

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES DIVISION**

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

WOOLEN LAKE

**WATERBODY EVALUATION &
RECOMMENDATIONS**

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational

Sportfish species are managed to maintain a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts.

Commercial

Woolen Lake supports a moderate population of commercial fish species. These species are not intensively managed. Recent sampling efforts indicate that the lake should support a commercial fishery.

Species of Special Concern

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

EXISTING HARVEST REGULATIONS

Recreational

Statewide regulations are in effect for all species. Current Louisiana fishing regulations can be found at: <http://www.wlf.louisiana.gov/regulations>

Commercial

Statewide regulations are in effect for all species. Current Louisiana commercial fishing regulations can be found at: <http://www.wlf.louisiana.gov/regulations>

SPECIES EVALUATION

Recreational

Largemouth bass are targeted as a species indicative of the overall fish population due to their high position in the food chain. Electrofishing is currently the best available indicator of largemouth bass abundance and size distribution, with the exception of large bass. Gill net sampling is used to determine the status of large bass and other large fish species. Shoreline seining is used to collect information related to fish reproduction.

Largemouth Bass

Largemouth bass abundance is determined from data collected during electrofishing sampling. Figure 1 includes catch per unit effort (CPUE) for the past five samples collected at Woolen Lake. It should be noted that these samples were taken during different seasons, which does affect sample composition. All samples were conducted during daytime. All of the CPUE's are considered to be low. Desirable CPUE values typically exceed 50 bass per hour. Figures 2, 3, and 4 depict the length frequency distribution of the largemouth bass collected during electrofishing sampling in 2007, 2010, and 2014, respectively. A distribution from the summer sample of 2013 is not included, as only two bass were collected. Though sample sizes were considered low, multiple size classes are represented in each, which indicates that there is recruitment.

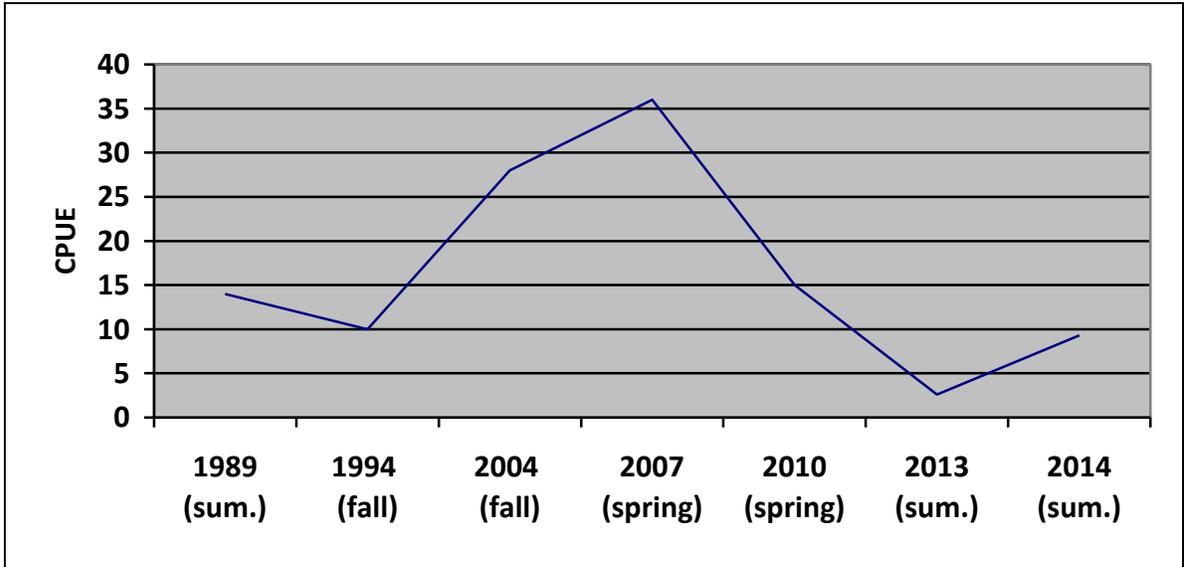


Figure 1. Catch per unit effort of largemouth bass collected during electrofishing on Woolen Lake, 1989 - 2014. Samples were taken during daytime except for 1989 and 1994.

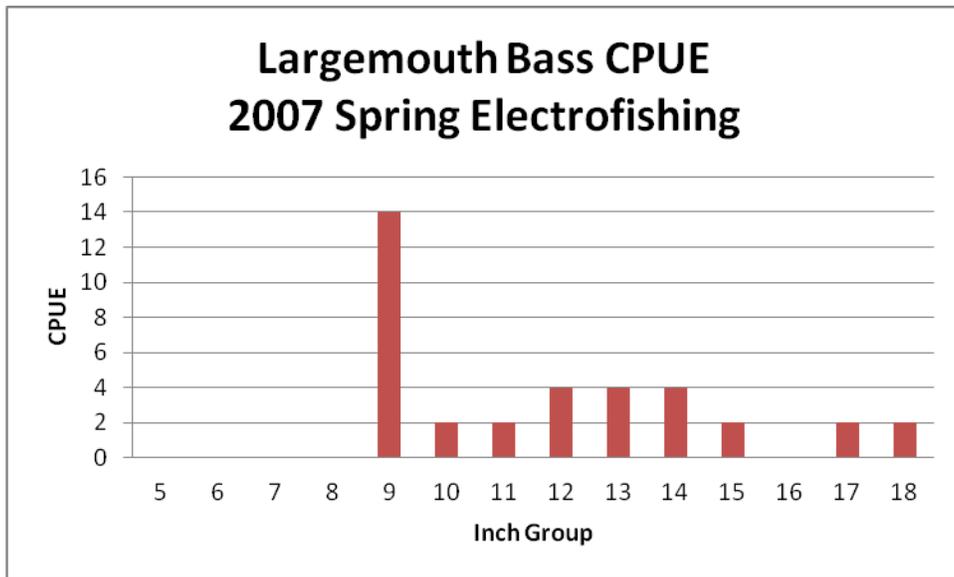


Figure 2. Length frequency distribution of largemouth bass collected during spring electrofishing on Woolen Lake, 2007.

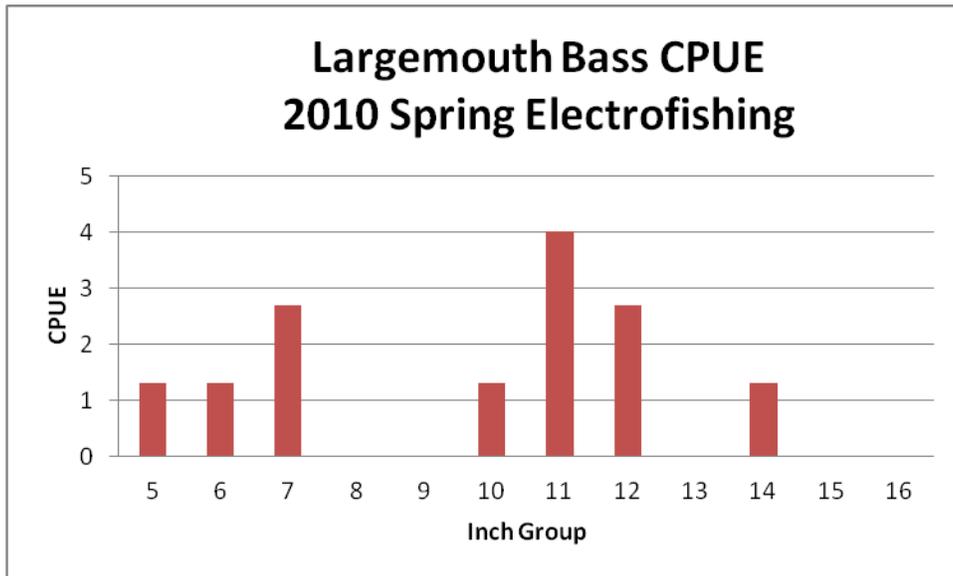


Figure 3. Length frequency distribution of largemouth bass collected during spring electrofishing samples on Woolen Lake, 2010.

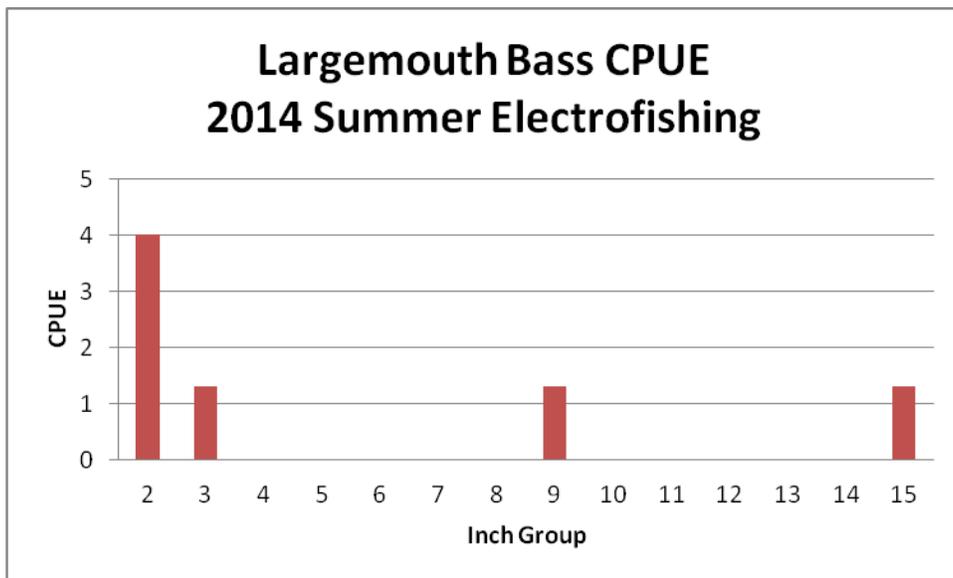


Figure 4. Length frequency distribution of largemouth bass collected during summer electrofishing samples on Woolen Lake, 2014.

Forage

Sunfish *Lepomis spp.*, silversides *Labidesthes spp.*, and shad *Dorosoma spp.* have been identified as the primary bass forage species in Woolen Lake. Forage availability has been estimated indirectly through measurement of largemouth bass body condition or relative weight. Relative weight (W_r) 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 relative weights below 80 indicate a potential problem with forage availability. Relative weights of

bass from recent electrofishing samples have exceeded 90 for nearly all size groups. The data indicate that Woolen Lake has adequate and available forage for largemouth bass. Young-of-year bass collected during summer of 2014 ($n=5$) were noticeably robust and had relative weights exceeding 125.

Crappie and Other sunfish species

Woolen Lake is renowned for quality crappie and sunfish fishing. Sampling directed specifically for these species has not been conducted. Lead nets, which have recently become the standardized sampling gear for crappie, have not been used in Woolen Lake. Both white crappie *P. nigromaculatus* and black crappie *P. annularis* were documented in early LDWF sampling. The most recent rotenone sample (1984) estimated a total of 54.0 and 2.5 white and black crappie per acre, respectively.

Biomass and electrofishing forage sampling has shown bluegill *Lepomis macrochirus* to be the dominant sunfish species. Rotenone samples conducted in 1965, 1971, and 1984 provided estimates of 2133, 3740, and 945 bluegills per acre, respectively. Other common species are redear sunfish *L. microlophus*, longear sunfish *L. megalotis* and warmouth *L. gulosus*.

Commercial

Commercial fish species abundance has been evaluated by LDWF with the use of gill nets (2014) and biomass sampling with rotenone (1965, 1971, and 1984). Buffalofish species are the most abundant commercial species in Woolen Lake. Two gill net samples in January 2014 captured 18 buffalo, 17 of which were bigmouth buffalo and one was a smallmouth buffalo. Figure 5 depicts the length frequency distribution of the buffalo from that sample. It does not appear that catfish are currently abundant in the lake, though the biomass sample in 1965 estimated 64.4 lbs/acre (Table 1). Only one catfish was captured in the 2014 gill net sample, a 23 inch blue catfish.

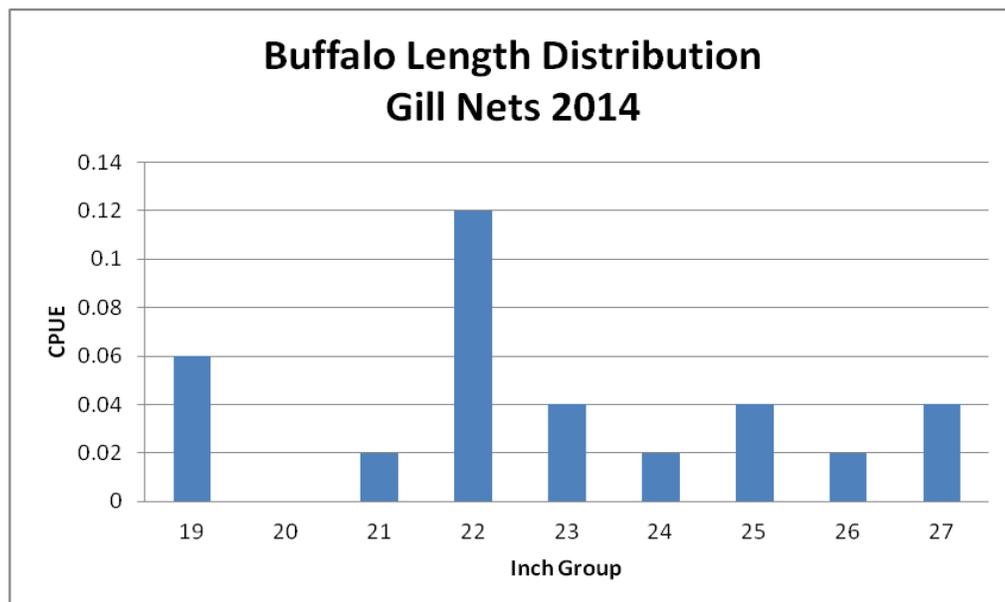


Figure 5. Length distribution of buffalo from two gill net samples conducted in Woolen Lake, February 2014.

Table 1. Pounds per acre estimates of rough species from biomass samples conducted on Woolen Lake in 1965, 1971 and 1984.

Species	Year		
	1965	1971	1984
Freshwater Drum	0	0	9.4
Buffalo spp.	10.5	0	89.2
Carp	0	0	8.4
Channel Catfish	64.4	0	1.4
Flathead Catfish	0	1	0
Spotted Gar	14.1	1	8.9

HABITAT EVALUATION

Aquatic Vegetation Status

2012

The floating species duckweed (*Lemna sp.*) and water hyacinth were the most common aquatic plants on Woolen Lake in 2012. A moderate amount of alligator weed was also present, though mostly confined to one cove.

2013

Total coverage of all species of aquatic vegetation on Woolen Lake was considered minimal to moderate, with none being problematic. No herbicide applications were necessary for the control of nuisance vegetation.

2014

Total coverage of all species of aquatic vegetation on Woolen Lake was considered minimal, with none being problematic. One herbicide application was made to control alligator weed and water hyacinth around the lake. A total of 10 acres of each were treated.

The small amount of emergent vegetation in the lake provides some fisheries benefit. Wood cover, in the form of live bald cypress (*Taxodium distichum*) and dead snags is common in the lake. Coontail (*Ceratophyllum demersum*), a native species considered desirable to the fisheries, grows sparsely throughout the shallows of the lake and is normally found at less than optimal amounts. Dense plankton blooms at times may limit submerged vegetation growth in the lake.

Vegetation prediction for 2015:

Total coverage of aquatic vegetation on Woolen Lake is predicted to be minimal and similar to that observed in 2014.

Limitations:

Factors that may limit the effectiveness of chemical, mechanical, or biological control methods for the aquatic plant problems found in the waterbody.

Agricultural and residential irrigation may preclude the use of certain herbicides

Small watershed may prolong drawdowns

Infrequent flooding from Boeuf River may reduce the effectiveness of grass carp

Regulatory or public factors or anything else that may limit the ability of LDWF to control aquatic plant problems in the waterbody.

Application of the herbicide 2,4-D would require a waiver from LDAF between March 15 - Sept. 15.

Aquatic Vegetation Management

Herbicide applications in Woolen Lake are conducted as needed to control vegetation when it reaches nuisance levels. Most often, the applications are in response to complaints of excessive vegetation adjacent to shoreline property. A surface application of imazamox (Clearcast) (0.5 gal./s/acre) will be used near residential areas and pump intakes for the control of alligator weed. Imazapyr (Habitat, Arsenal) will be used in areas away from piers and intake pumps. Imazapyr is more effective on alligator weed and other emergents, but has restrictions on use in water used for irrigation. Diquat dibromide (1.0 gal/acre) will be used to control duckweed. Other nuisance emergent/floating vegetation will be treated as necessary with the following herbicides: 2,4-D (0.5 gal./s/acre) (except March 15 – Sept. 15) for water hyacinth and American lotus; glyphosate (.75 gal/acre) for American lotus, water pennywort, and parrot's feather.

Substrate

Years of sediment accretion from adjacent croplands and annual deposits of leaf litter have resulted in the covering of a natural hard clay substrate with silt and organic material. This type of substrate is less than desirable for nest building fish species.

CONDITION IMBALANCE / PROBLEM

Recent fisheries samples (electrofishing, gill nets) and reports of poor fishing by anglers may be indicators of low abundance of sportfish. Very few largemouth bass were captured during spring and summer electrofishing samples in 2010, 2011, and 2014. No crappies have been captured in any of these samples. Catfish abundance also appears to be low, as only one was captured in the 2014 gill net sample.

The current spillway and water control structure does not allow for an effective drawdown. A drawdown of five feet would dewater much of the shallows, allowing for rapid decomposition of organic materials and compaction of the silt. This action would improve the spawning substrate for nesting fish species and may also improve the water quality in the lake.

CORRECTIVE ACTION NEEDED

The cause of the apparent low sportfish abundance is not confirmed, though degraded habitat and excessively low water levels and related poor water quality are likely contributors. Further monitoring is needed.

Repairs and updates to the current control structure should be made so that an adequate drawdown can be conducted.

Due to the recent establishment of Asian carp in the Boeuf River, back flowing water from this source for lake refill is strongly discouraged.

RECOMMENDATIONS

1. Modifications to the water control structure to allow for a drawdown of at least five feet is recommended.
2. When the necessary work is complete, a lake drawdown should be conducted. The control structure should be opened September 1 and closed November 30. Target level for the drawdown should be three feet below pool stage. The primary benefit of the drawdown will be to oxidize organic substrate and improve spawning habitat for nesting fish. A secondary purpose will be to allow for the maintenance and repair of shoreline properties.
3. LDWF fisheries sampling will continue to monitor the Woolen Lake fish population. Electrofishing will be conducted at night to avoid sampling bias associated with daytime electrofishing. Lead nets will be deployed in the fall to better assess the crappie and catfish population.