

**We Energies
2008 Annual Report - Nuisance Plant Control Survey
White Rapids Reservoir
FERC Project #2357**

Background and Methods

We Energies' Environmental department staff, Mr. Mike Grisar and Mr. John Hrobar, conducted a survey from a boat of the entire shoreline at the White Rapids Reservoir project on August 2, 2008. 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.

No purple loosestrife plants were observed along the shores of the White Rapids Reservoir project area.

For each stand of Eurasian water milfoil encountered during the 2008 surveys, the stand location and perimeter were compared and verified with the 2007 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 1. 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:

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

Results and Discussion

No purple loosestrife plants were observed along the shores of the White Rapids Reservoir project area.

Thirty-five stands of Eurasian water milfoil were observed to occur in 2008 at the White Rapids Reservoir project area (Table 1), an increase of 4 stands from 2007. The identified stands are distributed throughout the project area and range in size from 0.01-acre up to 15.43-acres.

Table 1. 2008 White Rapids Reservoir Eurasian Water Milfoil Stand Data.

| Stand # | Stand/Mat Density ¹ | Mat Thickness | Stand Size (acres) ² |
|---------|--------------------------------|---------------|---------------------------------|
| 1 | 4 | none | 0.70 |
| 2 | 1 | none | 3.39 (+0.65) |
| 3 | 3 | none | 0.33 (-6.67) |

| 4 | Not Present | | |
|---------|--------------------------------|---------------|---------------------------------|
| 5 | 4 (-1) | none | 7.02 (+3.56) |
| 6 | 1 | none | 10.56 (-0.01) |
| Stand # | Stand/Mat Density ¹ | Mat Thickness | Stand Size (acres) ² |
| 7 | 1 | none | 11.18 (-1.23) |
| 8 | 3 (-2) | none | 3.62 (+1.80) |
| 9 | 2 (+1) | none | 3.47 (+1.16) |
| 10 | 1 | none | 0.78 |
| 11 | 1 | none | 1.30 (+0.10) |
| 12 | 1 | none | 1.11 |
| 13 | 4 | none | 0.59 |
| 14 | 1 | none | 0.45 (-0.50) |
| 15 | 1 | none | 2.19 |
| 16 | 2 (-2) | none | 1.56 |
| 17 | 2 | none | 15.43 |
| 18 | 4 | none | 0.92 |
| 19 | 5 | none | 1.48 (+0.02) |
| 20 | 1 | none | 5.21 |
| 21 | 2 (-2) | none | 3.57 |
| 22 | 1 | none | 0.17 |
| 23 | 1 | none | 1.00 (+0.01) |
| 24 | 1 | none | 0.22 |
| 25 | 1 | none | 0.06 |
| 26 | 1 | none | 0.22 |
| 27 | 1 | none | 0.10 |
| 28 | skipped # | | |
| 29 | 1 | none | 0.43 |
| 30 | 1 | none | 0.62 |
| 31 | 1 | none | 0.26 |
| 32 | 1 | none | 3.51 (+0.01) |
| 33 | 2 | none | 0.29 |
| 34 | 1 | none | 0.01 |
| 35 | 2 | none | 0.22 |
| 36 | 1 | none | 0.29 |
| 37 | 1 | none | 0.11 |

1 – change in density rating from 2006 to 2007

2 – change in stand size from 2006 to 2007

Eurasian water milfoil is present in approximately 82-acres in the White Rapids Reservoir project area, an increase of approximately 10-acres from 2007. Cumulatively, the average stand size is 2.35-acres and has an average density rating of 1.37 per stand. In 2007, the average stand size was 2.84-acres and had an average density rating of 2.13 per stand. The decrease in stand size is attributable to the five new stands having an average size of 0.18-acre. The decrease observed in the average density rating is attributable to the decrease in stand densities observed in stands #5, 8, 16, and 21 as well as the new stands having an average rating of 1.40.

Out of the 35 observed stands, 5 (#1, 5, 13, 18, and 19) have a high density (>75% cover). The number high density stands decreased by 50% since 2007. These stands are scattered throughout the southern one-half of the reservoir, and they cover approximately 10.7-acres. Greater than 22-acres were classified with a high density rating in 2007.

28 of the 35 stands have very low densities 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 (*Potamogeton* 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*). These low density stands account for approximately 82% (67.70-acres) of the total area observed to have Eurasian water milfoil present.

Conclusions

In conclusion, there was a slight increase in the number Eurasian water milfoil stands observed in the White Rapids project area. However, there were notable decreases in the average stand size, average density rating per stand, and total cover of high density stands. Similarly, there was a notable increase in the percent of the total acres of milfoil observed at low densities. All of these changes indicate an improved condition of Eurasian water milfoil at White Rapids.

The region continues to experience a drought (over 2 years) resulting in lower flows and improved water clarity. Drought conditions have led to slower current in the impoundments. Less current and better light penetration appears to have promoted the establishment of the new stands. Additionally, better clarity also allowed for clearer visibility of Eurasian water milfoil. Improved visibility was also due to the lack of large and dense algae beds that has been noted in previous years. Cooler temperatures likely led to less algae and improved visibility.

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 management plan and the summary report prepared by EnviroScience for further information about milfoil management activities.