

Mud Lake

SLELO-PRISM Early Detection Surveillance

August 30 and September 3, 2013



Figure 1: Panoramic view of Mud Lake

Report prepared by Logan West and Mike McHale, 9/6/2013

Introduction and Background

Mud Lake is part of the Indian River lake system located on the St. Lawrence River plain that spans from Jefferson to St. Lawrence County. It is one of 18 naturally formed lakes that range from shallow, highly productive warm waters, to deep cold water lakes. The lake is located in Jefferson County (Figure 2) in the Town of Alexandra, just southwest of the village of Redwood (Figure 3). It has a maximum depth of approximately 15 feet with a mean depth of 5.9 feet. Boating is limited to car top boat launching, which is located on the northern part of the lake that borders Redwood.

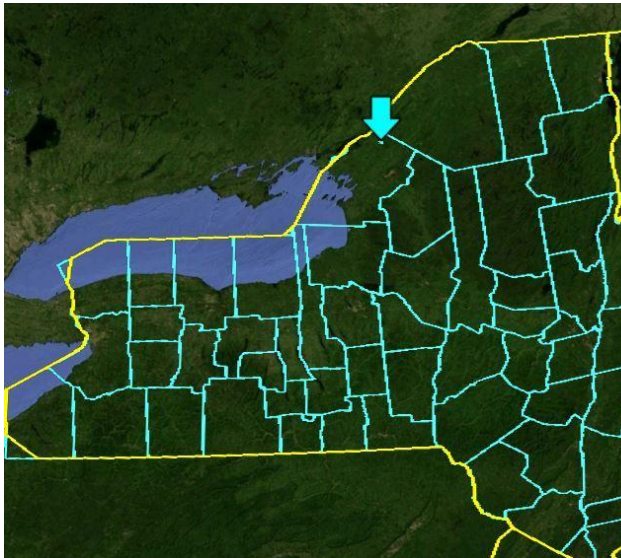


Figure 2: Location of Mud Lake in Jefferson County

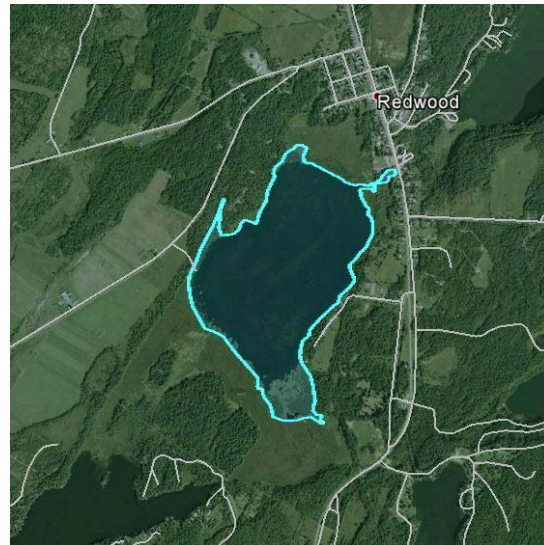


Figure 3: Location of Mud Lake (Blue outline) near the town of Red Wood

Mud Lake is considered a ‘Group One Shallow Productive Lake’. This group is comprised of shallow highly productive lakes. These lakes have a depth of less than 20 feet that enables uniform temperatures from top to bottom all summer long. Dense mats of rooted vegetation grow in the shallow waters, providing habitat for a large range of fish species. The

most common fish found in ‘Group One Shallow Productive Lakes’ is yellow perch, black crappie, sunfish and brown bullhead. These lakes can also support populations of northern pike and largemouth bass. Present but generally not abundant are populations of smallmouth bass. Walleye in these systems has declined and now is limited in numbers. ¹

The U.S. Fish and Wildlife Service National Wetland Inventory further classify Mud Lake and the surrounding wetlands. Mud Lake is lacustrine and limnetic, meaning that the lake has an unconsolidated bottom, composed of one or more of cobble/gravel, sand, mud and organic matter and its water depths allow sunlight to penetrate to the bottom. The surrounding wetlands are palustrine systems, or nontidal wetlands that are characterized by the presence of trees, shrubs and emergent vegetation that ranges from permanently saturated or flooded lands to those that may only be saturated seasonally. These palustrine systems are broken down into classes and subclasses by the U.S. Fish and Wildlife Service as seen in Figure 4 and Table 1. ²

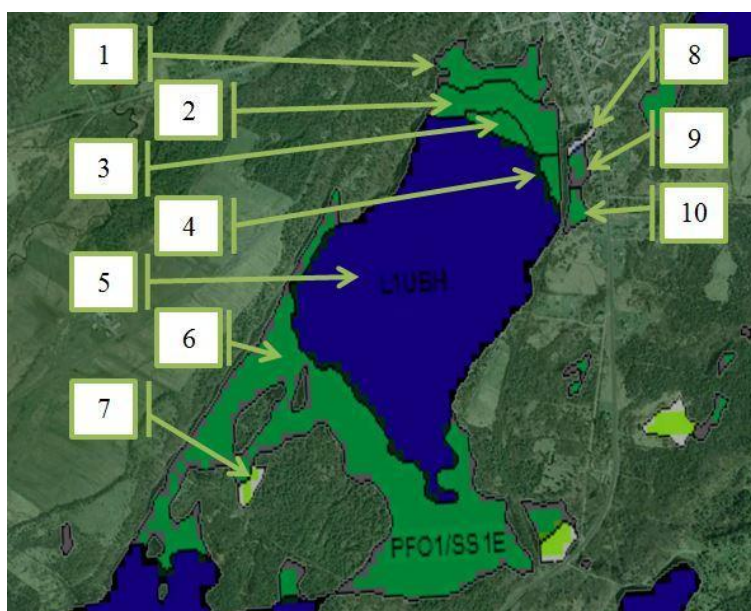


Figure 4: U.S. Fish & Wildlife Service National Wetlands Inventory Map

¹ Referenced from Department of Environmental Conservation website: <http://www.dec.ny.gov/outdoor/51581.html>

² Referenced from U.S Fish and Wildlife Service website (including Table 1.):
(<http://www.fws.gov/wetlands/Data/Google-Earth.html>)

Table 1. Habitat Classification Codes and Descriptions for Figure 3

Location	Habitat Classification Code	Description
1	PSS1E	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated
2	PSS1/EM5E	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous / Palustrine, Emergent, <i>Phragmites australis</i> , Seasonally Flooded and or Saturated
3	PFO1/SS1E	Palustrine, Forested, Broad-Leaved Deciduous / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated
4	PFO1/SS1E	Palustrine, Forested, Broad-Leaved Deciduous / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated
5	L1UBH	Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded
6	PFO1/SS1E	Palustrine, Forested, Broad-Leaved Deciduous / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated
7	PEM5E	Palustrine, Emergent, <i>Phragmites australis</i> , Seasonally Flooded and or Saturated
8	PUBH	Palustrine, Unconsolidated Bottom, Permanently Flooded
9	PSS1E	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated
10	PFO1/SS1E	Palustrine, Forested, Broad-Leaved Deciduous / Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded and or Saturated

Objectives and Methods

In preparation for early detection surveillance, aerial maps were used to identify Highly Probable Areas (HPA's). HPA's are areas where human activities or site conditions increase the probability that invasive species will be introduced or become established. Initially, three HPA's were identified; two terrestrial and one aquatic (Figure 5) and are summarized in Table 2.



Figure 5: HPA map of Mud Lake

Further, the field crew accessed the lake by canoe and conducted a series of rake tosses in multiple locations to collectively represent the lakes plant community. The rake toss locations were improvised once the crew was on the water. Rake toss samples are collected by throwing a weighted rake attached to a rope into the water from both sides of the canoe to gather submerged aquatic vegetation samples and to measure water depth (Table 3). This technique allowed the crew to determine what species were present in that location. Once the samples were collected, the species were identified, recorded, and determined to be either invasive or noninvasive (Table 3). Visual observations of vegetation in the area were also recorded.

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The crew utilized a handheld Garmin GPSMAP* 62 to track the travel route and record waypoints. Latitude and longitude coordinates along with locations of HPA's are presented in Table 2. Coordinates for rake toss sites are presented in Table 3. Coordinates of HPA's are always recorded in the event that personnel are required to return to the site for rapid response efforts for follow up monitoring.

Table 2: HPA locations and latitude/longitude coordinates

HPA	Latitude	Longitude	Notes
1	44.297497	75.801658	Town Park with ATV trail
2	44.29612	75.80198	Roof Top boat launch near water level control structure
3	44.293671	75.802093	Town property with ATV trail

Observations

On August 29th and September 3rd, an aquatic survey of Mud Lake was performed by SLELO technicians. Rake toss locations are presented in Figure 6. On September 3rd, a terrestrial survey of HPA 3 was performed along ATV access (Figure 7). **No ‘Prevention “Watch-List” Species’** were observed. One aquatic ‘Target Management Species’ Eurasian Water Milfoil (*Myriophyllum spicatum*) was discovered at several rake toss sites (Table 3). No ‘General Species of Concern’ were observed at HPA or rake toss sites.

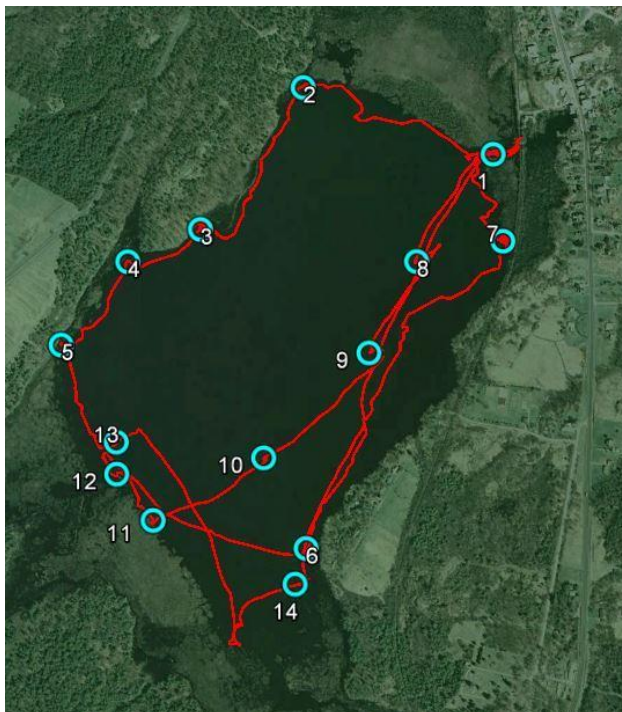


Figure 6: Rout and rake toss points on Mud Lake



Figure 7: Terrestrial survey tracks (red) of HPAs

Table 3: Rake toss points and data

Rake Toss	Latitude Longitude	Throw	Depth (ft)	# Spp.	# Inv.	Invasive plant spp. Present	Notes
1	44.296047	1	3	3	1	EWM	
	-75.802691	2	3				
2	44.297517	1	3	2			
	-75.808545	2	4				
3	44.294390	1	2	2			
	-75.811712	2	3				
4	44.293676	1	2	2			
	-75.813955	2	2				
5	44.291839	1	3	2			
	-75.816000	2	3				
6	44.287353	1	5	2	1	EWM	
	-75.808455	2	5				
7	44.294130	1	1				
	-75.802393	2	1				
8	44.293682	1	7	2			
	-75.805048	2	7				
9	44.291666	1	7	3	1	EWM	
	-75.806521	2	6				
10	44.289350	1	2	2			
	-75.809764	2	2				
11	44.287970	1	6	4	1	EWM	
	-75.813172	2	7				
12	44.288991	1	4	2			
	-75.814294	2	3				
13	44.289698	1	8	2			
	-75.814308	2	8				
14	44.286565	1	5	2	1	EWM	
	-75.808795	2	6				

Diverse populations of native aquatic plants were observed during the course of the rake toss. Several different species of pondweed (*Potamogeton spp.*) were discovered. It was found that there was a large population of large-leaf pondweed (*Potamogeton amplifolius*) that spanned across the lake. Also observed was robins or fern-leaved pondweed (*Potamogeton robbinsii*). Less numerous was white-stem pondweed (*Potamogeton praelongus*) as well as variable pondweed (*Potamogeton gramineus*). Common waterweed (*Elodea canadensis*) was observed

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from the surface on the southern side of the lake. Possibly two bladderwort species were observed, common bladderwort (*Utricularia macrorhiza*) and a possible sighting of floating bladderwort (*Utricularia radiata*) which is considered to be a threatened species with only a few populations in New York State. A hornwort species known as coontail (*Ceratophyllum demersum*) was identified. On a rake toss, water crowfoot (*Ranunculus spp.*) came to the surface. Along the edges of the lake, there were several emergent species such as fragrant water lily (*Nymphaea odorata*), spatterdock (*Nuphar variegata*), watershield (*Brasenia schreberi*) and a flowering plant in the sedge family known by the common names; softstem bulrush and great bulrush (*Schoenoplectus tabernaemontani*). Amongst all of this vegetation, a sample of a freshwater sponge that we believe to be a *Spongilla spp.* (possibly *Spongilla lacustris*) was collected from a rake toss, Figure 8. A magnified view is presented in Figure 9. The presents of a freshwater sponge indicates good water quality for the lake, and the high amount of biodiversity here is a sign of a healthy ecosystem.



Figure 8: A freshwater sponge species with common bladderwort gathered by a rake toss

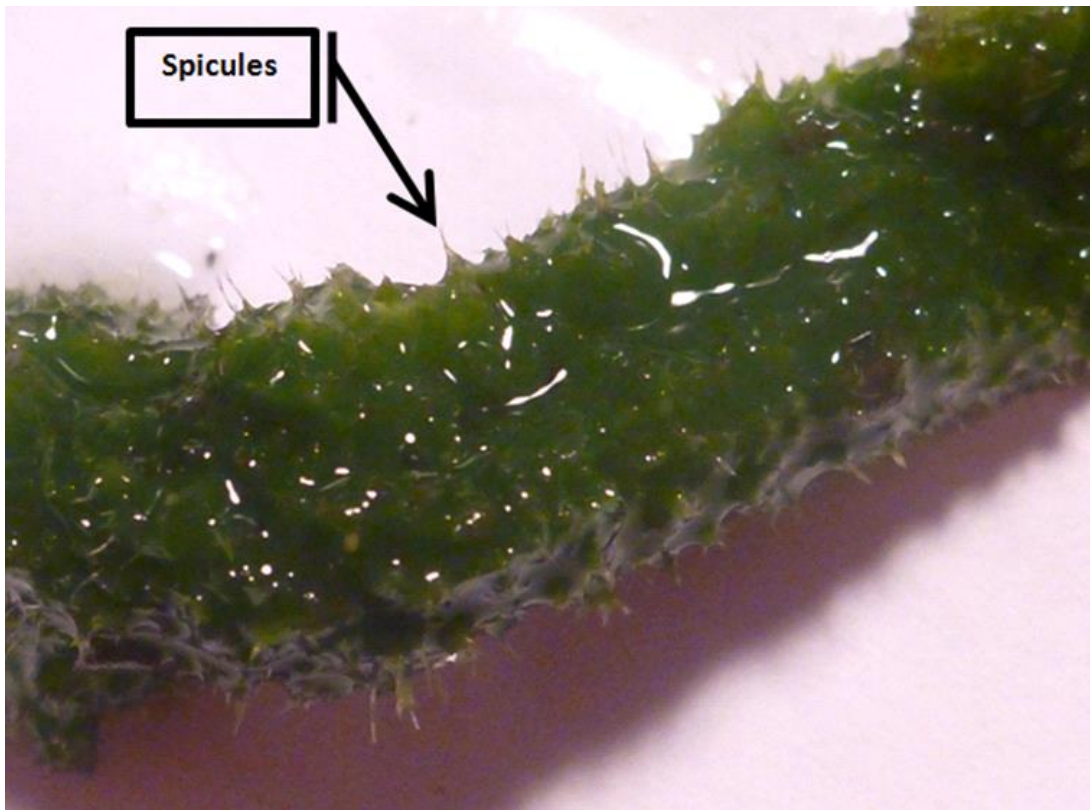


Figure 9: A close-up of the freshwater sponge species showing its glass-like spicules

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