

Bill Turner

From: Carl Nielsen [cnielsen@essgroup.com]
Sent: Thursday, March 02, 2006 5:07 PM
To: bturner@westford.mec.edu
Cc: David S. Brody
Subject: More ESS Data

Hi Bill,

As promised we are providing you with the remaining data we had collected during our 2004 monitoring of Nab Lake. There are 3 worksheets within this one attached document. Unfortunately we do not have any maps prepared at this point to illustrate sampling locations. I did label the water quality sampling stations so that you can identify them without a map. The plant transects are not as easy to do that with, however, it is evident from the sampling that was done that in several areas that were subjected to the drawdown, the native plant community continues to thrive often at very high densities. Other locations were not found to have any plants in areas exposed to drawdown. I think this disparity is a function of the soil types and the slope of the shoreline since, in general, it was observed that the more gradual sloped areas that possessed more muck or organics tended to retain the native community. I suspect this is a function of the muck's ability to maintain a seed bank, whereas steeper sandy areas are generally indicative of higher wave energy environs that would be likely to have seeds that settled there washed away before they could germinate. It is important also to note that we did not find any milfoil on any of the surveyed transects. In fact, there was very little milfoil anywhere in Nab lake at the time of our survey. The large mats of it that had previously been observed near the Blue Brook inlet were gone yet the native community of *Valisneria americana* (tapegrass) thrived. There was one very minor milfoil patch located near the inlet from storm drainage system that drains the new development adjacent to Shipley Swamp. I suspect that the continuous flow of warmer water from this system prevented the milfoil roots immediately below this outlet from drying out and freezing, particularly since the milfoil plants that were observed were found very close to shore in less than 1 foot of water. Small patches such as this can be controlled through hand-harvesting and are not a serious threat to the entire lake if the area is inspected and managed regularly by NLPAs or others that may be interested in protecting the lake and its native plant community.

I will be in our East Providence office late tonight and most of the day tomorrow should you have any questions.

Carl Nielsen, CLM

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3/3/2006

Table 1a. Laboratory Measured Water Quality Data for Nabnasset Lake, 2004.

Sample ID	Date	Total Phosphorus (mg/L)	Dissolved Phosphorus (mg/L)	Nitrate Nitrogen (mg/L)	Total Kjeldahl Nitrogen (mg/L)
WQ-1 (Shipley Swamp)	8/3/2004	0.04	0.02	0.89	0.61
WQ-2S (Lake Surface)	8/3/2004	0.01	0.01	1.00	<0.5
WQ-2B (Lake Bottom)	8/3/2004	0.02	0.02	0.91	0.74

Table 1b. Field Measured Water Quality Parameters for Nabnasset Lake, 2004.

Sample ID	Date	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% saturation)	Conductivity (umhos/cm)	Turbidity (FTU)	Temperature (degrees celsius)	pH (SU)	Secchi Depth (Feet)
WQ-1 (Shipley Swamp)	8/3/2004	8.9	110	348	0.83	28.7	7.8	3.0
WQ-2S (Lake Surface)	8/3/2004	8.9	108	346	0.73	27.4	8.2	12.1
WQ-2B (Lake Bottom)	8/3/2004	0.2	1.7	352	2.90	13.3	7.7	n/a

Table 2. Depth of Water, Substrate Type, Plant Cover, Biomass and Species Documented in Nabnasset Lake, August 3, 2004

Transect Number	Sampling Point ID Number	Water Depth (Feet)	Substrate Type	Plant Cover*	Plant Biomass*	Plant Species**
1	1	1.5	sand, muck	3	1	Pc, Ty, Ls, Jm
	2	4.0	sand, muck	2	2	Nf
	3	7.0	muck	4	2	Nf, Va, No
	4	7.5	muck	4	1	Ni
	5	11.0	muck	1	1	Ni
2	1	1.5	sand, gravel, cobble	1	1	G
	2	6.0	sand, gravel	2	1	Nf
	3	14.0	muck	2	1	Nf, Cd
	4	17.0	muck	0	0	no plants
3	1	3.0	sand	0	0	no plants
	2	7.0	sand, muck	4	4	Va, Nf
	3	12.0	muck	4	2	Va, Cd, Nf, Ec
	4	13.5	muck	4	1	Ec, Nf, Cd, Ni
4	1	5.0	sand	0	0	no plants
	2	8.0	muck	4	2	Va, Nf, Ec, Cd, Pr
	3	9.5	muck	3	1	Va, Ni
	4	13.0	muck	4	1	Cd, Ni, Ec
	5	13.0	muck	3	1	Va, Ni
5	1	4.0	sand, cobble	2	2	Nf, Cd, Va
	2	8.0	muck	1	2	Nf, Cd, Va, Pc,
	3	7.0	muck	4	2	Chara, Nf, Va, Ni
	4	11.5	muck	1	1	Ec, Ni

* The following cover and biomass ranges correspond with each number in the column:

0 = no plants; 1 = 1-25%; 2 = 26-50%; 3 = 51-75%; and 4 = 76-100%

** Key of plant species codes are listed in Table 3.

Table 3. Aquatic Plant Species Observed during Survey of Nabnasset Lake, August 3, 2004

Common Name	Scientific Name	Key to Plants List in Table 2
Curly Pondweed	<i>Potamogeton crispus</i>	Pc
Cattail	<i>Typha latifolia</i>	Ty
Purple loosestrife	<i>Lythrum salicaria</i>	Ls
Bayonet rush	<i>Juncus militaris</i>	Jm
Slender water-nymph	<i>Najas flexilis</i>	Nf
Water celery	<i>Vallisneria americana</i>	Va
White water lily	<i>Nymphaea odorata</i>	No
Stonewort	<i>Nitella, sp.</i>	Ni
Hedgehyssop	<i>Gratiola, sp.</i>	G
Waterweed	<i>Elodea canadensis</i>	Ec
Coontail	<i>Ceratophyllum demersum</i>	Cd
Robbin's pondweed	<i>Potamogeton robbinsii</i>	Pr
Muskgrass	<i>Chara, sp.</i>	Chara