

AgriLife TODAY

Weevils successfully destroy acres of lake-invading plants

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WOODVILLE – A weevil that feeds exclusively on giant salvinia has successfully destroyed about 150 acres of the invasive plant this summer on B.A. Steinhagen Lake near Woodville in East Texas, according to personnel involved in a statewide giant salvinia management program.



(http://today.agrilife.org/wp-content/uploads/2012/09/Lake-Steinhagen_April2012.jpg)

Giant salvinia in Lake Steinhagen (photo courtesy Floyd Boyett, U.S. Army Corps of Engineers)

Researchers from the U.S. Army Corps of Engineers, Texas Parks and Wildlife Department, Texas A&M AgriLife Extension Service and Texas A&M AgriLife Research are working to control giant salvinia, a free-floating aquatic fern native to South America. The plant has invaded 17 Texas lakes and bodies of water in the southeastern U.S., according to Dr. Allen Knutson, AgriLife Extension entomologist in Dallas.

Knutson said the fast-growing plant forms dense mats, which interfere with water recreation, displace native vegetation and reduce oxygen content of the water, often

harming fish and other aquatic life.

The Texas Parks and Wildlife Department's Aquatic Habitat Enhancement Program staff has released more than 112,000 adult weevils since 2010 from its Jasper rearing facility onto B.A. Steinhagen Lake.

Knutson, Dr. Abhishek Mukherjee and Dr. Kevin Heinz, Texas A&M University department of entomology, and Chris Moret, Texas Parks and Wildlife Department, studied the lake's weevil populations this year and in 2011.

"Late last winter, weevil numbers ranged between 20 and 30 weevils per kilogram of salvinia and are now up to 60 per kilogram, which is an excellent population," Mukherjee said. "Populations of this size cause more damage to the plant than it can overcome and are able to effectively control giant salvinia."

"Photos taken before and after weevil releases illustrate the tremendous job the weevils have done in controlling giant salvinia this year," said Floyd Boyett of the U.S. Army Corps of Engineers in Woodville. "We purposefully refrained from spraying this area to see what the weevils could do this year."

"Now, there is abundant open water, and what giant salvinia remains is contained within floating mats of grass or lotus along the shore," he said. "Weevils are in areas east and south of where they were released, indicating that the floating material must have carried the weevils a good distance and allowed them to establish."

Knutson said a similar effort aims to recreate these successful results at Caddo Lake in northeast Texas. Research there is being conducted at a weevil-rearing facility at the U.S. Fish and Wildlife Service's Caddo Lake National Wildlife Refuge through the Center for Invasive Species Eradication. The center is part of the Texas Water Resources Institute, AgriLife Research and AgriLife Extension and operated in collaboration with Texas Parks and Wildlife, U.S. Fish and Wildlife Service's Caddo Lake National Wildlife Refuge and the Caddo Lake Institute.

Lucas Gregory, the water institute's manager for the project, said giant salvinia is extremely abundant at Caddo Lake this year.

"The flood and freezes in the winters of 2010 and 2011 greatly reduced the amount of giant salvinia present in Caddo Lake, but it has come back with a vengeance this year," he said. "Some areas of the upper lake are almost impassable due to thick mats of salvinia."

So far in 2012, the facility has produced about 50,000 adult weevils, which were released at a research site on Caddo Lake, Knutson said.

"Efforts to establish a self-sustaining weevil population on Caddo are underway," Knutson said. "However, the effectiveness of the salvinia weevil, a tropical insect, is

limited by cold winters, especially at Caddo Lake.

“Our research has demonstrated that populations vary in their ability to survive freezing weather,” he said. “We are now searching for cold-tolerant strains that could better survive cold winters in Texas and therefore have a greater impact on salvinia infestations the following summer.”

Knutson and Mukherjee plan to acquire some weevils from Argentina later this year and evaluate their cold-hardiness in laboratory tests at Texas A&M.

“By collecting weevils in higher, and therefore colder, elevations in Argentina, we expect to find weevils more cold tolerant than those currently in the United States, which were originally collected from Brazil,” he said. “Finding more cold-tolerant weevil populations would be especially helpful when colder winters return to East Texas.”

The Caddo Lake giant salvinia project is funded by Congressional support through the U.S. Department of Agriculture’s Natural Resources Conservation Service.

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