Rybicki. 2021. *Trapa bispinosa* var. *iinumai* Nakano, webpage at U.S. Geological Survey, Nonindigenous Aquatic Species Database. <https://nas.er.usgs.gov/queries/FactSheet.aspx?SpeciesID=2974> [Accessed January, 2022]

Rybicki, Nancy, and Jill Swearingen. 2019. "Teaming up to Tackle two-horned trapa: A Highly Invasive New Species of Water Chestnut," Maryland Invasive Species Council website <https://mdinvasives.org/iotm/july-2019/> [Accessed November 2021]

USDA-APHIS [United States Department of Agriculture – Animal and Plant Inspection Service]. 2016. Weed Risk Assessment for *Trapa natans* L. (Lythraceae) – Water chestnut – (Version 1) Available online at https://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/wra/Trapa-natans.pdf [Accessed September 29, 2021]

Virginia Botanical Associates. 2021. Digital Atlas of the Virginia Flora. www.vplantatlas.org [Accessed November 2021]

Photo credits:

Two-horned trapa (*Trapa bispinosa*)
Kevin Heffernan, VA DCR.

Two-horned trapa (*Trapa bispinosa*)
Lynne Dodd USACE

Two-horned trapa (*Trapa bispinosa*) seed pods.
Kevin Heffernan, VA DCR.

Eurasian water chestnut (*Trapa natans*) Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Mosaic plant (*Ludwigia sedioides*) Shaun Winterton, Aquarium and Pond Plants of the World, Edition 3, USDA APHIS PPQ, Bugwood.org