Delta Lake

SLELO-PRISM Aquatic Invasive Species Early Detection Surveillance

June 27, 2013

Figure 1: Panoramic view of Delta Lake

Report prepared by Logan West, Mike McHale and Rob Williams on 7/2/13

Introduction and Background

Delta Lake is located in the center of Oneida County New York (Figure 2), just north of the Town of Rome. The open water surface area is approximately 2,300 acres and includes 19 miles of shoreline (Figure 3) with a maximum depth of 60 feet. This man-made reservoir was created following the construction of the Delta Dam on the Mohawk River, which began in 1908 and flooded the area where the original town of Delta once stood. The purpose of the dam was to guarantee sufficient water for the Barge and Erie Canal system, and also to prevent spring flooding in the Town of Rome.

Figure 2: Location of Delta Lake in Oneida County

Figure 3: Delta Lake shoreline

Today, Delta Lake State Park, which extends from a peninsula on the southeastern shoreline of the lake, is a popular year-round tourist destination. In the summer the park offers recreational opportunities for visitors that include boating, fishing, biking, hiking and camping, and in the winter the park offers ice fishing, snowmobiling and cross-country skiing.

Survey Methods and Objectives

In preparation for establishing and conducting Early Detection and Rapid Response surveillance targeting invasive species, a map of Delta Lake with six original High Probability Areas (HPA's) was created (Table 1). HPA's are areas where human activities or site conditions increase the probability that invasive species will be detected and/or become established. HPA-2 was not visited due to unsuitable conditions for invasive aquatic vegetative species, steep banks and water depth, and the safety concerns associated with the field crew being in close proximity to the overflow dam. However, two additional HPA's (7 & 8) were identified and included in data collection procedures (Figure 4)." The crew utilized a handheld Garmin GPSMAP* 62 to track the travel route and record waypoints (red line, Figure 4).

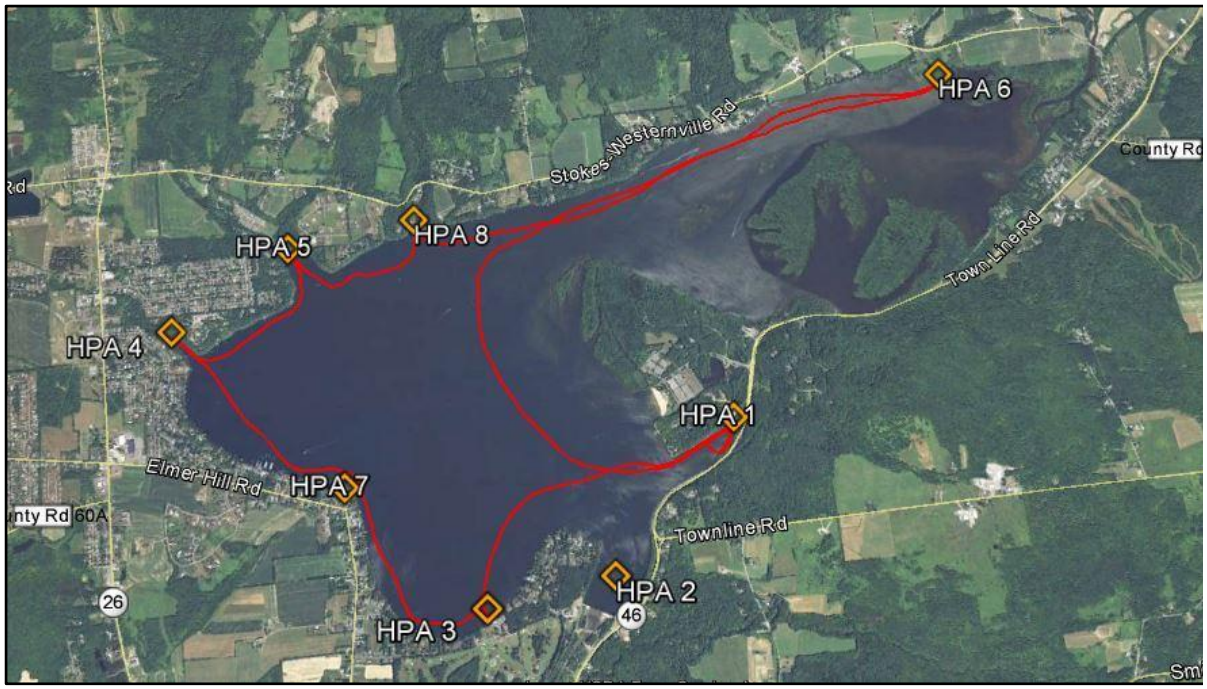

Figure 4: Delta Lake HPAs and Track of survey rout in red

Table 1: HPA's location and latitude, longitude coordinates

HPA	Location	Latitude	Longitude
HPA-1	Delta Lake State Park Boat Launch	43.28632	-75.4166
HPA-2	Near Dam	x	x
HPA-3	Cove Near Docks	43.27462	-75.4377
HPA-4	Sheltered Cove	43.29235	-75.466
HPA-5	Cove	43.29786	-75.4561
HPA-6	Shallows	43.30954	-75.3968
HPA-7	Sheltered Cove	43.28217	-75.4501
HPA-8	Cove	43.29972	-75.4449

A flat-bottomed motorboat (Figure 5) was used to transport the crew to each HPA location. Samples were collected by throwing a weighted rake (rake toss method, Figure 6) attached to a rope into the water from both sides of the boat to gather submerged aquatic vegetation samples and to measures water depth (Table 2). 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 2). Visual observations of vegetation in the area were also recorded.

Figure 5: Carolina Skiff powerboat used on Lake Delta

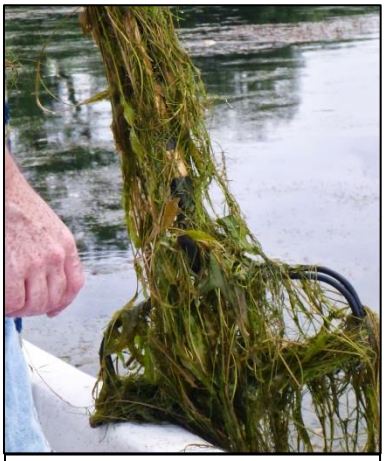

Figure 6: Photo of rake-toss with samples.

Observations

After launching the boat from the Delta Lake State Park, the crew visited each HPA to perform rake tosses and to boat along the shoreline to observe for invasive species.

Table 2: Data from rake toss points

Location: Delta Lake							Date: 6/27/2013
Point	**Latitude Longitude**	**Throw**	**Depth (ft)**	**# Spp.**	**# Inv.**	**Spp. Present**	**Notes**
HPA-1	43.28632	1	3	5	0	FW, BLPW, WSPW, CLPW, EL	Samples taken, possible hydrilla
	-75.4166	2	4	5	0		
HPA-3	43.27462	1	12	0	0		Steep banks, deep water
	-75.4377	2	13	0	0		
HPA-4	43.29235	1	5	3	0	BLPW, EL, WSPW	
	-75.466	2	5	3	0		
HPA-5	43.29786	1	5	1	0	BLPW	Pithophora algae seen
	-75.4561	2	6.5	1	0		
HPA-6	43.30954	1	6	2	0	BLPW, WSPW	
	-75.3968	2	6	2	0		
HPA-7	43.28217	1	9	3	0	CT, FW, BLPW	
	-75.4501	2	10	1	0		
HPA-8	43.29972	1	X	1	0	BLPW	Phragmites observed near shore
	-75.4449	2	X	1	0		

*Refer to subsequent Figure 4 for point locations. Key to abbreviations used in all table: **FW**: fanwort, **CT**: coontail, **WSPW:** white-stem pondweed, **BLPW:** broad-leaf pondweed, **CLPW**: curly-leaf pondweed, **EL:** elodea

Notable observations:

HPA 1: Observed a floating mat of vegetation that had no obvious rooted parts. The vegetation most likely was brought in by the current to this area. This was in close proximity to the boat launch and could have been introduced by transient boats foreign to Lake Delta.

Upon observation of the floating plant fragments, elodea species were observed along with other plant fragments having similar leaf arrangements in whorls of 5 and 6 leaves (Figure 7 and 8). Samples were then taken to the SLELO field office and observed under magnifying apparatus which showed serrated leaf margins on some of the plants (Figure 9), which suggested Hydrilla (*Hydrilla verticillata*).

Figure 7: Close-up of 6-leaf whorl

Figure 8: Close-up of 5,6 leaf whorl.

Figure 9: Magnified view of serrated leaf margin.

Sample verification:

To determine the correct species of these plants, magnified photographs were taken and submitted to Scott Kishbaugh, NYS DEC and subsequently to Robert Johnson, Cornell University.

Although the number of whorls present is deceiving, both scientists determined that this species was likely to be (*Elodea nutallii*).

Since the samples were floating fragments, any parent patch was not observed and therefore no root tubers were collected. Root tubers (or the absence of) can be used for more conclusive identification of Hydrilla.

The following figures are images from each of the 7 HPA's, **(in sequence)** as they were visited by the crew on June 27, 2013…

Figure 10: HPA-1

Figure 11: HPA 3

Figure 12: HPA-7

Figure 13: HPA-4

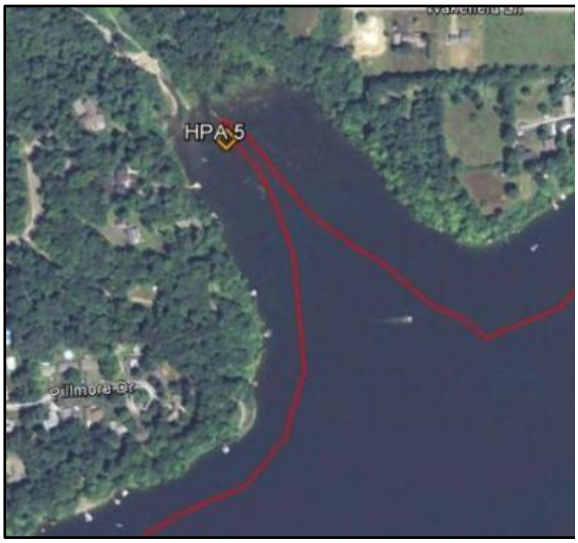

Figure 14: HPA-5

Figure 15: HPA-8

Figure 16: HPA-6