

# **LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES**



**OFFICE OF FISHERIES  
INLAND FISHERIES SECTION**

**PART VI -B**

**WATERBODY MANAGEMENT PLAN SERIES**

**CANEY CREEK RESERVOIR**

**WATERBODY EVALUATION &  
RECOMMENDATIONS**

# CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

AUGUST 2007 - Prepared by

Mike Wood, Biologist Manager, District 2

June 2009 – Updated by

Ryan Daniel, Biologist Supervisor, District 2

January 2010 – Updated by

Ryan Daniel

February 2013 – Updated by

James Seales, Biologist 3, District 1

January 2014 – Updated by

James Seales, Biologist 3, District 1

Jeff Sibley, Biologist Manager, District 1

January 2015—Updated by

Jeff Sibley, Biologist Manager, District 1

Kevin Houston, Biologist Supervisor, District 1

January 2016--Updated by

Jeff Sibley, Biologist Manager, District 1

# TABLE OF CONTENTS

<b>WATERBODY EVALUATION</b> .....	<b>4</b>
<b>STRATEGY STATEMENT</b> .....	<b>4</b>
<i>Recreational</i> .....	4
<i>Commercial</i> .....	4
<i>Species of Special Concern</i> .....	4
<b>EXISTING HARVEST REGULATIONS</b> .....	<b>5</b>
<i>Recreational</i> .....	5
<i>Commercial</i> .....	5
<b>SPECIES EVALUATION</b> .....	<b>5</b>
<i>Recreational</i> .....	5
<i>Largemouth bass genetics-</i> .....	11
<i>Commercial</i> .....	16
<b>HABITAT EVALUATION</b> .....	<b>16</b>
<i>Substrate</i> .....	17
<i>Artificial Structure</i> .....	17
<b>CORRECTIVE ACTION NEEDED</b> .....	<b>18</b>
<b>RECOMMENDATIONS</b> .....	<b>19</b>
<b>APPENDIX I</b> .....	<b>20</b>
<b>APPENDIX II</b> .....	<b>22</b>

# WATERBODY EVALUATION

## STRATEGY STATEMENT

### Recreational

Largemouth bass are managed to provide anglers the greatest opportunity of catching trophy sized fish. Sunfish and crappie are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish.

Caney Creek Reservoir was designated as a Louisiana Trophy Bass Lake in 1994. The designation is limited to three Louisiana water bodies and follows a determination that a water body has suitable potential to consistently produce largemouth bass in the 10-15 pound range. It is based on criteria including the following:

1. Successful introduction of Florida largemouth bass
2. Habitat with similar environmental features as original range of Florida largemouth bass
3. No incompatible gear conflicts (webbing)
4. Long term LDWF regulatory control
5. Angler understanding and support of associated regulations

Trophy bass are the product of 1) favorable genetics, 2) suitable habitat with abundant and available forage, and 3) adequate age to fulfill growth potential. Introductions of Florida largemouth bass provide the foundation for trophy bass through the incorporation of genetic material into the bass population. Caney bass harvest regulations are designed to provide for fulfillment of growth potential in some bass, but also to positively influence bass population size structure through harvest. Caney bass regulations that include a 15"-19" slot limit with an 8 fish creel and 2 fish allowed over slot are designed to increase harvest of bass smaller than 15" in length. Harvest of smaller bass provides a mechanism for removal of bass with limited genetic potential and increases available forage for larger bass. Removal of small bass through harvest is a key role in Caney Creek Reservoir trophy bass management and is encouraged.

Sunfish and crappie are managed to provide a healthy, sustainable population. Smaller fish provide forage for bass. Adult fish provide harvest opportunity for anglers.

### Commercial

The physical characteristics of Caney Creek Reservoir do not support the large rough fish species that normally comprise a commercial fishery; therefore, a commercial fishery strategy is not used. The existing prohibition on commercial fishing gear follows the recreational strategy chosen for largemouth bass by providing the greatest opportunity of catching trophy sized fish.

### Species of Special Concern

No threatened or endangered fish species are found in this waterbody.

## EXISTING HARVEST REGULATIONS

### Recreational

Crappie - 50 daily per person, no size restrictions

Sunfish (Bluegill, Redear, etc.) - no daily limit or size restrictions

Largemouth Bass - 15-19" slot limit - all bass that measure from 15.0 to 19.0 inches must be released immediately - 8 fish daily limit, of which no more than 2 can be over 19 inches

Yellow Bass - 50 daily per person, no size restrictions.

Trot lines, yo-yos, and set hooks legal

The recreational fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

### Commercial

The use of gill nets, trammel nets, fish seines and hoop nets are prohibited.

The commercial fishing regulations may be viewed at the link below:

<http://www.wlf.louisiana.gov/fishing/regulations>

## SPECIES EVALUATION

### Recreational

#### *Largemouth Bass*

#### Relative abundance, size distribution and relative weight-

Standardized sampling was initiated on Caney Creek Reservoir in 1989 with electrofishing. As with any fish sampling technique, electrofishing is influenced by environmental factors that can create significant variance in results. Accordingly, LDWF sampling is standardized to the greatest extent possible and analyzed over long periods of time to establish population trends. Largemouth bass are targeted as 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 bass. Gill net sampling is used to determine the status of large bass. In Figure 1 below, springtime electrofishing is used as an indicator of largemouth bass abundance (catch per unit effort – CPUE) by size group since 1990.

The most recent length distribution of largemouth bass collected during spring 2015 is presented in Figure 2. Bass ranged from 3 inches total length (TL) to 23 inches TL and most fish were 7-9 inches TL. Based on previous growth rates, those bass < 7 inches are typically young-of-the-year (YOY) recruits. These fish were spawned the previous year and the numbers indicate that ample reproduction occurred the previous spring. About 14% of the largemouth bass sampled were protected by the current 15 – 19 inch slot limit regulation.

Overall, about 82% of the bass sampled were under the protected slot limit (i.e., 14.9" or less TL).

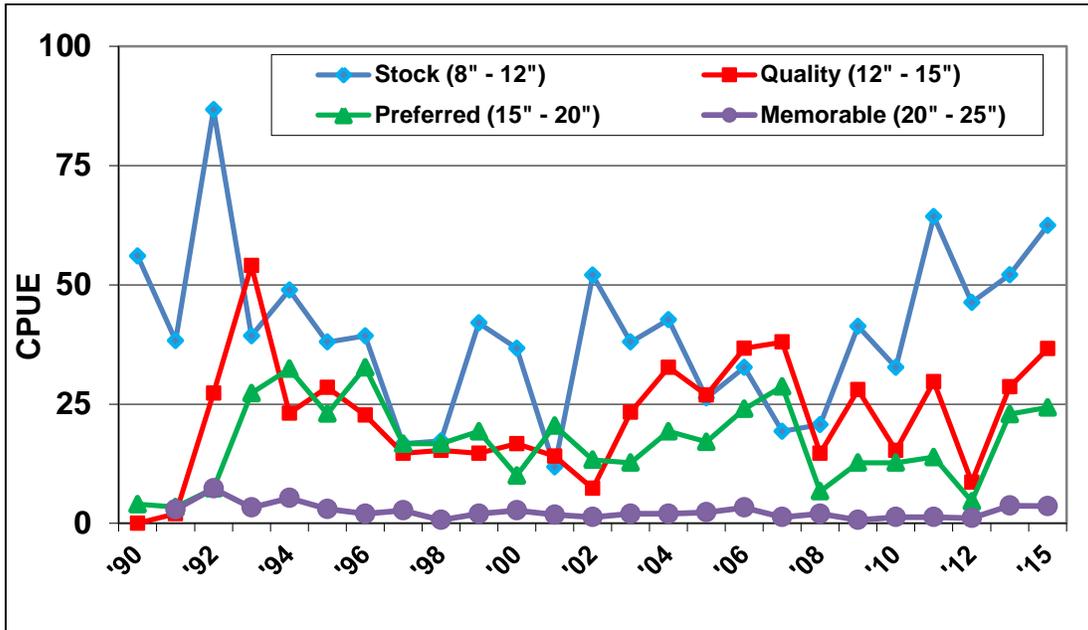


Figure 1. The CPUE for stock-, quality-, preferred- and memorable-size groups of largemouth bass collected during spring electrofishing on Caney Creek Reservoir, LA from 1990 – 2015.

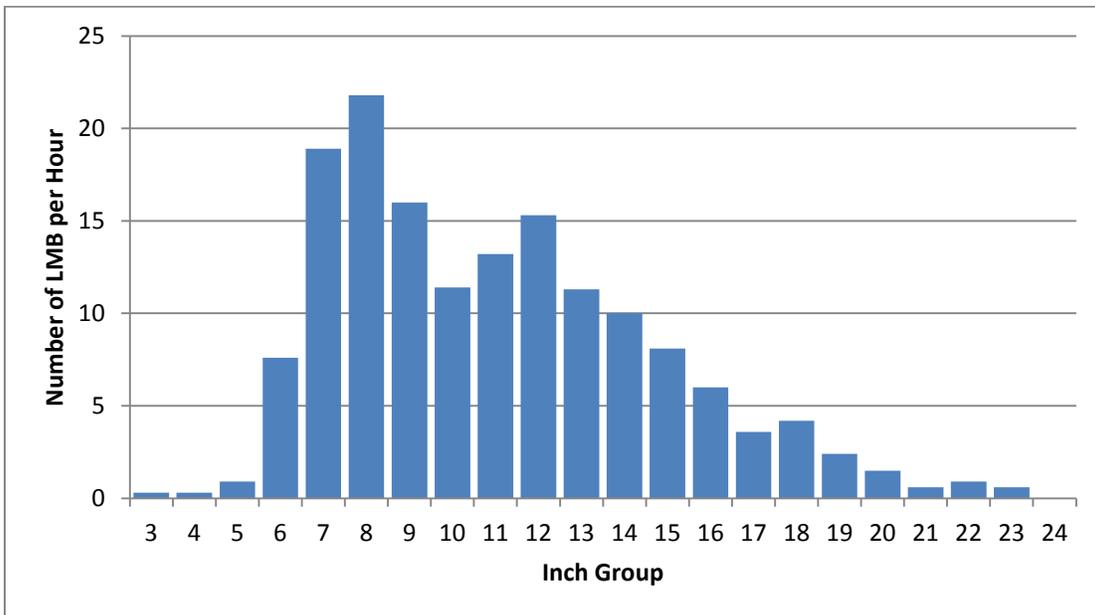


Figure 2. The length distribution (inch groups) of largemouth bass collected per hour of electrofishing effort on Caney Creek Lake, LA in the spring of 2015 (n = 508).

Extensive changes have occurred over time in the Caney bass population. Trends in the largemouth bass population of Caney Creek Reservoir have been the direct result of distinct environmental influences and are characterized in stages as listed below.

Stage 1. 1986-1989 Expanding population dominated by small young fish in the early years after impoundment.

Stage 2. 1989-1992 Bass population dominated by undersized individuals that exhibited slow growth due to inadequate forage. Some bass were able to grow through the competition and achieved trophy size. However, the overall condition of the Caney bass population was poor. A slot limit of 14"-17" was implemented as corrective measure to direct harvest to the overabundant small bass. Threadfin shad were also stocked to increase bass forage base.

Stage 3. 1992-1996 With success of corrective management, including the stocking of additional forage base (threadfin shad) and the pending increase of aquatic vegetation into the desirable 15%-30% range, the bass population were healthy and displaying rapid growth rates. The 14"-17" slot limit for bass was increased to enhance the existing bass population and take advantage of the excellent potential for production of trophy bass.

Stage 4. 1996-2005 The reduction in submerged aquatic vegetation to a level below 15% coverage was responsible for reduced bass abundance. The reduction in vegetation resulted in changes in the Caney Creek Reservoir fish population that were similar to those documented in Lake Conroe, Texas. Young sunfish and largemouth bass were subjected to reduced invertebrate forage and to increased predation. Their abundance and subsequently that of adult largemouth bass was reduced after the reduction in vegetation.

Stage 5. 2005-2015 Increased bass abundance is now occurring as a product of the slowly increasing coverage of aquatic vegetation. The beneficial changes are expected to continue as aquatic vegetation increases toward the desirable 15%-30% range of coverage. A decrease in relative abundance of largemouth bass was noted in the 2012 spring electrofishing sample. This may be due to the reduction in submerged aquatic vegetation that occurred because of low water levels resulting from the two previous years of drought.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe size distribution (length) data. Proportional stock density compares the number of fish of quality-size (> 12 inches TL for largemouth bass) to the number of bass of stock-size (> 8 inches TL). The PSD is expressed as a percentage. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. Relative stock density compares the number of fish of a given size range to the number of bass of stock size. A common calculation used in fisheries management is for RSD-Preferred or RSD<sub>P</sub>. This value compares the number of largemouth bass > 15 inches TL to the number of stock-size largemouth bass in the population. This is also commonly called RSD<sub>15</sub> values. Values for PSD and RSD – Preferred (> 15 inches in TL) from the spring electrofishing samples are shown in Figure 4 below. Ideal PSD and RSD<sub>P</sub> values for a largemouth bass population range from 40-70 and 10-40, respectively. The size structure indices from spring electrofishing samples are shown in Figure 3. The RSD<sub>P</sub> values are lower on average following the disappearance of submerged aquatic vegetation in the reservoir.

There is an observed downward trend in recent years in both PSD and RSD-p values (Figures 3 & 4). Recent samples indicate a large portion of Caney bass are available in sizes ranges under the protective slot limit. The PSD value from 2011 samples (PSD=42) was at the lower end of the ideal range. The PSD value from 2012 samples (PSD=24) fell well below the ideal range. This data would indicate that the Caney bass population is comprised mostly of small fish (as indicated in Figure 2), with many of the bass being in size ranges not desirable by anglers. There has been an increase in Total CPUE over this same time period, which would indicate stable spawning conditions. Perhaps, this trend is an observed response to increased spawning activity following the draught conditions of 2010-11 that led to firmer bottom sediments. However, there has been a constant downward trend in PSD values since 2007.

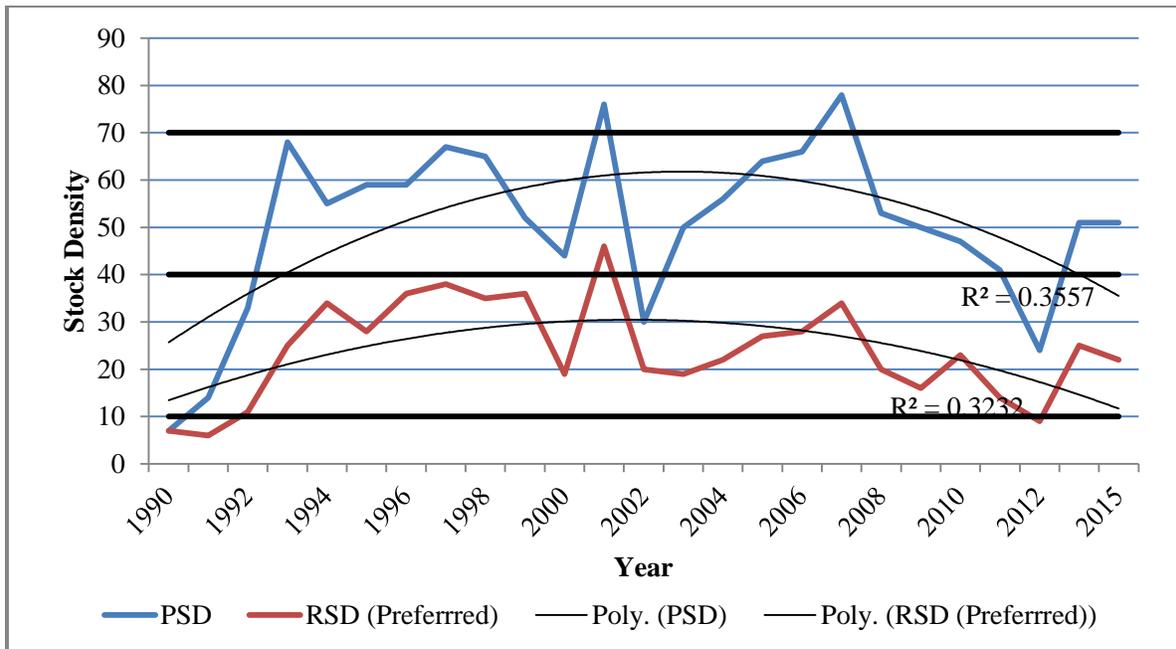


Figure 3. Size-structure indices for largemouth bass collected on Caney Creek Reservoir, LA during spring electrofishing from 1990 to 2015.

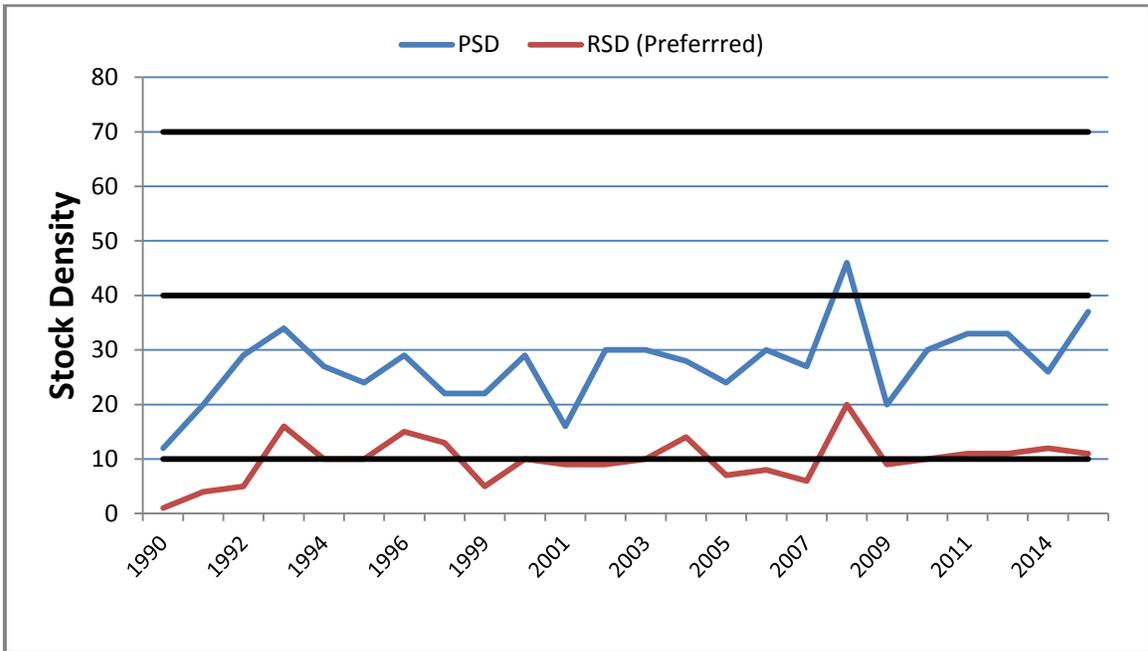


Figure 4. Size-structure indices for largemouth bass collected during fall electrofishing on Caney Creek Reservoir, LA from 1990-2015.

Standardized gill net sampling conducted on Caney Creek Reservoir may provide insight into the population of trophy size largemouth bass (*Micropterus salmoides*) that is not revealed with electrofishing sampling. Largemouth bass captured in gill nets during sampling from 1994 - 2011 are depicted in Figure 5. The results indicate the number of memorable size (20" – 25") largemouth bass (*Micropterus salmoides*) remained fairly constant despite the changes in coverage of submerged aquatic vegetation.

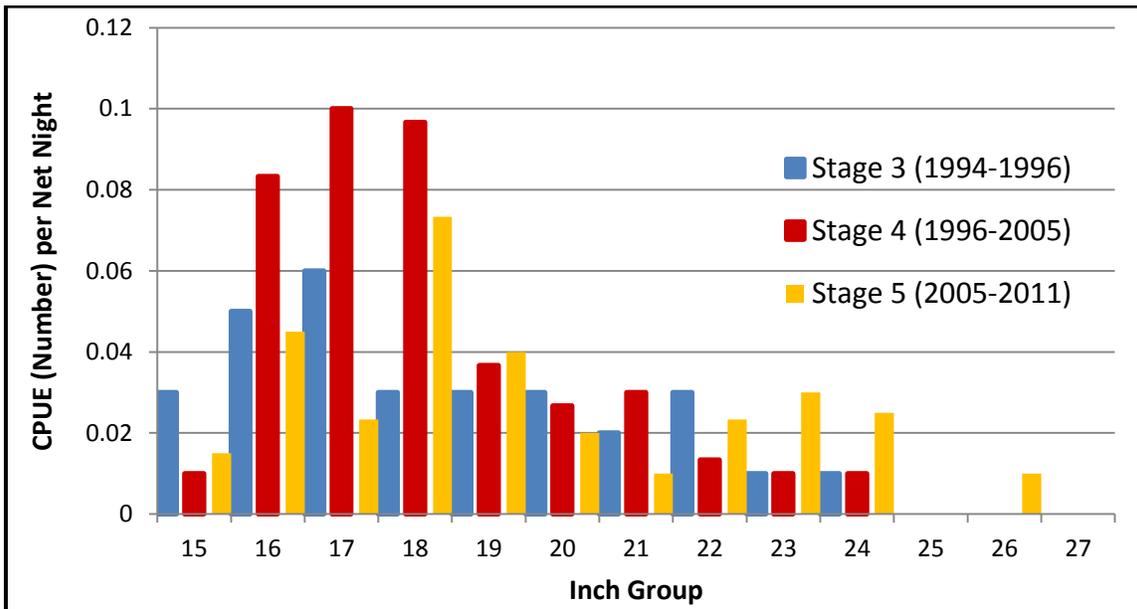


Figure 5. The mean CPUE (number) per net night (100' net) by inch group of largemouth bass collected during standardized gill net sampling on Caney Creek Reservoir, LA from 1994 - 2011.

## Forage

Forage availability is measured indirectly through measurement of bass body condition (relative weight). In Caney Creek Reservoir, complex cover = aquatic vegetation. With adequate complex cover, sunfish had been very abundant and were the primary forage base for largemouth bass. With the reduction in complex cover, open water fish species became more abundant. Threadfin shad and inland silversides became the primary bass forage species. Stable largemouth bass relative weights as shown in Figure 6 are an indication that the observed reduction in littoral forage (young sunfish) was offset with a corresponding increase in available pelagic forage (shad). However from 2005 to 2011, there was a slight decrease in bass Wr's. Perhaps littoral forage was becoming a limiting factor during this time period. Since 2011 and the establishment of eelgrass in new areas, relative weights have increased indicating that the vegetation is likely providing suitable cover once again for littoral forage.

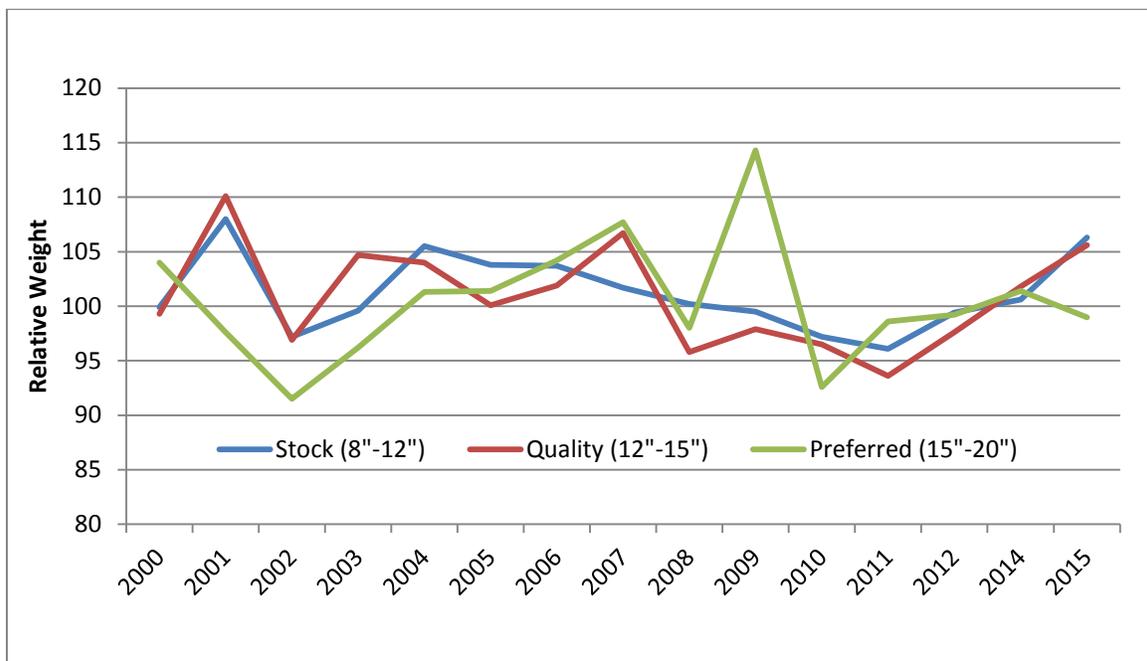


Figure 6. Relative weight (Wr) of stock-, quality-, and preferred-size largemouth bass collected during fall electrofishing on Caney Creek Reservoir, LA from 2000 – 2015.

The habitat change included effects to bass feeding behavior and growth. Ambush type feeding on sunfish in cover required a small expenditure of energy and allowed for more growth. The shift to smaller pelagic forage limited bass growth (especially after age 3) due to the expenditure of considerable energy as indicated in the bass age and growth comparison in Figure 7 below. Age and growth data from 2014 and 2015 is difficult to compare to the older information presented in Figure 7 as a change in sampling techniques was implemented. However, it appears that growth rates have increased with the expansion of submerged vegetation.

The downward trends in both relative weights and PSD values for largemouth bass in Caney Creek Reservoir may indicate a population that is beginning to crowd, especially in the stock size range. Studies performed on other area lakes with protective slot limits have shown a strong reluctance of bass anglers to harvest bass from these lakes. Caney is likely to be experiencing similar harvest trends. The data supports this trend with an abundance of small bass present in the lake. PSD and RSD-p values have fallen below or within the lower portion of the desired ranges in recent years, further indicating a rise in the relative numbers of small bass within the population. Additionally, stock density indexes calculated from fall samples frequently fall well below the desired ranges.

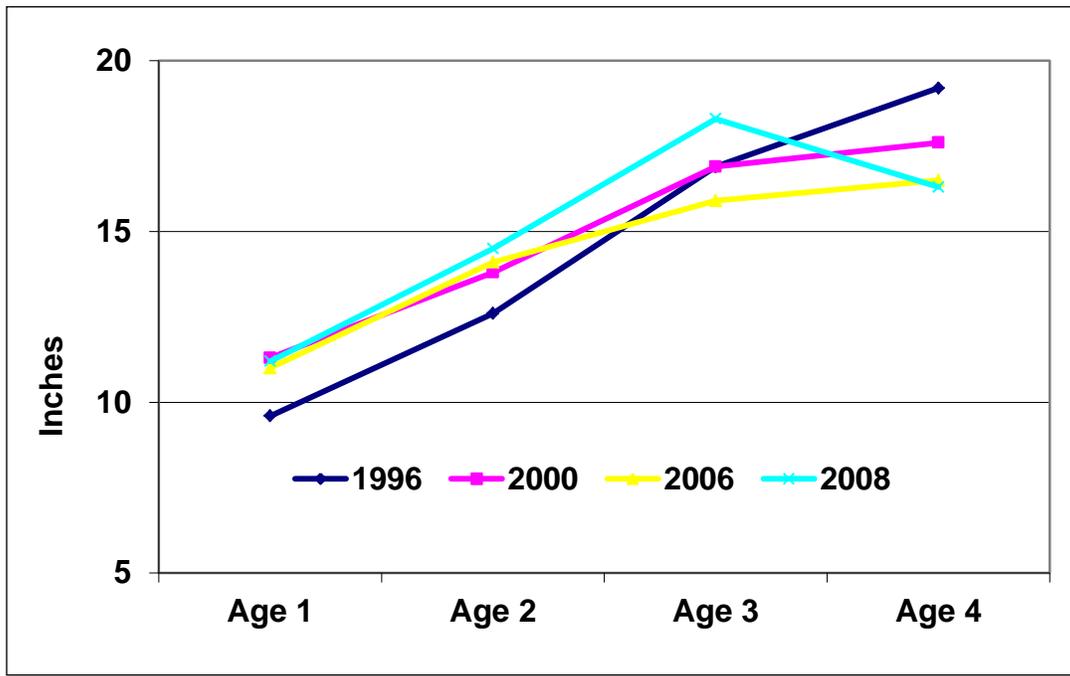


Figure 7. Growth rates of largemouth bass from Caney Creek Reservoir, LA for 1996, 2000, 2006 and 2008.

Largemouth bass genetics-

Genetics surveys indicate the presence of Florida strain genetics in over 70% of the largemouth bass population. Stocking programs are considered successful when over 30% of bass display Florida genetics. Florida genetics provide a critical component for trophy bass production. Bi-annual stocking allows increased identification of particular lines of Florida bass that prove to be most successful in Caney Creek Reservoir. A compilation of bass genetics results are listed in Table 1.

Table 1. Genetic analysis for largemouth bass from Caney Creek Reservoir, LA for the time period 1987 – 2015.

GENETICS					
Year	Number	Northern	Florida	Hybrid	Florida Influence
1987	346	70%	16%	14%	30%
1988	287	73%	16%	11%	27%
1989	300	82%	5%	13%	18%
1990	300	64%	11%	25%	36%
1991	35	63%	11%	26%	37%
1994	39	49%	23%	28%	51%
2000	66	35%	21%	44%	65%
2004	100	39%	28%	33%	61%
2006	70	16%	37%	47%	84%
2008	160	48%	19%	33%	52%
2014	189	16%	22%	62%	84%
2015	172	29%	15%	56%	71%

*Forage*

Forage sampling is performed in conjunction with fall electrofishing sampling and targets the fishes available as forage for larger predators such as largemouth bass. Only fishes  $\leq 5$  inches TL are considered ‘forage’ for the purpose of evaluating the available forage in the reservoir. Sunfish (*Lepomis* spp.) comprised the majority of the species available as forage for all years sampled. The CPUE by number of black bass, sunfish and forage species from the 2015 samples are illustrated in Figure 8. The average pounds per hour per station collected during this sample were 21.12 pounds.

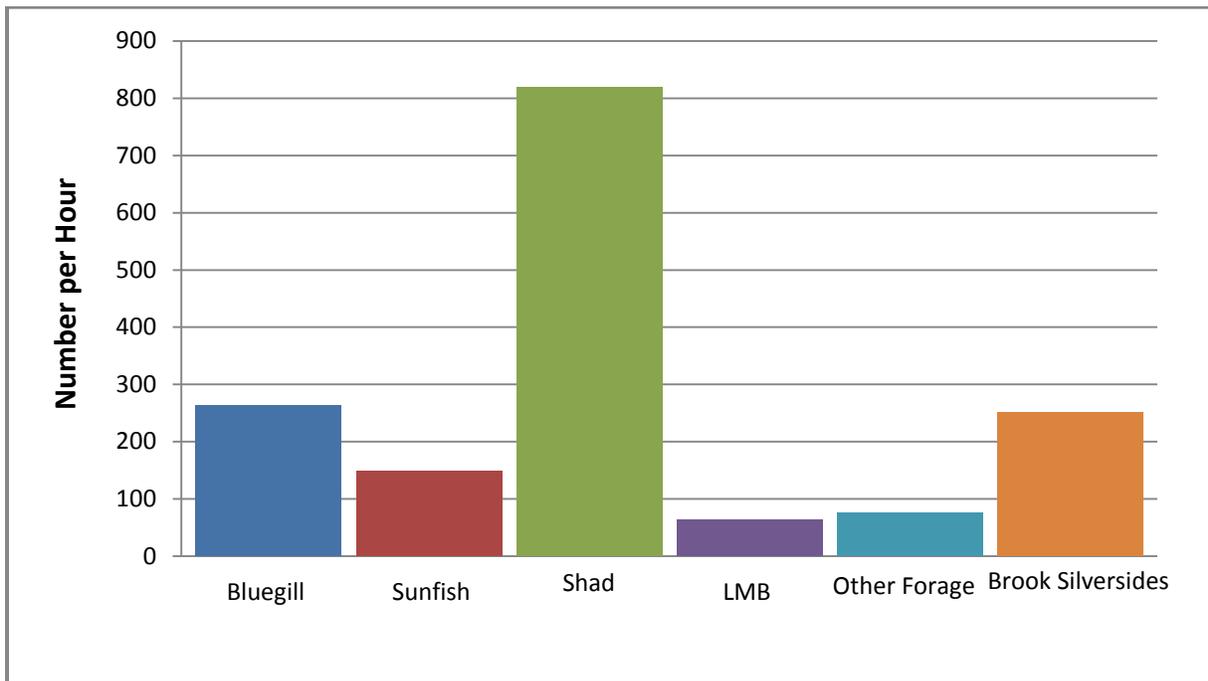


Figure 8. The CPUE (number per hour) for forage fishes  $\leq 5$  inches TL captured in Caney Creek Reservoir, LA from forage samples taken in 2015.

#### *Sunfish (Bluegill & Redear) and Black Crappie*

Sunfish and crappie abundance has also been influenced by habitat changes in Caney Creek Reservoir. Until recently, a reliable sampling technique has not been available to sample sunfish and crappie. Low catch rates in 2000 and 2001 followed by higher catch rates in 2004 and 2006 are more an indication of development of the new sampling gear than a measure of fish population status. A new technique of standardized sampling was initiated in 2006, by utilizing 1.0 inch square mesh lead nets set with 2 offshore anchors. Comparisons are made by catch per unit effort (CPUE) of sampling time. The CPUE of bluegill is depicted in the chart in Figure 9 below. The catch rate shows a steady decline from 2006 – 2012; this is likely due to the absence of any significant amounts of submerged aquatic vegetation. However, the bluegill catch rates for stock- and quality-sizes increased in 2014 and 2015, which corresponds with a noticeable increase in submerged aquatic vegetation on the lake.

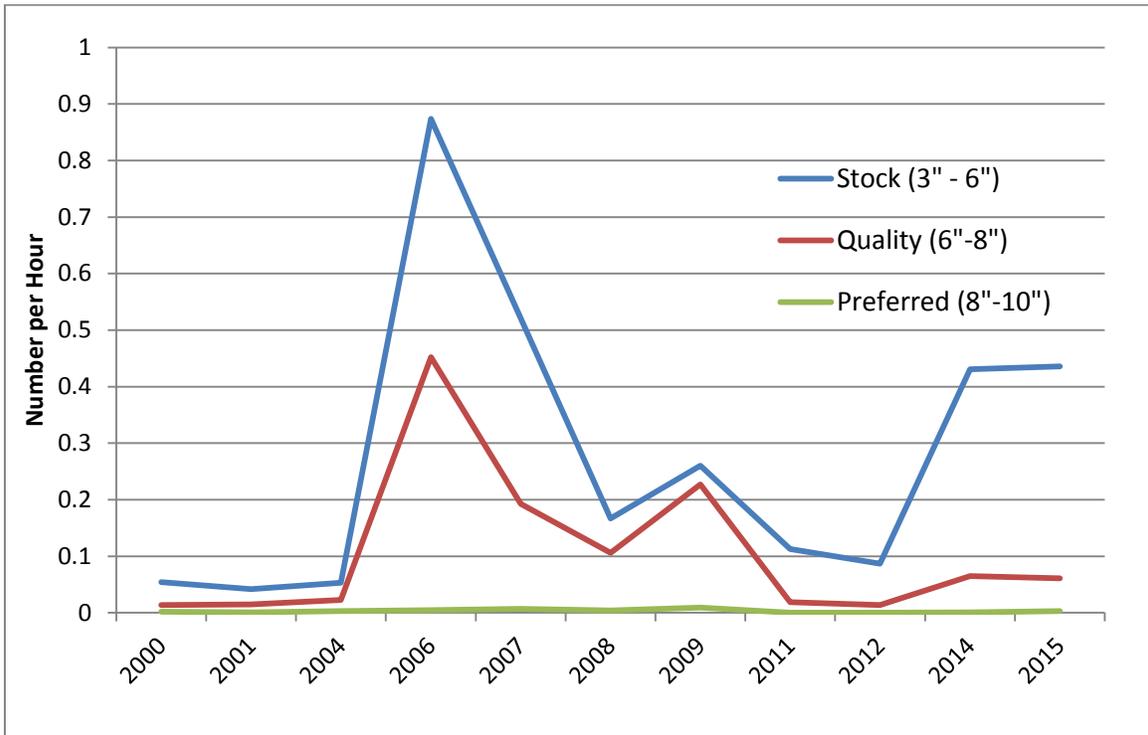


Figure 9. The catch per unit effort (number per hour) of stock-, quality- and preferred-size bluegill collected during lead net sampling on Caney Creek Reservoir, LA from 2000 – 2015.

The CPUE of redear sunfish collected in lead nets is shown in Figure 10. The trend of the catch rate follows that of the bluegill CPUE which declined from 2006 – 2012, but increased in 2014 and 2015.

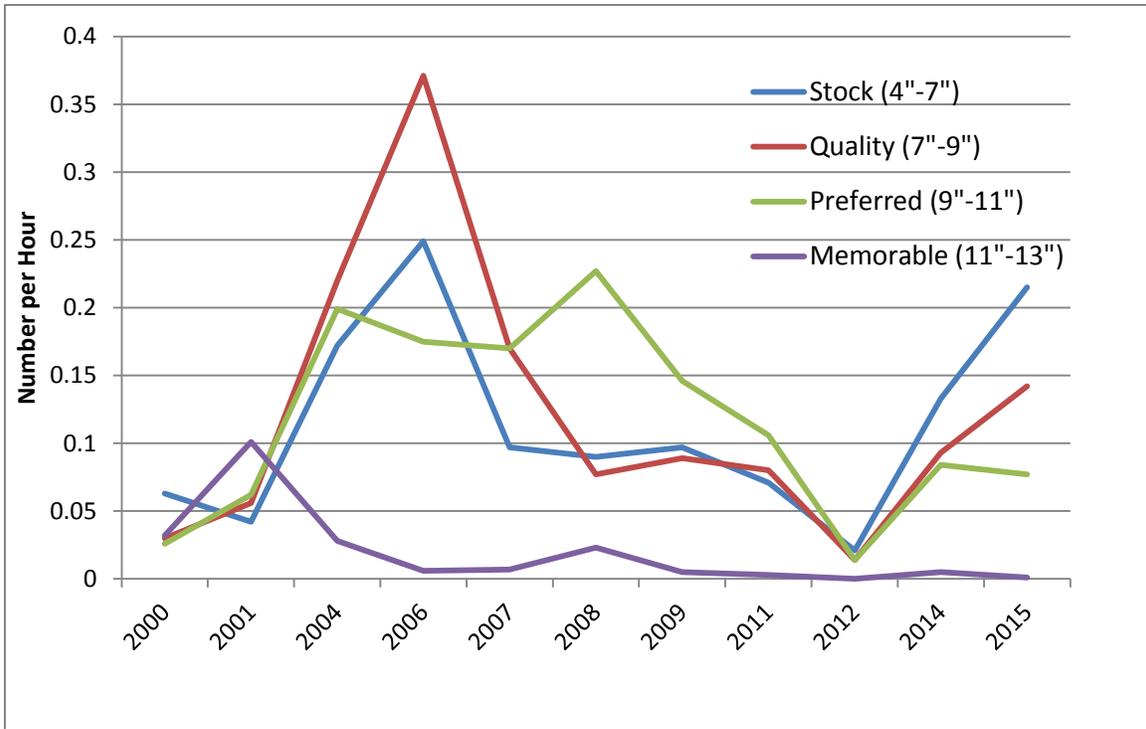


Figure 10. The CPUE(number per hour) of stock-, quality-, preferred- and memorable-size redear collected during lead net sampling on Caney Creek Reservoir, LA from 2000 – 2015.

Black crappie is the only species of crappie found in Caney Creek Reservoir. The chart in Figure 11 shows the CPUE (number per hour) of black crappie in lead net samples from 2000 – 2015. The population of black crappie in the reservoir appeared to remain more stable than the bluegill and redear populations from 2006 – 2012. However, black crappie are typically found in open water and are not negatively impacted by the lack of submerged aquatic vegetation. The population may be increasing based upon the 2014-2015 leadnet results.

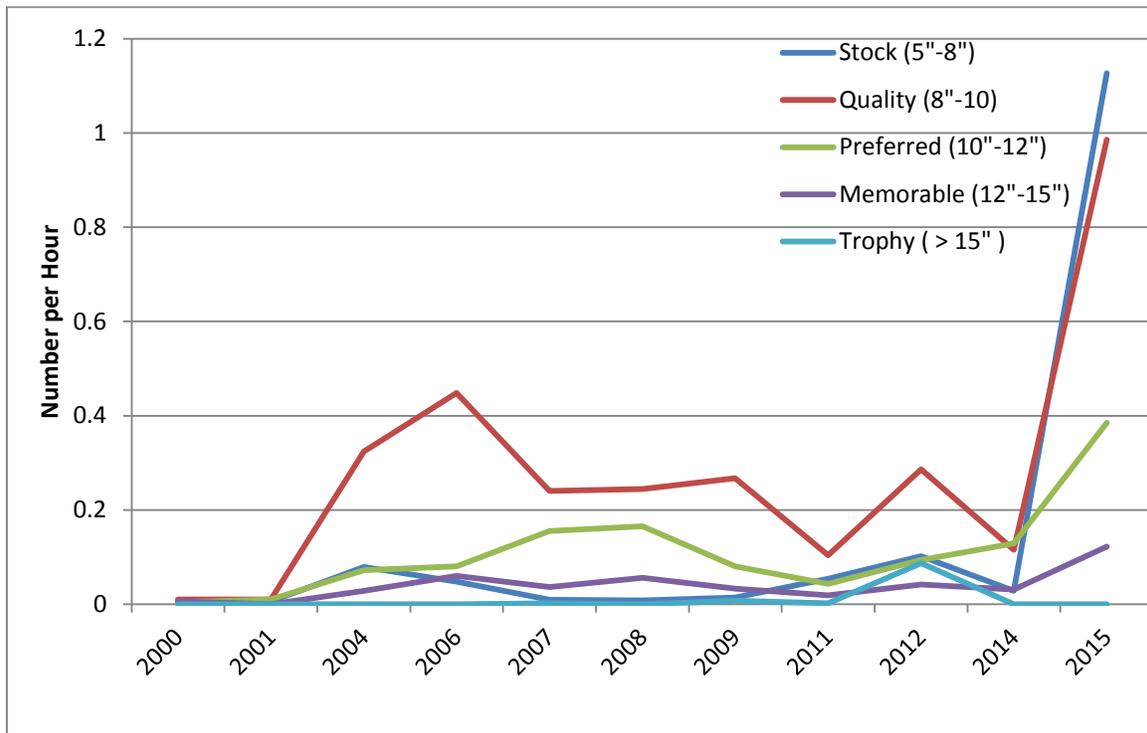


Figure 11. The CPUE (number per hour) of stock-, quality-, preferred-, memorable- and trophy-size black crappie collected during lead net sampling on Caney Creek Reservoir, LA from 2000 – 2015.

### Commercial

With the exception of flathead catfish, large rough fish species that normally comprise a commercial fishery are not found in this water body.

## **HABITAT EVALUATION**

### Aquatic Vegetation

The role of aquatic plants in Caney Creek Reservoir is recognized as significant. Native aquatic plants provide valuable fish and wildlife habitat, improve water quality, reduce rates of shoreline erosion and usually help prevent the spread of nuisance exotic plants. A 15-30% areal coverage of submerged aquatics with a diverse composition of native species is recognized as the most beneficial to a productive sport fishery. (Described in Caney Lake Aquatic Plant Management Plan, 1993).

The management of aquatic vegetation to the confines of a desirable coverage range is an elusive goal dependent on the combined influence of factors that may not be controllable or even defined. In Caney Creek Reservoir, the challenge of aquatic vegetation management is particularly difficult for reasons including the following:

1. Physical characteristics of the reservoir provide ideal growing conditions for aquatic vegetation with limited options available for control.
2. Due to the small watershed of Caney, water level manipulation is not a viable tool to manage aquatic habitat.

3. The potential for introduction of non-native or exotic plants is ever-present and natural controlling influences for exotic species are typically present only in their native range.
4. Caney Lake is a multi-use impoundment, including fishing, boating, skiing, sailing, swimming, and aesthetic enjoyment. Participants in each endeavor have distinct levels of tolerance for aquatic vegetation. Conflict between the various user groups is inevitable at all levels of coverage.

The most recent aquatic vegetation type map survey was conducted in August of 2015. Aquatic vegetation coverage was determined to be approximately 9% (450 acres). Observations made during 2015 suggested similar composition and coverage of species observed in 2014. Native submerged vegetation has continued to expand slowly and may indicate that the grass carp impacts are now minimal. The predominant submerged species were eelgrass, fanwort and bladderwort. Eelgrass was observed in areas less than 3 feet deep and with limited wave action. Although not as dense, eelgrass was also found in most coves on the south shore in areas with limited wave action. A small patch of hydrilla was found adjacent to the Brown's Landing boat launch on July 12, 2015. Granular aquathol herbicide was obtained and the area was treated August 20<sup>th</sup>. The treatment was successful as no viable hydrilla remained in the area by October.

Water hyacinth and giant salvinia were the primary floating nuisance species on the lake. Water Hyacinth significantly expanded coverage in both Hancock and Clear branches by the fall covering approximately 50 acres. LDWF spray crews aggressively treated the plants prior to winter. Giant salvinia remained in low densities scattered with other shoreline vegetation throughout most of the year. Plants grew during the summer in the extreme upper end of the lake and some of the major coves in very shallow water. By the end of November, rains had flushed much of the salvinia into the open parts of the lake. LDWF crews began treating the salvinia and wind and wave action quickly dispersed the plants and deposited much of it on the shore. Total acreage of salvinia remained below 20 acres in 2015.

#### Substrate

The majority of the reservoir's substrate is sandy loam with little organic content. Such substrate is suitable for nesting fish. In the upper ends of each arm of the reservoir, organic content is higher. Overall, suitable spawning substrate is not a limiting factor for nesting fish species.

#### Artificial Structure

Artificial reefs have been constructed using the polyethylene reef structures in several Louisiana water bodies, including Lake D'Arbonne, Lake Claiborne, and Toledo Bend. Construction of 100 pallet structures was planned by JPWD in March of 2002. However, in October of 2004, JPWD rescinded its resolution for the construction of polyethylene pallet reef structures, expressing intent to collect Christmas trees and sink them instead. Cooperative efforts to construct artificial reefs in Caney Creek Reservoir will remain a standing offer to JPWD under guidelines established by LDWF including the following:

1. The role of LDWF will be that of Administrator/Consultant. As such, the department will make final decisions relative to project design, material selection and placement for all

projects sanctioned by the department.

2. All inquiries and correspondence relative to habitat enhancement projects will be routed to the Biologist Manager responsible for the water body involved. LDWF assumes no responsibility for projects done independently by groups working outside LDWF guidelines.
3. Habitat enhancement structures must be placed so that they present no danger to boaters, swimmers or any other user groups. To prevent personal injury, care should be exercised during construction and deployment of habitat structures. Project participants should use appropriate safety guidelines for the use of all tools and materials.
4. Prohibited materials include tires, appliances, metallic objects, engines and vehicles.
5. Structures must be well anchored to prevent movement.
6. Materials should be long lived in underwater conditions.
7. Design should be durable to avoid damage during deployment as well as post deployment failure.
8. Structures may be marked with buoys and/or signs. If so, marker buoys will be bright yellow. Buoys may be marked to credit project sponsors.
9. Project sponsors should provide marker buoys and future maintenance of those buoys.
10. As Project Administrator/Consultant, LDWF will advise sponsors regarding the type and location of structures used in this program. LDWF staff will have final approval of locations for artificial structures. LDWF will participate in deployment as manpower and scheduled duties allow.
11. Structures should be easily accessible by anglers. In deciding structure locations, consideration should be given to natural factors such as wind, water currents and wave action, anticipated water level fluctuations as well as boat traffic and other recreational activities.

## **CONDITION IMBALANCE / PROBLEM**

Complex cover is currently below 15%-30% areal coverage. In Caney Creek Reservoir, with minor exceptions, complex cover = aquatic vegetation. For maximum fisheries productivity, coverage of aquatic vegetation should be in the range of 15%-30% areal coverage.

The number of largemouth bass appeared to increase following the return of aquatic vegetation, but the population may be dominantly comprised of smaller size classes.

## **CORRECTIVE ACTION NEEDED**

Re-establish and control native aquatic vegetation to provide increased productivity.

Perform a comprehensive stock assessment of the largemouth bass population.

## **RECOMMENDATIONS**

1. Aquatic vegetation control plans should consider the efforts to reestablish beneficial native vegetation and the low coverage of aquatic vegetation currently found in the lake. Utilize all available tools to maintain the range of 15-30% areal coverage of aquatic vegetation with a diverse composition of native species.
2. Caney Lake should be monitored for any noxious exotic aquatic vegetation. If nuisance aquatic weeds are found, control efforts should be in accordance with the approved LDWF Aquatic Herbicide Application Procedures. Water hyacinth should be controlled with foliar applications of 2,4-D (0.5 gal/acre) with a non-ionic surfactant (1pt/acre). Salvinia should be controlled with foliar applications of diquat (0.75 gal/acre) and a non-ionic surfactant from November 1 through March 31. Outside of that time frame, it should be treated with a mixture of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (12 oz/acre) surfactants.
3. Monitor established eel grass plantings in the areas the plants survived from the previous revegetation efforts on the lake. Monitor the spread of eel grass from the established beds and transplant eel grass to new locations with similar habitat types if plant densities reach high enough levels.
4. Continue bi-annual Florida largemouth bass stockings. Stockings will include over the water transport to areas throughout the lake that offer protection for the young fish.
5. Continue existing recreational and commercial harvest regulations until such time as sampling results indicate that change is appropriate and necessary from a biological perspective or such time as a change in management goal is indicated by the collective opinion of Caney Creek Reservoir anglers.
6. Continue scheduled standardized sampling of fish populations and aquatic vegetation to determine status over time. Continue with the third year of a three year stock assessment of the largemouth bass and crappie populations.
7. Conduct annual hearings to allow for public input regarding management goals.

## APPENDIX I

### PLAN TO REESTABLISH NATIVE AQUATIC VEGETATION IN CANEY LAKE

The introduction and evaluation of native aquatic vegetation is to be implemented as per techniques as described in *Update to the Propagation and Establishment of Aquatic Plants Handbook, Smart, Dick, and Snow, 2005*. The approach utilizes founder colonies as propagule sources: these are small colonies of aquatic plants established in strategic locations within the reservoir. Once established, founder colonies spread in two manners, including expansion (vegetative spread from the founder colony itself) and colonization (formation of new colonies from fragments, seeds, etc.).

In-lake cultivation has been selected for this project. A large but movable container for holding and stabilizing the pots and a protective fence to prevent grazing (and other disturbances) will be used. Pots will be filled with lake sediments and planted with propagules, and plants allowed to grow within the protection of the fencing. When plants are mature, they are moved to designated sites and transplanted. Empty pots are refilled with sediment substrate, and a subsequent crop is started to ensure a continued supply of mature transplants (or other propagules) throughout the growing season.

Commercial suppliers sell aquatic plant propagules. These propagules may be used as starter materials for plant propagule production, but not for establishing plant colonies. Stem fragments, daughter plants, root crowns, tubers or winter buds, even seeds (usually dependent upon species) may be used as starter materials for aquatic plant cultures. After a culture of a particular species is established, it will be used as a source for the next generation of cultivation.

Shallow coves well protected from winds and wave action will be selected establishment of aquatic plants. High-use areas will be avoided. In addition, wooded shorelines will be avoided due to excessive shading, which greatly reduces the light available to submersed aquatic plants.

Only native plant species are to be used. Diverse communities of native plants will provide the greatest water quality and habitat benefits over the long term. Plant species will be selected based on lake habitats or anticipated environmental conditions.

Timing can be as critical as species selection. Planting will occur before or during periods of active growth to ensure establishment. Plants will be planted as early as practical. Late planting reduces the length of growing season remaining and may decrease the likelihood of success.

Establishment of new colonies of aquatic plants will require protection from herbivores. Herbivores in Caney Creek Reservoir are certainly not limited to grass carp. Nutria, waterfowl and especially turtles are significant grazing pests. Exclosures will be constructed of wire-mesh fencing or orange plastic construction fencing to protect multiple plants.

Once suitable sites are selected and exclosures constructed, the project will proceed in three

phases. Phase 1 involves planting and monitoring over a full growing season of test plants of a variety of species within small protective enclosures. Assuming suitable sediments, water quality, and water levels, these plants will establish and hopefully expand beyond their protective cages, depending on the level of herbivory. During Phase 1, the level of herbivory and, if possible, the sizes and types of herbivores, will be noted. The response of the plants will dictate the best course of action for subsequent growing seasons.

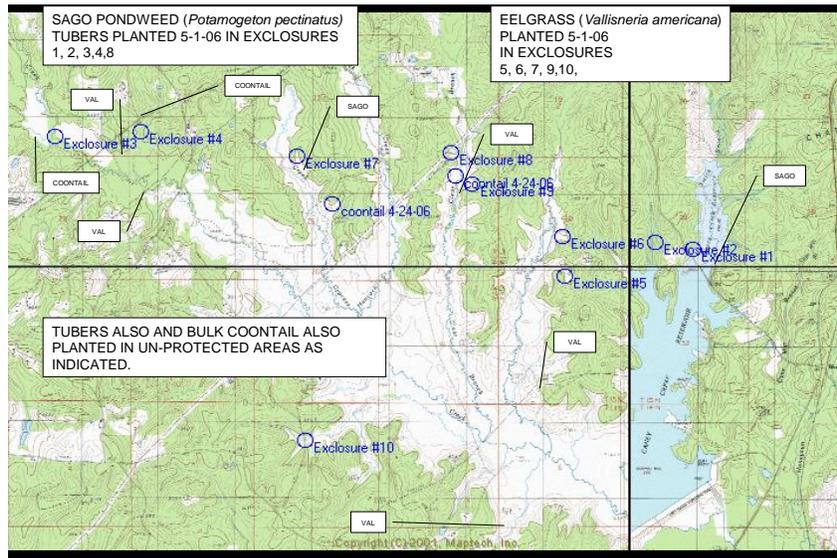
During the second growing season, those species performing best during Phase 1 will receive additional plantings. Phase 2 should result in the successful establishment of founder colonies of several species.

During Phase 3, colonies should expand to fill the niche within the fenced cove, and begin to spread into unprotected areas by vegetative and/or sexual modes of reproduction. Monitoring will continue at this stage, as large-scale disturbances can have serious consequences on newly established plant communities. Additional species may also be desirable to ensure maximum diversity, stability, and resilience of the aquatic plant community.

## APPENDIX II

### ESTABLISHMENT OF NATIVE VEGETATION

Re-vegetation efforts included the January, 2006 placement of 10 exclosures in sites throughout the impoundment. The exclosures were simple 10ft. x 10ft. pens with a layer of 2"x4" fence wire and an outside layer of 1" poultry wire. Tubers of eelgrass (*Vallisneria americana*, sago pondweed (*Potamogeton pectinatus*) were placed in the exclosures on May 1, 2006. Some tubers were also planted in unprotected areas.



Large quantities of coontail (*Ceratophyllum demersum*) vegetation was collected in Black Bayou and transported to Caney Creek Reservoir. Approximately 1 trip per week was made through the months of May, June, and July. Trips were discontinued when the coontail in Black Bayou became brownish and brittle, evidently due to the hot weather.



An evaluation of the plantings was made June 22, 2006 with the use of an underwater camera (Aqua-view). With the exception of two exclosures, all tuber plantings were observed to be successful. One of the unsuccessful exclosures had become covered with watershield, shading the submerged plants. Very little of the vegetation planted outside of the exclosures was observed.

Coontail was observed during evaluation trips, but in much smaller increments than when placed at the planting sites. Small amounts of coontail were found in adjacent water and mixed with emerged vegetation.

During the Caney typemap survey, another evaluation of plantings in the exclosures was made. Four of the exclosures had become covered with watershield, with no submerged vegetation observed underneath. The remainder of the exclosures had only remnants of the eelgrass and sago pondweed that had been observed earlier. The outside layer of poultry wire had been completely corroded on all pens. The 2"x4" fence wire was intact, but also corroded.