We Energies
2008 Annual Report - Nuisance Plant Control Survey
Twin Falls
Project #2072-008

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 Twin Falls Reservoir project on August 5, 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.

For each stand of Eurasian water milfoil encountered during the 2008 surveys, the stand location and perimeter were compared and verified with the 2006 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:

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

No purple loosestrife plants were observed along the shores of the Twin Falls project area.

Seventy-one stands of Eurasian water milfoil were observed to occur in 2008 at the Twin Falls Reservoir project area (Table 1), an increase of 4 stands from 2006. Nineteen new stands were identified while 7 stands were not present in 2008. Additionally, 8 stands were combined with other existing stands. The identified stands are distributed throughout the project area and range in size from 0.01-acre up to 92.62-acres.

Table 1. 2008 Twin Falls Reservoir Eurasian Water Milfoil Stand Data.

Stand #	Stand/Mat Density[1]	Mat Thickness	Stand Size (acres)[2]
1	1	none	0.01
2	1	none	0.33
3	1	none	0.09
4	1	none	2.30
5	1	none	0.01

Stand #	Stand/Mat Density[1]	Mat Thickness	Stand Size (acres)[2]
6	1	none	0.52
7	1	none	0.76
8	1	none	0.31
9	Not Present		
10	1 (-1)	none	15.86 (-0.41)
11	1	none	1.54
12	1	none	0.92
13	1 (-1)	none	0.78 (-0.23)
14	1 (-1)	none	0.80
15	Not Present		
16	Not Present		
17	1	none	0.18
18	Not Present		
19	1 (-1)	none	10.53 (-1.35)
20	2 (-2)	none	2.52 (+1.35)
21	1	none	0.43
22	1	none	0.94
23	1	none	7.85 (-0.81)
24	1	none	0.01
25	1	none	0.53
26	1	none	0.49
27	1	none	0.11 (+0.04)
28	1	none	0.25
29	Not Present		
30	Not Present		
31	1	none	0.43
32	1 (-1)	none	0.75 (-0.70)
33	1	none	5.90 (+2.11)
34	1	none	12.58 (+1.38)
35	1	none	0.10
36	1	none	0.14
37	1	none	0.38
38	3	none	0.48 (-0.47)
39	1 (-1)	none	0.73
40	3 (+1)	none	6.97 (-1.99)
41	4	none	1.38
42	3	none	4.27
43	combined with 42		
44	1	none	0.37
45	1 (-1)	none	20.25 (+0.30)
46	3 (-2)	none	0.04 (+0.03)
47	combined with 46		
48	combined with 46		
49	combined with 45		
50	1	none	4.71
51	1 (-1)	none	0.03
52	2	none	2.36
53	1	none	0.06
54	1	none	0.56

Stand #	Stand/Mat Density[1]	Mat Thickness	Stand Size (acres)[2]
55	1 (-1)	none	92.62 (+27.19)
56	2 (-1)	none	2.91 (-1.89)
57	combined with 55		
58	combined with 55		
59	combined with 55		
60	combined with 55		
61	2 (+1)	none	0.60
62	1	none	0.86
63	1 (-1)	none	0.89
64	Not Present		
65	1 (-2)	none	6.83
66	1	none	2.52
67	1	none	0.41
68	1	none	0.05
69	4	none	0.29
70	2	none	0.81
71	3	none	0.61
72	2	none	0.81
73	4	none	0.04
74	2	none	0.98
75	1	none	0.31
76	1	none	0.74
77	1	none	1.42
78	1	none	0.28
79	3	none	0.38
80	1	none	1.02
81	1	none	0.13
82	1	none	0.56
83	1	none	0.61
84	1	none	0.48
85	1	none	0.47
86	1	none	1.99

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 230-acres in the Twin Falls Reservoir project area, an increase of approximately 5-acres from 2006. Cumulatively, the average stand size is 3.24-acres and has an average density rating of 1.41 per stand. In 2006, the average stand size was 4.59-acres and had an average density rating of 1.79 per stand. The decrease in average stand size is largely attributable to the nineteen new stands that were not previously identified having an average size of 1.68-acres.

Out of the 71 observed stands, only stand 3 have a high density (>75% cover), stands 41, 69, and 73. Stand #69 is a small stand located below the railroad bridge just upstream from the dam, while the other two stands are located centrally in the north-south stretch of the river within this project area. Cumulatively, these stands comprise less than 1% (1.71-acres) of the total milfoil occurring within the Twin Falls project area. This is a significant decrease in the 84-acres of high density Eurasian water milfoil coverage documented in 2006. These changes are most notable in the western portions of Badwater Lake where dense milfoil beds covered over 80-acres in 2006. Although it was not technically surveyed in 2007, anecdotally, similar site characteristics occurred in 2007 when compared to the 2006 observations.

61 of the 71 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 (*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*). These low density stands account for approximately 92% (212.76-acres) of the total area observed to have Eurasian water milfoil present.

Another major change that occurred between 2006 and 2008 is the extent upstream to which the Eurasian water milfoil was observed in 2008. While most of these stands are relatively small and at low densities, it did spread substantially upstream.

Conclusions

In conclusion, the significant changes exhibited in Twin Falls were more than any other project area. The abrupt and significant decrease in stand density in the Badwater Lake area in particular was not anticipated. We suspect this change was the result of two factors: presence and impact of an indigenous population of weevils, and the cooler temperatures may have limited the aggressive milfoil growth in this reservoir. The other notable change was the addition of 19 new stands not previously recorded. Most of these stands occur in the upper most reaches in the riverine portion of the reservoir. This is likley due to the lower flows being experienced across the region.

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.

As eluded to above, 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.