

APCRP: The Biology and Management of Crested Floating Heart (*Nymphoides cristata*)

Capability

Crested floating heart (CFH) (*Nymphoides cristata*) is a floating-leaf, exotic invasive plant from Asia that has shown potential for rapid growth and surface coverage in water bodies in the Southeastern United States. The Florida Exotic Pest Plant Council (FLEPPC) listed the CFH as a Category 1 invasive exotic plant, which has the potential to alter the composition and structure of native communities. CFH is a newly emerging problem; therefore, limited published literature exists regarding invasion biology and management. CFH has shown potential to expand rapidly in canals and smaller water bodies; however, the

recent rapid expansion that has covered over 6000 acres in the Santee Cooper reservoirs in South Carolina is a cause for significant concern. Expansion in a reservoir formerly dominated by hydrilla is alarming because CFH is growing in a heavily populated triploid grass carp system. Research in Asia suggests grass carp will not consume CFH. Likewise, there are no proposals for classical biological control organisms, and preliminary research with herbicides has not provided a solid and cost-effective recommendation. Given the large number of southeastern reservoirs stocked with grass carp for hydrilla control, the introduction of a plant like CFH with attributes and growth potential similar to hydrilla could present a significant problem for resource managers. The potential for further spread of this plant into more northern states and the recent confirmation of populations in Louisiana and Texas suggests range expansion is still occurring. Like hydrilla, CFH produces millions of vegetative propagules (ramets) per acre that can remain dormant and resist current management efforts



Crested floating heart is an exotic invasive, floating-leaf plant that can rapidly expand to cover large areas of lakes, reservoirs, and canals. Triploid grass carp does not control this plant, and there is concern for spread of crested floating heart into multiple reservoirs stocked with grass carp.

Research on the invasion biology and best management practices is recommended while this plant is still in a relatively early stage of expansion. Development of biology information will predict water bodies at greatest risk. Likewise, screening of various management techniques will provide information to resource managers on the most cost-effective and selective options for managing CFH.

Applications

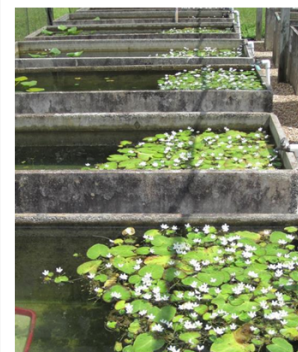
This research project is being conducted on a plant this is still in a relatively early stage of invasion and introduction. Based on current observations, both researchers and resource managers predict that CFH could be a major problem in future years. Developing solid information on reproductive biology and cost-effective strategies with herbicides will provide managers with the information needed to manage early stage introductions. The ability to adopt rapid response to new introductions with proven management strategies can result in significant long-term cost savings for individual projects.

Status

This research began in FY 14 and will continue through FY17. The Aquatic Plant Control Research Control Program is funding this project, and U.S. Army Engineer Research and Development Center (ERDC) scientists are collaborating with the University of Florida to conducting the research.

Documentation and References

- Willey and Netherland – 2015. Influence of sediment coverage on sprouting of crested floating heart ramets and response of ramets to contact herbicides. *J. Aquat. Plant Manage.* 53: 216-220.
- Glomski and Netherland – 2016. Impact of Retention Time on Efficacy of Foliar Treatments for Control of CFH. *J. Aquat. Plant Manage.* 54:50-53.
- Netherland and Richardson. 2015. Evaluating Sensitivity of Five Aquatic Plants to a Novel Arylpicolinate Herbicide Utilizing an Organization for Economic Cooperation and Development Protocol. *Weed Science.* 64: *In Press*.



Laboratory and mesocosm studies are being conducted to determine susceptibility of crested floating heart to various herbicide strategies. Likewise, studies conducted in these systems will determine factors that influence growth and reproduction. Crested floating heart plants can produce hundreds of small ramets that can remain dormant. Determining the biology of these ramets will be key in providing resource managers with critical information needed to better manage this invasive plant.

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