

APCRP: Applied Research Topics on the Biological Control of *Salvinia molesta* and *S. minima*

Capability

Multiple waterbodies in at least twelve states in the United States contain infestations of giant and/or common salvinia. While salvinia weevils have been successful at controlling giant salvinia in at least thirteen countries worldwide, very few success stories exist in the United States. In the past, weevil availability limited salvinia biocontrol. Since 2008, researchers from the U.S. Army Engineer Research and Development Center (ERDC), Environmental Laboratory, Lewisville, TX have been developing mass-rearing techniques for salvinia weevils. Due to advances in rearing techniques, such as rotational culture harvesting, weevil supply is no longer a problem. In 2014, researchers released 850,000 giant salvinia weevils (Brazil ecotype) and 30,000 common salvinia weevils

(Florida ecotype) at nine reservoirs in Texas and Louisiana. Since that time, weevil establishment, increases in weevil density, and salvinia reductions are evident at some of the reservoirs, while others are less successful.

The United States Army Corps of Engineers (USACE) Aquatic Plant Control Research Program, Louisiana Department of Wildlife and Fisheries, and USACE Fort Worth District are funding research to further investigate the underlying causes of success or failure of salvinia biocontrol. Research is currently focused on two primary objectives: (1) the effect of plant nitrogen content to salvinia biocontrol success at field sites, and (2) the most suitable weevil ecotype for biocontrol of common salvinia.



Applications

Results from this research have the potential to increase success rates of giant and common salvinia biocontrol efforts and aid in the development of a standard protocol for site selection (based on plant nitrogen content) and appropriate pairing of salvinia species to weevil ecotype. Once established, salvinia weevils offer a sustainable, low maintenance control method that has the potential to save water resources managers millions of dollars in plant control.



Giant salvinia infestation in Louisiana

Status

This ongoing project was initiated in FY15, with funding expected through FY 17.

Documentation and References

- A Guide to Mass Rearing the Salvinia Weevil for Biological Control of Giant Salvinia http://cise.tamu.edu/media/355740/gs_manual_10-15-12.pdf
- Nachtrieb, J.G. 2014. Mass-rearing *Cyrtobagous salviniae* for Biological Control of Giant Salvinia: Field Release Implications. *Journal of Aquatic Plant Management*, 51: 122-126. <http://apms.org/wp/wp-content/uploads/2015/01/japm-51-02-122-126.pdf>
- Mudge, C.R., N.E. Harms, and J.G. Nachtrieb. 2013. Interactions of Herbicides, Surfactants, and the Giant Salvinia Weevil (*Cyrtobagous salviniae*) for control of giant salvinia (*Salvinia molesta*). *Journal of Aquatic Plant Management*, 52: 15-21. <http://apms.org/wp/wp-content/uploads/2015/02/japm-52-01-15-abstract.pdf>

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