

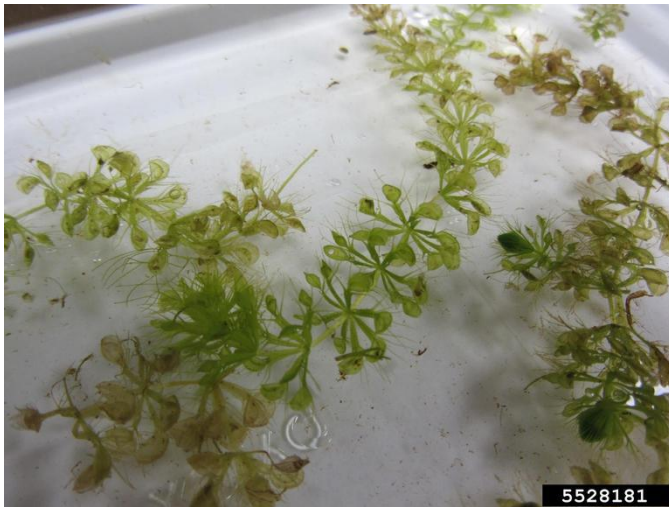
Aldrovanda vesiculosa, **Waterwheel**



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Common Name:	Waterwheel
Scientific Name:	<i>Aldrovanda vesiculosa</i>
ID Description:	Waterwheel is a free-floating submerged aquatic carnivorous plant; rootless stems grow across the water from 2.5 to 8 inches (6 to 20 cm) in length, with whorls of 4-9 small leaves one inch (2.3 cm) in diameter. Each of its leaves features a pair of two oval lobes 0.15 to 0.28 inches (4-7mm) in length, that snap shut in about one-tenth of a second upon stimulation of any of the 20 sensitive hairs located on the inner surface of each lobe.
Current Distribution in US and VT:	New Hampshire - Merrimack River, New Jersey - Succasunna and Lake Owassa New York - Big Pond, Virginia - Fort A.P. Hill
Habitat:	Waters with high organic matter and high levels of CO ₂ , increasingly eutrophic waters
Regulated/restricted in these Northeastern states:	NY, NH, NJ
Concern:	Waterwheel can grow very rapidly and colonize an entire waterbody. It competes with native plants and consumes zooplankton, decreasing their availability as food sources. It may impact the food web through predation of aquatic invertebrates. There is a concern that it may impact rare, threatened, and endangered aquatic invertebrates. <i>A. vesiculosa</i> is still a new invader in North America and peer reviewed literature and studies about the impacts on native macrophytes and native invertebrates are limited.
Means of Introduction and Spread:	Waterwheel spreads by seeds, leaf material, and turions (modified vegetative bundles that can go dormant during winter months). It is likely to be introduced through the aquarium trade and via transport on personal watercraft.

Plant Pest Designation Rationale

Ecological Threat:

Aldrovanda vesiculosa forms dense floating mats on the water surface, which can inhibit sunlight penetration and disrupt the natural balance of aquatic habitats. Its aggressive growth can outcompete native aquatic vegetation, leading to reduced biodiversity and altering the structure and function of aquatic ecosystems. *Aldrovanda vesiculosa's* carnivorous nature may pose a threat to native aquatic fauna, as it preys on small invertebrates and zooplankton, potentially disrupting food webs and ecological processes in affected water bodies. The presence of *Aldrovanda vesiculosa* may lead to habitat degradation and loss of ecosystem services, such as water filtration and nutrient cycling, which are essential for maintaining healthy aquatic environments.

Economic Impact:

An infestation of waterwheel in Vermont could have a significant economic impact across multiple sectors, including tourism, recreation, agriculture, and ecosystem services. The development of dense

mats by waterwheel plants can hinder water flow, disturb navigation, and disrupt recreational activities like boating and fishing. Infestations of waterwheel plants may lead to habitat deterioration and a decrease in ecosystem processes such as water filtration and nutrient cycling, vital for preserving balanced aquatic ecosystems.

Feasibility of control and spread prevention:

Mechanical methods such as hand harvesting can help manage smaller infestations, especially when followed by proper disposal to prevent regrowth. Biological control methods, which involve introducing natural predators or specific pathogens targeting waterwheel plants, present potential solutions to limit its population growth; however more research is needed. Public outreach is another key tool in preventing spread of aquatic plants. Boaters should carefully clean boats and equipment when moving between bodies of water; all soil and organic debris should be removed as well as bilge water. Gardeners and hobbyists should only plant non-invasive or native plants in ponds or aquariums. Aquarium water should be disposed of in a way that does not contaminate natural water-bodies.

Waterwheel infestation



Photo Credit [Fort A.P. Hill, US ARMY 2015](#)

Waterwheel infestation



Photo Credit [Fort A.P. Hill, US ARMY 2015](#)

Reported US distribution of *Aldrovanda vesiculosa* in EDDMaps



EDDMapS. 2024. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at <http://www.eddmaps.org/>; last accessed February 16, 2024.

References:

[Species Profile: Waterwheel \(usgs.gov\)](#)

[Department of Defense Legacy Resource Management Program: Waterwheel](#)

[Delaware Invasive Species Council Fact Sheet: Waterwheel](#)

[Maryland Invasive Species Council Fact Sheet: Waterwheel](#)

*This content was edited with the assistance of a generative artificial intelligence, ChatGPT. The content has been reviewed and verified to be accurate and complete and represents the intent of the Plant Health Section of the VT Agency of Agriculture, Food and Markets.