



Evaluation of the Biology, Ecology, and Control of *Aldrovanda vesiculosa* within a Risk Analysis Framework

Project # 16-815

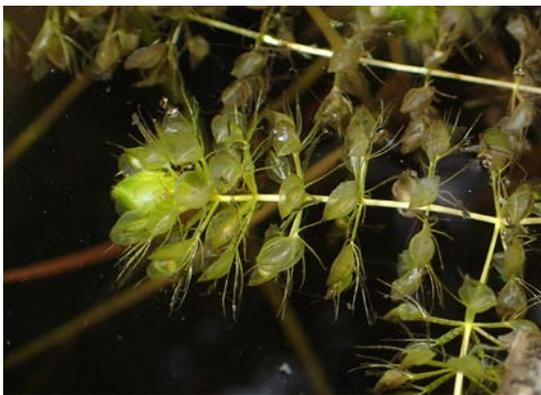
Background:

Aldrovanda vesiculosa (Waterwheel) L. is a submersed, rootless aquatic carnivorous plant native to Europe, Asia and Africa. In its native range, *Aldrovanda vesiculosa* is on the decline however, several large populations have established in North America. Recently, waterwheel has been increasing in abundance in wetlands and ponds from Virginia to New Jersey with significant infestations on Fort A.P. Hill, VA. Infestations on A.P. Hill have become very dense, potentially impairing native species while also interfering with use of water resources for training.

Biology: Typically, waterwheel is green to brown in color, with shoot length ranging from 1.5 cm to 20 cm. Whorls are arranged around the stem in a wheel fashion, hence the name waterwheel with 7-8 leaves per node. Each leaf is modified into a pair of oval lobes at the end of the petiole, which function as the trap to capture insects. Waterwheel feeds on a variety of insects such as snails, mosquito larvae and zooplankton.

Habitat: Waterwheel typically inhabits slow moving, slightly acidic, dystrophic waterbodies typical of bogs and fens. Most often, you can find waterwheel in shallow, stagnant areas among emergent vegetation such as rushes and cattails. Since waterwheel does not have roots, it is most often found at the water's surface. When conditions are right, waterwheel can form dense stands numbering in the millions of individuals.

Reproduction: primarily, waterwheel reproduces via fragmentation (breaking off of a section of a shoot, which can grow into a new plant). Flowers are rarely observed and often unsuccessful in producing viable seeds. At the end of the growing season, waterwheel produces an overwintering structure called a turion. The turions sink to the bottom of the water during winter and rises to the water's surface during the spring time to sprout.



Aldrovanda vesiculosa in Wroclaw University Botanical Garden

Objective:

Legacy funding was provided to 1) for a technical advisory committee of stakeholders, 2) identify all current information sources and compile a preliminary research review, and 3) prepare a report with priorities for future efforts regarding *Aldrovanda*.

Summary of Approach:

A technical advisory committee was formed from relevant military personnel and civilians with relevant state and federal agencies or previous experience with *Aldrovanda*. A site visit was conducted on September 27, 2016 along with a meeting to discuss the infestation and *Aldrovanda*. At this meeting, draft priorities were established for future *Aldrovanda* efforts. A follow up Web Ex meeting was conducted on February 23, 2017 to review a preliminary literature review, additional relevant information on *Aldrovanda*, and approve future priorities developed at the site visit meeting. The literature review was then completed with any additional feedback incorporated. Subsequent proposals were submitted to Legacy for option years, but no additional work was funded. Funding was also solicited from other entities, but none was sponsored.

Benefit:

Due to the dense infestations on Fort A.P. Hill potentially restricting habitat for native species, as well as interfering with use of water resources for training exercises, management of this species would protect both natural resources and training activities as part of the military mission. This project developed priorities and a literature review to guide future efforts. Based upon findings, triploid grass carp were stocked in some Fort A.P. Hill waterbodies for *Aldrovanda* control.

Accomplishments:

A technical advisory committee was formed. A fact sheet and interim report were developed. The committee conducted a WebEx meeting with presentation of preliminary *Aldrovanda* information. The committee reviewed the Fort A.P. Hill infestation, and determined priorities for future efforts to address *Aldrovanda*. A Literature Review was also compiled and final TAC findings were presented via WebEx.

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