

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

CYPRESS BAYOU RESERVOIR

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED EVERY THREE YEARS

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Jeff Sibley, Biologist Manager, District 1

Kevin Houston, Biologist Supervisor, District 1

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts. Bass anglers are afforded the opportunity to catch an occasional preferred, memorable, or trophy-sized fish through the introduction of Florida largemouth bass.

Commercial

Catfish are managed to provide a sustainable population while providing anglers and commercial fishers the opportunity to harvest numbers of fish. Commercial fishing is only allowed using slat traps, wire nets, and hoop nets during a special season from November 1 through the end of February each year.

Species of Special Concern

No threatened or endangered fish species are found in this waterbody. Bald Eagles (*Haliaeetus leucocephalus*) have been nesting adjacent to the lake for a number of years and are frequently seen around the lake during the winter.

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations apply for all fish species. The recreational fishing regulations may be viewed at the following link: <http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

The use of gill nets, trammels nets, and fish seines was prohibited in Cypress Bayou Reservoir in September 2002 by the Louisiana Wildlife and Fisheries Commission. Commercial fishing is allowed only by slat trap, wire net, or hoop nets during a special season from November 1 through the end of February.

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

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

Parish Regulations

There are no additional regulations by the parish or the Cypress Black Bayou Recreation and Water Conservation District specific to fishing.

SPECIES EVALUATION

Recreational

Cypress Bayou Reservoir has been sampled with various types of gears over the years. Biomass (rotenone) sampling was one of the primary sampling methods utilized by the Louisiana Department of Wildlife and Fisheries (LDWF) from 1980 through 1987 in an

effort to estimate standing crop of all fish in the lake. Electrofishing was initiated in 1995 to collect information on largemouth bass and crappie (*Pomoxis spp.*) populations. Largemouth bass and crappie are targeted as species indicative of the overall health of fish populations due to their high position in the food chain. Forage samples are conducted in conjunction with fall electrofishing samples. Gill net sampling was initiated in 2000 to sample the commercial fish population (i.e., catfish, common carp, and freshwater drum) and to evaluate the susceptibility of gamefish to gill nets.

Largemouth bass

Biomass estimates-

Biomass (rotenone) sampling was the primary method used to sample the fisheries in Cypress Bayou Reservoir until 1987. Figure 1 includes the standing crop estimates of largemouth bass in pounds per acre from 1980 until 1987. There was one significant change in the standing crop of largemouth bass on Cypress Bayou Reservoir in 1986 when the average for two one-acre rotenone samples was near 30 pounds of largemouth bass per acre. The yearly average standing crop for all other years sampled ranged from 0.7 to 8.46 pounds per acre.

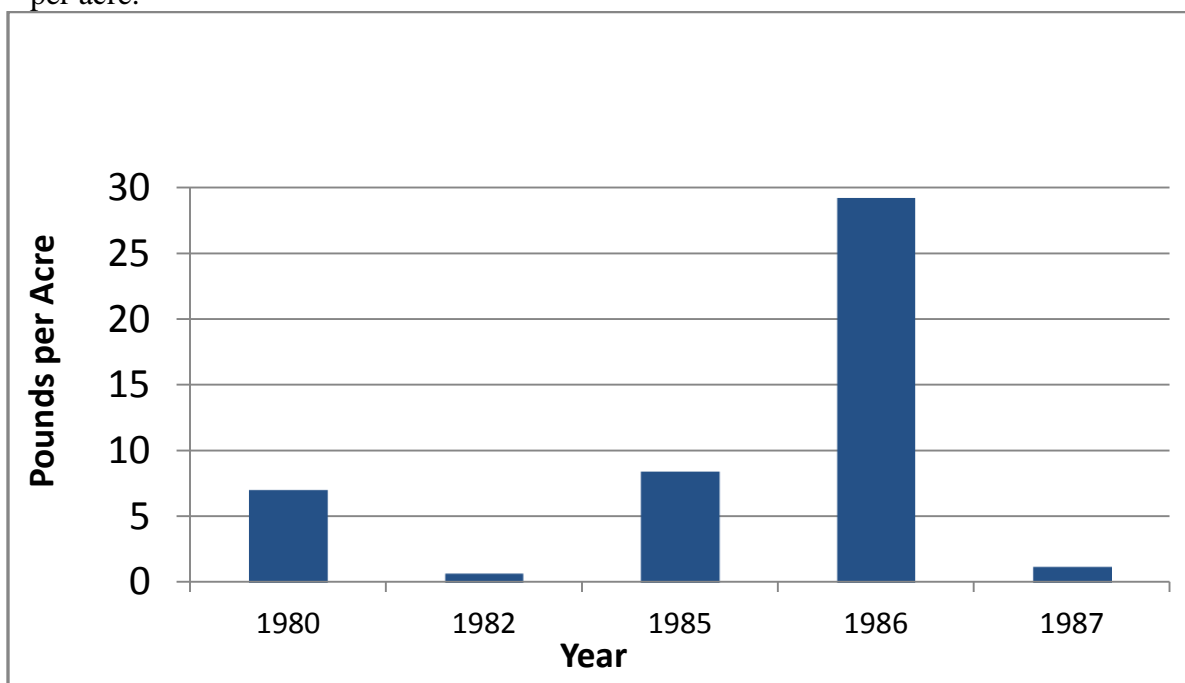


Figure 1. Annual estimates in pounds per acre of largemouth bass collected during biomass (rotenone) sampling in Cypress Bayou Reservoir, LA from 1980 to 1987.

Catch per unit effort and size distribution-

Electrofishing has been the primary sampling technique utilized on Cypress Bayou Reservoir in recent years. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish (i.e., > 5 lbs.). Sampling with gill nets provides better assessment of large bass and other large-bodied fish species (e.g., bowfin or common carp). Results from spring electrofishing samples for stock-size [total length (TL) \geq 8 in.] largemouth bass from 1995 – 2013 are presented in Figure 2. The data collected during this time period indicated a slight increase in catch-per-unit-effort (CPUE) of stock-size fish in Cypress Bayou Reservoir.

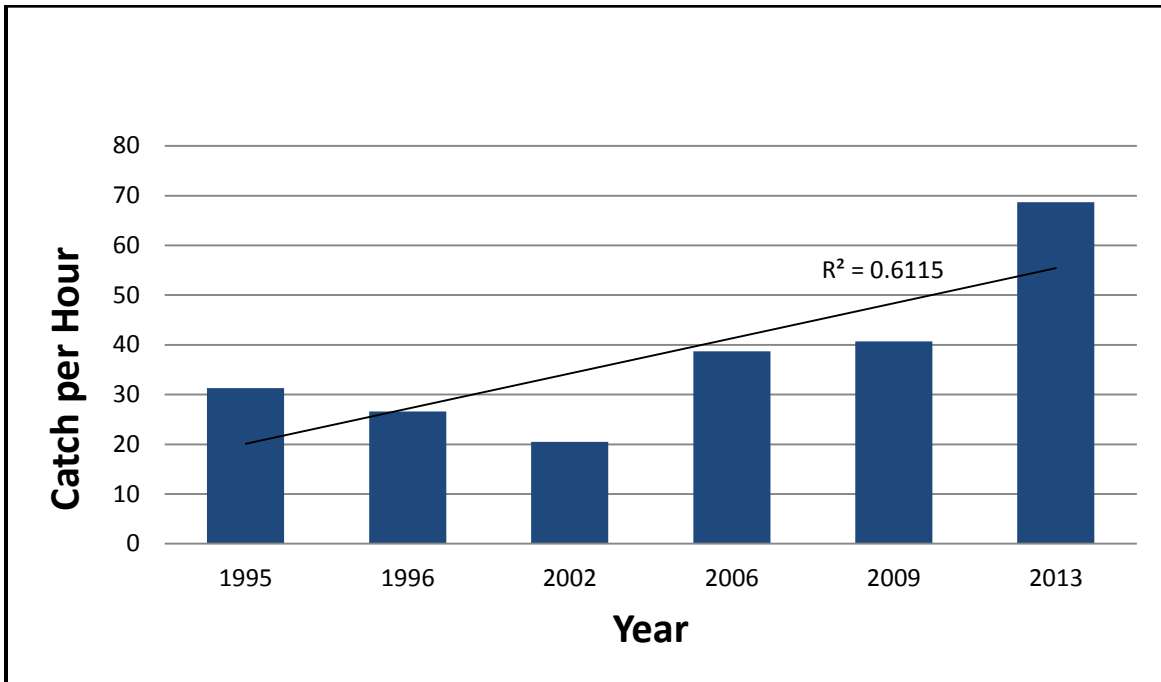


Figure 2. The CPUE for stock-size ($\geq 8''$ TL) largemouth bass collected during spring electrofishing on Cypress Bayou Reservoir, LA from 1995-2013.

The CPUE for stock-size largemouth bass from the fall electrofishing samples are shown in Figure 3. Results from both the spring and fall electrofishing samples for stock-size largemouth bass suggest a similar trend over the time period sampled.

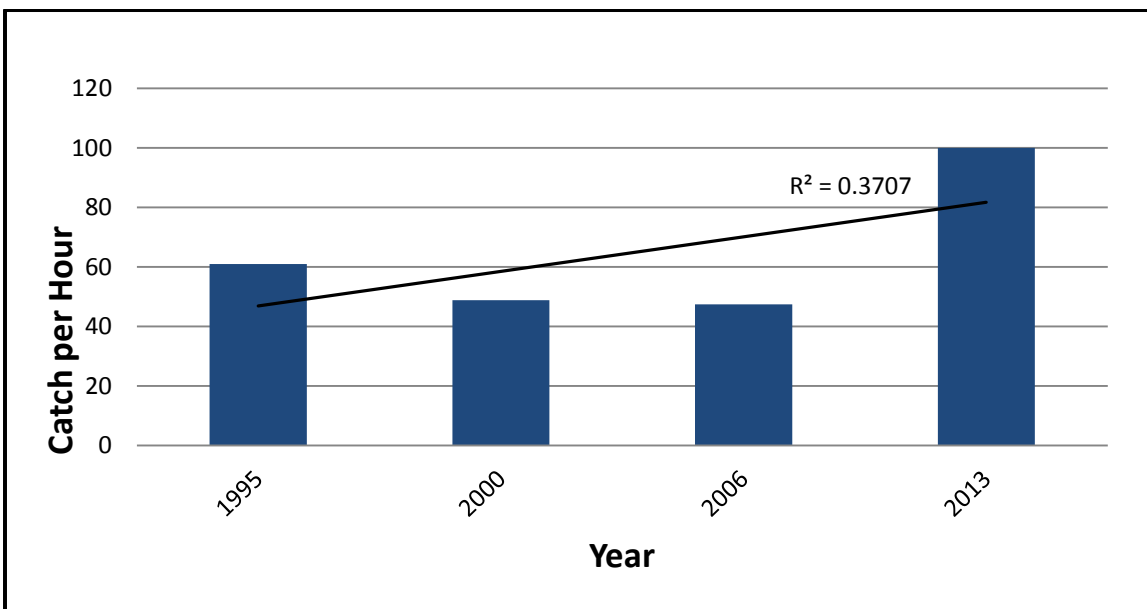


Figure 3. The CPUE for stock-size ($\geq 8''$ TL) largemouth bass collected during fall electrofishing on Cypress Bayou Reservoir, LA from 1995-2013.

Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-distribution data. Proportional stock density compares the number of bass of quality-size (≥ 12 inches TL) 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 (RSD-P). 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-15 values. Ideal PSD and RSD-P values for largemouth bass range from 40-70 and 10-40, respectively. Spring electrofishing samples indicated that the Cypress Bayou Reservoir largemouth bass population falls within the preferred range for both statistics, thus showing the lake maintains an abundance of bass greater than 15 inches TL (Figure 4).

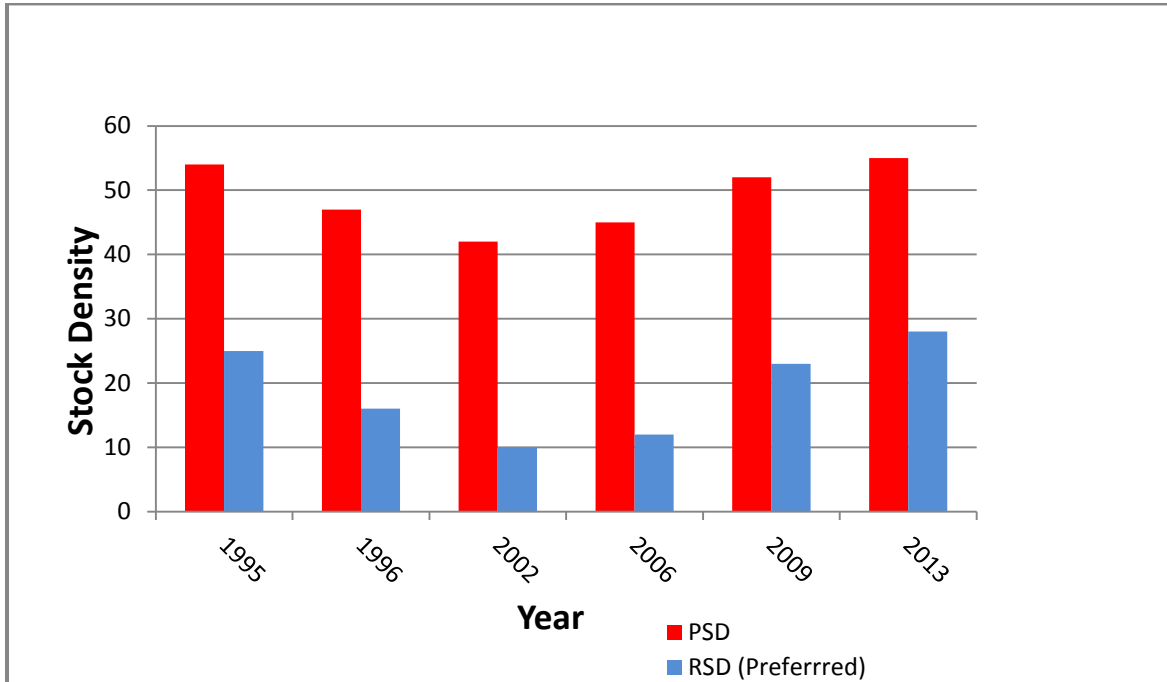


Figure 4. The size-structure indices for largemouth bass collected on Cypress Bayou Reservoir, LA, during spring electrofishing from 1995-2013.

Since 2000, little variation has been observed in size structure indices for largemouth bass collected during fall sampling (Figure 5). However, both PSD and RSD-P values are below the preferred ranges. This indicates an abundance of smaller fish which are present in the fall. This trend further supports the information shown in Figure 3 and indicates that spawning and recruitment of largemouth bass is not an issue in the reservoir.

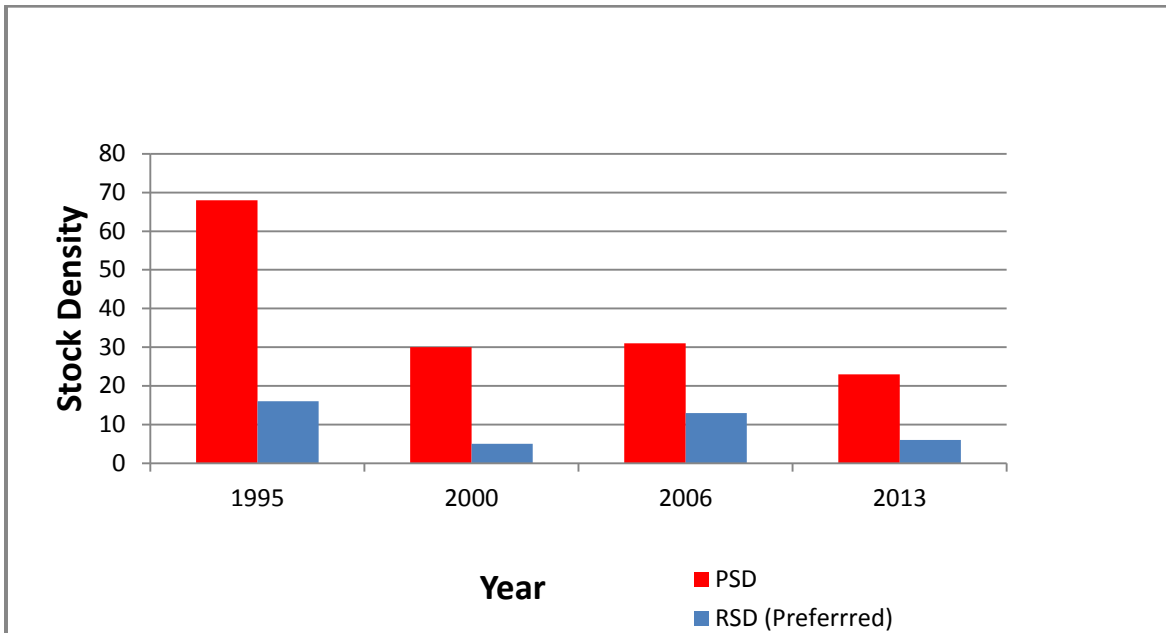


Figure 5. The size-structure indices for largemouth bass collected on Cypress Bayou Reservoir, LA during fall electrofishing from 1995-2013.

Gill net sampling conducted on Cypress Bayou Reservoir provides information on fishes that are not effectively sampled with standardized electrofishing techniques. Those include larger size largemouth bass, crappie, and catfish. Figure 6 indicates the number per net night and size distribution of largemouth bass captured in standardized gill net sampling from 2000 – 2014.

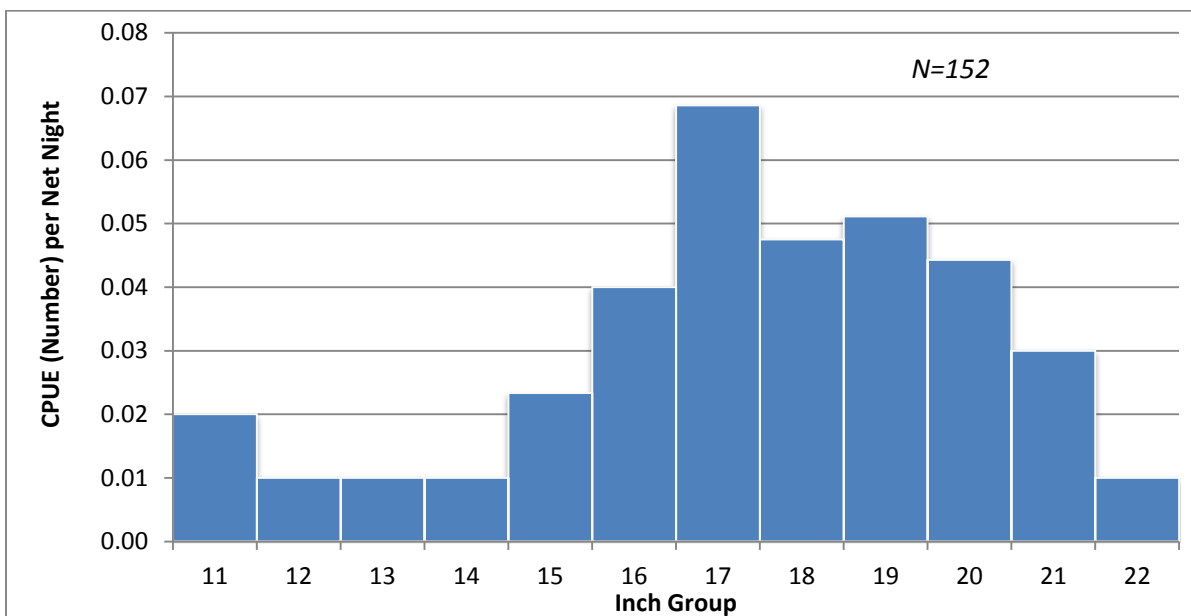


Figure 6. Mean CPUE (number) per inch group per net night (100' net) of largemouth bass collected on Cypress Bayou Reservoir, LA from standardized gill nets for 2000-2014.

The average length-at-age for Cypress Bayou Reservoir bass is provided in Table 1. Growth is rapid through age-4, but then slows to two inches or less per year.

Table 1. Length at age for largemouth bass from Cypress Bayou Reservoir, LA, 2006. N=57

Age	Length in Inches
1.0	6.8
2.0	10.4
3.0	13.4
4.0	15.8
5.0	NA
6.0	17.2
7.0	18.9

Largemouth bass genetics

Florida largemouth bass stockings on Cypress Bayou Reservoir were initiated in 1992 in an effort to offer anglers a chance to catch a fish of greater than average size. To date, 518,943 Florida bass fingerlings have been stocked in Cypress Bayou Reservoir. A genetic analysis of the largemouth bass population in Cypress Bayou Reservoir was conducted in 1995, 2004, and 2006 (Table 2). The overall Florida genome increased from 0% to 23% during the study period; however, the percentage of pure Florida largemouth bass remained very low ranging from 0% to 4%. Genetic testing indicates that Florida bass stockings have been successful and the gene has become established.

Table 2. – Largemouth bass genetic analysis from Cypress Bayou Reservoir, 1995-2006.

Year	Number	Northern %	Florida %	Hybrid %
1995	41	100	0	0
2004	30	73	0	27
2006	57	77	4	19

Forage

Forage availability is measured directly through fall forage electrofishing results and indirectly through measurement of largemouth bass body condition or relative weight (Wr). Relative weight is the ratio of a fish's weight to the weight of a "standard" fish of the same length. The Wr index is calculated by dividing the weight of a fish by the standard weight for its length, and multiplying the quotient by 100. Largemouth bass Wr below 80 indicate a potential problem with forage availability.

Figure 7 illustrates the Wr for stock-size and larger bass collected during fall electrofishing samples from 1995 – 2013. Relative weights were above 90 indicating that sufficient forage was available for these size groups of largemouth bass during this period.

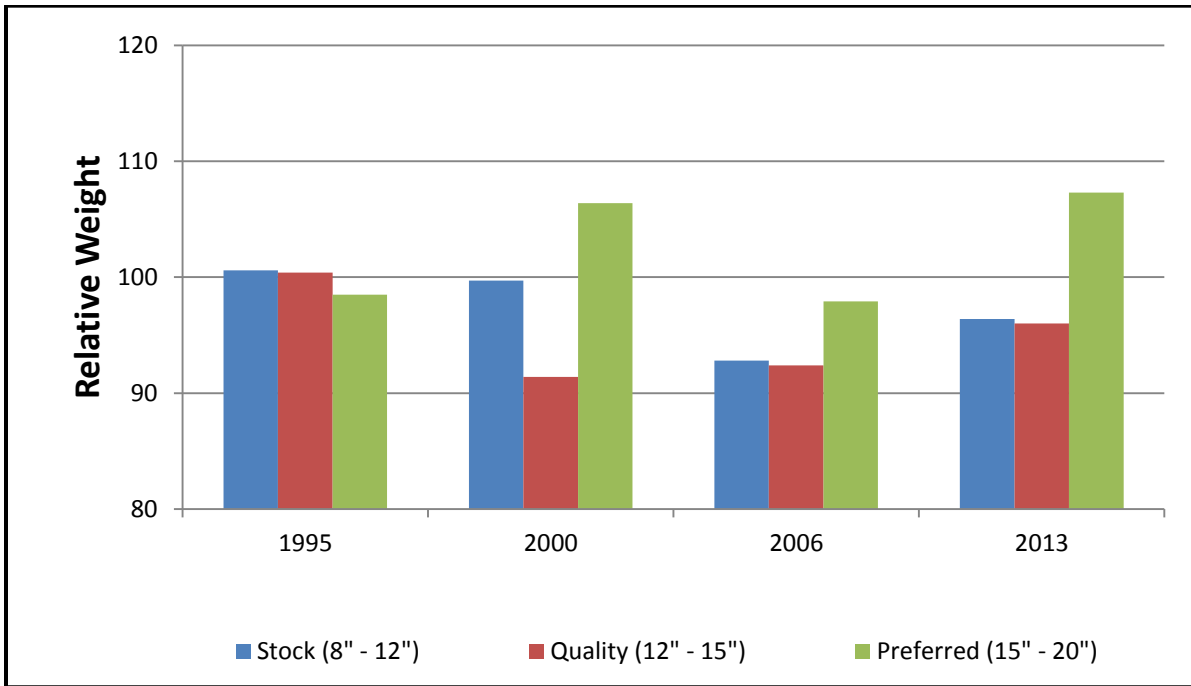


Figure 7. Relative weight (W_r) of largemouth bass by size group collected during fall electrofishing on Cypress Bayou Reservoir, LA from 1995 to 2013.

Only fishes ≤ 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 number per hour of black bass, sunfish and forage species from the 2013 samples are illustrated in Figure 8. The total pounds per hour collected during this sample were 49 pounds.

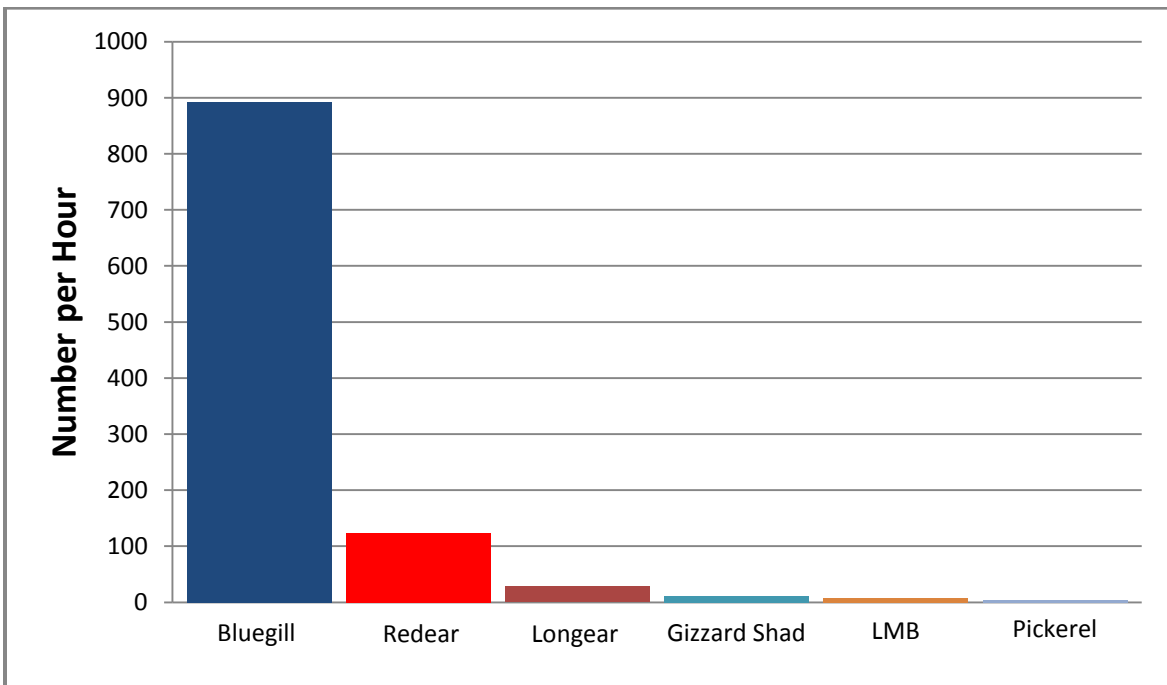


Figure 8. The CPUE (number per hour) for forage fishes ≤ 5 inches TL captured in Cypress Bayou Reservoir, LA from forage samples taken in 2013.

Crappie

Crappie collected during biomass (rotenone) sampling conducted from 1980 to 1987 consisted of both black crappie (*Pomoxis nigromaculatus*) and white crappie (*Pomoxis annularis*). The sampling revealed variations in abundance through the period sampled. The crappie population averaged a relatively low 1.6 pounds per acre per year (Figure 9).

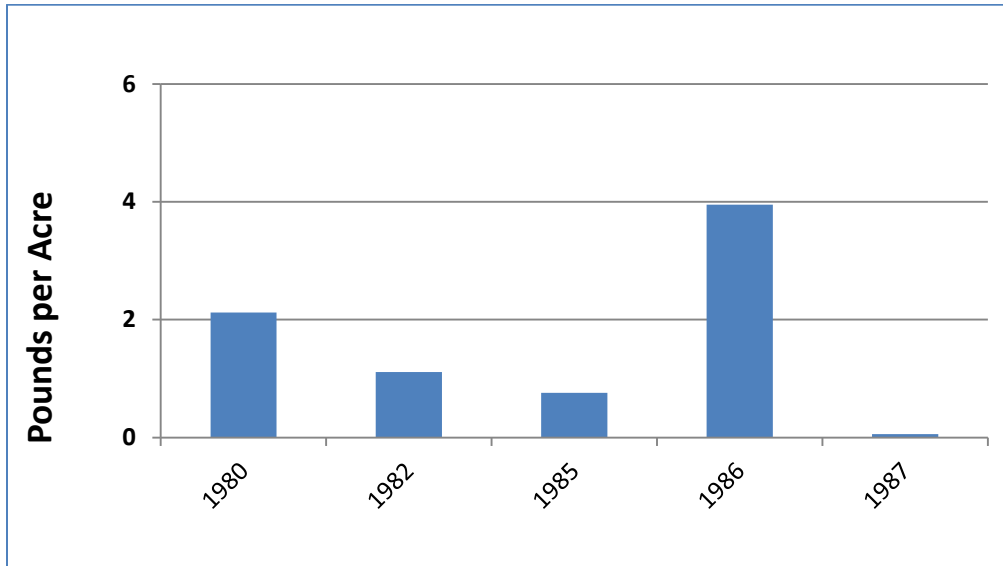


Figure 9. The CPUE in pounds per acre of crappie collected from Cypress Bayou Reservoir, LA, during biomass (rotenone) sampling from 1980 to 1987.

Few crappie were collected during spring electrofishing samples from 1990–2012 as depicted in Figure 10. The overall numbers were low in most of the samples. No crappie were collected in several of the sample efforts.

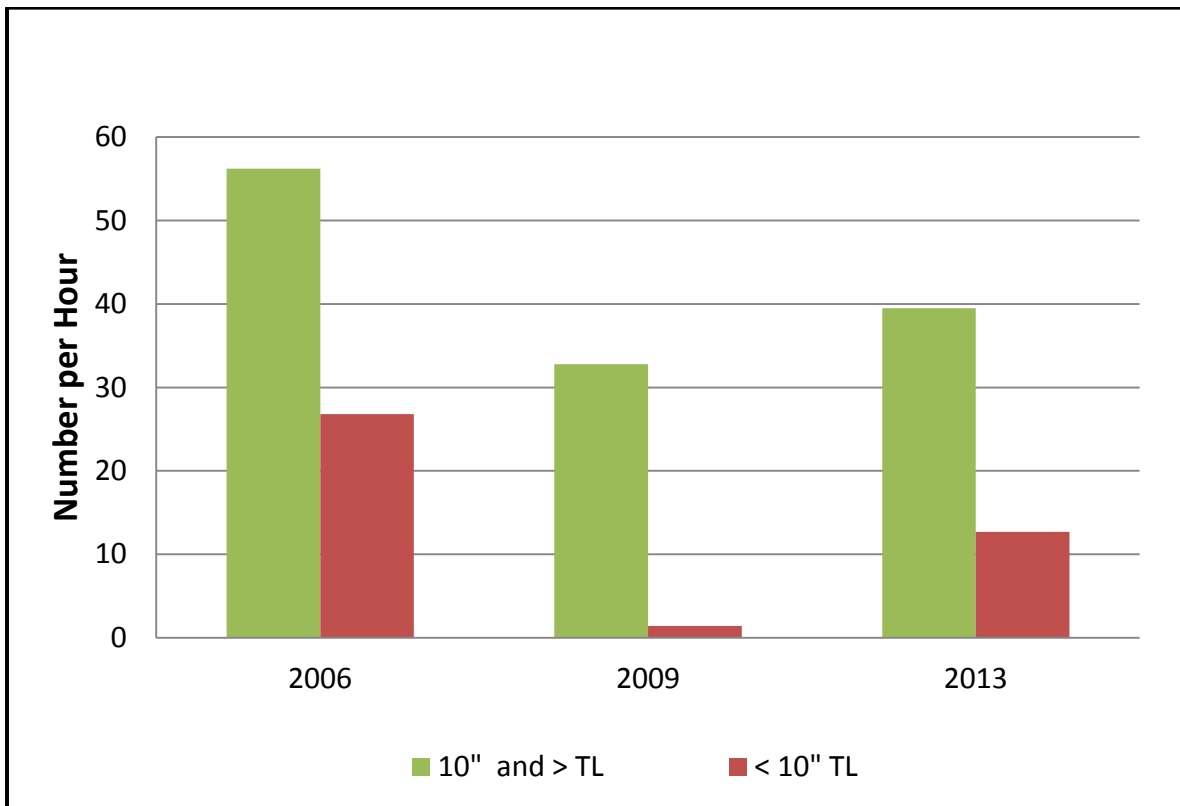


Figure 10. The CPUE of crappie from Cypress Bayou Reservoir, LA captured during springtime electrofishing from 2006 to 2012. TL = total length.

Results from gill net sampling are indicated in Figure 11. Although overall numbers of crappie collected in gill nets are relatively low, results revealed that larger size crappies are present in Cypress Bayou Reservoir.

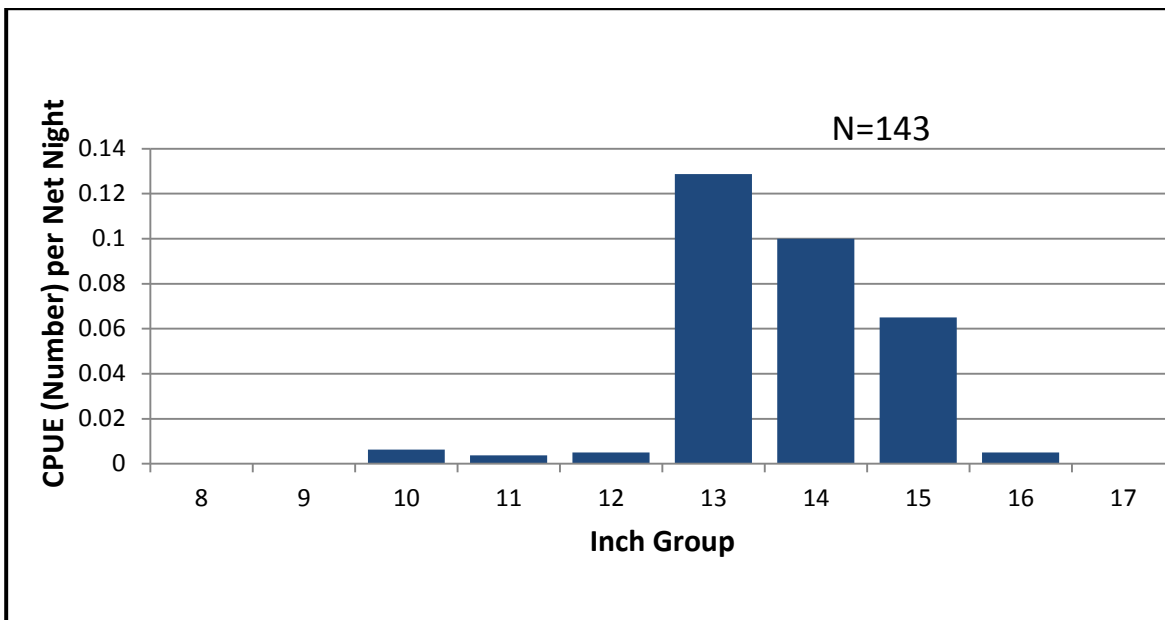


Figure 11. The Mean CPUE (number) per net night (per 100' net) of crappie collected on Cypress Bayou Reservoir, LA during standardized gill net sampling for 1999 - 2014.

In recent years, LDWF has used lead net gear to collect better information on crappie populations. Although lead nets have not yet been fished on Cypress Bayou Reservoir, plans are to assess the crappie population using lead nets from 2016-2018. Angler catches indicate that Cypress Bayou Reservoir has a more abundant crappie population than existing data would suggest. The planned three year study should yield valuable information about the crappie population of Cypress Bayou Reservoir.

Commercial

Cypress Bayou Reservoir supports an abundant catfish population. Limited commercial fishing is allowed using slat traps, wire nets, and hoop nets during a special season from November 1 through the end of February each year. The Louisiana Wildlife and Fisheries Commission prohibited the use of gill nets, trammels nets and fish seines in Cypress Bayou Reservoir and Black Bayou Reservoir in September 2002. .

Standardized sampling with gill nets was conducted in the lake from 1999 – 2014. The primary commercial species collected were channel catfish and blue catfish (Figures 12 and 13).

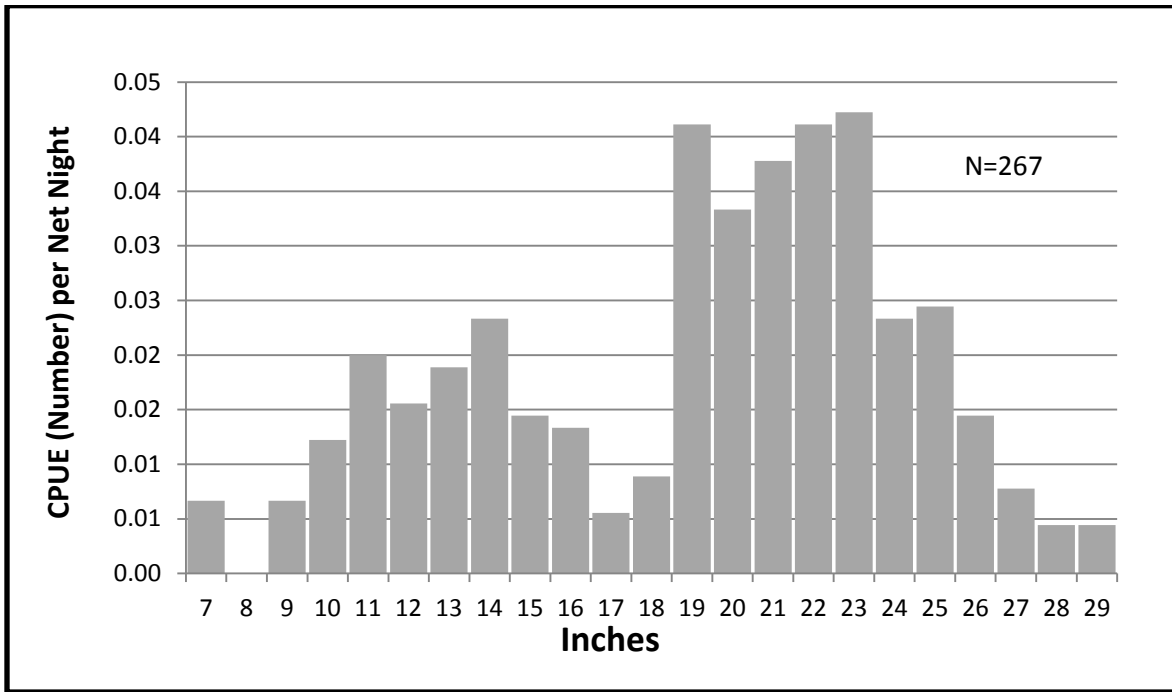


Figure 12. The mean CPUE in number per net night (100' net) per year of channel catfish in Cypress Bayou Reservoir, LA, during standardized gill net sampling from 1999 - 2014.

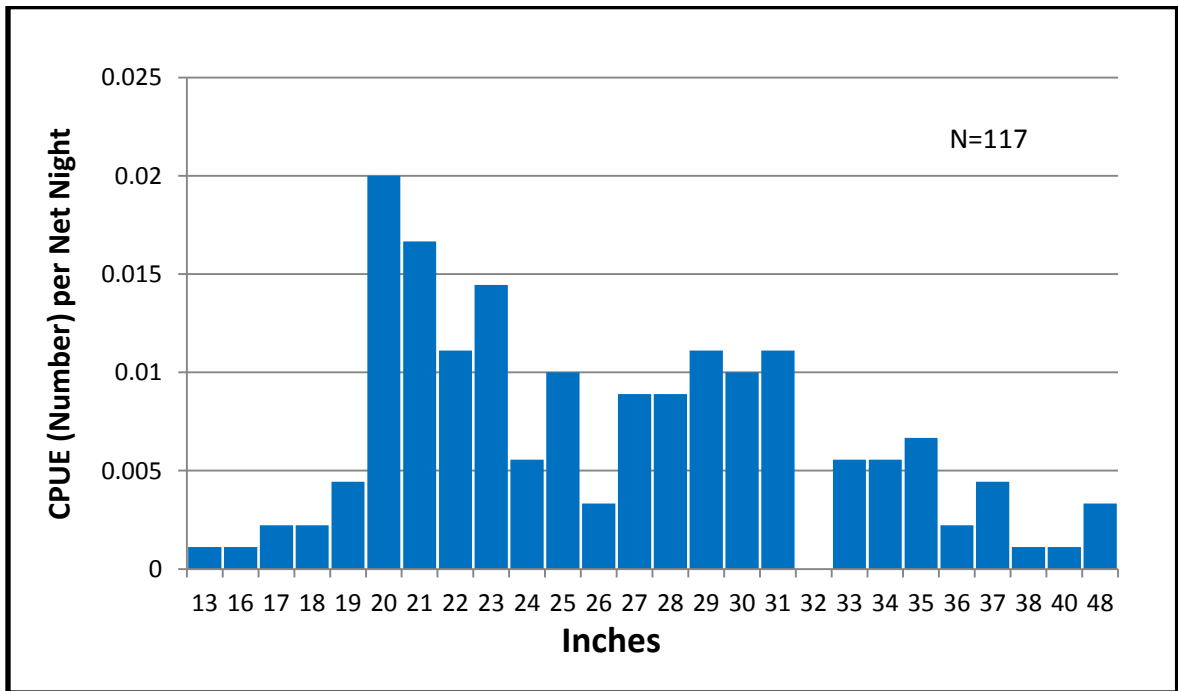


Figure 13. The mean CPUE in number per net night (100' net) per year of blue catfish in Cypress Bayou Reservoir, LA, during standardized gill net sampling from 1999 - 2014.

HABITAT EVALUATION

Aquatic Vegetation

Nuisance aquatic vegetation has been present in Cypress Bayou Reservoir for many years, but generally is not a major hindrance for recreational boating and fishing access in the majority of the lake. The area above and immediately below the Hwy. 162 Bridge on the upper end of the lake is where the majority of the aquatic vegetation problems persist. American lotus (*Nelumbo lutea*) is often a problem in this area of the lake. Access for foliar herbicide treatments can be difficult due to the shallow water depths and numerous stumps. The extreme upper end of the coves of the lake can also harbor problematic vegetation. The remainder of the lake is generally either free of aquatic vegetation or there is a fringe along the shoreline.

In 1998, hydrilla (*Hydrilla verticillata*) was documented in Cypress Bayou Reservoir. Hydrilla becomes dense some years in the shallow area of the lake just below the Hwy. 162 boat launch and will limit boating access to the creek channel. Hydrilla has not expanded into the main lake to a point that severely impacts recreational activities. Wave action and turbidity appear to keep the plant in check in the main lake. With the lack of complex cover in the lake, hydrilla offers beneficial fisheries habitat. No action should be taken to reduce hydrilla levels lake-wide unless coverages increase dramatically.

Giant salvinia (*Salvinia molesta*) was first documented in Cypress Bayou Reservoir in 2007. The plant has not become a significant problem on this lake as it has on several other area lakes. Foliar herbicide applications have been utilized on an as needed basis to help control the plant around the boat launches and other areas that harbor the plants. Very few mats have become established on the lake. It is apparent that the physical characteristics of the lake are beneficial in helping keep this plant under control. Much of the shoreline is open, windswept, and exposed to wave action.

In 2014, vegetation levels on Cypress Bayou Reservoir were reduced from previous years. This trend was observed on other area lakes following the harsh winter of 2013-14. Less than 2 acres of giant salvinia was found on the lake. Giant cut grass (*Zizaniopsis miliacea*) provides beneficial fish cover on Cypress Bayou Reservoir and could be found on nearly all the undeveloped shorelines of the lake. American lotus and alligator weed (*Alternanthera philoxeroides*) could be found near the LA 162 Bridge and combined to cover approximately 250 acres in the upper portion of the lake. Hydrilla was confined to the shallow portion of the lake above the Eagle's Nest Point and covered approximately 125 acres on the lake.

Substrate

The substrate of Cypress Bayou Reservoir is composed of mixed wet alluvial lands and poorly drained stiff soils in the Cypress Bayou stream bottom and terrace. Organic content is generally low except in the upper reaches of the lake. The majority of the littoral zone of the lake consists of suitable fish spawning substrate for nest building fishes.

Complex Cover

Complex cover in Cypress Bayou Reservoir is somewhat lacking. Little to no timber remains in the lake with the exception of Wagoner's Pocket. Cover is limited to aquatic

vegetation and the boathouses along the shore. Anglers and homeowners have added artificial structures around many of the boat houses and much of the angling effort on the lake targets these structures. Night time fishing is popular on the lake, especially around lighted piers.

CONDITION IMBALANCE / PROBLEM

The most significant problem on Cypress Bayou Reservoir is the presence of invasive aquatic vegetation, including giant salvinia and hydrilla. These plants pose a formidable threat to the aquatic habitat and recreational activities.

CORRECTIVE ACTION NEEDED

Control invasive aquatic vegetation.

RECOMMENDATIONS

1. Conduct strategic foliar herbicide applications to giant salvinia as needed. Diquat will be used from November 1 through March 31 at a rate of 0.75 gallons per acre mixed with a total of 1 qt. per acre of surfactant being comprised of 1 part Air Cover and 3 parts Aqua King Plus. Outside of that time frame, giant salvinia will be controlled 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.
2. Continue to monitor hydrilla levels. Make strategic herbicide applications around boating access points if necessary.
3. Continue scheduled standardized sampling of fish populations to determine status over time. In 2016, begin a stock assessment of the largemouth bass and crappie populations.
4. Continue introduction of Florida largemouth bass fingerlings as per the official LDWF Stocking Policy. Florida largemouth bass should be stocked as available.