We Energies
2010 Annual Report - Nuisance Plant Control Survey
Lower Paint
Project #2072-008

Background and Methods

We Energies' Environmental department staff, Mr. Mike Grisar and Mr. Scott Horzen, conducted a survey from a boat of the entire shoreline at the White Rapids Reservoir project on July 31, 2010. All waters and appropriate wetlands accessible from the boat were evaluated. Those species targeted for the survey included purple loosestrife (*Lythrum salicaria*) and Eurasian water milfoil (*Myriophyllum spicatum*). The visual meander survey included areas of shallow water adjacent to the shorelines. Shallow water was surveyed to a point where the water depth and clarity excluded visibility conducive to observing submerged vegetation. On average, this depth was at approximately 7-feet.

For each stand of Eurasian water milfoil encountered during the 2010 surveys, the stand location and perimeter were compared and verified with the 2008 monitoring data using a Trimble Geo XH GPS unit. Where the stand size was negligible, a single point in the center of the stand was located with the GPS. When significant changes in the stand perimeter were observed, these changes were marked with the GPS and reflected in the attached map. Changes in stand density were updated and are shown in Table 1LP. New stands not previously observed were mapped and recorded.

Various data were collected at each stand including stand/mat density and mat thickness (when present). The stand size was subsequently calculated from the collected GPS boundaries. A percent cover scale from 1-5 (sparse – dense) was used to accurately and consistently estimate stand densities:

Estimated Density Rating	% Cover
1 (sparse)	0 - 5%
2 (moderately sparse)	>5 - 25%
3 (moderate)	>25 - 75%
4 (moderately dense)	>75 - 95%
5 (dense)	>95%

Results and Discussion

A single purple loosestrife plant was observed along the far upper shores of the Lower Paint Reservoir project area. This is the first time since invasive species monitoring began at White Rapids that purple loosestrife was observed. The plant was found on the west bank of the river portion, and appeared to be a floating root ball with few roots anchored in the soil. The entire plant was removed including the flowering heads, stems, and root mass.

Thirty-four stands of Eurasian water milfoil were observed to occur in 2010 at the Lower Paint Reservoir project area (attached map), an increase of 9 stands from 2008, and 17 stands since 2006. The identified stands are distributed throughout the project area and range in size from 0.01-acre up to 33.70-acres.

Eurasian water milfoil is present in approximately 154-acres in the Lower Paint Reservoir project area, an increase of approximately 27-acres from 2008. There has been a consistent trend of an increase in spatial coverage since 2006, with a total increase of 39-acres over the 5-year period. Cumulatively, the average stand size is 4.52-acres and has an average density rating of

1.71 per stand. In 2008, the average stand size was 5.08-acres and had an average density rating of 1.40 per stand.

Thirteen new stands were identified in 2010 accounting for approximately 15.23-acres, 10% of the total acres of Eurasian water milfoil. These new stands have an average density rating per stand of 2.15, which relatively high for most new stands observed throughout the system. Four stands combined with other stands from when they were previously observed.

Eighteen stands changed in spatial coverage. The total gross change observed is nearly 40-acres with an average gross change of 2.21-acres per stand. Of these, 6 stands accounted for over 29-acres that either increased or decreased in size (approximate 4.9-acre average change). The largest changes were observed in stands 5, 6, & 11.

Out of the 34 observed stands, stand 23, 28, 29, and 35 have high density ratings (>75% cover), an increase of just one stand in 2008. These stands are located in the central part of the project area in a large bay that has several residential homes occurring on the bay and along the north shore of the river to the south of this large bay. They cover approximately 12.86-acres, just 8% of the total acreage.

The majority of the stands have very low densities (<25% cover) of Eurasian water milfoil with single stems growing sporadically among a lot of native species. The most common native species included northern water milfoil (*Myriophyllum sibiricum*), two-leaf water milfoil (*Myriophyllum heterophyllum*), a variety of pondweeds (*Potamogetan* sp.), common waterweed (*Elodea canadensis*), bladderwort (*Utricularia* sp.), coon's tail (*Ceratophyllum demersum*), water celery (*Vallisneria americana*), yellow pond lilies (*Nuphar* sp.), and white pond lily (*Nymphaea odorata*). 14 of the 34 stands have low densities and account for only 26% (40.36-acres) of the total area observed to have Eurasian water milfoil present, a decrease of over 80-acres since 2008.

Conclusions

In conclusion, a majority of the trends observed in the Lower Paint project area are negative trends. The total number of stands, total acres of Eurasian water milfoil, and average stand density all increased. Additionally, the number of sparse stands and total acreage of sparse stands dropped drastically. Most notably is the decrease in acres of milfoil less than 25% cover decreased by over 80-acres. Conversely, the number of high density stands increased from 1 to four and the total acreage of high density more than doubled since 2008. All of these factors contribute to having more Eurasian water milfoil at higher densities than previously documented.

These trends of changing spatial distribution, overall coverage, and stand densities indicate the Eurasian water milfoil population is in flux from year to year within the Menominee River system. Contributing factors include influences of local and annual climate variances (i.e. precipitation and temperature), the presence of the indigenous milfoil weevil population, extent of milfoil hybridization, fish predation, and others.

Annual fluctuations in the extent and density of Eurasian water milfoil may be due, in part, to the presence of an indigenous weevil population occurring in the system. See the attached discussion regarding the Eurasian water milfoil summary report prepared by EnviroScience for further information about milfoil management activities that occurred in 2010.

The new location of purple loosestrife observed in 2010 is discouraging. Generally, a trend in increased purple loosestrife presence was observed in 4 of the 8 reservoirs monitored in 2010. There continues to be an influx of purple loosestrife occurring along public roadways leading to many of the reservoirs.

Table 1LP. 2010 Lower Paint Reservoir Eurasian Water Milfoil Stand Data.

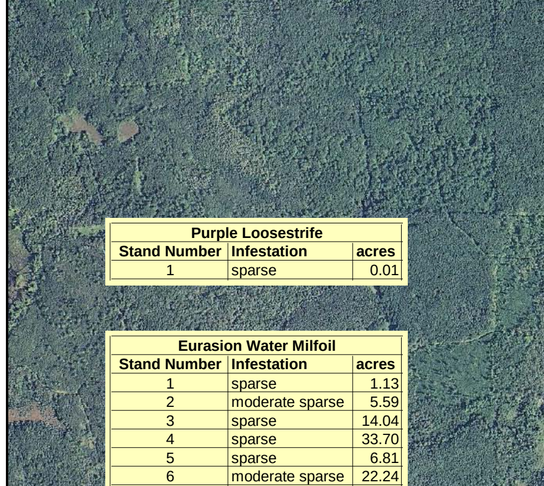
Stand Number	Density[1]	Mat Thickness	Stand Size[2]
1	1	None	1.13 (+0.82)
2	2	None	5.59 (+0.51)
3	1	None	14.04 (+1.56)
4	1	None	33.70 (+0.13)
5	1	None	6.81 (+6.00)
6	2	None	22.24 (-12.26)
7	1	None	4.47 (+0.52)
8	3	None	0.48 (+0.07)
9	1 (-1)	None	0.47
10	1	None	9.08 (-0.14)
11	1	None	7.13 (+4.85)
12	Combined with 11	NA	NA
13	Combined with 11	NA	NA
14	1	None	0.87 (-0.89)
15	1	None	8.58 (+2.83)
16	1	None	2.65 (+1.98)
17	3 (+2)	None	6.47 (+0.97)
18	Combined with 16	NA	NA
19	1	None	1
20	Combined with 21	NA	NA
21	1	None	1.27 (+0.35)
22	1	None	0.64 (+0.17)
23	4	None	11.06 (+5.49)
24	1	None	0.18
25	1	None	0.61 (+0.20)
26	1	None	5.30
27	3	None	3.09
28	4	None	0.47
29	4	None	0.14
30	3	None	0.23
31	3	None	1.20
32	1	None	0.81
33	1	None	0.01
34	1	None	0.15
35	4	None	1.19
36	1	None	0.44
37	1	None	0.01
38	1	None	2.19

1 – change in density rating from 2008 to 2010

2 – change in stand size from 2008 to 2010

Purple Loosestrife		
Stand Number	Infestation	acres
1	sparse	0.01

Eurasion Water Milfoil		
Stand Number	Infestation	acres
1	sparse	1.13
2	moderate sparse	5.59
3	sparse	14.04
4	sparse	33.70
5	sparse	6.81
6	moderate sparse	22.24
7	sparse	4.47
8	moderate	0.48
9	sparse	0.47
10	sparse	9.08
11	sparse	7.13
14	sparse	0.87
15	sparse	8.58
16	sparse	2.65
17	moderate	6.47
19	sparse	0.93
21	sparse	1.27
22	sparse	0.64
23	moderate dense	11.06
24	sparse	0.18
25	sparse	0.61
26	sparse	5.30
27	moderate	3.09
28	moderate dense	0.47
29	moderate dense	0.14
30	moderate	0.23
31	moderate	1.20
32	sparse	0.81
33	sparse	0.01
34	sparse	0.15
35	moderate dense	1.19
36	sparse	0.44
37	sparse	0.01
38	sparse	2.19



Public Boat Launch

FERC Hydro Project Boundary

Purple Loosestrife

Year 2010 field work

- sparse
- moderate sparse
- moderate
- moderate dense
- dense

Feet

1,000 0 1,000 2,000

N

W E

S

Lower Paint Hydro Project - Year 2010
Eurasian Water Milfoil and Purple Loosestrife Survey

Source: USDA -NAIP Imagery, 2009
GPS field data, 7/31/2010

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