

LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES



OFFICE OF FISHERIES
INLAND FISHERIES DIVISION

PART VI -A

WATERBODY MANAGEMENT PLAN SERIES

LAKE BOEUF

LAKE HISTORY & MANAGEMENT ISSUES

CHRONOLOGY

DOCUMENT SCHEDULED TO BE UPDATED ANNUALLY

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FIGURE 1. MAP OF LAKE BOEUF (020103) AND BAYOU BOEUF (020102), THEIR PROXIMITY TO THE LAKE BOEUF WILDLIFE MANAGEMENT AREA, AND THEIR VICINITY TO MAJOR METROPOLITAN AREAS.16

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WATER BODY HISTORY

GENERAL INFORMATION

Lake Boeuf is a coastal wetland lake composed of interconnecting bayous and canals. Access is restricted by shallow water and an infestation of aquatic weeds. This management plan includes information for water body codes 020102 (Bayou Boeuf) and 020103 (Lake Boeuf; Figure 1).

Owners

State owned water bottom of natural formed lake and bayous. Oil exploration canals are owned by various land owners.

Size

Approximately 2,000 acres

Watershed

Lafourche Parish - west of the Mississippi River

Parish/s located

Lafourche Parish

Border waters

Bayou Boeuf, Bowie Canal, and Halpin Canal are the major waterways that connect to Lake Boeuf. The lake is bordered in the north by a slight natural ridge between Grand Bayou and Bayou Chevreuil and on the south by a natural ridge along Bayou Lafourche. These areas naturally drain southwest from Lac des Allemands. Water also flows from the western end of Grand Bayou (a distributary of Bayou Citamon) and the southern end of Theriot Canal (which connects to Bayou Lafourche). The exchange of flow between Bayou Lafourche and Theriot Canal is limited by a gated structure near the south end of Theriot Canal. This structure is normally closed during low flow periods except to allow boats to pass. This structure is approximately 8 ft wide and is owned by the Bayou Lafourche Freshwater Diversion District (Louisiana Department of Environmental Quality (LDEQ) 2004).

WATERBODY AUTHORITY

Authority

The Louisiana Department of Wildlife and Fisheries (LDWF) has the authority to manage the fisheries in Lake Boeuf. The U.S. Army Corps of Engineers has the authority to manage aquatic vegetation in Lake Boeuf.

Association

None

Access - maps with locations (Figure 2)

Boat docks

Public free ramp at Hwy. 308 on the border of Bayou Lafourche (Figure 2)

Private pay ramp at Hwy. 307 on the border of Bayou Boeuf (Figure 2)

Piers

There are no fishing piers in the area. The lake is accessible by boat only.

State/Federal facilities

There are no State or Federal facilities within the boundaries of the lake at this time. Lake Boeuf Wildlife Management Area is just south of the lake (Figure 3). The Lake Boeuf Wildlife Management Area is located east of Louisiana Highway 308, north of Raceland, Louisiana. The area includes approximately 800 acres of fresh marsh/swamp habitat and is accessible only by boat via Theriot Canal, Foret Canal, or Lake Boeuf. Hunting opportunities include archery, small game, waterfowl, and feral hogs. The area also hosts annual youth lottery deer gun hunts. More information can be obtained at the LDWF website:

<<http://www.wlf.louisiana.gov>>.

Reefs

No artificial structures constructed.

Shoreline development

None

State/National Parks

None

Shoreline development by landowners

Lake Boeuf is not accessible by road. Development is limited to hunting/fishing camps where leases have been obtained. Table 1 lists the land use types for the surrounding area.

Table 1. Land use types for the 120 mi² surrounding Lake Boeuf, Bayou Boeuf, Halpin Canal, and Theriot Canal areas (LDEQ 2004).

	Land use type percent of total area (020102)	Land use type percent of total area (020103)
Fresh Marsh	9.0%	67.6%
Saline Marsh	0.0%	0.0%
Wetland Forest	62.1%	0.0%
Upland Forest	0.1%	0.0%
Wetland Scrub/Shrub	2.3%	5.6%
Upland Scrub/Shrub	0.0%	0.0%
Agriculture	20.2%	0.0%
Urban	3.0%	0.0%

Barren	0.0%	0.0%
Water	3.3%	26.8%

Physical description of waterbody

Lake Boeuf is covered by relatively thick densities of floating and/or rooted vegetation. LDEQ (2004) reported that over 67% of Lake Boeuf was classified as marsh instead of water (Figure 4).

Shoreline length

Shoreline length - 12.6 miles

Width – N-S = approximately 1.54 miles and E-W = approximately 2.05 miles

Timber type

No timber - freshwater marsh

Average depth

Average depth – 4.6 feet

Maximum depth

Max. depth – 7.0 feet

Min. depth - 0.5 feet

Natural seasonal water fluctuation

Water fluctuation is a result of wind direction and rain fall.

EVENTS / PROBLEMS

Aquatic Vegetation

Aquatic vegetation restricts access to the lake. Boats with outboard motors are restricted to the main channel of the lake. Mud boats are often used to access the lake.

MANAGEMENT ISSUES

AQUATIC VEGETATION

Type map

Beginning in 2005, the U.S. Army Corps of Engineers assumed the task of aquatic weed control for Lake Boeuf. The LDWF aquatic type map survey of 2004 indicated the dominant emersed species as American lotus *Nelumbo lutea*. The dominant submersed species was observed to be hydrilla (*Hydrilla verticillata*). Other plants found throughout the system include common salvinia (*Salvinia minima*), water hyacinth (*Eichhornia crassipes*), frog’s bit (*Limnobium spongia*), yellow water lily (*Nymphaea mexicana*) coontail, (*Ceratophyllum demersum*), cabomba (*Cabomba sp.*), water pennywort (*Hydrocotyle umbellata*), water paspalum (*Paspalum fluitans*). See Appendix I.

Biomass

N/A

Treatment history by year available

Biological

No biological treatments made to date.

Chemical

The U.S. Army Corps of Engineers is responsible for controlling aquatic vegetation in Lake Boeuf. LDWF spray crews control nuisance aquatic vegetation in surrounding canals and bayous to maintain boating and fishing access. Chemical applications vary from year to year depending on the amount of vegetation in the area.

Table 2. LDWF aquatic weed herbicide treatment history in the Lake Boeuf area. Detailed information regarding specific chemical usage is not available prior to 2005.

Year	Chemical	Acres Treated	Gallons	Target species
1996	n/a	134	n/a	n/a
1997	n/a	46	n/a	n/a
1998	n/a	335	n/a	n/a
1999	n/a	243	n/a	n/a
2000	n/a	309	n/a	n/a
2001	n/a	555	n/a	n/a
2002	n/a	285	n/a	n/a
2003	n/a	500	n/a	n/a
2004	n/a	1,624	n/a	n/a
2005	2,4-D	136	68	Water hyacinth

2005	Aquastar	16.9	13	Wild rice
2005	Reward	2.60	2	Common salvinia
2006	n/a	1,191	n/a	n/a
2007	2,4-D	2002	101	Water hyacinth
2007	Aquastar	37.7	29	Wild rice
2007	Reward	10.4	8	Common salvinia
2008	2,4-D	352	176	Water hyacinth
2008	Reward	15.6	12	Common salvinia
2009	2,4-D	1,060	530	Water hyacinth
2009	Reward	26	20	Common salvinia

HISTORY OF REGULATIONS

No lake specific regulations have been proposed.

Table 3. Statewide recreational and commercial fishing regulations for freshwater species.

STATEWIDE REGULATIONS BY SPECIES	
RECREATIONAL	
Crappie	50 daily per person; no size restriction
Largemouth Bass	10 daily per person; no size restriction
Catfish	100 daily per person, with the following mins: Note: A maximum of 25 undersize fish of a single or combination of all 3 may be kept within the 100 fish daily creel limit
Channel Catfish	11" minimum TL
Blue Catfish	12" minimum TL
Flathead Catfish	14" minimum TL
Striped Bass	5 daily per person; no more than 2 bass >30"
Lepomis (all sunfish species)	No limit
White Bass	50 daily per person; no size restriction
Freshwater Drum	25 daily per person; 12" minimum TL
Buffalo Fish	25 daily per person; 16" minimum TL
Bowfin	No limit; 16" minimum TL
COMMERCIAL	
Blue Catfish	12 inches minimum total length
Buffalo	16 inches minimum total length

Channel Catfish	11 inches minimum total length, 8 inches collar boned
Flathead Catfish	14 inches minimum total length
Freshwater Drum	12 inches minimum total length
Bowfin	22 inches minimum total length. Fishermen are prohibited, while on the water, from possessing bowfin eggs (roe) that are not naturally connected to a whole fish. The taking of bowfin with nets or bowfin body parts, including eggs (roe), is prohibited during the months of December, January and February.

FISH KILLS / DISEASE HISTORY

Hurricane Andrew 1992 caused a massive fish kill in the lake and surrounding areas.

LMBV samples have not been taken from this waterbody.

CONTAMINANTS / POLLUTION

There are no fish consumption advisories for the Lake Boeuf area (<http://www.dhh.louisiana.gov/offices/page.asp?id=205&detail=6532>).

Water quality

In 1999, this area was listed as impaired by both EPA and LDEQ due to organic enrichment, low DO, and nutrients (LDEQ 2004). LDEQ (2004) suggested that poor water quality was a result of minor industrial point sources, pasture land, petroleum activities, spills, septic tanks, natural sources, and non- irrigated crop production. In order to reach optimum values of dissolved oxygen (>5 mg/L), established by LDEQ, 100% of the man-made sources would have to be reduced in the summer and 92% in the winter (LDEQ 2004). Only 37% of natural background sources would have to be reduced in the summer to maintain these levels (LDEQ 2004).

Water level

Water level is dependent on wind direction and rain fall.

BIOLOGICAL

Fish samples

Table 4. LDWF standard sampling history in the Lake Boeuf area (lake codes 020102 and 020103).

LAKE BOEUF FISH SAMPLING	
1990	Electrofishing – 1 – 15 minute sample (spring) 1-15 minute sample (fall)
1991	Electrofishing – 3-15 minute samples (fall)
1992	Electrofishing – 2-15 minute samples (spring) 1-15 minute samples (fall)
1993	Electrofishing – 4-15 minute sample (spring) 2-15 minute sample (fall) 1-15 minute samples (fall)
1994	Electrofishing – 3-15 minute sample (spring) 2-15 minute sample (fall) 1-15 minute samples (fall)
1995	Electrofishing – 3-15 minute sample (spring) 3-15 minute sample (fall) 1-15 minute samples (fall)
2000	Electrofishing – 5 – 15 minute samples (spring) 7-15 minute samples (fall) 1-7.5 minute forage sample
2007	Electrofishing – 4-15 minute samples (spring) 4-15 minute samples (fall)
2008	Electrofishing – 2-15 minute sample (fall)
2009	Electrofishing – 4-15 minute samples (winter) 4-15 minute samples (spring) 4-15 minute samples (fall) 1-15 minute forage sample 2 – 1 ½ in bar, 4’ hoop nets (spring) 2 – lead nets (spring) 3 – lead nets (fall)
2010	Lake Boeuf is scheduled to be sampled annually: Electrofishing – 4-15 minute samples (winter) 4-15 minute samples (spring) 4-15 minute samples (fall) 1-7.5 minute forage sample 2 – lead nets (fall)

Lake records

None available

Stocking History

Table 5. Stocking history in the Lake Boeuf area.

Species	Date	Size	Total
Florida Largemouth Bass	1993	Fingerlings	* ^a
Florida Largemouth Bass	4/26/1996	Fingerlings	53,768
Florida Largemouth Bass	2/8/2009	Phase II	3420* ^b
* ^a Lafourche Bass Club stocked fingerling Florida bass in 1993 and the total number of bass is not available.			
* ^b Florida largemouth bass were stocked in an effort to restore the fishery after extensive fish kills following Hurricanes Gustav and Ike.			

Species profile

Table 6. Freshwater and brackish species collected during LDWF standard electrofishing samples in Lake Boeuf and surrounding canals. No comprehensive species survey has been conducted in the Lake Boeuf area.

FRESHWATER AND BRACKISH SPECIES	
<i>Lepomis miniatus</i>	redspotted sunfish
<i>Lepomis gulosus</i>	warmouth
<i>Lepomis microlophus</i>	redeer sunfish
<i>Lepomis macrochirus</i>	bluegill
<i>Pomoxis nigromaculatus</i>	black crappie
<i>Pomoxis annularis</i>	white crappie
<i>Lepomis cyanellus</i>	green sunfish
<i>Lepomis humilis</i>	orange-spotted sunfish
<i>Lepomis megalotis</i>	longear sunfish
<i>Micropterus salmoides</i>	largemouth bass
<i>Lepisosteus oculatus</i>	spotted gar
<i>Lepisosteus osseus</i>	longnose gar
<i>Morone mississippiensis</i>	yellow bass
<i>Amia calva</i>	bowfin
<i>Esox americanus</i>	grass pickerel

<i>Notemigonus crysoleucas</i>	golden shiner
<i>Mugil cephalus</i>	striped mullet
<i>Lucania parva</i>	rainwater killifish
<i>Dorosoma petenense</i>	threadfin shad
<i>Dorosoma cepedianum</i>	gizzard shad
<i>Ictalurus furcatus</i>	blue catfish
<i>Pylodictis olivaris</i>	flathead catfish
<i>Ictalurus punctatus</i>	channel catfish

Genetics

Stocking evaluation and subsequent genetic sampling will begin in 2011.

Threatened/endangered/exotic species

None

Creel

No creel sampling conducted

HYDROLOGICAL CHANGES

None

WATER USE

Hunting

Duck hunting

Fishing

Many recreational fishermen target crappie in the canals surrounding Lake Boeuf and commercial fishermen target catfish.

Trapping

Nutria

Skiing

No

Scuba Diving

No

Swimming

No

Irrigation

No

References

- LDEQ. 2004. Bayou Boeuf, Halpin Canal, and Theriot Canal and Lake Boeuf TMDLS for biochemical oxygen-demanding substances: subsegments 020102 and 020103. CFMS Contract No. 594599. Engineering Group 2, Louisiana Department of Environmental Quality, Baton Rouge, LA: May 19, 2004.

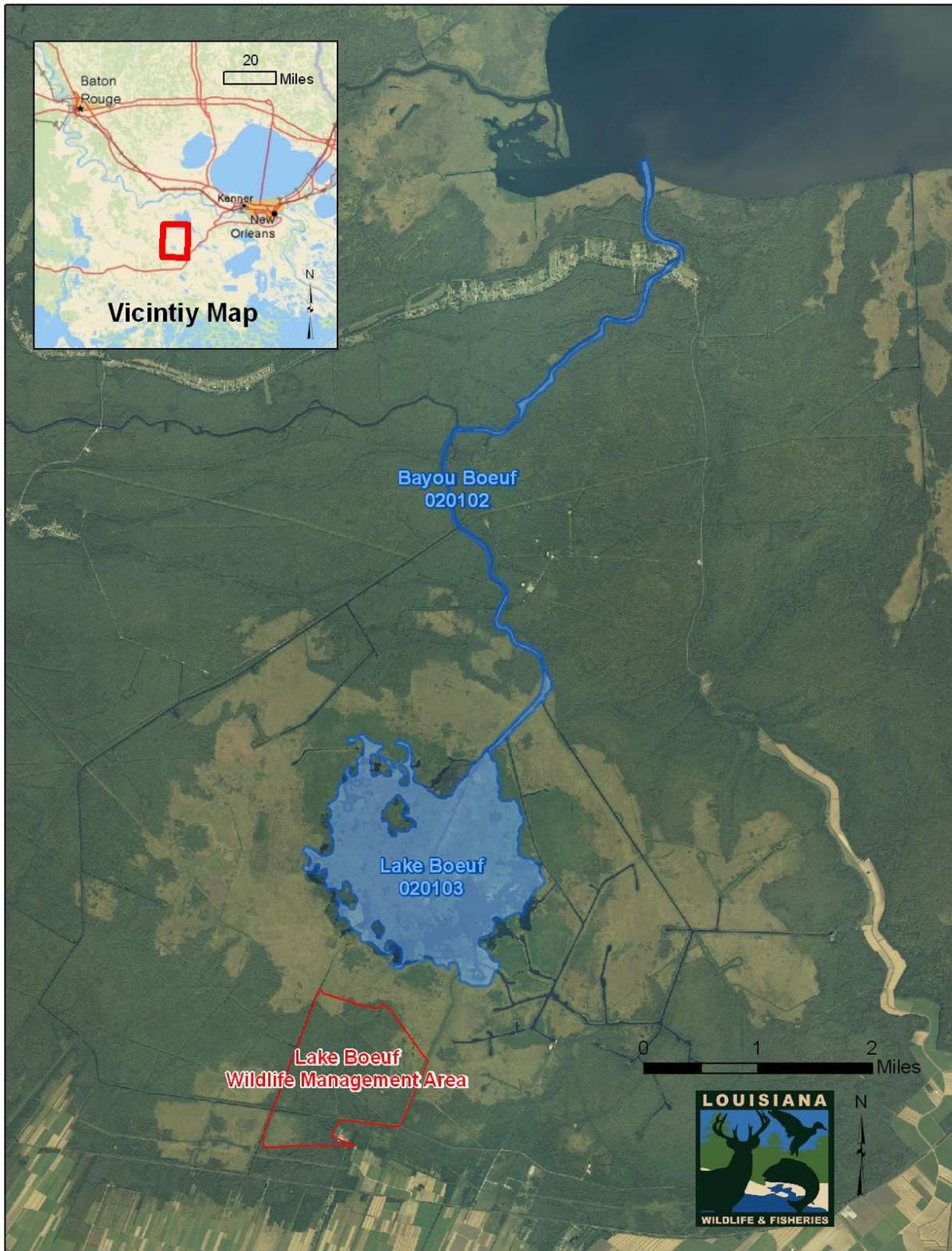


Figure 1. Map of Lake Boeuf (020103) and Bayou Boeuf (020102), their proximity to the Lake Boeuf Wildlife Management Area, and their vicinity to major metropolitan areas.

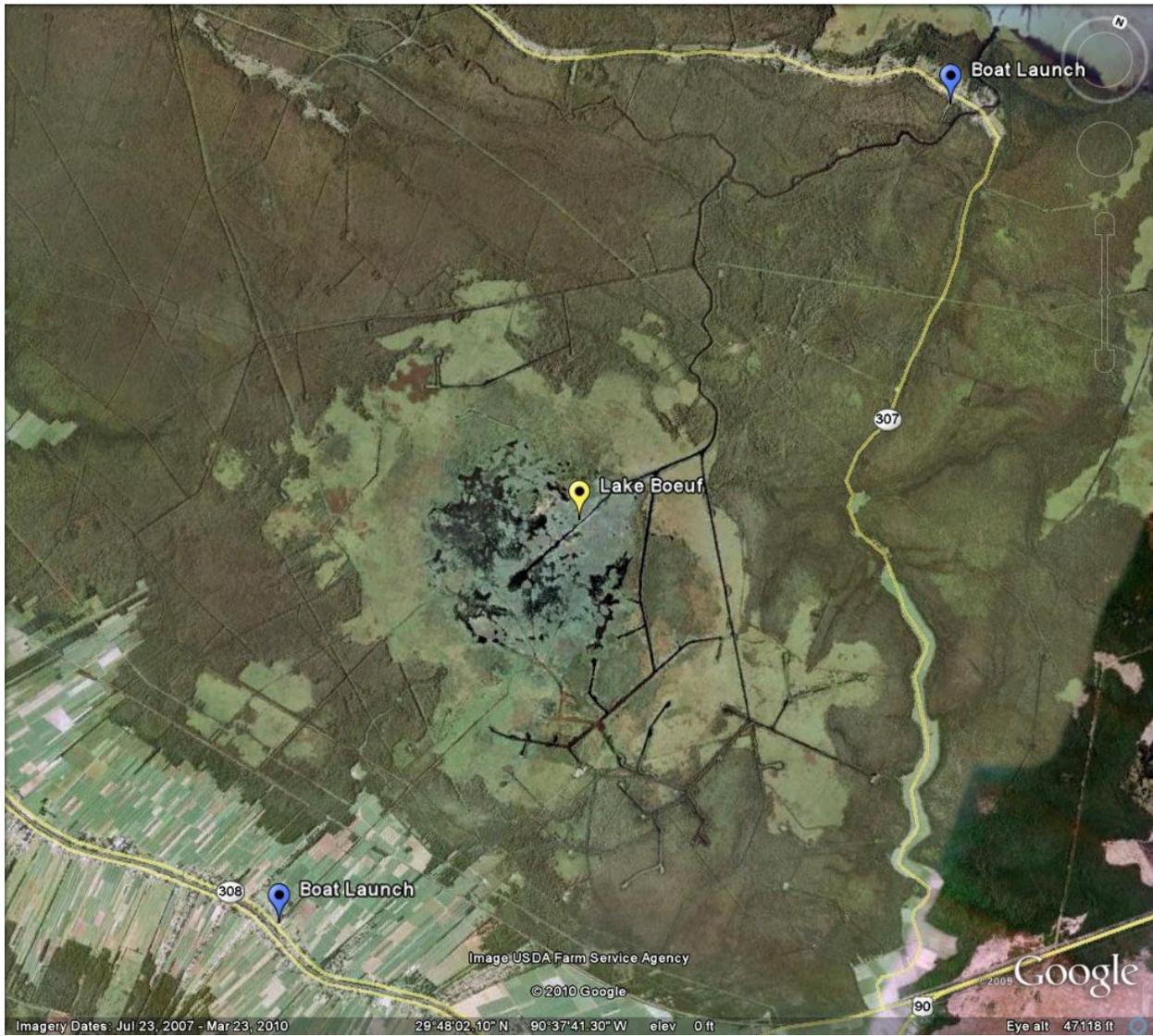


Figure 2. Boat launch locations around Lake Boeuf in Lafourche Parish, LA.

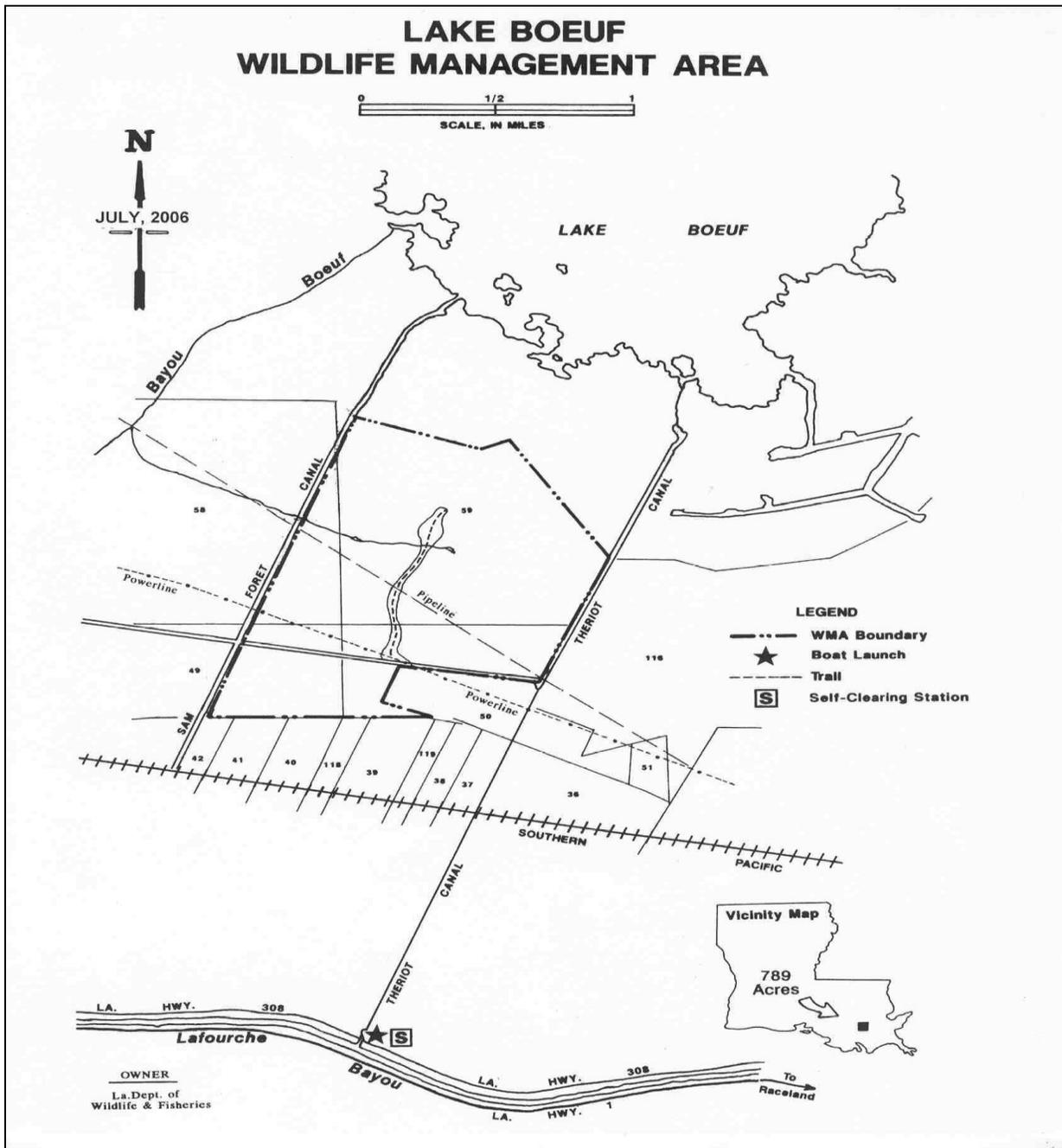


Figure 3. Map of the Lake Boeuf Wildlife Management Area in Lafourche Parish, LA.

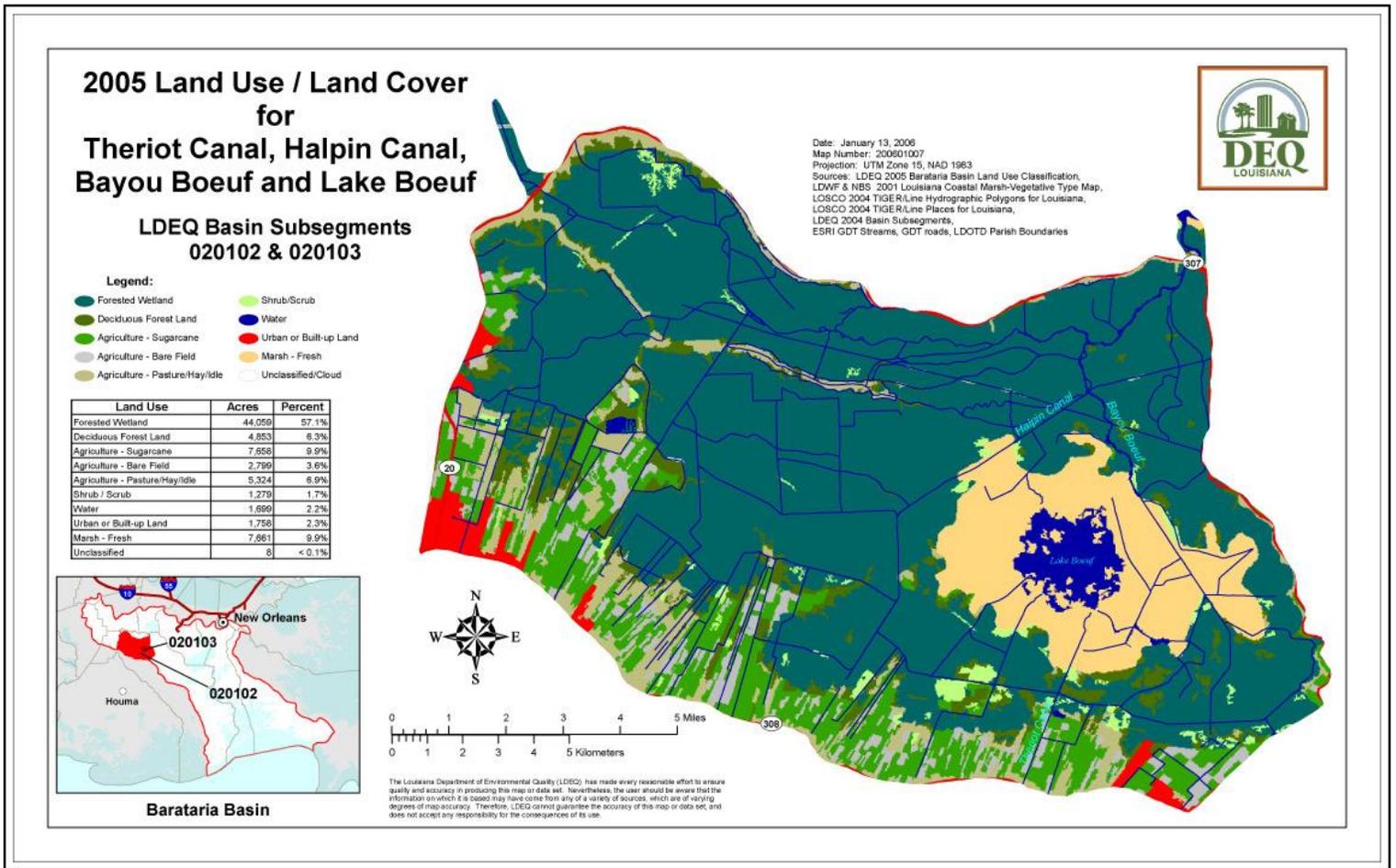
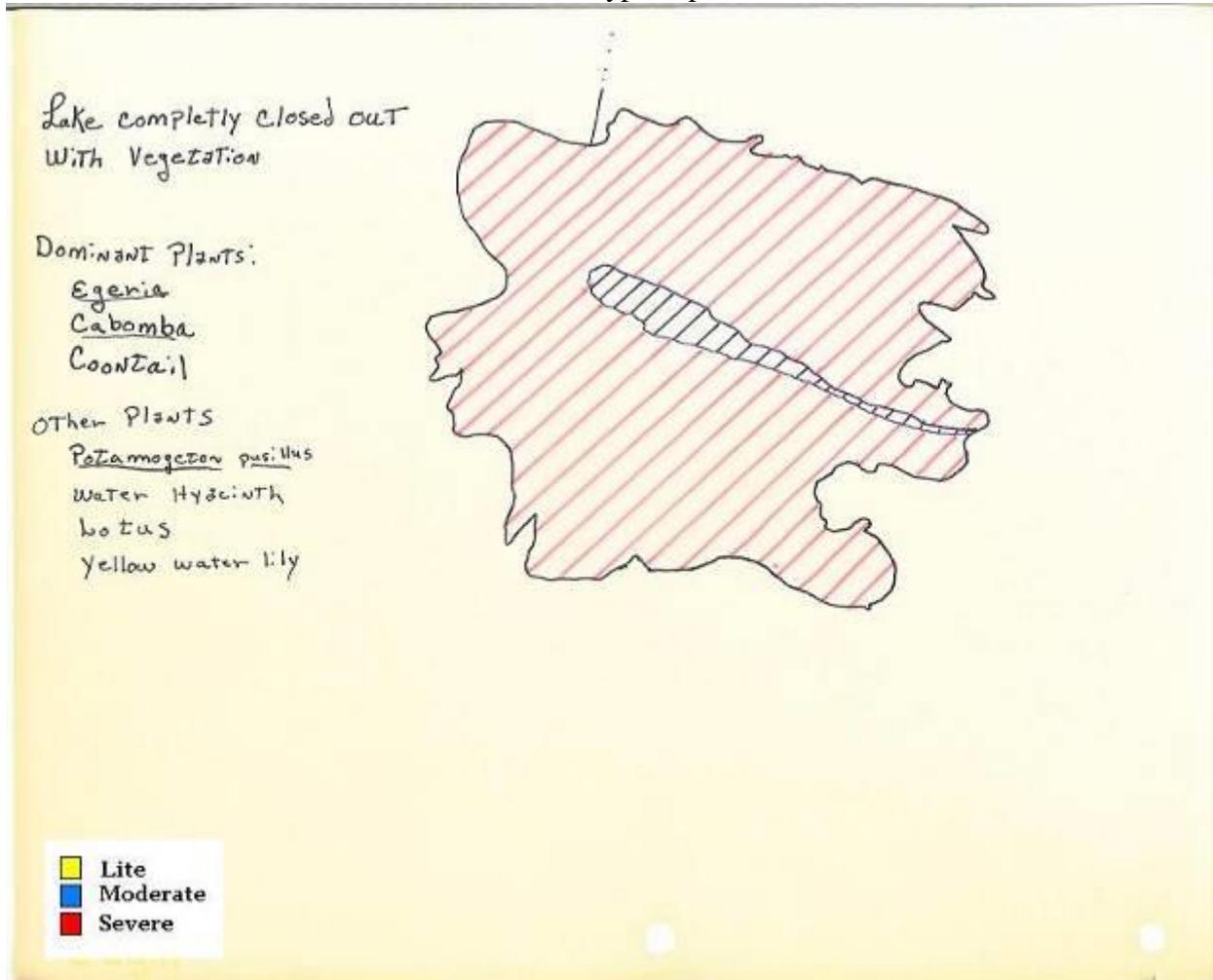


Figure 4. Land use and land cover for Theriot Canal, Halpin Canal, Bayou Boeuf, and Lake Boeuf courtesy of LDEQ.

APPENDIX I – TYPEMAPS

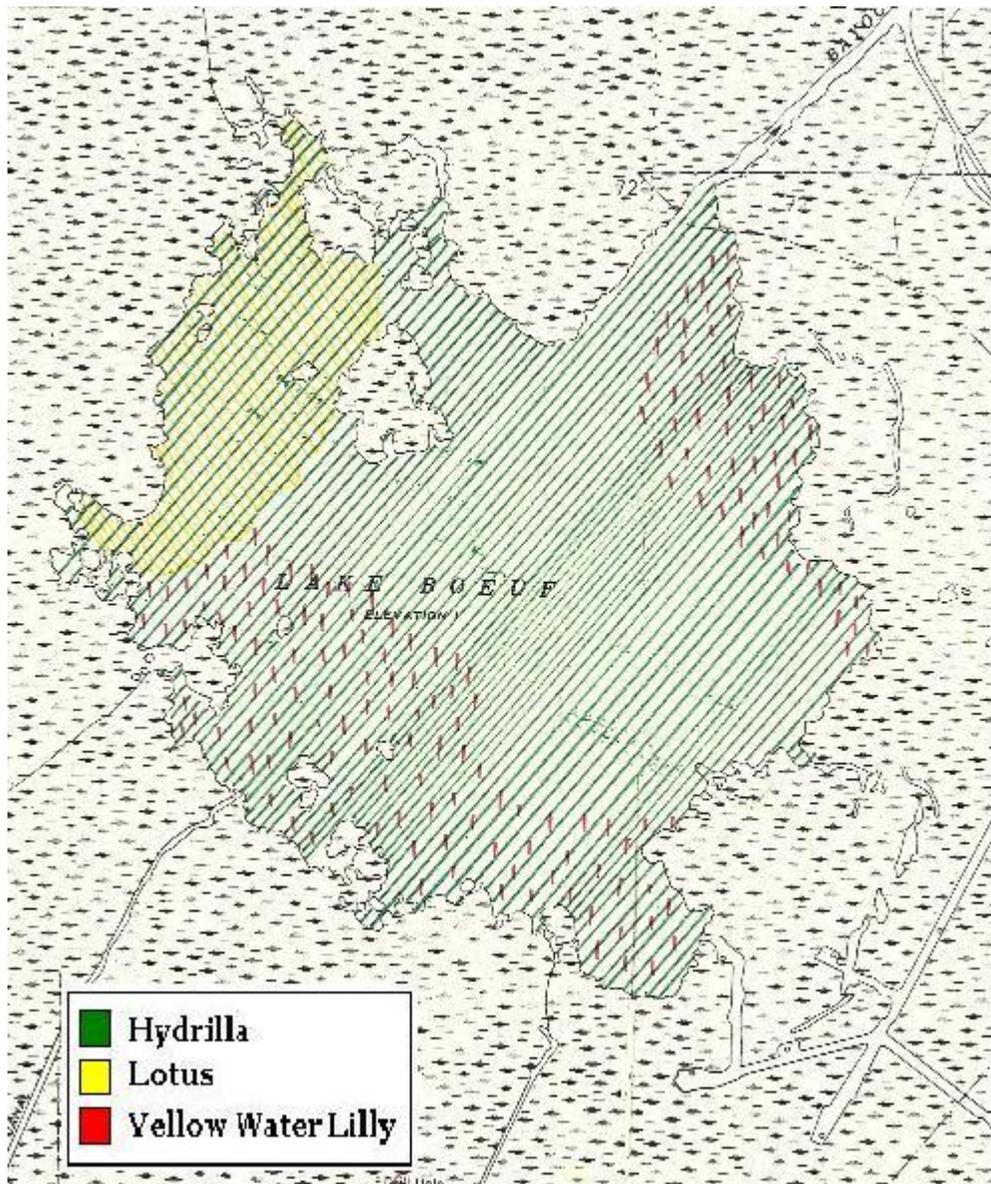
LAKE BOEUF 1980 Typemap



LAKE BOEUF
September 1984

Aquatic vegetation on Lake Boeuf, Lafourche Parish, was inspected on September 18, 1984. Lake Boeuf was again found to be, for the most part, matted over with hydrilla (Hydrilla verticillata). Coverage is 95% (+). Hydrilla was noted to be flowering. Lotus (Nelumbo lutea) overlays the hydrilla in the northwest 20% of the lake, while yellow waterlily (Nymphaea mexicana) covers the beds in the northeastern and southern portions.

Other plants observed were water hyacinths (Eichhornia crassipes), pickerelweed (Pontederia lanceolata), frog's-bit (Limnobium sorgia), coontail (Ceratophyllum demersum) and water-pennywort (Hydrocotyle umbellata).

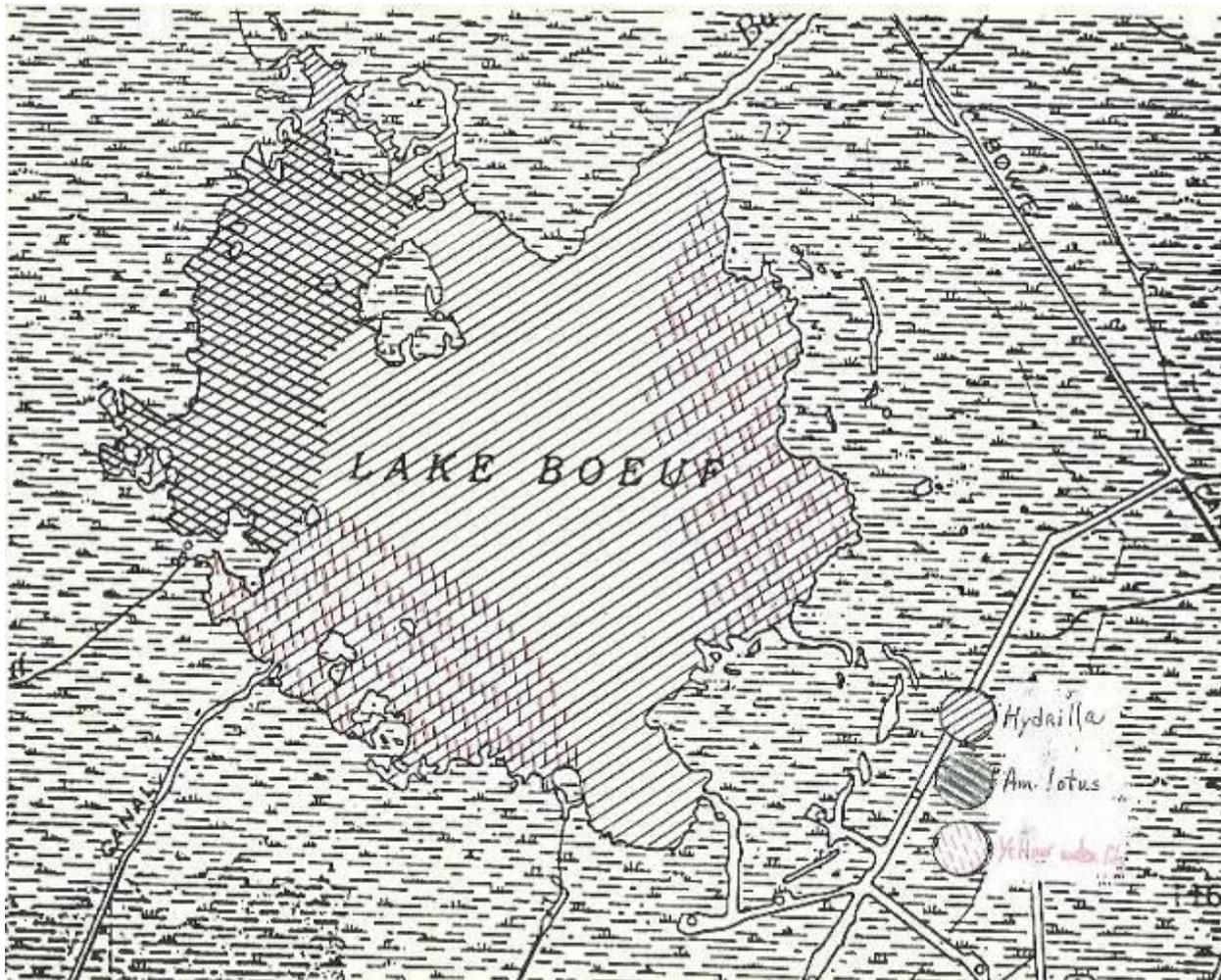


LAKE BOEUF
October 1985

Lake Boeuf, Lafourche Parish, was surveyed for composition and severity of aquatic vegetation on October 3, 1985. At least 95% of the lake was covered by hydrilla (Hydrilla verticillata). Open water areas were found only in boat channels crossing the lake at various locations. These areas ranged from 6.5 to 8.0 feet in depth. A heavy infestation of yellow water lily (Nymphaea mexicana) was interspersed with hydrilla in the northeast portion of the lake.

A moderate to heavy stand of lotus (Nelumbo lutea) overlays the hydrilla beds in the western most portion of the lake. Coverage is approximately 20% and occurs mainly in areas 4.5 to 5.0 feet deep.

Other plants observed were water hyacinths (Eichhornia crassipes), water-pennywort (Hydrocotyle umbellata), coontail (Ceratophyllum demersum), frog's-bit (Limnobium spongia), water fern (Azolla caroliniana), water lettuce (Pistia stratiotes), water-meal (Wolffia sp.), and giant duckweed (Spirodela polyrhiza).



LAKE BOEUF
September 1986

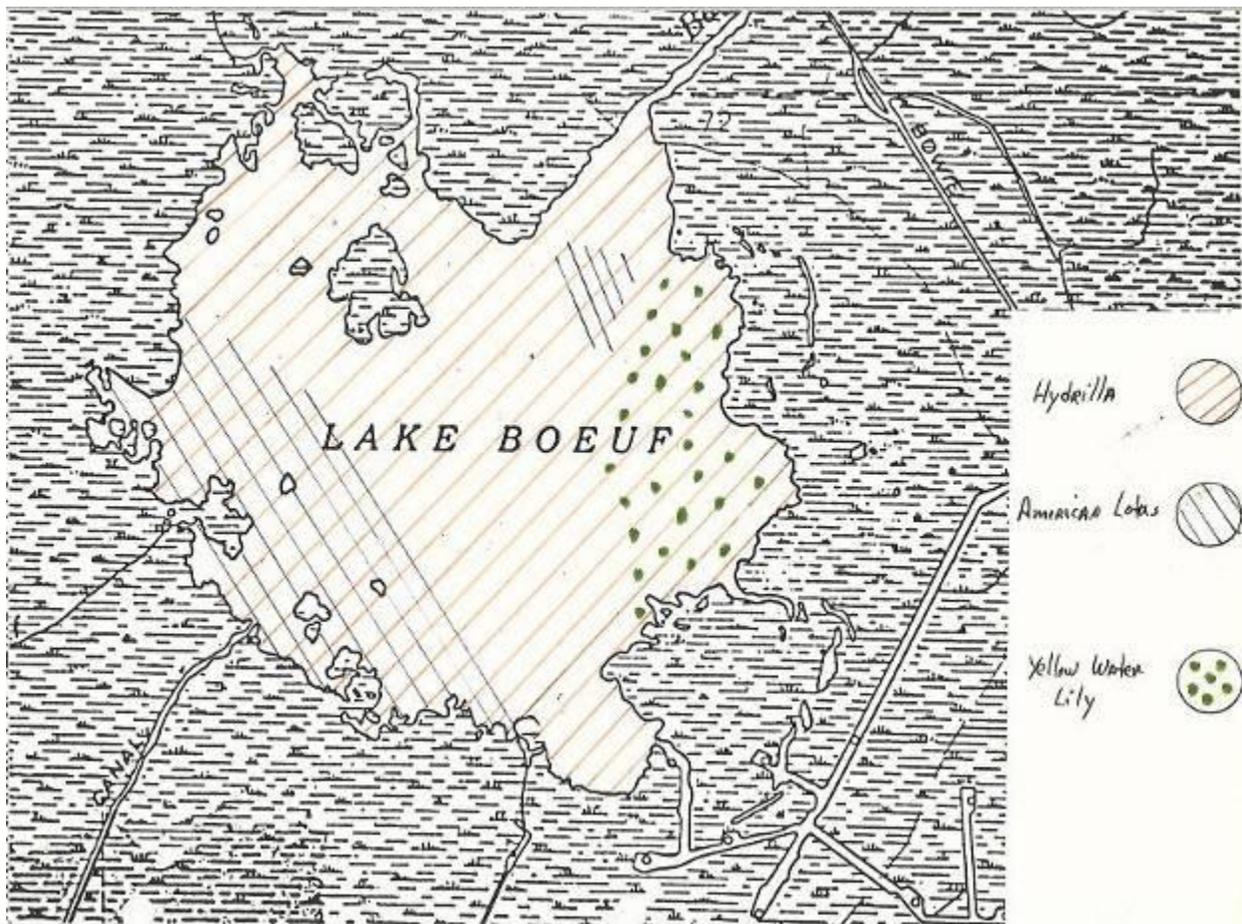
Lake Boeuf, Lafourche Parish, was surveyed on September 30, 1986, to determine the presence and severity of aquatic vegetation. As was reported last year the lake was covered by hydrilla (Hydrilla verticillata). In addition to the boat channels crossing the lake, a small portion of the west-central area of the lake contained open water.

Overlaying the hydrilla beds in the south and southwest portion of the lake is a moderate to heavy stand of lotus (Nelumbo lutea) occurring in water up to 5.0 feet deep. Coverage is approximately 20%. Lotus also occurred in a small portion in the northeast corner of the lake.

Along the westernmost shoreline a moderate to heavy fringe of frog's-bit (Limnobium songia) was observed out to a depth of 4.0 feet.

A heavy infestation of Yellow waterlily (Nymphaea mesicana) occurred in the eastern part of the lake out to a depth of 4.5 feet.

Other plants noted were water hyacinths (Eichhornia crassipes), water-pennywort (Hydrocotyle umbellata), coontail (Ceratophyllum demersum), water fern (Azolla caroliniana), water lettuce (Pistia stratiotes), water meal (Wolffia sp.), and giant duckweed (Spirodela polyrhiza).

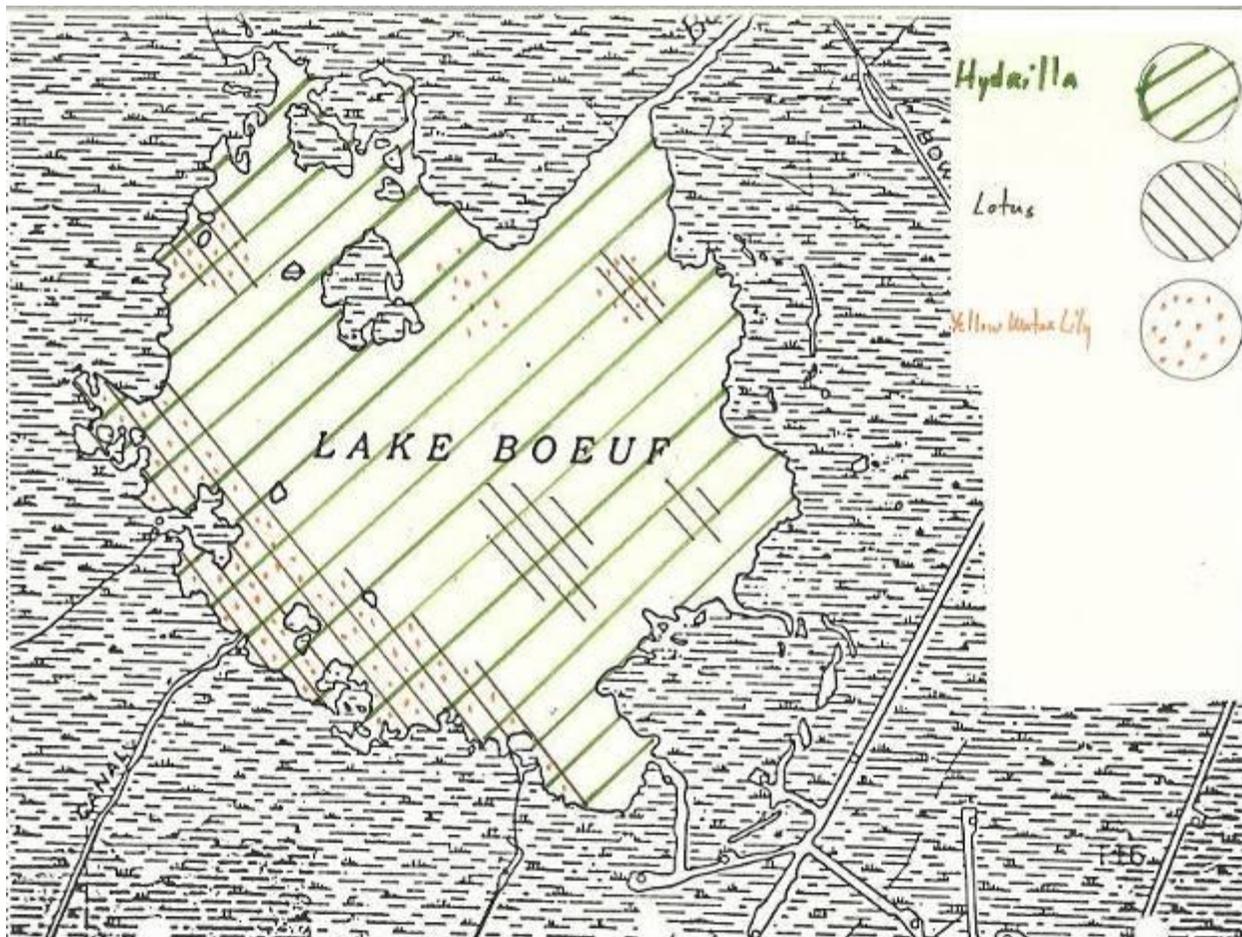


LAKE BOEUF
September 1987

On September 30, 1987, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation. Hydrilla (Hydrilla verticillata) was again the dominate plant covering most of the lake. Clear water areas include boat channels, small test plots on the east side, and various pool areas scatt4ered throughout the lake. Water depths for these areas were 7.0 feet, 4.5 feet and 4.0 feet respectively.

A moderate to heavy stand of lotus (Nelumbo lutea) mixed with yellow water lily (Nymphaea mexicana) was noted in the south and southwest part of the lake. Plants observed were found in water up to 5.0' in depth. Scattered patches of lotus were also found throughout the lake.

Scattered mats of frog's-bit (Limnobium songia) water lettuce (Pistia stratiotes), water-pennywort (Hydrocotyle umbellate), alligatorweed (Alternanthera philoxeroides) and coontail (Ceratophyllum demersum).



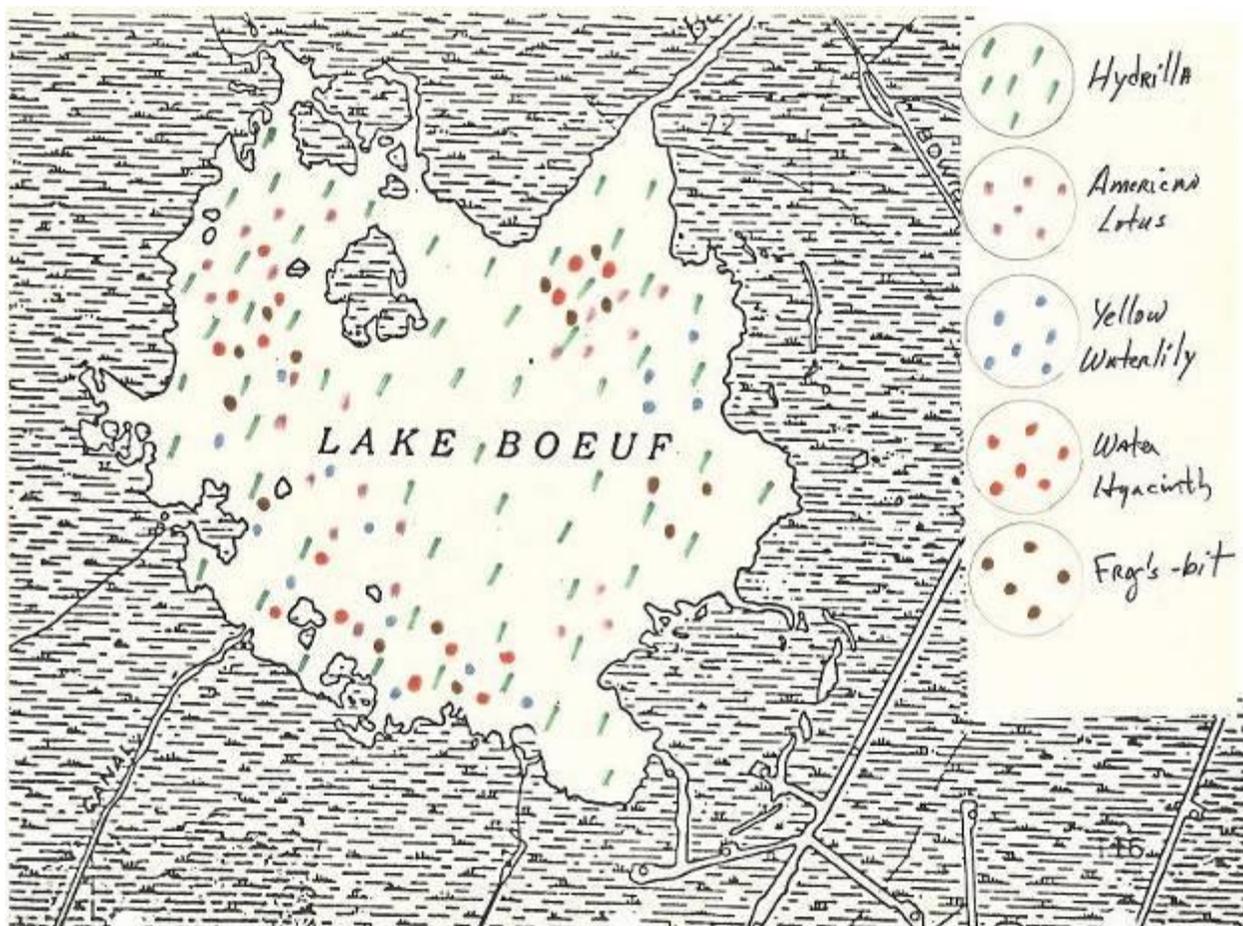
LAKE BOEUF
October 1988

On October 6, 1988, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation. Although, hydrilla (Hydrilla verticillata) remains the dominate plant species, there was an increase in open water areas compared to previous years. These areas range in depth from 4.5 feet in pond areas to 7.5 feet in the main boat channels.

A mixture of lotus (Nelumbo lutea) and yellow water lily (Nymphaea mexicana) was observed in the south and southwest sections of the lake. A moderate stand of lotus was also present in the northeast quadrant and some scattered plants occurred near the southeast shoreline. Plants observed were found in water up to 5.0' in depth.

Large mats of Waterhyacinth (Eichhornia crassipes) and frog's-bit (Limnobium songia) were present throughout the lake.

Other plants observed included water-pennywort (Hydrocotyle umbellata), coontail (Ceratophyllum demersum), alligatorweed (Alternanthera philoxeroides), fanwort (Cabomba caroliniana), water-fern (Azolla carolinana), and various species of duckweed.

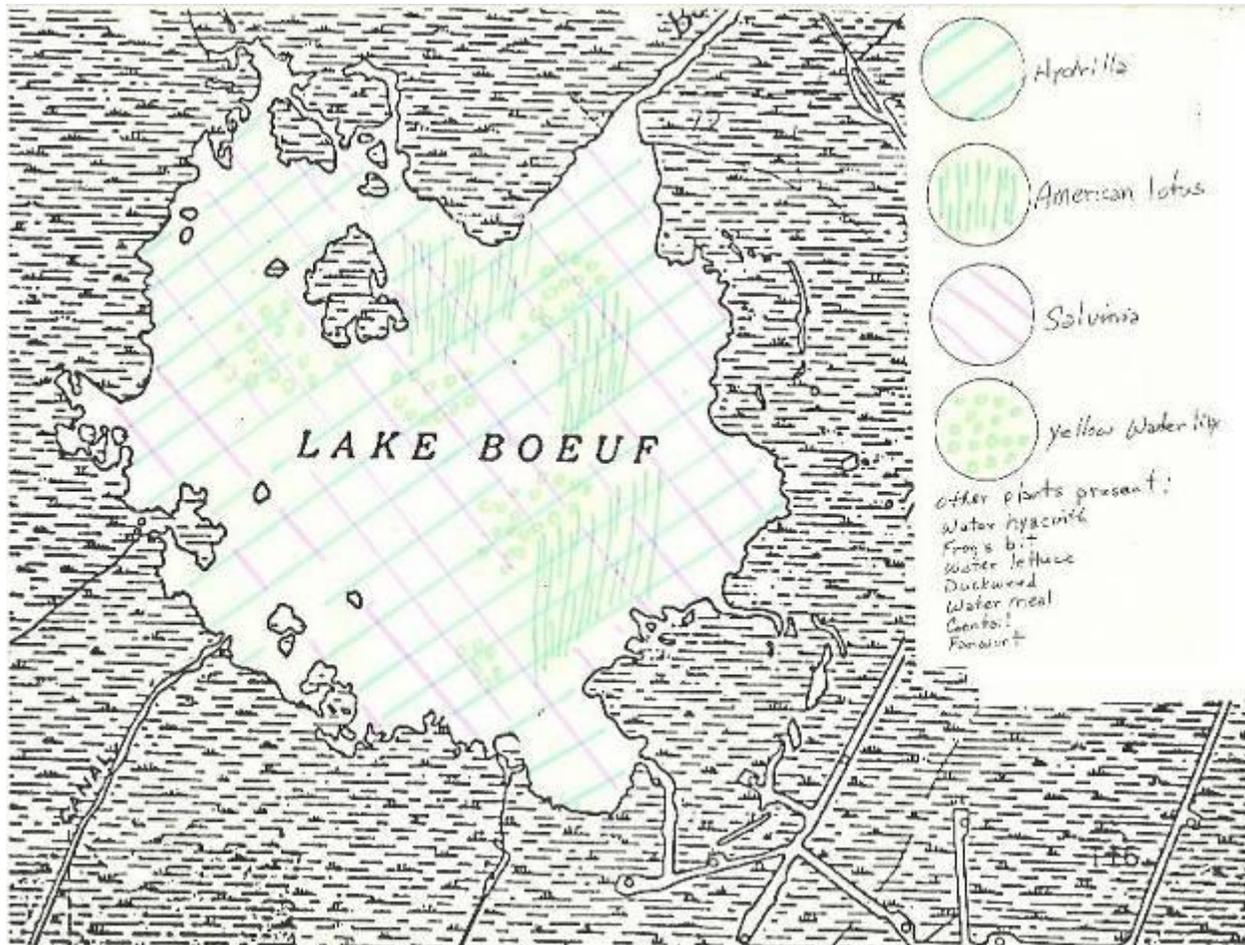


LAKE BOEUF October 1990

On October 10, 1990, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation. Most open water areas were confined to the boat channels. These areas ranged in depth from 5' to 6'.

Hydrilla (Hydrilla verticillata) is the dominate plant species. I was found throughout the lake. American lotus (Nelumbo lutea) was found in dense stands in the entire west portion of the lake, these stands ere growing in conjunction with Yellow water lily (Nymphaea mexicana). Salvinia (Salvinia rotundifolia) was also found throughout the entire lake.

Other plants observed included Waterhyacinth (Eichhornia crassipes), frogbit (Limnobium songia), waterlettuce (Pistia stratiotes), duckweed (Lemna minor), watermeal (Wolffia spp.), coontail (Ceratophyllum demersum) and fanwort (Cabomba caroliniana).

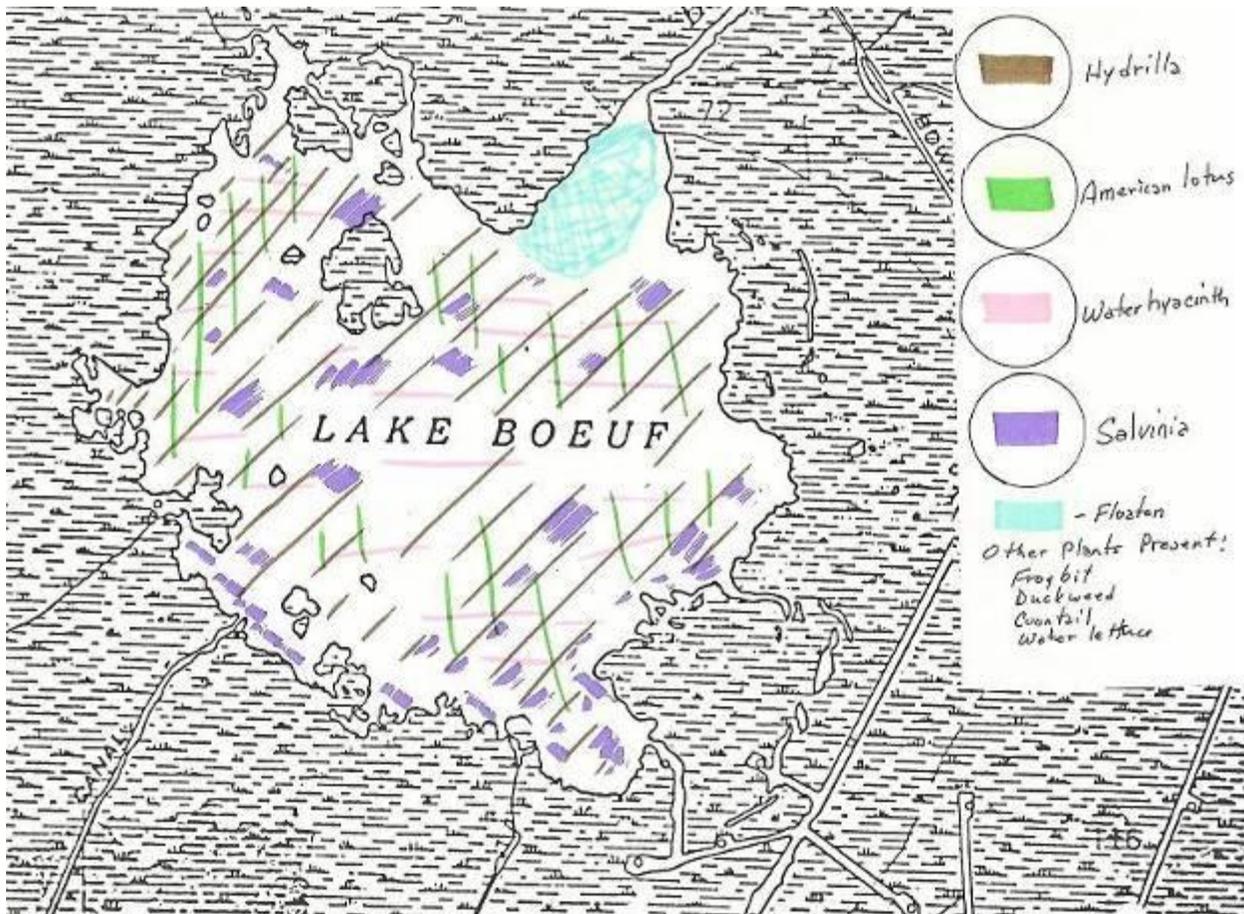


LAKE BOEUF September 1991

On September 25, 1991, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation. Hydrilla (Hydrilla verticillata) remains the dominate plant species, found throughout the entire lake. There is some areas of open water which includes the main boat channels (depth 25'), boat lanes (depth 4') and an area in the north part of the lake where a flotan had broken loose (depth 4'). The flotan had moved and is nearly completely blocking the entrance of Bayou Boeuf into the lake.

This year there seems to be more lotus (Nelumbo lutea) and Waterhyacinth (Eichhorina crassipes) in the lake. These plants ere found throughout the lake in dense stands and mats. Salvinia (Salvinia rotundifolia) was found throughout the lake, also. Especially along the edges of the channels and ponds.

Other plants observed included frogbit (Limnobium songia), duckweed (Lemna minor), coontail (Ceratophyllum demersum) and waterlettuce (Pistia stratiotes).



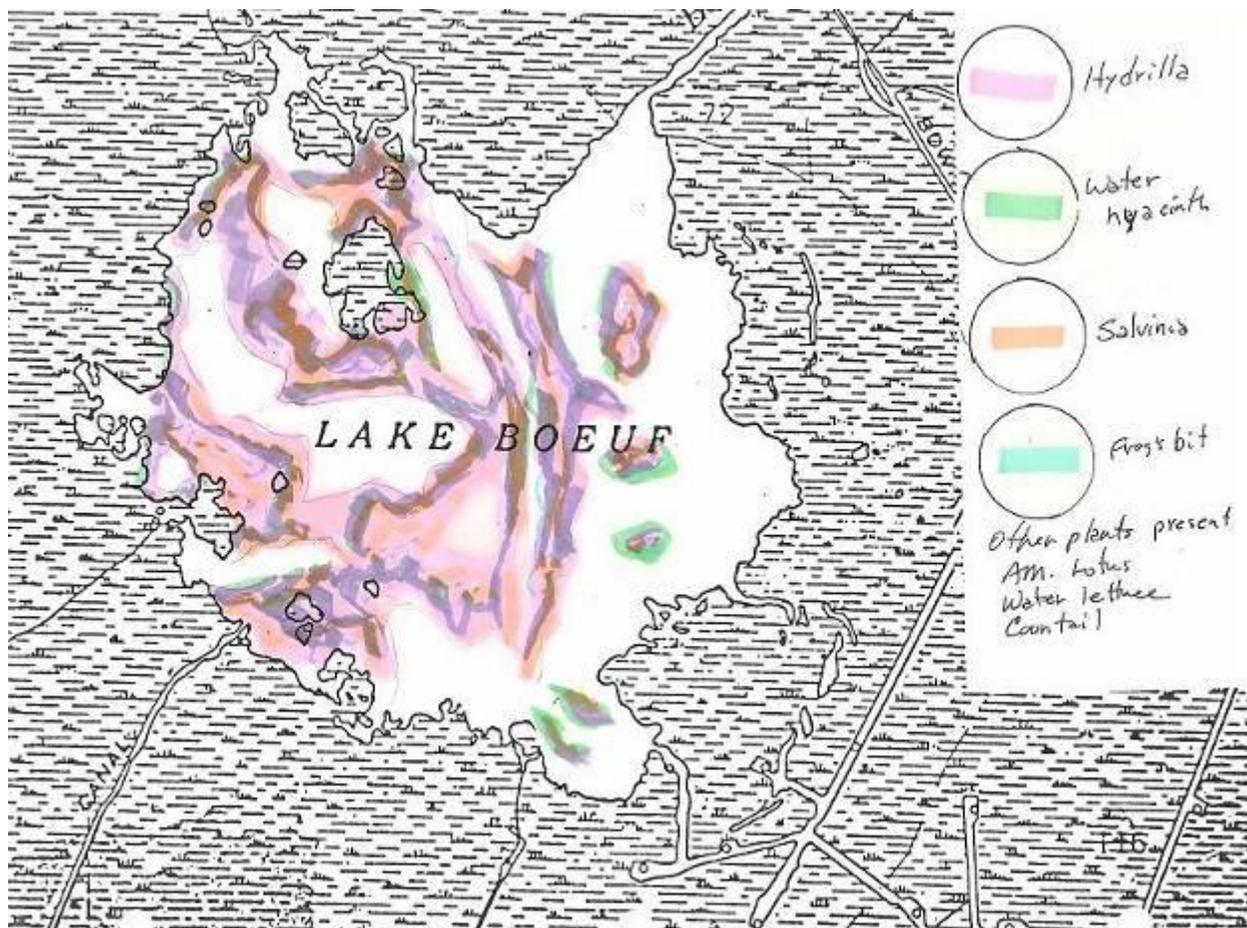
LAKE BOEUF
September 1992

On September 23, 1992, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation.

Hydrilla (Hydrilla verticillata) remains the dominate submersed plant species present. There is more open water this year as compared to last year but the lake is still 50-65% covered with aquatic vegetation.

Water hyacinths (Eichhornia crassipes) was found throughout the lake intermingled in hydrilla mats as well as along the edges of flotons.

It is evident that the contour of the lake has changed since the Sam Foret Canal is completely inaccessible. This may be due to the movement of flotons in the lake.

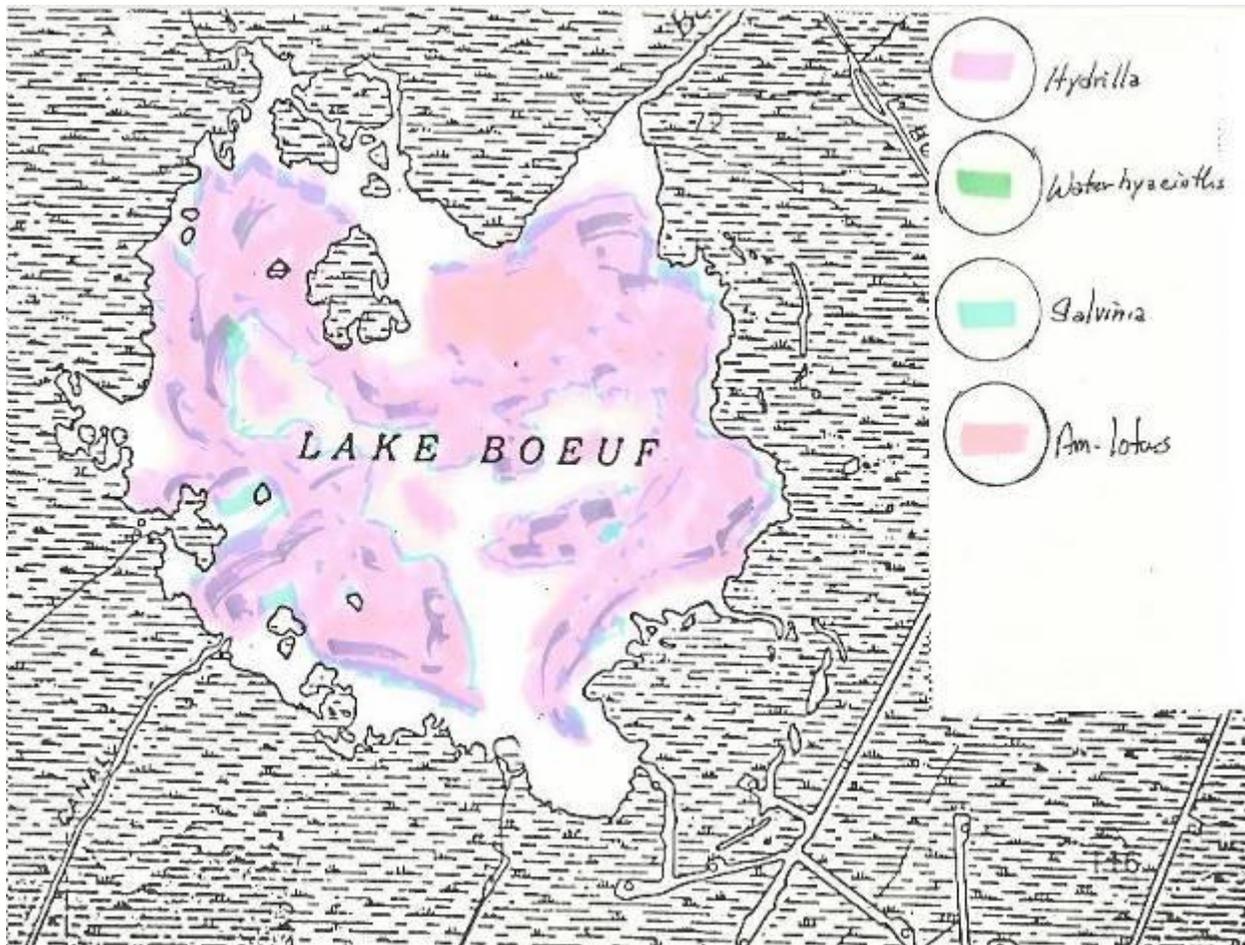


LAKE BOEUF
October 1993

On October 12, 1993, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic weed composition and severity of infestation.

This year, approximately 75% is covered with vegetation. Hydrilla (Hydrilla verticillata) remains the dominate plant species present. Water hyacinths (Eichhornia crassipes) was found throughout the lake, intermingled in hydrilla mats, along channels and at the edges of flotons. There are a few stands of American lotus (Nelumbo lutea). Salvinia (Salvinia rotundifolia) was found throughout the lake along channel edges, pond edges and intermixed in the hydrilla and hyacinth mats.

Other plants observed were: duckweeds (Lemna spp.), frogbit (Limnobium spongia), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum) and coontail (Ceratophyllum demersum).



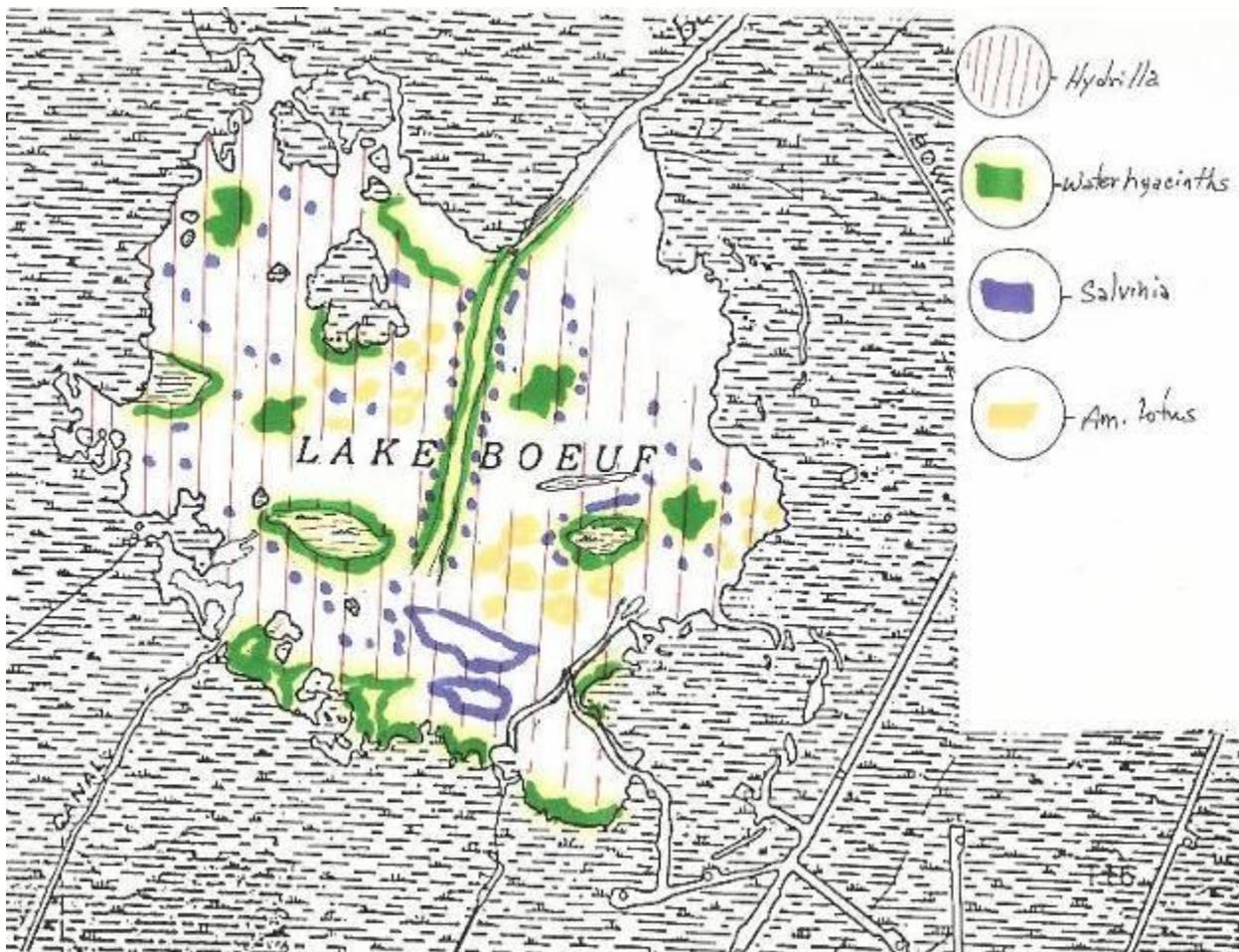
LAKE BOEUF September 1994

On September 28, 1994, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

This year, approximately 70-75% of the lake is covered with vegetation. Hydrilla (Hydrilla verticillata) is the dominate plant species present. Water hyacinths (Eichhornia crassipes) was found throughout the lake, especially around flotons, boat lanes and along channels. Salvinia (Salvinia rotundifolia) was also present intermixed within the hydrilla and water hyacinth mats. A few stands of American lotus (Nelumbo lutea) were found. This year there seems to be more flotons present.

Other plants observed were: duckweeds (Lemna spp.), frog's bit (Limnobium spongia), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum spp.), sedge (Carex spp.) and Bidens (Bidens spp.).

Surveyed by: Charles Biggar



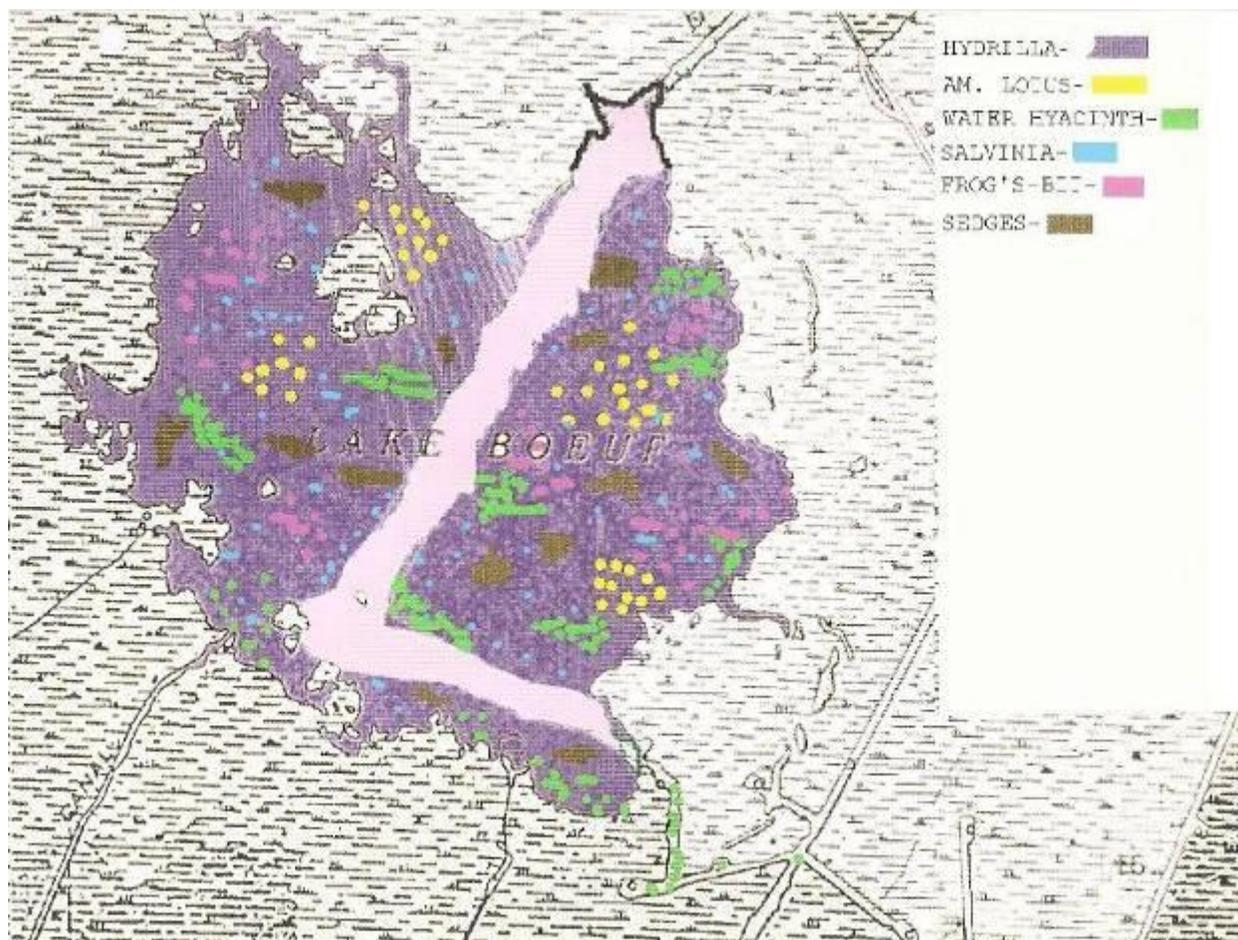
LAKE BOEUF November 1995

On November 16, 1995, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

The lake was approximately 70-75% covered with vegetation. Hydrilla (Hydrilla verticillata) was the most predominant plant present covering most of the lake. Water hyacinths (Eichhornia crassipes) were found along the edges and floating in mats throughout the lake. This year, a number of floating sedge (Carex spp.) mats were noted. Salvinia (Salvinia rotundifolia) and frog's-bit (Limnobium spongia) was observed intermingled within the hydrilla beds. There were a few American lotus (Nelumbo lutea) stands present.

Other plants observed were: duckweeds (Lemna spp.), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum spp.) and Bidens (Bidens spp.).

Surveyed by: Charles Biggar



LAKE BOEUF September 1996

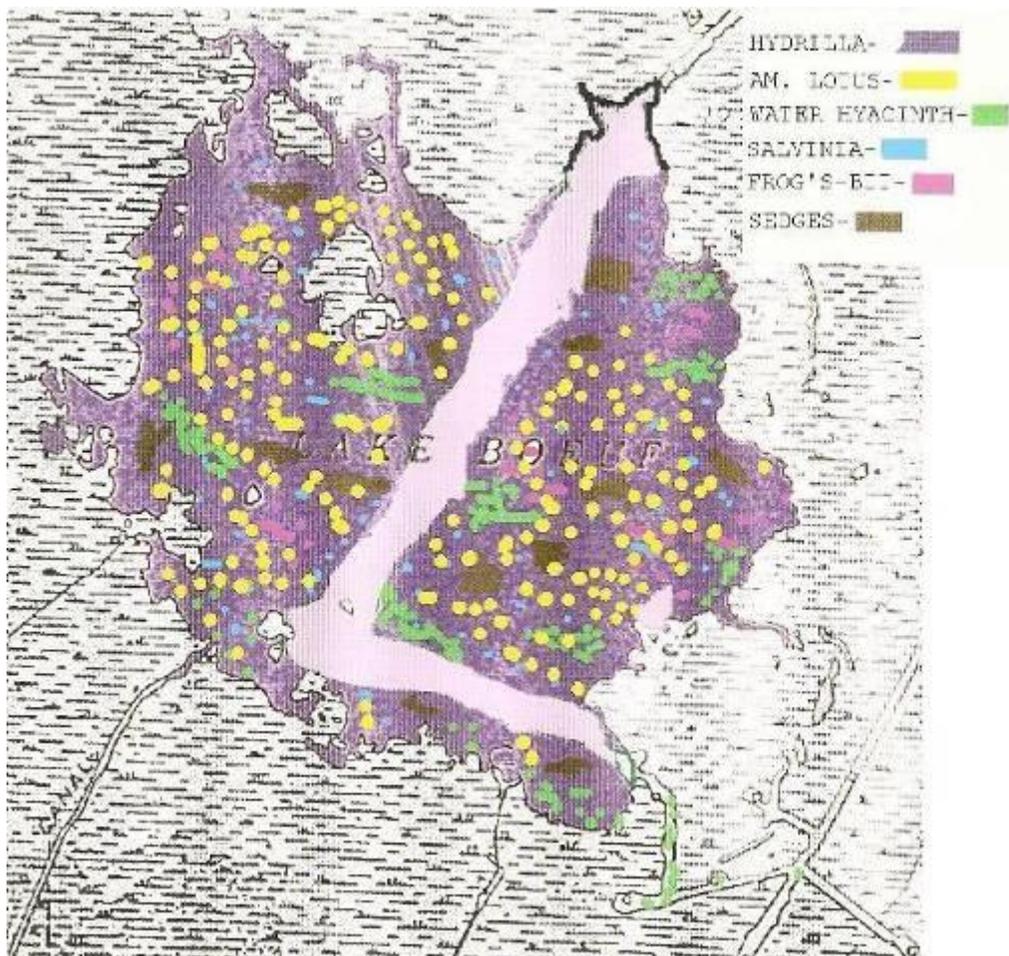
On September 16, 1996, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

The lake was approximately 65-70% covered with vegetation. Hydrilla (Hydrilla verticillata) was the most predominant plant present covering most of the lake. Water hyacinths (Eichhornia crassipes) were found along the edges and floating in mats throughout the lake. This year, a number of floating sedge (Carex spp.) mats were noted. Salvinia (Salvinia rotundifolia) and frog's-bit (Limnobium spongia) was observed intermingled within the hydrilla beds. American lotus (Nelumbo lutea) was found very abundant throughout the lake.

Other plants observed were: duckweeds (Lemna spp.), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum spp.), Bidens (Bidens spp.) and algae.

Note: The area (50 acres) treated with SONAR on May 14, 1996 was void of hydrilla.

Surveyed by: Charles Biggar



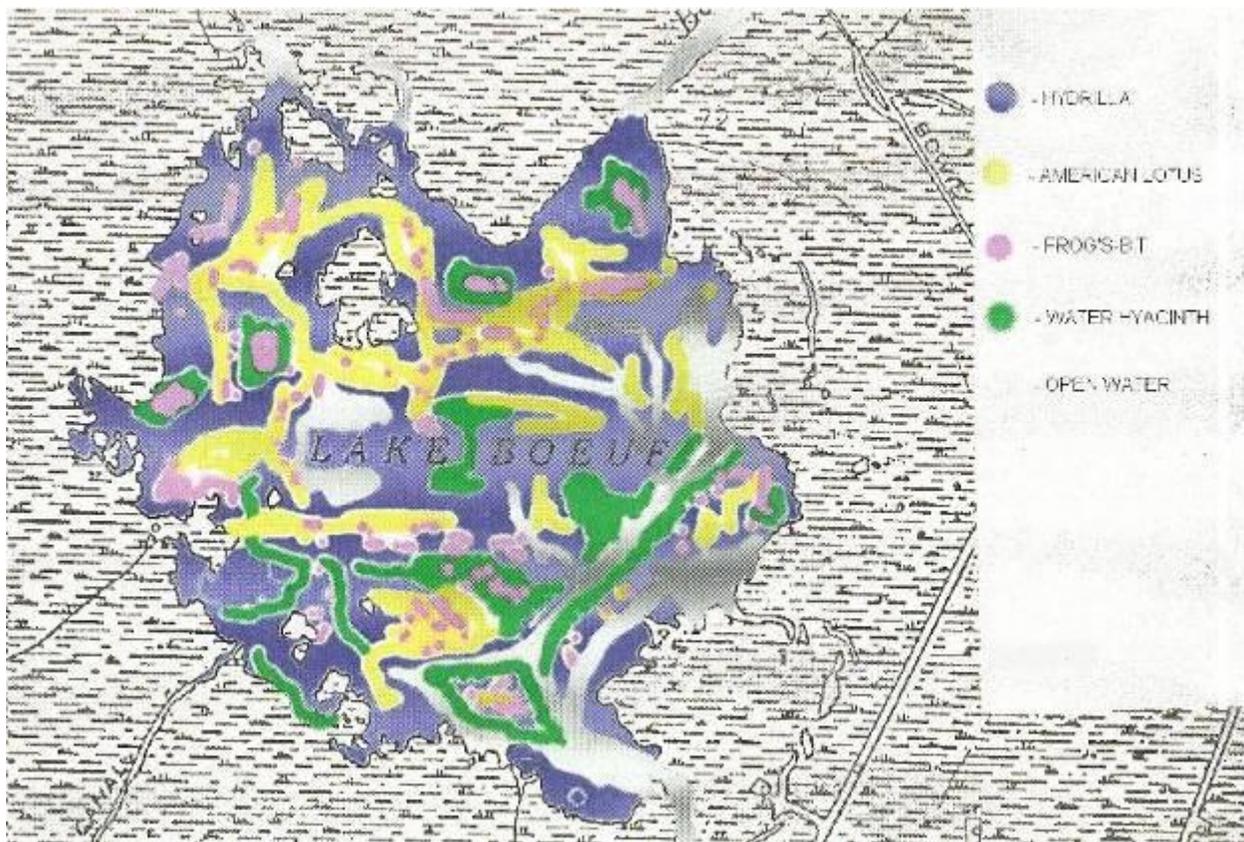
LAKE BOEUF October 1997

On October 7, 1997, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

The lake was approximately 65-70% covered with vegetation. Hydrilla (Hydrilla verticillata) was the most predominant plant present covering most of the lake. Water hyacinths (Eichhornia crassipes) were found along the edges and floating in mats throughout the lake. Salvinia (Salvinia rotundifolia) and very large patches of frog's-bit (Limnobium spongia) was observed intermingled within the hydrilla beds. American lotus (Nelumbo lutea) was found very abundant throughout the lake.

Other plants observed were: duckweeds (Lemna ssp.), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum ssp.), Bidens (Bidens ssp.) sedges (Cyperaceae) and algae.

Surveyed by: Charles Biggar



LAKE BOEUF September 1998

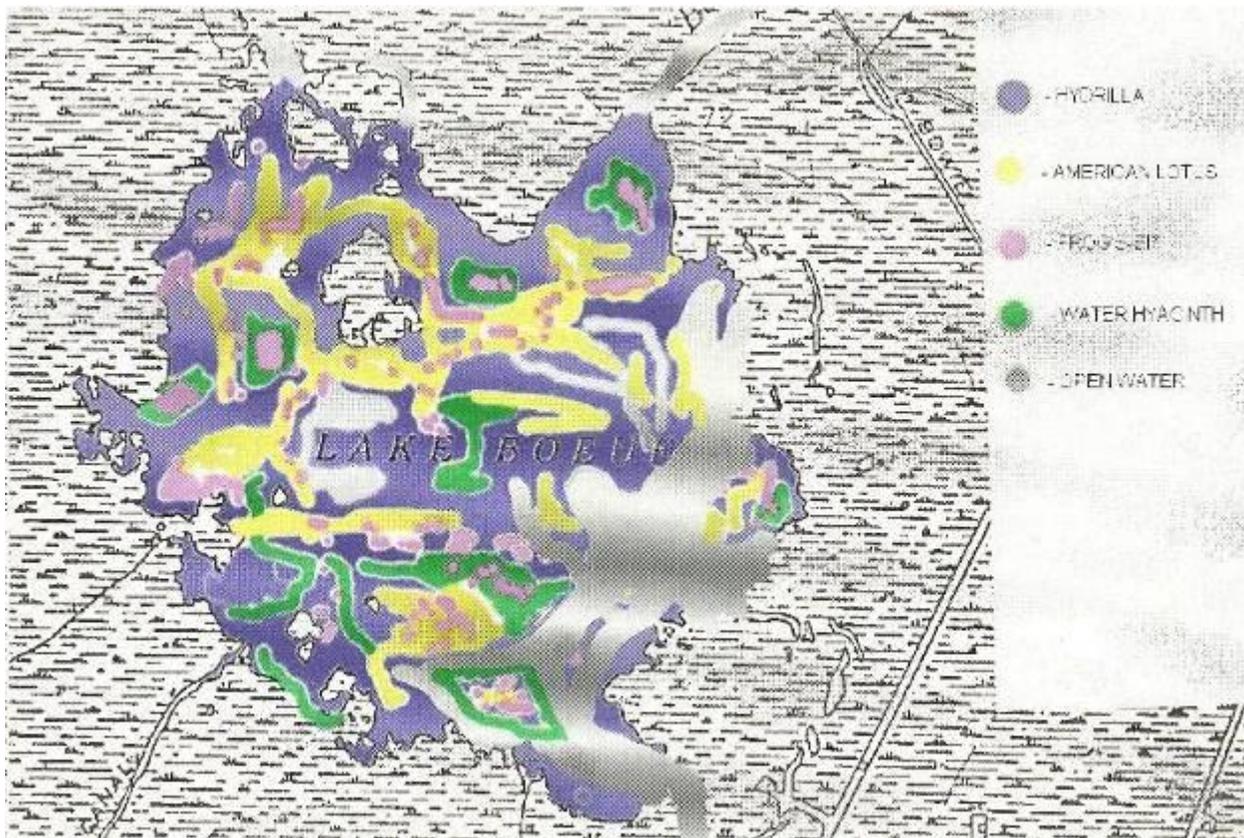
On September 22, 1998, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

The lake was approximately 65-70% covered with vegetation. Hydrilla (Hydrilla verticillata) was the most predominant plant present covering most of the lake. Water hyacinths (Eichhornia crassipes) were found along the edges and floating in mats throughout the lake. This year, a number of floating sedge (Carex spp.) mats were noted. Salvinia (Salvinia rotundifolia) and frog's-bit (Limnobium spongia) was observed intermingled within the hydrilla beds. American lotus (Nelumbo lutea) was found very abundant throughout the lake.

Other plants observed were: duckweeds (Lemna spp.), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myriophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum spp.), Bidens (Bidens spp.) and algae.

Note: Those areas treated with SONAR on May 14, 1996 and May 8, 1998 were void of hydrilla.

Surveyed by: Karl Mapes



LAKE BOEUF September 1999

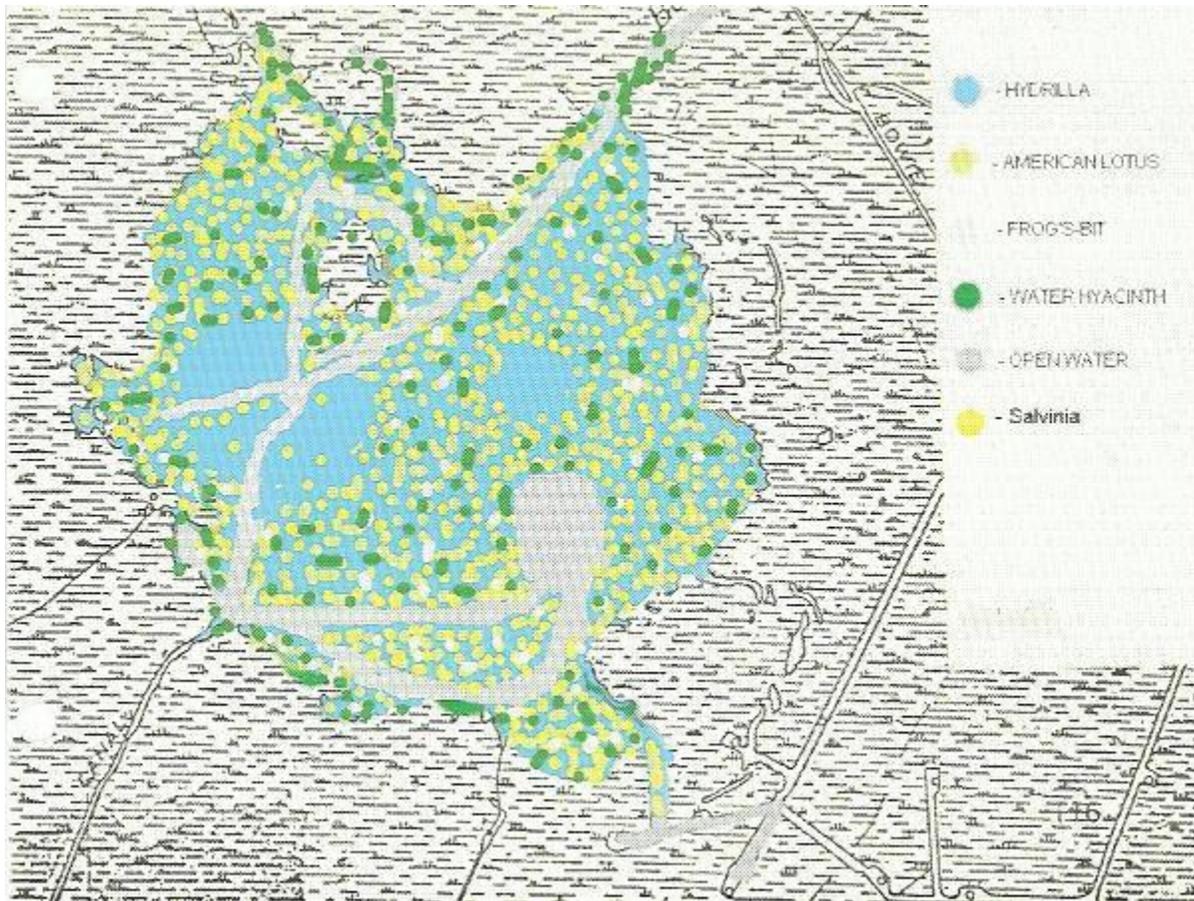
On September 10, 1999, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and severity of infestation.

The lake was approximately 70-80% covered with vegetation. Hydrilla (Hydrilla verticillata) was the most predominant submergent plant covering most of the lake. American lotus (Nelumbo lutea) was the most abundant floating plant found throughout the lake. Water hyacinths (Eichhornia crassipes) were found along the edges and floating in mats throughout the lake. This year as in the past, a number of floating sedge (Carex spp.) mats ere noted. Salvinia (Salvinia rotundifolia) and frog's-bit (Limnobium spongia) was observed intermingled within the American lotus and hydrilla beds.

Other plants observed were: duckweeds (Lemna spp.), water lettuce (Pistia stratiotes), Eurasian water milfoil (Myrophyllum spicatum), fanwort (Cabomba caroliniana), yellow water-lily (Nymphaea mexicana), fragrant water-lily (Nymphaea odorata), smartweed (Polygonum spp.), Bidens (Bidens spp.) and algae.

Note: Those areas treated with SONAR on May 8, 1998 were beginning to show evidence of hydrilla.

Surveyed by: Karl Mapes



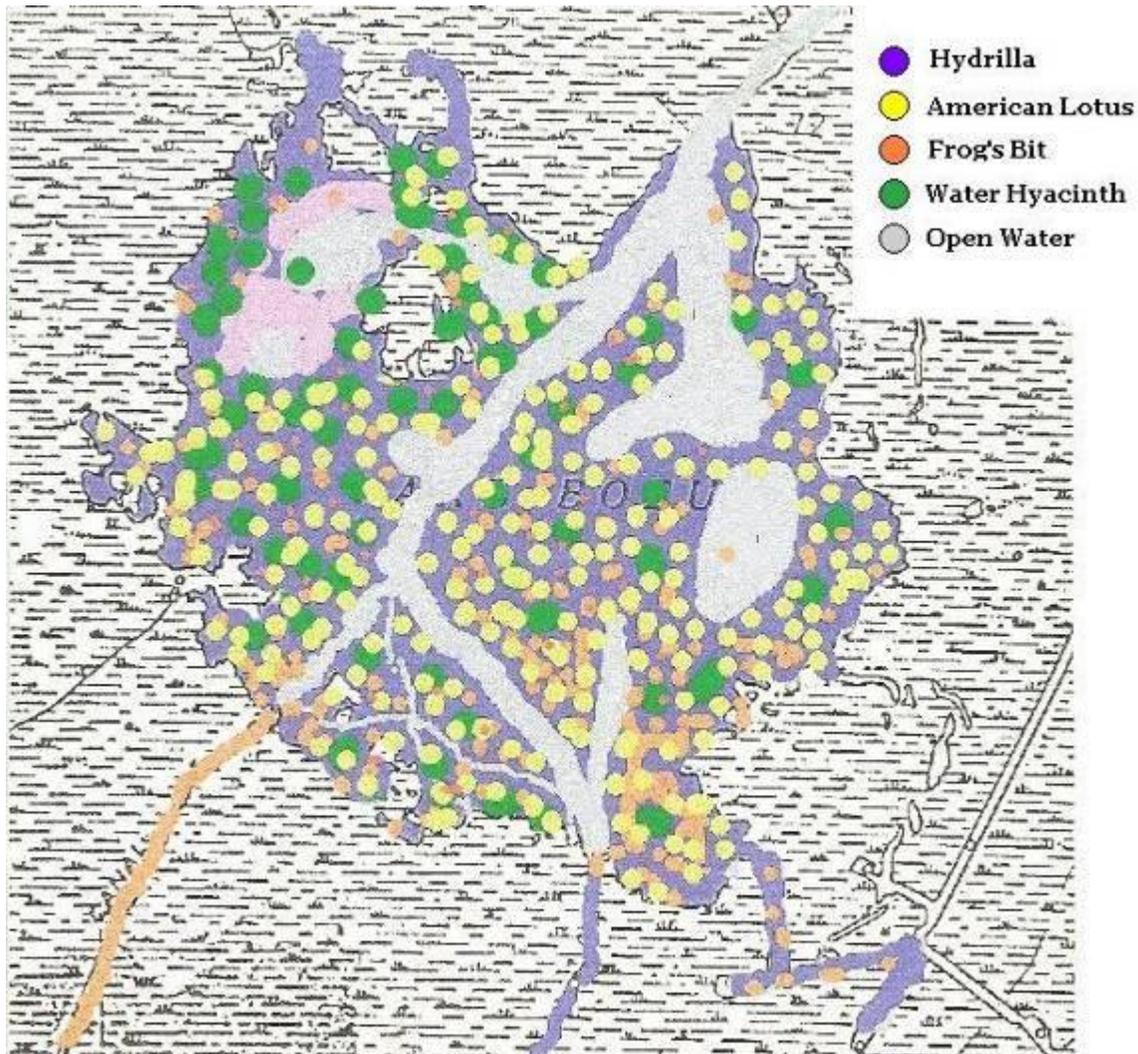
LAKE BOEUF August 2000

On August 30, 2000, Lake Boeuf, Lafourche Parish, was surveyed to determine aquatic plant composition and densities.

Hydrilla (*Hydrilla verticillata*) and American lotus (*Nelumbo lutea*) were the most predominant plants covering most of the lake. Water hyacinths (*Eichhornia crassipes*) were the next most abundant species found along the edges and in floating mats throughout the lake. Frog-bit (*Limnobium spongia*), pennywort (*Hydrocotyle umbellata*), common salvinia (*Salvinia rotundifolia*) and common arrowhead (*Sagittaria latifolia*) was observed in the northwest corner of the lake in greater frequency. Greater densities of salvinia were observed in the south and southeast quadrants of the lake. Water hyacinth was more abundant in the northwest quadrant of the system.

Other plants observed were duckweeds (*Lemna spp.*), water lettuce (*Pistia stratiotes*), fanwort (*Cabomba caroliniana*), yellow water-lily (*Nymphaea mexicana*), smartweed (*Polygonum spp.*), Bidens (*Bidens spp.*), water primrose (*Ludwigia octovalis*), sedge (*Carex spp.*) and algae.

Surveyed by: Karl Mapes



LAKE BOEUF
AUGUST 22, 2001

Assisted by Keith Matherne Lake Boeuf was typemapped and the following predominate species were found:

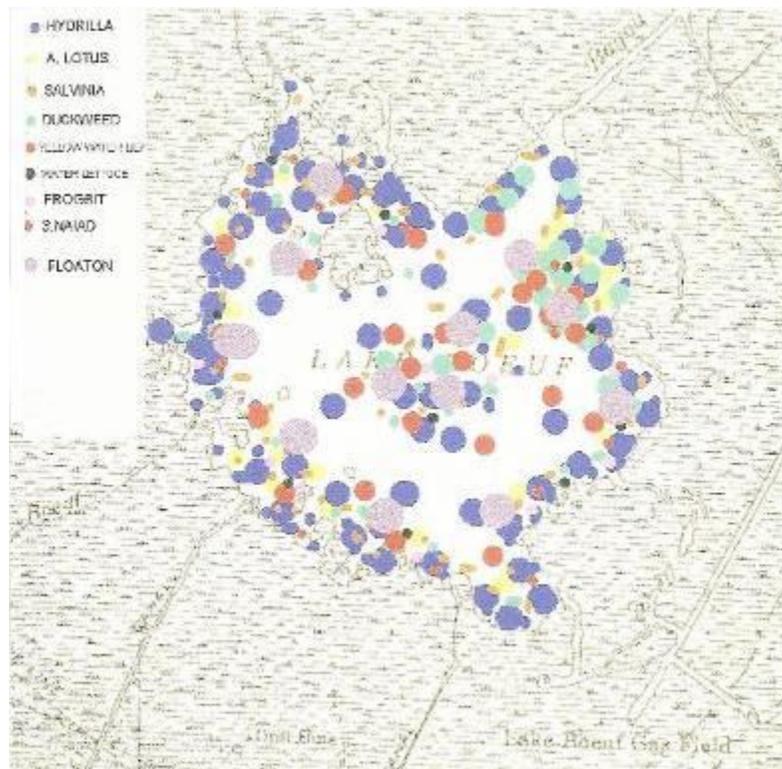
Water Hyacinth
Hydrilla
Yellow Water Lily

Other species found were coontail scattered throughout the system in small stands. Common salvinia could be found in small numbers and sparsely located except at the southern end of the lake near the Theriot canal where it was at its greatest density. Duckweed could be found throughout the hydrilla and was found in greater densities at the northern end of the lake. Floatons of various sizes could be found in large numbers throughout Lake Boeuf. Within these were found the sedges, pennywort, alligator-weed, arrow arum, and maple trees to just name a few. Water lettuce could be found on the fringes of the lake as well as frog's bit and American lotus.

The large stand of American lotus found last year must have been impacted negatively by the unusually high salinities brought on by the drought. Lake Boeuf is coming back with a strong stand of hydrilla right now.

Lake Boeuf depths were recorded and the mean depth on this date was found to be 2.7'.

Karl Mapes, Biologist Supervisor
Region III

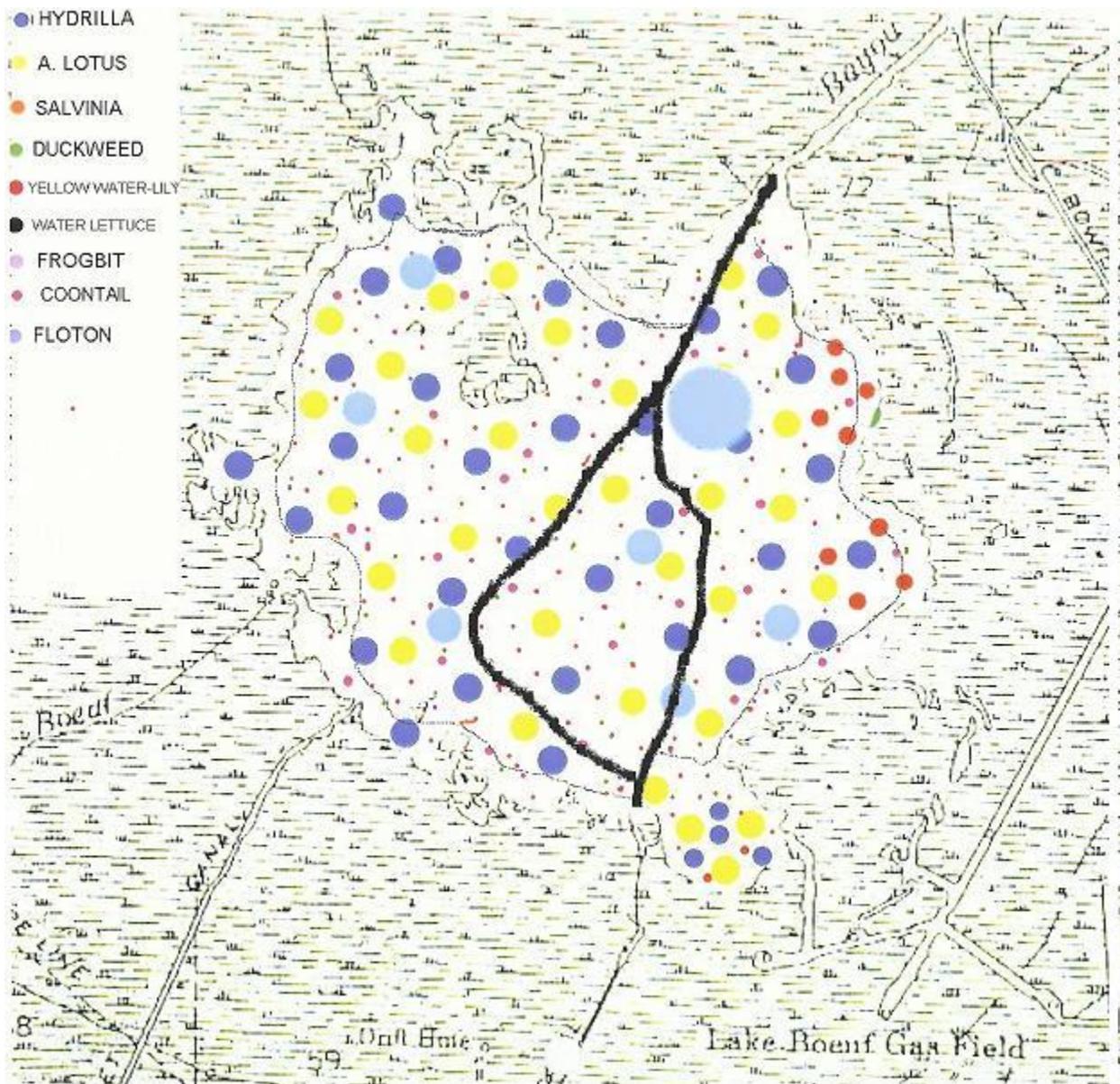


LAKE BOEUF
July 2003

On Wednesday July 30, 2003 Keith Matherne and I surveyed Lake Boeuf for vegetation species and composition. The dominant emersed 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.

Karl Mapes
Biologist Supervisor, Region III



LAKE BOEUF
October 2004

On October 5, 2004 Keith Matherne, Brian Minchew and I surveyed Lake Boeuf for vegetation species and composition. The dominant emerged species was American lotus *Nelumbo lutea* and 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*, yellow water lily *Nymphaea mexicana* coontail, *Ceratophyllum demersum*, Cabomba *Cabomba sp.*, Water pennywort *Hydrocotyle umbellata*, Water paspalum *Paspalum fluitans*.

Hydrilla, lotus, and water hyacinth could be found throughout the system.

Karl Mapes
Biologist Supervisor, Region III

