LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

ANACOCO LAKE

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

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LAKE HISTORY

GENERAL INFORMATION

Date Lake formed

Anacoco Reservoir was formed in 1951 as a result of Act 277 of the 1948 Legislature, establishing the Anacoco Prairie Game and Fish Preserve and setting aside approximately 5,379 acres for the construction of recreational waters and lands.

Impoundment

Anacoco Reservoir was created by the impoundment of Anacoco Creek, Caney Creek, Prairie Creek, and Sandy Creek with an earthen dam approximately 4,670 feet in length with a 12' crown at elevation 206.0 mean sea level (MSL). Maximum embankment height is approximately 37' and constructed of a homogenous earth fill with stone rip-rap shore protection. Lakeside embankment slope is 1:3 with a 25' and 40' wide berm.

Ownership - State of Louisiana owns the water bottoms and the Louisiana Department of Wildlife & Fisheries (LDWF) manages the fish and wildlife resources. The Department of Transportation and Development has authority and maintenance over the levees and associated structures as per Act 270 (see below).

Purpose for creation – water supply and recreation

Size (surface acres)

2,600 acres (24,000 acre feet storage); Maximum capacity 82,500 acre feet

Watershed

A total of 209 mi^2 of surface area (including the 112 mi^2 watershed of Vernon Lake) drain into Anacoco Lake. The watershed-to-lake ratio is rather large at 50:1. Watershed land use/land cover consists primarily of commercial pineland forest, upland hardwood forest, and pasture. The sandy soil in the watershed is acidic (i.e., low pH) and alkalinity is low, leading to low fertility. Anacoco Creek is an eastern tributary of the Sabine River basin, boundary waters shared with the State of Texas.

Pool stage

194.0 MSL at spillway crest.

Parish/ location

Anacoco Reservoir is located 10 miles west of Leesville, in western Vernon Parish, situated in west-central Louisiana. The dam and spillway are located 2 miles south of LA Hwy 8 in Section 3 & 4, T1N, R10W (31° 5.802' N; 093° 23.391 W).

Border waters

The reservoir is located 6.75 miles downstream of Vernon Lake on Anacoco Creek.

Drawdown (outlet) structure description:

Under ideal conditions, the reservoir can be drawn down at a rate of about 4" per day with the gate opened to maximum height.

Gate size – 6' x 6' sluice gate
Number of gates – 1
Construction – reinforced concrete control structure
Condition – Poor
Flow rate – draw down 4"/day under ideal conditions

Spillway
Spillway location – the spillway is located on the western end of Anacoco dam at the spillway park.
Spillway crest length – 375' at 194' MSL and 125' at 196' MSL or a total of 500'
Condition – fair with some weathering/pitting of concrete face
Flow rate – present spillway design for flood – 55,500 CFS (17.36"/5 days)

Who controls

Louisiana Department of Transportation and Development (LDOTD) is responsible for the maintenance and operation of 19 reservoir embankments, including Anacoco Reservoir, to maintain their integrity and to prevent any breach or damage to the existing facilities as per Act 270 of 1984. While DOTD is not responsible for lake management from a fisheries standpoint, they are responsible in the event of a dam breach. Emergency Action Plans for Anacoco and Vernon Lakes are on file with the Dam Safety and Water Resources Section of DOTD in Baton Rouge, LA. Requests for lake management gate openings must be directed to the Secretary of DOTD in writing from the Secretary of the Louisiana Department of Wildlife and Fisheries (LDWF) or his designee. Verbal request are not to be accepted. The letter from LDWF to DOTD is to indicate the date for gate opening and the rate of drawdown desired for wildlife or lake management purposes.

LAKE AUTHORITY

Act 858 of the 1981 Legislature abolished approximately 19 special game and fish commissions including the Anacoco Prairie Game and Fish Commission. The authority of the respective game and fish commissions was transferred to the LDWF. State Law provides authority for parish governments to appoint a panel of citizens to serve in an advisory capacity. The Vernon Parish Game & Fish Commission fills that role with respect to fish and wildlife issues.

Vernon Parish Game and Fish Commission

Vernon Parish Game and Fish Commission
Jason Nolde, Chairman
C/o Vernon Parish Police Jury
P.O. Box 1548
Leesville, LA 71446

Authorization – Nine members are selected by the Police Jury to serve at the leisure of the Police Jury in an advisory capacity only; current civilian members include Arno Arpke, Sam Fertitta, Mark Koury, Jason Nolde (Chairman), Jody Patterson (Secretary), Randy Bennett, Paul Kaiama, and Jury members Mike Kay, and Melvin Haymon.

ACCESS

Boat ramps
Four improved concrete boat ramps are located on Anacoco Lake; three on the west side of the lake - Spillway Park landing, Sandy Creek landing, and Methodist landing, and one on the east side, the VFW landing **(SEE APPENDIX I – LAKE MAP W/BOAT LAUNCHES).**

Boat docks
There are currently two docks (associated with public boat ramps) where boaters may moor their boats; one on the west side of the lake – the Spillway Park Landing, and one on the east side – the VFW Landing. There are numerous private wharves and ramps around the lake.

Piers
There are two public fishing piers located at VFW Park, and Anacoco Spillway Park. There are numerous private piers around the lake.

State/Federal facilities
There are currently no state or federally owned facilities on Anacoco Lake.

Reefs
There are currently no state-owned/operated artificial reefs.

SHORELINE DEVELOPMENT

State/National Parks
There are currently no state or federally owned parks on Anacoco Lake.

Shoreline Development by Landowners
Approximately 40% of the shoreline is developed with homes and camps.

PHYSICAL DESCRIPTION

Shoreline length
There are 21 miles of shoreline around Anacoco Lake.

Timber type
Vegetation surrounding Anacoco Reservoir consists primarily of mixed upland

pine/hardwood forest.

Average depth
9.2 feet

Maximum depth
35 feet

Natural seasonal water fluctuation:
0.5 – 2.0 feet

EVENTS / PROBLEMS

The dam breach of 1956
The original spillway structure failed in 1956, resulting from piping of foundation material beneath the east section of the stilling basin. Two hurricanes in 1957 hindered construction, but the new spillway was completed in 1958.

The Construction of Vernon Reservoir Eight Miles Upstream
With the construction of Vernon Lake in 1960 eight miles upstream, the potential fertility of Anacoco was substantially reduced. When several reservoirs are serially placed on a stream, the fertility in downstream reservoirs suffers as nutrients are assimilated by aquatic organisms and sediments in the upstream reservoirs. The Vernon Lake watershed covers approximately half of the Anacoco watershed. Subsequently, the poor fertility of the watershed soils, the loss of nutrients due to the Vernon Lake component of the watershed, and the age (64 yrs.) has resulted in a substantial decrease in fisheries production.

The lakebed renovation of 1999
A lake renovation project was implemented in 1999 and completed in 2000 to stimulate a more prolonged period of fisheries production **(SEE APPENDIX II)**.

The turbid waters of 2003 – 2008
Beginning in 2003, water clarity in Anacoco Lake began to decline (<18" as measured by Secchi disk). Contributing factors included: leakage of potable water lines under several tributaries (Sandy Creek, Caney Creek, and Anacoco Creek), drought, silviculture activities, development, common carp, and wind action from Hurricane Rita. This turbid water is believed to be responsible for the loss of submersed vegetation and the associated population declines in centrarchids (i.e., black bass, crappie and sunfish) and clupeids (i.e., shad) from 2004 thru 2008.

The turbid waters of 2010 – 2011
Water quality parameters began to improve in 2009 (Secchi readings >18"). By the spring of 2010, relative abundance of largemouth bass numbers returned to normal (CPUE >50 bass/hour). In October 2010, the drawdown structure was partially opened at the request of

the VPPJ and the Boise Paper Mill to provide downstream flow for mill effluent releases to keep the mill in operation. The resulting low water conditions within the lake then allowed settled clay particles to re-suspend into the water column when subjected to wind action. Mean Neophelometric turbidity units (NTU) rose from 18.6 in August 2010 to 177.3 in July 2011.

MANAGEMENT ISSUES

AQUATIC VEGETATION

In the early years of Anacoco Reservoir, water clarity was relatively high. Submersed vegetation was extensive in the western and northern sections of Anacoco Lake during that period. Common plants included coontail *Ceratophyllum demersum*, fanwort *Cabomba caroliniana*, Brazilian elodea *Egeria densa*, pondweed *Potamogeton diversifolius*, and muskgrass *Chara* spp. Repeated summer/fall drawdowns of 6.0 feet below pool to control submergents from 1961 till 1971 resulted in severe button bush *Cephalanthus occidentalis* coverage in the shallow, exposed portions of the lake. Button bush was eventually eliminated by herbicide application (2, 4-D) and a reduced drawdown frequency. Recent drawdowns, while employed for fisheries management, have further hindered the growth of submersed and emergent aquatic plants.

Type map

Since the 2012 drawdown, submersed plant coverage has increased significantly, with estimated beneficial plant coverage between 10%-15%. Spikerush (*Eleocharis* spp.), variable leaf pondweed (*Potamogeton diversifolius*), and stonewort (*Nitella* spp.) were the primary submersed aquatic vegetation observed in 2014. Bald cypress trees (*Taxodium distichum)* cover approximately 10% of the northern most portion of Anacoco Lake. This species is typically limited to water less than four feet deep. **(SEE APPENDIX III)**

Due to the lack of beneficial aquatic vegetation, LDWF worked in cooperation with the Vernon Parish Game and Fish Commission to begin a native plant restoration effort (Part B, Appendix I) in fall 2012. A total of 3,000 bullwhips (*Scirpus californicus)*, 7,500 fragrant water lily (*Nymphaea odorata)* tubers, and 12,000 eel grass *(Vallisneria Americana)* rhizomes were planted from November 2012 through June 2013.

Biomass

No sampling conducted.

Past Control Measures

Biological

No biological methods of plant control have been implemented on Anacoco Reservoir.

Chemical

No chemical treatments were made on Anacoco Lake from 1999 to 2012. Chemical treatments are typically conducted in shallow coves. Primary target species are primrose and alligator weed (Table1). These two species are treated with imazapyr (0.5 gal/acre) and Turbulence (0.25 gal/acre) surfactant.

Table 1. Anacoco Lake herbicide treatment history 2013-2015.

Year	Number of Treatments	Acres Treated	Primary Vegetation Treated
2013	4	96	Primrose, Alligator Weed
2014	2	62	Alligator Weed
2015	2	67.3	Alligator Weed

Physical:

The most recent draw down was from January to November 2012 to address turbidity issues and to improve fish habitat.

HISTORY OF REGULATIONS

Recreational

Historical

Statewide regulations for all fish species in place since impoundment in 1951.

Largemouth Bass *(Micropterus salmoides):* 15 daily of any size

April 1, 1991

Black bass management plan implemented with state-wide daily creel limit of 10 with no minimum length as a conservation measure.

Current Harvest Regulations

Statewide regulations are in effect for all fish species.

Recreational fishing regulations may be viewed at the link:
http://www.wlf.louisiana.gov/fishing/regulations

Commercial

The use of gill nets, trammel nets, and hoop nets have been prohibited in Anacoco Reservoir since 1978. However, trotlines and slat traps are not prohibited and may be fished to take legal commercial species within Anacoco Lake and Anacoco Creek upstream to Vernon Dam. Commercial fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

TITLE 76
WILDLIFE AND FISHERIES
PART VII. FISH AND OTHER AQUATIC LIFE

Chapter 1. Freshwater Sports and Commercial Fishing

103. Anacoco Lake, Lake Vernon and Anacoco Bayou

A. Whereas, the chairman of the Anacoco-Prairie State Fish and Game Commission has requested commercial nets be prohibited in Lake Vernon, Anacoco Lake, and that portion of Anacoco Bayou between the lakes, all in Vernon Parish, and

Whereas, fish population samples taken by the district fisheries biologist indicate a very low population of commercial fish, and

Whereas, it is evident that there are no viable commercial fisheries due to the scarcity of these commercial species.

B. Therefore, be it resolved, the Louisiana Wildlife and Fisheries Commission hereby prohibits the use of fish nets (gill nets, trammel nets, hoop nets, fish seines) in Anacoco Lake, Lake Vernon and that portion of Anacoco Bayou between the two lakes, Vernon Parish, LA.

AUTHORITY NOTE: Promulgated in accordance with R.S. 56:22.
HISTORICAL NOTE: Promulgated by the Department of Wildlife and Fisheries, Wildlife and Fisheries Commission, LR 4:57 (February 1978), amended LR 7:356 (July 1981), LR 12:843 (December 1986).

DRAWDOWN HISTORY

The detailed drawdown history of Anacoco Lake is provided in Table 2:

Table 2. A chronology of drawdowns on Anacoco Lake, LA from present to past, 2015 – 1957.

Drawdown Date	2012—January 9 to November 1
Purpose	Lakebed Renovation
Success	Good to excellent bottom drying
Fishing Closure	None
Depth Below Pool	18’

Estimated % Exposed	~85 %
Who Operated Structure	LDOTD
Any Fish Kills	None Reported
Drawdown Date	Fall 2010--October 5 to November 10
Purpose	Release water at request of Boise Inc. and VPPJ for Boise paper mill operations
Success	Boise was able to release effluent and stay in operation; however we observed increased turbidity during and after drawdown.
Fishing Closure	None
Depth Below Pool	2’
Estimated % Exposed	~25%
Who Operated Structure	LDOTD
Any Fish Kills	None Reported
Drawdown Date	Summer/Winter 2008/2009 – August 1 to Jan. 15
Purpose	Repair/replace drawdown mechanism
Success	Good – new gate workable
Fishing Closure	No
Depth Below Pool	14 – 18’
Estimated % Exposed	90%
Who Operated Structure	LDOTD
Any Fish Kills	None reported
Drawdown Date	Summer/fall 2006 – July 20 to Sept. 30
Purpose	Reduce turbidity due to clay suspension
Success	Poor – turbidity re-established within 6 months
Fishing Closure	No

Depth Below Pool	8 – 10’
Estimated % Exposed	60%
Who Operated Structure	LDOTD
Any Fish Kills	None reported
Drawdown Date	Annual 1999-2000 Feb. 1, ’99 to Apr. 4, 2000 – 14 months
Purpose	Lakebed renovation project
Success	Excellent
Fishing Closure	No
Depth Below Pool	12 – 16’
Estimated % Exposed	90%
Who Operated Structure	LDOTD/LDWF
Any Fish Kills	None reported
Drawdown Date	Fall/winter 1995-96 – Sept. 15 to Jan. 15
Purpose	Correct imbalance of fish populations; property owner repairs
Success	Good
Fishing Closure	No
Depth Below Pool	8 – 10’
Estimated % Exposed	60%
Who Operated Structure	LDOTD
Any Fish Kills	None reported
Drawdown Date	Fall/winter 1989-90 – Sept. 15 to Jan. 15
Purpose	Correct fish imbalance

Success	Good
Fishing Closure	No
Depth Below Pool	8 – 10’
Estimated % Exposed	60%
Who Operated Structure	LDOTD
Any Fish Kills	None reported
Drawdown Date	Fall 1982 – Sept. 16 to Dec. 6 (Boise Southern Pollution releases following the 1980 – 1981 drought)
Purpose	Correct fish imbalance
Success	Good
Fishing Closure	None
Depth Below Pool	8 – 10’
Estimated % Exposed	60%
Who Operated Structure	LDWF
Any Fish Kills	None reported
Drawdown Date	Fall/winter 1980-81 – Aug. 1 to Jan. 15
Purpose	Correct fish imbalance
Success	Good
Fishing Closure	None
Depth Below Pool	8 – 10’
Estimated % Exposed	60%
Who Operated Structure	LDWF
Any Fish Kills	None reported

Drawdown Date	Summer/fall 1975 – Aug. 1 to Oct. 30
Purpose	Control nuisance aquatic vegetation
Success	Poor to fair
Fishing Closure	No
Depth Below Pool	6 – 8’
Estimated % Exposed	50%
Who Operated Structure	LDWF
Any Fish Kills	None reported
Drawdown Date	Summer/fall 1974 – Aug. 1 to Oct. 30
Purpose	Control nuisance aquatic vegetation
Success	Poor to fair
Fishing Closure	No
Depth Below Pool	6 – 8’
Estimated % Exposed	50%
Who Operated Structure	LDWF
Any Fish Kills	None reported
Drawdown Date	Summer/fall 1961-71 – Aug. 1 to Oct. 30
Purpose	Control nuisance aquatic vegetation
Success	Poor to fair
Fishing Closure	No
Depth Below Pool	6 – 8’
Estimated % Exposed	50%
Who Operated Structure	LDWF

Any Fish Kills	None reported
Drawdown Date	Annual 1956-1958 – (unscheduled) spillway breach and subsequent repair period
Purpose	Make repairs to dam and spillway
Success	Good
Fishing Closure	No
Depth Below Pool	14 – 16’
Estimated % Exposed	95%
Who Operated Structure	LDOTD
Any Fish Kills	None reported

Fish Kills / Disease History

Largemouth bass virus (LMBV)

Fish samples (Table 3) were collected and analyzed in 2002 for the presence of LMBV. All samples tested negative for the virus.

Table 3. Fish tested for the largemouth bass virus on Anacoco Lake, Louisiana in 2002.

SPECIES	Number of fish
Black crappie	6
Warmouth sunfish	10
Largemouth bass	10
White bass	6
Longear sunfish	10
Bluegill	11
Redear sunfish	3

Fish Kills

There were scattered reports of dead fish following Hurricane Rita in September of 2005.

Contaminants/pollution

Water quality is monitored quarterly by the Department of Environmental Quality (DEQ) – Water Resources Division. There are currently no fish consumption advisories in effect for

Anacoco Reservoir.

Water quality

As detailed in the EVENTS/PROBLEMS section above, turbidity has been the primary water quality impairment in Anacoco Lake for the past ten years. Since the 2012 drawdown, turbidity has remained low with mean NTU's remaining below 25.

Water level

As noted above, below normal water levels and accompanying wave action has caused re-suspension of bottom sediments leading to increased turbidities in the past. Minor drawdowns (less than 6' below pool elevation) should be avoided for this reason.

BIOLOGICAL

Fish Samples

Gear - In the early years of standardized fish sampling (1966 – 1984), biomass surveys were the preferred sampling method for Anacoco Reservoir. Biomass surveys involve the use of a fish toxicant (rotenone) to kill all fish contained within a one acre block-off net. Data collected through biomass surveys are comprehensive, but the sampling method has been discontinued due to negative public sentiment. Other standardized methodologies have been employed since 1990, including electrofishing, gillnets, seines, lead nets, and creel surveys (Table 4).

Rotenone (standing crop estimates): 1966, 1967, 1968, 1970, 1974 - 1976, 1982, 1984, 1993 and 2006.

Table 4. Historical and scheduled sampling events on Anacoco Lake, LA from 1990-2018.

YEAR	SAMPLING TYPE
1990	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling Age, growth, genetics and feeding habit studies of largemouth bass
1991	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling

1992	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
1993	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Rotenone 4-one acre sets Water quality sampling
1994	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
1995	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
1996	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
1997	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling

1998	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
1999	• No sampling - Lake Bed Renovation
2000	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
2001	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Age, growth, and genetics studies of largemouth bass Creel Survey
2002	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Age, growth, and genetics studies of largemouth bass
2003	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls
2004	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Age, growth, and genetics studies of largemouth bass
2005	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls

2006	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Rotenone Sets – 4 one acre samples Shoreline seining – 3 hauls Water quality sampling
2007	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Lead nets – 2 sets Water quality sampling
2008	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
2009	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
2010	Aquatic Type Map Electrofishing 4-15 minute samples (spring and fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Shoreline seining – 3 hauls Water quality sampling
2011	Aquatic Type Map No fisheries samples taken due to low, turbid water conditions Water quality
2012	No fisheries sampling due to 18 foot drawdown for lake bed renovation

2013	Aquatic Type Map (see Appendix III) Electrofishing 4-15 minute samples (spring) 5-15 minute samples (forage sample in fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Water quality sampling LMB stocking success assessment via genetic analysis
2014	Aquatic Type Map Electrofishing 4-15 minute samples (spring) 5-15 minute samples (forage sample in fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Water quality sampling
2015	Aquatic Type Map Electrofishing 4-15 minute samples (spring) 4-225 second samples (forage sample in fall) Gill Nets - 3 samples each, 2.5, 3.0, 3.5, & 4.0" mesh Water quality sampling
2016	Aquatic Type Map No Fisheries Sampling Scheduled
2017	Aquatic Type Map No Fisheries Sampling Scheduled
2018	Aquatic Type Map No Fisheries Sampling Scheduled

Age and Growth

Age and growth (reported as mean length at age) of largemouth bass was determined through analysis of sagittal otoliths collected in fall 2002 and 2004. Growth rates were slightly below the statewide average. Crappie age and growth samples were collected in fall of 2007, however due to insufficient sample size no growth analysis was performed.

Genetic Analysis

Genetic sampling and analyses were conducted in 2001, 2002, 2004, and 2013 to determine introgression rate of the Florida genome in the Anacoco Lake bass population. The 2013 total FLMB gene expression was 33% with 6% pure Florida strain (Table 7). This sample consisted primarily of young-of-the-year (YOY) LMB spawned after the 2012 drawdown.

Largemouth Bass Feeding Habits

Stomach analyses of 40 largemouth bass collected in the spring of 1990 revealed that 27% contained no food items. Of those that contained gut contents, unidentified fish remains comprised 51% of the total volume of contents measured. Stomachs were also found to contain a variety of small arthropods.

Water Quality

Water quality parameters (pH, Temperature, dissolved oxygen, and conductivity) are generally measured and recorded in conjunction with fisheries samples.

Stocking History

Table 5. The species and number of fish stocked in Anacoco Lake, Louisiana from 1951 – 2015

Year	LMB (Florida)	LMB (Native)	Bluegill	Channel Catfish	Blue Catfish	Flathead Catfish	Crappie	Redear Sunfish	Threadfin Shad
1951		X	X	X			X		
1982					7,500				
1984					9,826				
1999			62,664						
2000	266,398		47,311	26,316		8,379			
2001	261,281		429,817			3,590			
2002	250,252			36,519		2,810			
2003	65,009								
2004	64,294								
2005	65,135								
2007			192,618						
2008	50,000								
2009								20,418	
2013	16,128		*16,699					*35,828	16,865
2014	32,035								
2015	32,101								
TOTALS	1,102,633		749,109	62,835	17,326	14,779		56,246	16,865

*Note: this total includes 4" adult broodstock.

Species profile

A checklist of fishes collected or historically known to occur in the Anacoco Creek drainage, Vernon Parish, Louisiana is found in Table 6 below.

Table 6. Fishes collected or historically known to occur in the Anacoco Creek drainage, Vernon Parish, Louisiana

Family, Scientific and Common Names
Petromyzontidae - lampreys {2}
Ichthyomyzon castaneus Girard, 1858 - chestnut lamprey
Ichthyomyzon gagei Hubbs and Trautman, 1937 - southern brook lamprey
Polyodontidae - paddlefishes {1}
Polyodon spathula (Walbaum, 1792) - paddlefish
Lepisosteidae - gars {2}
Lepisosteus oculatus Winchell, 1864 - spotted gar
Lepisosteus osseus (Linnaeus, 1758) - longnose gar
Amiidae - bowfin {1}
Amia calva Linnaeus, 1766 - bowfin
Clupeidae - herrings {2}
Dorosoma cepedianum (Lesueur, 1818) - gizzard shad
Dorosoma petenense (Guenthur, 1867) - threadfin shad
Cyprinidae - carps and minnows {15}
Cyprinus carpio Linnaeus, 1758 - common carp
Cyprinella lutrensis (Baird and Girard, 1853) - red shiner
Cyprinella venusta Girard, 1856 - blacktail shiner
Hybognathus hayi Jordan, 1885 - cypress minnow*
Hybognathus nuchalis Agassiz, 1855 - Mississippi silvery shiner
Hybopsis amnis (Hubbs, and Greene, 1951) - pallid shiner
Lythrurus fumeus (Evermann, 1892) - ribbon shiner
Lythrurus umbratilis (Girard, 1856) - redfin shiner
Notemigonus crysoleucas (Mitchill, 1814) - golden shiner
Notropis atrocaudalis Evermann, 1892 - blackspot shiner*
Notropis sabinae Jordan and Gilbert, 1886 - Sabine shiner
Notropis texanus (Girard, 1856) - weed shiner
Notropis volucellus (Cope, 1865) - mimic shiner
Opsopoeodus emiliae Hay, 1881 - pugnose minnow
Pimephales vigilax (Baird and Girard, 1853) bullhead minnow
Phenacobius mirabilis – (Girard, 1857) suckermouth minnow
Catostomidae - suckers {5}
Erimyzon claviformis (Girard, 1856) - western creek chubsucker* [see Bailey *et al*. 2005]
Erimyzon sucetta (Lacépède, 1803) - lake chubsucker*
Ictiobus bubalus (Rafinesque, 1818) - smallmouth buffalo
Minytrema melanops (Rafinesque, 1820) - spotted sucker
Moxostoma poecilurum Jordan, 1877 - blacktail redhorse
Ictaluridae - North American catfishes {7}
Ameiurus melas (Rafinesque, 1820) - black bullhead
Ameiurus natalis (Lesueur, 1819) - yellow bullhead
Ictalurus furcatus (Lesueur, 1840) - blue catfish
Ictalurus punctatus (Rafinesque, 18180 - channel catfish

Noturus gyrinus (Mitchill, 1817) - tadpole madtom
Noturus nocturnus Jordan and Gilbert, 1886 - freckled madtom
Pylodictis olivaris (Rafinesque, 1818) - flathead catfish
Esocidae - pikes {1}
Esox americanus Gmelin, 1789 - grass pickerel
Aphredoderidae - pirate perch {1}
Aphredoderus sayanus (Gilliams, 1824) - pirate perch
Atherinopsidae - New World silversides {1}
Labidesthes sicculus (Cope, 1865) - brook silverside
Fundulidae - topminnows {2}
Fundulus notatus (Rafinesque, 1820) - blackstripe topminnow
Fundulus olivaceus (Storer, 1845) - blackspotted topminnow
Poeciliidae - livebearers {3}
Gambusia affinis (Baird and Girard, 1853) - western mosquitofish
Heterandria formosa Agassiz, 1855 - least killifish
Poecilia latipinna (Lesueur, 1821) - sailfin molly
Cyprinodontidae - pupfishes {1}
Cyprinodon variegatus Lacépède, 1803 - sheepshead minnow
Moronidae - temperate basses {1}
Morone mississippiensis Jordan and Evermann, 1887 - yellow bass
Centrarchidae - sunfishes {13}
Centrarchus macropterus (Lacépède, 1801) - flier
Lepomis cyanellus Rafinesque, 1819 - green sunfish
Lepomis gulosus (Cuvier, 1829) – warmouth
Lepomis humilis (Girard, 1858) - orangespotted sunfish
Lepomis macrochirus Rafinesque, 1819 – bluegill
Lepomis marginatus (Holbrook, 1855) - dollar sunfish
Lepomis megalotis (Rafinesque, 1820) - longear sunfish
Lepomis microlophus (Gunther, 1859) - redear sunfish
Lepomis miniatus Jordan, 1877 - redspotted sunfish
Lepomis symmetricus Forbes, 1883 - bantam sunfish
Micropterus salmoides (Lacépède, 1802) - largemouth bass
Micropterus punctulatus (Rafinesque, 1819) - spotted bass
Pomoxis annularis Rafinesque, 1818 - white crappie
Pomoxis nigromaculatus (Lesueur, 1829) - black crappie
Percidae - perches {9}
Ammocrypta vivax Hay, 1882 - scaly sand darter
Etheostoma chlorosoma (Hay, 1880) - bluntnose darter
Etheostoma collettei Birdsong and Knapp, 1969 - creole darter
Etheostoma gracile (Girard, 1859) - slough darter
Etheostoma histrio Jordan and Gilbert, 1887 - harlequin darter
Etheostoma proeliare (Hay, 1880) - cypress darter
Percina macrolepida Stevenson, 1971 - bigscale logperch
Percina maculata (Girard, 1859) - blackside darter
Percina sciera (Swain, 1883) - dusky darter
Sciaenidae - drums and croakers {1}

Aplodinotus grunniens Rafinesque – Freshwater drum
Elassomatidae - pygmy sunfish {1}
Elassoma zonatum Jordan, 1877 - banded pygmy sunfish

Nomenclature and phylogenetic order follows Nelson, *et al*. 2004. Common and Scientific Names of Fishes from the United States, Canada, and Mexico, 6th Edition. American Fisheries Society Special Publication 29. 386 pp. Exceptions are noted.

Genetics

Table 7. Genetic analyses of the largemouth bass in Anacoco Lake, Louisiana

Year	Number	Northern	Florida	Fx hybrid	Florida Influence
2001	31	87%	0%	13%	13%
2002	31	74%	6%	20%	26%
2004	23	70%	0%	30%	30%
2013	98	67%	6%	27%	33%

Threatened/endangered/exotic species
Bald eagles have been observed nesting in the vicinity of Anacoco Lake (below the dam).

WATER USE

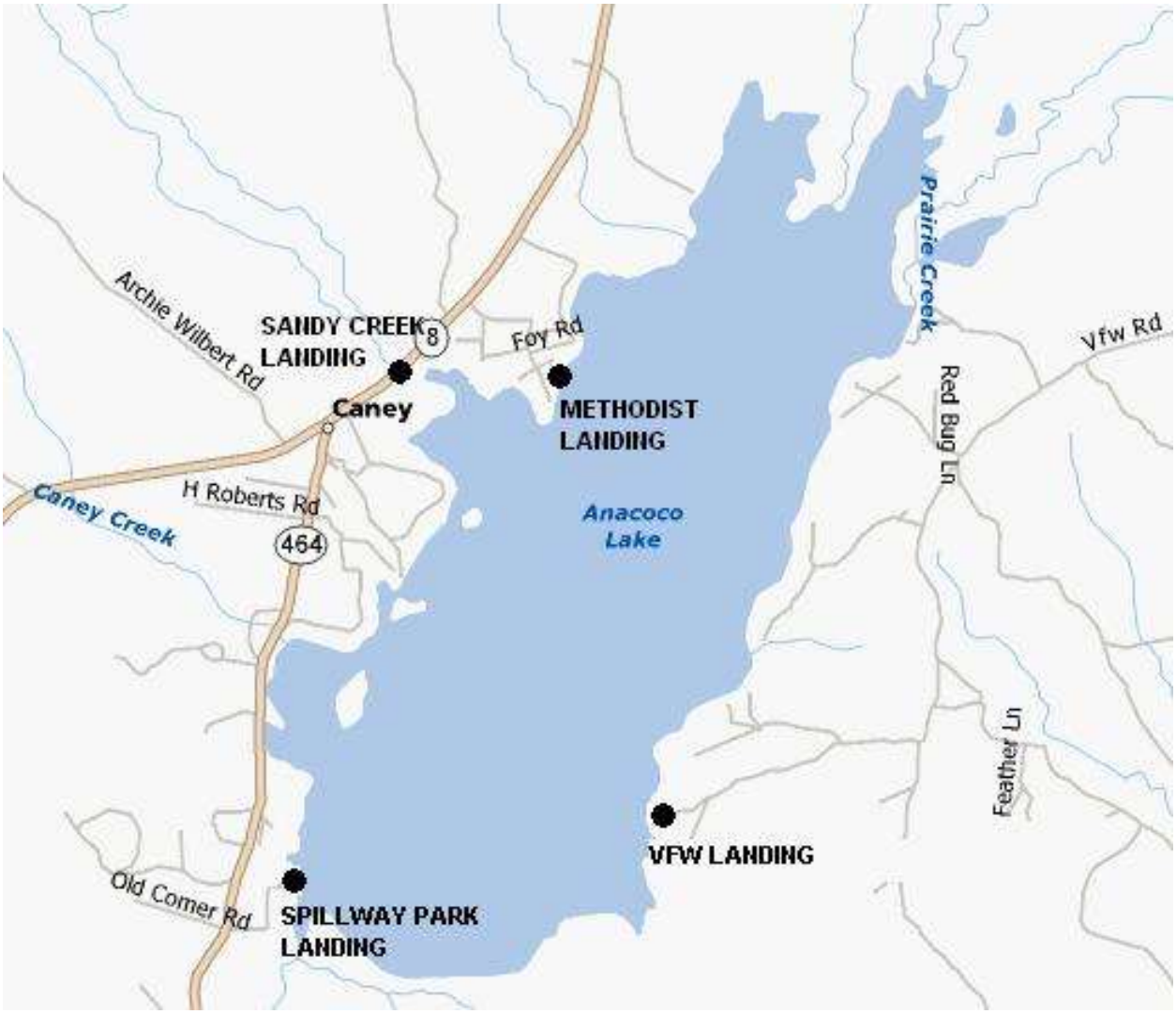
Hunting
There are approximately one dozen duck blinds throughout Anacoco Reservoir. Permits, issued by the Vernon Parish Police Jury are required.

Swimming
There are public swimming areas at both the VFW and Spillway Park landings. Both areas are "swim at your own risk" with no life guards on duty.

Fishing & boat riding
Yes

Irrigation
There are no agricultural or municipal water withdrawals for the purpose of irrigation. The Police Jury allows private property owners around the lake to have personal irrigation systems designed for yard and garden watering only. Additionally, there are a number of fire hydrants around the lake the Police Jury maintains for fire protection of residents.

APPENDIX I – LAKE MAP W/BOAT LAUNCHES
(return to boat ramps)



APPENDIX II
(return to lakebed)

ANACOCO LAKE BED RENOVATION PROJECT - 1999

By
Bobby C. Reed
Inland Fish Division
LA Dept. Wildlife & Fisheries

History — Anacoco Lake is situated in West Central Vernon Parish approximately five to eight miles from Leesville, LA. Formed by the impoundment of Anacoco Creek in 1950, Anacoco Lake lies in a somewhat flat flood plain adjacent to gently rolling hills comprised of sandy to sandy loam top soils underlain by red clay. The forest types are predominantly upland pine/mixed hardwood and bottomland hardwoods. With the impoundment of Vernon Lake just upstream and the aging process (48 years), the essential nutrients/fertility needed for viable fisheries production are no longer available. To improve water quality, increase fertility and stimulate fish growth and production major habitat modifications are necessary to revitalize Anacoco Lake.

The Department of Wildlife and Fisheries with the assistance of the Vernon Parish Game and Fish Commission, Police Jury, Dept. Transportation and Development and several other agencies and volunteer workers will cooperate and implement a Management Plan to enhance fisheries resources on Anacoco Lake. This management plan explains and outlines important steps to improve the lake.

Procedures - We will implement a spring/summer draw down of Anacoco Lake to achieve plan objectives of improving fisheries. The lake level will be maintained at least 8 to 10 feet below pool elevation (184.0 - 186.0 MSL) to accomplish renovation objectives. Numerous studies have been conducted on the effects of water level fluctuations on fisheries production (Lantz et al. 1967, Keith 1975, Ploskey 1986, and Nordhaus 1989). If conducted properly (planned and controlled) drawdowns can be very beneficial to overall fisheries production (Keith 1975). Drawdowns have several positive impacts on older and aging reservoirs:

1) **Exposure of the organic build-up** on the lake bottom resulting in the aeration and drying out of bottom sediments and the oxidation of organic and mineral matter, thus releasing nutrients when re-flooded.

2) **Re-vegetation of exposed lake bottoms by terrestrial plants** - both volunteer and cultivated plantings. Plant growth and root activity release nutrients otherwise unavailable to the reservoir. Flooding of terrestrial plants provide a substrate for algae and release nutrients upon decomposition.

3) **Reduction of undesirable forage and rough fishes**, overpopulation of sunfish (bream) due to low numbers of desirable game fishes is a common problem in older less productive reservoirs. Drawdowns concentrate game fish and prey fish in smaller areas

and game fish feed heavily and fatten during the fall and winter months.

4) **Heavy game fish reproduction** the following spring season after refilling, especially "fattened" largemouth bass. Since the forage fish population has been greatly reduced by predation, the "fill-the-void" stimulus is apparent as game fish spawn with great success to occupy the "new" area.

5) **Control of aquatic vegetation** is accomplished by drying and freezing during the winter months. Successful drawdowns and timely freezes make this one-two punch lethal to noxious weeds.

6) **"Drastic" drawdowns of intervals of 5 to eight years** are much more beneficial than lesser drawdowns of more frequent intervals.

"Renovation" - Drawdowns must occur during the growing season for successful seeding of herbaceous terrestrial plants on lake bottoms and should allow for substantial growth before refilling. Terrestrial vegetation may consist of "volunteer" native plant growth and intentionally planted crops such as millet and sorghum. Ploskey (1986) reported that millets and sorghums provided large dense stands of desirable vegetation and seemed to be the choice for several fisheries managers who had conducted summer drawdowns. These were broadcast at a rate of 20 to 45 lbs. seed/acre and 100 lbs. 8-8-8 fertilizer/acre from summer to early fall. Since the proposed draw down will end September 15 most planting should occur April - July. When the lake is drawn down eight to ten feet below pool, approximately 2/3 thirds of the lake bed is exposed, or 1,700 acres. The actual work activities to be conducted in the lake bed proper must be held to a minimum so as not to disturb lake bottoms. To do extensive dirt work along shorelines (grading, grubbing of dead timber, or deep plowing would require a permit from the Corps of engineers, Section 404 and Section 10). Additionally, the State Division of Archeology has identified some 135 archeological sites in the lake during the last draw down (1995), and any dirt moving activities could easily damage these sensitive sites. Due to these restrictions and the size of the reservoir to be seeded, aerial application of seed and fertilizer will be the most cost effective method of accomplishing the project objective of establishing terrestrial vegetation. Below is an outline and time line for the Anacoco Lake Renovation Project:

ANACOCO LAKE RENOVATION PROJECT

I. Draw down to commence with DOTD opening the gate on February 1, 1999.

II. Lake to be drawn down eight to 10 feet below normal pool or 184.0 to 186.0 MSL, expect the lake to be at or near desirable level by early to mid-March (depending upon the weather).

III. By early to mid-April the lake bottoms should begin drying enough to allow for native "volunteer" terrestrial plants to begin sprouting and growing as the season warms.

IV. By May and June the lakebed should be dry enough to begin seed and fertilizer applications. Millets may include Japanese, Pearl and brown top, while sorghum may include Sudan and other "tall" varieties. Egyptian wheat is another excellent and very tall annual grass. Either aerial or terrestrial applications are sufficient, which ever method works out.

V. DOTD to close the gates on September 15, 1999 to begin re-flooding the reservoir. Lake should reach pool elevation by October 15, depending upon the weather.

VI. Fish Stocking - 2000 through 2002 the Department of Wildlife and Fisheries will stock fingerling fishes into Anacoco Lake in order to restore sport fish populations and enhance angling opportunities. The following species and numbers have been requested of the Hatchery Section of LDWF:

Florida Largemouth Bass - 260,000/yr.
Channel Catfish - 26,000/yr.
Blue Catfish - 26,000/yr.
Flathead Catfish - 10,000/yr.
Threadfin Shad - 200,000/yr.
Bluegill/redear - 400,000

VII. Monitoring - The recovery of fish populations in Lake Anacoco will be monitored monthly from June 2000 through June 2002. Monitoring will include electrofishing, seine, and experimental gill net samples conducted monthly at selected sites. Documentation will provide LDWF biologists with important fisheries management and recovery time data on this reservoir for future draw down events. More importantly, this project will provide a management framework for lake bed renovation in other Louisiana reservoirs where productivity has waned.

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APPENDIX III – VEGETATIVE TYPE MAP
(return to typemap)

ANACOCO LAKE
September 2014
Robby Maxwell

Anacoco Lake, in Vernon Parish, was surveyed for the presence of aquatic vegetation on September 25, 2014. On the day of the survey, water clarity was 38 cm as measured by secchi disk, and turbidity was measured at 18.8 NTU. The water was more turbid than last year's vegetation survey.

Plant densities were designated as "Low," "Medium," and "High." The heaviest densities of plants were in the northern portions of the lake, and most notably in the northeastern end, though earlier spray efforts have been effective in the areas that are perennial problems. The most common species of concern in these areas were alligator weed (*Alternanthera philoxeroides*) and primrose (*Ludwigia* spp.). These two species made up the majority of plants in heavily infested areas. Common salvinia (*Salvinia* minima) was observed sheltered in a southeastern cove and in the cypress trees on the northern end of the lake. *Phragmites* spp. was observed in one small stand on the eastern end of the lake.

Much of the 2'-4' contour of the lake was occupied by light to medium densities of spikerush (*Eleocharis spp.*), pondweed (*Potamogeton* spp.), and stonewort (*Nitella* spp.). In the winter and spring of 2013, LDWF planted bulrush (*Schoenoplectus californicus*), white water lily (*Nymphaea odorata*), and tape grass (*Vallisneria americana*) throughout the lake. So far, bulrush survival has been high, water lilies were observed mostly in the northern and western portions of the lake with a few large stands present, and no surviving tape grass was observed.

Alligator weed is a substantial problem in the northeastern portion of the lake, and any spray efforts should be concentrated on these areas. Overall, much of the lake is problem-free in regards to nuisance plants.

The beneficial aquatic plant growth is promising, and should benefit a fishery that has been plagued by water quality issues for the past few years.

ANACOCO LAKE
September 2015
Daniel Hill

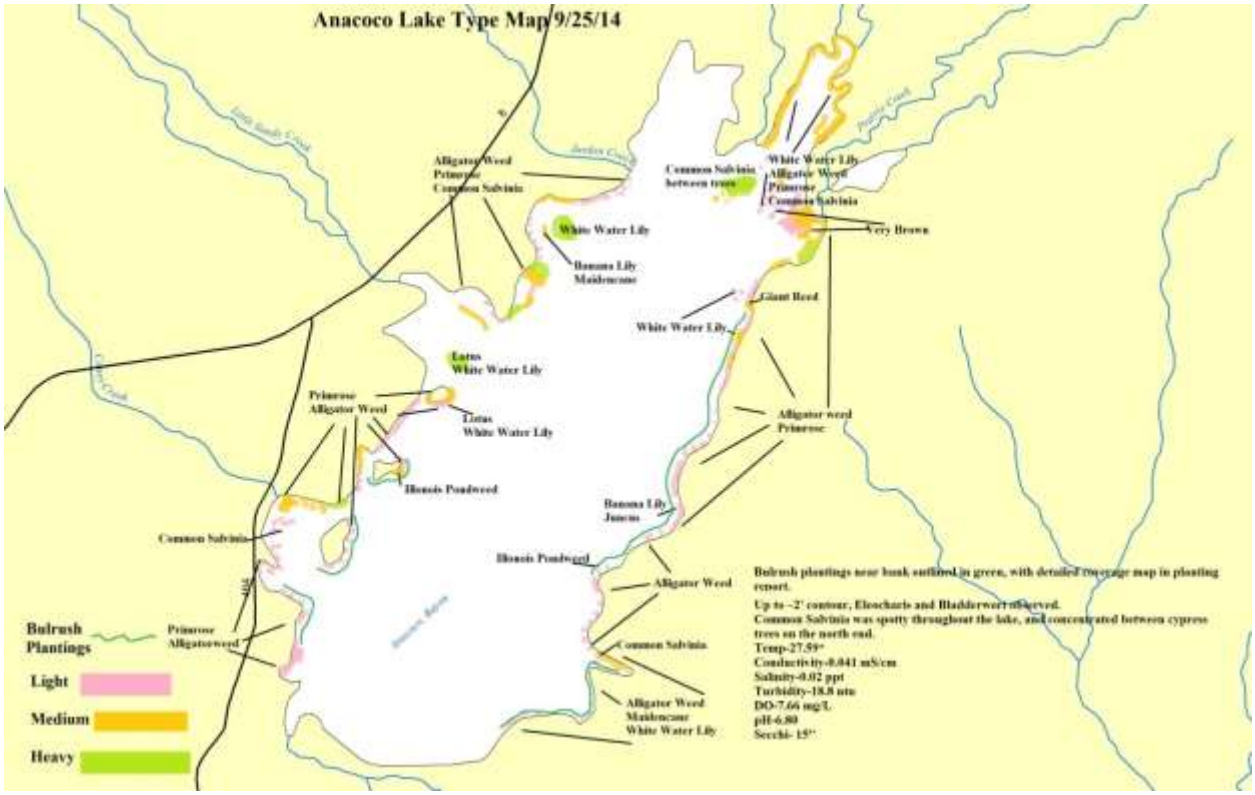
Anacoco Lake, in Vernon Parish, was surveyed for the presence of aquatic vegetation on September 2, 2015. The 2015 aquatic vegetation survey is attached for comparison to 2014. During the 2015 survey the turbidity was similar to that of the 2014 survey. Water clarity was 38.1 cm as measured by Secchi disk and the NTU reading was 27.6.

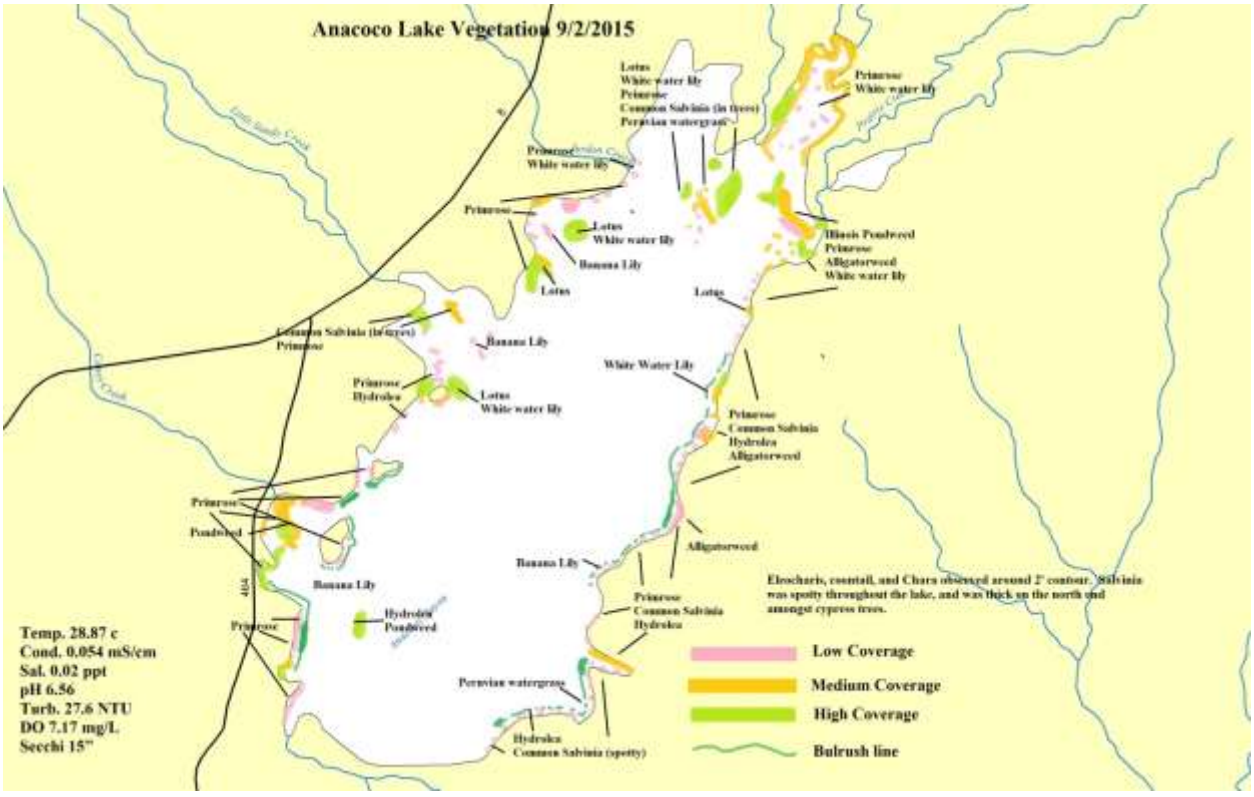
Plant densities were designated as "Low," "Medium," and "High." The heaviest densities of plants were in the northern portions of the lake, and most notably in the northeastern end, though earlier spray efforts have been effective in the areas that are perennial problems. The most common species of concern in these areas were alligator weed (*Alternanthera philoxeroides*) and primrose (*Ludwigia* spp.). These two species made up the majority of plants in heavily infested areas. Common salvinia (*Salvinia minima*) was observed sheltered in a southeastern cove and in the cypress trees on the northern end of the lake. *Phragmites* spp. was observed in one small stand on the eastern end of the lake.

Much of the 2'-4' contour of the lake was occupied by light to medium densities of spikerush (*Eleocharis spp.*), pondweed (*Potamogeton* spp.), coontail (*Ceratophyllum demersum*) and stonewort (*Nitella spp.*). In the winter and spring of 2013, LDWF planted bulrush (*Schoenoplectus californicus*), white water lily (*Nymphaea odorata*), and tape grass (*Vallisneria americana*) throughout the lake. So far, bulrush survival has been high, water lilies were observed mostly in the northern and western portions of the lake with a few large stands present, and no surviving tape grass was observed.

Alligator weed and primrose is a substantial problem in the northeastern portion of the lake, and any spray efforts should be concentrated on these areas. Overall, much of the lake is problem-free in regards to nuisance plants.

The beneficial aquatic plant growth is promising, and should benefit a fishery that has been plagued by water quality issues for the past few years.


Anacoco Lake Type Map 9/25/14
Alligator Weed
Primrose
Common Salvinia
Common Salvinia between trees
White Water Lily
Alligator Weed
Primrose
Common Salvinia
Very Brown
White Water Lily
Banana Lily
Maidencane
Giant Reed
White Water Lily
Lotus
White Water Lily
Primrose
Alligator Weed
Lotus
White Water Lily
Alligator weed
Primrose
Illinois Pondweed
Banana Lily
Juncus
Common Salvinia
Illinois Pondweed
Alligator Weed
Common Salvinia
Alligator Weed
Maidencane
White Water Lily
Bulrush Plantings
Primrose
Alligatorweed
Light
Medium
Heavy
Bulrush plantings near bank outlined in green, with detailed coverage map in planting report.
Up to –2' contour, Eleocharis and Bladderwort observed.
Common Salvinia was spotty throughout the lake, and concentrated between cypress trees on the north end.
Temp-27.59°
Conductivity-0.041 mS/cm
Salinity-0.02 ppt
Turbidity-18.8 ntu
DO-7.66 mg/L
pH-6.80
Secchi- 15"


Anacoco Lake Vegetation 9/2/2015
Lotus
White water lily
Primrose
Common Salvinia (in trees)
Peruvian watergrass
Primrose
White water lily
Primrose
Lotus
White water lily
Banana Lily
Lotus
Illinois Pondweed
Primrose
Alligatorweed
White water lily
Lotus
Common Salvinia (between trees)
Primrose
Banana Lily
White Water Lily
Primrose
Hydrolea
Lotus
White water lily
Primrose
Common Salvinia
Hydrolea
Alligatorweed
Primrose
Pondweed
Alligatorweed
Banana Lily
Banana Lily
Primrose
Common Salvinia
Hydrolea
Hydrolea
Pondweed
Peruvian watergrass
Hydrolea
Common Salvinia (spotty)
Temp. 28.87 c
Cond. 0.054 mS/cm
Sal. 0.02 ppt
pH 6.56
Turb. 27.6 NTU
DO 7.17 mg/L
Secchi 15"
Eleocharis, coontail, and Chara observed around 2' contour. Salvinia was spotty throughout the lake, and was thick on the north end amongst cypress trees.
Low Coverage
Medium Coverage
High Coverage
Bulrush line