LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

2018
AQUATIC VEGETATION MANAGEMENT PLAN

CHENIERE LAKE

Past Control Measures:

Recent methods for control of aquatic vegetation on Cheniere Lake have involved intensive herbicide applications and annual drawdowns. Floating species of nuisance vegetation have required the most control, with treatments of boat-applied foliar herbicides. In recent years, common salvinia (*Salvinia minima)* has been the main focus of herbicide treatments. Coverage has fluctuated since it was first discovered in 2007. A total of 96 acres of common salvinia were treated in 2014, with control efforts beginning in early summer when coverage first became significant. No vegetation control was necessary in 2015. The amount of vegetation treated with herbicides on Cheniere Lake since 2008 is shown in Table 1. The 3-foot drawdowns have been conducted annually since 2002 and are initiated around Labor Day, typically extending until mid-December. The purpose is two-fold: to accelerate decomposition of organic material in the shallows, and to reduce the coverage of shallow emergent vegetation.

Chemical

Herbicides that have been used on Cheniere Lake include diquat dibromide for common salvinia (0.75 gal/acre) and duckweed (*Lemna sp.,* 1.0 gal/acre), and glyphosate (0.75 gal/acre) for other floating and emergent species during the 2,4-D waiver period of March 15 – Sept. 15. Since 2013, LDWF has used a recommended mixture of herbicides for the control of salvinia (see Recommendations below). The systemic herbicide 2,4-D (0.5 gal/acre) has been used to control other floating and emergent species outside of waiver period. Imazapyr (0.5 gal/acre) has recently become the preferred herbicide for emergent species in Cheniere Lake.

Table 1. Acres of aquatic vegetation treated with herbicides in Cheniere Lake, 2008 – 2017.

Year	Acres Sprayed	Vegetation
2008	15	common salvinia, water hyacinth
2009	1,252	common salvinia, water hyacinth, pennywort
2010	788	duckweed, common salvinia, alligator weed
2011	168	duckweed, common salvinia
2012	425	common salvinia (318), duckweed (95), water hyacinth (10)
2013	426	common salvinia (354), duckweed (50), primrose (21)
2014	136	common salvinia (96), duckweed (40)
2015	0	n/a
2016	9	Alligator weed (4.5), Primrose (4.5)
2017	0	Drawdown – no treatment

Biological

Approximately 500 salvinia weevils (*Cyrtobagous salviniae*) were stocked in August 2008. They were originally placed into a 5 ft. x 5 ft. PVC frame near Area 8, which was completely covered by common salvinia. Rain and winds from Hurricane Gustav soon moved much of this accumulation to the south side of the lake, where the frame and contents were relocated to Area 5 on Sept. 16. Weevil survival was assessed in February 2009, with none detected.

Stockings were terminated due to the significant decline in coverage of common salvinia on the lake.

Mechanical (Drawdowns)
Annual fall/winter drawdowns were initiated in 1998 to increase the rate of decomposition of the thick layers of detritus on the lake bottom. These drawdowns of 3 feet below pool stage also serve to curb the growth of submerged aquatic vegetation (SAV) around the shoreline and shallows of the lake.

The historic flood of March 2016 caused extensive damage to the Hwy. 3033 roadway and dam. Necessary repairs will require that the lake be lowered 6 feet below normal pool stage for an undetermined amount of time (up to 2 years). The drawdown was initiated in August 2016. Extensive natural vegetation control is expected to occur during this period. No other control methods will be performed while the lake is at this level. The lake remained 9 feet below pool stage throughout 2017. As of December 2017, no date has been set to refill the lake.

Aquatic Vegetation Status:

General:
Many species of aquatic vegetation continue to thrive in Cheniere Lake due to its nutrient-rich, swamp-like habitat. Coverage of common salvinia once again increased to problematic levels in 2014. Duckweed was common, but not problematic; nor was water hyacinth (*Eichhornia crassipes*). Water primrose (*Ludwigia sp.*) is common along much of the shoreline and can form dense surface mats within the lake. Submerged aquatic vegetation (SAV) is abundant in the lake to depths up to six feet. Species commonly present include coontail (*Ceratophyllum demersum*), fanwort (*Cabomba caroliniana*), bladderwort (*Utricularia sp.*), and southern naiad (*Najas guadalupensis*). Total coverage of SAV typically exceeds what is recommended for optimal fisheries habitat, although it is not considered problematic.

Coverage and Status of Problem Plant Species in 2017
-There was insignificant coverage of nuisance aquatic vegetation in 2017 due to the extensive and ongoing drawdown. The lake was mostly inaccessible by boat, thus a complete assessment was not possible.

Coverage and Status of Problem Plant Species in 2015 (prior to flood and drawdown of 2016)
-Common salvinia –coverage was insignificant throughout most of the year, though some small mats formed during the drawdown (total coverage approx. 25 acres).
-Duckweed – not abundant or problematic, total coverage <25 acres
-Water primrose – common along shoreline and scattered in denser thickets of trees
-Water hyacinth – insignificant coverage, scattered individual plants

Coverage and Status of Beneficial Plant Species in 2017-SAV (coontail, fanwort, bladderwort, southern naiad) – believed to be insignificant due to the current drawdown.

Predicted coverage of vegetation for the upcoming year – 2018
Aquatic vegetation should not be an issue in 2018 due to the extensive drawdown initiated in 2016.

Recommendations:

No aquatic vegetation control efforts or evaluations will be conducted during the extended drawdown. Boating access is extremely difficult at this water level.

Discontinue the following standing recommendation for at least one year following the refilling of Cheniere Lake: Continue Cheniere Lake water fluctuations with at least a 3-foot reduction in water level annually. Drawdown rate should be approximately 3-4 inches per day. Drawdowns should begin soon after Labor Day and extend to January 15th of the following year.

If common salvinia continues to persist, salvinia weevils should be re-stocked. Weevils should be placed into floating containment frames located in close proximity to large surface mats of salvinia. Update: this has not yet been done since the salvinia has become scarce in the lake following the winter drawdowns and has not reached significant coverage until early summer in the past two years.

Duckweed and water hyacinth will be sprayed when mats of 0.25 acres or larger are observed, or when they are affecting boat launches or cleared boat lanes. Control of emergent species will be conducted when coverage becomes problematic, though it is normally confined to the shoreline or very shallow coves. Common salvinia will continue to be treated if coverage exceeds 10 total acres or surface mats have formed that are accessible by spray boat. LDWF has adopted the following herbicide methods for control of both giant (*S. molesta*) and common salvinia:

> April 1 – Oct. 31: a mixture of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Turbulence (or approved equivalent, 0.25 gals/acre) surfactant
> Nov. 1 – March 31: diquat dibromide (0.75 gals/acre) and a 90:10 non-ionic surfactant (0.25 gal/acre)

Recommended herbicides and rates for other vegetation species are as follows:

-Duckweed: diquat (1 gal/acre) with a non-ionic surfactant (0.25gal/acre)
-Water Hyacinth: (March 15 – Sept. 15) – glyphosate (0.75 gal/acre) with a non-ionic surfactant (0.25gal/acre)
(Sept. 16 – March 14) – 2,4-D (0.5 gal/acre) with a non-ionic surfactant (1 pt./acre)
-Emergent Species: (residential areas) - imazamox (0.5gal/acre) with Turbulence surfactant (or approved equivalent, 0.25 gals/acre)

(Non-residential areas) - imazapyr (0.5gal/acre) with Turbulence surfactant (or approved equivalent, 0.25 gals/acre)