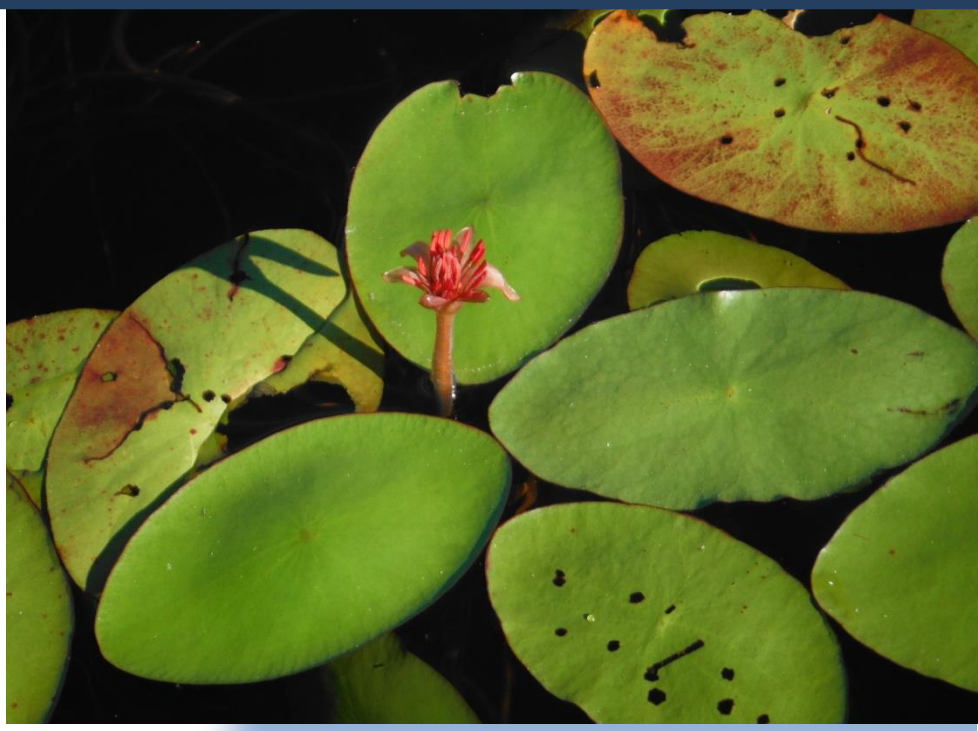
2014 Report: Seventh Lake

Aquatic Plant Survey



Adirondack Watershed Institute
Paul Smith's College
P.O. Box 265
Paul Smiths, NY 12970

Report No. PSCAWI 2014-85

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

Acknowledgements

The Adirondack Watershed Institute (AWI) is a program of Paul Smith's College that conducts work broadly focused on protecting and conserving water resources. The narrative and results presented in this report were produced by Virginia Brink, Nathan Mills, Dylan Kirk, and Lindsey Pett, who constituted the AWI Early Detection team in 2014. These individuals also conducted the aquatic plant survey and performed the GIS work needed to develop the aquatic plant maps. The field work and reporting was done under the supervision of Daniel L Kelting, AWI Executive Director, with assistance from Corey Laxson, AWI Research Associate. This project was supported with funding from the Great Lakes Restoration Initiative through the US Fish and Wildlife Service.

Please cite this report as:

Adirondack Watershed Institute Program Report*, 2014. Aquatic Plant Survey of Seventh Lake. Adirondack Watershed Institute of Paul Smith's College. Report No. PSCAWI 2014-85. 1-?????.

*Corresponding author Daniel L. Kelting at dkelting@paulsmiths.edu

Cover Photo: Water shield (*Brasenia schreberi*) in flower in Quiver Pond.

Table of Contents

List of Tables..... **Error! Bookmark not defined.**

List of Photographs 5

List of Figures 6

Introduction 7

Methodology..... 9

Results..... 11

Photos: Top Left- Lindsey Pett; Top Right- Nathan Mills & Dylan Kirk; Bottom- Dylan Kirk at Black Pond & Piercefield Flow

List of Tables

Table 1.1. Percent cover of aquatic plant species detected at each plant bed in Seventh Lake. Refer to Figure 2 for bed locations. A = Abundant (<50% cover), C = Common (25-50%), P = Present (15-25%), O = Occasional (5-15%), and R = Rare (<5%). 133

Table 1.2. Percent cover of aquatic plant species detected at each plant bed in Seventh Lake. Refer to Figure 2 for bed locations. A = Abundant (<50% cover), C = Common (25-50%), P = Present (15-25%), O = Occasional (5-15%), and R = Rare (<5%). 134

Table 2.1. Species present on the rake at each of the rake toss locations and abundance. Refer to Figure 3 for Rake Toss locations. 167

Table 2.2. Species present on the rake at each of the rake toss locations and abundance. Refer to Figure 3 for rake toss locations..... 17

Photos: Left- Nathan Mills & Dylan Kirk; Right- Lindsey Pett & Virginia Brink at Piercefield Flow

List of Photographs

Photo 1. Canoe/fishing launch off NY Route 30. 8
Photo 2. Beach access on Lake Clear. 8
Photo 3. Residenses on South shore..... 8
Photo 4. Virginia Brink and Lindsey Pett surveying. 8
Photo 5. View of the North Shore on Lake Clear. 8
Photo 6. Breeding pair of Loons on Lake Clear. 8
Photo 7. Survey Team 2014. 9
Photo 8. Nathan Mills surveying aquatic plants on Lake Clear..... 10
Photo 9. Mixed aquatic plant bed in Lake Clear. 10
Photo 10. White-stem pondweed (*Potamogeton praelongus*).. 10
Photo 11. White water lily (*Nymphaea ordata*).. 10
Photo 12. Fragment of variable-leaf pondweed (*Potamogeton gramineus*) found in Lake Clear..... 11

List of Figures

Figure 1. Location of Seventh Lake. 7

Figure 2. Location of the aquatic plant beds detected in Seventh Lake during the surface survey performed on 2 July, 2014. Data for Plant Beds can be found in Tables 1.1 & 1.2. 122

Figure 3. Rake toss locations on Seventh Lake, 2 July, 2014. Open circles represent locations where no plants were detected, closed circles represent locations where plants were encountered on the rake. Data for Rake Tosses can be found in Tables 2.1. 2.2. 155

Figure 4. Location of *Myriophyllum heterophyllum* beds detected in Seventh Lake during the surface survey performed on 2 July, 2014. Data for *M. heterophyllum* beds can be found on Table 1.1 &1.2 18

Figure 5. Location of *Myriophyllum spicatum* beds detected in Seventh Lake during the surface survey performed on 2 July, 2014. Data for *M. spicatum* beds can be found on Table 1.1 & 1.2 19

Introduction

The Eastern Lake Ontario – Upper Watershed AIS Response Team was established in September 2010 as a landscape level aquatic invasive species Early Detection / Rapid Response (EDRR) team. The EDRR team worked within the Great Lakes portion of the Adirondack Park (Figure 1). The EDRR team began work in the summer of 2011 with an initial focus on rapid response work in the Fulton Chain of Lakes to eradicate a new population of Eurasian watermilfoil that was discovered during a lake survey in 2010. During the winter of 2011/2012 a priority waters list for surveillance was developed collaboratively with Hilary Smith and Meghan Johnstone of the Adirondack Park Invasive Plant Program (APIPP), and early detection surveillance work commenced in the summer of 2012. We performed EDRR using two teams, an Early Detection (ED) team surveyed lakes and a Rapid Response (RR) team performed eradication. This report presents the results of the aquatic plant survey for Seventh Lake.

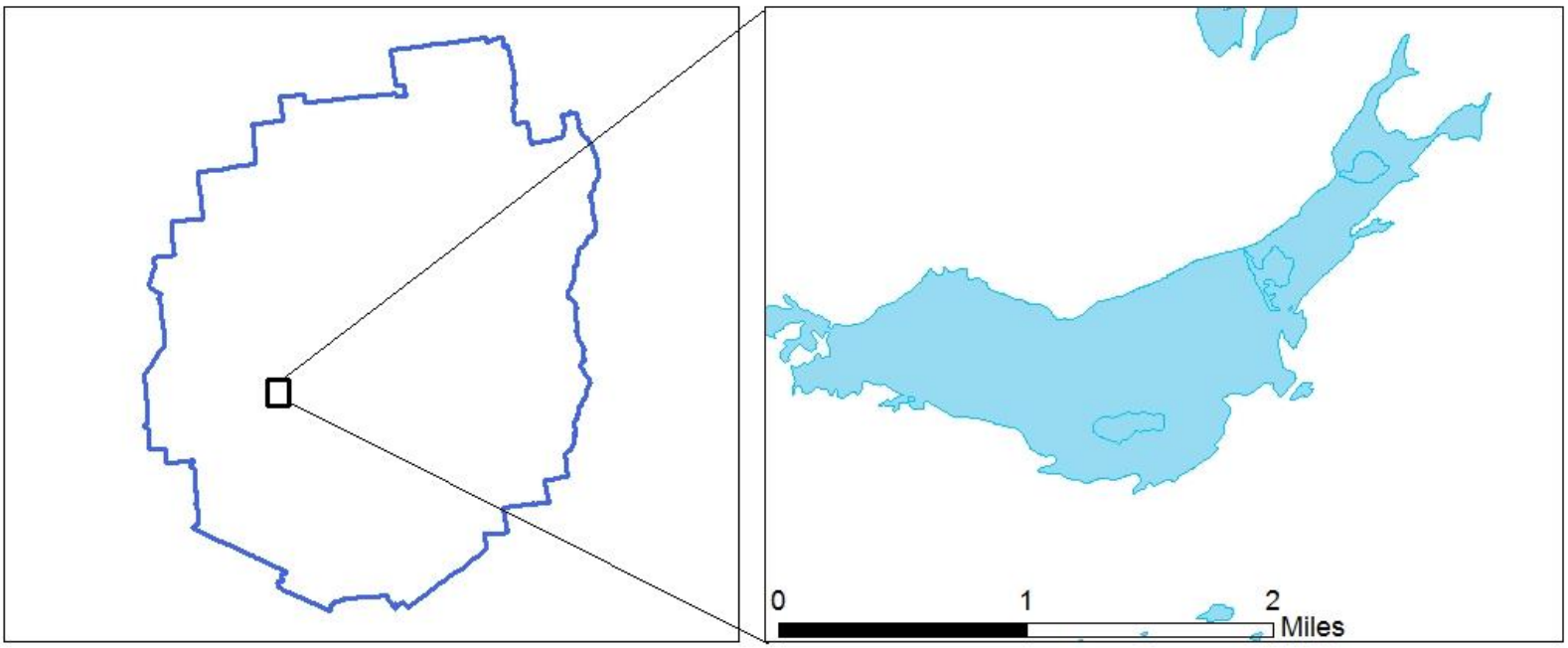


Figure 1. Location of Seventh Lake.

An aquatic plant survey of Seventh Lake was conducted on 2 July, 2014. Seventh Lake is located in the Town of Inlet in Hamilton County, New York (Figure 1). This 851 acre lake was accessed for surveying at a public boat launch located off NYS Rt. 28 in the Town of Inlet, NY. The shoreline of Seventh Lake has minimal development. Although development was minimal the lake appeared to be heavily trafficked by motorboats.

Photo 1. Public Beach and Motor Launch at DEC 'Eight-Lake Capmground'

Photo 2. DEC Public Motorboat Launch on Seventh Lake

Methodology

The ED team performed a whole lake aquatic plant survey of Seventh Lake using a combination of visual surveys and rake tossing. The team surveyed the entire littoral zone of each lake in a serpentine search pattern and mapped the location, species composition, and species abundance of all aquatic plant beds. Bed perimeters were mapped with a handheld GPS unit and field data were recorded on a datasheet (Appendix 1). Visual surveys were supplemented by periodic rake tossing using a consistent protocol (Appendix 2). All field data were entered into ArcGIS to create aquatic plant maps for each lake. When AIS were encountered, separate maps that showed the locations and abundance of the AIS were created. When deployed, the ED team worked in two person crews under the supervision of a crew chief. The surveys were generally done by canoe, but a motor boat was used when possible in larger water bodies. Each crew was equipped with a bathymetric map of the lake, portable depth sounder, handheld GPS unit, two-sided rake, and a digital camera. Depths were checked periodically while surveying to ensure that the far shore edge of the littoral zone was covered. Photos were taken of new species and any AIS encountered.

Photo 3. Survey Team 2014 (From Left: Virginia Brink, Lindsey Pett, Dylan Kirk, Nathan Mills).

Photo 4. Yellow Water Lily (*Nuphar variegata*)

Photo 5. White Water Lily (*Nymphaea odorata*)

Photo 6. Bur-reed (*Sparganium sp*.)

Results

Aquatic plant coverage in Seventh Lake overall was moderate, however the North Eastern bay had a high percentage of plant coverage. Seventh lake comprised of 35 major plant beds that collectively covered 76.9 acres or 9% of the surface area of the lake (Figure 2). 20 different aquatic species were identified during the surface survey (Table 1.1-1.3).

Common species in this water body included Water Shield (*Brasenia schreberi),* Yellow Water Lily (*Nuphar variegate*), White Water Lily (*Nymphaea odorata*), Ribbonleaf Pondweed (*Potamogeton epihydrus*), and Bur-reed (*Sparganium sp*.) Common bladderwort (*Utricularia vulgaris*), Purple Bladderwort (*U. purpurea)*, and Flatleaf Bladderwort (*U. intermedia)* were species detected which could be easily confused with invasive species

Of the 48 rake tosses spaced throughout the littoral zone of the pond (Figure 3), 18 rakes (38%) had acquired plants upon recovery (Table 2.1 & 2.2). All plants recovered on the rake tosses were present in the surface survey (Table 2.1 & 2.2).

Variable-leaf watermilfoil in Seventh Lake was found in 9 beds which covered 56.3 acres. This was 7% of the surface area of the Lake and 73% of the total aquatic plant coverage in the lake (Figure 4 and Table 1). Variable-leaf watermilfoil (*Myriophyllum heterophyllum*) was detected during this survey (Map 35). The range in which this plant is deemed native or non-native is under debate and in some states this plant is classified as invasive. Eurasian Water Milfoil (*Myripphyllum spicatum)* was also detected in Seventh Lake, and was found in 9 beds which covered 45.6 acres. This was 5% of the surface area of the Lake and 59% of the total aquatic plant coverage in the lake (Photo 7).

Photo 7. Flowering Eurasian Water Milfoil (*Myriophyllum spicatum).*

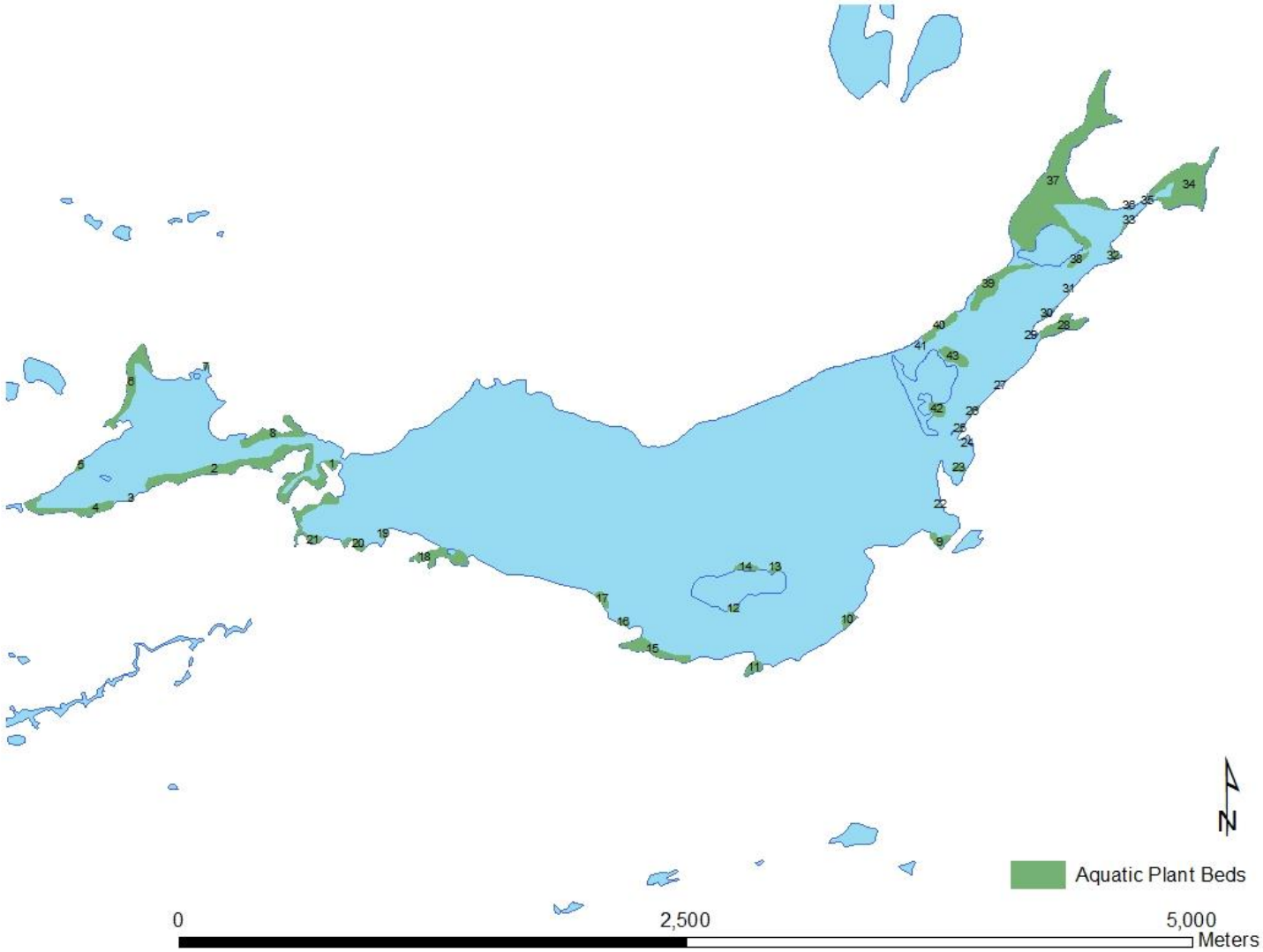


Figure 2. Location of the aquatic plant beds detected in Seventh Lake during the surface survey performed on 02 July, 2014. Data for Plant Beds can be found in Tables 1.1 & 1.2.

Table 1.1 Percent cover of aquatic plant species detected at each plant bed in Seventh Lake. Refer to Figure 2 for bed locations. A = Abundant (<50% cover), C = Common (25-50%), P = Present (15-25%), O = Occasional (5-15%), and R = Rare (<5%).

Seventh Lake										Plant Beds									
Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Brasenia schreberi	Water Shield	2	0	3	2	1	0	4	4	3	3	3	2	4	0	1	0	4	0
Elodea canadensis	Canadian Waterweed	0	0	0	0	0	0	0	0	0	2	0	3	4	0	0	0	0	0
Eleocharis sp.	Hairgrass	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myriophyllum heterophyllum	Alternate-leaf Milfoil	0	0	3	0	0	0	2	0	0	4	0	3	3	0	3	0	0	0
Myriophyllum spicatum	Eurasian Water Milfoil	0	0	0	0	0	0	0	0	0	2	0	2	3	0	0	0	0	0
Nitella sp.	Brittlewort	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0
Nuphar variegata	Yellow Water Lily	3	2	0	0	0	0	3	0	0	4	2	4	0	0	3	0	2	0
Nymphaea odorata	White Water Lily	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0
Potamogeton alpinus	Alpine Pondweed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Potamogeton amplifolius	Largeleaf Pondweed	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Potamogeton epihydrus	Ribbonleaf Pondweed	4	0	2	0	2	3	5	1	0	0	0	0	0	1	2	0	2	1
Potamogeton gramineus	Variable-leaved Pondw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Potamogeton natans	Broad Leaved Pondwe	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Potamogeton robbinsii	Fern-leaf Pondweed	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Sagittaria graminea	Grass-leaved Arrowhe	0	0	2	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0
Sparganium sp.	Bur-reed	4	3	4	2	0	3	4	0	0	3	3	0	0	0	1	3	1	3
Utricularia intermedia	Flatleaf Bladderwort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utricularia purpurea	Purple Bladderwort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Utricularia vulgaris	Common Bladderwort	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Vallisneria americana	Wild Celery	3	0	2	0	0	0	4	0	0	3	0	0	4	0	1	0	0	0
Acres		1.1	0.8	1.0	0.4	0.6	0.9	3.5	0.4	0.9	3.4	0.2	0.9	3.5	0.0	1.0	0.0	0.1	0.2

Table 2.2. Percent cover of aquatic plant species detected at each plant bed in Seventh Lake. Refer to Figure 2 for bed locations. A = Abundant (<50% cover), C = Common (25-50%), P = Present (15-25%), O = Occasional (5-15%), and R = Rare (<5%).

Seventh Lake										Plant Beds									
Scientific Name	Common Name	19	20	21	22	23	24	25	26	27	28	29	30	36	31	32	33	34	35
Brasenia schreberi	Water Shield	0	0	0	0	1	0	0	1	0	0	2	3	0	3	0	0	3	3
Elodea canadensis	Canadian Waterweed	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Eleocharis sp.	Hairgrass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Myriophyllum heterophyllum	Alternate-leaf Milfoil	0	0	0	0	0	1	0	1	0	0	5	0	0	0	0	0	0	0
Myriophyllum spicatum	Eurasian Water Milfoil	0	0	0	0	2	0	1	0	0	0	5	0	4	1	0	0	0	1
Nitella sp.	Brittlewort	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuphar variegata	Yellow Water Lily	0	1	0	0	0	0	0	2	1	3	1	2	0	0	0	0	0	0
Nymphaea odorata	White Water Lily	3	1	0	2	0	0	3	5	0	3	5	5	5	3	0	0	0	4
Potamogeton alpinus	Alpine Pondweed	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
Potamogeton amplifolius	Largeleaf Pondweed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Potamogeton epihydrus	Ribbonleaf Pondweed	0	1	0	2	1	0	1	1	1	0	1	3	0	2	4	0	2	2
Potamogeton gramineus	Variable-leaved Pondw	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Potamogeton natans	Broad Leaved Pondwe	0	2	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0
Potamogeton robbinsii	Fern-leaf Pondweed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sagittaria graminea	Grass-leaved Arrowhe	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
Sparganium sp.	Bur-reed	0	3	1	1	1	1	1	1	2	0	2	0	1	1	2	0	2	0
Utricularia intermedia	Flatleaf Bladderwort	0	5	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Utricularia purpurea	Purple Bladderwort	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Utricularia vulgaris	Common Bladderwort	0	1	0	1	0	4	1	0	0	0	2	0	0	0	0	0	0	1
Vallisneria americana	Wild Celery	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	0
Acres		0.0	3.2	0.0	0.3	0.1	0.6	0.4	10.4	0.1	0.2	32.0	4.5	1.2	1.7	0.0	0.0	1.0	2.4

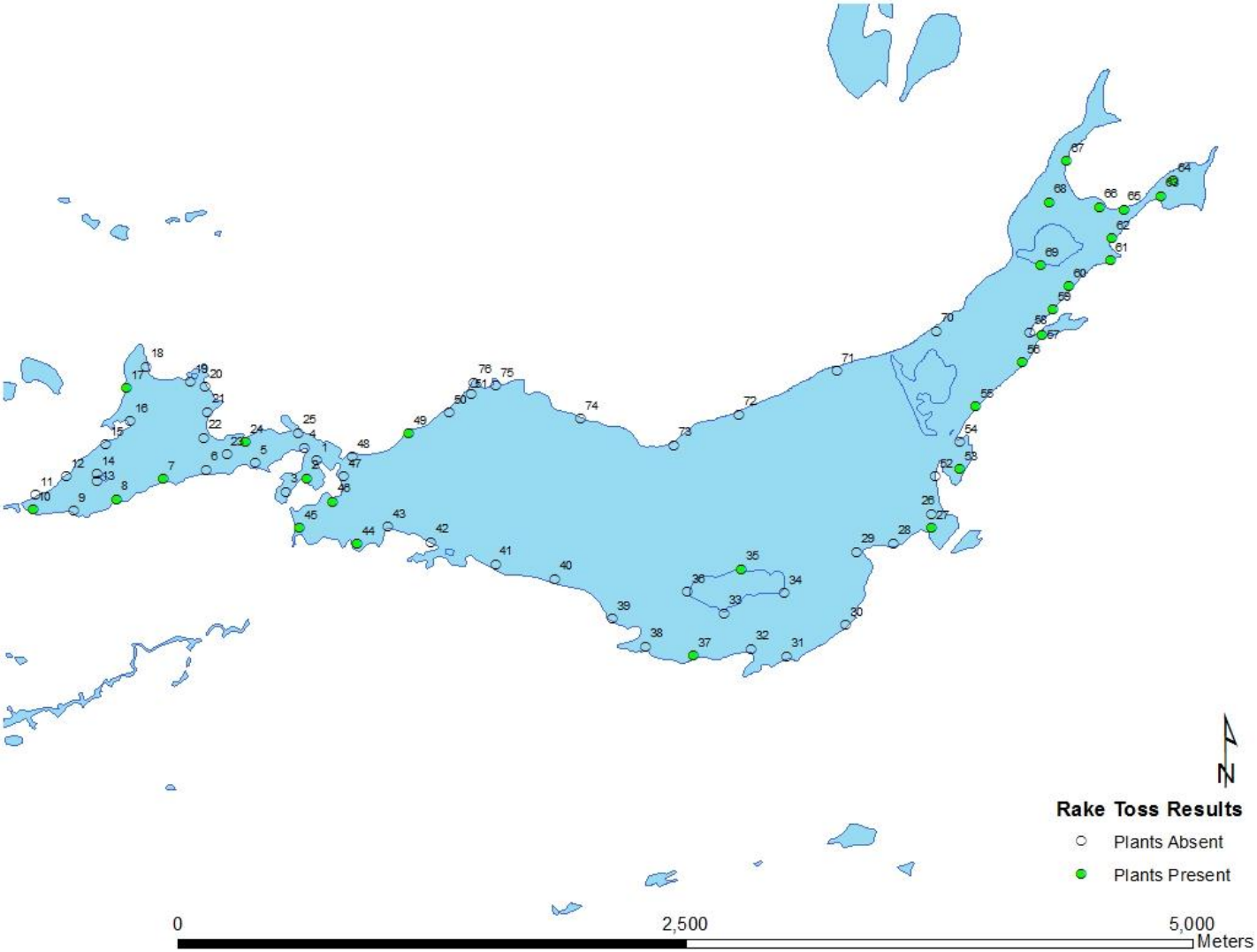


Figure 3. Rake toss locations on Sixth Lake, 2 July, 2014. Open circles represent locations where no plants were detected, closed circles represent locations where plants were encountered on the rake. Data for Rake Tosses can be found in Tables 2.1 & 2.2

Table 3.1 Species present on the rake at each of the rake toss locations and abundance. Refer to Figure 3 for Rake Toss locations.

Seventh Lake					Rake Toss					
Scientific Name	Common Name	2	10	12	19	20	24	27	28	29
Elodea nuttallii	Western Waterweed	-	-	-	-	-	-	-	-	-
Eleocharis sp.	Hairgrass	-	-	-	-	-	-	-	-	-
Myriophyllum heterophyllum	Alternate-leaf Milfoil	-	-	-	-	-	R	R	-	-
Nitella sp.	Brittlewort	-	-	-	C	-	-	-	-	-
Nymphaea odorata	White Water Lily	-	-	-	-	-	-	-	-	-
Potamogeton alpinus	Alpine Pondweed	-	-	-	-	P	-	-	-	-
Potamogeton epihydrus	Ribbonleaf Pondweed	-	-	R	-	-	-	-	-	-
Potamogeton robbinsii	Fern-leaf Pondweed	-	-	-	P	-	-	-	-	-
Sparganium sp.	Bur-reed	-	O	-	-	-	-	R	-	-
Utricularia purpurea	Purple Bladderwort	-	-	-	-	-	-	R	O	-
Utricularia vulgaris	Common Bladderwort	-	-	-	-	-	-	R	-	A
Vallisneria americana	Wild Celery	R	-	-	-	-	-	-	R	R
Depth (ft)		6.9	6.7	7.6	4.1	4.7	9.4	5.6	4.8	3.5

Table 4.2 Species present on the rake at each of the rake toss locations and abundance. Refer to Figure 3 for Rake Toss locations.

Seventh Lake					Rake Toss					
Scientific Name	Common Name	30	31	32	33	34	35	43	47	48
Elodea nuttallii	Western Waterweed	-	-	-	-	-	R	-	-	-
Eleocharis sp.	Hairgrass	-	R	-	-	-	-	-	-	-
Myriophyllum heterophyllum	Alternate-leaf Milfoil	-	-	-	R	-	-	-	-	-
Nitella sp.	Brittlewort	R	R	R	-	C	-	-	-	-
Nymphaea odorata	White Water Lily	-	-	-	-	-	-	-	P	-
Potamogeton alpinus	Alpine Pondweed	-	-	-	-	-	-	-	-	-
Potamogeton epihydrus	Ribbonleaf Pondweed	-	-	-	-	-	-	-	-	-
Potamogeton robbinsii	Fern-leaf Pondweed	-	-	-	-	-	-	-	-	-
Sparganium sp.	Bur-reed	-	-	-	-	R	-	-	O	R
Utricularia purpurea	Purple Bladderwort	-	-	-	C	-	R	-	-	-
Utricularia vulgaris	Common Bladderwort	-	-	-	-	-	-	-	-	-
Vallisneria americana	Wild Celery	-	-	-	-	-	R	R	-	-
Depth (ft)		4.6	4	4.7	4.8	3.3	2.7	7.6	9.5	7.1

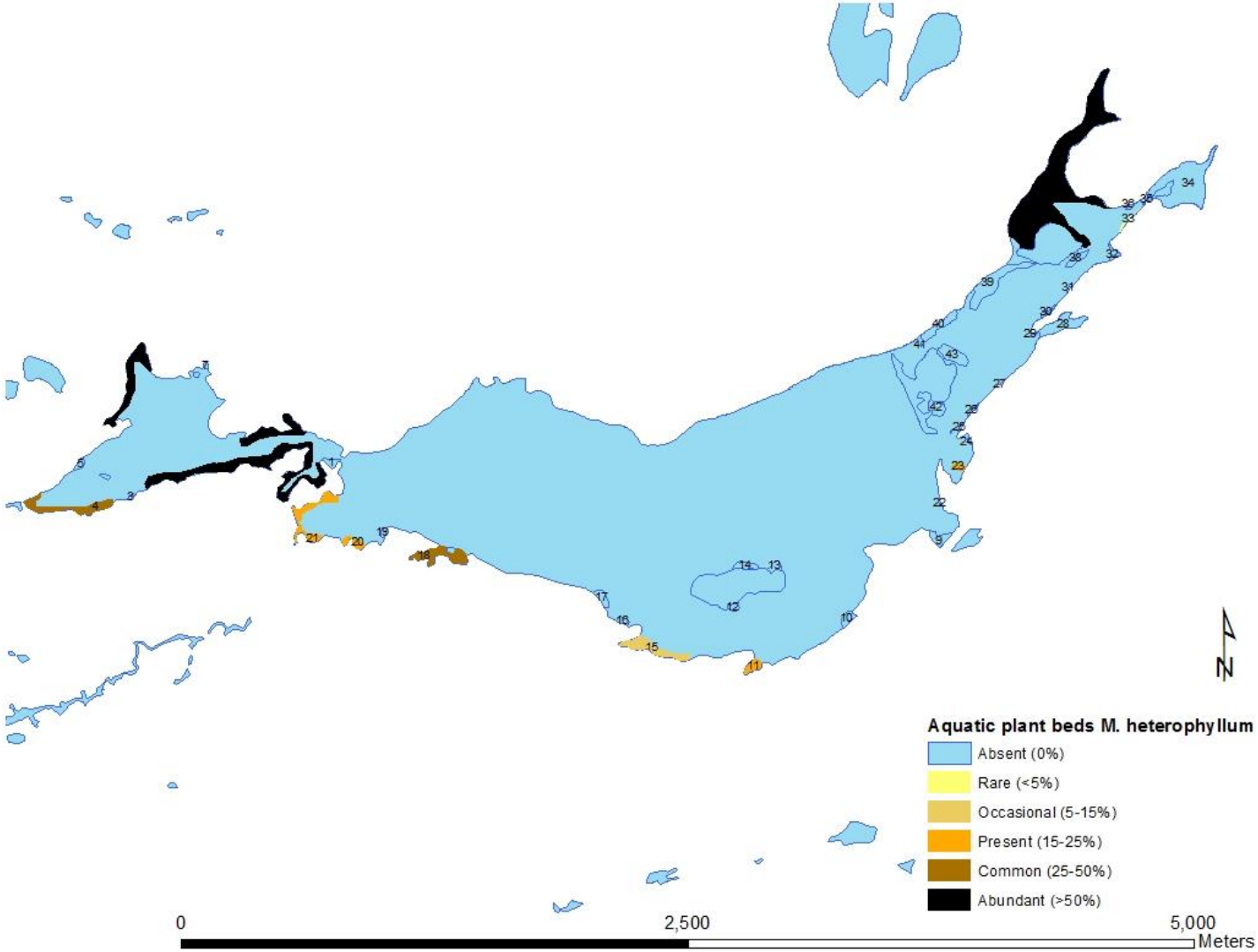


Figure 4. Location of the aquatic plant beds M. heterophyllum detected in Sixth Lake during the surface survey performed on 2 July, 2014. Data for Plant Beds can be found in Tables 1.1 & 1.2.

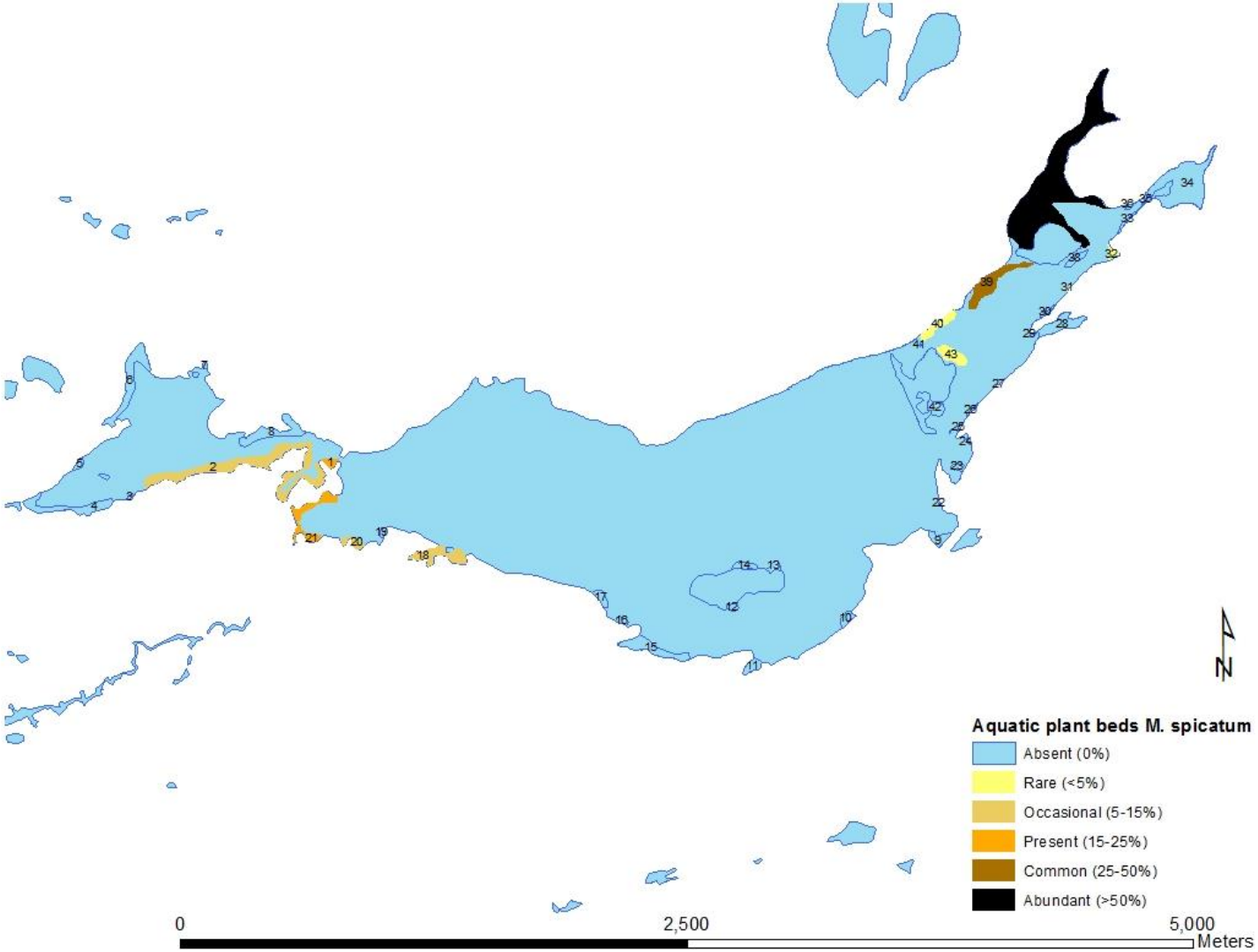


Figure 5. Location of the aquatic plant beds M. spicatum detected in Sixth Lake during the surface survey performed on 2 July, 2014. Data for Plant Beds can be found in Tables 1.1 & 1.2.