

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

BAYOU LACOMBE

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

October 2013 - Prepared by
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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Largemouth bass (LMB) are managed to maintain a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish to maintain angler interest and efforts.

Commercial

Commercial species are managed with statewide regulations for maximum sustainable yield.

Species of Special Concern

Species of special concern are managed to protect the current population and to provide an opportunity for recovery to a sustainable population. In Louisiana, management of Threatened and Endangered (T & E) species is purview of the United States Fish and Wildlife Service (USFWS).

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations for recreational fresh and saltwater species apply. A brief description of recreational regulation is provided below. For complete recreational regulations please use the following link: <http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

Statewide regulations for commercial fresh and saltwater species apply. Statewide species and gear specific regulations apply. There are no special regulations for Bayou Lacombe. For complete regulations please use the following link: <http://www.wlf.louisiana.gov/fishing/regulations>

Species of Special Concern

Louisiana prohibited the take of all sturgeon in 1991. It is also illegal in Louisiana to possess a threatened or endangered species. Paddlefish daily possession is 2 per person with a maximum lower jaw fork length of 30 inches.

SPECIES EVALUATION

Recreational

Largemouth bass are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish.

Relative abundance, size distribution and structure indices

Electrofishing for LMB is conducted at stations in lower Bayou Lacombe. This area is tidally influenced and salinities ranged from 0.1 parts per thousand (ppt) to 5.7 ppt during sampling efforts. Increased water levels, temperature, conductivity and salinity associated with consistent southeasterly winds affect the efficiency of fall electrofishing efforts. Therefore, only data from spring electrofishing samples are considered in data analysis. Catch per unit of effort (CPUE) analyses by length category (Figure 1) indicates a population dominated by individuals < 12 inches total length (TL). These results appear to corroborate anecdotal reports from anglers who have noted catches of large numbers of small fish. The mean total CPUE for years 2006 through 2012 indicates a population decline and subsequent rebound following Hurricane Katrina in 2005 (Figure 2).

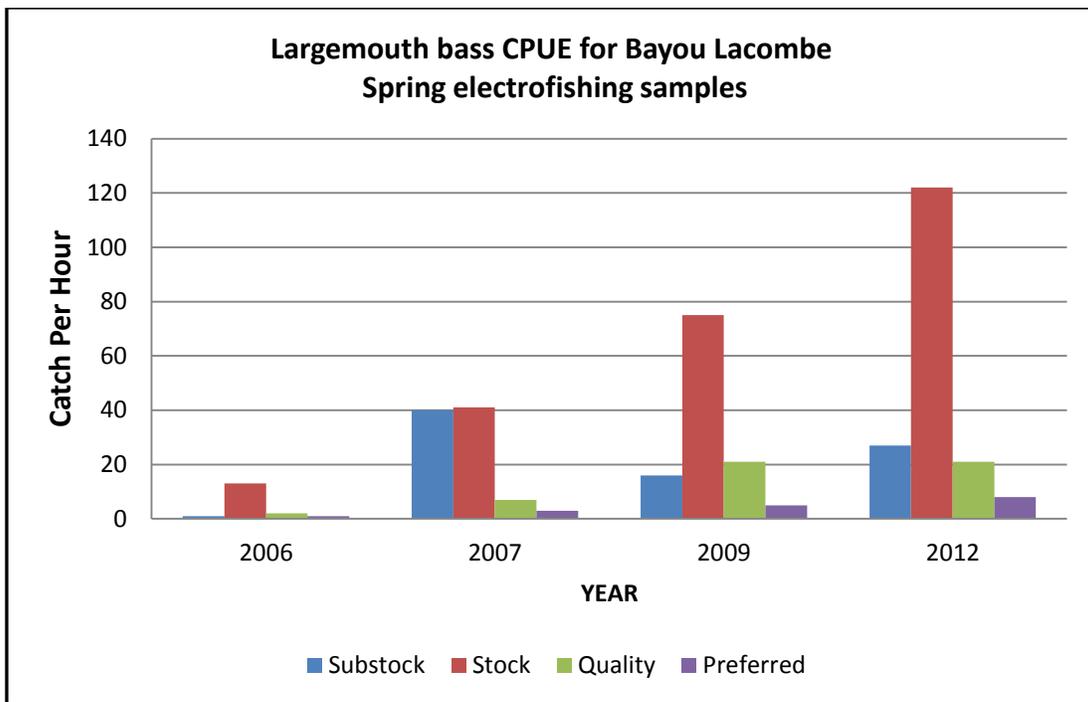


Figure 1. The CPUE of substock-, (< 8 inches), stock- (8-12 inches), quality-, (12 - 15 inches) and preferred-size (15 - 20 inches) LMB from Bayou Lacombe, LA, for 2006, 2007, 2009, and 2012 spring electrofishing samples.

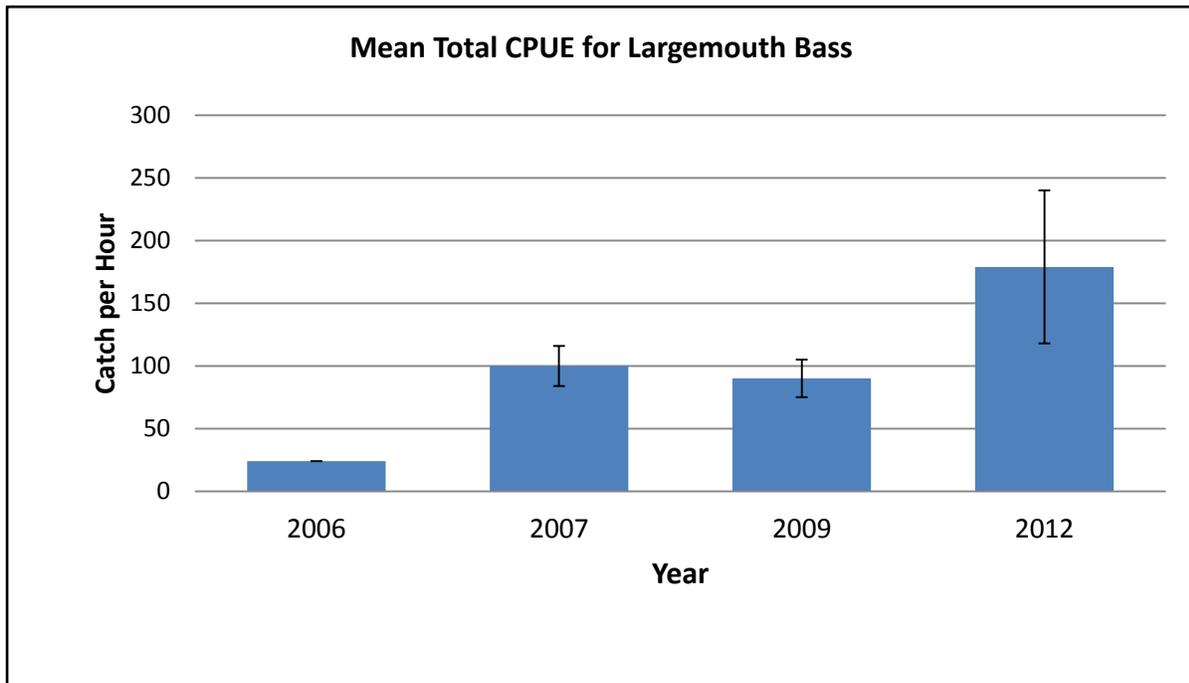


Figure 2. The mean total CPUE (\pm SE) for LMB collected in spring electrofishing samples for Bayou Lacombe, LA, for the years 2006, 2007, 2009 and 2012.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality size (greater than 12 inches for largemouth bass) to the number of bass of stock-size (≥ 8 inches in length). The PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish.

$$\text{PSD} = \frac{\text{Number of bass } \geq 12 \text{ inches}}{\text{Number of bass } \geq 8 \text{ inches}} \times 100$$

Relative stock density of preferred-size fish (RSD_p) is the proportion of largemouth bass in a stock (fish over 8 inches) that are 15 inches or longer.

$$\text{RSD}_p = \frac{\text{Number of bass } > 15 \text{ inches}}{\text{Number of bass } > 8 \text{ inches}} \times 100$$

Ideal PSD and RSD values for largemouth bass range from 40-70 and 10-40, respectively. Figure 3 below indicates that PSD and RSD_p values for Bayou Lacombe are low for all years sampled.

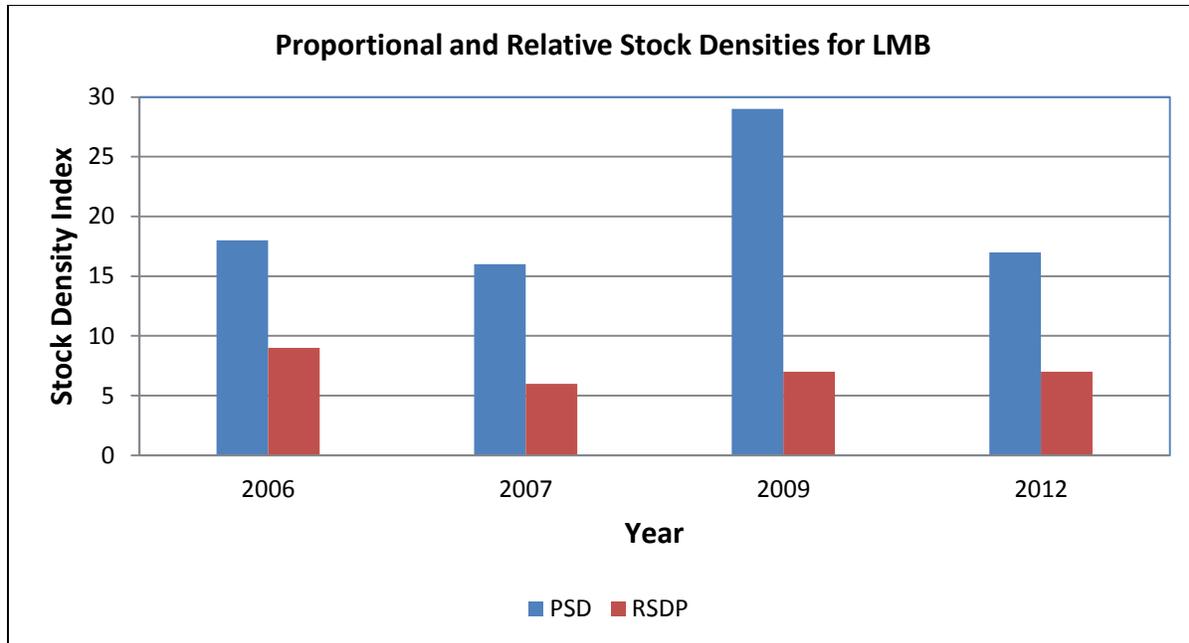


Figure 3. The PSD and RSD_p for LMB collected in spring electrofishing samples from Bayou Lacombe, LA for the years 2006, 2007, 2009 and 2012.

The size distribution of Bayou Lacombe LMB is shown in Figure 4. Individual LMB ranged from one to 18 inches TL, with good representation was observed for bass in the 6 to 9 inch groups. The length-weight relationship for Bayou Lacombe LMB is shown in Figure 5. The b value of the power function exceeded 3.0 (3.13) indicating LMB grow fatter as they attain greater length in Bayou Lacombe.

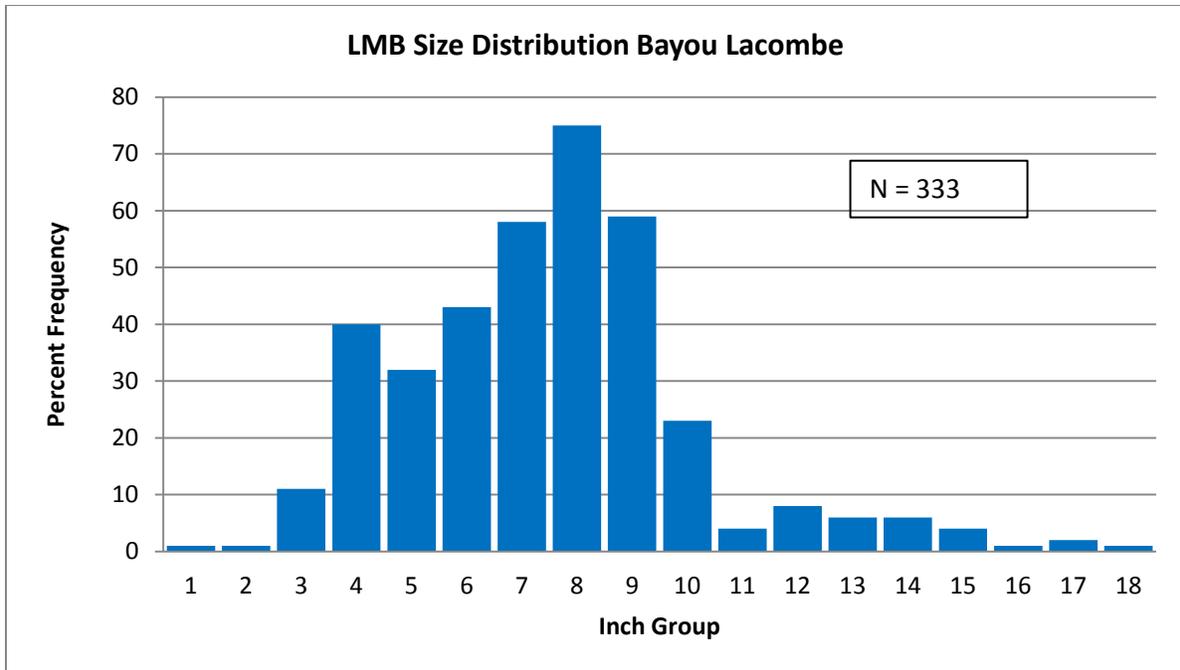


Figure 4. The size distribution (inch groups) of largemouth bass from Bayou Lacombe in spring samples, years 2006, 2007, 2009 and 2012 combined.

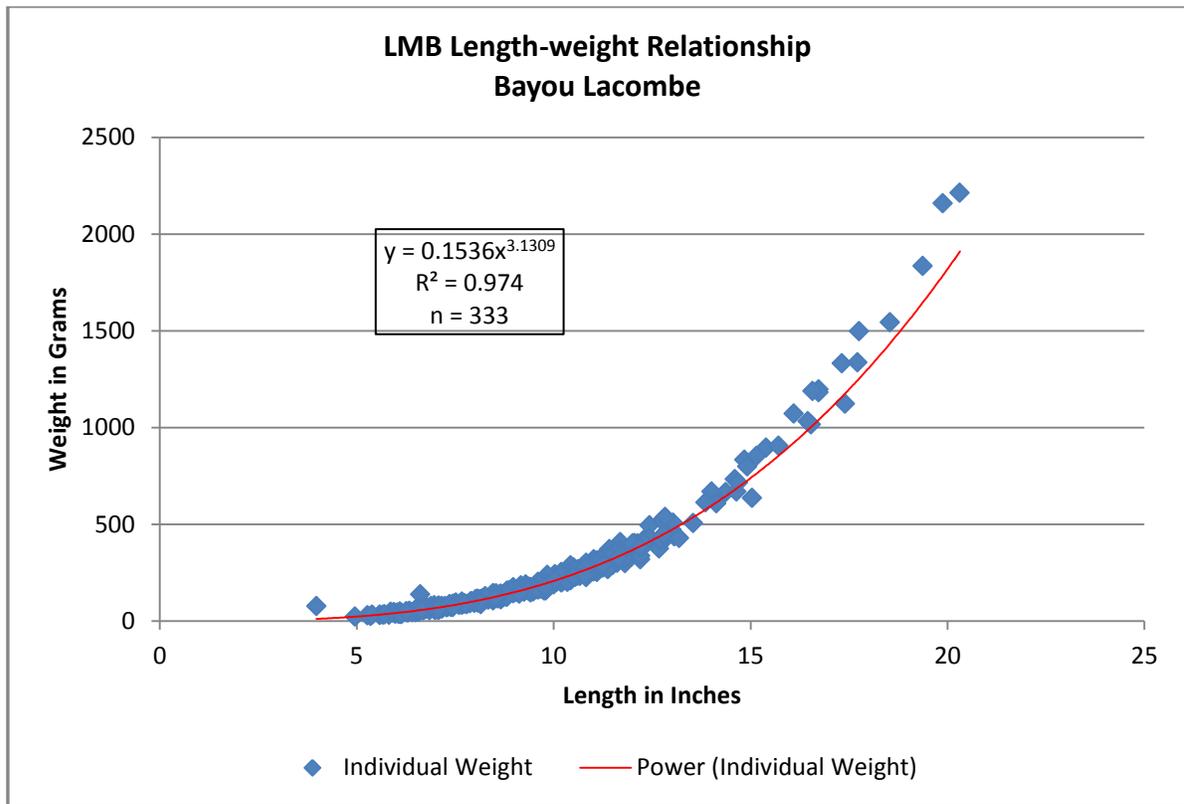


Figure 5. The observed and predicted weight at total length (inches) of Bayou Lacombe largemouth bass for spring samples 2006-2012.

Forage

Forage availability can be measured indirectly by calculating fish body condition or relative weight. Relative weight (Wr) is a measure of fish “plumpness” and is the ratio of the fish weight to that of a determined standard weight for healthy fish. Largemouth bass Wr below 80 may indicate a potential problem with forage availability. Relative weights that are near or above 100 indicate a healthy LMB population. The mean relative weight for stock size Bayou Lacombe LMB ranged from 86 to 95. The LMB of stock-size length category are in good condition and forage does not appear to be a limiting factor.

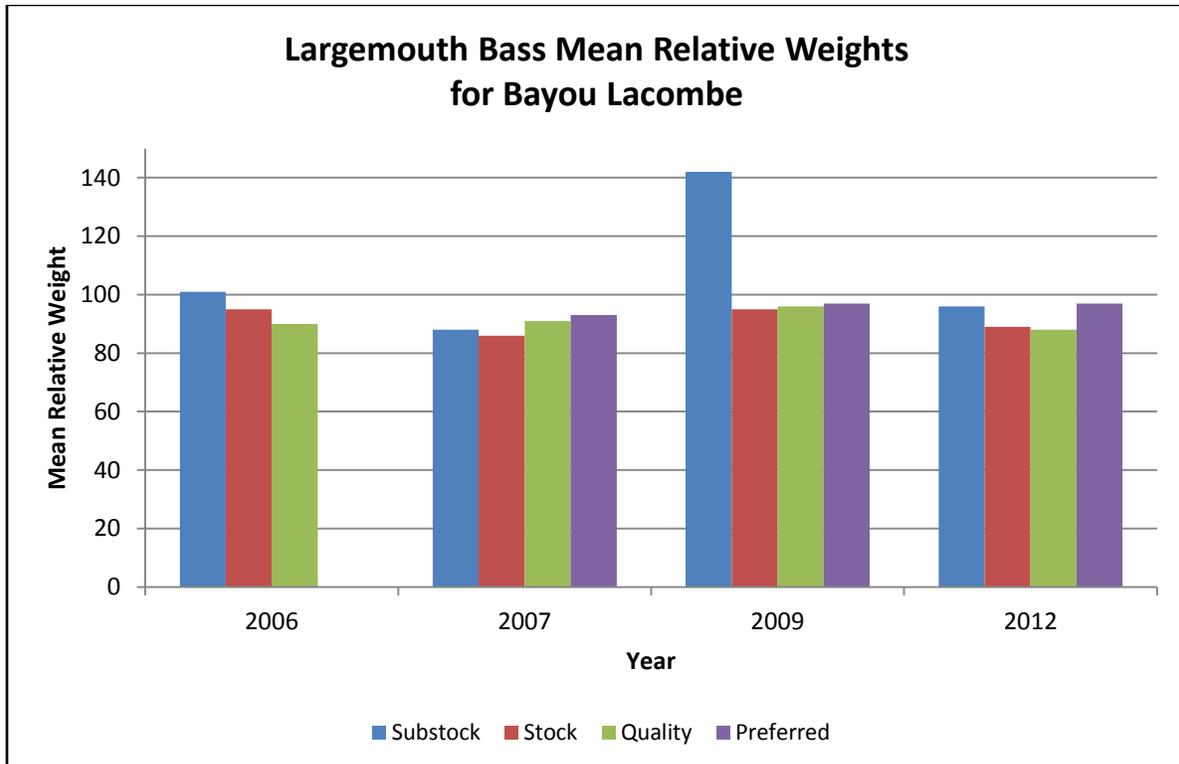


Figure 6. The mean Wr's for the various size classes of largemouth bass collected from Bayou Lacombe for the years 2006, 2007, 2009 and 2012. No preferred-size LMB were collected in 2006 samples.

Crappie

Only two black crappies have been collected in electrofishing samples in Bayou Lacombe since 2006.

Commercial:

There has not been an evaluation of commercial fishes in Bayou Lacombe. Blue crab fishermen will utilize the bayou seasonally.

Species of Special Concern:

There has not been an evaluation of species of special concern in Bayou Lacombe.

HABITAT EVALUATION

Aquatic Vegetation:

LDWF has not conducted a full assessment of aquatic vegetation (typemap) in Bayou Lacombe. However, Van Vranken reported dense growths of submerged aquatic plants including coontail, milfoil, widgeon grass and Cabomba. Eel grass also grows along the shoreline in the lower portion of the bayou (Tim Ruth, personal observation).

In May 2013 giant salvinia was found in Bayou Lacombe. Less than 0.5 acres of plant material was found in a small manmade canal. Giant salvinia is being treated with a glyphosate / Diquat / Surfactant Mix (applied to 1 acre) 0.75gal / acre – 0.25gal/acre-0.25gal/acre; and Diquat / Surfactant mix (applied to 3 acres) 0.75gal / acre-0.25gal/acre. An assessment of the area conducted on 10/20/2013 concluded the plant had spread to several canals and shallow marsh drains along the bayou. However, plant density and maturity remains low in all areas. A Google Earth image of the area depicting the extent of Giant salvinia as of 10/20/2013 can be found in APPENDIX I.

Substrate:

LDWF has not conducted an assessment of substrate in Bayou Lacombe. However, Van Vranken reported little to no sand and gravel substrates present at sample sites compared to Sobczak (1976) and Farabee (1992). He found the sand and gravel had been covered by silt and organic debris. Furthermore, he reported the removal of logs and large woody debris following Hurricane Katrina. FEMA contractors were hired to remove storm debris from the stream. Unfortunately, they removed many of the logs that were present in the stream prior to the storm. These logs are not likely to be replaced soon as much of the trees in riparian zone were destroyed by the hurricane.

Artificial Structure:

Boat docks, small piers, bridge pilings, and rip rap protected shorelines are the only artificial structure in Bayou Lacombe.

CONDITION IMBALANCE / PROBLEM

Bick et al (1953) reported that Bayou Lacombe was dredged in upstream areas during his study to facilitate drainage. Geagan (1959, 1963) reported the dredging had altered the physio-chemical characteristics of the stream but did not severely affect the fish community. Van Vranken (2007) reported drastic habitat changes in Bayou Lacombe since earlier studies; Bick et al (1953), Geagan (1959, 1963), Sobczak (1976) and Farabee (1992). Sand and gravel substrates had been silted over and deep pools filled in. Furthermore, much of the large woody debris was removed from the stream after Hurricane Katrina. Although removing storm debris from the stream was necessary, much of the preexisting woody debris was removed as well. Removing the large jams of mature trees and branches from the stream increased flow rate. This aided in the flushing of accumulated leaf litter and other organic

debris. Hurricane Katrina destroyed many trees in the riparian zone and FEMA contractors cleared a path along the edge of the stream for access. Clearing activities removed the vegetative buffer and shade provided by the canopy. Subsequently, runoff, turbidity and water temperature in Bayou Lacombe has increased. Lastly, Van Vranken (2007) refers to the gradually increasing salinity in Lake Pontchartrain (Thompson and Fitzhugh, 1985; Sikora and Kjerfve, 1985) and suggests it may have influenced the freshwater fish population of Bayou Lacombe.

CORRECTIVE ACTION NEEDED

Adherence to streamside and channel best management practices (BMPs) is needed. Shoreline riparian vegetation should be allowed to regrow to a width of approximately 30-100 ft. from the channel, ensuring that native species are dominant. Sedimentation has covered historic sand and gravel substrates. Channel rehabilitation (e.g., variation in slope, increased sinuosity, creation of riffle-run-pool sequences, and addition of large woody debris) needs to occur so that sediment can be redistributed and historic flow regimes can be restored.

RECOMMENDATIONS

1. Coordinate with applicable government agencies and non-governmental organizations to develop a comprehensive management strategy for Bayou Lacombe.
2. Foliar herbicide applications on Bayou Lacombe will be conducted as needed by LDWF spray crews in areas that are accessible to the public. Giant salvinia will continue to be treated with a diquat (0.75gal/acre) and surfactant (0.25gal/acre) mixture via low pressure tank sprayer. Alligator weed will be treated with Clearcast (0.5gal/acre) and Inergy (0.25gal/acre). Torpedograss will be treated with a glyphosate (0.75gal/acre) and surfactant (0.25gal/acre) mix.
3. Communicate with experts from LSU, USACE, USFWS and USGS to consider releasing Giant salvinia weevils in Bayou Lacombe, canals and surrounding marshes

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APPENDIX I
(return to aquatic)

Map Image of Giant Salvinia in Bayou Lacombe Area

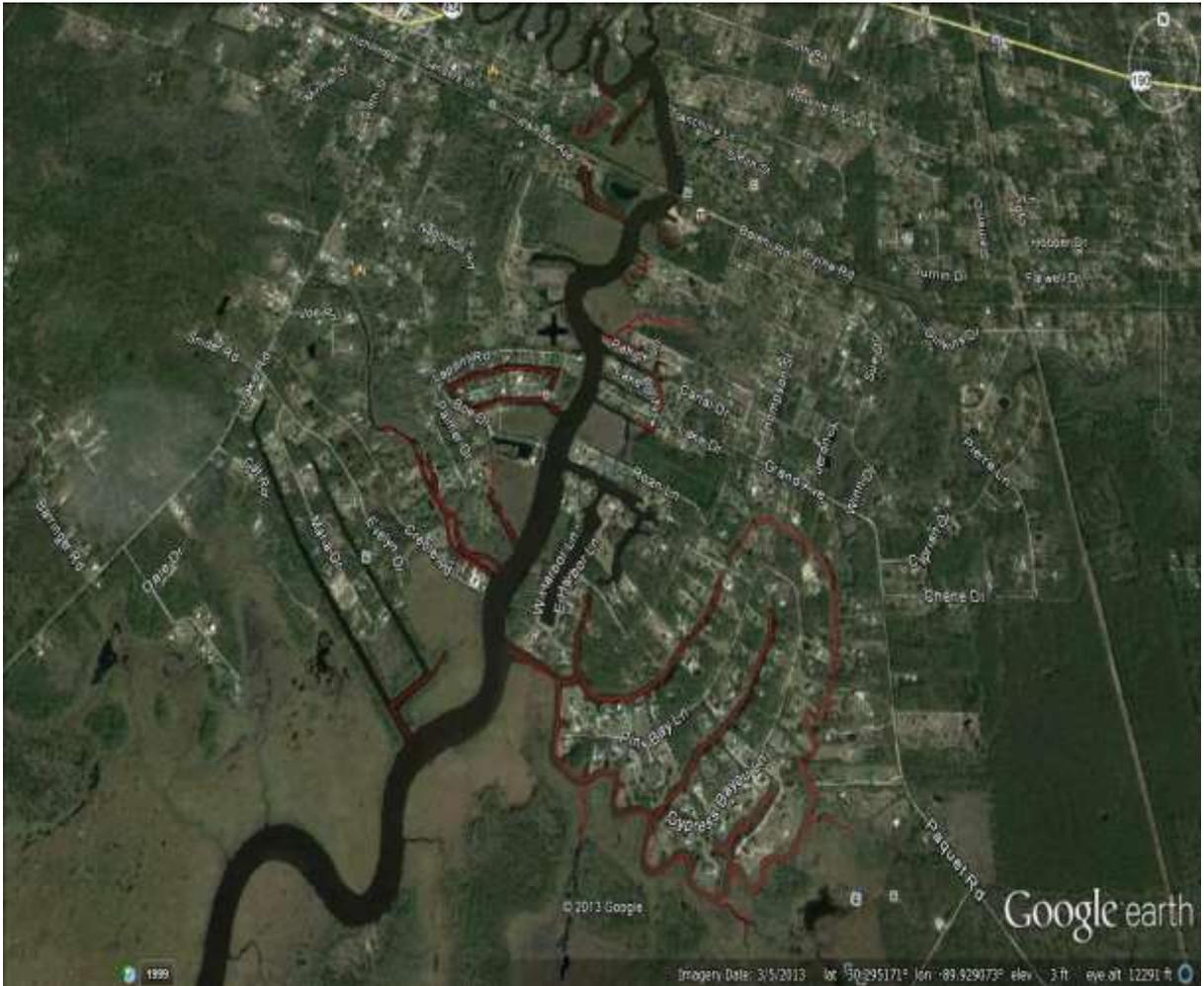


Figure 1. Google Earth Image depicting the extent of Giant salvinia in Bayou Lacombe area as of 10-20-2013. (Image date 3/5/2013)