

LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES



**OFFICE OF FISHERIES
INLAND FISHERIES SECTION**

**AQUATIC VEGETATION MANAGEMENT PLAN
2018**

HORSESHOE LAKE – MER ROUGE

Location: Morehouse Parish

1. Waterbody type – Inactive oxbow lake formed by impoundment from Bayou Bonne Idee. The levee construction forming the current lake was completed in 1947.
2. Age and condition of control structure – Constructed in 1947, inoperable; the structure needs to be replaced.
3. Type of control structure – 3 ft x 3 ft concrete drop box with manually operated slide gate (size unknown) (Figure 1).



Figure 1. Horseshoe Lake control structure at 2.5 ft. below pool stage.

4. Water level range (MSL) – Pool stage = 90.4 ft, annual fluctuation typically < 2.5 ft.
5. Surface area – 133 acres, no significant change with annual fluctuation
6. Average depth – 4.5 ft.
7. Watershed ratio – unknown, less than 10:1
8. Drawdown potential of structure – n/a
9. Waterbody Board or Lake Commission – Morehouse Parish Police Jury (MPPJ) currently has authority on water control issues. The Horseshoe Lake Commission, which was appointed by the Police Jury, has been disbanded since the late 1990's.
 - a. Primary contact information – Morehouse Parish Police Jury, phone (318) 281-4132
 - b. Procedure for spillway openings – operated by the MPPJ under technical assistance

of the Louisiana Department of Wildlife and Fisheries (LDWF).

10. Drawdown History - no documented drawdowns have been conducted on the lake to date.
11. Significant stakeholders and needs/concerns
 - Farmers – minimal agricultural irrigation
 - Homeowners – stable water levels, vegetation control, aesthetics
12. History of aquatic vegetation complaints - There have been periodic complaints from homeowners whenever nuisance vegetation has become excessive or has impacted private piers. Most of the historic complaints have been attributed to the floating species water hyacinth (*Eichhornia crassipes*) and duckweed (*Lemna sp.*). The police jury has requested assistance in the past with clearing floating and emergent aquatic vegetation, mostly alligator weed (*Alternanthera philoxeroides*) and water hyacinth from the area around the spillway structure.
13. Controversial issues on the lake - A 50-year lease between landowners of the current lake bottom and LDWF expired on May 23, 1997. The lease agreement established Horseshoe Lake as a state Fish and Game Preserve. Soon before the lease was to expire, the Horseshoe Lake Commission, homeowners, and local anglers expressed concern over the possibility of the lake becoming unavailable to the public. The lease has not been renewed, but the lake has remained open to the public. The single boat launch on the lake is also privately owned, but has remained opened to the public, with the owner collecting a modest launch fee.

In 1993, the Lake Commission proposed a drawdown of the lake for repair of the leaking water control structure. The lake had reached levels over 2 ft. below pool stage. Lakeside residents expressed opposition to the drawdown and the effort was abandoned. The structure has remained inoperable.

Past Control Measures:

Historic

Applications of aquatic herbicides (2,4-D, diquat dibromide, and glyphosate) have been conducted by LDWF with boat mounted spray equipment. Applications were conducted when nuisance vegetation became overabundant. The majority of these efforts were for control of duckweed (*Lemna minor*) and water hyacinth (*Eichhorria crassipes*). Control with herbicide has been the only type of vegetation control used on Horseshoe Lake.

In 2003, LDWF applied Sonar® (fluridone), a broad spectrum systemic herbicide, into Horseshoe Lake primarily for control of duckweed, but also for coontail (*Ceratophyllum demersum*) control. At the time, over 80% of the lake was covered with duckweed. The treatment resulted in a significant reduction in duckweed. By 2005, duckweed had returned to problematic levels. Environmental conditions and repeated applications of diquat dibromide reduced duckweed coverage. Typically, only maintenance herbicide applications are conducted on Horseshoe Lake. These applications involve a spray crew making no more

than one trip per month during the growing season for control of nuisance vegetation including alligator weed (*Alternanthera philoxeroides*) and the aforementioned floating species. Glyphosate (0.75 gal/acre) has been primarily used for emergent species and water hyacinth and diquat dibromide (0.75 gal/acre) has been used exclusively on duckweed. These herbicides have been used most often because 2,4-D is restricted in this area for much of the growing season.

In 2012, few herbicide applications were required for management of nuisance vegetation. Alligator weed and duckweed were the two most commonly treated species, with 36 and 32 acres sprayed in 2012, respectively. Duckweed was treated with diquat dibromide. Alligator weed was treated with glyphosate. A small amount of pennywort (*Hydrocotyle sp.*) was also treated with glyphosate. The treatments were considered routine maintenance applications.

In 2013, the only species that required control was alligator weed. A total of 36 acres were treated with imazapyr (0.5 gal/acre) and Inergy surfactant (0.25 gal/acre).

Recent

2014 - No efforts were necessary for control of nuisance aquatic vegetation.

2015 - Two operations were necessary for control of alligator weed and other nuisance emergent vegetation. A total of 16 acres were treated with imazamox (0.5 gal/acre) or glyphosate (0.75 gal/acre), each mixed with the appropriate surfactant.

2016 – A total of 26 acres of emergent vegetation, mostly alligator weed, required treatment with herbicide.

2017 – A single herbicide treatment was conducted in 2017 for the control of emergent species growing adjacent to the shoreline. A total of 5 acres of alligator weed and 5 acres of water primrose were treated with imazapyr.

Aquatic Vegetation Status:

General – Recent Annual Summaries

2012

Throughout 2012, there was a minimal amount of nuisance vegetation on Horseshoe Lake. Alligator weed and duckweed were the most abundant species, though neither reached problematic levels. A moderate and desirable amount of coontail was also present in the shallow areas of the lake. No formal vegetation survey was conducted in 2012, though spray crews visited the lake on multiple occasions to monitor the nuisance vegetation.

2013

Nuisance aquatic vegetation coverage remained minimal in 2013. The historically troublesome species water hyacinth and duckweed never reached problematic coverage. The most abundant species was alligator weed, which impacted some shoreline property owners. Coontail, a native submerged species, was also present in moderate amounts.

2014

A visit to Horseshoe Lake in January 2014 revealed very little emergent and floating vegetation in the lake. A subsequent visit in the fall revealed similar conditions. Nuisance vegetation remained at minimal coverage throughout the year.

2015

Total coverage of emergent vegetation was slightly higher in 2015 than in recent years. Alligator weed was the primary nuisance species, with mats forming near some residential areas and in the shallows. Treatments were made in response to complaints by homeowners.

2016

Alligator weed again was the primary nuisance species in 2016, with mats forming near some residential areas and in the shallows with a total of 26 acres being treated.

2017

Coverage of all aquatic vegetation species was minimal in 2017. A single “maintenance” herbicide application was conducted to control the primary emergent species: alligator weed and water primrose. A total of 10 acres were treated.

2018 Vegetation Prediction

Emergent vegetation coverage is expected to be minimal in 2018. Submerged vegetation has been less than desirable and is likely to remain so unless water clarity increases. No other significant changes are anticipated.

Recommendations:

Regularly scheduled treatments (one spray crew day/month) during the growing season will continue to maintain control of nuisance aquatic vegetation if problems arise. Public complaints and requests from the Morehouse Parish Police Jury will be responded to as soon as possible. Herbicide applications are to be made by spray crews in accordance with LDWF Aquatic Herbicide Application Procedures. Diquat dibromide (1.0 gal/acre) will be used to control duckweed and other floating or emergent species. Water hyacinth will be controlled with glyphosate (0.75 gal/acre) from March 15 – September 15. The systemic herbicide 2,4-D (0.5 gal/acre) will be used to treat water hyacinth outside of the 2,4-D waiver period. The herbicides imazapyr (0.5 gal/acre) and imazamox (0.5 gal/acre) will be used on alligator weed and other emergent species as they have proven to be very effective. Imazamox should be used in the vicinity of water intakes and developed shorelines, in that it has less irrigation restrictions.

Typemap:

No detailed type maps have been performed on Horseshoe Lake. An LDWF report in 2005 described aquatic vegetation in the lake. General observations of coverage and potential problems were included. The report stated that moderate amounts of the following species were found adjacent to the shoreline in much of the lake: alligator weed, water primrose (*Ludwigia sp.*), water pennywort, and duckweed. The coverage of these species was not problematic. Submergent vegetation was also not posing a threat at this time. Coontail and fanwort (*Cabomba caroliniana*) were observed in moderate amounts scattered throughout the lake.