LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI - B

WATERBODY MANAGEMENT PLAN SERIES

BLIND RIVER, LOUISIANA

WATERBODY EVALUATION & RECOMMENDATIONS
CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED EVERY THREE YEARS

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Recreational fish species are managed to maintain sustainable populations while providing anglers the opportunity to catch or harvest numbers of fish.

Commercial
Commercial fish species are managed to provide sustainable populations.

Species of Special Concern
Species of special concern are managed toward viable, self-sustaining populations.

EXISTING HARVEST REGULATIONS

Recreational
All statewide regulations apply to game fish species, see link below:
http://www.wlf.louisiana.gov/regulations

Commercial
All statewide regulations apply to commercial fish species, see link below:
http://www.wlf.louisiana.gov/regulations

Species of Special Concern
Paddlefish (*Polyodon spathula*) have a 30” max lower jaw fork length, 2 fish daily limit, fish cannot be retained alive; fish cannot be harvested by snagging methods. Pallid sturgeon (*Scaphirhynchus albus*), shovelnose sturgeon (*Scaphirhynchus platyrhynchus*), and Gulf sturgeon (*Acipenser oxyrinchus desotoi*): no legal harvest or possession.
http://www.wlf.louisiana.gov/regulations

SPECIES EVALUATION

Recreational

Largemouth bass (*Micropterus salmoides*) are targeted for evaluation since they are a species indicative of the overall fish population due to their high position in the food chain and because they are highly sought after by anglers. Electrofishing is the best indicator of largemouth bass abundance and size distribution, with the exception of large fish.
Largemouth Bass

Catch per unit effort, relative weight and structural indices-
Spring electrofishing results indicate considerable variability of catch-per-unit-effort (CPUE) of largemouth bass following hurricanes Katrina, Gustav and Isaac, 2005, 2008 and 2012, respectively (Figures 1 and 2). The storms created water quality conditions, such as low dissolved oxygen, that resulted in major fish kills. In the years following each of these named storms, the mean total CPUE for largemouth rebounded. It was most evident in the number of stock-size fish captured, as these new recruits were the most abundant. Successive years of stability with regard to water quality (e.g. no tropical storm influence) have allowed for several year classes of LMB to advance to larger size. The total CPUE for 2018 exceeded the long-term averages for stock-, quality-, and preferred-size classes of largemouth bass as depicted in Figures 1 and 2, respectively.

![Figure 1](image_url)

Figure 1. The mean CPUE (± 95% CI) in number per hour for stock-, quality-, and preferred-size largemouth bass on Blind River, LA, from 1996 to 2018.
Proportional stock density (PSD) and relative stock density (RSD) are indices used to numerically describe length-frequency data. Proportional stock density compares the number of fish of quality-size (greater than 12 inches for largemouth bass) to the number of bass of stock-size (8 inches in length). The PSD is expressed as a percent. A fish population with a high PSD consists mainly of larger individuals, whereas a population with a low PSD consists mainly of smaller fish. For example, Figure 3 below indicates a PSD of 52 for 1997. The number indicates that 52% of the bass stock (fish over 8 inches) in the sample was at least 12 inches or longer.

\[
PSD = \frac{\text{Number of bass}>12\text{ inches}}{\text{Number of bass}>8\text{ inches}} \times 100
\]

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

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

Although there were increases in the overall mean CPUE’s following 2007, 2009 and 2013, the size-structure indices for largemouth bass decreased in the proportion of both quality-
size and preferred-size fish. The increase in mean CPUE during these years is due to the abundance of sub-stock size fish, which are not included in stock density calculations. Thus, in 2018, after several years without a significant mortality event, an increase in mean CPUE was observed as well as a slight increase in the proportion of both quality- and preferred-size fish (Figure 3). The size distribution comparison (length frequencies) from 2009 to 2018 spring electrofishing results shows that in 2010, 2014 and 2018 there were more substock-sized fish inch groups present than in all other years. The size distribution comparison from 2018 indicates a larger abundance of fish greater than 8 inches than in previous years, indicating that successive year classes of largemouth bass have survived in the absence of significant mortality events (Figure 4).

Figure 3. The mean size-structure indices (PSD and RSDp) for largemouth bass from spring electrofishing results on Blind River, LA from 1996 to 2018. Error bars represent 95% confidence limits of the mean size-structure indices.
Stocking and Genetics
Over 439,000 Florida largemouth bass (*M. floridanus*) fingerlings have been stocked regularly into Blind River since 1995. A majority of these fish were stocked post hurricanes Katrina and Gustav, in response to public outcry over the massive fish kills that occurred following these storm events. In the post storm absence of predation and competition, the Florida largemouth bass should have become dominant in this coastal river, when in fact this species did not even become established. Genetic testing conducted in 2010 indicated that less than 1% of the Florida genome was present in the sample results (Table 1). Additionally, high CPUE’s in 2010 (Figures 1 and 2), along with the genetic results, indicate that the remaining native largemouth bass population, although greatly reduced from pre-storm levels, recovered robustly and that any stocking efforts were unnecessary. The stocking of Florida largemouth bass in the nearby Tangipahoa River showed a similar fate; the ineffectiveness to establish this genotype during post hurricane recovery. This tenacity for recovery of native largemouth bass populations has also been
noted in other coastal river systems including the Calcasieu, Mermentau and Sabine rivers in southwest Louisiana following hurricanes Rita (2005) and Ike (2008). These systems received little to no stockings of largemouth bass before and after the hurricane related fish kills, yet yielded record CPUE’s within two years into recovery. These observations suggest that native coastal populations of largemouth bass (and other indigenous fish species) have adapted to these periodic storm events and rapid recovery is part of the natural selection process.

Table 1. Results of 2010 genetic testing for the Florida genome in largemouth bass from Blind River, LA.

<table>
<thead>
<tr>
<th>Number of fish</th>
<th>% Northern</th>
<th>% Hybrid</th>
<th>% Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>206</td>
<td>93.7</td>
<td>5.8</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 2. Florida largemouth bass stockings into Blind River, LA from 1995 – 2009.

<table>
<thead>
<tr>
<th>Florida LMB Stocking</th>
<th>Number of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Number of Fish</td>
</tr>
<tr>
<td>1995</td>
<td>27,000</td>
</tr>
<tr>
<td>1996</td>
<td>27,032</td>
</tr>
<tr>
<td>1997</td>
<td>9,800</td>
</tr>
<tr>
<td>1999</td>
<td>12,043</td>
</tr>
<tr>
<td>2000</td>
<td>14,244</td>
</tr>
<tr>
<td>2001</td>
<td>10,000</td>
</tr>
<tr>
<td>2002</td>
<td>10,546</td>
</tr>
<tr>
<td>2003</td>
<td>10,036</td>
</tr>
<tr>
<td>2004</td>
<td>10,013</td>
</tr>
<tr>
<td>2005</td>
<td>6,972</td>
</tr>
<tr>
<td>2006</td>
<td>75,248</td>
</tr>
<tr>
<td>2007</td>
<td>73,743</td>
</tr>
<tr>
<td>2008</td>
<td>76,901</td>
</tr>
<tr>
<td>2009</td>
<td>75,862</td>
</tr>
<tr>
<td>TOTAL</td>
<td>439,440</td>
</tr>
</tbody>
</table>
Recreational – Other Species

Crappie, Catfish and Sunfish-
Black and white crappies (Pomoxis nigromaculatus and P. annularis) have both been observed but not monitored in the river, as well as blue, channel, and flathead catfishes (Ictalurus furcatus, I. punctatus, Pylodictis olivaris), bluegill, redear, spotted, warmouth and longear sunfishes (Lepomis macrochirus, L. microlophus, L. miniatu, L. gulosus and L. megalotis respectively).

Forage-
Forage availability is typically measured directly through electrofishing and shoreline seine sampling and indirectly through measurement of largemouth bass body condition or relative weight. Relative weight (Wr) is the ratio of a fish’s weight to the weight of a ‘‘standard’’ fish of the same length. The 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 indicates a potential problem with forage availability. Relative weights of largemouth bass caught in the Blind River area ranged from 97 to 102 from 1997 to 2014 for all stock-size and larger fish, indicating an adequate forage base (Figure 5). The mean Wr of largemouth bass from 1997 to 2014 is approximately 98 (Figure 5). This high Wr suggests that there is ample forage available for bass production.

Figure 5. Mean relative weights (+ 95% CI) for largemouth bass collected in fall electrofishing samples from Blind River, LA, for 1997 to 2014.
Electrofishing samples from 2014 showed that the available forage was bluegill, redear, spotted, longear and hybrid sunfishes, along with golden shiners (*Notemigonus crysoleucas*), threadfin and gizzard shad (*Dorosoma petenense* and *D. cepedianum*), golden and blackstripe topminnows (*Fundulus chrysotus* and *F. notatus*), and inland silversides (*Menidia beryllina*) (Figure 6).

![Figure 6. Forage composition in total numbers by species per hour from fall electrofishing results on Blind River, LA, 2014.](image)

*Aquatic Invasive Species-*
Though their population has not been monitored, common carp (*Cyprinus carpio*) are commonly observed in the river.

Adult silver carp (*Hypophthalmichthys molitrix*) have been observed in the nearby Amite River. These fish may have been introduced via the Bonnet Carré Spillway operation by the US Army Corps of Engineers during the 2011 flood event. To date, no juveniles have been observed.
The invasive apple snail (*Pomacea maculata*) has been documented in the New River Canal, a discharge canal that empties into the Petite Amite River, which empties into the Blind River. As of summer 2018, heavy infestations of the snail have been reported throughout the Blind River area.

**HABITAT EVALUATION**

**Aquatic Vegetation**

Salvinia weevils were stocked in the Blind River area in 2008 and will continue to be stocked as they become available. Shortly after the initial stocking, Hurricane Gustav impacted the region and flooded the small slough where our weevil enclosure was being harbored. The flood waters widely dispersed our very small concentration of weevils, inhibiting the ability for them to colonize the area. A site visit was made in 2009, samples were taken, and weevils were not found in samples pulled from the immediate or surrounding area. In late 2013, salvinia weevils living on common salvinia were again introduced into the Blind River area. Follow-up site visits have indicated that weevils are reproducing and spreading in the stocked area. Weevils have been, and will continue to be, stocked as they become available.

The Blind River generates a large number of complaints each year, and they are addressed accordingly. An average of 836 acres of vegetation are chemically treated annually. In an average year, the majority of treated vegetation is common salvinia and water hyacinth. The remaining acreage is typically composed of alligator weed, pennywort, primrose, water paspalum and duckweed.

Common salvinia and water hyacinth have been the main subjects of access and habitat complaints over the past few years. Common salvinia is scattered throughout the basin and is constantly being restocked by the flushing and draining of adjacent swamps and bayous.

**Estimates of vegetation coverage (as of November 17, 2017) are provided below:**

**Problematic Species**
- **Common Salvinia (*Salvinia minima*)** – 50 acres
- **Water Hyacinth (*Eichhornia crassipes*)** – 50 acres
- **Duckweed (*Lemna spp.*)** – 50 acres
- **Duck Lettuce (*Ottelia alismoides*)** – 50 acres

**Beneficial Species**
- **Yellow Water Lily (*Nymphaea mexicana*)** – 75 acres
- **Coontail (*Ceratophyllum demersum*)** – 45 acres

Common salvinia should be treated from April 1 – October 31 with a mixture of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Turbulence surfactant (or approved
equivalent, 0.25 gal/acre). From November 1 – March 31, common salvinia will be controlled with diquat (0.75 gal/acre) and a 90:10 non-ionic surfactant (0.25 gal/acre).

Water hyacinth should be controlled with 2,4-D (0.5 gal/acre) and a 90:10 non-ionic surfactant (1 pint/acre) or glyphosate (0.75 gal/acre) and a 90:10 non-ionic surfactant (0.25 gal/acre).

Water lilies (*Nymphaea spp.*) grow along much of the shallow shoreline of the river. Although the water lilies generally do not impair boating access, aquatic herbicide applications are routinely administered for control.

**Water Quality**

In 2016, the Environmental Protection Agency listed Blind River waters as impaired due to organic enrichment/depletion of oxygen, mercury in fish tissue, and the presence of non-native aquatic plants. The EPA listed atmospheric deposition as a potential source of mercury contamination.


**Substrate**

Sandy river bottoms, high in inorganic material.

**Artificial Structure**

None

**CONDITION IMBALANCE / PROBLEM**

1. Lack of riverine influence has resulted in poor water quality conditions including: high organic load, low dissolved oxygen, stagnant backwaters that frequently flow into the river and saltwater intrusion from Lake Maurepas.

2. Blind River is very susceptible to major fish kills, especially in the event of a tropical storm or hurricane.

**CORRECTIVE ACTION NEEDED**

1. Restoration of Maurepas Swamp through diversions to improve water quality of Blind River.

2. Restoration of river flow into the system.
RECOMMENDATIONS

1. Seek opportunities for diversion of Mississippi River water into the Maurepas Swamp and Blind River system to restore historic natural seasonal water fluctuations.

2. Initiate a 3-year Age, Growth, & Mortality Study on largemouth bass in order to effectively evaluate population dynamics within the fish stock.

3. Continue to work with the Coastal Protection and Restoration Authority and USACE on proposed diversion projects.

4. Continue to control aquatic vegetation as needed through biological (weevil introductions) and chemical applications. Aquatic vegetation is treated according to the Aquatic Herbicide Application Procedures as adopted by the LDWF Inland Fisheries Section.