Special Note

The partners of the SLELO PRISM have identified 24 Priority Conservation Areas on which we conduct early detection surveillance on a two year rotation. This report is considered as an addendum to the original field report. The original report is attached to the end of this report.

St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management

2014 Field Survey
Addendum to
Mud Bay
Water Chestnut & Hydrilla Assessment

SLELO-PRISM Early Detection Surveillance
June 20, 2014

Report prepared by Elizabeth MacEwen and Sabrina Dreythaler

Figure 1. Panoramic view of shoreline at Mud Bay. Photo taken by Sabrina Dreythaler.

Summary

In June of 2014, field crew members Sabrina Dreythaler and Elizabeth MacEwen conducted early detection surveillance targeting Hydrilla (*Hydrilla verticillata*) and Water Chestnut (*Trapa natans*). A second late season visit is planned to survey for Rusty Crayfish and Asian Clam. Occurrences of any target management species were also noted[1]. This survey was completed using the same methods of rake toss surveying as used in 2012. The same points along the perimeter were used, see **figure 2**, and these will now be considered highly probable areas (HPAs). Instead of completing the survey during various times throughout the season like in 2012, this year's survey was conducted during a single day. A terrestrial survey was also completed targeting Swallow-wort (*Cynananchum* spp.) at the same sites (HPAs) as in 2012, see **figure 3**.

[1] For a list of prevention and targeted species, see the SLELO-PRISM 2012-2016 Strategic Plan, pp. 36 – 37.

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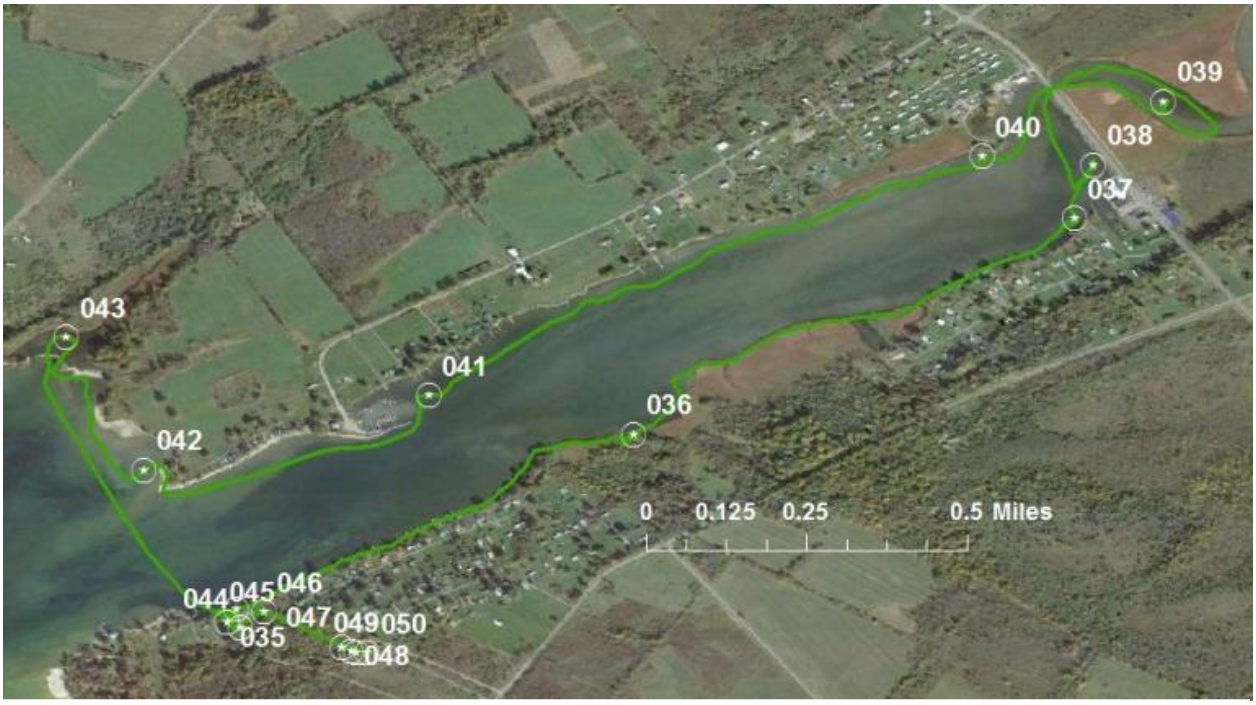

Figure 2. Aquatic HPAs and route taken along perimeter of Mud Bay.

Figure 3. Terrestrial HPAs and route taken along Bates RD to the NYS DEC Boat Launch

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Observations

There were no observations of Water Chestnut or Hydrilla during the aquatic survey of Mud Bay. Eurasian Watermilfoil (*Myriophyllum spicatum*), Curly-Leaf Pondweed (Potamogeton crispus) and Zebra/Quagga Mussels (*Dreissena spp.*) were observed while surveying the perimeter. These species were also observed in 2012. Seen in 2012, but not seen in this survey was European Frogbit (*Hydrocharis morsus-ranae*). Details can be seen on **Table 1.**

Figure 4. Patch of Swallow-wort, Located at the NYSDEC Boat Launch on Mud Bay on 6/20/14. Photo taken by Sabrina Dreythaler

Swallow-wort could be seen in a moderate sized patch at the boat launch (approximately 8' by 5', see **figure 4**), as previously observed in 2012. Some sites had dead or dying plants, while other sites that were revisited had no signs of Swallow-wort. Fewer live plants could be seen at HPA-264. Details can be seen on **Table 2**.

Figure 5. Swallow-wort patch sprayed on 6/9/2014. Photo by Sabrina Dreythaler

Actions Taken: Swallow-wort Rapid Response

In 2012 the smaller patches of Swallow-wort were hand dug by field crew members Mike McHale and Greg Chapman. The large patch was sprayed with a 2-3% glyphosate solution by SLELO Licensed Herbicide Applicator and Field Crew Member Mike Parks. The patches that were hand dug grew back, and the patch that was sprayed did not. On June 9th, **2014** Mike Parks sprayed an area of 4756 square feet of Swallow-wort with 1 gallon of 1.5% Garlon 4 Ultra, see figure 5. After this early detection surveillance, he returned on June 26th, 2014 to spray an additional 2600 square feet of Swallow-wort with 2.5 gallons of 1.5% Garlon 4 Ultra solution.

Table 1. Mud Bay Aquatic HPAs

Location: Mud Bay									Date: 6/20/14
HPA	**WP**	**Lat/Long**	**Throw**	**Depth**	**# Spp.**	**# Inv**	**Inv. Spp. 2014**	**Inv. Spp. 2012**	**Notes**
252	35	44.070424	1	3	0	0		EWM, ZM	
		-76.3306	2		0	0		EWM	
253	36	44.074363	1	3	1	0		EWM	
		-76.321653	2		5	2	EWM, ZM		
255	37	44.079226	1	4	2	0		EWM	
		-76.311721	2		2	0		EWM	
256	38	44.080433	1	4	4	0		EWM	Visual: EWM
		-76.311278	2		2	0			
257	39	44.081868	1	2.5	1	1	CLPW	EWM	2012 Visual: CLPW
		-76.309701	2		3	1	CLPW	EWM	
258	40	44.08062	1	3	1	0			
		-76.313788	2		1	1	EWM	EWM	
259	41	44.07524	1	4	3	2	ZM, QG	EWM	
		-76.326265	2		1	0		EWM, ZM	
260	42	44.073569	1	4.5	1	0			
		-76.332685	2		1	0			
261	43	44.076553	1	1	1	0		EWM	2012 Visual: EFB
		-76.334423	2		1	0		CLPW, EWM	

Table 2. Mud Bay Terrestrial HPAs

Location: Mud Bay NYS-DEC Boat Launch (Bates Rd.)					Date: 6/20/14
HPA	**WP**	**Latitude Longitude**	**Species**	**Notes 2014**	**Notes 2012**
262	**046**	44.070142	Swallow-wort	None present	Single plant
		-76.329983			Removed by SLELO Field Crew 7-2-12
263	**048**	44.069477	Swallow-wort	Dead plants on ground	Single plant
		-76.328005			Removed by SLELO Field Crew 7-2-12
264	**050**	44.06944	Swallow-wort	Dying patch, a couple of live plants	Two plants
		-76.327641			Removed by SLELO Field Crew 7-2-12
265	**049**	44.069464	Swallow-wort	Dead plants on ground	Moderate Sized Patch (<20 plants)
		-76.327873			Removed by SLELO Field Crew 7-2-12
266	**047**	44.069581	Swallow-wort	None, some dead	Very Large Patch
		-76.328225			Sprayed by Mike Parks (SLELO) 7-9-12
272	**044**	44.070003	Swallow-wort	None	Large Patch Amongst Shrubs (~100 plants)
		-76.330517			Removed by SLELO Field Crew 7-2-12
273	**045**	44.070142	Swallow-wort	Moderate Sized patch on both sides of boat launch	Moderate Sized Patch (<20 plants)
		-76.330807			Removed by SLELO Field Crew 7-2-12

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St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management

Mud Bay

SLELO-PRISM Water Chestnut & Hydrilla Surveillance 2012

June 27th (Water Chestnut) & August 2 (Hydrilla), 2012

Figure 1: Panoramic view of Mud Bay, looking west, June 27, 2012. Photo by Mike McHale.

Report drafted by Greg Chapman and Mike McHale, 6/29/12.Updated 7/11/12 & 8/21/12.

Introduction and Background

Mud Bay is an approximately 200-acre bay on the northeastern shore of Lake Ontario, south of the village of Cape Vincent in Jefferson County, New York.

Public boating access is available from an unimproved gravel boat launch recently installed and maintained by the NYS Department of Environmental Conservation, located off Bates road on the south shore of the bay. Informal shoreline fishing access is also available at the eastern end of the bay in the area near the County Route 6 bridge. Several marinas also charge a small fee for public use of their concrete boat launch ramps.

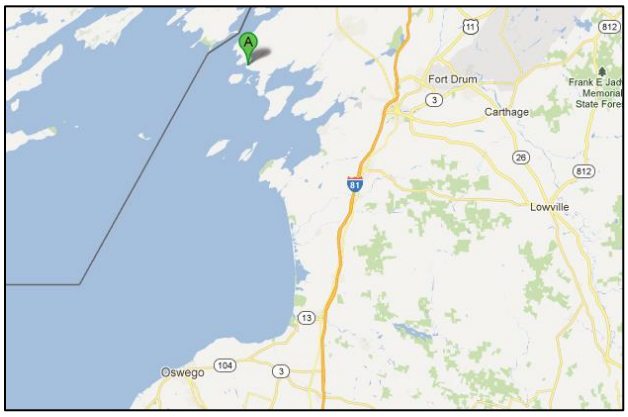

Figure 2: Location of Mud Bay within the eastern Lake Ontario region.

Figure 3: Map of Mud Bay and surrounding area, with marker showing the location of the NYSDEC Boat Launch (access is from Bates Road).

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Objectives and Procedures

A survey targeting water chestnut (*Trapa natans*) and other aquatic and riparian invasive species[2] was undertaken by SLELO-PRISM seasonal employees Mike McHale and Greg Chapman on June 27, 2012. The bay's size allowed for a full perimeter survey to be completed.

A subsequent survey targeting Hydrilla (*Hydrilla verticillata*) was undertaken by SLELO-PRISM seasonal employees Mike McHale and Greg Chapman on August 2, 2012.

Additional data detailing submerged aquatic vegetation was collected via rake toss during both surveys. For each rake toss location, a weighted rake was thrown twice, once from each side of the canoe. Submerged aquatic vegetation collected on the end of the rake was then analyzed from each toss, and the total number of species present was recorded, as well as the number and identification of all invasive species present.

Invasive species occurrences were recorded using the iMapInvasives Observation Field Form and reported to the iMapInvasives database. A Garmin hand-held GPS unit was used to record invasive species occurrence coordinates, locations of rake tosses as well as tracking the route taken during the survey.

Observations

No occurrences of Water Chestnut or Hydrilla were observed during either survey of Mud Bay's perimeter.

Figure 4: Photo of Swallow-wort (Cynananchum spp.) growing adjacent to the NYSDEC Boat Launch on Mud Bay, June 27, 2012. Photo by Mike McHale.

Small patches of Swallow-wort (*Cynananchum* spp.) were observed growing at the perimeter of the NYSDEC boat launch lower parking lot and near the boat launch itself (see Figure 4). A more focused survey of the boat launch property on July 2, 2012 found additional Swallow-wort growing scattered throughout the property. See the section below (Actions Taken - Swallow-wort Rapid Response) for additional data regarding Swallow-wort occurrences at the Mud Bay NYSDEC Boat Launch and removal/suppression actions taken.

Several other common invasive species were observed to occur throughout Mud Bay, including Eurasian Watermilfoil (*Myriophyllum spicatum*) and Curly-Leaf Pondweed (*Potamogeton crispus*). Scattered patches of Eurasian Frogbit (*Hydrocharis morsus-ranae*) were observed growing in the quiet, weedy areas near point 254 and rake-toss point 261. Zebra/Quagga Mussels (*Dreissena* spp.) were observed growing upon submerged vegetation at rake-toss points 252 and 259 (see Figures 9 and 10 for point

2 For a list of targeted species, see the SLELO-PRISM 2012–2016 Strategic Plan, pp. 36 – 37.

locations). Small clumps of Swallow-wort (*Cynananchum* spp.) were observed growing at the perimeter of the NYSDEC boat launch lower parking lot and near the boat launch itself (see Figure 4). For complete observation data, see Tables 2, 3 and 4.

Figure 5: SLELO Licensed Herbicide Applicator Mike Parks spraying the large Swallow-wort infestation at the NYSDEC Mud Bay Boat Launch on July 9, 2012. Photo by Mike McHale.

Actions Taken - Swallow-wort Rapid Response

Following initial detection of Swallow-wort at the NYSDEC Boat Launch on Mud Bay on June 27, a follow-up survey and rapid response actions took place on July 2, 2012. A walking survey of accessible areas at the boat launch property revealed additional occurrences of Swallow-wort in scattered locations throughout the property. Most of these occurrences were individual plants or small clusters, however one large patch covering an area approximately 40' x 50' was discovered. See Figure 8 and Table 1 on the following page for full Swallow-wort survey results and a map of occurrences. Physical removal (hand digging/pulling) of all but the largest Swallow-wort patch was undertaken by Greg Chapman and Mike McHale on July 2. Approximately three cubic yards of plants were removed. The remaining large patch was sprayed with a 2-3% glyphosate solution by SLELO Licensed Herbicide Applicator and Field Crew Member Mike Parks on July 9, 2012. A total of eight gallons of herbicide was applied.

Figure 6: Photo of the largest Swallow-wort infestation at the Mud Bay NYSDEC Boat Launch on July 2, 2012. Photo by Greg Chapman.

Figure 7: Photo showing the state of Swallow-wort seed pods, July 2, 2012. Photo by Greg Chapman.

Figure 8: Map showing Swallow-wort occurrences at the Mud Bay NYSDEC Boat Launch observed on July 2, 2012. The red polygon (266) shows the area occupied by the largest observed patch, to which herbicide was applied on July 9, 2012. All other occurrences were removed by hand digging on July 2. The green line shows the route taken during the survey. For further details about individual points, see Table 1 below.

Location: Mud Bay NYS-DEC Boat Launch (Bates Rd.)		**Date:** 7-2-12	
Point	**Lat/Long**	**Species**	**Notes**
262	44.0704228 -76.33010625	Swallow-wort	Single Plant Removed by SLELO Field Crew 7-2-12
263	44.06953515 -76.32797113	Swallow-wort	Single Plant Removed by SLELO Field Crew 7-2-12
264	44.06943457 -76.32764859	Swallow-wort	Two Plants Removed by SLELO Field Crew 7-2-12
265	44.06945955 -76.32796543	Swallow-wort	Moderate Sized Patch (<20 Plants) Removed by SLELO Field Crew 7-2-12
266	44.069464	Swallow-wort	Very Large Patch

	-76.328328		Sprayed by Mike Parks (SLELO) 7-9-12
272	44.070058 -76.330827	Swallow-wort	Large Patch Amongst Shrubs (~100 plants) Removed by SLELO Field Crew 7-2-12
273	44.0702161 -76.33078761	Swallow-wort	Moderate Sized Patch (<20 Plants) Removed by SLELO Field Crew 7-2-12

Table 1: Additional point data for Swallow-wort observations at the NYSDEC Mud Bay Boat Launch.

Additional Maps & Data Tables

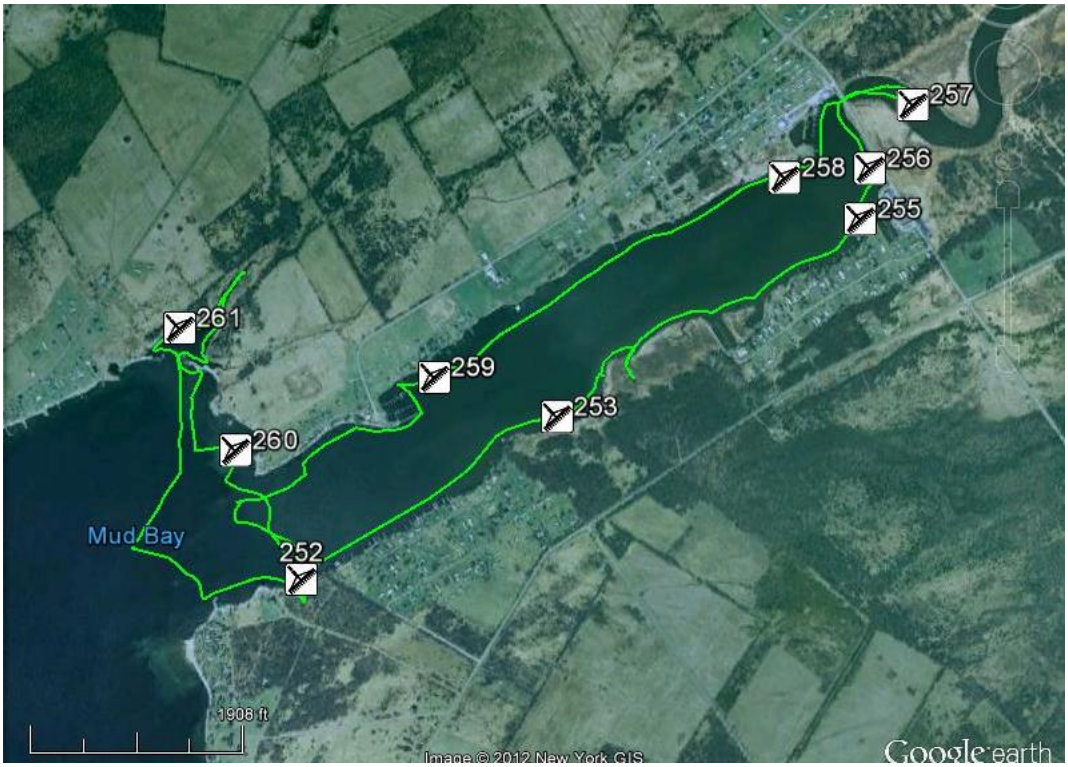

Figure 9: Rake-toss locations on Mud Bay, June 27, 2012 and August 2, 2012. The green line shows the route taken during the Water Chestnut survey; a similar route was taken for Hydrilla. See Tables 2 and 4 for corresponding data.

Figure 10: Visual observation locations on Mud Bay, June 27, 2012. See Table 3 for corresponding data.

Data Tables

Key for Data Tables:

EWM: Eurasian Milfoil; **CLPW**: Curly-Leaf Pondweed; **ZM**: Zebra Mussels, **EFB**: Eurasian Frog-bit.

Table 2: Water Chestnut survey rake toss data, collected June 27, 2012. See Figure 9 for locations.

Location: Mud Bay							**Date:** 6/27/12
Point	**Lat/Long**	**Throw**	**Depth**	**# Spp.**	**# Inv.**	**Invasive Spp.**	**Notes**
252	44.070470	1	4'	5	2	EWM, ZM	
	-76.330599	2	8'	3	1	EWM	
253	44.074427	1	3'	3	1	EWM	
	-76.321940	2	3'	3	0		

255	44.079240	1	3'	2	0		
	-76.311644	2	3'	3	1	EWM	
256	44.080472	1	3'	3	1	EWM	
	-76.311320	2	3'	2	0		
257	44.082017	1	2'	4	1	EWM	Visual: CLPW
	-76.309870	2	2'	3	1	EWM	
258	44.080244	1	3'	3	0		
	-76.314212	2	3'	2	0		
259	44.075390	1	3'	3	0		
	-76.326101	2	4'	5	2	EWM, ZM	
260	44.073611	1	2'	2	0		
	-76.332852	2	2'	2	0		
261	44.076585	1	2'	2	1	EWM	Visual: EFB in small patches at cattail perimeter
	-76.334738	2	2'	4	1	CLPW	

Table 3: Visual observations for Mud Bay.

Location: Mud Bay		**Date:** 6/27/12	
Point	**Lat/Long**	**Species**	**Notes**
262	44.070239	Swallow-wort	Small clumps at parking lot edge and near boat launch
	-76.330783		
254	44.07561203	CLPW EFB	Scattered clusters amongst thick submerged vegetation
	-76.31956751		

Table 4: Hydrilla survey rake toss data, collected August 2, 2012. See Figure 9 for locations.

Location: Mud Bay							**Date:** 8/2/12
Point	**Lat/Long**	**Throw**	**Depth**	**# Spp.**	**# Inv.**	**Invasive Spp. present**	**Notes**
252	44.070470	1	5'	4	2	EWM, ZM	
	-76.330599	2	6'	3	1	EWM	
253	44.074427	1	2'	2	0		
	-76.321940	2	2'	2	1	EWM	
255	44.079240	1	3'	3	1	EWM	
	-76.311644	2	3'	4	1	EWM	
256	44.080472	1	2'	4	0		
	-76.311320	2	3'	4	0		
257	44.082017	1	1.5'	4	1	EWM	
	-76.309870	2	1.5'	3	0		
258	44.080244	1	2.5'	2	0		
	-76.314212	2	2.5'	5	1	EWM	
259	44.075390	1	3'	3	1	EWM	
	-76.326101	2	3'	3	1	EWM	
260	44.073611	1	3'	0	0		
	-76.332852	2	3'	1	0		
261	44.076585	1	1'	4	1	EWM	
	-76.334738	2	1.5'	3	1	EWM	

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