

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

**BLACK RIVER - COCODRIE LAKE
COMPLEX**

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

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LAKE HISTORY

General Information

The Black River Lake-Cocodrie Lake Complex consists of two individual lakes interconnected by Workinger Bayou. The lakes utilize one water control structure to maintain water levels. Because the lakes are interconnected, it is necessary to approach both lakes as a single complex when considering management options. In the following lake management plan the lakes will be referred to as the Black River-Cocodrie Lake Complex (hereinafter Lake Complex). In several areas of the document, the lakes may be referenced individually for clarification purposes.

Date reservoir formed

Cocodrie Lake is a natural oxbow likely formed when the Mississippi River changed course. Black River Lake is an impounded river bend of Black River that was cut off from Black River by flood control levees built by the U.S. Army Corp. of Engineers (USACE) in May of 1952. The two lakes are connected by Workinger Bayou and the pool elevation in both lakes is maintained by one water control structure installed in 1982 and located in Cocodrie Bayou.

Impoundment

Ownership – State of Louisiana

Purpose for creation – Cocodrie Lake is a natural oxbow. Black River Lake was created by flood control levees that cut off a portion of Black River. The primary purpose of the Lake Complex is to provide recreational opportunities for the citizens of the state.

Size

Black River Lake is 1,000 acres and Cocodrie Lake is 742 acres. Workinger Bayou connects the two lakes. The Lake Complex has a total of 1,792 acres.

Water shed

The Lake Complex has a 7:1 watershed ratio. However, the Lake Complex is connected to Cocodrie Bayou thru Bayou Cross Cocodrie. Cocodrie Bayou is the primary drainage source for the majority of Concordia Parish and portions of Catahoula and Tensas parish. Due to this connection, the Lake Complex experiences significant water level fluctuation following periods of high rainfall.

Pool stage

34.0 ft. Mean Sea Level (MSL)

Parish/s located

Catahoula and Concordia

Drawdown description

The drawdown detail and description is unknown. The Lake Complex has never been drawn down. The drawdown gate was intentionally made inoperable due to vandalism (i.e., unauthorized openings).

Drawdown structure – see [Appendix I](#).

Gate size –

Number of gates – one

Condition – poor, inoperable

Spillway

Black River- Cocodrie Lake Complex spillway is located in Cocodrie Bayou. It is a concrete weir 75 feet wide with an elevation of 33.0 feet MSL. The drawdown gate is located in the center of the weir; however, it has never been operated for a drawdown and is inoperable at this time.

Who controls

The Cocodrie Bayou structure was a Louisiana Department Public Works project. The Concordia Parish Police Jury is the duly authorized entity which operates and maintains the Cocodrie Bayou water control structure. Lake management decisions other than flood control would be conducted under the supervision of the Louisiana Department of Wildlife and Fisheries (LDWF).

Lake Authority

There is no state-authorized Lake Commission.

Lake Association

There is no current active Lake Association. The Louisiana Department of Wildlife and Fisheries collaborates with Concordia Parish Police Jury on management decisions.

Contact Information - Concordia Parish Police Jury
4001 Carter Street- Room 1
Vidalia, La. 71373

Authorization

Parish government under state law can select/appoint a panel of interested/concerned citizens to serve on committees in an advisory capacity to the jury. The Lake Complex does not have an active Advisory Committee at this time.

Access - Map with locations (See [Appendix II](#))

Public Boat Launches

Horseshoe Marina (commercial) – Hwy 129 – 31.502769, -91.701858
Cocodrie Lake Public landing – Hwy 565 – 31.515576, -91.713654
Workinger Bayou Marina (commercial) – Hwy 906 – 31.472848, -91.742764

Piers

No public fishing piers are available. Numerous private piers are located on the lake.

State/Federal Facilities

No state or federal facilities

Reefs

No artificial reefs have been placed in the Lake Complex

State/National Parks

NONE

Shoreline development by landowners

The Lake Complex has moderate development with approximately 600 houses, camps, and businesses around the shoreline.

Physical Description of lake

Shoreline length

49.5 miles

Timber type

Black River/ Cocodrie Lake is primarily an open water lake. The shoreline consists of hardwood bottomland, agricultural fields, and camps and houses.

Average depth

Black River Lake – 40' average depth
Cocodrie Lake - 6' average depth

Maximum depth

60 feet

Natural seasonal water fluctuation

The Lake Complex is connected to Cocodrie Bayou, which due to flood control levees on the Black, Tensas, Red and Mississippi Rivers, has become the primary drain for portions of Concordia, Tensas and Catahoula Parish. For this reason, the Lake Complex experiences

significant water fluctuations during rain events. Since 1990, the average annual water level fluctuations above pool stage have been 9.3 feet.

Events / Problems

Due to the Lake Complex being connected to Cocodrie Bayou, which is the primary drainage outlet for Concordia Parish, flooding has become an issue for lake area residents during high rainfall events. The Black River Lake Restoration and Flood Control Study was prepared for the Black River Lake Recreation and Water Conservation District by Denmon Engineering Company, Inc. in 2006. The study recommended a flood control structure on Black River Lake to allow water flow between the Lake Complex and Black River. Denmon Engineering conducted a preliminary report for the project in 2007. The report suggested that 2-10'x10'box culverts placed through the Black River Levee would mitigate some of the current flooding and sedimentation problems in the Lake Complex area. The study calculated a cost estimate for the project of \$3,386,132.

Due to the large amount of agricultural area surrounding Cocodrie Lake, siltation and high turbidity has been an on-going issue.

MANAGEMENT ISSUES

Aquatic Vegetation

Historically, aquatic vegetation has not been a serious issue in the Lake Complex. The latest vegetation survey was conducted in August of 2014. No significant submersed vegetation was observed and no significant amount of floating vegetation was found.

The only emergent vegetation observed was a fringe of giant cutgrass (*Zizaniopsis miliacea*) along much of the shoreline. This vegetation is beneficial and likely reduces shoreline erosion by buffering waves created by extensive water recreation that occurs on the lake.

Type map

A vegetation survey was conducted on Black River Lake in August of 2014 and found approximately 6 to 10 acres of aquatic vegetation. No type map was completed due to the lack of vegetation.

Biomass

No vegetation biomass sampling has been conducted.

Treatment history by year available

Biological

No biological treatments have occurred.

Chemical

LDWF spray crews utilize foliar herbicide applications as periodic complaints are received from the public. Public complaints are uncommon. The only recorded spraying occurred in 2013. No spraying was needed in 2014. For a complete summary of herbicide applications see Table 1.

Herbicide treatments made in the past have been applied at the following rates:

Glyphosate (Aquamaster, Aquastar, etc.): Used at a rate of 0.75 gallons per acre to treat alligator weed, water hyacinth, and giant and common salvinia during the active growing period.

Diquat (Reward, Knockout): Used at a rate of 0.75 gallons per acre to treat alligator weed, water hyacinth, and giant and common salvinia during the slower growing period or winter months.

Surfactant is added at a rate of 1:4 (surfactant: herbicide) for all herbicides.

Future herbicide applications for the treatment of giant and common salvinia will be in accordance with the approved LDWF Aquatic Herbicide Application Procedure effective March 18, 2013. Schedule and rates listed below:

April 1-October 31: glyphosate (0.75 gal/acre)/diquat (0.25 gal/acre)/Aqua King Plus (0.25 gal/acre)/ Air Cover (12 oz. /acre)

November 1 – March 31: diquat (0.75 gal./acre)/non-ionic surfactant (0.25 gal/acre)

Table 1. Herbicide applications made in the Black River-Cocodrie Lake Complex, Louisiana for 2013.

Year	Acres Treated	Vegetation
2013	65	Water Hyacinth
	15	Alligator Weed

Physical

No drawdowns have been conducted on the Lake Complex.

History of Regulations

Recreational

Statewide regulations for all fish species, the recreational fishing regulations may be viewed at this link: <http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

The commercial fishing regulations may be viewed at the link below:
<http://www.wlf.louisiana.gov/fishing/regulations>

Drawdown history

The Black River-Cocodrie Lake Complex has never had a drawdown.

Fish kills / Disease History, LMBV

No fish kills have been documented in this Lake Complex; however, in 2003 40- largemouth bass, 8- spotted bass, and 7- black crappie were tested for largemouth bass virus (LMBV). The results were as follows:

LMB - 11 Positive 27%
Spotted Bass – 1 Positive 12%
Black Crappie – 0%

No documented fish kills have been reported for this Lake Complex.

Contaminants / Pollution

No documented records of contaminants or pollution have been located in the files. Currently, there are no fish consumption advisories. However, annual updates can be found at the DEQ and LDWF links below.

<http://www.deq.louisiana.gov/portal/tabid/2201/Default.aspx>

<http://www.wlf.louisiana.gov/fishing/fish-consumption-advisories>

Water level

Normal pool elevation for the Lake Complex is 34.0 MSL. Water levels fluctuate greatly due to the lakes being connected and draining through Cocodrie Bayou. Cocodrie Bayou is the primary drainage for Concordia Parish. Water levels rise and fall erratically during rainfall events. Physical evidence and anecdotal information from local residents indicate that, during high rainfall events, the lake water level may rise 10 ft. above normal pool before head pressure increases enough to force the water to start flowing south down Cocodrie Bayou (Black River Lake Hydraulics Report and Preliminary design; Denmon Engineering, Inc.; 2007).

Biological

Fish samples

Table 2. Historical and proposed fisheries sampling on Black River-Cocodrie Lake Complex, Louisiana.

YEAR	SAMPLING GEAR
1978	Rotenone – 2 Stations
1988	Rotenone – 1 Station
1990	Electrofishing (Summer – 3 Stations)
1991	Frame Nets (Winter – 4 Stations)
1999	Electrofishing (Fall – 6 Stations)
2002	Electrofishing (Spring and Fall – 6 Stations)
2003	Electrofishing (Fall – 3 Stations, forage 1 station), Frame nets (Winter – 4 Stations), Lead nets (Winter – 3 stations)
2006	Seines (Summer – 4 stations) Electrofishing (Fall – 8 stations, forage – 2 Stations, Spring – 3 Stations) Lead nets (Winter – 6 stations)
2007	Electrofishing (Spring – 3 Stations)
2010	Seines (Summer – 1 Station)
2012	Electrofishing (Spring and Fall – 4 Stations, forage – 4 Stations)
2014	Gill Net (Winter – 3 Stations)
2017	Electrofishing (Spring and Fall – 4 Stations, forage – 4 Stations)

Lake records

No official records are kept for Black River-Cocodrie Lake Complex

Stocking History

Stocking has been minimal. Florida largemouth bass (FLMB) stocking first occurred in 2004. Since that time, FLMB stocking has been sporadic and has occurred 5 times (Table 3).

Table 3. Fish stocking records for Black River- Cocodrie Lake Complex, Louisiana from 2004 to present.

Year	Florida Largemouth Bass
2004	10,065
2007	11,036
2008	9,900
2011	10,808
2014	17,400

Genetics

Electrophoretic analysis was conducted on a sample of 55 largemouth bass in 2006. The results of genetic testing are found in Table 4.

Table 4. Genetics analyses of largemouth bass in the Black River-Cocodrie Lake Complex, Louisiana.

Lake	Year	n	% Northern	% Florida	% Hybrid	% Florida Influence
Black River Lake	2006	36	100	0	0	0
Cocodrie Lake	2006	22	84	0	16	16

Species profile

As per Freshwater Fishes of Louisiana by Dr. Neil H. Douglas, fish species listed below have been collected or are likely to occur in the Black River-Cocodrie Lake Complex.

Lamprey Family, PETROMYZONTIDAE

Southern brook lamprey, *Ichthyomyzon gagei* Hubbs and Trautman
Chestnut lamprey, *Ichthyomyzon castaneus* Girard

Gar Family, LEPISOSTEIDAE

Spotted gar, *Lepisosteus oculatus* (Winchell)
Longnose gar, *Lepisosteus osseus* (Linnaeus)
Shortnose gar, *Lepisosteus platostomus* Rafinesque
Alligator gar, *Lepisosteus spatula* Lacépède

Bowfin Family, AMIIDAE

Bowfin, *Amia calva* Linnaeus

Freshwater Eel Family, ANGUILLIDAE

American eel, *Anguilla rostrata* (Lesueur)

Herring Family, CLUPEIDAE

- Gizzard shad, *Dorosoma cepedianum* (Lesueur)
- Threadfin shad, *Dorosoma petenense* (Günther)

Minnow Family, CYPRINIDAE

- Blacktail shiner, *Cyprinella venusta* (Girard)
- Common Carp, *Cyprinus carpio* Linnaeus
- Cypress minnow, *Hybognathus hayi* Jordan
- Striped shiner, *Luxilus chrysocephalus* Rafinesque
- Golden shiner, *Notemigonus crysoleucas* (Mitchill)
- Emerald shiner, *Notropis atherinoides* Rafinesque
- Taillight shiner, *Notropis maculatus* (Hay)
- Weed shiner, *Notropis texanus* (Girard)
- Mimic shiner, *Notropis volucellus* (Cope)
- Bullhead minnow, *Pimephales vigilax* (Baird and Girard)
- Creek chub, *Semotilus atromaculatus* (Mitchill)

Sucker Family, CATOSTOMIDAE

- Lake chubsucker, *Erimyzon sucetta* (Lacépède)
- Smallmouth buffalo, *Ictiobus bubalus* (Rafinesque)
- Bigmouth buffalo, *Ictiobus cyprinellus* (Valenciennes)
- Black buffalo, *Ictiobus niger* (Rafinesque)
- Spotted sucker, *Minytrema melanops* (Rafinesque)

Freshwater Catfish Family, ICTALURIDAE

- Black bullhead, *Ameiurus melas* (Rafinesque)
- Yellow bullhead, *Ameiurus natalis* (Lesueur)
- Tadpole madtom, *Noturus gyrinus* (Mitchill)
- Blue Catfish, *Ictalurus furcatus* (Lesueur)
- Channel Catfish, *Ictalurus punctatus* (Rafinesque)
- Flathead Catfish, *Pylodictis olivaris* (Rafinesque)

Pike Family, ESOCIDAE

- Grass pickerel, *Esox americanus vermiculatus* (Lesueur)
- Chain pickerel, *Esox niger* (Lesueur)

Pirate Perch Family, APHREDODERIDAE

- Pirate perch, *Aphredoderus sayanus* (Gilliams)

Killifish Family, CYPRINODONTIDAE

- Golden topminnow, *Fundulus chrysotus* (Günther)
- Starhead topminnow, *Fundulus nottii* (Agassiz)
- Blackstripe topminnow, *Fundulus notatus* (Rafinesque)

Blackspotted topminnow, *Fundulus olivaceus* (Storer)

Livebearer Family, POECILIIDAE

Western mosquitofish, *Gambusia affinis* (Baird and Girard)

Silverside Family, ATHERINIDAE

Brook silverside, *Labidesthes sicculus* (Cope)

Temperate Bass Family, PERCICHTHYIDAE

White bass, *Morone chrysops* (Rafinesque)

Yellow bass, *Morone mississippiensis* (Jordan and Eigenmann)

Striped bass, *Morone saxatilis* (Walbaum)

Sunfish Family, CENTRARCHIDAE

Banded pygmy sunfish, *Elassoma zonatum* (Jordan)

Green sunfish, *Lepomis cyanellus* (Rafinesque)

Warmouth, *Lepomis gulosus* (Cuvier)

Orangespotted sunfish, *Lepomis humilis* (Girard)

Bluegill, *Lepomis macrochirus* (Rafinesque)

Dollar sunfish, *Lepomis marginatus* (Holbrook)

Longear sunfish, *Lepomis megalotis* (Rafinesque)

Redear sunfish, *Lepomis microlophus* (Günther)

Spotted sunfish, *Lepomis punctatus* (Valenciennes)

Bantam sunfish, *Lepomis symmetricus* (Forbes)

Florida largemouth bass, *Micropterus floridanus* (Kassler et al)

Northern largemouth bass, *Micropterus salmoides salmoides* (Lacépède)

White crappie, *Pomoxis annularis* (Rafinesque)

Black crappie, *Pomoxis nigromaculatus* (Lesueur)

Perch Family, PERCIDAE

Swamp darter, *Etheostoma fusiforme* (Girard)

Slough darter, *Etheostoma gracile* (Girard)

Drum Family, SCIAENIDAE

Freshwater drum, *Aplodinotus grunniens* (Rafinesque)

Threatened/endangered/exotic species

No threatened or endangered species have been documented in the Lake Complex. Silver carp (*Hypophthalmichthys molitrix*), an exotic Asian carp species, has been documented. Bighead carp (*Hypophthalmichthys nobilis*) and grass carp (*Ctenopharyngodon idella*) have not been documented; however, they are likely to occur due to periodic flooding from local rivers.

Recreational Angler Survey (Creel survey)

Current methods

Access point creel surveys were conducted on the Lake Complex in 2006 and 2007.

Historic information

2006 estimates: Number of anglers = 6,914; total angler hours = 34,156; mean trip = 4.64 hrs. Mean distance traveled = 43 miles

2007 estimates: Number of anglers = 8,246; total angler hours = 34,345; mean trip = 4.31 hrs. Mean distance traveled = 53 miles

Hydrological Changes

Flood control levees for the Black, Tensas, Red and Mississippi Rivers have significantly changed the natural hydrology of these lakes and bayous. With the construction of levees, weirs, control gates and a pumping plant, the system undergoes rapid water level fluctuations during rain events.

Water Use

Hunting

Hunting on Black River-Cocodrie Lake Complex is minimal due to extensive residential development. However, various species of waterfowl frequent the lake during the winter.

Recreational watersports

Recreational water sports are very popular on the Lake Complex and include water skiing, personal watercraft, and other recreational boats. The majority of recreational watersports occur in the deep open water of Black River Lake. There are numerous homes and camps located on the shoreline of the lake which make them convenient for water recreation.

Fishing

The Lake Complex is utilized extensively for recreational fishing -- primarily largemouth bass, crappie, catfish and bluegill.

Swimming

Swimming is popular in the lakes. There are no beaches or designated swimming areas. The majority of swimming occurs from private piers and boat docks especially in Black River Lake due to the deep, clear water.

Irrigation

The Black River-Cocodrie Lake complex has a small number of irrigation pumps in them to provide water for agricultural irrigation to surrounding farm land.

Appendix I
[\(return to drawdown\)](#)

Black River-Cocodrie Lake Complex drawdown structure is located on Cocodrie Bayou in Concordia Parish, Louisiana.



Appendix II

[\(return to association\)](#)

Black River-Cocodrie Lake Complex map with location of boat launches.

