CHRONOLOGY

June 2014 - Prepared by
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October 2017 – Updated by
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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Sportsfish 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.

Commercial
Cane River Lake does not support significant numbers of fish species that normally comprise a commercial fishery. Catfish, spotted gar, freshwater drum and bowfin are present in the lake and are managed to provide sustainable populations.

Species of Special Concern
Paddlefish, *Polyodon spathula* are known to occur in this reservoir likely due to the presence of Natchitoches Federal Fish Hatchery on the shoreline of the lake. It is possible for young specimens to inadvertently escape during hatchery operations.

EXISTING REGULATIONS

Recreational Fishing Regulations
Statewide recreational fishing regulations are in effect at Cane River Lake. Recreational fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/regulations

Commercial Fishing Regulations
Statewide commercial fishing regulations are in effect at Cane River Lake. Louisiana’s commercial fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/regulations

SPECIES EVALUATION

Recreational Species

*Largemouth Bass*

Angler harvest and effort
A creel survey was initiated in January 1989 to determine angler effort and catch rates. This access point survey was conducted on four weekend days and two weekdays per month during the calendar year of 1989. In 1996, a second access point creel survey was conducted for an eight-month period from March to October. The survey dates included four weekend days and two weekdays each month. The third and latest access point creel survey was conducted for a twelve-month period from January to December of 2016, and included four weekend days and two weekdays each month. It should be noted that the latest creel survey did not include boat trailer counts at the beginning of each survey; data that is used to extrapolate the total number
of LMB anglers, and LMB caught, harvested and released for a full 365-day period.

The largemouth bass (LMB) fishery is an important component of Cane River Lake. Anglers logged 63,652 hours fishing on Cane River Lake in 1989 with 53,792 hours (84.5%) directed toward largemouth bass. Specific results derived from analysis of largemouth bass angler information gathered during the three creel surveys are given in Table 1.

Table 1. Largemouth bass angler information taken from creel surveys conducted at Cane River Lake, Louisiana in 1989, 1996 and 2016.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF LARGEMOUTH BASS ANGLERS</td>
<td>12,462</td>
<td>10,125</td>
<td>353</td>
</tr>
<tr>
<td>MEAN NUMBER OF ANGLERS IN PARTY</td>
<td>1.77</td>
<td>1.83</td>
<td>1.67</td>
</tr>
<tr>
<td>MEAN TRIP LENGTH (HOURS)</td>
<td>4.19</td>
<td>5.14</td>
<td>4.61</td>
</tr>
<tr>
<td>MEAN ONE-WAY DISTANCE TRAVELED (MILES)</td>
<td>35</td>
<td>38</td>
<td>29</td>
</tr>
</tbody>
</table>

Creel survey data were used to determine bass angler catch statistics. These values are useful in assessing angler success and angler harvest. Catch statistics for largemouth bass anglers are shown in Table 2.


<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>NUMBER LMB CAUGHT</td>
<td>15,203</td>
<td>23,567</td>
<td>914</td>
</tr>
<tr>
<td>NUMBER LMB HARVESTED</td>
<td>9,336 (61.4% of catch)</td>
<td>14,832 (63% of catch)</td>
<td>230 (26.96% of catch)</td>
</tr>
<tr>
<td>NUMBER LMB RELEASED</td>
<td>5,866 (38.6% of catch)</td>
<td>8,735 (37% of catch)</td>
<td>623 (73.04% of catch)</td>
</tr>
<tr>
<td>POUNDS LMB HARVESTED</td>
<td>13,797</td>
<td>22,737</td>
<td>322.61</td>
</tr>
<tr>
<td>AVERAGE WEIGHT PER LMB (POUNDS)</td>
<td>1.66</td>
<td>1.43</td>
<td>1.34</td>
</tr>
<tr>
<td>LMB CAUGHT PER TRIP</td>
<td>2.33</td>
<td>2.48</td>
<td>2.23</td>
</tr>
<tr>
<td>LMB HARVESTED PER TRIP</td>
<td>1.32</td>
<td>1.34</td>
<td>0.78</td>
</tr>
<tr>
<td>LMB CAUGHT PER HOUR</td>
<td>0.50</td>
<td>0.48</td>
<td>0.50</td>
</tr>
<tr>
<td>LMB HARVESTED PER HOUR</td>
<td>0.28</td>
<td>0.25</td>
<td>0.17</td>
</tr>
</tbody>
</table>
Size distributions (in inch groups) for largemouth bass harvested by bass anglers during creel surveys conducted at Cane River Lake, Louisiana are shown in Figure 1.

<table>
<thead>
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<tbody>
<tr>
<td>6</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>8</td>
<td>4</td>
<td>5</td>
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<td>22</td>
<td>25</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

Figure 1. The size distributions (inch groups) of largemouth bass harvested by bass anglers during creel surveys at Cane River Lake, LA 1989, 1996 and 2016.

The creel data indicates that bass anglers harvested approximately 62% of all bass caught in 1989 and 1996. However, LMB harvest rates declined 20 years later in 2016 to 27% of all bass caught. The median length for largemouth bass harvested by bass anglers was 13 inches for surveys in 1989 and 1996, and 13.53 inches in 2016.

**Relative abundance and relative weight**

Analysis of electrofishing data from Cane River Lake reveals the presence of a stable largemouth bass population that exhibits slight fluctuations in abundance over time. Stock-, quality- and preferred-size bass demonstrate a slight increase in abundance from 2012 to 2015 and then a slight decrease in abundance from 2015 to 2017.

The catch-per-unit-effort (CPUE) values for selected largemouth bass size groups collected during spring electrofishing sampling are shown in Figure 2.
Figure 2. The CPUE for largemouth bass of stock-, quality- and preferred-size largemouth bass collected during spring electrofishing at Cane River Lake, LA from 2001 to 2017.

Average relative weights (Wr) of largemouth bass sampled from Cane River Lake during fall electrofishing in 2001, 2003, 2005, 2007 and 2013 are stock-size – 91, quality-size – 93.7, preferred-size – 96.2 and memorable-size – 96.1, respectively. Relative weights for largemouth bass by size group are depicted in Figure 3.

Figure 3. Relative weights of largemouth bass collected at Cane River Lake, LA during fall electrofishing during from 2001, 2003, 2005, 2007 & 2013.
When comparing relative weights for largemouth bass collected in 2013 to the average Wr of the previous four sample periods, Wr for stock-size fish decreased by 6.2%, Wr for quality-size fish decreased by 4.1%, and Wr for preferred-size fish decreased by 1.25%. Relative weight values for largemouth bass of stock-size and quality-size fish show a downward trend since 2001 while relative weight values for preferred-size and memorable-size largemouth bass show an increase during the same period.

Largemouth bass genetics
Cane River Lake was stocked with 35,000 Florida strain largemouth bass fingerlings in 1993. Florida strain largemouth bass were stocked into the reservoir to incorporate a genetic trait associated with larger maximum sized adult fish. It should be noted that Florida strain largemouth bass may inadvertently escape the Natchitoches National Fish Hatchery during operations. Genetic samples taken from the bass population in 2017 indicate that the percentage of LMB with the Florida influence (F1 - Fx) was 22.3 percent, while largemouth bass with the genetic signature defined as pure Florida comprised 2.1 percent (Table 3).

Table 3. Genetic analysis of largemouth bass collected from Cane River Lake, LA.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Northern</th>
<th>Florida</th>
<th>Hybrid</th>
<th>Florida Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>84</td>
<td>75%</td>
<td>6%</td>
<td>19%</td>
<td>25%</td>
</tr>
<tr>
<td>2015</td>
<td>139</td>
<td>73.3%</td>
<td>2.2%</td>
<td>24.5%</td>
<td>26.7%</td>
</tr>
<tr>
<td>2016</td>
<td>152</td>
<td>69.1%</td>
<td>7.9%</td>
<td>23.0%</td>
<td>30.9%</td>
</tr>
<tr>
<td>2017</td>
<td>94</td>
<td>77.7%</td>
<td>2.1%</td>
<td>20.2%</td>
<td>22.3%</td>
</tr>
</tbody>
</table>

Sunfish (Bluegill & Redear)
Sunfish anglers comprise a small portion of the total angler group at Cane River Lake. Annual catch information for bluegill sunfish appears in Table 4.

Table 4. Bluegill harvest data collected during annual creel surveys at Cane River Lake, Natchitoches Parish, Louisiana. Estimates are for bream anglers.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>NUMBER BLUEGILL CAUGHT</td>
<td>18,320</td>
<td>18,320</td>
<td>73,898</td>
<td></td>
</tr>
<tr>
<td>NUMBER BLUEGILL HARVESTED</td>
<td>18,320 (100% of catch)</td>
<td>73,898 (100% of catch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POUNDS HARVESTED</td>
<td>2.878</td>
<td>2.878</td>
<td>15.625</td>
<td></td>
</tr>
<tr>
<td>AVERAGE WEIGHT PER BLUEGILL (POUNDS)</td>
<td>0.14</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLUEGILL CAUGHT PER TRIP</td>
<td>17.7</td>
<td>17.7</td>
<td>12.0</td>
<td></td>
</tr>
<tr>
<td>BLUEGILL CAUGHT PER HOUR</td>
<td>6.3</td>
<td>6.3</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>BLUEGILL HARVESTED (NUMBER PER HOUR)</td>
<td>6.3</td>
<td>6.3</td>
<td>2.76</td>
<td></td>
</tr>
<tr>
<td>BLUEGILL HARVESTED (POUNDS PER HOUR)</td>
<td>1.09</td>
<td>1.09</td>
<td>0.53</td>
<td></td>
</tr>
</tbody>
</table>
Crappie
Relative abundance and size structure indices
Crappies are present in Cane River Lake and provide recreational opportunity for anglers. Crappie were sampled with gillnets during seven periods between 2000 and 2017. Total catch-per-unit-of-effort (number of fish caught per hour) values are given in Figure 4.

![Figure 4: CPUE (number caught/100'net night) of white and black crappie with gillnets from Cane River Lake, LA in 2000-2002, 2006-2007, 2011-2014 and 2016-2017.](image)

These results indicate the presence of a stable to increasing population of crappie in Cane River Lake. They indicate a slightly higher frequency of occurrence of white crappie than black crappie until 2016 and 2017. The cumulative catch per unit effort for white crappies was 0.29 fish compared to 0.47 fish for black crappies. The crappie population of Cane River Lake appears to follow a cyclical pattern often observed in waterbodies statewide.

Angler harvest and effort
Crappie anglers were interviewed as part of the previously mentioned creel surveys. However, no crappies were recorded in either of the first two survey periods. Of the 374 total anglers interviewed in the 2016 creel, 21 were reported as crappie anglers (6%). A total of 80 crappie were observed in angler catches during the survey. All were black crappie with the 8-inch size category being the most prevalent.
Catfish

While each of the three major species of catfish, channel catfish (*Ictalurus punctatus*), blue catfish (*Ictalurus furcatus*), and flathead catfish (*Pylodictis olivaris*), are found in this reservoir, channel catfish is the most abundant species. To increase recreational angling opportunity, LDWF stocked sixty adult flathead catfish into the lake in 2005 and 4,009 channel catfish fingerlings in 2009. Gillnetting results for the three species of catfish are shown in Figures 5 and Figure 6.

![Figure 5. Total CPUE (pounds per net night) of channel catfish, blue catfish and flathead catfish collected in Cane River Lake, LA by gillnet sampling 2000-2002, 2006-2007, 2011-2014 and 2016-2017.](image-url)

**Forage**

Forage fish are those that are available for use as food by predatory fishes. In general, all individuals up to six inches in length are forage fish, particularly when discussing forage for largemouth bass. Forage sampling conducted by electrofishing in the fall of 2016 resulted in an average of 147.72 pounds per hour of forage fishes equal to or less than six inches in length. Figure 7 depicts forage results for number caught from 2013, 2015 and 2016.

Figure 7. Number by species of forage fish collected per hour during fall electrofishing at Cane River Lake, LA in 2013, 2015 and 2016.
Commercial Species
Data collected with standardized gillnets is presented in Figures 8 - 11. Standardized gillnet sampling involves the use of 100 yards each of 2.5 inch, 3 inch, 3.5 inch and 4-inch monofilament gill nets at each station.

*Carp*
While common carp (*Cyprinus carpio*) are not subject to species specific management, they are considered commercial species. Figure 8 depicts total CPUE of common carp collected in gillnets at Cane River Lake.

![Figure 8](image_url)


*Freshwater Drum*
Freshwater drum (*Aplodinotus grunniens*) is occasionally collected during standardized sampling at this lake. Abundance of this species remains relatively low. Catch data from standardized gillnets is presented in Figure 9.

Bowfin
Bowfin (Amia calva) is not a major commercial species in Cane River Lake. Bowfins are occasionally collected during standardized sampling. The CPUE for bowfins collected in gillnets is depicted in Figure 10.

Garfish
Spotted gar (*Lepisosteus oculatus*) is the only species of garfish that occur in this reservoir. The CPUE for spotted gar collected in gillnets is depicted in Figure 11.

![Figure 11. Total CPUE (pounds/100'/pet night and number/100'/net night) of spotted gar. taken by gillnet sampling at Cane River Lake, LA during sampling periods 2000-2002, 2006 – 2007, 2011, 2014 and 2016-2017.](image)

Species of Special Concern
Paddlefish (*Polyodon spathula*) occur in gillnetting records from this reservoir. This is likely due to the presence of a Natchitoches Federal Fish Hatchery on the lake. It is possible for young paddlefish to inadvertently escape during hatchery operations. The CPUE for paddlefish collected in gillnets is depicted in Figure 12.
HABITAT EVALUATION

Aquatic Vegetation
For many years, the most problematic aquatic plant species at Cane River Lake was water hyacinth (*Eichhornia crassipes*). Herbicide treatments directed toward this species comprised 36% of all acreage treated by LDWF during the period 2005-2013. However, water hyacinth coverage has been minimal since 2010.

In recent years, submerged aquatic vegetation has become more problematic at Cane River Lake. In 2010, LDWF cooperated with the Cane River Waterway Commission to treat 63 acres of coontail (*Ceratophyllum demersum*) and spatterdock (*Nuphar luteum*) in the upper end of the lake with Aquathol K at a rate of 10 gallons per surface acre. The Aquathol K was provided by the commission and applied by LDWF.

In 2011, LDWF cooperated with the Cane River Waterway Commission to treat 60.6 acres of hydrilla (*Hydrilla verticillata*) in the lower end of Cane River Lake. The Aquathol K was provided by the commission and applied by LDWF via injection at a rate of 15 gallons per surface acre.

In May 2013, LDWF assisted the Cane River Waterway Commission in the treatment of coontail. The treatment area included 236 surface acres along 18 miles of shoreline. A total of 5,500 gallons of Aquathol K was used. The chemical concentration used was 2.0 ppm of
Endothall. Chemicals for this treatment were purchased by the Commission and applied by LDWF.

Each of the three Aquathol K treatments made at Cane River Lake in years 2010, 2011 and 2013 was effective in reducing the coverage of submerged aquatic vegetation.

In April 2013, giant salvinia (Salvinia molesta) was discovered in Cane River Lake near the Shell Beach boat ramp by LDWF staff during standardized fisheries sampling. LDWF staff removed approximately one gallon of plant material by means of dip nets. Subsequently, a LDWF spray crew made foliar herbicide applications to the general area to ensure removal of the plant. The Cane River Patrol was notified regarding the discovery and was advised to remain vigilant in monitoring the area.

The giant salvinia found in Cane River Lake most likely originated from a boat trailer in the Shell Beach parking lot. LDWF staff noted a boat trailer that had giant salvinia plants on it parked in the Shell Beach parking lot at the time of the initial discovery.

No giant salvinia was noted in Cane River Lake from April 2013 through January 2016. In February 2016, LDWF staff again found giant salvinia near the Washington Street boat ramp while conducting creel survey activities. It was believed to have originated from boat trailers while launching at this ramp. Subsequent treatments were made by the Cane River Patrol to the area.

Giant salvinia was once again noted in April 2017 within this same area, but in increasing amounts in a small pocket with a connected drainage just upstream of the ramp. LDWF crews and the Cane River Patrol found a 2.5-acre site with 100% salvinia coverage. This site, known as Fredericks Lake, is located directly upstream of the pocket. LDWF staff gained access and permission from the landowner to treat the lake. A 100-foot section of boom was then placed across the pocket and repeated herbicide treatments were made to salvinia within the pocket, the drain and Fredericks Lake. At the present time, salvinia has been contained with decreased coverage and ongoing treatments as necessary.

Durable Natural Structure
Very little woody structure exists in this lake due to its origin as a streambed. Occasional fallen trees are found along the shoreline.

Substrate
Information from the Natural Resources Conservation Service shows that soils in the Cane River Lake watershed range from silt loam to sandy loam to various clay types. Soil pH values fall between 5 and 7.3 for the drainage area. Soil fertility is classified as moderate.

Artificial Structure
No artificial reef structures have been placed in this reservoir by LDWF. Placement of brush piles is a common practice of local anglers.
CONDITION IMBALANCE / PROBLEM

Aquatic vegetation is sometimes problematic at Cane River Lake. Primary concerns are related to submerged aquatic vegetation including hydrilla and coontail. Secondarily, floating types such as water hyacinth and giant salvinia require annual treatment. Spatterdock has been persistent in recent years.

CORRECTIVE ACTION NEEDED

LDWF will periodically assess the vegetation coverage of Cane River Lake by both physical survey and regular communication with the Cane River Patrol. LDWF will respond appropriately based upon such assessments.
RECOMMENDATIONS

Simply stated, the aquatic plant control recommendation for Cane River Lake is a continuation of past practices. The Cane River Waterway Commission closely monitors this waterbody and communicates well with LDWF when problems arise. It has not yet been necessary for LDWF to aggressively monitor plant coverage on this lake.

Historically, the commission has purchased herbicides needed for large-scale treatments and LDWF has cooperated with the commission by serving in an advisory role as well as providing labor and equipment for large-scale treatments. LDWF has typically provided personnel, equipment and chemicals for spot treatments in response to requests from the commission.

LDWF will continue to maintain a good line of communication with the Cane River Waterway Commission with regard to aquatic plants on this lake. Additionally, LDWF staff will make observations of aquatic plant coverage during routine fisheries sampling on the lake. LDWF will respond appropriately with spot treatments of foliar herbicides as a first line of action for the treatment of floating and emergent vegetation upon requests for assistance made by the Cane River Waterway Commission.

Alligator weed in undeveloped shoreline areas will be treated with foliar applications of imazapyr (0.5 gal/acre) and Turbulence (or approved equivalent, 0.25 gal/acre) surfactant. Alligator weed in developed shoreline areas will be treated with foliar applications of imazamox (Clearcast, 0.5 gal/acre) and Turbulence (or approved equivalent, 0.25 gal/acre) surfactant.

Water hyacinth will be treated with foliar applications of glyphosate (0.75 gal/acre) and a non-ionic surfactant (0.25 gal/acre) from March 15 to September 15 of each year. Water hyacinth will be treated with foliar applications of 2,4-D (0.5 gal/acre) and Red River 90 (1 pint/acre) from September 16 to March 14.

Giant salvinia will be treated with a mixture of glyphosate (0.75 gal/acre), diquat (0.25 gal/acre) and Turbulence (or approved equivalent, 0.25 gal/acre) surfactant from April 1 to October 31. Outside of that time period, diquat (0.75 gal/acre) and a 90:10 non-ionic surfactant (0.25 gal/acre) will be used.

Submerged aquatic vegetation will be controlled in response to requests from the Cane River Waterway Commission. It is recommended that the Commission use endothall at 2.0 ppm for submerged aquatic vegetation control.

Standardized fish sampling will continue as currently scheduled.