

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES



OFFICE OF FISHERIES
INLAND FISHERIES SECTION

2020 AQUATIC VEGETATION CONTROL PLAN

BAYOU DESIARD

Location: Ouachita Parish

1. Waterbody type – impounded stream; historic river channel
2. Age and condition of control structure – L-11 spillway and control structure: age unknown, good condition; Hog Bayou spillway: age unknown, good condition
3. Type of control structure – L-11 structure: 12 ft. x 12 ft. vertical concrete drop box with 6 ft. stop logs on 3 sides; Hog Bayou: 34 ft. wide spillway with stop logs
4. Water level range (MSL) – Max pool stage = 72.0 ft., varies with season for flood retention and city water supply, annual fluctuation typically 1.0 - 2.0 ft.
5. Surface area – 1,250 acres
6. Average depth – 10 ft.
7. Watershed ratio – 17:1
8. Drawdown potential of structure – the maximum drawdown potential is 5 ft., which would require pumping by the City of Monroe water treatment plant; a drawdown of 2 – 3 feet could potentially be achieved by removal of stop logs from both control structures
9. Waterbody Board or Lake Commission – Bayou DeSiard-Black Bayou-Cutoff Loop Water Conservation Board
 - a. Creation / Nomination – Legislative Act 308 of 1962; members nominated by Morehouse Parish, Ouachita Parish, and City of Monroe
 - b. Primary contact information – Jerry Cain (current president)
 - c. Procedure for spillway openings – operated by the City of Monroe for city water supply purposes; Ouachita Parish Public Works has authority for flood control purposes
10. Drawdown History – no significant drawdowns have occurred on Bayou DeSiard because it is the primary water source for the City of Monroe
11. Significant stakeholders and needs/concerns
 - Farmers – minimal agricultural irrigation
 - Homeowners – stable water levels, vegetation control, aesthetics
 - City of Monroe – Bayou DeSiard is the primary municipal water supply
12. History of aquatic vegetation complaints – Nuisance aquatic vegetation has plagued the north half of Bayou DeSiard for much of the past 50 years, prompting complaints from homeowners and recreational users. Floating vegetation such as duckweed (*Lemna spp.*) and water hyacinth (*Pontederia crassipes*) has prompted the majority of complaints.
13. Controversial issues on the lake – The habitat on the northern half of Bayou DeSiard is conducive to excessive aquatic vegetation growth, which has prompted studies and interest groups to address the problems. Man-made alterations to this historic river have been identified as the primary cause for the vegetation issues on the north end.

Aquatic Vegetation Status:

General: The upper end of Bayou DeSiard (north of L-11 canal) has historically had significant coverage of nuisance vegetation. Duckweed thrives in the upper reaches, where it is protected by dense bald cypress (*Taxodium distichum*) thickets and shallow water. The Louisiana Department of Wildlife and Fisheries (LDWF) spray crews are not able to effectively apply treatments in these areas. Wind and water currents transport duckweed to downstream residential areas, where navigation and recreation become hindered. Coverage of duckweed in 2019 was much lower than in previous years. Watermeal (*Wolffia spp.*) and mosquito fern (*Azolla spp.*) often comprise a significant component of large surface mats. Submersed aquatic vegetation (SAV) has been problematic in areas upstream of the LDWF Monroe office, though currently it is very scarce. Fanwort (*Cabomba caroliniana*), coontail (*Ceratophyllum demersum*), bladderwort (*Utricularia sp.*), and slender pondweed (*Potamogeton pusillus*) have all been identified as contributing to dense subsurface mats historically. Vegetation coverage south of the L-11 canal is generally considered to be low to moderate. In 2018, a small amount of giant salvinia (*Salvinia molesta*) was observed in Hannah's Run, which lies between the railroad along Black Bayou Lake and an earthen dam at the LDWF District 2 office. This body of water is connected to Black Bayou Lake, which has a giant salvinia infestation, and Bayou DeSiard via culverts. Giant salvinia in this area poses a risk to Bayou DeSiard. A boom has been placed at the culvert flowing into Bayou DeSiard in an attempt to prevent introduction. A small infestation of common salvinia (*S. minima*) was identified near the north end of Black Bayou NWR in 2019, with a few scattered individual plants observed between the LDWF District 2 office and this location. The most recent type map of vegetation on the north end of Bayou DeSiard was completed in July, 2018 (APPENDIX).

Coverage and Status of Problem Plant Species in 2019:

- Alligator weed (*Alternanthera philoxeroides*) – moderate amounts, mostly on the upper end, and associated with bald cypress thickets (100 acres maximum coverage)
- Duckweed – not problematic in 2019; a few surface mats (1 – 5 acres) formed during the summer in the north half, partially covering the main channel; but most of the coverage was in the densely wooded areas (150 acres maximum coverage)
- Parrot feather (*Myriophyllum aquaticum*) – widespread, but scattered; forming surface mats in protected areas (10 – 20 acres)
- Water pennywort (*Hydrocotyle spp.*) – widespread, forming surface mats in protected areas (20 – 30 acres)
- Water hyacinth – forms small mats on occasion, especially in the forested upper section, though normally poses no serious threats (approximately 30 acres)
- SAV (coontail, fanwort) – submersed vegetation has become scarce in the northern half of Bayou DeSiard in the past year, likely due to recent stockings of triploid grass carp (10 acres); it remains widely scattered in the southern half (no access for vegetation monitoring)
- Common salvinia – one small (<1 acre) infestation with individual plants scattered between

Black Bayou NWR and the L-11 canal

Coverage and Status of Beneficial Plant Species in 2019

- Coontail - scattered in depths up to five feet, found throughout the bayou; currently scarce in the upper end, but typically present in beneficial amounts in lower sections of DeSiard (acreage unknown)
- Fanwort – currently scarce in the upper reaches, scattered in depths up to five feet.; coverage not known in the lower sections

Predicted Coverage for 2020

Coverage of emergent and floating species on the upper end of Bayou DeSiard is expected to be similar in 2020. Coverage of submersed species is expected to remain minimal from recent stockings of grass carp, especially on the northern end.

Limitations:

Since Bayou DeSiard is the primary water supply for the City of Monroe, it is unlikely that drawdowns will become a tool for vegetation control. Nearly the entire length is highly residential, with the exception of some portions on the northern half. This limits the types of herbicides that may be used to those without irrigation restrictions. Three of the four sections of Bayou DeSiard south of the L-11 canal do not have public boat launches, thus herbicide treatment in these areas may not be permitted by LDWF policy.

Past Control Measures:

Chemical Control

Nuisance floating and emergent vegetation has historically been controlled with herbicides on Bayou DeSiard. Large mats of duckweed commonly form in the upper end of Bayou DeSiard. Herbicide applications are conducted for control of duckweed and other species, including water hyacinth, mosquito fern, alligator weed, parrot feather, water pennywort and giant salvinia. The contact herbicide diquat dibromide (1 gal/acre) is primarily used for duckweed control, while glyphosate (0.75 gal/acre), 2,4-D (0.5 gal/acre), and imazapyr (0.5 gal/acre) have been used most often to control other floating and emergent species. A waiver is required for the use of 2,4-D in Ouachita Parish between March 15th and September 1st. Table 1 shows total acres sprayed for the most common nuisance species on Bayou DeSiard from 2012 - 2019. These totals represent vegetation treated by LDWF spray crews and private contractors.

Table 1. Total acres of nuisance aquatic vegetation treated with herbicide on Bayou DeSiard, 2012 - 2019. gs = giant salvinia, cs = common salvinia

<u>Year</u>	<u>Alligator weed</u>	<u>Coontail</u>	<u>Duckweed</u>	<u>Parrot feather</u>	<u>Water pennywort</u>	<u>Water hyacinth</u>	<u>Salvinia Species</u>	<u>Water primrose</u>
2012	236	37	434	22	35	55	-	-
2013	123	11	548	28	54	151	-	-
2014	99	-	221	23	59	40	3 (GS)	-
2015	106	-	536	25	40	47	-	-
2016	80	-	251	8	-	92	-	45
2017	89	-	314	-	4	35	.3 (GS)	6
2018	91	-	253	-	18	19	.6 (GS)	5
2019	97	-	16	-	18	80	5.5 (CS)	61

In 2015, a private contractor was utilized, in addition to multiple treatments by LDWF crews, to control the nuisance vegetation in Bayou DeSiard. The contracted spraying took place July 27 – July 30 on the upper end (north of L-11 canal) for control of duckweed, water hyacinth and alligator weed. Three airboat crews treated approximately 200 acres of duckweed and 100 acres of other floating and emergent species. Diquat dibromide (1.0 gal/acre) was used for duckweed, and imazamox (0.5 gal/acre) was used to control alligator weed, water hyacinth, and other emergent species. An evaluation conducted on August 12 revealed satisfactory results, though surface mats of duckweed once again formed in some areas by October.

In 2016, herbicide applications were made to help control the commonly found nuisance aquatic vegetation on Bayou DeSiard such as alligator weed, duckweed, water hyacinth, and primrose. Most of these applications were made in the section of Bayou DeSiard north of Finks Hideaway Rd. Multiple applications were also made in the section between U.S. Hwy. 165 and Bon-Aire Dr. on the ULM campus for the control of water hyacinth (20 acres). Herbicide was purchased by the homeowners and applied by LDWF in this area since there is no public access.

In 2017, herbicide applications were primarily used to control nuisance amounts of duckweed and emergent species on the north half of Bayou DeSiard, especially the Frenchman’s Bend area. A private contractor was utilized to treat 300 acres of duckweed and 75 acres of alligator weed in early July. A small amount (<10 acres) of water hyacinth was treated in the section south of Bon-Aire Dr. during mid-summer. A small amount of giant salvinia was observed near the Hwy. 134 boat ramp and also at Hannah’s Run, adjacent to the LDWF District 2 office. It was treated immediately with appropriate herbicides (see Recommendations below).

In 2018, duckweed remained the most problematic and abundant species in Bayou DeSiard, though nuisance coverage was confined mostly between Black Bayou NWR and Hwy. 134, in the upper section. There were very few reports of nuisance vegetation in other sections. A few large mats of alligator weed, along with water primrose and water hyacinth were also

treated in the upper section. Overall vegetation coverage was less than normal in 2018, with a great reduction in SAV, especially in the upper reaches.

In 2019, alligator weed (97 acres), water primrose (61 acres), and water hyacinth (80 acres) were the three most problematic species treated in Bayou DeSiard. Duckweed coverage was significantly less (16 acres treated) than previous years. All treatments were performed by LDWF spray crews.

Biological Control

Triploid Grass Carp

A total of 5,500 triploid grass carp (TGC, *Ctenopharyngodon idella*) were stocked into Bayou DeSiard in April (3,500) and November (1,000) of 2013, and October (1,000) of 2014. The goal of these introductions was to reduce the coverage of submersed aquatic vegetation. The SAV had reached densities in certain areas where it was impeding boat navigation and degrading habitat. It was also reaching the surface and preventing downstream flow of duckweed, which resulted in the formation of large, thick surface mats.

During early January 2016, there had been no measurable reduction in SAV on the north end. It was also unknown if the 2014 grass carp were remaining in the areas targeted for control. Multiple samples and observation trips revealed very few grass carp occurrences. It was also discovered that dissolved oxygen levels in the vicinity of the Hwy. 134 bridge were too low (<2.0 ppm) to support large fish during the summer of 2015.

In March 2016, following the flood, ten grass carp equipped with radio transmitters, and 46 others, were stocked into the upper end of Bayou DeSiard in an effort to determine if stocked grass carp were remaining and feeding in targeted areas. By mid-May, all fish with transmitters were determined to be dead. Prior to dying, the fish remained in the target area with several moving great distances. The cause of death of these fish is unknown.

The same year, a total of 1,000 grass carp were stocked in October 2016 and another 8,000 were stocked in November 2016; none with transmitters. All of these fish were stocked into the upper end of Bayou DeSiard.

In 2018, SAV became extremely scarce in the northern half of Bayou DeSiard. This is likely the result of the numerous grass carp introductions. Very few grass carp were recorded during fisheries sampling or observations during 2018. It was unknown if they remained in the targeted areas for vegetation control. LDWF will continue to evaluate if additional grass carp stockings into Bayou DeSiard are warranted in an effort to increase their numbers to a level where they may continue to reduce the SAV coverage.

Numerous grass carp were documented during fisheries sampling and other observations in 2019. Total coverage of SAV in the northern section of Bayou DeSiard remains minimal.

Mechanical Control

Containment Booms

Two 100 ft. sections of oil spill containment boom were deployed across Bayou DeSiard near the north end of Black Bayou NWR in the spring of 2013. The booms overlap each other with enough room to allow boat passage. The intended purpose was to contain the duckweed on the north side of the boom in an undeveloped area and prevent it from flowing into the residential areas. The duckweed can also be more efficiently treated with herbicides when concentrated against the boom by wind or current. Though anticipated, significant concentrations of duckweed on the north side of the boom never materialized. This indicated that there was not much movement downstream from the upper reaches. The booms were removed in late summer 2013.

A boom was placed at the Hannah's Run culvert in December 2016 in an effort to prevent the introduction of giant salvinia into Bayou DeSiard from Black Bayou Lake.

Recommendations:

A vegetation assessment (type map) will be conducted to evaluate the recent TGC introductions. All grass carp collected during fisheries sampling will be measured to allow for estimates of growth and health. No additional stockings of grass carp are recommended at this time.

Special sampling will be utilized to determine presence of grass carp in target areas. Sampling will include the use of nets, electrofishing, and visual searches by boat.

Regular monitoring will be conducted to determine presence of giant salvinia in Bayou DeSiard, especially in the vicinity of the District 2 office where it has been found in Hannah's Run. Herbicide applications will be conducted as needed per the LDWF Aquatic Herbicide Application Procedure:

Plant Species	Herbicide	Surfactant
Common/Giant Salvinia (April 1 to October 31)	Glyphosate (0.75 gal/acre) + Diquat (0.25 gal/acre) or Clipper SC (2 oz./acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Common/Giant Salvinia (November 1 to March 31)	Diquat (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)
Water Hyacinth	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
Water Hyacinth in waiver areas (March 15 to September 15)	Glyphosate (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)
Alligator Weed (undeveloped areas)	Imazapyr (0.5 gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Alligator Weed (developed areas)	Imazamox (0.5 gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
American Lotus (<i>Nelumbo lutea</i>)	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
American Lotus in waiver areas (March 15 to September 15)	Glyphosate (0.5 gal/acre)	Nonionic surfactant (0.25 gal/acre)
American Lotus in waiver areas with potable water intakes (March 15 to September 15)	Triclopyr (0.5gal/acre)	Turbulence (or approved equivalent, 0.25 gal/acre)
Duckweed	Diquat (1.0 gal/acre)	Nonionic surfactant (0.25 gal/acre)
Cuban Bulrush (<i>Oxycaryum cubense</i> , sedge)	2, 4-D (0.5 gal/acre)	Nonionic surfactant (1 pint/acre)
Cuban Bulrush (sedge) in waiver areas (March 15 to September 15)	Glyphosate (0.75 gal/acre)	Nonionic surfactant (0.25 gal/acre)
Water Lettuce (<i>Pistia stratiotes</i>)	Diquat (1.0 gal/acre)	Nonionic surfactant (0.25 gal/acre)

Upon discovery of hydrilla, surface and subsurface applications of Cutrine[®]-Plus (chelated copper) and Tribune[™] (diquat dibromide) at a ratio of 3:2, respectively, will be made immediately. The mixture will be applied at the rate of 5.5 gallons per surface acre of hydrilla. An alternative mixture will be to apply only diquat dibromide on the surface and by subsurface injection at a rate of 2.0 gallons/acre.

APPENDIX

Type Map:

A type map of aquatic vegetation was conducted on Bayou DeSiard in August of 2016 and 2017 and in July of 2018. A summary of the surveys is included below:

August 14, 2017 Bayou DeSiard Type Map Survey – North End

A type map survey was performed on Bayou DeSiard north of Fink's Hideaway Rd. Vegetation coverage on this entire section was assessed by boat. Water level was near pool stage and color was normal in some areas and muddy in others. Below is a description of observations taken directly from field notes, going northward from the Fink's Hideaway Rd. A map denoting observations taken in the field is available in the District 2 office.

Observations were also made in the sections north and south of BonAire Dr. on Aug. 21. Very little submerged aquatic vegetation (SAV) was detected in these sections and emergent and floating vegetation was minimal. A recent treatment of water hyacinth had been made in both sections.

Fink's Rd. to Dist. 2 Office: no apparent SAV; small amt. of alligator weed (<2ac.); very little duckweed

Dist. 2 Office to Shorty Payne Rd.: very little veg.; widely scattered duckweed and watermeal; no apparent SAV

Shorty Payne Rd. to Black Bayou RR: very little veg.; <1 ac. Duckweed and alligator weed on south side of RR trestle

Black Bayou RR to Frenchman's Bend RR: no apparent stands of SAV, though some fragments of fanwort were seen floating; alligator weed, primrose, and duckweed found along shore and in trees; water was muddy; mid-channel was open; small amt. of pennywort; approx. 15% coverage of alligator weed and primrose

Frenchman's Bend (RR to Hwy. 134): fanwort common along shore to depth of 7 ft., beginning on north side of RR trestle; alligator weed common in trees, duckweed held in place by fanwort; channel clear (10 m wide) north of highline at hwy. 165; large mat of duckweed in bend just south of hwy. 134; this area has 90% fanwort coverage; grass carp are abundant in this section

North of Hwy. 134: small mats of water hyacinth just north of bridge; 80% coverage of fanwort and duckweed northward to nursery, where channel cleared; water muddy in Parrot's beak area; very little SAV or duckweed north Parrot's beak; 10% emergent veg. (mostly alligator weed and water primrose) to north end

Summary

Nuisance vegetation continues to be problematic in the Frenchman's Bend (FB) area and just north of Hwy. 134. The submerged vegetation consisted almost entirely of fanwort. SAV was only detected between the RR trestle at FB to the pipeline crossings at Parrots Beak (6.6 miles). North of the FB highline at Hwy. 165, SAV averaged 80% for 4.6 miles to near the Parrots Beak pipeline crossings. South of the highline crossing at Hwy. 165, SAV was along shoreline only to the FB RR trestle. Large mats of duckweed were only observed from the north half of FB to just north of the plant nursery. This reduction may be the result of recent contract spraying (July). The deeper areas with a wide channel tended to have the least amount of nuisance vegetation. Very little SAV was observed south of FB, which appears to be a reduction since 2016. Numerous grass carp were observed during the survey, mostly in the Frenchman's Bend section. Bayou DeSiard Type Map Survey – North End

August 4, 2016

A type map survey was performed on Bayou DeSiard north of Fink's Hideaway Rd. Vegetation coverage on this entire section was assessed by boat. No surveys were performed in other sections of the bayou. Water level was near pool stage and color was normal to dark. Below is a description of observations directly from field notes, going southward from the north end at Hwy. 165. A map denoting observations taken in the field is available in the District 2 office.

Hwy. 165 to first bend: no SAV, small patches of water primrose and alligator weed (<2ac.)

First Bend S to First Highline: duckweed in trees, forming mats in some areas, scattered in channel, very little SAV, scattered water primrose

First Highline S to Nursery: duckweed forming small mats in channel, scattered coontail floating (no mats). At second pipeline, fanwort becoming abundant, solid duckweed south to nursery. SAV not dense beneath duckweed mat. Scattered water hyacinth (not abundant). Fanwort more abundant going south. Small scattered mats of primrose and alligator weed, mostly in trees. Duckweed nearly 100%, SAV=25%, 1 ac. Water hyacinth, 5 ac. Primrose

Nursery S to Hwy. 134: 50% coverage of duckweed, scattered SAV in channel, scattered alligator weed and water hyacinth. 3 acres of primrose/alligator weed in S curve north of bridge

Frenchman's Bend (Hwy. 134 S to RR trestle): duckweed solid at bridge south for several hundred yards, scattered alligator weed in channel and trees. 80% fanwort in first flat on right going south and channel. 80% duckweed at first power line, alligator weed/water primrose abundant, scattered. Dense SAV (mostly fanwort) on sides of channel. Duckweed 20% at Highline. Channel clear between two Highline crossings and south to RR trestle. Alligator weed dense in trees between High lines.

Frenchman's Bend RR trestle S to Black Bayou RR trestle: very shallow at bridge, 90% duckweed, 75% fanwort. Scattered alligator weed/water primrose and water hyacinth. Small

amounts of parrot's feather. Duckweed forming solid mat .5 mi south of bridge. Unidentified sedge in floating mats fairly common. 50% duckweed at north end of Black Bayou NWR. Large floating mats of sedge and alligator weed at Highline. Very dense duckweed and other floating veg. along refuge. Begins to open up near refuge shop, and is mostly clear south of shop. Very little SAV. One large (approx. 36 in.) grass carp observed near Frenchman's Bend trestle.

Black Bayou RR trestle S to Hatchery: 100% duckweed s of RR trestle, begins to open south of power line. Between Shorty Payne and Hatchery – 10% duckweed with primrose, mostly clear. No SAV observed.

Hatchery S to Fink's Hideaway: Scattered alligator weed along shore, small patches of white water lily between Hatchery and RR trestle, very little duckweed north of RR. Duckweed and watermeal more abundant south of RR, extending 10 ft. from shore. Watermeal more abundant than duckweed, small mat near structure at Fink's Hideaway. The structure is clogged with debris, thus removal of floating vegetation not possible.

Summary

Nuisance vegetation continues to be problematic in several areas in this section of Bayou DeSiard. Much of the shallower areas contain dense stands of mostly fanwort, with some coontail. Large mats of duckweed have formed in the same areas as in the past. The deeper areas with a wide channel tended to have the least amount of nuisance vegetation. There has been no apparent reduction in SAV nor duckweed since the stocking of grass carp was initiated in 2013.

July 3 - 9, 2018 Bayou DeSiard Type Map Survey – North End

A type map survey was performed on Bayou DeSiard north of Fink's Hideaway Rd. Vegetation coverage on this entire section was assessed by boat and drags were made throughout to detect submerged vegetation (SAV). Water level was 69.9 ft. MSL (slightly below pool stage) and color was fairly clear to slightly stained. Below is a description of observations taken directly from field notes, going northward from the Fink's Hideaway Rd. A map denoting observations taken in the field is available in the District 2 office.

Observations were also made in the sections north and south of BonAire Dr. during this period. Very little aquatic vegetation was detected in these sections, with coverage of emergent species minimal.

Fink's Rd. to Dist. 2 Office: no significant coverage of any type of aquatic vegetation. Watermeal (<2ac.) was widely scattered between Finks Hideaway Rd. and the first RR trestle northward.

Dist. 2 Office to Shorty Payne Rd.: very little veg.; widely scattered duckweed and

watermeal; no apparent SAV

Shorty Payne to Hwy. 134: duckweed and alligator weed were the most abundant species of vegetation. Two large surface mats of duckweed were across the channel in 2 locations: south Frenchman's Bend and in the straight portion of the channel along Black Bayou NWR. Scattered duckweed and alligator weed were scattered in the forested areas, with a few large patches of alligator weed growing along the edge of the channel, but not impeding navigation. Water primrose was growing with alligator weed in some locations. No SAV detected.

Hwy. 134 to Hwy. 136: no apparent stands of SAV, though a very few fragments of fanwort and/or coontail were seen floating; alligator weed, water primrose, and duckweed found along shore and in trees; mid-channel was open; small amt. of scattered water pennywort; no significant coverage of duckweed or emergent/floating species in the channel.

Summary

Though duckweed and alligator weed were common and abundant in areas (mostly forested), no vegetation was considered to be problematic. Other than two mats of duckweed covering the channel, no other species was observed at nuisance levels in the channel, which was mostly clear. The vast majority of all species present were in the forested areas along the channel. No SAV was detected during this survey, other than just a few fragments seen north of Hwy. 134. It should also be noted that very few grass carp were observed during this survey. Currently, only maintenance spraying of alligator weed and the large mats of duckweed is recommended, though not absolutely necessary. A formal survey of southern sections of Bayou DeSiard was not conducted due to lack of accessibility and historically low levels of vegetation.