LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

SPRING BAYOU

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

2007 – Prepared by
Jody David, Biologist Manager, District 6

July 2013 - Prepared by
Jody David, Biologist Manager, District 6

March 2015 - Prepared by
Jody David, Biologist Manager, District 6

June 2017 – Prepared by
Jody David, Biologist Manager, District 6

March 2019 – Prepared by
Jody David, Biologist Manager, District 6

April 2021 – Prepared by
Jody David, Biologist Manager, District 6
Daniel Hill, Biologist Manager, District 6
Bradley Launey, Biologist Supervisor, District 6

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Largemouth Bass (*Micropterus salmoides*) are managed to provide the opportunity to catch fish of greater average size. Other 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.

Commercial

Utilization of the commercial fishery is limited at present. Spring Bayou was closed to commercial fishing in April 2009 as a measure to protect introduced Triploid Grass Carp (*Ctenopharyngodon idella,* TGC).

Species of Special Concern

No threatened or endangered species have been observed in Spring Bayou. Bald Eagles (*Haliaeetus leucocephalus*) are seen around the lake during the winter.

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. Shoreline seining has been used in the past to collect information related to fish reproductive success and forage availability. Sunfish (*Lepomis* spp.) and crappie (*Pomoxis* spp.) are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish.

Largemouth Bass Abundance and Size Distribution

Electrofishing sampling is conducted during daylight hours. Shock time for each sample lasts approximately 900 seconds. The number of sample sites is determined by the total acres of a waterbody. Six electrofishing samples are conducted on Spring Bayou at locations representative of available habitat. The catch-per-unit-of-effort (CPUE) of Largemouth Largemouth Bass collected from Spring Bayou by electrofishing from 1990 to 2021 is reported in Figure 1. CPUE has generally increased in all indicated size groups from 1990 – 1997. The decline in bass CPUE in 2000 - 2003 may be directly related to an abundance of submerged aquatic plants, especially hydrilla (*Hydrilla verticillata*), which greatly limited sampling efforts. Largemouth Bass CPUE began an upward trend in 2005, but a CPUE decline is noted in 2007- 2008 in all size groups (Figure 1). An expanded coverage of hydrilla is suspected as a significant influence to those results. As submerged vegetation declined, beginning in 2010 and especially in 2017 and 2021, CPUE's increased as shown in Figure 1. The size distribution increased once the submerged vegetation was reduced as shown in Figure 2. Also shown in Figure 2 is an increase in young-of-the-year (YOY) bass and in the larger-sized inch groups collected during electrofishing samples.

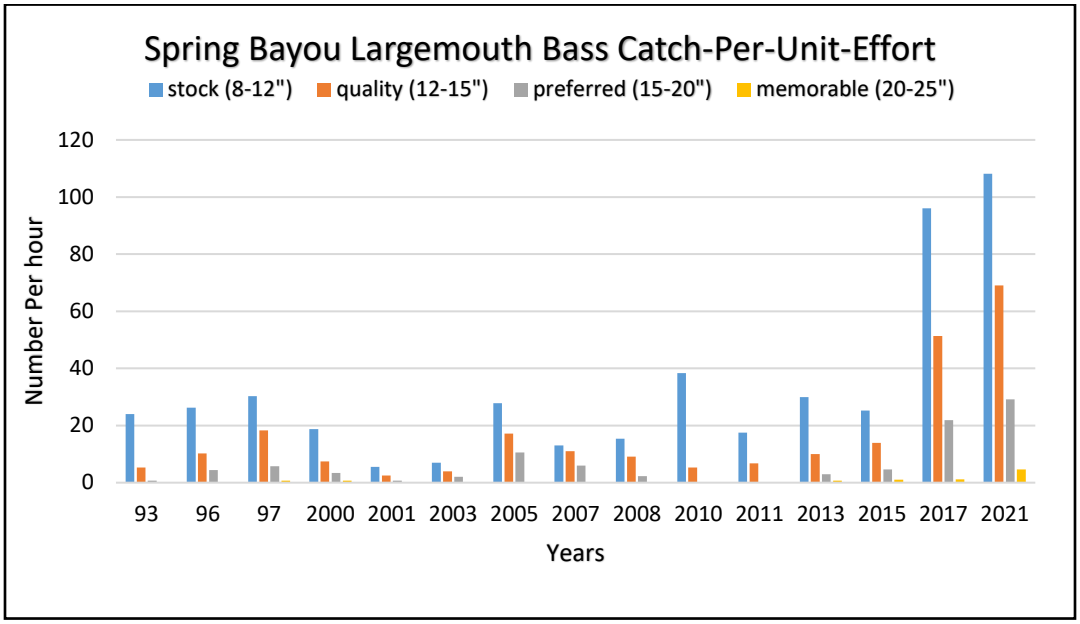

Figure 1. The spring catch-per-unit-of-effort (CPUE: number per hour) for Largemouth Bass of stock-, quality-, preferred-, and memorable-size fish sampled by electrofishing at Spring Bayou, LA, from years 1990 – 2021.

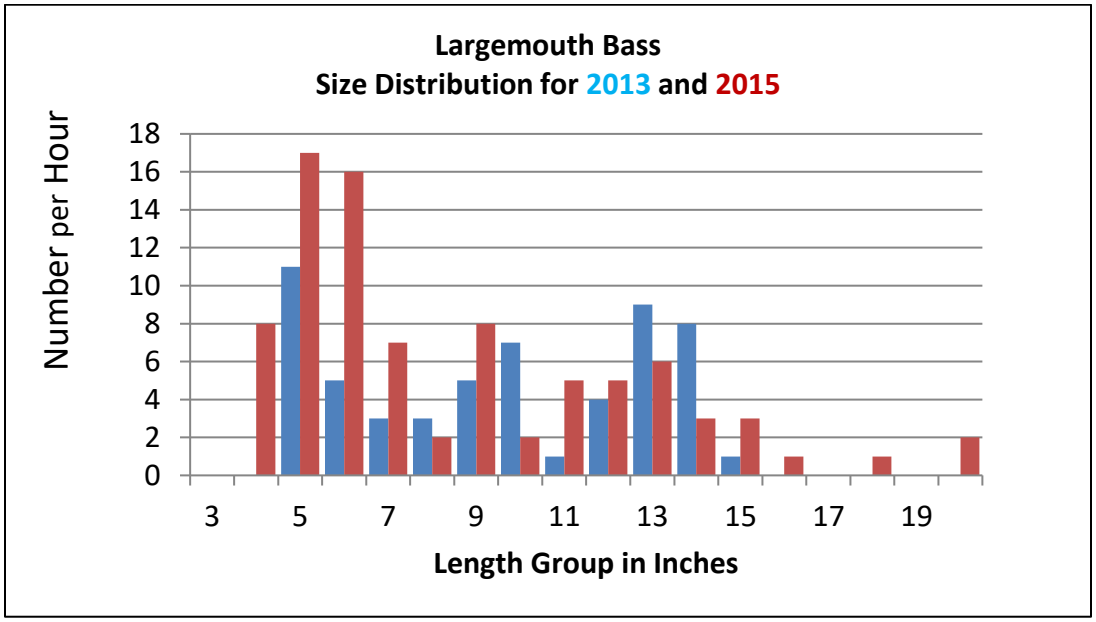

Figure 2. Largemouth Bass size distribution (inch groups) from spring electrofishing samples (number sampled per hour) taken on Spring Bayou, Louisiana for 2013 N=57 and 2015. N=86.

Largemouth Bass recruitment has been sporadic (Figure 3). Abundance of bass exceeding 13 inches in total length is low for all three years reported. Total number of bass collected each year was very similar; 2005 = 36, 2007 = 32 and 2008 = 34.

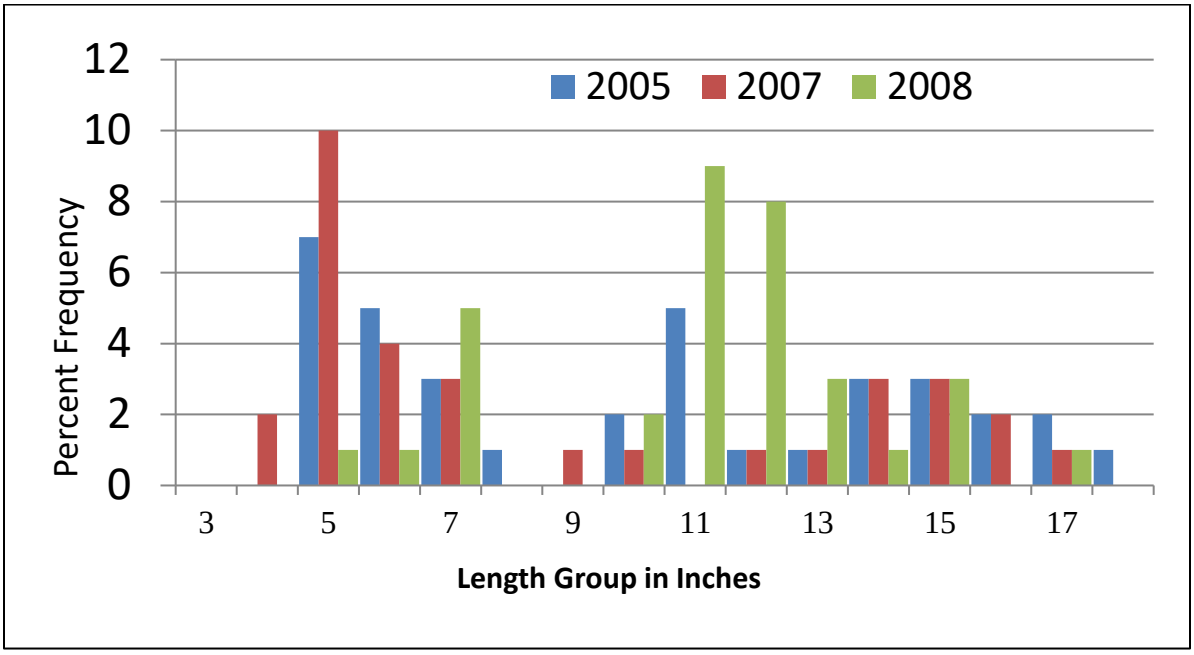

Figure 3. Largemouth Bass size distribution (inch groups) from spring electrofishing samples taken on Spring Bayou, Louisiana for 2005, 2007, and 2008. N for 2005=36, N for 2007=32, N for 2008=34.

Largemouth Bass recruitment has increased as shown in Figure 4. Abundance of bass exceeding 13 inches in total length has increased in 2013 and 2015 due to the decrease in aquatic vegetation allowing access.

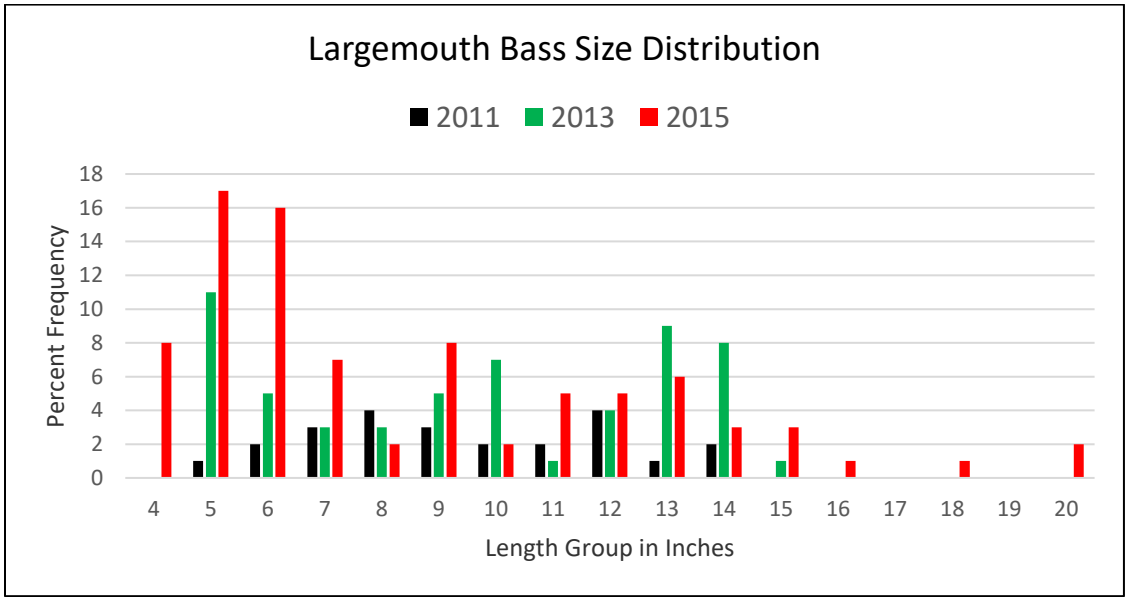

Figure 4. Largemouth Bass size distribution (inch groups) from spring electrofishing samples taken on Spring Bayou, Louisiana for 2011, 2013 and 2015. N for 2011 = 24, N for 2013 = 57, N for 2015 = 86.

Largemouth Bass Population Assessment

A Largemouth Bass population assessment study was conducted from the fall of 2017 – 2019. The study included intensive sampling and an access point creel survey in 2017 to describe angler participation and habits. The purpose of the study is to obtain accurate

estimates of length distribution, age composition, and growth and mortality rates of the Largemouth Bass population.

Every fish population is the product of a unique set of influences, both natural and man-induced. A thorough understanding of those influences and the corresponding population response is essential to good fisheries management. As part of a statewide effort, the Louisiana Department of Wildlife and Fisheries (LDWF) recently completed a study to describe the Spring Bayou Largemouth Bass population. The project included data collection over a three-year period from 2017 – 2019. Population dynamics including relative abundance, spawning success, growth, body condition, mortality, and longevity were measured. Spring Bayou anglers were also surveyed to determine their collective influence on the Largemouth Bass population.

Electrofishing gear was used by fisheries biologists to collect Largemouth Bass from Spring Bayou each fall. Length and weight measurements were recorded for each fish and otoliths (inner ear bones) were removed for age and growth analyses. Annual growth rings on the otoliths provide an accurate measurement of fish age. Size and age for all of the sample fish were combined to generate estimates of average growth rate and longevity. Angler surveys were conducted during the sample period to document fishing effort, angler catch rate, and harvest rates.

Largemouth Bass numbers have increased in the fall electrofishing samples as shown in figure 5, 6 and 7. A decrease in submerged vegetation has increased sampling efforts as well as recruitment of Largemouth Bass.

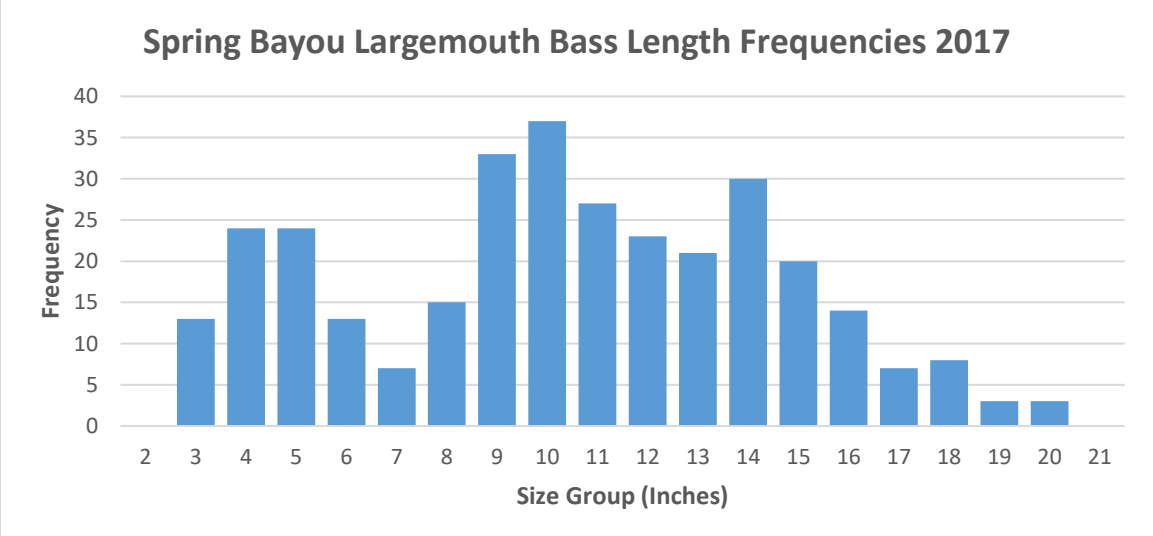

Figure 5. Largemouth Bass length frequencies (inch groups) from fall electrofishing samples taken on Spring Bayou, LA. for 2017. N = 322

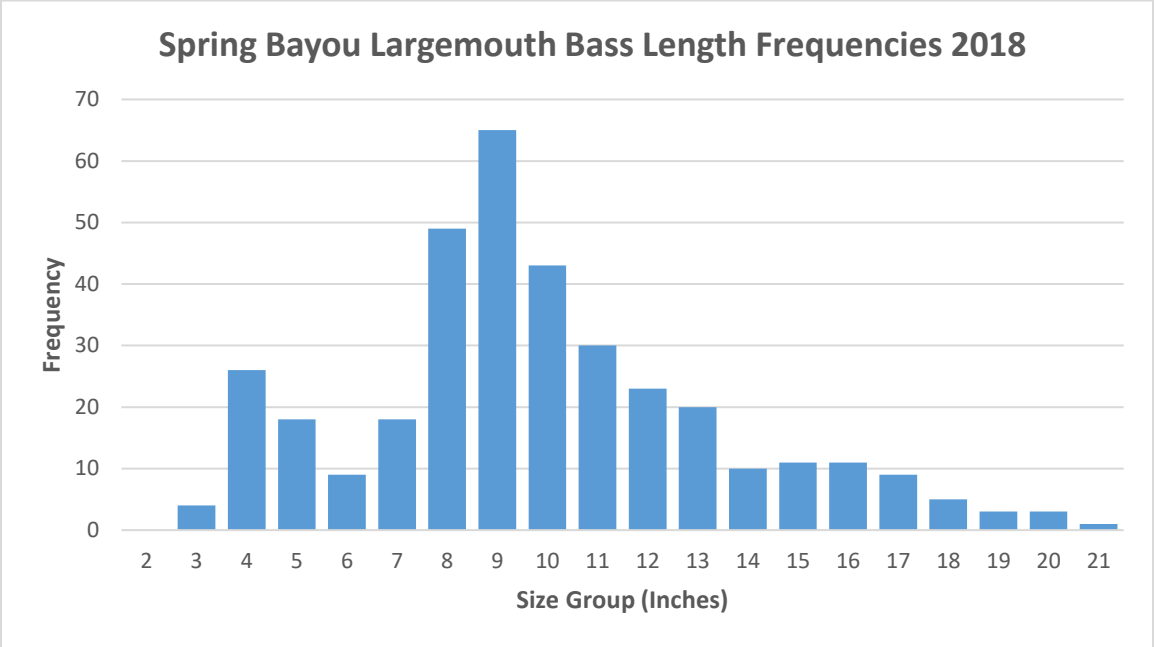

Figure 6. Largemouth Bass length frequencies (inch groups) from fall electrofishing samples taken on Spring Bayou, LA for 2018. N = 358

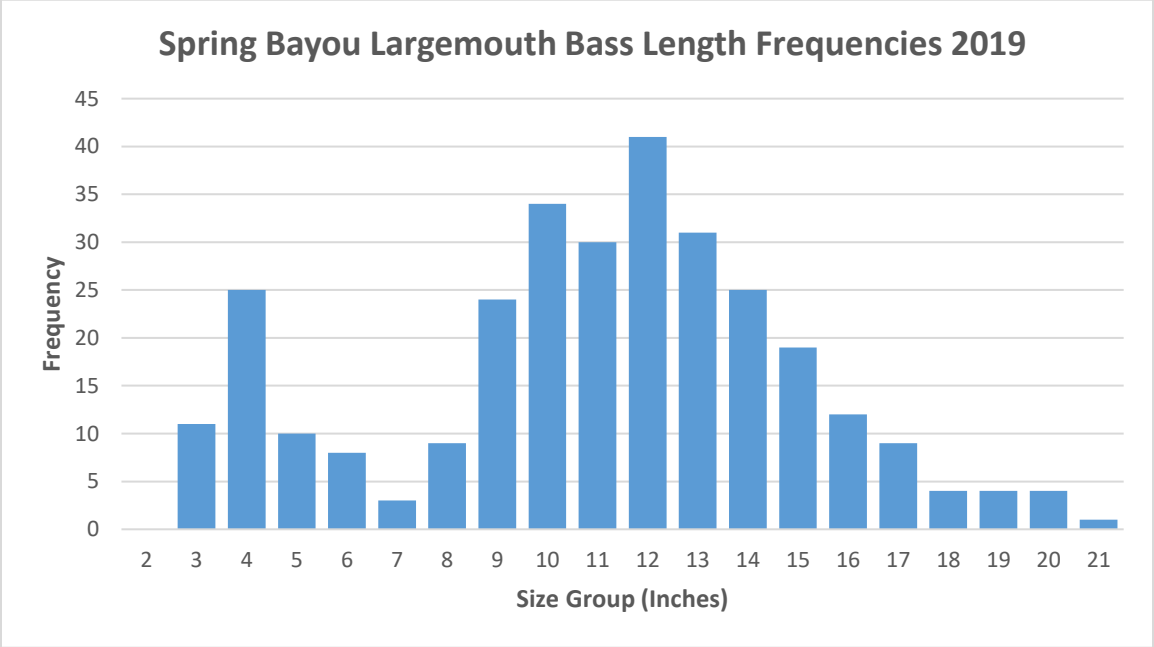

Figure 7. Largemouth Bass length frequencies (inch groups) from fall electrofishing samples taken on Spring Bayou, LA for 2019. N = 304

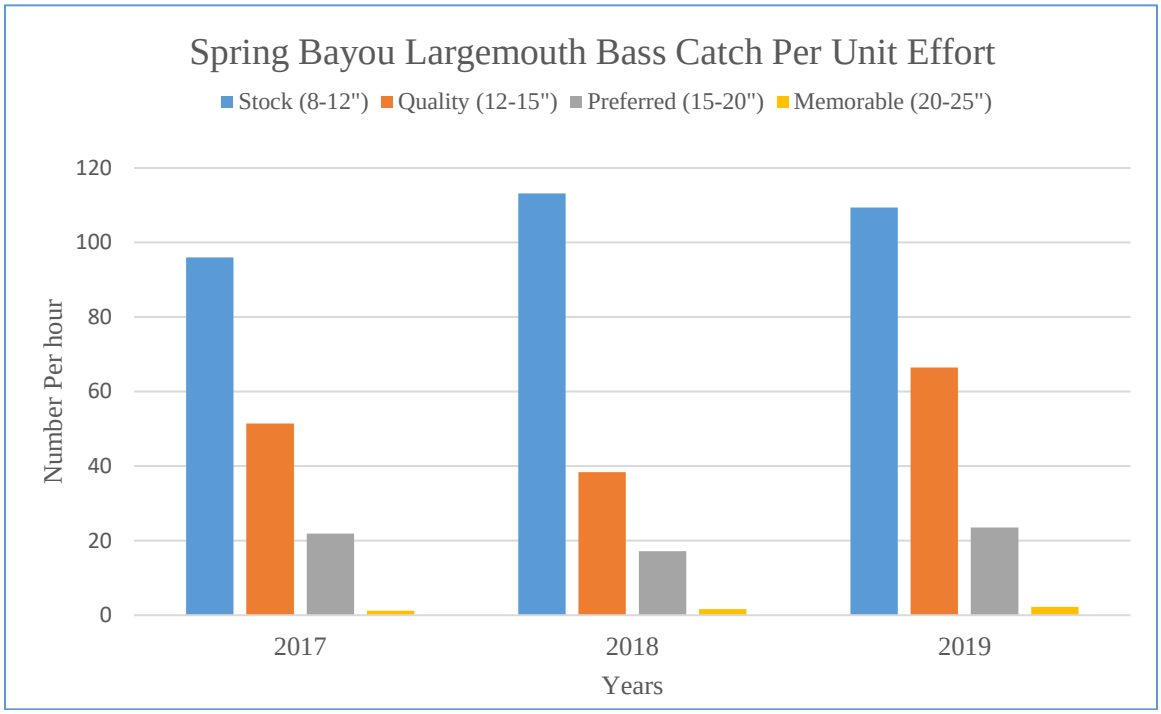

Figure 8. The fall catch-per-unit-of-effort (CPUE: number per hour) for Largemouth Bass of stock-, quality-, preferred-, and memorable-size fish sampled by electrofishing at Spring Bayou, LA, from years 2017-2019.

Figure 9 illustrates that Spring Bayou supports a healthy Largemouth Bass population with some bass reaching 21 inches. Good representation of fish in the 8 to 16-inch range was observed in all three years of the project. The recurring presence of small 4 to 8 inch (age-1) bass indicates successful reproduction.

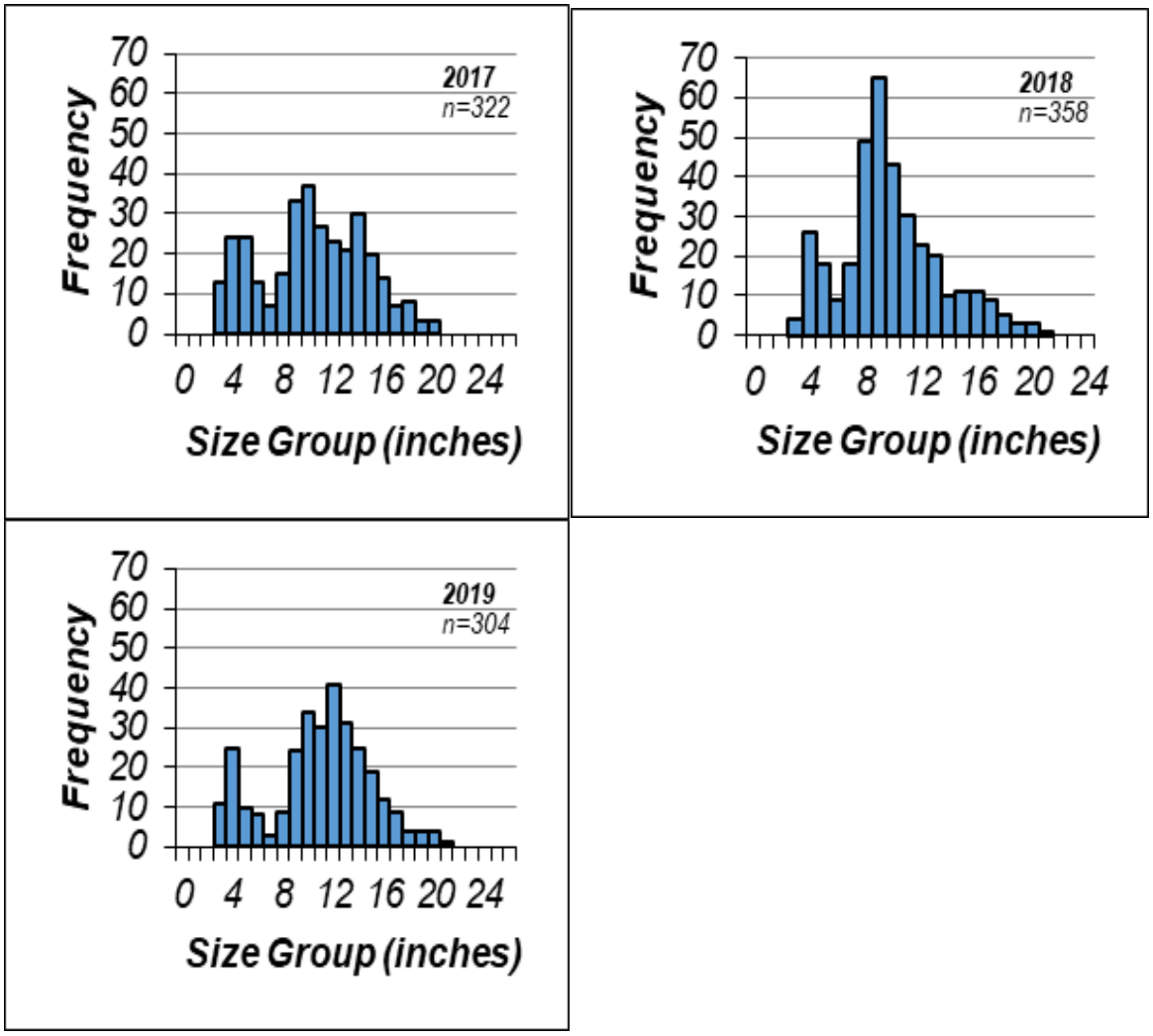

Figure 9. Annual size frequency distributions of the Spring Bayou Largemouth Bass fall electrofishing survey (2017-2019). Sample sizes (n) are presented in each graphic.

Age structure of the complete electrofishing sample (2017-2019) is shown in Figure 10. Forty-seven percent of the total sample were comprised of age-1 and age-2 bass. The majority of the age 6+ fish were females and only a small percentage of Spring Bayou LargemouthLargemouth Bass were 6-years and older. Average length at age for Spring Bayou bass is provided in Table 1. Growth is rapid through age-4, but then slows to only a half-inch or less in length per year.

Body condition for Spring Bayou bass can be described as robust. Good physical condition of bass generally is the product of an adequate food supply that is readily available to predation.

Recruitment of age-1 Largemouth Bass in Spring Bayou is highly variable. Factors that are favorable for stable recruitment include seasonal water fluctuation, quality spawning substrate, and adequate cover for fingerlings. Possible causes for Spring Bayou Largemouth Bass recruitment variability are high water events in 2016 and 2018, and an abundance of larger predatory fish.

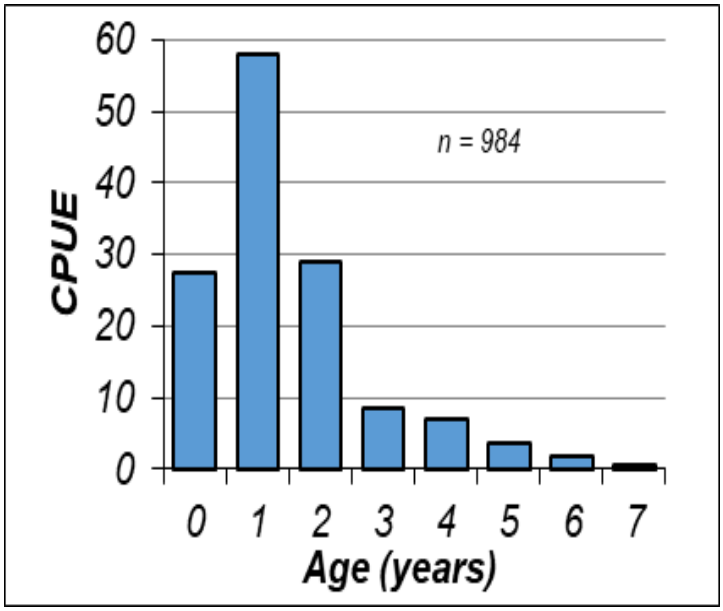

Figure 10. The age structure of Spring Bayou Bass.

Table 1. Length at age of Spring Bayou bass.

Age	**Length in Inches**
1.0	8.8
2.0	12.3
3.0	14.8
4.0	16.7
5.0	18.0
6.0	19.0
7.0	19.7

The rate at which fish die each year is referred to as mortality. Mortality consists of two parts: natural mortality (predation, disease) and fishing mortality (angler harvest and discard mortality). Results of the bass population assessment study above are preliminary due to final analysis of the data is still pending as this management plan is being updated.

Largemouth Bass Genetics

The majority of Largemouth Bass collected for genome determination are taken during fall standardized electrofishing samples. Ten Bass per inch group are collected for growth and genetics analysis. Otoliths (ear bones) and liver tissue are removed. Total length and weight is recorded for each specimen. The Louisiana State University genetics laboratory conducts starch gel electrophoresis. Genetic results for the Spring Bayou LargemouthLargemouth Bass

population are presented in Table 2. Results from samples in 1995 and 2000 indicate that native (Northern) Largemouth Bass are dominant in Spring Bayou. A Largemouth Bass population assessment study was conducted from 2017-2019. Genetic samples were analyzed by Louisiana State University. Results below show a slight increase in Florida Largemouth Bass influence during each year sampled in the Spring Bayou complex.

Table 2. Largemouth Bass stockings and genetic results for Spring Bayou, LA for 1993- 2020.

YEAR	Florida Largemouth Bass STOCKINGS	GENETIC SAMPLING RESULTS				
		N	Northern Largemouth Bass	Florida Largemouth Bass	Fx	TOTAL FLORIDA INFLUENCE
1993	68,657					
1995	0	45	93%	4%	3%	7%
1999	25,156					
2000	30,757	18	83%	11%	6%	17%
2001	25,000					
2002	24,390					
2003	25,270					
2008	27,027					
2009	27,508					
2010	89,306					
2011	20,812					
2012	16,953					
2014	43,132 *575,400					
2016	27,308					
2017	0	160	83.1%	1.9%	15.0%	16.9%
2018	53,902	163	82.8%	4.7%	13.5%	18.2%
2019	0	157	79.0%	5.1%	15.9%	21.0%
2020	54,500					
TOTAL	1,135,078					
*Sac Fry						

Largemouth Bass Relative Weight

Sunfish and shad (gizzard and threadfin) have been identified as primary bass forage species in Spring Bayou. During the fall sampling period from 2000 - 2010, a 450-second electrofishing sample was conducted to determine forage relative abundance. From 2011 – 2019, a 225-second electrofishing sample was conducted at each sample station. Shoreline seine sampling is also conducted each summer to determine young-of-the-year production. There is a difference between forage abundance and availability. If there is an overabundance of aquatic vegetation, visual barriers created by the vegetation preclude effective feeding by predators.

Largemouth Bass body conditions are analyzed to determine effective utilization/conversion of available forage. Relative weight (Wr) is a measure of fish "plumpness" and is the ratio of

fish weight to that of a determined standard. The Wr is calculated by dividing the weight of individual fish by the standard weight for fish of the same length, and multiplying the quotient by 100. Largemouth Bass relative weights below 80 may indicate a potential problem with forage availability. Spring Bayou Largemouth Bass average a Wr near 96 in all size groups, indicating a healthy bass population with abundant and available forage.

Table 3. The percent of fish, by species, that are ≤ six inches in total length from forage electrofishing samples from 2000 – 2019 in Spring Bayou, Louisiana.

Forage – Electrofishing Samples (% of sample)									
Year	Bluegill (*Lepomis macrochirus*)	Redear Sunfish (*Lepomis microlophus*)	Longear Sunfish (*Lepomis megalotis*)	Silversides (*Menidia* spp.)	Gizzard Shad	Threadfin Shad	Warmouth (*Lepomis gulosus*)	Lake Chub Sucker (*Erimyzon sucetta*)	Golden Shiner (*Notemigonus crysoleucas*)
2000	10.3	2.6	0	0	2.6	51.3	0	0	
2001	0	0	0	0	0	0	0	0	
2005	30.3	0	4.7	7.0	0	0	4.6	0	
2007	37.0	0	0	0	0	0	3.7	0	
2008	54.6	0	0	0	0	0	0	0	
2010	74.9	3.7	0	0	0	0	3.7	0	
2011	50.1	17.5	0	1.2	0	0	1.2	0	
2013	47.8	4.8	0	1.8	4.1	5.9	3.0	4.8	
2015	39.6	4.2	0	3.3	0.4	32.2	1.3	3.3	
2017	57.3	1.5	0.2	1.3	0	0.9	0.8	0	0.9
2018	45.7	4.5	1.4	0.2	2.1	11	1.4	0	2.7
2019	53.0	1.8	0.6	0	0.3	0.8	1.5	0	0

Bluegill comprised the highest percentage of available forage from 2000 – 2019, except in 2000 when Threadfin Shad was the most abundant available forage (Table 3). Shad was not present in the following year's sample, which could be attributed to sample bias due to an infestation of submersed vegetation and periodic fish kills. In 2015, shad were present in the sample,Largemouth Bass. The presence of shad could be due to a reduction in hydrilla or chance since Threadfin Shad are pelagic schooling fish that only occasionally encountered in shoreline electrofishing.

Shoreline seine sampling is conducted in the summer months of June – August. All samples are conducted at night from one-half hour after sunset until one –half hour before sunrise. A one quadrant haul sample is taken at each station using a 25-foot-long seine, six feet deep, fitted centrally with a 6' x 6' x 6' bag and consisting of 3/16-inch Ace® nylon mesh. A total of three seine hauls are taken each year at the three boat ramps, one haul per ramp. The quadrant haul is conducted by anchoring one end of the seine at the shoreline and the other stretched perpendicular to the shoreline. The distal end is then swung around back to the shoreline, keeping the lead line tight and on the bottom. After the seine haul is completed, all fish are removed from the seine and placed into a properly marked sample bag, which is then placed on ice. In the laboratory, fish specimens are sorted by species, enumerated, and total lengths measured in inch groups by total number. Species collected in Spring Bayou consist of sunfish, Largemouth Bass, shad, silversides, and Golden Shiners. Bluegills were the predominant forage species collected in seine hauls (Table 4). Increasing hydrilla infestations,

in the most recent year of seine sampling (2007), reduced the biomass (pounds/acre) of available forage by more than 50% to the lowest level recorded.

Table 4. Total numbers of all fish species ≤ 6 inches in total length captured by seine hauls from Spring Bayou, LA, 1990 – 2007.

Total Number By Species								
Year	Bluegill	Other sunfish	Silversides	Golden Shiners	Gizzard Shad	Threadfin Shad	Mosquito Fish (*Gambusia affinis*)	Yellow Bass (*Morone mississippiensis*)
1990	144	108	355	0	87	162	279	90
1991	280	170	969	30	22	16	1467	172
1993	690	157	1444	46	77	218	527	30
1994	359	139	695	79	1	98	84	36
1995	415	168	328	21	74	232	96	39
1996	622	424	690	42	133	717	134	39
1998	110	51	0	30	175	4	84	102
2003	184	103	502	25	45	19	141	0
2007	12	0	4	0	0	0	261	0

Forage was comprised mainly of Gizzard and Threadfin Shad, 6 inches TL or less during the 1980's. An average of three 1-acre biomass (rotenone) samples/year is shown in Figure 6 below. Rotenone sampling is typically used to monitor forage populations has been limited due to the excessive amount of aquatic vegetation (hydrilla) in the lake. The infestations block out suitable areas in which to place the block-off net.

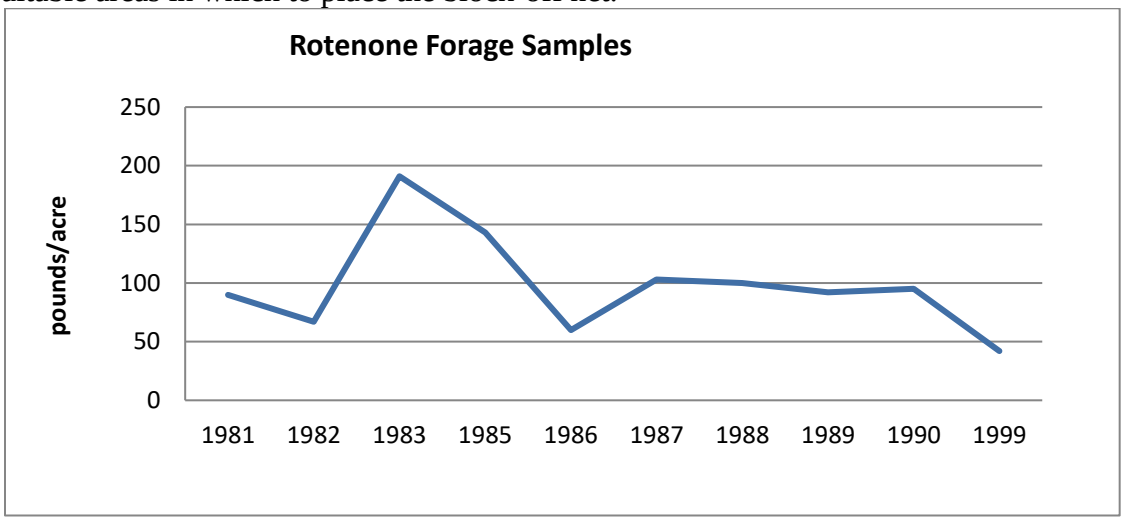

Figure 11. Forage samples (≤ 6 inches TL) from standardized biomass (rotenone) samples taken in Spring Bayou, Louisiana from 1981-1999.

Crappie Abundance and Size Distribution-
LDWF crappie CPUE remained low from 2000 – 2003, then increased in 2005 (Figure 12). From 2000 – 2003, numbers were extremely low which can be related to the drought of 1999/2000 causing low water levels and related fish kills. Increased predation is also likely. In 2005, abundance increased in all size groups, which could be related to a high recruitment rate and immigration of fish from other areas. In 2008, results indicating reduced abundance are likely biased due to excessive submersed vegetation. In 2010, 2011, 2013 and 2015, sampling results showed a substantial increase in quality- and preferred-size classes of crappie, perhaps due to reduced aquatic vegetation and increased forage availability throughout the lake.

Figure 12. Crappie relative abundance by size group (CPUE: fish per hour) from fall electrofishing at Spring Bayou, LA, for the years 1990 - 2015.

The size distribution of crappies collected in Spring Bayou using lead nets during 2012 is shown in Figure 13. Total catch is sorted by inch groups to provide a size distribution model of the population at the time of sampling. The fall 2012 length distribution of the crappie population ranged from 2-16 inches with strong representation of the 7-12 inch groups. The majority of the crappies captured consist of Black Crappie. The total number of collected was 465 taken in four different sample locations. The total soak (fishing) time of the lead nets was approximately 48 hours. The increase in total number of crappie captured may have been related to the 2011 Mississippi River flood, which inundated the complex thereby improving crappie recruitment and forage availability. The 2012 season marked the first time lead net samples were taken in Spring Bayou.

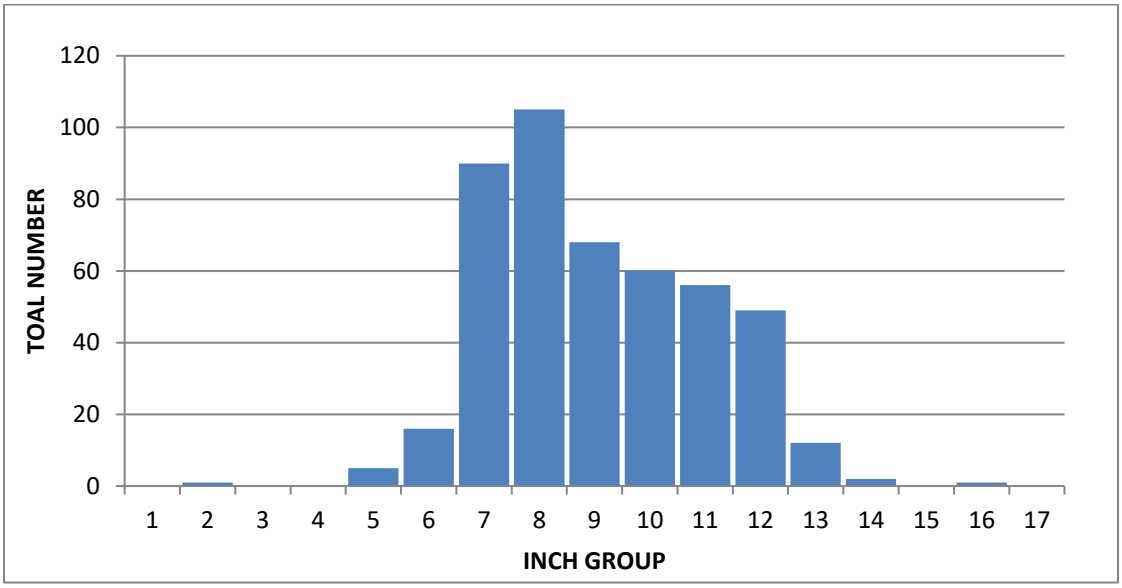

Figure 13. The size distribution (inch groups) of crappie captured in lead net samples at Spring Bayou, Louisiana in the fall of 2012. N=465.

Crappie Population Assessment

The fall of 2016 marked the first year of a three-year population assessment (2016-2018) project for crappie on Spring Bayou. The study included intensive sampling and an access point creel survey in 2017 to describe angler participation and habits. The purpose of the study was to obtain accurate estimates of length distribution, age composition,growth, and mortality rates of the crappie population. This information is used to determine if alternative regulations would have a desired effect on the population. Numbers of crappie appeared to increase substantially over past years of sampling due to reduced submersed aquatic vegetation, therefore improving crappie recruitment (figure 9-11). Because lead nets are very efficient at capturing crappies, future samples will also be taken utilizing this gear to assess populations.

Lead nets were used by fisheries biologists to collect crappie from Spring Bayou each fall. Length and weight measurements were recorded for each fish, and otoliths (ear bones) were removed from approximately 25% of the sampled fish for age and growth analyses. Annual growth rings on the otoliths provide an accurate measurement of fish age. Size and age for all of the sample fish were combined to generate estimates of average growth rate and longevity. Angler surveys were also conducted during the sample period to document fishing effort, angler catch rate and harvest rates. Results below are preliminary, and final analysis is pending.

Spring Bayou supports a healthy crappie population, with some crappie reaching 13 inches. As shown in figure 14 -16. Good representation of fish in the 7 to 11-inch range was observed in all three years of the project.

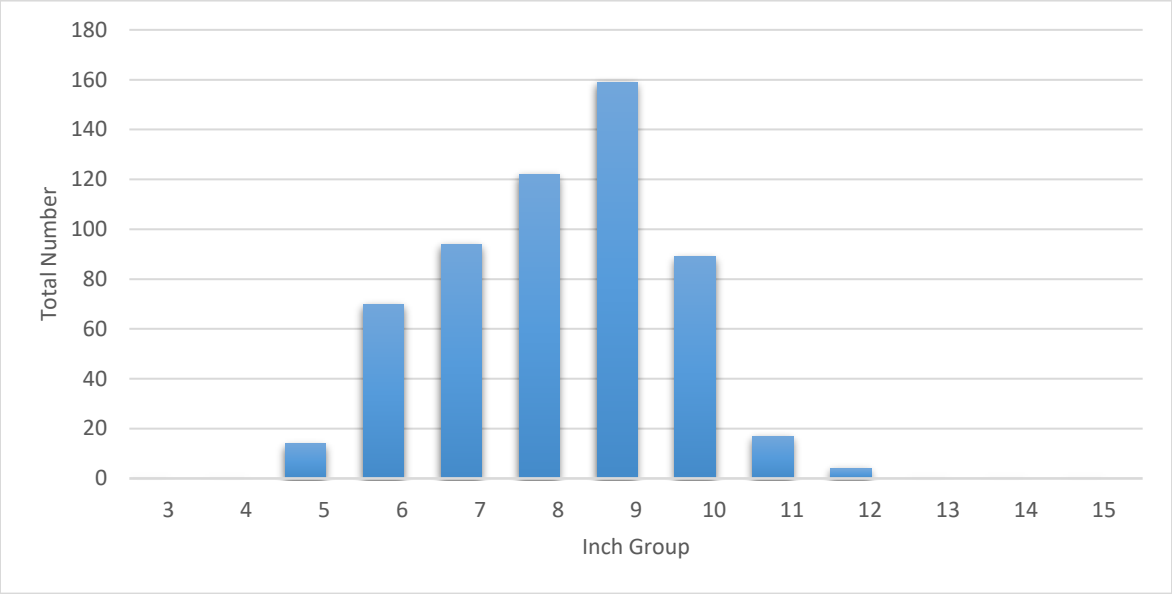

Figure 14. The size distribution (inch groups) of crappie captured in lead net samples at Spring Bayou, Louisiana in the fall of 2016. N= 565.

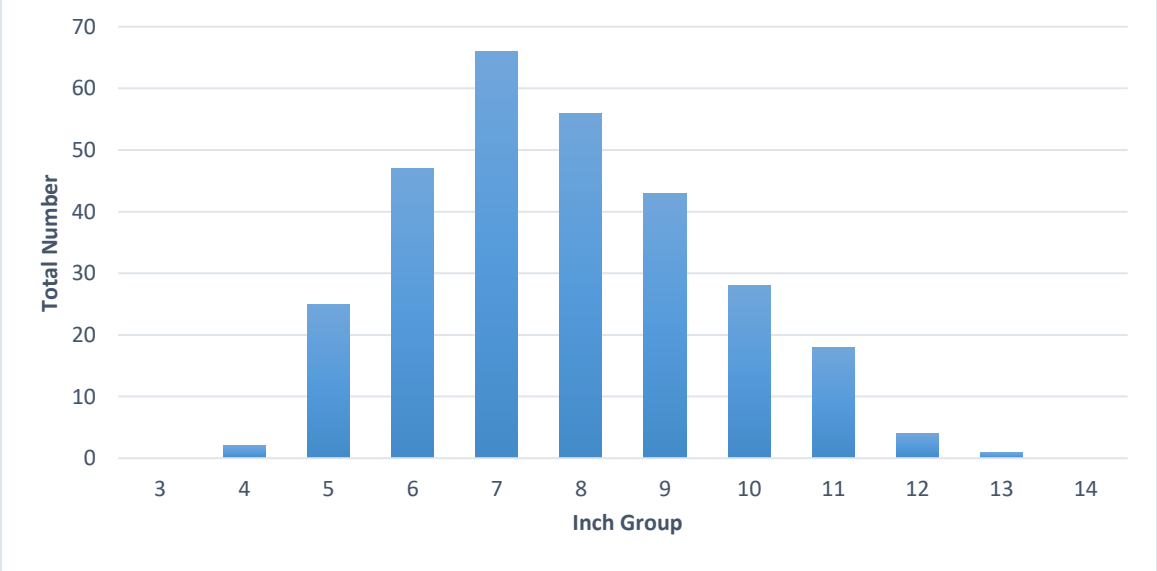

Figure 15. The size distribution (inch groups) of crappie captured in lead net samples at Spring Bayou, Louisiana in the fall of 2017. N= 290.

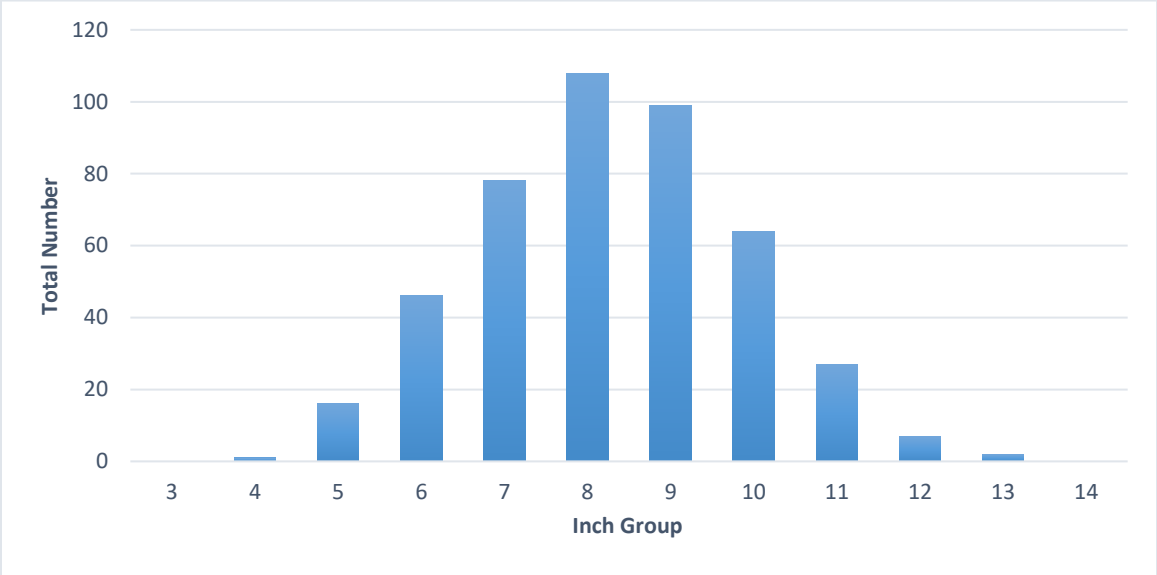

Figure 16. The size distribution (inch groups) of crappie captured in lead net samples at Spring Bayou, Louisiana in the fall of 2018. N= 444.

Age structure of the lead net sample (2016-2018) is shown in Figure 17. Eighty-one percent of the total sample were comprised of age-1 and age-2 crappie. The majority of crappie collected were Black Crappie. Average length at age for Spring Bayou crappie is provided in Table 5. Growth is rapid through age-3, but then slows to only a half to one inch or less in length per year.

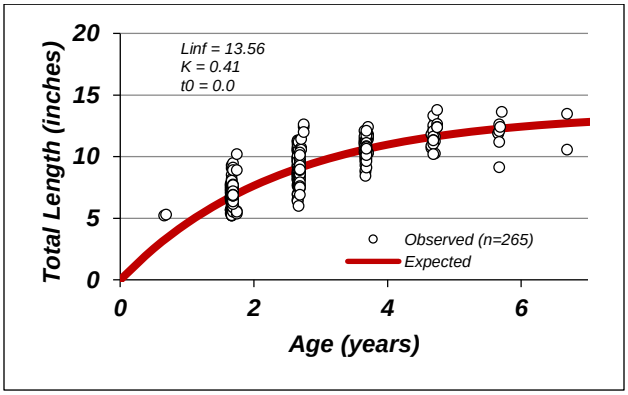

Figure 17. Growth rate of crappie collected by lead nets in Spring Bayou, LA from 2016-2018.

Table 5. Length at age of crappie in Spring Bayou, LA from 2016-2018.

Age	Length in Inches
T1.0	4.60
2.0	7.64
3.0	9.65
4.0	10.98
5.0	11.85
6.0	12.43

An access point creel survey was conducted in 2017 at Spring Bayou. High numbers of crappie were harvested from 8-11 inches with some harvest ofcrappie exceeding 15 inches

total length (Figure 18).

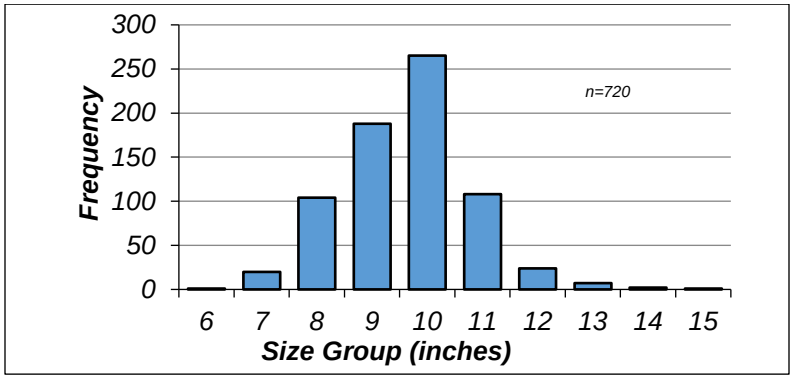

Figure 18. Frequency of crappie harvested from 2017 creel survey

Commercial

Commercial fishing is permitted Monday through Friday on Spring Bayou, except for slat traps and hoop nets that may be fished any day of the week. However, the use of gill nets and trammel nets or the take of or possession of triploid Grass Carp (TGC) was prohibited in January of 2009 (Appendix I). The webbing prohibition was implemented to protect TGC, introduced for hydrilla control. Permits are issued by the LDWF area supervisor or from the LDWF office in Opelousas to harvest commercial fish species on Grassy Lake WMA, Pomme De Terre WMA, and Spring Bayou WMA (Appendix II). No commercial fishing activity is allowed before 2:00 PM during the migratory waterfowl season. Commercial fish landings have been reduced by approximately 90% of past levels due to the increase in hydrilla coverage and lifting of the entanglement gear prohibition (Figure 19).

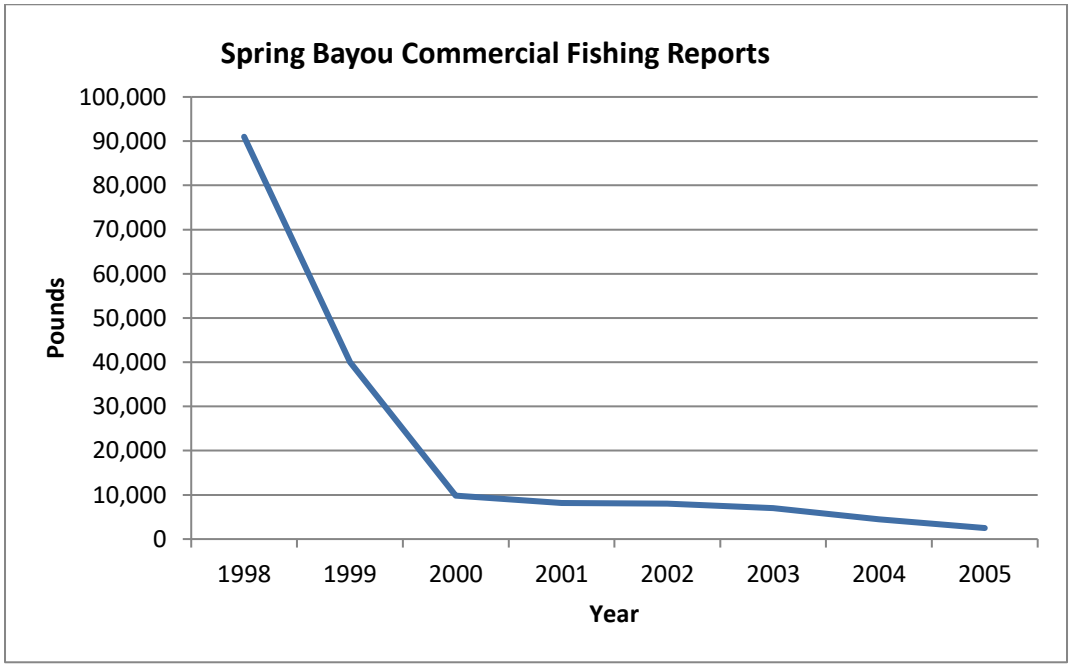

Figure 19. Commercial fish landings in total pounds compiled from annual commercial fish landing reports for Spring Bayou, LA from 1998 – 2005. Commercial species such as Common Carp (*Cyprinus carpio*), Buffalo (*Ictiobus* spp.), Bowfin (*Amia calva*) and Freshwater Drum (*Aplodinotus grunniens*) accounted for most species captured.

LDWF standardized sampling includes monofilament gill nets of 2.5 inches, 3.0 inches, 3.5 inches and 4.0 inches set between December 1 and February 28. The minimum number of net sets is determined by the surface area of the impoundment. A net set consists of four, 100-yard nets of the specified mesh sizes. Gill nets are set within one hour of sunset and retrieved as soon as possible after sunrise the following morning. All fish captured are individually measured for total length (millimeters) and weight (grams).

Commercial fishing, the use of gill or trammel nets, is prohibited in Spring Bayou since the introduction of Triploid Grass Carp in 2008. From 2008 to 2015, a total of 61,000 Triploid Grass Carp have been stocked in Spring Bayou to reduce submersed vegetation, such as hydrilla. Since that time, commercial species have become abundant throughout the lake, especially after the flood of 2011 when the Red River backed into the lake. These species consist mainly of buffalo, Common Carp, and Bowfin.

During standardized gill net samples in Spring Bayou in 2014 and 2016, results show that numerous commercial species, such as buffalo fish, are present in the lake (Figure 20). . Triploid Grass Carp were captured in all mesh sizes (Figure 16), and numbers captured in the 3.5 and 4 inch mesh were considerably low in 2016.

Commercial fishing in Spring Bayou has been a valuable management practice to harvest commercial species, which in turn promotes game species populations. Since the commercial fish population has increased, LDWF lifted the ban on the ban on gill or trammel nets under Title 76 on April 2018 allowing commercial fishing in Spring Bayou during the month of February only. Additionally, to reduce the capture of Triploid Grass Carp the use of gill or trammel nets must be 3.5-inch mesh are greater. The take or possession of grass carp is Triploid Grass Carp is prohibited. A permit to gill net is required and available from area supervisor or the Lafayette field office at (337) 735-8699.

The most common species sampled in 2011 were buffalo and Bowfin. Other species noted were the Triploid Grass Carp (TGC), which were stocked in Spring Bayou in 2008 to 2015 to control the spread of hydrilla (Table 6).

Red River spring floods influence this backwater system. Commercial fish species enter the complex and increase their population. As shown in Table 6 in 1997, 2011 and 2016 high water events resulted in increased abundance of commercial species.

Table 6. Total number of species captured per year with monofilament gill nets fished on Spring Bayou, LA during 1990 – 2018.

Species	1990	1991	1992	1993	1994	1995	1997	2002	2011	2014	2016	2018
Largemouth Bass			15	3	8	17			1	17	16	75
White Crappie (*Pomoxis annularis*)	1	13	7	2	3	15				3	0	1
Black Crappie (*Pomoxis nigromaculatus*)		7	2	1	1	17	2	4	1	6	2	24
Common Carp			19	8	20	19	29	3	4	5	1	14
Channel Catfish (*Ictalurus punctatus*)			2	1	4	1	2	1		5	0	5
Blue Catfish (*Ictalurus furcatus*)	1			2	3	17		1	1	1	0	0
Bullhead (*Ameiurus* spp.)					3	2	2	3	7	16	17	11
Bigmouth Buffalo (*Ictiobus cyprinellus*)			42	31	76	92	267	19	178	112	94	78
Smallmouth Buffalo (*Ictiobus bubalus*)			10	8	18	15	67		32	91	114	197
Freshwater Drum			7	13	5	6	9			1	2	11
White Bass (*Morone chrysops*)		5		2			2			0	0	0
Bowfin		44	31	32	34	93	25	3	43	59	26	23
Spotted Gar (*Lepisosteus oculatus*)				3		6	6			2	1	3
Alligator Gar (*Atractosteus spatula*)										4	0	0
Gizzard Shad			9	7	5		21	2	3	1	3	2
Flathead Catfish (*Pylodictis olivaris*)					1					0	0	0
Grass Carp									66	8	75	21
Silver Carp (*Hypophthalmichthys molitrix*)									5	14	1	9

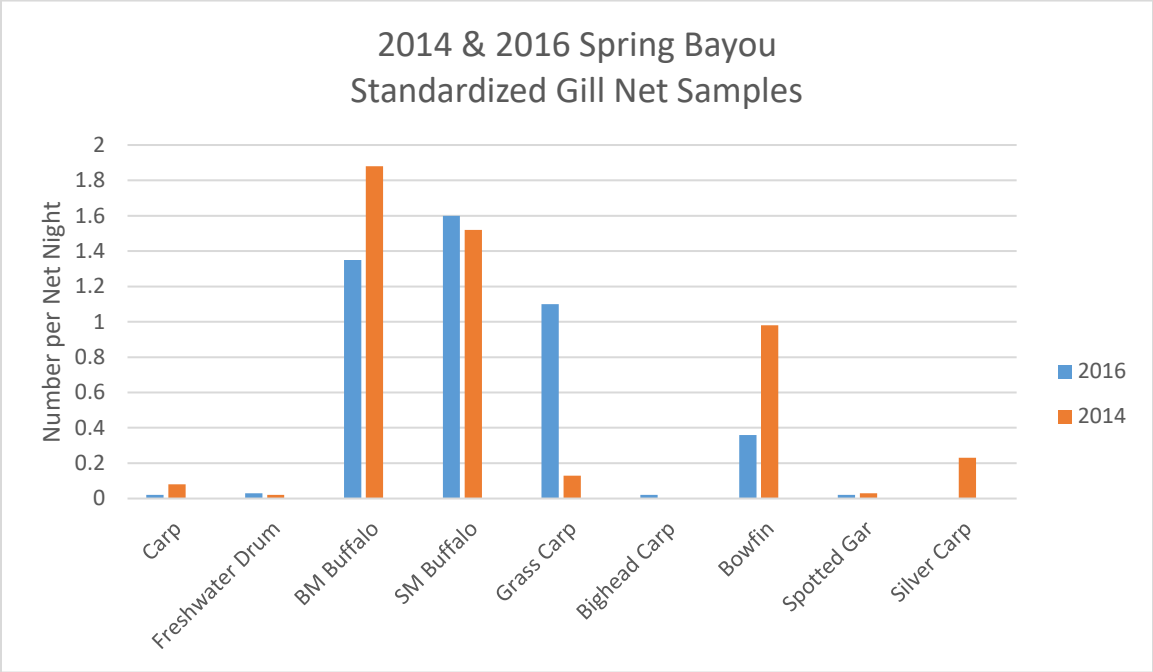

Figure 20- Number of commercial fish caught per net night (100 feet of net fished overnight) from LDWF winter gill net sampling in Spring Bayou, LA for 2014 and 2016.

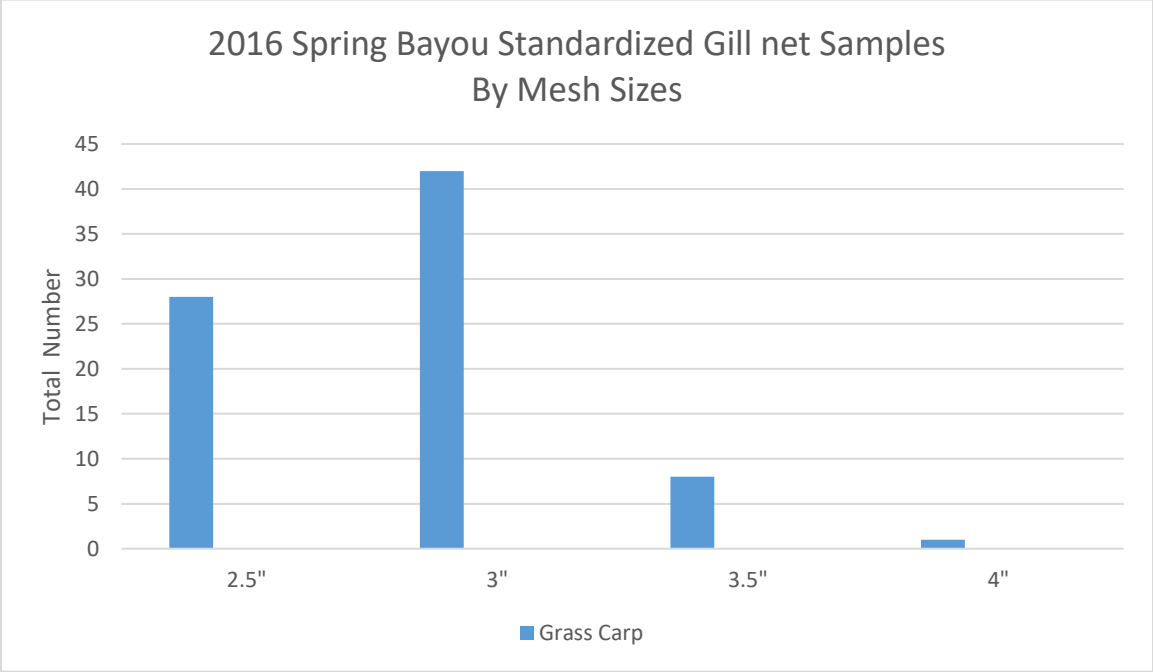

Figure 21 – Actual number of Grass Carp captured by mesh size from LDWF winter gill net sampling in Spring Bayou, LA. for 2016.

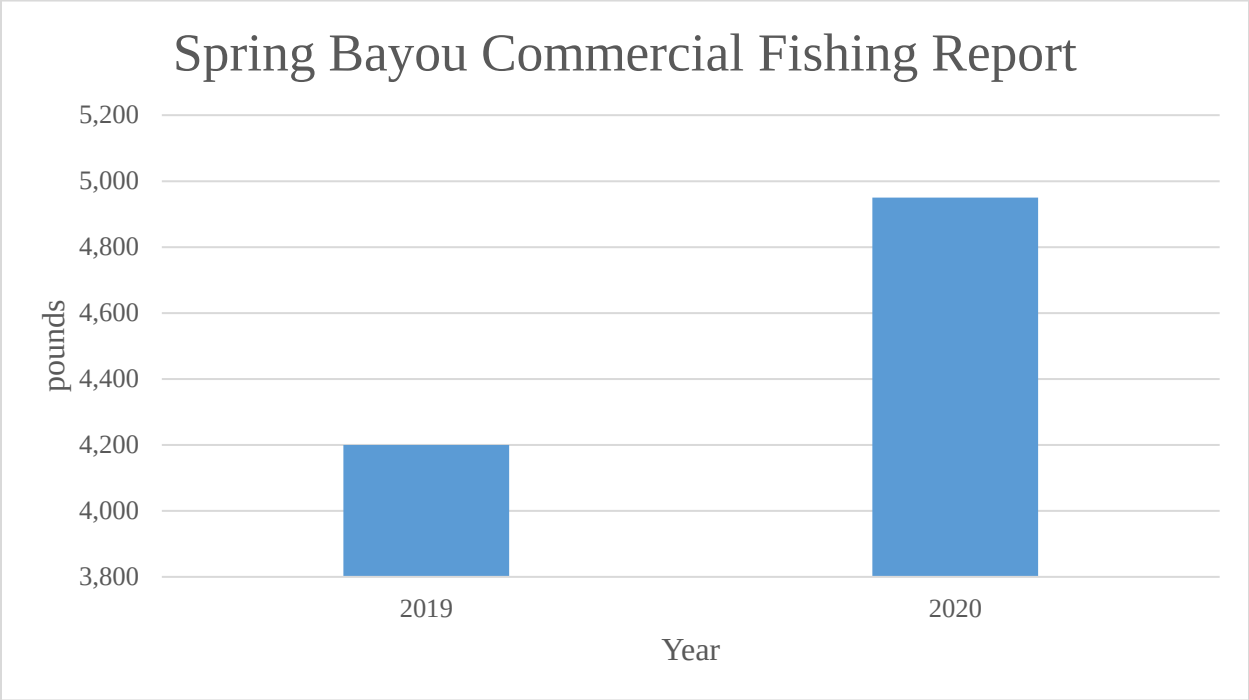

Figure 22. Total pounds of commercial fish caught by commercial fishermen. Most common species captured was buffalo fish (93%) each year. Other species were Common and Silver Carp. * There was only one commercial fishermen fishing in both years.

Creel Surveys

Access point creel surveys are conducted on water bodies to collect fishery dependent data from anglers including: fishing pressure, catch rates, harvest, size structure of harvested fishes, angling success and species preference.

Table 7. Average number of Largemouth Bass anglers interviewed, time fished and distance traveled to Spring Bayou, LA during the 1989, 1992, 2009 and 2017 creel surveys.

BASS ANGLERS State regulations – no minimum/10 fish creel			
Year	Mean no. of anglers in party	Mean trip length (hours)	Mean one-way distance traveled to ramp
1989	1.6	4.04	14 miles
1992	1.72	3.73	11 miles
2009	1.92	2.49	15 miles
2017	1.54	3.72	15 miles

Bass anglers on Spring Bayou averaged four hours per trip fishing after having driven approximately 15 miles to the ramp where they launched their boat in the 1989 survey. In 1992, average trip length fell to 3.73, but the creel survey was cut short when Hurricane Andrew hit the Atchafalaya Basin causing major fish kills. Fishing effort was extremely low during the remainder of 1992 following the hurricane. In the 2009 creel survey, average trip length fell to 2.49 hours. Fish kills caused by Hurricane Gustav in 2008 contributed to reduced angler catch as well. Participation by local Largemouth Bass anglers (Avoyelles and Rapides Parishes) made up the majority of fishermen interviewed.

Tables 7, 8, 9 and 10 below report the number of Largemouth Bass caught, released and harvested per trip by month during the 1989, 1992, 2009 and 2017 surveys. Catch rates were found to be the highest in the month of July in 1989. Number of bass harvested (431) is just above the number of bass released (429). In the 1992 survey, catch rates were highest in June and July with the average weight of bass to near 1.66 pounds. From August – December, no creel surveys (NC) were conducted due to Hurricane Andrew and related fish kills. In the 2017 survey, were highest in August and September with an average weight of bass at 1.2 pounds.

The average weight of a Largemouth Bass caught in the 1989 creel survey was 1.62 pounds. In the 2009 creel survey, angler catch was much reduced; likely due to excessive hydrilla growth and Hurricane Gustav-induced fish kills. In 2017, survey the average weight of Largemouth Bass caught was 1.47 pounds.

Tables 8, 9, 10 and 11. Largemouth Bass caught, released and harvested per trip by anglers on Spring Bayou, LA, during the 1989, 1992, 2009 and 2017 creel surveys. NC = no creel conducted. Minimum length limit = MLL.

Table 8. 1989 creel survey results.

State regulations – no MLL/10 fish creel (1989 Creel Survey)				
Month	Largemouth Bass caught / trip	Largemouth Bass released / trip	Largemouth Bass harvested / trip	Ave. weight
1	1.45	0.86	0.59	1.31
2	0.91	0.76	0.14	1.82
3	1.04	0.64	0.40	1.60
4	1.90	1.5	0.34	1.88
5	0.88	0.38	0.50	1.56
6	1.61	1.17	0.44	1.24
7	5.59	3.07	2.51	1.09
8	2.58	0.88	1.70	1.49
9	2.63	1.50	1.13	1.18
10	2.95	0.90	2.05	1.39
11	3.11	1.19	1.92	1.16
12	0.55	0	0.50	3.75

Table 9. 1992 creel survey results.

State regulations – no MLL/10 fish creel (1992 Creel Survey)				
Month	Largemouth Bass caught / trip	Largemouth Bass released / trip	Largemouth Bass harvested / trip	Ave. weight
1	0	0	0	0
2	1.41	1.18	0.22	1.82
3	0.67	0.27	0.44	1.60
4	0.74	0.17	0.56	1.88
5	2.51	1.59	0.92	1.71
6	2.82	1.66	1.16	1.40
7	2.89	1.88	1.01	1.58
8	NC	NC	NC	NC
9	NC	NC	NC	NC
10	NC	NC	NC	NC
11	NC	NC	NC	NC
12	NC	NC	NC	NC

Table 10. 2009 creel survey results.

State regulations – no MLL/10 fish creel (2009 Creel Survey)				
Month	Largemouth Bass caught / trip	Largemouth Bass released / trip	Largemouth Bass harvested / trip	Ave. weight
1	0	0	0	0
2	0.42	0.38	0.11	1.71
3	0.14	0	0	0
4	0	0	0	0
5	0	0	0	0
6	NC	NC	NC	NC
7	NC	NC	NC	NC
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0

Table 11. 2017 creel survey results.

State regulations – no MLL/10 fish creel (2017 Creel Survey)				
Month	Largemouth Bass caught / trip	Largemouth Bass released / trip	Largemouth Bass harvested / trip	Ave. weight
1	0.33	0.33	0	0
2	2.95	1.07	1.87	1.40
3	2.96	2.36	0.59	1.16
4	1.54	1.36	0.18	1.22
5	1.67	1.33	0.33	0.86
6	1.13	0.93	0.19	1.68
7	1.49	1.18	0.31	1.18
8	3.65	2.58	1.08	1.24
9	8.77	5.81	2.95	1.09
10	3.36	2.59	0.77	1.21
11	0	0	0	0
12	1.65	1.19	0.46	1.47

An access point creel survey was conducted in 2017 at Spring Bayou. There were high numbers of bass harvested between 12-14 inches with some bass exceeding 18 inches in length as shown in figure 22.

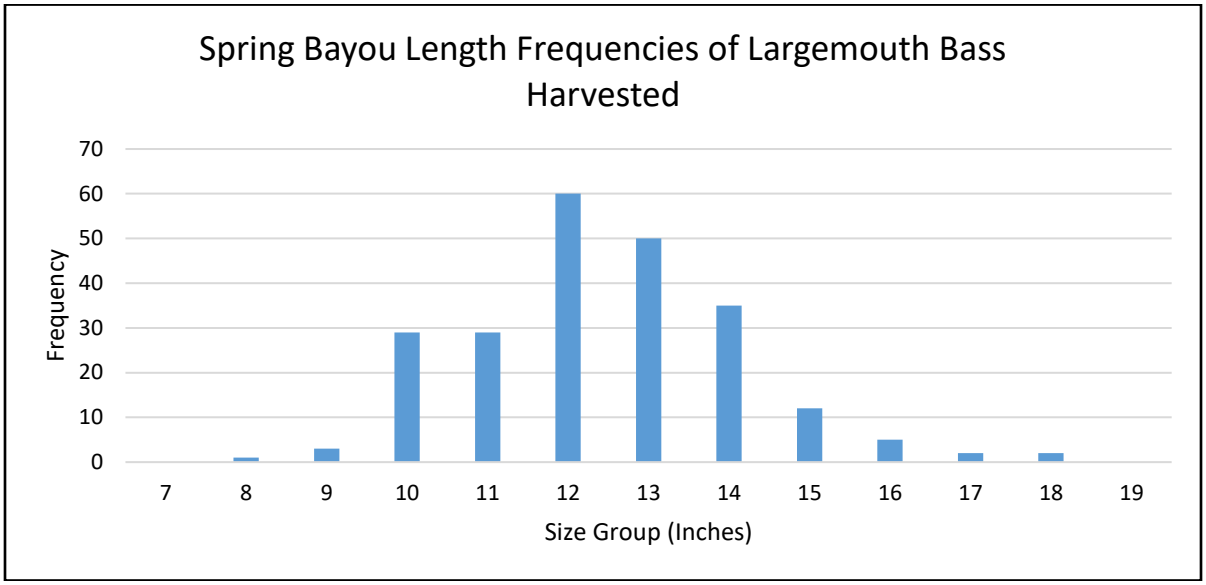

Figure 22. Largemouth Bass length frequencies from Spring Bayou creel survey 2017.

In 1989, although Largemouth Bass and crappie only averaged 19% and 16%, respectively, of total fish harvested from Spring Bayou, these two species are most pursued by Spring Bayou fishermen. Bluegill was the most abundant species harvested (61%) by anglers (Figure 23) throughout the creel year.

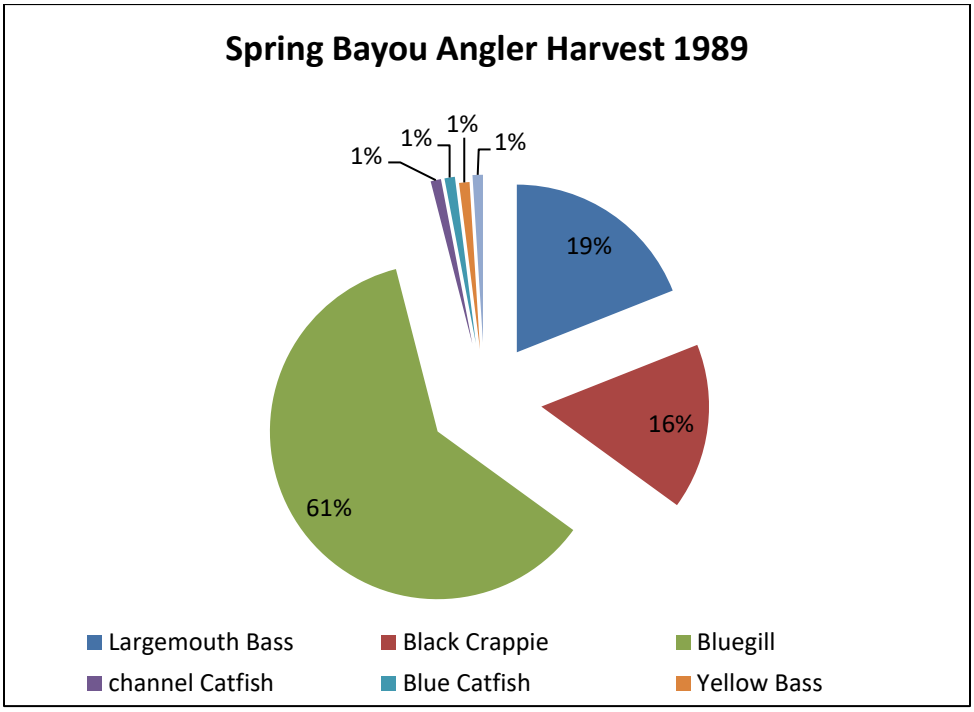

Figure 23. The percentage (%) by number of total fish species harvested by anglers from Spring Bayou, LA during the 1989 creel survey.

Bluegill was the most abundant species (45%) harvested during the 1992 creel survey as shown in Figure 24 below. This was followed by Black Crappie (19%), Largemouth Bass (17%) and Warmouth at 12%.

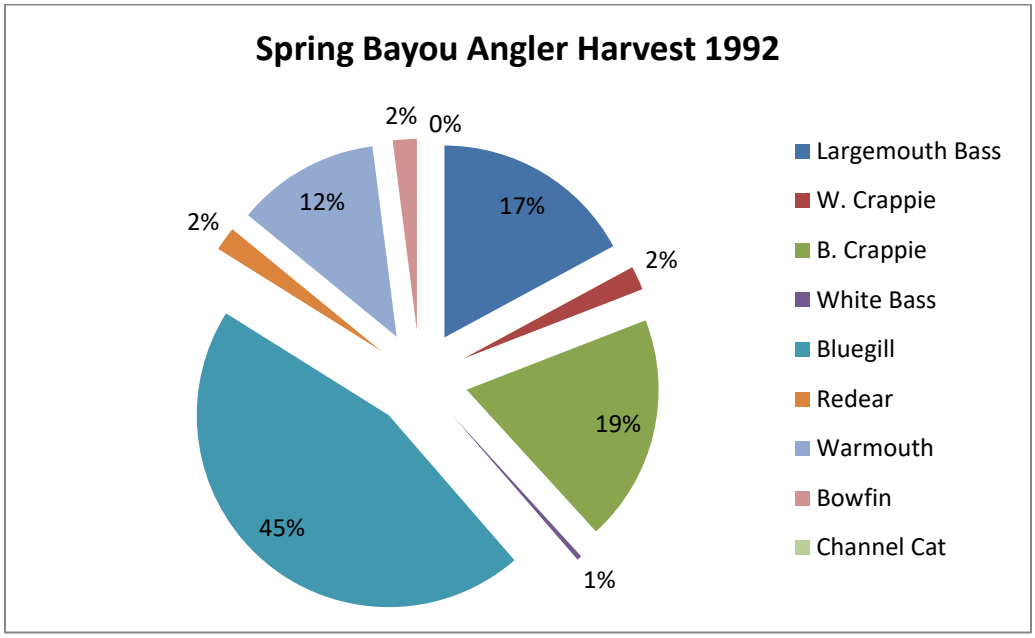

Figure 24. The percentage (%) by number of total fish species harvested by anglers from Spring Bayou, LA during the 1992 creel survey.

Few Largemouth Bass were harvested (1%) by anglers in the 2009 creel survey (Figure 25). Bluegill (54%) and Black Crappie (25%) were the two most abundant species. In lesser numbers harvested were Redear Sunfish (9%), Warmouth (8%), followed by White Crappie at 2%.

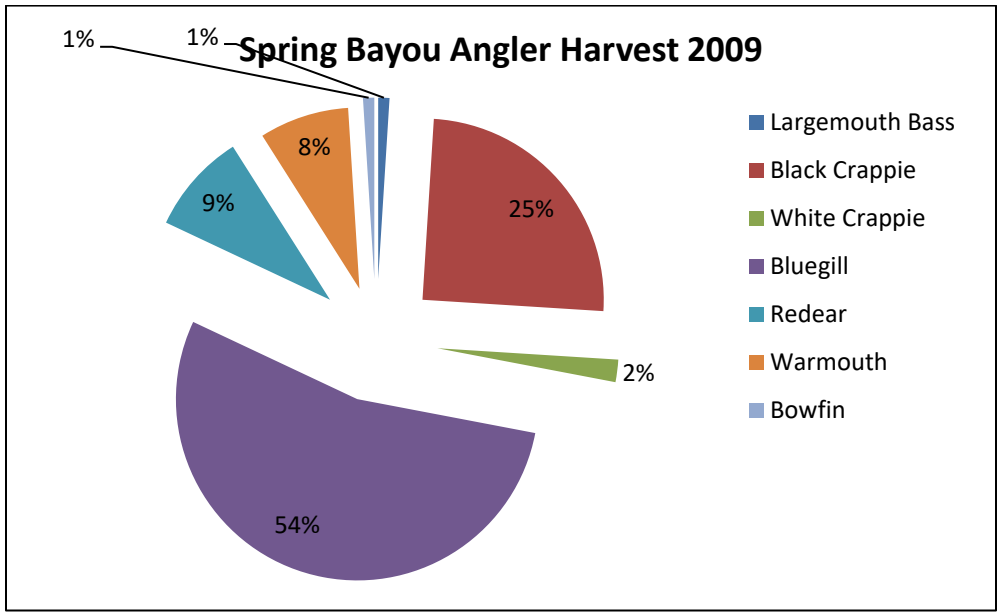

Figure 25. The percentage (%) by number of total fish species harvested by anglers from Spring Bayou, LA. during the 2009 creel survey.

Largemouth Bass and crappie were the most targeted by anglers during the 2017 creel survey as shown in figure 26.

Spring Bayou Interview Frequencies by Angler Target – 2017 Creel Survey			
Year	**Target**	**Number Interviews**	**Percent Interviews**
2017	Largemouth Bass	177	43.60
2017	Crappie	114	28.08
2017	Bream	73	17.98
2017	Anything	39	9.61
2017	Bowfin	3	0.74

Figure 26. Species frequencies targeted by anglers during Spring Bayou, LA, during the 2017 creel survey.

During Spring Bayou creel survey interviews in 2009, anglers were asked their opinion of current bass regulations. If the angler expressed disagreement with the regulation, they were asked to provide suggestions for change.

Table 12 below shows the results of those opinion questions. These results were compiled from Largemouth Bass anglers only. Highest percentage of approval (70%) was expressed for current regulations. Anglers who did not primarily pursue bass also responded with high approval of the current regulations. The majority of fishermen agreed with current Largemouth Bass regulations. During the 1989 and 1992 creel survey, an angler opinion survey was not conducted.

Table 12. Results of an angler opinion survey taken at boat ramp access points on Spring Bayou, LA during the 2009 creel survey.

Angler Opinion Survey Results		
Preference	Bass Anglers	All Anglers
	2009 n = 23	2009 n = 101
No length restriction	71%	91%
14” minimum	10%	0
12” minimum	14%	2%
No opinion	0	5%
14-17 slot limit	0	1%
Other Slot	2%	0
Other regulation	0	0
Other minimum	3%	1%

Sunfish species made up the greatest percentage of fish harvested in Spring Bayou during 1989, 1992 and 2009 (Table 13). Bluegill were most common, followed by Warmouth and Redear Sunfish.

Table 13. Percent by number of common sunfish species harvested by anglers on Spring Bayou, LA, during the 1989, 1992 and 2009 creel surveys.

Year	Bluegill	Redear Sunfish	Warmouth	Longear Sunfish
1989	99%	0.002%	0.002%	0.001%
1992	76%	3%	20%	1%
2009	76%	12%	12%	0

Crappies were harvested in the majority of the months during the 1989 creel survey (Figure 27). In the 1992 survey, crappie harvest was highest in February, followed by May and June. From August – December, no creel surveys were conducted on Spring Bayou due to Hurricane Andrew. District personnel were assisting with assessing the fish kills within the Atchafalaya Basin and continued to monitor fish populations for that year. In the 2009 survey, crappies were caught in the later part of the year especially during the August – October timeframe. Crappie numbers may have shown an increase in the 2009 survey, but due to personnel assisting another district with fisheries activities, the months of June and July were not surveyed. In later months of the creel survey, crappie harvest was minimal.

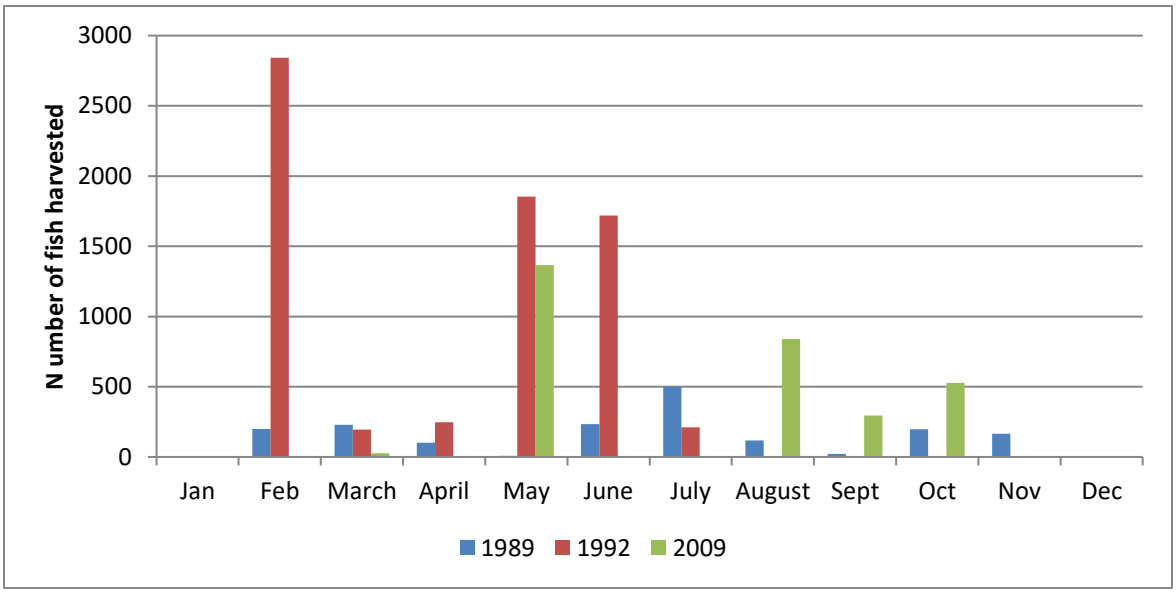

Figure 27. The total estimated number of crappies harvested by month and year by anglers on Spring Bayou, LA, during the 1989, 1992 and 2009 creel surveys.

Crappies harvested ranged from 7 -13 inches during the 2017 creel survey (Figure 28). Crappie in the 8- 11 inch group made up the majority of crappie harvested.

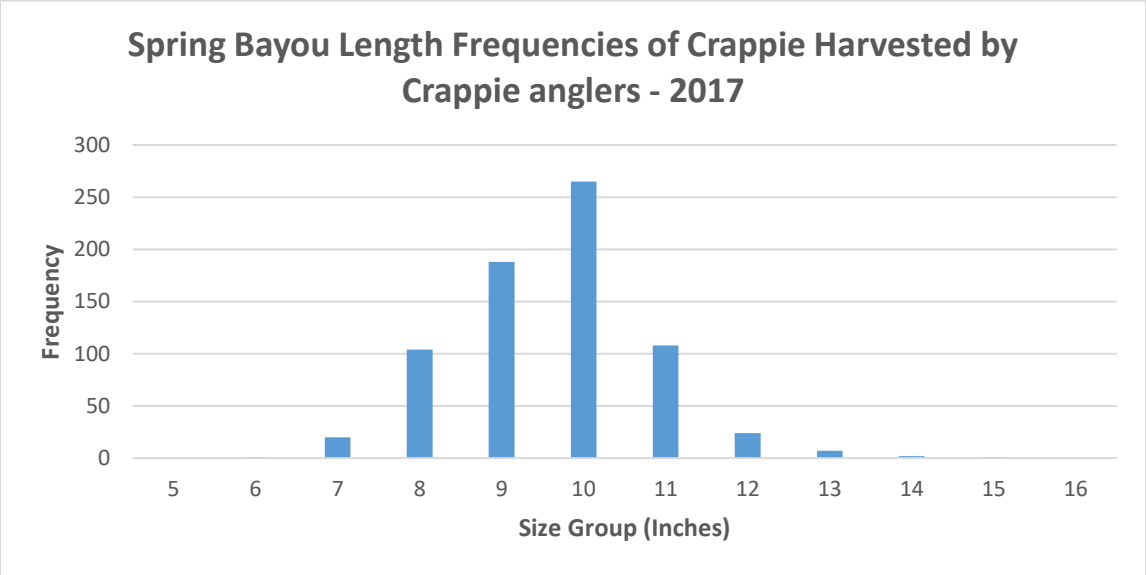

Figure 28. Total number crappie harvested by crappie anglers in Spring Bayou, LA during the 2017 creel survey.

Water Quality

Water quality parameters such as dissolved oxygen, temperature, pH, conductivity and depth were measured concurrent with other standardized sampling efforts, drawdown events and monthly site visits. Dissolved oxygen (DO) levels often fell below 2.0 mg/l on the lake bottom from 2005 – 2012 (Figure 29). This is due to excessive amounts of submerged vegetation such as hydrilla. In 2005 and 2008, surface and bottom readings fell below 2.0 mg/l due to the effects of Hurricanes Rita and Gustav. In 2011, dissolved oxygen levels fell well below 2.0 mg/l when Mississippi River floodwaters placed an additional 4 feet of water in Spring Bayou. Hypoxic conditions and fish kills occurred. In 2015, monthly water quality parameters were taken at three locations in the lake; one near the spillway, one at mid- lake and the other at the upper end of the lake (Tables 14 & 15). Readings were taken a 1-meter intervals beginning just below the surface to just above the bottom in areas, which represent the deeper parts of the lake. Water quality parameters include turbidity (NTU), water temperature (C*), Dissolved oxygen (ppm), conductivity (u mhos/cm), pH (in tenths), depth (meters), lake level and secchi depth (cm). In Figures 30 and 31 the average temperature and dissolved oxygen readings (surface) of the three stations show low DO's in November and December which may be related to stratification but the other months have above average readings.

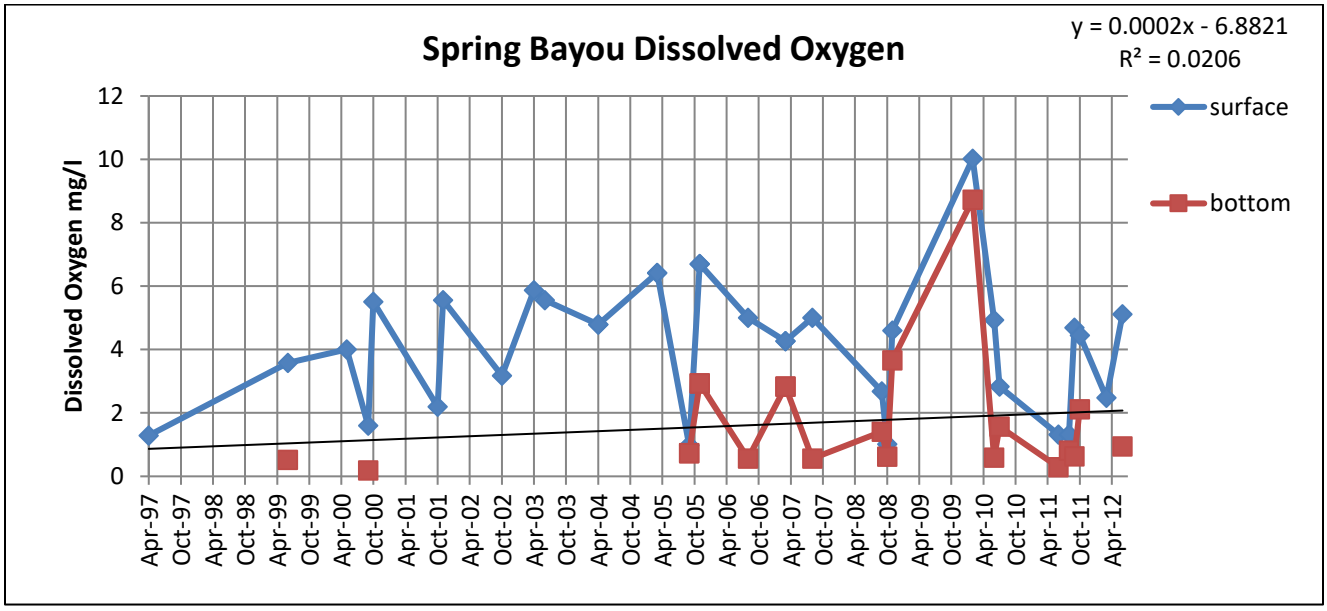

Figure 29. Dissolved oxygen measurements taken during standardized fisheries and random sampling events from Spring Bayou, Louisiana, during the years 1997-2012.

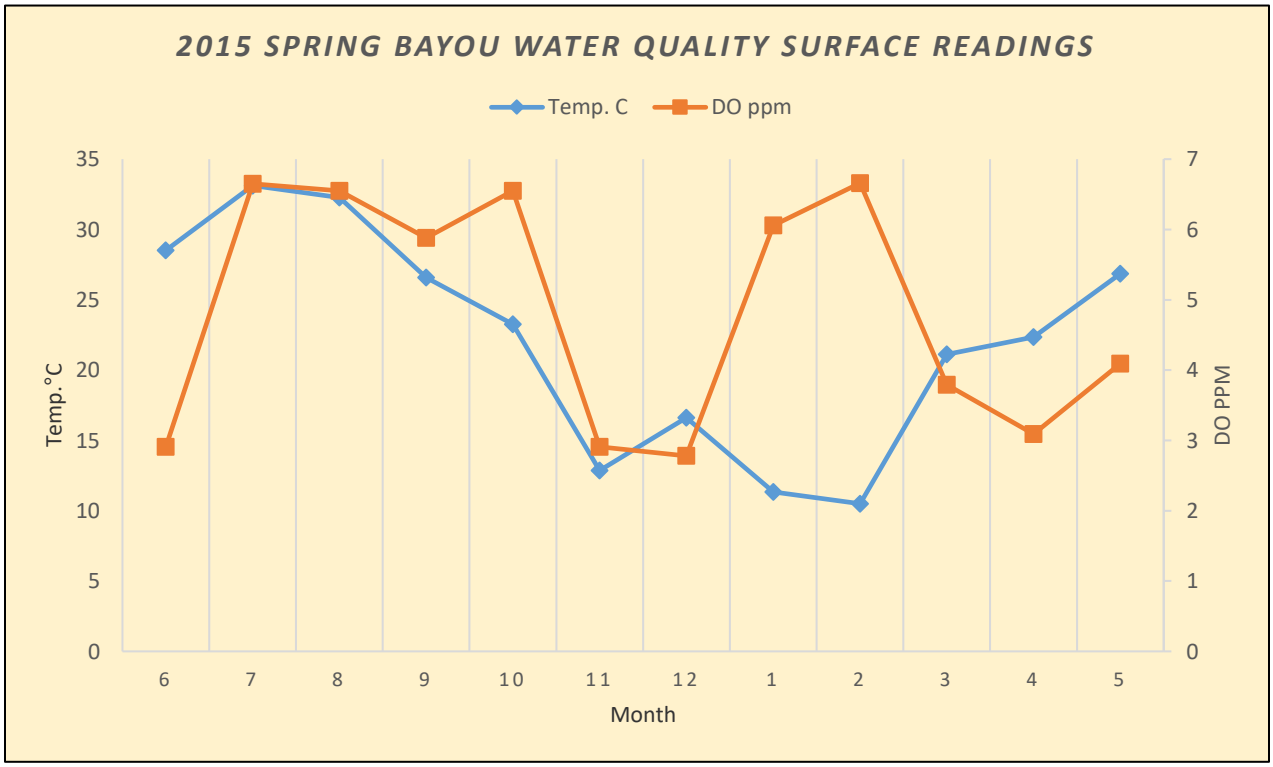

Figure 30. Surface temperature and dissolved oxygen readings by month for Spring Bayou during 2015.

Table 14. Actual water quality readings taken by station by month by parameter for Spring Bayou during 2015.

Spring Bayou Water Quality 2015

Jan. 11, 2015	Depth (m)	Temp. °C	D.O. ppm	PH	Turb. NTU	Conduct.
Station 1	0.194	11	5.6	9.5	47.6	0.071
Little River Bridge	1.191	11	5.7	9.65	49.7	0.071
	2.068	10.97	5.24	10.65	54.1	0.071
Station 2	0.102	11.86	7.03	8.61	14.4	0.079
Grand Bay	0.869	10.8	4.49	8.66	14.5	0.079
	1.854	10.56	1.02	8.91	14.8	0.078
Station 3	0.127	11.13	5.55	8.51	58.1	0.08
Tete de Bouef	1.899	10.58	5.61	8.57	46.4	0.078
	2.997	10.5	6.23	8.58	45.7	0.078
Feb. 18, 2015						
Station 1	0.161	10.41	7.6	9.23	20.6	0.086
	0.95	10.37	7.69	9.25	20.6	0.086
	1.98	10.15	7.88	9.48	40.6	0.086
Station 2	0.39	10.76	5.58	8.69	11.1	0.084
	1.47	10.14	4.78	8.83	22	0.084
Station 3	0.18	10.34	6.81	8.27	22.4	0.092
	2.38	9.53	5.92	8.29	40.5	0.092
	3.26	9.51	2.55	8.49	40.9	0.092
Mar. 18, 2015						
Station 1	0.123	20.4	2.98	8.47	29.3	0.08
	0.878	20.36	2.96	8.54	31.2	0.08
	1.88	20.36	3.04	8.7	32.2	0.08
Station 2	0.107	21.93	5.37	7.78	21.9	0.075
	0.893	20.97	2.3	7.85	36.1	0.082
	1.89	15.47	0.87	8.02	40	0.075
Station 3	0.209	21.03	3.03	7.34	42.2	0.095
	2.32	17.54	0.64	7.41	40.2	0.082
	3.39	15.36	0.84	7.4	40.2	0.086
Apr. 15, 2015						
Station 1	0.031	21.7	2.88	7.09	75.7	0.092
	0.92	21.47	2.91	7.08	78.2	0.092
	1.958	21.42	2.88	6.69	87	0.092
Station 2	0.024	22.75	3.37	6.75	12.3	0.089
	0.747	22.4	2	6.6	11.5	0.09
	1.679	21.9	0.7	6.27	10.6	0.09
Station 3	0.046	22.6	3.03	6.71	12.3	0.098
	1.885	21.98	2.05	6.66	12.6	0.096
	2.824	21.89	1.65	6.14	12.1	0.096
May 20, 2015						
Station 1	0.07	26.13	2.59	7.5	35	0.096
	0.867	25.95	2.38	7.66	36.5	0.096
	1.632	25.84	2.32	8.01	37.3	0.096
Station 2	0.022	27.37	5.23	6.91	9.4	0.082
	0.418	26.09	2.53	6.88	12.7	0.083
	1.534	24.23	0.56	7.18	12.2	0.088
Station 3	0.099	27.04	4.45	6.95	8.8	0.093
	1.369	25.63	1.74	6.62	11.8	0.102
	2.427	24.86	0.91	6.75	11.1	0.096
June 16, 2015						
Station 1	0.077	29.17	3.72	8.02	19.1	0.094
	0.87	28.5	2.59	8.19	19.1	0.094
	1.67	28.33	2.43	8.3	18.8	0.094
Station 2	0.043	27.9	2.94	7.3	6.8	0.088
	0.622	27.8	2.76	7.31	7.2	0.088
	1.25	27.5	2.36	7.43	7.7	0.088
Station 3	0.088	28.49	2.07	6.84	12.1	0.096
	1.25	28.05	1.26	6.78	12.2	0.096
	2.86	26.65	0.57	6.86	12	0.102

July 15, 2015	Depth (m)	Temp. °C	D.O. ppm	PH	Turb. NTU	Conduct.
Station 1	0.094	32.4	4.99	8.18	12.1	0.112
	0.796	31.77	3.56	8.35	13.3	0.112
	1.787	31.75	2.74	8.56	17.1	0.112
Station 2	0.032	33.42	9.19	7.86	15.5	0.09
	0.494	32.2	5.57	7.87	13.9	0.09
	1.045	31.87	3.6	8.04	13.7	0.091
Station 3	0.054	33.54	5.78	7.34	12.7	0.139
	1.283	31.78	3.38	7.3	14.8	0.146
	2.323	31.14	1.68	7.35	17.2	0.149
Aug. 13, 2015						
Station 1	0.59	31.17	2.78	8	14	0.188
	0.74	31.01	2.06	8.2	14	0.119
	1.56	30.8	0.84	8.6	15.8	0.139
Station 2	0.058	32.85	8.86	7.89	14.6	0.097
	0.56	32.02	3.55	7.92	13	0.099
	0.997	31.85	2.31	7.98	13.5	0.099
Station 3	0.131	32.84	8.01	7.28	16.2	0.152
	1.33	31.63	3.01	7.25	15.1	0.155
	2.59	31.37	1.53	7.52	14.9	0.158
Sept. 16, 2015						
Station 1	0.11	26.38	5.37	7.85	17.3	0.108
	0.769	25.89	4.14	7.95	26.1	0.108
	1.55	25.83	4.02	7.97	33.3	0.108
Station 2	0.206	26.78	6.94	8.41	19.1	0.101
	0.976	26.19	4.78	8.59	22.5	0.102
Station 3	0.099	26.6	5.35	8.13	14.9	0.144
	1.033	26.05	3.51	8.16	14.9	0.143
	2.085	25.95	2.73	8.23	21.5	0.145
Oct. 15, 2015						
Station 1	0.097	22.13	6.84	9.18	21.4	0.098
	1.128	21.91	5.94	9.45	24.1	0.098
Station 2	0.095	23.98	7.69	8.57	20.6	0.104
	0.71	22.99	5.8	8.77	23.4	0.104
Station 3	0.076	23.68	5.13	7.96	17.3	0.315
	1.008	23.08	4.25	7.98	17.7	0.136
	2.019	22.47	3.47	8.47	23.4	0.14
Nov. 24, 2015						
Station 1	0.177	12.36	2.87	8.18	18.4	0.089
	1.535	12.33	2.91	8.13	18.2	0.089
	2.584	12.31	3.06	8.43	19.1	0.089
Station 2	0.141	13.58	3.03	8.1	12.2	0.083
	0.974	13.49	2.6	7.98	13.2	0.083
	1.907	12.25	0.85	8.24	14	0.076
Station 3	0.597	12.68	2.85	7.83	18.3	0.082
	1.785	12.36	2.52	7.7	18.4	0.081
	3.047	12.13	1.98	8.02	17.8	0.079
Dec. 15, 2015						
Station 1	0.073	15.9	2.6	8.36	25.4	0.103
	0.963	15.74	2.59	8.35	27.1	0.102
	2.018	15.64	2.84	8.53	27.1	0.102
Station 2	0.026	17.19	2.89	7.84	9.7	0.092
	0.823	16.93	1.97	8.16	9.7	0.092
	1.433	16.21	1.33	8.33	9.6	0.093
Station 3	0.065	16.75	2.85	7.34	7.7	0.094
	1.278	16.23	2.49	7.47	7.8	0.093
	2.454	16.09	2.52	7.69	8.6	0.093

Table 14. Water quality sampling dates and water levels. Pool stage is 41.0 ft. (msl).

DATE	POOL STAGE
Jan. 11, 2016	42.5’
Feb. 18, 2015	41.5
Mar. 18, 2015	43.0
Apr. 15, 2015	42.3
May 20, 2015	42.0
June 16, 2015	42.0
July 15, 2015	41.3
Aug. 13, 2015	40.7
Sept. 16, 2015	40.5
Oct. 15, 2015	39.6
Nov. 24, 2015	43.0
Dec. 15, 2015	42.5

HABITAT EVALUATION

Aquatic Vegetation

Aquatic vegetation has historically restricted Spring Bayou boating and angler access. In 1994, hydrilla was discovered. The plant covered 75% of the surface area of Spring Bayou within two years. A 1996 fall drawdown was unsuccessful due to high water. A 1997 summer/fall drawdown provided limited control. Drawdowns recommended by LDWF after 1997 were not supported by the local public.

Contact and systemic herbicides (fluridone - Sonar®) and triploid Grass Carp have been used in the past to combat the spread of hydrilla in Spring Bayou. Successive annual applications of systemic herbicides have reduced hydrilla growth in the treated areas. Giant salvinia (*Salvinia* molesta) was first observed in Spring Bayou in 2017. Control of giant salvinia has consisted of contact and systemic herbicided. A complete record of spray efforts in Spring Bayou can be found in the Spring Bayou Aquatic Vegetation Control Plan, and type map archives can be found in Spring Bayou MP-C.

In 2019, foliar herbicide applications were made on nuisance plants such as water hyacinth, water primrose, alligator weed, and common and giant salvinia in Spring Bayou. A total of 512 gallons were applied to 660 acres. Foliar applications of 2,4-D (0.5 gal/acre) were used to control water hyacinth and water primrose. A mixture of diquat dibromide (0.25 gal/acre) and glyphosate (0.75 gal/acre) with a methylated vegetable oil (0.25 gal./acre) surfactant was used to control common and giant salvinia. Arsenal (0.5 gal/acre) was used to control alligator weed.

In 2020, foliar herbicide applications were made on nuisance plants such as water hyacinth, water primrose, alligator weed, American lotus, water pennywort, and common and giant salvinia in Spring Bayou. A total of 507 gallons were applied to 783 acres. Foliar applications of 2,4-D (0.5 gal/acre) were used to control water hyacinth, A. lotus, water pennywort and water primrose. A mixture of diquat dibromide (0.25 gal/acre) and glyphosate (0.75 gal/acre) with a methylated vegetable oil (Turbulence, 0.25 gal./acre) surfactant was used to control common and giant salvinia from April 1 – October 31. Diquat dibromide (0.75 gal/acre) was applied to control common/giant salvinia outside of that time frame. Imazapyr (Arsenal,0.5 gal/acre) was used to control alligator weed.

Plant Coverage Estimates as of November 2020

- Hydrilla - 0 acres
- water hyacinth - 250 acres
- water pennywort - 75 acres
- water primrose - 100 acres
- alligator weed - 125 acres
- common salvinia - 50 acres
- giant salvinia – 750 acres
- American lotus - 25 acres
- duckweed - 50 acres
- frog’s bit - 25 acres

- hydrilla, coontail & fanwort – There is no submersed vegetation currently in the lake
- alligator weed, water hyacinth & water primrose - up to 300 acres mixed and located primarily along the shoreline on lower end of lake
- common/giant salvinia - up to 700 acres located throughout the lake.
- duckweed & frog's Bit - 65 acres located primarily along shoreline on the upper end of the lake.

Substrate

Excessive accretion has reduced the quality of nesting substrate in Spring Bayou. Accretion rate has increased markedly with the introduction of invasive aquatic vegetation.

CONDITION IMBALANCE / PROBLEM

1. The natural water fluctuation cycle of Spring Bayou (i.e., spring flood pulse and fall low water) was altered in 1955 with the construction of the spillway on the Little River.

2. Benefits of the natural water fluctuation cycle (i.e., increased sportfish nesting success and aquatic vegetation control) have been compromised.

3. Invasive species including hydrilla, common salvinia, giant salvinia and water hyacinth have been introduced into Spring Bayou.

4. Lake drawdowns to mimic natural water level fluctuation are unpopular with users of Spring Bayou.

5. Physical limitations reduce water flow and increase time necessary to dewater the Spring Bayou system. Time necessary for drying substrate is limited to the degree that benefits are minimized.

CORRECTIVE ACTION NEEDED

1. Re-establishment and/or simulation of the natural water fluctuation cycle could provide substantial improvements to habitat, sportfish populations, and angler access.

2. Dredging is necessary to allow adequate water flow for water fluctuation. Areas that require dredging are Boggy Bayou and a portion of Little River.

3. Increased public information efforts are needed to explain the benefits of water fluctuation and the application necessary to achieve a healthy Spring Bayou.

4. All available control measures must be applied in an effort to control excessive aquatic vegetation in Spring Bayou.

RECOMMENDATIONS

1. An approach of integrated control measures (chemical, physical, and biological) is recommended to manage aquatic vegetation in Spring Bayou. The advantage of a combined approach is the ability to achieve benefits from several control methods and not be completely dependent on the success of any one approach.

2. Herbicide applications will continue to be conducted as per the standard operating procedure for the application of herbicides by LDWF aquatic plant control personnel (Table 15).

3. LDWF personnel will monitor aquatic vegetation coverage on an annual schedule. Sampling will also be conducted to monitor survival, growth, and effectiveness of stocked Triploid Grass Carp. Subsequent TGC stockings will be conducted as necessary.

4. Dredge as necessary in Boggy Bayou and Little River to facilitate water flow and to increase effectiveness of fall drawdowns.

5. Water level fluctuation is an important tool for lake management. Drawdowns mimic natural low water periods of the fall and can provide many of the same benefits including aquatic vegetation control and fish population management. Cooler water temperatures in the fall also reduce the potential for fish kills. Consistent drawdown regimes will allow the introduced TGC to reduce hydrilla infestations. Therefore, if and when dredging is complete it is recommended that a drawdown of four feet below pool stage (37 msl) be conducted every 3 years, beginning the day after Labor Day. The target water level is to be maintained until the end of December, when the gates will be closed to allow the lake to refill. The lake will remain open for recreational activities during a drawdown.

6. Continued sampling will be conducted to monitor fisheries and aquatic vegetation status.

Table 15. Aquatic Herbicide Application Procedures.

Plant Species	Herbicide	Surfactant
***Salvinia spp*. Alternative 1** Common/Giant Salvinia (April 1 to October 31)	Glyphosate (0.75 gal/acre) Diquat (0.25 gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
***Salvinia spp*. Alternative 2** Common/Giant Salvinia (April 1 to October 31)	Glyphosate (0.75 gal/acre) Flumioxazin (2 oz./acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
***Salvinia spp*. Alternative 3** Common/Giant Salvinia (April 1 to October 31)	MSM (1 oz./acre) Flumioxazin (1 oz./acre)	Turbulence (or approved equivalent, 0.25 gal/acre)

***Salvinia spp*. Alternative 4** Common/Giant Salvinia (November 1 to March 31)	Diquat (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)
***Salvinia spp*. Alternative 5** Common/Giant Salvinia (November 1 to March 31)	Flumioxazin (12 oz./acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Water Hyacinth	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
Water Hyacinth in waiver areas (March 15 to September 15)	Glyphosate (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)
Alligator Weed/Giant Cut Grass (undeveloped areas)	Imazapyr (0.5 gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Alligator Weed/Giant Cut Grass (developed areas)	Imazamox (0.5 gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
American Lotus	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
American Lotus in waiver areas (March 15 to September 15)	Glyphosate (0.5 gal/acre)	Nonionic surfactant (0.25 gal/acre)
American Lotus in waiver areas with potable water intakes (March 15 to September 15)	Triclopyr (0.5gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Duckweed	Diquat (1.0 gal/acre) or Flumioxazin (8 oz./acre)	Nonionic surfactant (0.25 gal/acre) or Turbulence (or approved equivalent, 0.25 gal/acre)
Cuban Bulrush (sedge)	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
Cuban Bulrush (sedge) in waiver areas	Glyphosate (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)

(March 15 to September 15)		
Water Lettuce	Diquat (1.0 gal/acre) or Flumioxazin (6 oz./acre)	Nonionic surfactant (0.25 gal/acre) or Turbulence (or approved equivalent, 0.25 gal/acre)

APPENDIX I

§112. Prohibit the Use and Possession of Gill Nets and Trammel Nets; Prohibit the Taking of Grass Carp

A. No person shall use or possess any gill net or trammel net in the areas designated below as restricted areas. No person shall take or sell any fish taken with the prohibited gear. Additionally, no person shall take or possess any Triploid Grass Carp within the restricted areas.

1. Restricted areas:

a. Spring Bayou Wildlife Management Area (WMA), Avoyelles Parish;

b. Old River, Avoyelles Parish;

c. Little River, Avoyelles Parish.

B. Violation of the provisions of this Section constitutes a class two violation.

AUTHORITY NOTE: Promulgated in accordance with R.S.

56:21, R.S. 56:22.

HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 34:886 (May 2008).

Editor's Note: In §113. A.10,

APPENDIX II

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES
5652 HWY 182
OPELOUSAS. La. 70586

Commercial Fish Report

Name of Permit Holder: _____

Commercial Fish Lic. #: _____

Fish Report for Month of: _____

Date of Report: _____

	Grassy Lake WMA	Pomme De Terre WMA	Spring Bayou WMA
Special permit # for			
Number of days fished			
Catfish	Lbs.	Lbs.	Lbs.
Buffalo	Lbs.	Lbs.	Lbs.
Carp	Lbs.	Lbs.	Lbs.
Gar	Lbs.	Lbs.	Lbs.
Freshwater Drum (Goo)	Lbs.	Lbs.	Lbs.
Shad	Lbs.	Lbs.	Lbs.
Suckers	Lbs.	Lbs.	Lbs.
Turtles	Lbs.	Lbs.	Lbs.
Other	Lbs.	Lbs.	Lbs.
Totals	Lbs.	Lbs.	Lbs.