

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

BARATARIA BASIN

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

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LAKE HISTORY

GENERAL INFORMATION

The Barataria Basin is one of the nation's most significant estuaries. It is located between the Mississippi River and Bayou Lafourche in Southeast Louisiana ([APPENDIX I](#)). The basin is bounded on the north and east by the Mississippi River from Donaldsonville to Venice, on the south by the Gulf of Mexico and on the west by Bayou Lafourche. The basin contains approximately 1,565,000 acres. It was formed approximately 3,500-4,000 years ago as part of the Lafourche-Delta complex. The basin is an irregularly shaped area bounded on each side by a distributary ridge formed by the present and historical channels of the Mississippi River. A chain of barrier islands separates the basin from the Gulf of Mexico. In the northern half of the basin, which is transected by the Gulf Intracoastal Waterway (GIWW), several large lakes occupy the sump position approximately half way between the ridges. The southern half of the basin consists of tidally influenced marshes connected to a large bay system behind the barrier islands. The basin has undergone significant hydrological changes both natural and anthropogenic. Freshwater and sediment input into the Barataria Basin was virtually eliminated with construction of the main line Mississippi River levees and the closure of Bayou Lafourche at Donaldsonville in the 1930's. The Davis Pond Freshwater Diversion (DPFD) now introduces Mississippi River water back into the basin. The basin contains 152,120 acres of swamp, 173,320 acres of fresh marsh, 59,490 acres of intermediate marsh, 102,720 acres of brackish marsh, and 133,600 acres of saline marsh.

Major Waterbodies:

Primary fresh and intermediate water bodies in the Barataria Basin include Lake Salvador (15,000 acres), Lake Des Allemands (12,000 acres), Lake Cataouatche (8,000 acres), The Pen (2,000 acres), Lake Boeuf (2,000 acres) Bayous Boeuf (8 miles), Des Allemands (20 miles), Chevreuil (10 miles), Grand (12 miles), Citamon (14 miles), Segnette (12 miles), and Bayou Verret (4 miles) ([APPENDIX I](#)). In addition, there are many miles of manmade canals throughout the basin including the GIWW and Barataria Waterway.

Parish(s) Located:

The basin is located in portions of nine parishes: Assumption, Ascension, St. James, Lafourche, St. John the Baptist, St. Charles, Jefferson, Plaquemines and Orleans (Source: LaCoast.gov).

AUTHORITY

The state of Louisiana has authority over the state owned water bottoms of the Barataria Basin. However, manmade canals are considered private property of the landowner. In these instances, land owners did not give up land rights for canal construction purposes. Some, but not all, of these landowners still allow public access in their canals. This document does not attempt to delineate private / public canals nor suggest public access to private canals.

The basin is managed under the authority of at least three major programs:

The Coastal Protection and Restoration Authority (CPRA) of Louisiana is mandated to develop,

implement and enforce a comprehensive coastal protection and restoration master plan. This single state authority integrates coastal restoration and hurricane protection statewide. The Barataria Basin is located in CPRA's Southeast Region. Initially, CPRA was established as a board of directors by the 1st Extraordinary Session of the Louisiana Legislature of 2005. Act 545 of the 2008 Regular Session and Act 523 of the 2009 Regular Session provided the Board of Directors with an implementation arm. These Acts integrated the coastal restoration and flood protection division of the Department of Natural Resources (DNR) and the Department of Transportation and Development (DOTD), creating the Office of Coastal Protection and Restoration (OCPR) within the Executive Department. Act 604 of the 2012 Regular Session of the Louisiana Legislature formally changed the name from OCPR to CPRA. Complete details for CPRA, including the Louisiana 2012 Coastal Master Plan and specific plans for the Barataria Basin can be found by visiting the CPRA website at: <http://coastal.louisiana.gov/>.

The Barataria Terrebonne National Estuary Program (BTNEP) was formed in 1990 and includes many stakeholders such as local government, businesses, scientists, conservation organizations, and agricultural interests. The BTNEP is chartered with protection, development and study of the basins and is administered through the Louisiana Universities Marine Consortium (LUMCON). The Barataria and Terrebonne Basins were nominated for the National Estuary Program (NEP) in 1989. The NEP was established by Congress through section 320 of the Clean Water Act in 1987 and is administered by the Environmental Protection Agency (EPA). (Source: BTNEP.org) While BTNEP does not have legislative authority to enact specific management plans it is considered an authority on management issues of the basin. Complete details for BTNEP can be found by visiting their website at: <http://www.btnep.org>.

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) is federally mandated legislation enacted by the U.S. Congress in 1990 that is designed to identify, prepare, and fund construction of coastal wetlands restoration projects. These projects provide for the long-term conservation of wetlands and dependent fish and wildlife populations with cost-effective plans for creating, restoring, protecting, or enhancing coastal wetlands. In Louisiana, CWPPRA is often called the "Breux Act" in honor of U.S. Senator John Breux, who helped initiate the legislation. (Source: LaCoast.gov). Details for CWPPRA's Barataria Basin projects can be found by visiting the LaCoast website at: <http://lacoast.gov>.

ACCESS

There are numerous boat ramps and marinas located throughout the Barataria Basin. Table 1 lists the most popular access locations within the basin.

Table 1. List of popular boating access locations in the Barataria Basin, LA.

Boat Ramp Name	Map Coordinates
Bayou Chevreuil Launch:	(29.911628° N; -90.728780° W)
Bayou Gauche Launch:	(29.781829° N; -90.394416° W)
Sanchez Launch:	(29.850045° N; -90.678806° W)
Bill Taylor Launch:	(29.890434° N; -90.78543° W)
Des Allemands Launch:	(29.821840° N; -90.476315° W)
LaRousse Launch:	(29.868076° N; -90.599839° W)
Moll Canal Launch:	(30.013824° N; -90.543052° W)
Theriot Canal Launch:	(29.737554° N; -90.647604° W)
Fred's Launch:	(29.917525° N; -90.625196° W)
Pier 90 Launch:	(29.913090° N; -90.273356° W)
Bayou Segnette Launch:	(29.897209° N; -90.158195° W)
Rosethorne Launch:	(29.760994° N; -90.102538° W)
Des Familles Launch:	(29.769359° N; -90.081755° W)
Crowne Pointe Launch:	(29.747879° N; -90.137229° W)
Cochiara's Launch:	(29.691940° N; -90.096643° W)
Joes Landing:	(29.685085° N; -90.101671° W)
SeaWay Marina:	(29.656523° N; -90.108921° W)
C&M Marina:	(29.653279° N; -90.106101° W)
Clovelly Launch:	(29.553033° N; -90.275768° W)
Larose GIWW Launch:	(29.582617° N; -90.375828° W)
Myrtle Grove Marina	(29.633849° N; -89.952094° W)
Happy Jack Marina:	(29.517968° N; -89.736759° W)
Port Sulphur Ramp:	(29.473928° N; -89.697220° W)
Delta Marina:	(29.385710° N; -89.601379° W)
Joshua's Marina:	(29.349747° N; -89.537841° W)
Cypress Cove Marina:	(29.250318° N; -89.360650° W)
Venice Marina:	(29.240064° N; -89.364634° W)
JJ's Launch:	(29.382376° N; -90.258932° W)
Bobby Lynn's:	(29.266080° N; -90.218255° W)
Boudreaux's:	(29.256427° N; -90.215977° W)
Watt's:	(29.252270° N; -90.215977° W)
Fourchon Public Launch:	(29.115095° N; -90.191122° W)
Bridgeside Marina:	(29.203790° N; -90.040290° W)
Caminada:	(29.205409° N; -90.039183° W)
Sand Dollar:	(29.262382° N; -89.961519° W)

Boat docks

Small boat docks are associated with the boat ramps at all launches listed. However, these docks

are for loading and boarding boats not for extended vessel moorings. Vessel docking, fuel, and marina services may be available at the following marinas. Table 2 lists popular marinas and associated websites.

Table 2. List of marinas offering vessel services throughout Barataria Basin, LA.

Joes Landing Marina	http://www.joeslanding.com/
SeaWay Marina	http://www.seawaymarinalafitte.com/
C&M Marina	http://www.teamlafitteharbor.com/
Bridgeside Marina	http://www.bridgesidecabinsandmarina.net/
Delta Marina	http://www.teamlafitteharbor.com/
Cypress Cove Marina	http://www.cypresscovevenice.com/
Venice Marina	http://www.venicemarina.com/
Bobby Lynn's Marina	http://www.bobbylynns.com/
Sand Dollar Marina	http://www.yelp.com/biz/sand-dollar-motel-grand-isle

Piers

There is a small community fishing pier in Lafitte, LA. It is located on Jean Lafitte Blvd. between 2nd and 4th streets. Coordinates: 29.1667060°N, -90.110127°W

There is a fishing pier accessing the Gulf of Mexico in Grand Isle State Park, Grand Isle, LA. Coordinates: 29.259917°N, -89.950148°W

State/Federal facilities

Lake Boeuf Wildlife Management Area (WMA) is located in the basin east of Hwy 308 north of Raceland, LA. The area includes approximately 800 acres of fresh marsh/swamp and is accessible only by boat via the Theriot Canal, Foret Canal, or Lake Boeuf. Hunting opportunities include archery, small game, waterfowl, and unmarked hogs. The area also hosts annual youth lottery gun deer hunts. More information available at the following link: <http://www.wlf.louisiana.gov/sites> .

Salvador WMA is located in the basin in St. Charles Parish along the western shores of Lake Salvador and Lake Cataouatche. The area includes approximately 30,000 acres and is accessible only by boat via Bayous Verret, Segnette or Des Allemands. The area consists of fresh marsh and swamp that is segmented and accessible by oil and gas canals. Hunting opportunities include archery, small game, and waterfowl. For more information including maps and special regulations please follow this link: <http://www.wlf.louisiana.gov/wma/2765>

Timken WMA is a 3,000 acre marsh island in the basin. The area is identified as Couba Island on maps and is leased to LDWF from the New Orleans City Park Commission. It is located immediately to the east of Salvador WMA and is accessible via the same waterways. The island consists of fresh to intermediate marsh and provides habitat for waterfowl, furbearers and alligators. For more information including maps and special regulations please follow this link: <http://www.wlf.louisiana.gov/wma/2765>

The Grand Isle Marine Lab is located on Grand Isle, in the Barataria Basin. The lab serves as a research hub for LDWF biologists as well as universities and cooperative efforts with other states. For more information please follow the link: [Grand Isle Marine Isle](#) .

The U.S. Coast Guard “Grand Isle Station” is located on Grand Isle, La. It is considered one of the three priority “3” CONUS small boat stations in the Coast Guard. For more information please follow the link below: [Coast Guard Grand Isle Station](#) .

SHORELINE DEVELOPMENT

State/National Parks

Jean Lafitte National Historical Park and Preserve is located in the Barataria Basin. For more information please follow this link: <http://www.nps.gov/jela/index.htm>

Bayou Segnette State Park is located in the Barataria Basin in Jefferson Parish. The park includes a popular, well maintained boat ramp providing access to the middle and upper portions of the basin. For more information please follow the link below:

<http://www.crt.state.la.us/parks/ibyusegne.aspx>

Grand Isle State Park is located in the Barataria Basin on Grand Isle. The park is located on the gulf side of the island providing swimming, fishing, nature and bird watching opportunities. A fishing pier accessing the Gulf of Mexico is also available. For more information please follow this link: <http://www.crt.state.la.us/parks/igrdisle.aspx>

Elmer’s Island Refuge is located in the Barataria Basin. The refuge is owned and maintained by LDWF. The island refuge provides fishing, nature and bird watching opportunities. For more information please follow the link below:

<http://www.wlf.louisiana.gov/refuge/elmers-island>

EVENTS / PROBLEMS

The Barataria Basin is a complex and dynamic ecosystem. For detailed descriptions of problems and comprehensive plans visit CPRA, BTNEP and CWPPRA websites at:

<http://coastal.louisiana.gov/>

<http://www.btneep.org/BTNEP/home.aspx>

http://lacoast.gov/new/About/Basin_data/ba/Default.aspx

2010 Deepwater Horizon Oil Spill

The 2010 *Deepwater Horizon* Oil Spill in the Gulf of Mexico was the nation’s largest oil spill. The Barataria Basin was affected by direct oiling and response activities. The investigation into the impacts of the *Deepwater Horizon* oil spill on natural resources including fisheries, aquatic vegetation and wetlands is ongoing.

Hurricanes and Tropical Storms

Since 2005, multiple hurricanes have affected the Barataria basin; Hurricane Isaac in 2012, Tropical Storm Lee in 2011, Hurricane Gustav in 2008, Hurricane Ike in 2008, Hurricane Rita in 2005, Hurricane Katrina in 2005. Salinity spikes (see Appendix II Figure 1) and loss of aquatic vegetation and wetlands due to wave action and bottom scour are associated with these events.

Natural mortality due to environmental disruptions may limit largemouth bass (LMB) populations in coastal areas. Periodic hurricanes and tropical storms often interrupt natural regimes and disturb aquatic habitats of the basin. Widespread fish kills are associated with such events (see fish kills section). A common LDWF response to such kills was to evaluate the extent of the kill and restock to enhance recovery of the fish population. Largemouth bass were the most commonly stocked species in those efforts. The current approach includes an evaluation of natural recovery with restocking and/or harvest restrictions reserved for application on an as-needed basis.

Hydrological Changes and Diversions

The Barataria Basin has undergone significant hydrological changes both natural and anthropogenic. Historically the Mississippi River was the source of freshwater, nutrients and sediment for the basin. The construction of Mississippi River main line levees and the closure of Bayou Lafourche at Donaldsonville ceased the input of freshwater and sediment. Navigation canals like the Barataria Waterway, Wilkinson Canal, the GIWW and the hundreds of miles of oil field canals plus natural processes such as subsidence and sea-level rise have increased saltwater intrusion and shoreline erosion. To mitigate for these changes, siphons and diversions have been constructed.

The Naomi Freshwater siphon and the West Pointe a la Hache siphons were constructed in 1992, on the west side of the basin. These siphons are capable of a maximum discharge of 2144 cubic feet per second (cfs) each. The Davis Pond Freshwater Diversion (DPFD) was dedicated as the Barataria's largest diversion in March 2002. It has the capacity to divert up to 10,650 cubic feet per second (cfs) of freshwater from the Mississippi River, channeling it through an outflow canal, into a 9,200 acre ponding area, then out into Lake Cataouatche, and into the Barataria Basin.

Several modifications were made after its dedication (see Appendix II Figure 1). The ponding area did not drain properly, which caused the lower west guide levee (WGL) to be overtopped. Vinyl sheet piling was used in the low sections of the WGL that had subsided. Heavy marsh equipment was used to compact the Lake Cataouatche Shore Line protection (gabion weir) in areas where there were natural channels to entice the ponding area to drain.

2003 - During testing conducted at flow rates of 10,650 cfs the WGL overtopped and the east guide levee (EGL) was being seriously undermined and came close to being overtopped in many locations. The Cypress canal levee was also being overtopped and came close to being breached in several locations.

2005 - The EGL was raised to its design grade, which is where it is today. The gabions at the locations of the natural channels in the ponding area were removed to allow the area to better drain into Lake Cataouatche.

2005/2006 – The natural channels were deepened and widened well into the ponding area to connect to open areas and permit better drainage.

2006/2007 - More channels were built and more cuts in the gabions were made to assist in the drainage of the ponding area.

2008/2009 - Two large cuts (500') were made in the Cypress Canal Levee, in the vicinity of the WGL to allow additional drainage into the NW section of Lake Cataouatche. Vinyl sheet pilings were also placed in the gaps on the lower WGL.

The operation of the DPFDD has been inconsistent in the past (Table 3). Its operation was influenced by natural and anthropogenic forces during that time, a drought year in 2006, followed by two wet years in 2008 and 2009, and then in 2010 when the diversion was operated at nearly continuous high discharge from April through August in response to the *Deepwater Horizon* oil spill. Davis Pond Freshwater Diversion gauge data can be found at the link below. <http://waterdata.usgs.gov/usa/nwis/uv?295501090190400>

Table 3. Davis Pond Freshwater Diversion mean annual discharge in cubic feet per second (cfs).

Year	Mean Annual Discharge (cfs)
2003	833
2004	683
2005	821
2006	3101
2007	2207
2008	3551
2009	3802
2010	3873
2011	2312
2012	2079
2013	503
2014	936

The current operation plan of the DPFDD for 2015 is based on salinity ranges. From December through May, Davis Pond operations will be based on the monthly salinity range at the 15 ppt line specified by the map (see Appendix II Figure 3). From June through November, Davis Pond operations will be based on the monthly salinity range at the 5 ppt line specified by the map (see Appendix II Figure 3).

The DPFDD has dramatically changed the salinity regime and has altered the aquatic habitat in Lake Cataouatche and into the Barataria Basin. The increase of Mississippi River water is associated with an increase in turbidity, nutrients, and invasive species in the system. Decreased water clarity, eutrophication and excess algae have contributed to impacts to aquatic habitat in the Barataria Basin.

Aquatic Habitat Loss and Shifts

Submerged aquatic vegetation (SAV) is the most significant form of complex cover for aquatic animals in Barataria Basin. Beginning in the 1950s, salt water intrusion contributed to SAV coverage declines in the middle and upper basin. In 2003, the U.S. Army Corps of Engineers Davis Pond Freshwater Diversion (DPFDD) project began operation. Fresh water from the Mississippi River stimulated growth of submerged aquatic vegetation in the project outfall area. By 2007, Lake Cataouatche had an estimated 90% coverage of SAV. Species included eelgrass, coontail, milfoil and hydrilla.

SAV began to decline throughout the upper and middle basin in 2008. Currently, SAV is

essentially absent in and around Lake Cataouatche. Unfortunately, the quality sport fishery that had been associated with the SAV habitat has also declined. A combination of natural and anthropogenic influences is likely responsible.

1. Hurricanes, most recently Gustav and Ike in 2008 scoured the bottom of Lake Cataouatche and dislodged vegetation.
2. Salinity spikes associated with these events also damaged the freshwater SAV species.
3. Water quality changes associated with the operation and the modifications of the DPF include decreased water clarity. The availability of light is one of the most important factors affecting SAV persistence and survival (Dennison et al. 1993). Turbidity measurements have increased at three sample sites within Lake Cataouatche since 2006.

Table 4. Top and bottom turbidity measurements in Nephelometric Turbidity Units (NTU) at sample site 4001 (29.82611 N; -90.2525 W).

Date	NTU Top	NTU Bottom
2/28/2003	14.1999	13.1999
5/5/2003	10.6999	35
8/21/2003	3.7999	4.5
10/16/2003	2.5	6.0999
2/3/2004	30.5	30
6/10/2004	4.6999	4.0999
8/5/2004	4.1999	4.1999
12/3/2004	1	1
2/15/2005	7.5999	7.5
4/25/2005	9.3999	9
8/18/2005	2.8999	4.6999
11/7/2005	3.3999	3.6999
3/6/2006	4.7999	5.2999
5/26/2006	1.5	0.5999
8/24/2006	0.6999	0.3999
2/14/2008	23.8999	23.5999
12/9/2010	51.0	56.7999

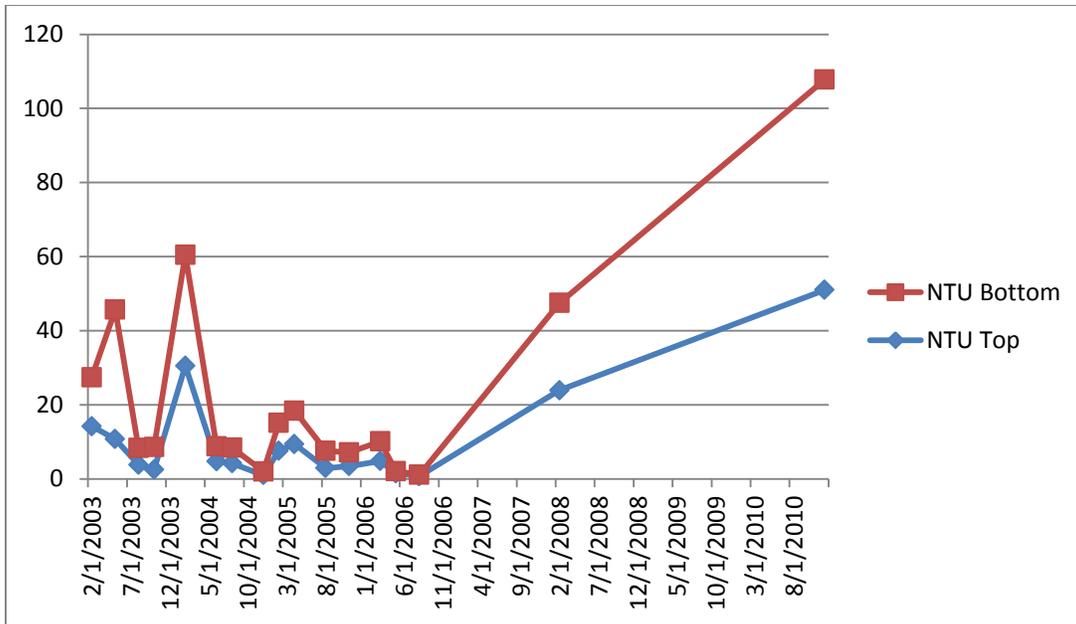


Figure 1. Top and bottom turbidity values in NTU's at sample site 4001 (29.82611, -90.2525).

Table 5. Top and bottom turbidity measurements in NTU's at sample site 4003 (29.84333 N; -90.27222 W).

Date	NTU Top	NTU Bottom
5/27/2003	11.6999	20.2999
12/2/2003	6.5999	8.2999
4/19/2004	3.2999	8.3999
12/16/2004	1	1
5/10/2005	13.7999	13.7999
12/19/2005	9.8999	12.0999
6/20/2006	0.2999	0.7999
6/2/2008	8.7999	14.5
12/1/2010	10.0999	36.0999
1/4/2011	22.6999	25.7999

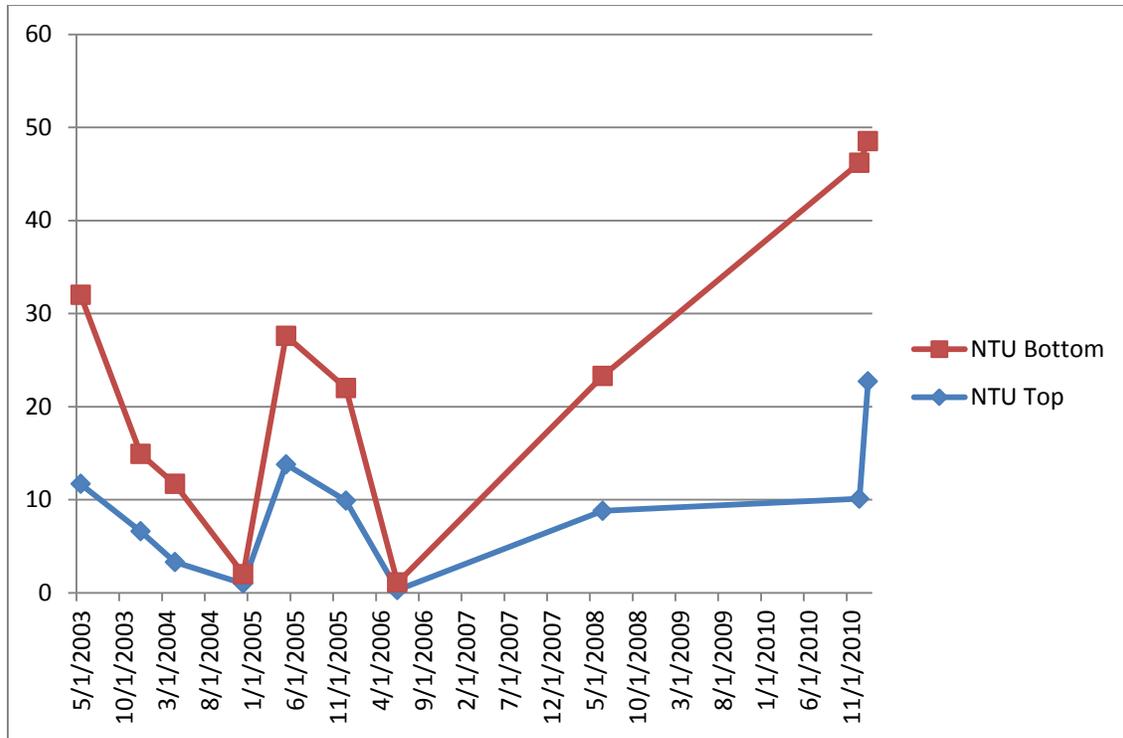


Figure 2. Top and bottom turbidity values in NTU's at sample site 4003 (29.84333 N; -90.27222 W).

Table 6. Top and bottom turbidity measurements in NTU's at sample site 4004 (29.86194 N; -90.22889 W).

Date	NTU Top	NTU Bottom
2/28/2003	31.1999	29.8999
5/19/2003	16.3999	22.2999
8/21/2003	4.2999	10.2999
10/16/2003	2.5999	3.3999
2/3/2004	25.8999	26.8999
6/10/2004	5.5999	5.3999
8/5/2004	3.1999	3.5999
12/3/2004	2.5	1.1999
2/15/2005	18	13.5
4/25/2005	35.7999	37.7999
8/18/2005	3.5999	5.8999
11/7/2005	9.6999	9.5999
3/6/2006	8.0999	12.7999
5/26/2006	2.1999	4.1999
8/24/2006	0.5	1.6999
2/14/2008	16.6999	20.0999
12/9/2010	15.5999	19

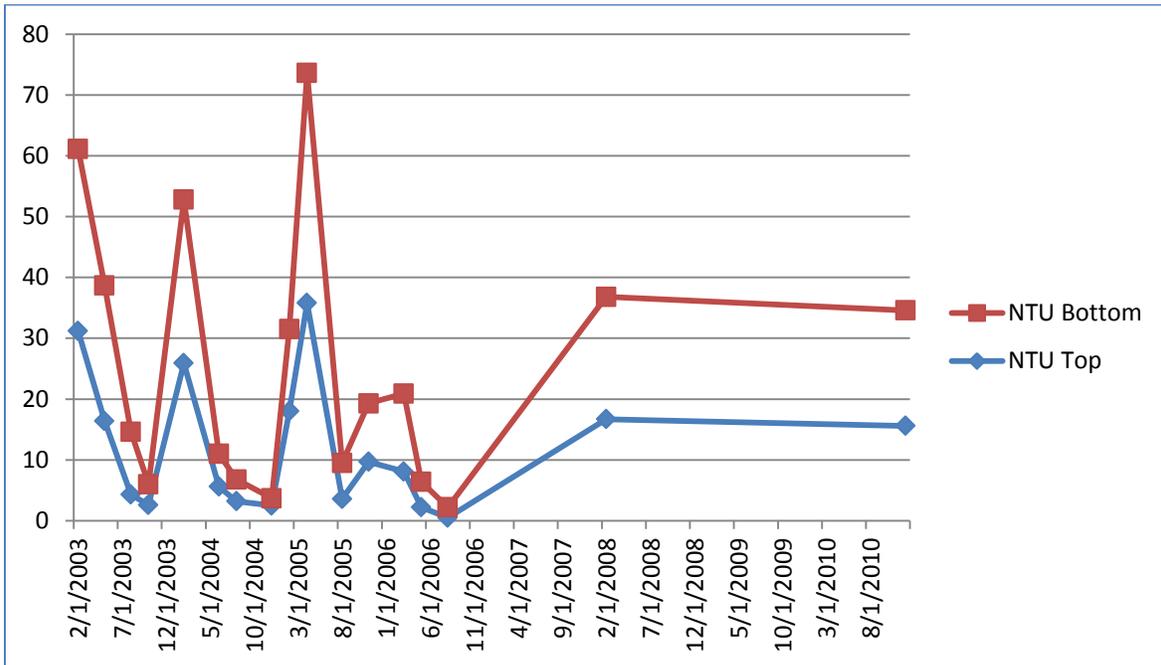


Figure 3. Top and bottom turbidity values in NTU's at sample site 4004 (29.86194 N; -90.22889 W).

MANAGEMENT ISSUES

AQUATIC VEGETATION

Aquatic vegetation provides beneficial habitat for fish and wildlife throughout the fresh and intermediate wetland areas of the Barataria Basin. However, invasive plants such as water hyacinth, alligator weed, common salvinia, and giant salvinia become overly abundant and problematic. Water hyacinth and giant salvinia have been the most problematic in recent years. In the lower areas of the basin, freshwater plant species are restricted by salinity. Marsh grasses, *Spartina spp.* are the dominant plants.

Type Maps

Efforts to estimate the abundance and species composition of aquatic vegetation in the Barataria Basin has been limited to localized efforts. The most recent vegetative type map survey for Lake Boeuf is presented in [Appendix III](#), while an historical compendium (1980 – 2001) is found in Barataria Basin MP-C. Figure 4 depicts Eurasian milfoil abundance in The Pen (20802) in 2011. In 2012, a survey of Lake Salvador revealed no significant coverage of submerged aquatic vegetation. Results of a 2013 survey of Lake Cataouatche and Salvador are depicted in Figure 5.

Treatment history by year available

Biological

Giant salvinia weevils (*Cyrtobagous salviniae*) have been introduced to control giant salvinia in the Barataria Basin. LDWF, the U.S. Fish and Wildlife Service (USFWS), the National Park Service (NPS) and private land owners continue to cooperate to introduce the weevils throughout the basin. Table 4 summarizes LDWF giant salvinia weevil releases since 2008.

Table 4. Summary of giant salvinia weevil releases into the Barataria Basin from 2008 – 2013.

	2008	2009	2011	2012	2013	TOTAL
20101 Bayous Chevreuil, Grand and Verret				800		800
20102 Bayou Boeuf, Halpin and Theriot Canals			4000	12000	7200	23200
20201 Bayou Des Allemands above Hwy 90	3600	4800		2400		10800
20202 Lake Des Allemands				3200		3200
20301 Bayou Des Allemands below Hwy 90				14000	6480	20480
20302 Bayou Gauche	400	400		2000		2800
20304 Lake Salvador	800			14800	5760	21360
20701 Bayou Segnette				4800		4800
20801 Clovelly				2400		2400
20802 The Pen				4000		4000
TOTAL	4,800	5,200	4,000	60,400	19,440	93,840

Chemical

Historically, LDWF maintained a 2 man “Salvador spray crew” within the basin. This crew primarily treated water hyacinth to maintain access to Salvador Wildlife Management Area (WMA). The US Army Corps of Engineers (USACE) treated water hyacinth in the basin, but discontinued its aquatic plant control program in October 2011. Currently, two LDWF spray crews are assigned to maintain access to the WMA and surrounding waterbodies. In 2005, giant salvinia was discovered in the GIWW near Larose, LA. The invasive plant quickly spread throughout freshwater areas of the basin. In 2008, giant salvinia weevils were introduced. Weevils now effectively control the plant. Herbicide applications for control of giant salvinia are confined to critical areas to maintain boating access. Winds and/or tides often accumulate the plant in and around boat ramps and dead-end canals. Otherwise, herbicide applications are conducted for water hyacinth treatment. Table 5 reflects that trend.

Two herbicide treatments have been conducted within the Barataria Basin to control SAV. In November 2007, LDWF contractors applied Aquathol K to 1,124 acres in Lake Cataouatche. Follow up inspections showed that the herbicide application did not control SAV in the target area.

In 2011, Aquathol Super K was applied to boat lanes in The Pen to maintain boating access. Milfoil was the primary target species. A combined total area of 125 acres was treated in the 2000 acre lake. Within 90 days of the herbicide application, nearly all milfoil had disappeared from The Pen. Despite the apparent correlation, effects of that magnitude from the limited herbicide application are improbable. However, storm surge from Tropical Storm Lee occurred during the same time frame. The corresponding salinity spike is strongly suspected to be the primary cause of large scale damage to the freshwater plant species.

In 2014 a total of 4,394.22 acres of noxious aquatic plants were treated with herbicides in the Barataria basin (Table 5).

Table 5. Summary of herbicide treatments on aquatic plants in the Barataria Basin, LA.

20101 Bayous Verret, Chevreuil, Citamon and Grand				
Year	Plant	Acres	Herbicide	Rate
2005	water hyacinth	16	2,4-D	0.5gal/acre
2006	sedge	10	2,4-D	0.5gal/acre
	water hyacinth	72	2,4-D	0.5gal/acre
2007	alligator weed	38	2,4-D	0.5gal/acre
	pennywort	2	2,4-D	0.5gal/acre
	primrose	7	2,4-D	0.5gal/acre
	common salvinia	14	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	sedge	21	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	water hyacinth	64	2,4-D	0.5gal/acre
	water lettuce	2	2,4-D	0.5gal/acre
2008	alligator weed	11	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	37	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre

	common salvinia	12	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	40	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	torpedo grass	12	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	90	2,4-D	0.5gal/acre
2009	alligator weed	5	2,4-D	0.5gal/acre
	pennywort	149	2,4-D	0.5gal/acre
	primrose	16	2,4-D	0.5gal/acre
	common salvinia	17	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	sedge	5	2,4-D	0.5gal/acre
	water hyacinth	51	2,4-D	0.5gal/acre
	water lettuce	1	2,4-D	0.5gal/acre
2010	alligator weed	16	2,4-D	0.5gal/acre
	pennywort	16	2,4-D	0.5gal/acre
	primrose	80	2,4-D	0.5gal/acre
	water hyacinth	48	2,4-D	0.5gal/acre
2011	alligator weed	31	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	16	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	31	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	124	2,4-D	0.5gal/acre
	water hyacinth	337	2,4-D	0.5gal/acre
2013	alligator weed	13	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	pennywort	58	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	primrose	13	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	water hyacinth	45	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
20102 Bayous Boeuf, Halpin, and Theriot Canals				
Year	Plant	Acres	Herbicide	Rate
2011	alligator weed	16	2,4-D	0.5gal/acre
	water hyacinth	40	2,4-D	0.5gal/acre
	sedge	16	2,4-D	0.5gal/acre
20201 Bayou Des Allemands above Hwy 90				
Year	Plant	Acres	Herbicide	Rate
2012	water hyacinth	193	2,4-D	0.5gal/acre
2013	alligator weed	23	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	pennywort	55	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	primrose	7	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	water hyacinth	185	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
2014	primrose	9	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	water hyacinth	21	2,4-D	0.5gal/acre

20202 Lake Des Allemands				
Year	Plant	Acres	Herbicide	Rate
2005	common salvinia	3	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	water hyacinth	19	2,4-D	0.5gal/acre
	water paspalum	1	2,4-D	0.5gal/acre
2006	common salvinia	32	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	water hyacinth	31	2,4-D	0.5gal/acre
2007	alligator weed	8	2,4-D	0.5gal/acre
	water hyacinth	15	2,4-D	0.5gal/acre
	water paspalum	8	2,4-D	0.5gal/acre
2008	alligator weed	7	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	7	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	14	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	22	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	37	2,4-D	0.5gal/acre
	water lettuce	2	2,4-D	0.5gal/acre
2009	pennywort	32	2,4-D	0.5gal/acre
	common salvinia	28	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	11	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	8	2,4-D	0.5gal/acre
	water paspalum	4	2,4-D	0.5gal/acre
2010	alligator weed	19	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	21	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	6	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	1	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	28	2,4-D	0.5gal/acre
	water lettuce	1	2,4-D	0.5gal/acre
	water paspalum	2	2,4-D	0.5gal/acre
2011	alligator weed	12	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	6	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	8	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	49	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	10	2,4-D	0.5gal/acre
	water paspalum	6	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
2012	alligator weed	44	2,4-D	0.5gal/acre
	pennywort	25	2,4-D	0.5gal/acre
	primrose	2	2,4-D	0.5gal/acre
	common salvinia	43	Glyphosate,	0.75gal/acre,

			Surfactant	0.25gal/acre
	giant salvinia	57	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	9	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	159	2,4-D	0.5gal/acre
2013	alligator weed	31	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	primrose	6	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	common salvinia	6	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre,
	giant salvinia	5	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre,
	water hyacinth	165	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	water lettuce	35	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
2014	alligator weed	23	2,4-D	0.5gal/acre
	duckweed	35	Diquat, Surfactant	0.75gal/acre 0.25gal/acre
	primrose	1.5	2,4-D	0.5gal/acre
	pennywort	18	2,4-D	0.5gal/acre
	water hyacinth	112.5	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
20301 Bayou Des Allemands Below Hwy 90				
Year	Plant	Acres	Herbicide	Rate
2008	alligator weed	5	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	29	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	32	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	torpedo grass	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	7	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
2009	common salvinia	29	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	210	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	33	2,4-D	0.5gal/acre
2010	pennywort	9	2,4-D	0.5gal/acre
	giant salvinia	9	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	5	2,4-D	0.5gal/acre
2011	alligator weed	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	11	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	4	Glyphosate,	0.75gal/acre,

			Surfactant	0.25gal/acre
	water hyacinth	4	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
2012	alligator weed	261	2,4-D	0.5gal/acre
	pennywort	40	2,4-D	0.5gal/acre
	primrose	7	2,4-D	0.5gal/acre
	giant salvinia	7	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	56	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	1541	2,4-D	0.5gal/acre
2013	alligator weed	123	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	paragrass	18	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	pennywort	157	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	primrose	20	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
	sedge	165	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	water hyacinth	1172	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
2014	alligator weed	123.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	162.50	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	158.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	48.5	Glyphosate/ Diquat,, Surfactant	0.75gal/acre, 0.25gal/acre, 0.25gal/acre
	sedge	116.75	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	water hyacinth	825.15	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
20303 Lake Cataouatche				
Year	Plant	Acres	Herbicide	Rate
2005	primrose	12	2,4-D	0.5gal/acre
	sedge	4	2,4-D	0.5gal/acre
	water hyacinth	117	2,4-D	0.5gal/acre
2007	coontail	281	Aquathol K	
	hydrilla	844	Aquathol K	
	water hyacinth	18	2,4-D	0.5gal/acre
2009	primrose	11	2,4-D	0.5gal/acre
	water hyacinth	1008	2,4-D	0.5gal/acre
2010	alligator weed	13	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	duckweed	5	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	frog's bit	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	13	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	18	Glyphosate,	0.75gal/acre,

			Surfactant	0.25gal/acre
	common salvinia	8	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	21	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	141	2,4-D	0.5gal/acre
2011	alligator weed	3	2,4-D	0.5gal/acre
	water hyacinth	114	2,4-D	0.5gal/acre
	alligator weed	23	2,4-D	0.5gal/acre
2012	water hyacinth	440	2,4-D	0.5gal/acre
	water hyacinth	100	2,4-D	0.5gal/acre
20304 Lake Salvador				
Year	Plant	Acres	Herbicide	Rate
2005	alligator weed	19	2,4-D	0.5gal/acre
	primrose	41	2,4-D	0.5gal/acre
	water hyacinth	589	2,4-D	0.5gal/acre
2006	primrose	5	2,4-D	0.5gal/acre
	water hyacinth	1114	2,4-D	0.5gal/acre
2007	alligator weed	16	2,4-D	0.5gal/acre
	pennywort	42	2,4-D	0.5gal/acre
	primrose	8	2,4-D	0.5gal/acre
	water hyacinth	212	2,4-D	0.5gal/acre
2008	alligator weed	59	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	frog's bit	19	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	22	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	Peruvian water grass	1	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	20	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	24	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	64	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	38	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	1480	2,4-D	0.5gal/acre
2009	filamentous algae	4	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	alligator weed	62	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	25	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	1	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	23	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	584	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	50	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	1084	2,4-D	0.5gal/acre
	water paspalum	5	Glyphosate,	0.75gal/acre,

			Surfactant	0.25gal/acre
2010	alligator weed	80	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	228	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	35	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	6	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	1222	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	32	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	387	2,4-D	0.5gal/acre
	water lettuce	12	2,4-D	0.5gal/acre
2011	alligator weed	118	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	56	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	18	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	13	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	1597	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	128	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	843	2,4-D	0.5gal/acre
2012	alligator weed	54	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	4	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	12	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	221	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	11	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	1119	2,4-D	0.5gal/acre
2014	alligator weed	109.13	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	378.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	212.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	34.17	Glyphosate/ Diquat,, Surfactant	0.75gal/acre, 0.25gal/acre, 0.25gal/acre
	sedge	84.87	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	smartweed	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	610.13	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
20701 Bayou Segnette				

Year	Plant	Acres	Herbicide	Rate
2011	alligator weed	2	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	common salvinia	8	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	30	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	sedge	1	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	92	2,4-D	0.5gal/acre
2012	alligator weed	12	2,4-D	0.5gal/acre
	pennywort	5	2,4-D	0.5gal/acre
	water hyacinth	577	2,4-D	0.5gal/acre
2014	alligator weed	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	26.19	Glyphosate/ Diquat,, Surfactant	0.75gal/acre, 0.25gal/acre, 0.25gal/acre
	sedge	49.55	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	smartweed	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	261.3	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
20803 The Pen				
Year	Plant	Acres	Herbicide	Rate
2011	milfoil	134	Aquathol K	
	parrots feather	48	Aquathol K	
2012	giant salvinia	4	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	105	2,4-D	0.5gal/acre
2014	alligator weed	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	pennywort	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	primrose	6.8	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	26.19	Glyphosate/ Diquat,, Surfactant	0.75gal/acre, 0.25gal/acre, 0.25gal/acre
	sedge	49.55	2,4-D Surfactant	0.5gal/acre, 0.25gal/acre
	smartweed	5.3	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	289.8	2,4-D, Surfactant	0.5gal/acre, 0.25gal/acre
20103 Lake Boeuf				
Year	Plant	Acres	Herbicide	Rate
2014	alligator weed	7.5	2,4-D	0.5gal/acre

	primrose	70.5	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	162	2,4-D	0.5gal/acre
20302 Bayou Gauche				
Year	Plant	Acres	Herbicide	Rate
2014	alligator weed	21.5	2,4-D	0.5gal/acre
	primrose	45.0	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	water hyacinth	58.5	2,4-D	0.5gal/acre
20601/20802 Intracoastal Waterway				
Year	Plant	Acres	Herbicide	Rate
2014	alligator weed	8	2,4-D	0.5gal/acre
	pennywort	24	Glyphosate, Surfactant	0.75gal/acre, 0.25gal/acre
	giant salvinia	66.61	Glyphosate/ Diquat,, Surfactant	0.75gal/acre, 0.25gal/acre, 0.25gal/acre
	water hyacinth	11.31	2,4-D	0.5gal/acre

HISTORY OF REGULATIONS

Recreational

Recreational fishing regulations including size and creel limits of fresh and saltwater species can be found on the LDWF website at: <http://www.wlf.louisiana.gov/fishing/regulations>

Commercial

Commercial fishing regulations for fresh and saltwater species can be found on the LDWF website at: <http://www.wlf.louisiana.gov/fishing/regulations>

FISH KILLS / DISEASE HISTORY

Fish kills occur frequently in the upper area of the basin. Hypoxic conditions typically result when excessive organic material is brought into suspension from the energy of storms. Although fish kill investigations are limited due to conditions in the aftermath of the storm, witnesses have reported widespread fish kills throughout the upper basin following Hurricanes Katrina and Rita in 2005, Hurricanes Gustav and Ike in 2008 and Hurricane Isaac in 2012. .

No samples for largemouth bass virus have been collected.

CONTAMINANTS / POLLUTION

Fish consumption and swimming advisories for waterbodies within the basin can be found on the Louisiana Department of Environmental Quality's website at: <http://www.deq.louisiana.gov/portal/default.aspx?tabid=1631>

BIOLOGICAL

Fish samples

Inland Fisheries Districts 7 and 8 sample fish in 14 LDEQ designated waterbodies in the Barataria Basin. Historical sampling data from 1990 to present is available through the LDWF data management system (DMS). Records prior to 1990 are on file in Districts 7 and 8 offices. Table 6 summarizes samples collected from 1990 to present. Samples listed below represent several gear types deployed for routine monitoring: the DPF project, coastal monitoring and special projects. Districts 7 and 8 collected standardized electrofishing samples and 1 day rotenone samples in the basin in 2011, 2012, and 2013 for a special coastal project. District 8 will collect standardized electrofishing samples at 17 stations in the basin biennially. Table 7 below shows scheduled samples beginning in 2014. Figure 3 depicts District 8 standardized electrofishing stations within the Barataria Basin.

Table 6. Historical fisheries sampling in the Barataria Basin, LA 1991 - 2013.

Waterbody	Year(s)	Sampling Gear	Number of Samples
20101 Bayous Verret, Chevreuil, Citamon, Grand	1991-1995, 2000, 2007-2008	Electrofish/Forage	40/4
20102 Bayou Boeuf, Halpin and Theriot Canals	1991-1993, 2000, 2007-2010, 2012	Electrofish / Forage	42/3
	2009	Hoop nets	2
	2009	Leadnets	2
20103 Lake Boeuf	1990, 1993-1995, 2000, 2008	Electrofish/Forage	25/3
20201 Bayou des Allemands Above Hwy 90	1996-1997, 2000, 2010	Electrofish/Forage	104/8
20202 Lake des Allemands	1990-1992, 2011	Electrofish/Forage	30/4
	1990-1994, 2001-2004	1 Acre Rotenone	20
20301 Bayou des Allemands Below Hwy 90	1996-1997, 2000-2010, 2013	Electrofish/Forage	41/2
20302 Bayou Gauche	1994	Electrofish/Forage	8/1
20303 Lake Cataouatche	1998-2013	Electrofish/Forage	268/26
	1998-2006	Gillnets	34
	1998-2006	1" Hoop nets	145
	1998-2006	1 Acre Rotenone	13
	2011-2012	Leadnets	4
	2011-2013	1 Day Rotenone	3
20304 Lake Salvador	1998-2010, 2011-2013	Electrofish/Forage	92/27
	1998-2010	Gillnets	52
	1998-2010	1" Hoop nets	297
	1998-2010	1 Acre Rotenone	16
	2011-2012	Leadnets	4
	2011-2013	1 Day Rotenone	3
20701 Bayou Segnette	1991-1992, 2009	Electrofish/Forage	15/1

20803 The Pen	1998-2010, 2011-2012	Electrofish/Forage	119/27
	1998-2010	1" Hoop nets	96
	2011-2012	Leadnets	12
	2011-2012	1 Day Rotenone	7
20801 Intracoastal Waterway	2011-2013	Electrofish	17
	2011-2012	Leadnets	22
	2011-2013	1 Day Rotenone	17
20901 Bayous Rigolets and Perot	1995, 1998-2013	Electrofish/Forage	125/38
	1998-2010	Gillnets	102
	1998-2010	1" Hoop nets	100
	2011-2012	Leadnets	4
	2011-2013	1 Day Rotenone	3
20902 Little Lake	1998-2010	Electrofish/Forage	132/35
	1998-2010	Gillnets	102
	1998-2010	1" Hoop nets	296
	1998-2009	1 Acre Rotenone	17

Table 7. Inland Fisheries scheduled biennial samples in the Barataria Basin, LA beginning in 2014.

Year	Waterbody	Sampling Gear	Number of Samples
2014 2016 2018	20202 Lake des Allemands	Electrofish / Forage	6 Electro/3 Forage
	20301 Bayou des Allemands Below Hwy 90	Electrofish / Forage	2 Electro/1 Forage
	20303 Lake Cataouatche	Electrofish/Forage	6 Electro/3 Forage
	20304 Lake Salvador	Electrofish/Forage	4 Electro /2 Forage
	20801 Intracoastal Waterway	Electrofish	8 Electro /4 Forage
20803 The Pen	Electrofish	4 Electro /2 Forage	
20901 Bayous Rigolets and Perot	Electrofish	4 Electro /2 Forage	

Stocking History

Fish stockings in Barataria Basin were initiated as a response to the effects of Hurricane Andrew in 1993. Species stocked include northern largemouth bass, Florida largemouth bass (FLMB), and flathead catfish. Table 8 summarizes LDWF fish stocking in the Barataria Basin from 1993

to 2013. To date, 1,867,663 Florida largemouth bass have been stocked at locations throughout the Basin. A majority of these fish were stocked post Hurricanes Katrina and Gustav. In the post storm absence of predation and competition, the stocked Florida largemouth bass should have become dominant in the coastal marshes. In actuality, the species did not even become established. Genetic testing conducted from 2010 – 2012 indicated the highest percentage of Florida genome in sample collections to be 4% (Table 9). The stocking of Florida largemouth bass in the nearby Amite, Blind, Tangipahoa and Tickfaw Rivers yielded similar results. This tenacity for recovery by native largemouth bass populations has also been noted in other coastal river systems including the Calcasieu, Mermentau and Sabine Rivers following Hurricanes Rita (2005) and Ike (2008). These systems received no fish stockings after the hurricane related fish kills. However, subsequent LDWF sampling yielded record catch rates of bass within two years of the event. These observations confirm the resilience of fish populations in the Barataria Basin.

Table 8. The LDWF fish stocking history for the Barataria Basin 1993 to present. Listings below are fingerling size unless otherwise noted.

Waterbody	Year	Species	Number
20101 Bayous Verret, Chevreuil, Citamon and Grand	2005	FLMB	500
20103 Lake Boeuf	1996	FLMB	53,768
	2009	FLMB	2,000
20202 Lake des Allemands	1993	Largemouth bass	40,000
	1995	FLMB	12,180
	1996	FLMB	58,471
	1997	FLMB	22,981
	2000	FLMB	152,150
	2001	FLMB	223,638
		Adult Flathead catfish	1,700
	2002	FLMB	265,736
	2003	FLMB	249,951
	2004	FLMB	223,365
	2005	FLMB	206,512
	2007	FLMB	198,298
	2008	FLMB	83,750
	2010	FLMB	7,620
2011	FLMB	1,400	
20303 Lake Cataouatche	2002	Phase II FLMB	1,472
	2003	Phase II FLMB	3,039
	2005	Phase II FLMB	10,000
	2010	Phase II FLMB	8,671
	2011	Phase II FLMB	9,448
	2012	Phase II FLMB	9,264
	2013	FLMB	10,634

20304 Lake Salvador	2002	Phase II FLMB	772
	2003	Phase II FLMB	86
20803 The Pen	2001	FLMB	8,139
	2006	FLMB	2,618
TOTAL			1,867,663

Largemouth bass genetics

Genetic analyses have been conducted on largemouth bass to determine the extent of Florida genome present in Barataria Basin largemouth bass. Results from Lake Cataouatche during 2010-2012 are provided in Table 9.

Table 9. Results of genetic analysis of LMB populations for Lake Des Allemands and Lake Cataouatche, LA, within the Barataria Basin, 2001-2012.

Water Body	Year	Sample Size	Northern	Florida	Hybrid	Florida Influence
Lake Des Allemands	2001	21	91.3%	0%	8.7%	8.7%
	2009	27	85%	0%	15%	15%
Lake Cataouatche	2010	256	89%	0%	11%	11%
	2011	131	81%	2.3%	16.7%	19%
	2012	119	82%	4 %	14%	18%

Species profile

Conner and Day (1987) published an extensive species list for the Barataria Basin. The list was compiled by researchers B.A. Thompson and W. Forman and summarized 13 major studies spanning 14 years (Table 9).

Table 9. Fish species list of the Barataria Basin, Louisiana (Conner and Day 1987).

FRESHWATER (31 species)	
Family and scientific name	Common Name
Acipenseridae	
<i>Acipenser oxyrinchus desotoi</i>	Gulf Sturgeon
Lepisosteidae	
<i>Lepisosteus oculatus</i>	Spotted gar
<i>L. osseus</i>	Longnose gar
<i>L. spatula</i>	Alligator gar
Amiidae	
<i>Amia calva</i>	Bowfin
Clupeidae	
<i>Alosa alabamae</i>	Alabama shad
<i>A. chrysochloris</i>	Skipjack herring
<i>Dorosoma cepedianum</i>	Gizzard shad

<i>D. petenense</i>	Threadfin shad
Esocidae	
<i>Esox niger</i>	Chain pickerel
Cyprinidae	
<i>Notemigonus crysoleucas</i>	Golden shiner
Ictaluridae	
<i>Ictalurus furcatus</i>	Blue catfish
<i>I. punctatus</i>	Channel catfish
<i>Pylodictis olivaris</i>	Flathead catfish
Aphredoderidae	
<i>Aphredoderus sayanus</i>	Pirate perch
Poeciliidae	
<i>Gambusia affinis</i>	Mosquitofish
<i>Heterandria Formosa</i>	Least killifish
<i>Poecilia latipinna</i>	Sailfin molly
Moronidae	
<i>Morone chrysops</i>	White bass
<i>M. mississippiensis</i>	Yellow bass
<i>M. saxatilis</i>	Striped bass
Centrarchidae	
<i>Elassoma zonatum</i>	Banded pygmy sunfish
<i>Lepomis gulosus</i>	Warmouth
<i>L. macrochirus</i>	Bluegill
<i>L. marginatus</i>	Dollar sunfish
<i>L. microlophus</i>	Redear sunfish
<i>L. punctatus</i>	Spotted sunfish
<i>Micropterus salmoides</i>	Largemouth bass
<i>Pomoxis annularis</i>	White crappie
<i>P. nigromaculatus</i>	Black crappie
Sciaenidae	
<i>Aplodinotus grunniens</i>	Freshwater drum
ESTUARINE (23 species)	
Cyprinodontidae	
<i>Adinia xenica</i>	Diamond killifish
<i>Cyprinodon variegates</i>	Sheepshead minnow
<i>Fundulus grandis</i>	Gulf killifish
<i>F. jenkinsi</i>	Saltmarsh killifish
<i>F. pulverous</i>	Bayou killifish
<i>F. similis</i>	Longnose killifish
<i>Lucania parva</i>	Rainwater killifish
Atherinidae	
<i>Membras martinica</i>	Rough silverside
<i>Menidia beryline</i>	Inland silverside
Syngnathidae	
<i>Syngnathus scovelli</i>	Gulf pipefish

Sparidae	
<i>Lagodon rhomboids</i>	Pinfish
Eleotridae	
<i>Dormitator maculatus</i>	Fat sleeper
<i>Eleotris pisonis</i>	Spinycheek sleeper
Gobiidae	
<i>Evorthodus lyricus</i>	Lyre goby
<i>Gobioides broussonetii</i>	Violet goby
<i>Gobionellus boleosoma</i>	Darter goby
<i>G. hastatus</i>	Sharptail goby
<i>G. shufeldti</i>	Freshwater goby
<i>Gobiosoma bosci</i>	Naked goby
<i>G. robustum</i>	Code goby
<i>Microgobius gulosus</i>	Clown goby
<i>M. thalassinus</i>	Green goby
Soleidae	
<i>Trinectes maculatus</i>	Hogchoker
ESTUARINE-MARINE (26 species)	
Elopidae	
<i>Elops saurus</i>	Ladyfish
<i>Megalops atlanticus</i>	Tarpon
Clupeidae	
<i>Brevoortia patronus</i>	Gulf menhaden
Engraulidae	
<i>Anchoa mitchilli</i>	Bay anchovy
Ariidae	
<i>Arius felis</i>	Hardhead catfish
<i>Bagre marinus</i>	Gafftopsail catfish
Gobiesocidae	
<i>Gobiesox strumosus</i>	Skilletfish
Belonidae	
<i>Strongylura marina</i>	Atlantic needlefish
Syngnathidae	
<i>Syngnathus floridae</i>	Dusky pipefish
<i>S. louisianae</i>	Chain pipefish
Carangidae	
<i>Oligoplites saurus</i>	Leatherjacket
Sparidae	
<i>Eucinostomus argenteus</i>	Sheepshead
Sciaenidae	
<i>Bairdiella chrysoura</i>	Silver perch
<i>Cynoscion arenarius</i>	Sand seatrout
<i>C. nebulosus</i>	Spotted seatrout
<i>Leiostomus xanthurus</i>	Spot
<i>Micropogonias undulatus</i>	Atlantic croaker
<i>Pogonias cromis</i>	Black drum

<i>Sciaenops ocellatus</i>	Red drum
<i>Stellifer lanceolatus</i>	Star drum
Ephippidae	
<i>Chaetodipterus faber</i>	Atlantic spadefish
Mugilidae	
<i>Mugil cephalus</i>	Striped mullet
Bothidae	
<i>Citharichthys spilopterus</i>	Bay whiff
<i>Paralichthys lethostigma</i>	Southern flounder
Soleidae	
<i>Achirus lineatus</i>	Lined sole
MARINE (106 species)	
Carcharhinidae	
<i>Carcharhinus leucas</i>	Bull shark
<i>Rhizoprionodon terraenovae</i>	Atlantic Sharpnose shark
Pristidae	
<i>Dasyatis americana</i>	Southern stingray
<i>D. sabina</i>	Atlantic stingray
Albulidae	
<i>Albula vulpes</i>	Bonfish
Anguillidae	
<i>Anguilla rostrata</i>	American eel
Congridae	
<i>Hildebrandia flava</i>	Yellow conger
<i>Paraconger caudilimbatus</i>	Margintail conger
Ophichthidae	
<i>Gordiichthys irretitus</i>	Horsehair eel
<i>Myrophis punctatus</i>	Speckled Worm eel
<i>Ophichthus gomesii</i>	Shrimp eel
<i>O. ocellatus</i>	Palespotted eel
Clupeidae	
<i>Harengula jaguana</i>	Scaled sardine
<i>Opisthonema oglinum</i>	Atlantic thread herring
Engraulidae	
<i>Anchoa cubana</i>	Cuban anchovy
<i>A. hepsetus</i>	Striped anchovy
<i>A. lyolepis</i>	Dusky anchovy
Synodontidae	
<i>Synodus foetens</i>	Inshore lizardfish
Batrachoididae	
<i>Opsanus beta</i>	Gulf toadfish
<i>O. pardus</i>	Leopard toadfish
<i>Porichthys plectrodon</i>	Atlantic midshipman
Antennariidae	
<i>Antennarius radiates</i>	Singlespot frogfish
<i>Histrio histrio</i>	Sargassumfish

Ogcocephalus	
<i>Ogcocephalus radiates</i>	Polka-dot batfish
Gadidae	
<i>Urophycis cirrata</i>	Gulf hake
<i>U. floridana</i>	Southern hake
<i>U. regia</i>	Spotted hake
Bythitidae	
<i>Gunterichthys longipenis</i>	Gold brotula
Ophidiidae	
<i>Lepophidium brevibarbe</i>	Blackedge cusk-eel
<i>Ophidion welshi</i>	Crested cusk-eel
Exocoetidae	
<i>Cypselurus melanurus</i>	Atlantic flyingfish
<i>Hirundichthys affinis</i>	Fourwing flyingfish
<i>H. rondeletii</i>	Blackwing flyingfish
<i>Hyporhamphus unifasciatus</i>	Halfbeak
<i>Prognichthys gibbifrons</i>	Bluntnose flyingfish
Syngnathidae	
<i>Hippocampus erectus</i>	Lined seahorse
<i>H. zosterae</i>	Dwarf seahorse
Percichthyidae	
<i>Centropristis philadelphica</i>	Rock sea bass
Pomatomidae	
<i>Pomatomus saltatrix</i>	Bluefish
Rachycentridae	
<i>Rachycentron canadum</i>	Cobia
Echeneidae	
<i>Remora remora</i>	Remora
Carangidae	
<i>Alectis ciliaris</i>	African pompano
<i>Caranx crysos</i>	Blue runner
<i>C. hippos</i>	Crevalle jack
<i>C. latus</i>	Horse-eye jack
<i>Chloroscombrus chrysurus</i>	Atlantic bumper
<i>Hemicaranx amblyrhynchus</i>	Bluntnose jack
<i>Selene setapinnis</i>	Atlantic moonfish
<i>S. vomer</i>	Lookdown
<i>Seriola zonata</i>	Banded rudderfish
<i>Trachinotus carolinus</i>	Florida pompano
<i>T. falcatus</i>	Permit
<i>Trachurus lathami</i>	Rough scad
Coryphaenidae	
<i>Coryphaena hippurus</i>	Dolphin
Lobotidae	
<i>Lobotes surinamensis</i>	Tripletail
Gerreidae	

<i>Diapterus plumier</i>	Striped mojarra
<i>Eucinostomus gula</i>	Silver jenny
<i>E. melanopterus</i>	Flagfin mojarra
<i>Gerres cinereus</i>	Yellowfin mojarra
Haemulidae	
<i>Orthopristis chrysoptera</i>	Pigfish
Sciaenidae	
<i>Cynoscion nothus</i>	Silver seatrout
<i>Larimus fasciatus</i>	Banded drum
<i>Menticirrhus americanus</i>	Southern kingfish
<i>M. littoralis</i>	Gulf kingfish
<i>M. saxatilis</i>	Northern kingfish
Mugilidae	
<i>Mugil curema</i>	White Mullet
Sphyraenidae	
<i>Sphyraena barracuda</i>	Great barracuda
<i>S. borealis</i>	Northern sennet
<i>S. guachancho</i>	Guaguanche
Polynemidae	
<i>Polydactylus octonemus</i>	Atlantic threadfin
Uranoscopidae	
<i>Astroscopus y-graecum</i>	Southern stargazer
Blenniidae	
<i>Chasmodes bosquianus</i>	Striped blenny
<i>Hypoleurochilus geminates</i>	Crested blenny
<i>Hypsoblennius ionthas</i>	Freckled blenny
Eleotridae	
<i>Erotelis</i>	Emerald sleeper
Gobiidae	
<i>Bathygobius soporator</i>	Frillfin goby
Microdesmidae	
<i>Microdesmus longipinnis</i>	Pink wormfish
Trichiuridae	
<i>Trichiurus lepturus</i>	Atlantic cutlassfish
Scombridae	
<i>Peprilus alepidotus</i>	Harvestfish
<i>P. burti</i>	Gulf butterfish
Triglidae	
<i>Prionotus roseus</i>	Bluespotted searobin
<i>P. rubio</i>	Blackfin searobin
<i>P. salmonicolor</i>	Blackwing searobin
<i>P. scitulus</i>	Leopard searobin
<i>P. tribulus</i>	Bighead searobin
Bothidae	
<i>Ancylopsetta dilecta</i>	Three-eye flounder
<i>A. quadrocellata</i>	Ocellated flounder

<i>Citharichthys macrops</i>	Spotted whiff
<i>Etropus crossotus</i>	Fringed flounder
<i>Paralichthys squamilentus</i>	Broad flounder
Cynoglossidae	
<i>Symphurus civitatus</i>	Offshore tonguefish
<i>S. plagiusa</i>	Blackcheek tonguefish
Balistidae	
<i>Aluterus schoepfii</i>	Orange filefish
<i>A. scriptus</i>	Scrawled filefish
<i>Canthidermis sufflamen</i>	Ocean triggerfish
<i>Monacanthus hispidus</i>	Planehead filefish
Tetraodontidae	
<i>Lagocephalus laevigatus</i>	Smooth puffer
<i>Sphoeroides parvus</i>	Least puffer
Diodontidae	
<i>Chilomycterus schoepfii</i>	Striped burrfish
Molidae	
<i>Mola mola</i>	Ocean sunfish

Threatened/endangered/exotic species

Bighead carp (*Hypophthalmichthys nobilis*) and Silver carp (*Hypophthalmichthys molitrix*) are present in the Barataria Basin. However, it is not known if either of the species has established a sustained population within the basin. In 2013, channeled apple snails were found in Bayou Boeuf and the Pleasure Bend neighborhood on the western shore of Lake des Allemands.

CREEL

LDWF conducted a one year fixed point access creel survey at the Pier 90 and Bayou Segnette boat ramps in 2010.

Current methods

No creel surveys are currently being conducted within the basin. No creel surveys are currently scheduled within the basin.

WATER USE

Hunting

Hunting for big game, small game, and waterfowl is popular on both private lands and WMA's within the basin

Skiing

Skiing is not popular in the basin

Scuba Diving

Scuba diving is not popular in the basin

Swimming

Swimming is not popular in the basin. However, people do swim on the bay and gulf sides of Grand Isle.

Irrigation

Water withdrawals are prohibited, except for withdrawals made by an individual, adjacent property owner for residential purposes only (LAC Title 76: Part IX 117).

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Meador, M.R. and W. E. Kelso. 1990. Growth of Largemouth Bass in Low Salinity Environments. *Transactions of the American Fisheries Society* 119: 545-552.

APPENDIX I
[\(return to text\)](#)

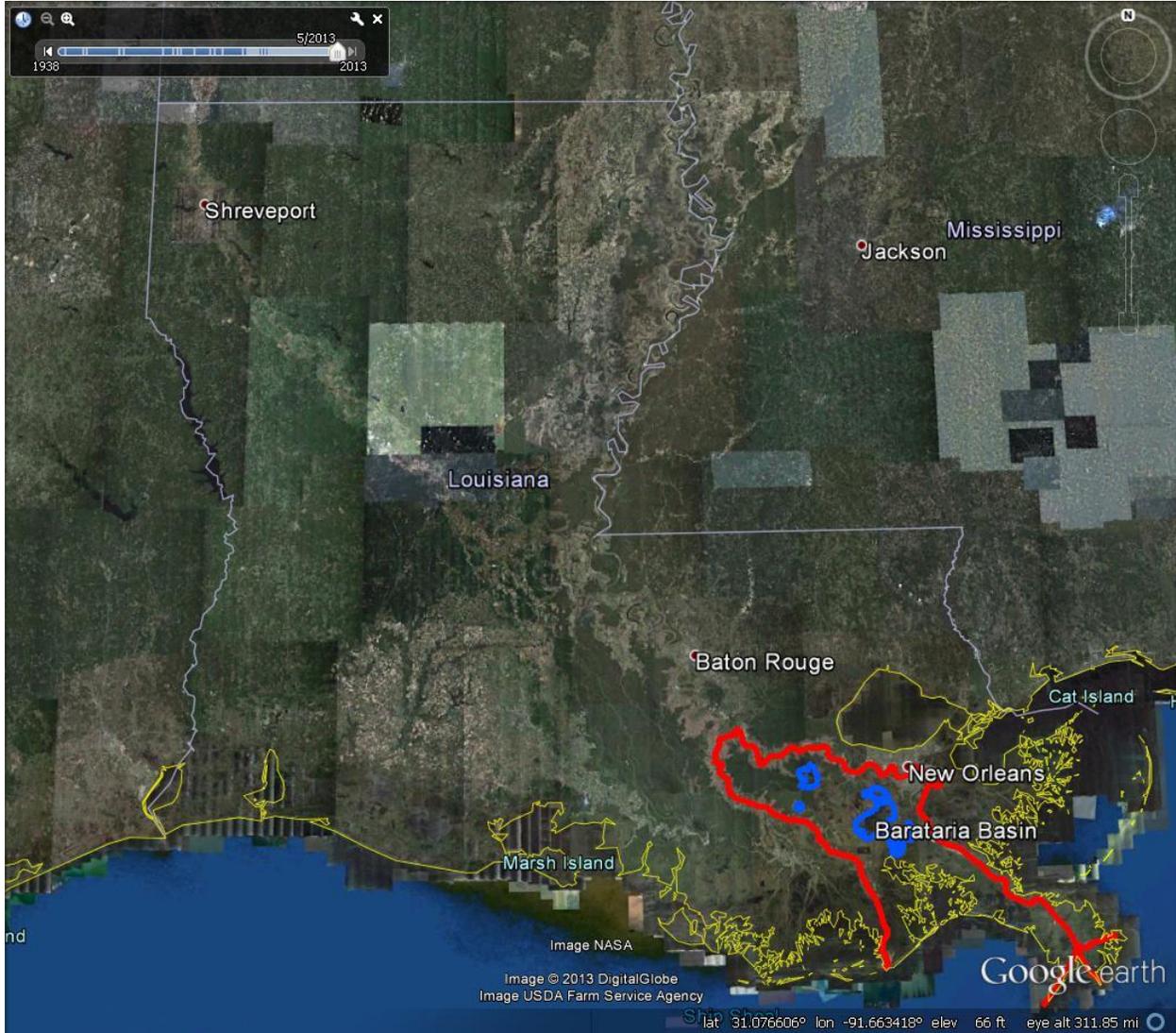


Figure 1. March 2013 Google Earth Image Depicting the Barataria Basin, Louisiana.



Figure 2. March 2013 Google Earth Image Depicting Major Fresh and Intermediate Streams and Lakes in the Barataria Basin, Louisiana.



Figure 3. March 2013 Google earth image depicting LDWF electrofishing sample stations in the Barataria Basin

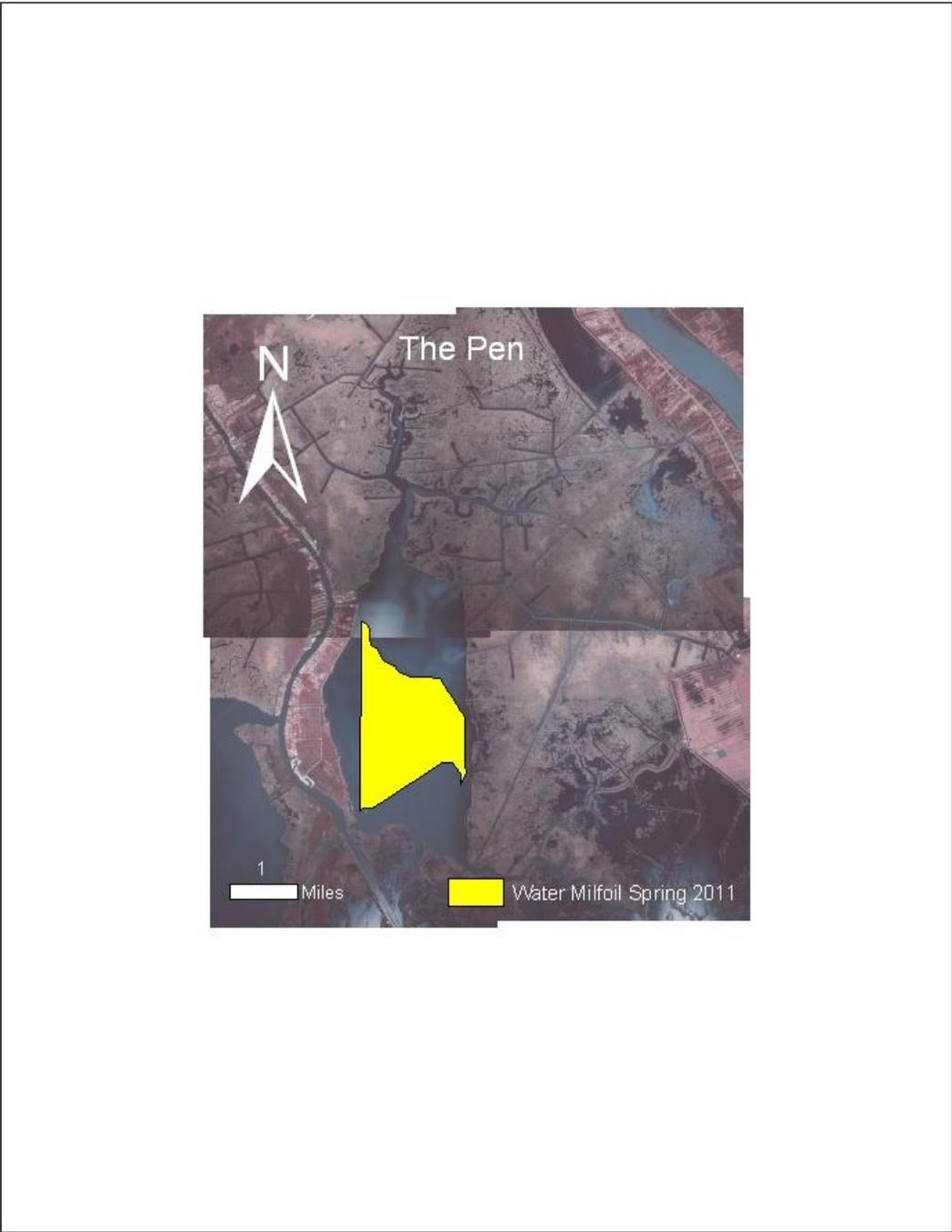


Figure 4. 2011 SAV survey results from the Pen (20803)



Figure 5. Google Earth image depicting 2013 SAV survey results.

APPENDIX II

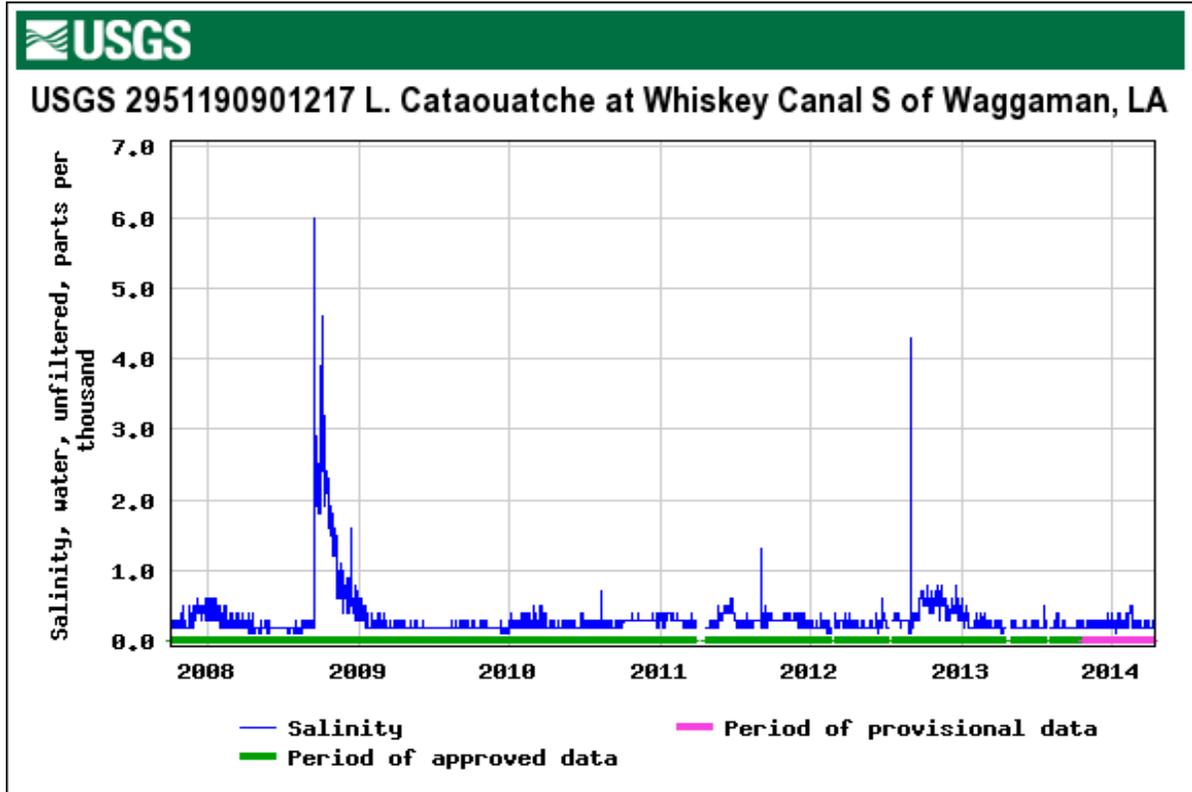


Figure 1. Salinity in Lake Cataouatche at Whiskey Canal from January 2008 to March 2014.



Figure 2. Map of the modifications made to the Davis Pond Freshwater Diversion ponding area.

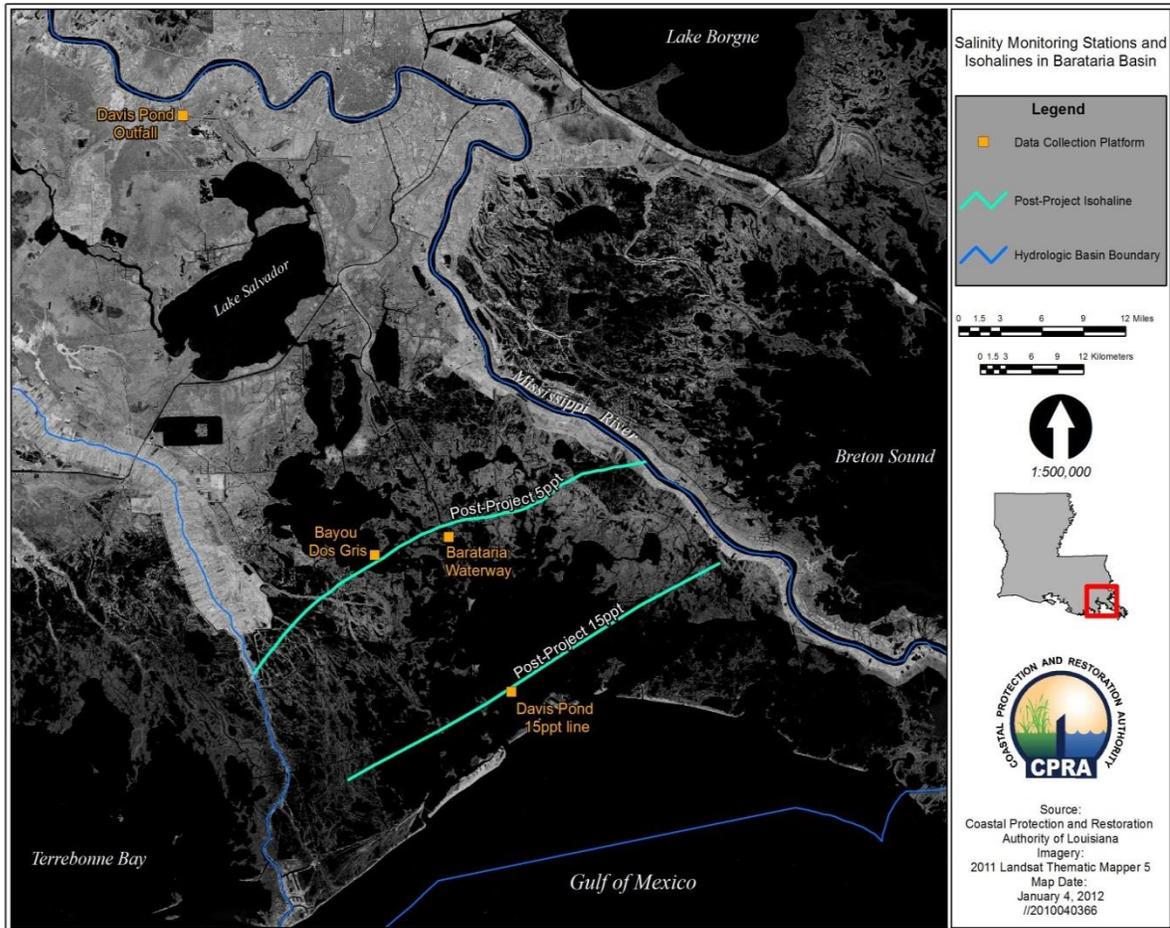


Figure 3. Map of salinity gauges and isohaline lines in Barataria Basin, LA to be used for operation of the Davis Pond Freshwater Diversion.

Appendix III
[\(Return to typemaps\)](#)

LAKE BOEUF
July 2003

On Wednesday July 30, 2003 Keith Matherne and I surveyed Lake Boeuf for vegetation species and composition. The dominant emerged species was American lotus (*Nelumbo lutea*) and the dominant submersed was hydrilla (*Hydrilla verticillata*). Other plants found throughout the system include common salvinia (*Salvinia minimum*), water hyacinth (*Eichhornia crassipes*), frog's bit (*Limnobium spongia*) and yellow water lily (*Nymphaea mexicana*).

Average depth was found to be 4.6 ft. and Secchi reading was 3.2 ft.

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Biologist Supervisor, Region III

