

**Texas AgriLife Extension Service
Texas Water Resources Institute**

Quarterly Progress Report

**Water Quality at Caddo Lake
Center for Invasive Species Eradication: Caddo Lake Giant Salvinia Eradication Project
USDA NRCS Agreement #: 68-7442-10-499**

Quarter No. 5 From: 7.01.2011 Through: 9.30.2011

Abstract:

The **Center for Invasive Species Eradication** (CISE) has continued operations this quarter with the continuing focus being on releasing additional crops of weevils on Caddo Lake. To date, approximately 105,000 adult weevils (and a large number of larvae) have been produced and released into four different locations on the lake. Research has been initiated and continues to evaluate weevil expansion as well as weevil impact on the giant salvinia. Additional weevil releases along with new research objectives are planned for late October through early November 2011. However, many on-lake operations have been suspended due to historic low-water levels present on Caddo Lake in late summer and early fall of 2011. Once lake levels rise to acceptable levels, on-lake weevil releases and research will continue as planned.

Weevil rearing, sampling, and disbursement continue to be a significant task this quarter. Further research objectives regarding the biological control of giant salvinia have been established for investigation for the next six months. Dr. Abhishek Mukherjee, of Texas A&M University, has recently joined the research aspect of the project to assist in further investigating the effectiveness of salvinia weevils as a biological control of salvinia on Caddo Lake. In addition, initial herbicide /surfactant trials began this quarter at the weevil rearing facility.

A meeting of the Inter-Agency Giant Salvinia Control Team was held September 30th to discuss the current state of giant salvinia control and research in the southern United States. Also discussed was the prospect of designing and implementing an online mapping program for Caddo Lake to help convey and organize all on-lake vegetation control measures. The possibility of a cooperative effort between Caddo Lake Institute and Texas Water Resources Institute / Institute of Renewable Natural Resources to create this online resource would hopefully allow better coordination between the various agencies engaged in vegetation control on Caddo Lake as well as providing a clear view to the public of all on-lake vegetation control activities. This online resource could be applied to other water bodies if the initial prototype is launched and proves to be successful.

Overall Progress and Results by Task:

Task 1. Project Administration: Texas Water Resources Institute

***Subtask 1.1:** Establish a Center for Invasive Species Eradication at Texas A&M University under the administrative leadership of Texas AgriLife Research and Texas AgriLife Extension Service to utilize funds provided through USDA Natural Resources Conservation Service to focus research and Extension educational programs on controlling invasive plant species.*

This action has been completed and the Center for Invasive Species Eradication is fully operational with personnel at TWRI handling day to day management activities.

Task 100% Complete

***Subtask 1.2:** Provide fiscal oversight of funds, make funds allocations to scientists and Extension personnel, establish contracts and subcontracts as necessary, perform accounting functions*

Fiscal management is being carried out by TWRI personnel. Budgets and planned expenditures are continually being monitored to ensure that expenses are within the scope of the project and within the available budget.

As of July 31, 2011 a total of \$182,177 dollars have been spent on the project. Another \$212,864 are currently encumbered and will be spent this fiscal year.

Task 40% Complete

***Subtask 1.3:** Facilitate project and program discussions between AgriLife Research and Extension administration and NRCS administrative personnel to ensure that programmatic goals and objectives are met in a timely manner through this project.*

Work for this task has continued.

Task 35% Complete

Task 2. Project Coordination: Texas Water Resources Institute and other Agencies

***Subtask 2.1:** Coordinate and facilitate meetings among project personnel to ensure research focus, maximum collaboration, educational programs and transfer of information*

Coordination and cooperation with other agencies is ongoing. Various formal and informal meetings have been attended and relevant information regarding achieving project goals has been of focus amongst involved agencies. Potential publications regarding research findings, weevil rearing methods, and general educational programs

are being developed. Work towards completing these objectives is ongoing and should be progressing over the next six months.

Task 55% Complete

Subtask 2.2: *Work with groups currently engaged in controlling Giant Salvinia and other invasive species to foster collaboration and information transfer on the state of the science in controlling Giant Salvinia. These groups include those participating in the Interagency Giant Salvinia Control Team, including the Caddo Lake Institute, Cypress Valley Navigation District, East Texas Baptist University, Northeast Texas Municipal Water District, Northwestern State University, Louisiana Dept. of Fish and Wildlife, Louisiana State University, Texas AgriLife Research, Texas AgriLife Extension Service, Texas Parks and Wildlife Dept., USDA Agricultural Research Service, Animal & Plant Health Inspection Service, Natural Resource Conservation Service, US Army Corps of Engineers, Engineer Research & Development Center and Lewisville Aquatic Ecosystem Research Facility, and US Fish and Wildlife Service*

Project personnel have been making contact with personnel from most of the agencies/entities listed above. A meeting with the Inter-Agency Giant Salvinia Control Team on September 30th allowed project personnel to engage with other entities involved in similar efforts. Additionally, CISE project personnel continue to work with Chris Moret at TPWD on Giant Salvinia management options and plans for 2011 and 2012.

Task 55% Complete

Subtask 2.3: *Work with project personnel to meet reporting requirements and to produce effective project publications*

The “weevil rearing” manual is in the works and a draft should be completed by December of 2011 has been established between persons involved with rearing weevils under different setups. The CISE chapter of this manual will detail the large-scale rearing of weevils under greenhouses in large tanks utilizing data and experience gleaned from the weevil rearing efforts of the previous year. In addition, a draft salvinia tri-fold is in development that provides information on salvinia, the issues it presents and solutions to the problem. This tri-fold should be completed next quarter.

Task 50% Complete

Task 3. Chemical Treatment and Evaluation: Texas AgriLife Research and Extension

Subtask 3.1: *Researchers and Extension Specialists will work with others to establish chemical treatment research and demonstration sites to the extent possible at Caddo Lake for Giant Salvinia control. (Killing Giant Salvinia at Caddo Lake is the primary focus; as such,*

demonstrations at private or isolated locations may be required for research demonstrations of chemical treatment combinations)

No activity to report during this quarter. Initial chemical trials are underway and top performers will be selected for on-lake trials. Needed equipment to conduct these trials has been procured.

A private spray contractor was hired to spray giant salvinia on Caddo Lake. However, spray efforts have been postponed due to low water conditions along with low coverage of giant salvinia on the lake. Once lake conditions improve, spray activities will commence.

Task 40% Complete

Subtask 3.2: *Test and evaluate chemical treatment practice alternatives for controlling Giant Salvinia at Caddo Lake using a variety of chemicals, surfactants, and combinations at various concentrations and timings (This may include contracting with local or private chemical applicators to chemically treat Caddo Lake)*

An initial round of chemical trials within plastic tubs has concluded during the last quarter. The best performing herbicides and surfactant combinations will be implemented in another round of small-scale studies in the coming weeks. Preliminary results were presented at the September 30th IAGSCT meeting.

Task 35% Complete

Subtask 3.3: *Evaluate the efficacy and cost effectiveness information of each treatment scenario*

No activity to report at this time. This work will begin following the small-scale chemical treatments.

Task 0% Complete

Subtask 3.4: *Work with personnel in Task 4 to evaluate the efficacy of utilizing chemical treatments in concert with biological control*

No activity to report at this time.

Task 0% Complete

Task 4. Biological Treatment and Evaluation: Texas AgriLife Research and Extension

Subtask 4.1: *Collaborate with other agencies and groups to setup new studies and cooperate in ongoing research and Extension educational programs dealing with biological strategies for*

controlling Giant Salvinia at Caddo Lake; practices which can be utilized for public and private lands statewide (If needed, research and demonstration sites away from Caddo Lake will be utilized as quickly killing Giant Salvinia at Caddo Lake is the priority)

No new activity to report this quarter.

Task 40% Complete

Subtask 4.2: *Work with TPWD and local Caddo Lake agencies, organizations and individuals to enhance weevil rearing capabilities for use at Caddo Lake*

Weevil rearing capabilities have been refined and production and weevil delivery methods have been established. Local support in releasing weevils on the lake may be utilized in future releases if the need arises. Likewise, resources of TPWD have been offered if the need arises.

Task 85% Complete

Subtask 4.3: *Coordinate with USACE's Lewisville Aquatic Ecosystem Research Facility to collaborate in ongoing efforts, transfer knowledge and expand their operations*

AgriLife Extension personnel maintain routine contact with LAERF personnel regarding weevil rearing and release methodologies. USACE-LAERF personnel are participating in the development of the "weevil rearing manual."

Task 45% Complete

Subtask 4.4: *Evaluate improved methods of rearing weevils, harvesting weevils, delivering weevils to infested areas in Caddo Lake and various timing options of weevil applications in Caddo Lake to determine the most effective biological treatment scenarios to employ to the extent possible; as indicated earlier, killing Giant Salvinia at Caddo Lake may result in the need for research demonstration sites in the vicinity of Caddo Lake.*

Effective methods for rearing, harvesting, and delivering weevils to Caddo Lake have been established and implemented. Research sites have been established, however, low-water conditions have prevented them from becoming demonstration sites.

Task 65% Complete

Subtask 4.5: *Assess practice efficacy and cost effectiveness of utilizing weevils in the control of Giant Salvinia*

A component of new research objectives is focused on a cost/benefit analysis of the utilization of salvinia weevils as a control agent of giant salvinia.

Task 5% Complete

Subtask 4.6: Use information gleaned from demonstration sites to develop biological treatment recommendations and guidelines for use of weevils to treat Giant Salvinia in infested areas

No activity to report at this time.

Task 0% Complete

Subtask 4.7: Work with personnel in Task 3 to evaluate the efficacy of utilizing chemical treatments in concert with biological control

No activity to report at this time.

Task 0% Complete

Task 5. Other Treatment: All involved agencies

Subtask 5.1: Work with federal, state and local agencies as well as local entities and individuals to evaluate the feasibility, efficacy and cost effectiveness of utilizing other treatment options (hydrological, mechanical, others) for controlling Giant Salvinia

A private company has completed a demonstration of a device they claim would kill giant salvinia and not harm other plants. The demonstration did not result in positive results and has been discontinued.

Task 20% Complete

Subtask 5.2: Convert feasible options into treatment practice descriptions to include in recommended treatment strategies and guidelines

The first demonstration conducted by a private company did not result in a viable treatment option.

Task 30% Complete

Subtask 5.3: Develop treatment prescriptions suitable for inclusion in NRCS FOTGs, Extension printed materials and other guides for treating Giant Salvinia; these will take the form of job sheets, fact sheets, supplements to conservation practice standards and technical brochures.

A draft salvinia tri-fold is in development that provides information on salvinia, the issues it presents and solutions to the problem. This tri-fold should be completed next quarter.

Task 25% Complete

Task 6. Education and Outreach: Texas AgriLife Extension Service and Texas Water Resources Institute

Subtask 6.1: *Extension and TWRI will work with TPWD and other agencies to enhance existing outreach and education efforts through the use of news releases, TV spots, demonstrations, and other communications focused on prevention of spread and control methods for Giant Salvinia*

Media coverage of the project and giant salvinia in general has slackened slightly this quarter due to reduced levels of giant salvinia coverage across the region. Low water conditions due to the ongoing drought in the region have also contributed to the reduced attention. The project website, blog, and facebook page will be more frequently updated as project activities increase in order to garner more public attention. Additional plans for an organized media “event” are in the works to hopefully bring public attention back to the project before the 2012 growing season begins. Project personnel have conducted two educational programs of Extension clientele in five counties on pond and aquatic vegetation management in which the discussed the Giant Salvinia problem in Texas and some of CISE’s efforts in this arena. Additional extension events and public educational events are planned for the upcoming quarter.

Task 45% Complete

Subtask 6.2: *Identify and secure partnerships with local, state, regional and national organizations (ex: B.A.S.S., fishing and hunting guides, cities, water sports manufacturers, Ranger Boats, Evinrude, Mercury, others) to expand the dissemination of educational materials on Giant Salvinia*

No new activity to report this quarter.

Task 20% Complete

Subtask 6.3: *Develop and host CISE website for invasive species eradication information and as an outlet for information dissemination*

Website development is now complete and provides links to numerous information outlets. Content is continually being added to the site. In addition, a Facebook page and online blog have been created and are updated as new information is ready to be presented. All pages are advertised to the public when the opportunity is available.

CISE Web address: <http://cise.tamu.edu/>
Project Web address: <http://cise.tamu.edu/caddo>
Project blog: <http://caddosalvinia.blogspot.com/>
Facebook page: link can be found on the above blog.

Task 88% Complete

Subtask 6.4: Facilitate education and outreach efforts and support media relations

Project personnel participated in an event at Caddo Lake on August 10th in which Senator Hutchison made an appearance and spoke about ongoing efforts at Caddo Lake including the work being done through CISE. Project personnel led on-site discussions with the Senator. Several press pieces resulted from this visit and the event was well attended by local and regional landowners, agencies, media and others.

<http://caddosalvinia.blogspot.com/>

<http://agrilife.org/today/2011/08/10/fight-against-invasive-species-on-texas-lakes/>

http://www.news-journal.com/mineola/opinion/article_9a69ea0c-e26e-5b4f-8c47-680abb39c9bc.html

Task 50% Complete

Task 7. GIS Support: Texas AgriLife Research

Subtask 7.1: Texas AgriLife Research will provide GIS support for all aspects of the project and develop maps illustrating project activities and demonstration locations

Monitoring of designated lake areas of project interest continues using GPS. GIS Support for the project goals will commence once sufficient spatial data has been attained and objectives determined.

A new online GIS mapping program is being discussed as a tool to enhance on-lake vegetation control coordination and allow public viewing of all on-lake work activities. Such a program would be a collaborative effort that displays current work on Caddo Lake.

Task 30% Complete

Task 8. Include Treatment Scenarios in Agency Guidelines: All Agencies

***Subtask 8.1:** Using information gleaned from this project, develop detailed strategies and practices for control of Giant Salvinia for inclusion in agency guidelines such as NRCS FOTGs, Extension bulletins and factsheets, TPWD outreach information and other agency materials for utilization in both private and public water bodies*

Work on this task has continued this quarter. Project personnel have been coordinating with Russell Castro with NRCS to develop and publish a landowner guide to Giant Salvinia and its control options. This brochure should be completed next quarter.

Task 30% Complete

***Subtask 8.2:** Work closely with NRCS and other agencies to disseminate the control practices for Giant Salvinia as appropriate*

The brochure developed in conjunction with NRCS will be disseminated once completed. Other information is continually disseminated through presentations, meetings and other avenues as appropriate.

Task 20% Complete

Planned Activities for Next Quarter:

- conduct final weevil release of the year in the Tar Island area of the lake
- conduct second round of small-scale chemical trials
- edit and review "Salvinia Weevil Rearing Manual"
- continue to monitor weevil release sites
- continue coordination with CVND and TPWD
- attend the Texas Aquatic Plant Management Society meeting in Bandera to present project information

Attachments:

Photo 1: Drought effects on the Gravier Slough Weevil Release Site on Caddo Lake, September 2, 2011. Terrestrial plants now growing in an area that formerly contained 3-4 feet deep water.



Photo 2: Large-scale weevil release in August 2011 in an area of Caddo Lake that has maintained higher water levels through the drought.

