

## *Synergistic eradication*

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### CENTER'S FIRST PROJECT TACKLES INVASIVE PLANT AT TREASURED LAKE

Caddo Lake, straddling the state line between Texas and Louisiana, is a treasure for many people. Known for its signature bald cypress trees draped with Spanish moss, this treasured lake is also a home to vast diversity of wildlife. In recent years, giant salvinia, a fast-growing fern native to South America, has invaded the lake, threatening to steal the treasure away.

With leadership from Sen. Kay Bailey Hutchison and funding from Congress, a new center is finding ways to control and eradicate this invasive plant in Caddo Lake.

The Center for Invasive Species Eradication (CISE), under the direction of the Texas Water Resources Institute (TWRI), was recently established by Texas AgriLife Research and the Texas AgriLife Extension Service. The center is directing research, demonstrations, educational programs, and treatment activities that initially focus on eradicating giant salvinia in Caddo Lake. Next it will contend with other noxious non-native plant species in Texas. Congress provided the funds through the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

Non-native invasive plants are unwanted species that have usually been introduced unintentionally from other countries and have the ability to spread out of control, ultimately displacing native species. The Texas Department of Agriculture currently lists 32 noxious weeds growing in Texas, including giant salvinia, giant cane, and saltcedar (tamarisk).

"This center is a collaborative effort to complement and connect with ongoing endeavors by others dealing with invasive plant problems," said Dr. B.L. Harris, acting director of TWRI. "We look forward to working with not only AgriLife Research scientists and AgriLife Extension specialists but also other universities; local, state, and federal agencies; and other groups and individuals to provide practical solutions to controlling invasive species and preventing future infestations."

The center's first undertaking is the *Caddo Lake Giant Salvinia Eradication Project*, which seeks integrated, multi-agency management options for giant salvinia (*Salvinia molesta*). The free-floating aquatic fern was introduced to the United States by the water garden industry.

Since its appearance in this country, giant salvinia has been an aggressive invader that can double in size in four to 10 days under favorable growing conditions.

"Caddo Lake in East Texas was first infested with giant salvinia in 2006, and within two years the plant's coverage expanded from less than 2 acres to more than 1,000 acres," said Dr. Michael Masser, AgriLife Extension fisheries specialist. "The plant can form thick mats over the lake, choking off sunlight to the fish, plants, and animals below, and greatly hinders boating, fishing, and other recreational uses of the water.

"So far, efforts to control giant salvinia such as chemical spraying and mechanically removing the invasive plant have yielded moderate success but have not completely eliminated the species from the lake," he said.

Harris said AgriLife Extension and AgriLife Research project members are collaborating with other agencies on this effort, including the Caddo Lake Institute, Texas Parks and Wildlife Department (TPWD), U.S. Fish and Wildlife Service,



CADDO LAKE IS THE FOCUS OF THE FIRST PROJECT FOR THE CENTER FOR INVASIVE SPECIES ERADICATION. SCIENTISTS WILL DEMONSTRATE AND EVALUATE DIFFERENT METHODS FOR CONTROLLING AND PREVENTING THE GROWTH OF GIANT SALVINIA. PHOTO BY LUCAS GREGORY



U.S. Army Corps of Engineers, NRCS, Cypress Valley Navigation District, Louisiana Department of Wildlife and Fisheries, and Louisiana State University.

TWRI project manager Lucas Gregory said project members are evaluating and demonstrating control methods—primarily chemical and biological—and assessing their effectiveness in killing giant salvinia.

Masser and Dr. Paul Baumann, AgriLife Extension weed specialist, are establishing chemical treatment demonstration sites.

“We are testing and evaluating different chemical treatment practices using a variety of chemicals, surfactants, and combinations at various concentrations, rates, and timings to determine the most effective chemical control methods,” Baumann said.

Dr. Allen Knutson, AgriLife Extension entomologist, is leading the biological control efforts of the center using weevils proven to eat only giant salvinia. He is working with TPWD, U.S. Army Corps of Engineers’ Lewisville Aquatic Ecosystem Research Facility and the USDA

Agricultural Research Service in Weslaco to improve methods of rearing weevils for release in Caddo Lake and tactics for monitoring their impact on giant salvinia.

Knutson, who is located at Texas AgriLife Research and Extension Urban Solutions Center at Dallas, said the nature of Caddo Lake presents a perfect setting for giant salvinia to establish and thrive. “A vast majority of the lake is actually a swamp that is largely inaccessible by boat or canoe and provides giant salvinia a great place to hide,” he said. “These areas are ideal candidates for establishing biological control and will hopefully provide a continual line of defense against the further spread of giant salvinia in the lake.”

Baumann said the combination of chemical and biological control should prove to be effective. “This project offers a unique opportunity and solution where integrated pest management practices will need to be employed,” he said. “The use of herbicides along with the weevils that feed on giant salvinia will be a synergistic combination that will provide for giant salvinia control at levels not

achievable with either practice used alone.”

Along with the research, education is essential to getting the word out about this noxious weed and ways to prevent its spread to other lakes, Gregory said. AgriLife Extension and TWRI are collaborating with TPWD and other agencies to educate boaters, landowners, and the public about the invasive plant.

The project’s long-term goal is to identify the most effective control methods and incorporate them into agency guides, such as the NRCS *Field Office Technical Guide* and Extension educational program materials, so public and private organizations will have proven approaches to eradicate giant salvinia, Gregory said.

“We anticipate that results from the Caddo Lake project will result in well-documented ‘state of the science’ management practices that can be applied on private and public water bodies statewide,” he said.

TPWD has an interactive education website about invasive species found in Texas: [TexasInvasives.org](http://TexasInvasives.org). Project materials are available on CISE’s website at [cise.tamu.edu](http://cise.tamu.edu).