

October 22, 2011
Eagle Lake Property Owners, Inc.
Crown Point and Ticonderoga, NY
Aquatic Plant Survey

Prepared by:
Amy Calkins
PO Box 444, Westport, NY 12993
518 412 4266

Introduction:

On October 22, 2011, I Amy Calkins, conducted a survey of the aquatic plant life that exists in Ti Bay in Eagle Lake. This lake is in the town of Crown Point and Ticonderoga, NY. The purpose of this survey is to get a general list of what aquatic plants are in Ti Bay. The information contained herein can be utilized as a comparison for future aquatic plant inventories/surveys, herbicide applications, matting, and hand harvesting.

Procedures:

This survey was conducted in accordance with the 2006 aquatic plant survey guidelines created by Scott Kishbaugh, NYS DEC. The pesticides program monitoring requirements for Tier III lakes was utilized. Two rake grabs were performed per site. The sites were deliberately chosen as areas NOT in the middle of dense Eurasian Aquatic Milfoil (EWM) beds. Such beds and their peripheries have been assessed for various aquatic plant species by this surveyor via scuba diving and mapped prior to this date. The map is included in the appendix section of this report. The map depicts dense beds and their peripheries, mixed natives and EWM, and areas where mats were placed to kill off the EWM.

The wind was steady and blowing out of the west. The anchor line was tied to the bow of the boat. Therefore, each time we anchored, the boat was oriented in a W to E orientation from the bow of the boat to the stern. Therefore, we were able to collect samples from the north and south sides of the boat consistently. Eleven sites were chosen in the bay 9 were along the shore lines with 2 more centered in the bay. The two grabs for each site were assessed by using the 5 plant densities on the rake as follows:

0 = no plants

1/T = trace = fingerful = 1-2 stems

2/S = sparse = handful = 3-10 stems

3/M = medium = rake full = 10+

4/D = dense = rake loaded and hard to haul into boat

No dense rake grabs were obtained during this survey.

Aquatic Plant Descriptions:

The following macrophyte descriptions are taken directly from the 2008 macrophyte survey done by Allied biological. This surveyor provides the photos that accompany the aquatic plant writeups.



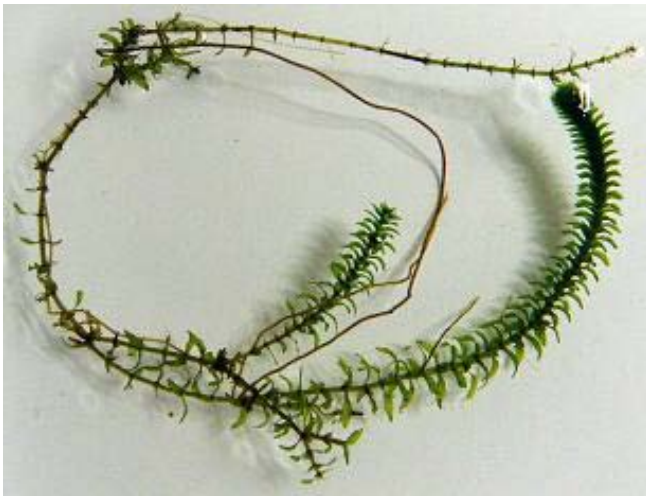
Eurasian Water Milfoil (*Myriophyllum spicatum*. Common Names: Asian Water milfoil. **Aggressive, Exotic, Invasive**.): Eurasian water milfoil has long (2 meters or more) spaghetti-like stems that grow from submerged rhizomes. The stems often branch repeatedly at the water's surface creating a canopy that can crowd out other vegetation, and obstruct recreation and navigation. The leaves are arranged in whorls of 4 to 5, and spread out along the stem. The leaves are divided like a feather, resembling the bones on a fish spine. Eurasian water milfoil is an exotic species originating in Europe and Asia, but its range now includes most of the United States. It's ability to grow in cool water and at low light conditions gives it an early season advantage

over other native submersed plants. In addition to reproducing via fruit production, it can also reproduce via fragmentation. Waterfowl graze on Eurasian water milfoil, and its vegetation provides habitat for invertebrates. However, studies have determined mixed beds of pondweeds and wild celery can support more diverse invertebrate populations.

Pipewort (*Eriocaulon aquaticum*. Common Names: Pipewort. **Native**.): Pipewort has translucent green leaves, 2 to 10 cm long, that form a compact basal rosette. The individual leaves taper from the base to the tip, and bear a checkered appearance due to fine crossing veins. Pipewort has pale unbranched roots that appear segmented, a distinguishing characteristic. Each rosette typically produces a single flower stalk that can range from a few centimeters to several meters in length, depending on the depth of the water. The flower head is round with many small flowers packed in a tight formation. Pipewort prefers sandy substrates and soft water with excellent clarity. Reproduction can be from overwintering roots, or insect pollination of flower tips.



Slender Naiad (*Najas flexilis*: Common Names: slender naiad, bushy pondweed. **Native**.): Slender naiad has fine-branched stems that can taper to lengths of one meter, originating from delicate rootstalks. Plant shape varies; sometimes compact and bushy, other times long and slender, depending on growing conditions. The leaves are short (1-4 cm long) and finely serrated, tapering to a point. It is found in a variety of habitats, and can colonize sandy or gravelly substrates. If conditions are ideal, it can reach nuisance densities. It is a true annual, and dies off in the fall, relying on seed dispersal to return the next year. It is an important food source for waterfowl. (Slender Naiad from top left to lower right. Common waterweed in upper right)



Common Waterweed (*Elodea Canadensis*: Common Names: elodea, common waterweed. **Native.**): Common waterweed has slender stems that can reach a meter in length, and a shallow root system. The stem is adorned with lance-like leaves that are attached directly to the stalk in whorls of three that tend to congregated near the stem tip. The leaves are populated by a variety of aquatic invertebrates. Male and female flowers occur on separate plants, but it can also reproduce via stem fragmentation. Since common waterweed is disease resistant, and tolerant to low-light conditions, it can reach nuisance levels, creating dense mats that can obstruct fish movement, and the operation of boat motors.

Water Stargrass (*Zosterella dubia* (=Heteranthera dubia): Common Name: Water stargrass. **Native.**): Water stargrass has slender free-branched stems that originate from rhizomes. The leaves are narrow and alternate, attaching directly to the stem. Leaves can be up to 15 cm long, and lack a prominent midvein, a distinguishing characteristic. Water stargrass can inhabit a wide range of water depths and sediment types, and can tolerate reduced clarity environments. Yellow star-shaped flowers are produced by midsummer, but reproduction is usually via over wintering rhizomes. Water stargrass is a locally important waterfowl food source, and provides suitable cover and foraging for fish.



Muskgrass (*Chara* sp. Common Names: muskgrass, stonewort, chara. **Native.**): Muskgrass is actually a multi-branched algae that appears as a higher plant. It is simple in structure and has rhizoids instead of true roots. The branches of muskgrass have ridges that are often encrusted with calcium carbonate. This grants the entire plant a “crusty” feel and appearance. The side branches develop in whorls that look like the spoke in a wheel. Muskgrass is easily identified by a pungent, skunk-like odor. It prefers softer sediments, and can often be found in deeper water than other plants. As such, it’s considered an early pioneer, the first species to colonize a disturbed lakebed.

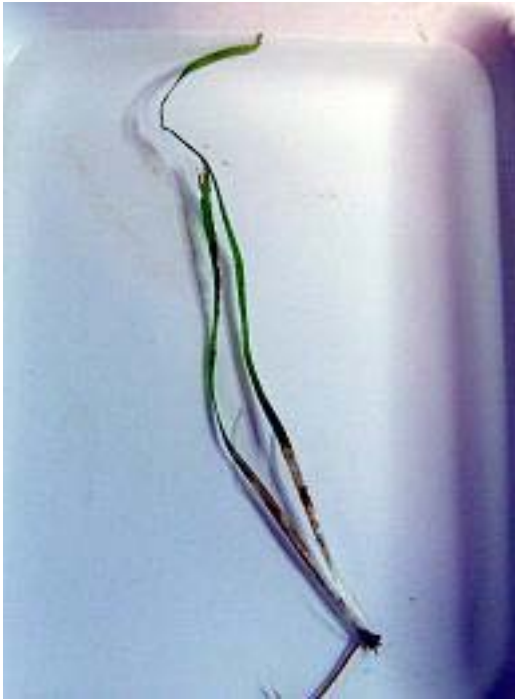


Flat-stem Pondweed (*Potamogeton zosteriformis*. Common Name: Flat-stem pondweed. **Native.**): Flat-stem pondweed is freely branched, emerging from a delicate rhizome system. The stems are strongly flattened with an angled appearance. The long leaves are stiff and linear with a prominent midvein, and numerous fine parallel veins. This prominent midvein distinguishes this pondweed from water stargrass. The stipules are firm and free, situated in the leaf axils. Flat-stem pondweed lacks floating leaves. Flat-stem pondweed inhabits a variety of water depths from shallow water to water several meters deep and prefers soft sediment types. Although it produces nut-like fruits, it overwinters primarily by rhizomes and winter buds. It can be a locally important food source to fauna, such as

waterfowl, muskrat, deer, beaver, and moose. It also provides suitable habitat and food for fish and aquatic invertebrates.

Bass Weed (*Potamogeton amplifolius*. Common Names: Large-leaf Pondweed, Bass Weed, Musky Weed. **Native.**): Bass weed has robust stems that originate from black-scaled rhizomes. The submersed leaves of bass weed are among the broadest in the region. The submersed leaves are arched and slightly folded, attached to stems via stalks, and possess many (25-37 veins). Floating leaves are produced on long stalks (8-30 cm). Stipules are large, free and taper to a sharp point. Flowers, and later in the season fruit are densely packed onto a spike. Bass weed prefers soft sediments in water one to 4 meters deep. This plant is sensitive to increased turbidity and also has difficulty recovering from top-cutting, from such devices as boat propellers and aquatic plant harvesters. As its name implies the broad leaves of this submersed plant provides abundant shade, shelter and foraging opportunities for fish. The high number of nutlets produced per plant make it an excellent waterfowl food source.





Tape-grass (*Vallisneria spiralis*. Common Names: Wild celery, eel-grass, tape-grass. **Native**.): Tape-grass has long flowing ribbon-like leaves that have a basal arrangement from a creeping rhizome. The leaves can be up to 2 meters long, have a cellophane-like texture, with a prominent center stripe and finely serrated edges. The leaves are mostly submerged, although they can reach the surface allowing the tips to trail. Male and female flowers are produced on separate plants, but reproduction is usually via over-wintering rhizomes and tubers. Tape-grass usually inhabits hard substrate bottoms in shallow to deep water. It tolerates a wide variety of water chemistries. Tape-grass is the premiere food source for waterfowl, which greedily consume all parts of the plant. Canvasback ducks (*Aythya valisneria*) enjoy a strong relationship with tape-grass, going so far to alter their migration routes based on tape-grass abundance. Extensive beds of tapegrass are considered good shade, habitat and feeding opportunities for fish.

Robbins Pondweed (*Potamogeton robbinsii*. Common Name: Fern Pondweed. **Native**.). Robbins pondweed has robust stems that emerge from spreading rhizomes. The leaves are strongly ranked creating a fern-like appearance most clearly seen while still submerged. Its distinct closely-spaced fern-like leaves give it a unique appearance among the pondweeds of our region. Each leaf is firm and linear, with a base that wraps around the stem. At the stem it has ear-like lobes fused with a fibrous stipule. No floating leaves are produced. Robbins pondweed thrives in deeper water, and under some circumstances, it can over winter green. Robbins pondweed creates suitable invertebrate habitat, and cover for lie-in-wait predaceous fish, such as pickerel and pike.



Coontail (*Ceratophyllum demersum*. Common Names: coontail, hornwort. **Native**.): Coontail has long trailing stems that lack true roots, although it can become loosely anchored to sediment by modified leaves. The leaves are stiff, and arranged in whorls of 5-12 at each node. Each leaf is forked once or twice, and has teeth along the margins. The whorls of leaves are spaced closer at the end of the stem, creating a raccoon tail appearance. Coontail is tolerant of low light conditions, and since it is not rooted, it can drift into different depth zones. Coontail can also tolerate cool water and can over winter as a green plant under the ice. Typically, it reproduces via fragmentation. Bushy stems of coontail provide valuable habitat for invertebrates and fish (especially during winter), and the leaves are grazed on by waterfowl. Due to late season deterioration of 2011 sample, photo of Allied Biological 2008 sample used.



Leafy Pondweed (*Potamogeton foliosus*: Common Name: leafy pondweed. **Native**): Leafy pondweed has freely branched stems that hold slender submersed leaves that become slightly narrower as they approach the stem. The leaf contains 3-5 veins and often tapers to a point. No floating leaves are produced. It produces early season fruits in tight clusters on short stalks in the leaf axils. These early season fruits are often the first grazed upon by waterfowl during the season. Muskrat, beaver, deer and even moose also graze on the fruit. It inhabits a wide range of habitats, but usually prefers shallow water. It has a high tolerance for eutrophic conditions, allowing it to even colonize secondary water treatment ponds.

Water Marigold (*Bidens beckii*, =*Megalodonata beckii*. Common Name: Water marigold. **Native**): Water marigold usually only develops submersed leafy structures. Submersed leaves are situated in a whorl on the delicate stem, and have many finely divided leaves. If it does rise out of the water, its emerged leaves have toothy margins attached directly to the stem. It also produces a distinct daisy-like flower on a sturdy stalk. Water marigold prefers soft sediment and clear water, up to three meters deep. It is a classic indicator species, and is often one of the first submersed plants to decline in abundance and distribution when water quality declines. Since it usually doesn't produce flowers, it over winters via rhizomes. The submersed portions of this plant provide shade, shelter and foraging opportunities for fish. When flower structures emerge, it attracts terrestrial flying insects. In New York, water marigold is listed as Threatened on the watch list with a state rank of S3 (Young and Weldy, 2006).



Arrowhead (Submersed Rosette) (*Sagittaria* sp. Common Name: Arrowhead. **Native**): This plant is the submersed rosette of a species of arrowhead. The submersed rosette lacks both flowers and seeds, so further identification is not possible. Arrowhead has emergent leaves, and usually inhabits shallow waters at pond or lake edges, or along sluggish streams. It can tolerate a wide variety of sediment types and pH ranges. Arrowhead is very suitable for constructed wetland development due to its tolerance of habitats, and ability to act as a nutrient sink for phosphorous. Typical arrowhead reproduction is via rhizomes and tubers although seed production is possible if conditions are ideal. Arrowhead has high wildlife value, providing high-energy food sources for waterfowl, muskrats and beavers. Arrowhead beds provide suitable shelter and forage opportunities for juvenile fish as well.

White-stem Pondweed (*Potamogeton praelongus*:

Common Name: White-stem Pondweed. **Native**).

White-stem pondweed has zigzag stems that can extend two to three meters in length, and emerge from

a stout rust-spotted rhizome. The submersed leaves are lance to oval shaped and wrap around one third to one half of the stem's diameter. The leaves typically possess three to five strong veins and many (11 to 35) weaker veins. The tip of the leaf is shaped like a boat.

Although similar in appearance to clasping-leaf pondweed, the zigzag stems and attachment to the stem are distinguishing characteristics. Flowers and plump fruit are produced on a cylindrical spike. The fruit have a sharp dorsal ridge, unlike that of claspingleaf pondweed. White-stem pondweed prefers clear lakes and soft sediment types. It can not tolerate turbid conditions (often it's the first plant to die off), and serves as a suitable water quality indicator.

The fruit produced by white-stem pondweed is valuable to grazing waterfowl, and portions of the plant are consumed by muskrat, beaver, deer and moose. White-stem pondweed provides valuable food for grazing fish, and excellent habitat for classic lie-in-wait predators such as pickerel and muskellunge.



Water Moss (*Fontinalis* sp. Common Name: water moss. **Native**):

Water mosses are submerged mosses that are attached to rocks, trees, logs, and other hard substrates by false rootlets located at the base of their stems. The stems are dark-green to brown, and about one foot long. The leaves share a similar color as the

stems, and are usually ovate with fine-toothed margins. Water moss is utilized by aquatic invertebrates, and as a breeding site for small fish. Water moss rarely reaches nuisance levels.

Benthic Filamentous Algae: Filamentous algae are a chain or series of similar algae cells arranged in an end to end manner. Benthic filamentous algae are attached to a hard substrate, such as logs, rocks, a lake bottom, or even other aquatic plants. When growing in heavy densities, benthic filamentous algae can appear as brown or green mats of vegetation that can reach the surface. When large pieces break off the bottom substrate they become floating filamentous algae patches. Benthic filamentous algae can comprise an entire range of morphologies, but flagellated taxa are far less common.





Creeping Bladderwort (*Utricularia gibba*. Common Names: creeping bladderwort, humped bladderwort, cone-spur bladderwort. **Native**.). Creeping bladderwort is a small (usually less than 10 cm long), delicate, free floating stem. It often forms tangled mats in quiet shallow waters, often associated with bogs, or stranded on soil. It is sometimes mistaken for algae. It has short side braches that fork once or twice, a defining characteristic. Small bladders, used to capture live prey, are situated on these side branches. Small yellow snap-dragon-like flowers are produce on a short stalk. Mats of creeping bladderwort offer limited cover and foraging opportunities for fish.

Watershield (*Brasenia schreberi*. Common Names: common water shield, water target. **Native**.): Watershield is a floating-leaf aquatic plant similar to water lilies. Its stem and leaves are elastic, and are attached to a rooted rhizome that acts as an anchor and source of stored nutrients. The leaf stalks are attached to the middle of the leaf, creating a bull's eye effect, hence its name water target. The leaves are green on the upper surface, and purple underneath. Maroon to purple flowers peak above the water's surface on short, stout stalks. Watershield is usually coated with a clear gelatinous slime on the stem and underside of the leaves. Watershield prefers soft-water lakes and ponds in sediments containing decomposing organic matter. The whole plant is consumed by waterfowl, and the floating leaves provide shade and cover for fish. (oblong leaves in foreground).



White Water Lily (*Nymphaea* sp. Common Name: white water lily, fragrant water lily): White water lily leaf stalks emerge directly from a submerged fleshy rhizome. White water lilies have round floating leaves. Flowering occurs during the summer, and the flowers open during the day, and close during the night. Water lilies typically inhabit quiet water less than two meters deep, such as ponds, shallow lakes and slow moving streams. The leaves offer shade and protection for fish, and the leaves, stems, and flowers are grazed upon by muskrats, beaver, and sometimes even deer.

Discussion:

Appendix A of this report contains two charts: One entitled “Overall Percentage of Macrophyte Occurrence in Rake Tosses” and the second labeled “Site Macrophyte Density”. Also included are two tables entitled: “Eagle Lake Macrophyte Distribution Table” and “Complete Data for Survey Conducted on October 22, 2011 of Ti Bay”. The titles are self-explanatory. The Eagle Lake Macrophyte Distribution Table lists the macrophytes in descending order of their percentages and densities in Ti Bay. Photos representing the various grab densities on a rake and photos representing aquatic surface plant densities from Allied Biological’s 2008 Plant Survey are also included.

Appendix B contains a GIS map of Ticonderoga Bay. It depicts the current EWM beds, peripheries, mixed areas of EWM and natives, depth contours at 3 ft. intervals, and includes the site survey points in red and numbered.

Eleven sites were surveyed. Twenty-two rake tosses were made (two at each site). Of those 22 tosses 20 (90%) had submerged aquatic plants in them. Eighteen types of aquatic plants and filamentous algae and two types of floating aquatic plants were obtained via the rake tosses. The dominant aquatic plant in this survey is Robbins Pond Weed (41%) at this time of year. Eurasian Milfoil was next in density at 45%. As mentioned earlier, EWM beds, their peripheries, and surveyed mixed native and EWM areas were NOT included as sites in this survey because they have already been mapped. Had they been included the percent occurrence would have been much higher for EWM and it would have been the dominant aquatic plant in this survey. One threatened NYS macrophyte was observed on this survey and it is (*Bidens beckii*) Water Marigold.

Submersed macrophytes were collected at each of the 11 sites surveyed (100%). In addition, the 11 sites surveyed revealed 5 (45%) had a medium density of aquatic plants, 3 (27%) had sparse densities of aquatic plants, and 3 (27%) had a trace density of aquatic plants.

Ti Bay has a sparse to zero density of plants on the north-eastern end of the bay along the shoreline, however, the rest of the bay is very well populated by macrophytes. Maximum depth of Ti Bay is 15 ft.

Robbins Pondweed also has a high occurrence in Ti Bay. This plant is easily recognizable by its feathery or fernlike appearance and makes good cover for larger fish and reptiles. It tends to grow in low dense beds up to 2-3 ft deep. This is a sturdy plant with dense dark green stems and leaves. This plant was found in 7 (64%) of the 11 sites.

Water Stargrass has a high occurrence in the bay, as the rake tosses demonstrate. The fine nature of its leaves and lack of midvein make it easily identifiable. Although high in numbers this plant because of its fine nature does not shade out other natives and is found mixed among a variety of other native plants. It was found in 6 (55%) of the 11 sites surveyed.

Eurasian Water Milfoil is an invasive species that is currently spreading within Eagle Lake and has overtaken approximately 8 acres of native macrophyte territory within this lake. This number could be on the low side as each season more areas of infestation are discovered by this surveyor in Eagle Lake. This plant, when growing in beds, is dense and can grow up to 22 feet in height. Outside of the surveyed EWM beds, peripheries, and a mixed areas listed on the map in Appendix B the occurrences of this invasive vary from a single or double stemmed plant about every 4-5 ft in the area directly south of survey point 952 and if one travels eastward along the southern shoreline to survey point 954 in Ti Bay. The only area that appears to be free of EWM at this time in Ti Bay is the northeastern shoreline north of EWM bed “D”. This surveyor has spent much time diving this bay and has dove its length and breadth and encountered this invasive in almost all areas at this density. This plant occurred in 5 (45%) of the 11 sites for the rake tosses.

Arrowhead submersed rosette is a very low growing macrophyte that has strong narrow leaves and tends to grow in the soft sediments of Ticonderoga bay. This plant is found in 5 of the 11 sites surveyed. This plant appears to compete well with other natives despite its low form and was found in rake tosses that brought up medium densities of plants. This macrophyte occurred in 5 (45%) of the 11 sites surveyed.

Tapegrass was found in 4 (36%) of the 11 sites surveyed. This plant has long slender leaves that are more delicate and easily broken/torn than that of Arrowhead or Robbins pondweed and can reach lengths of about 18 inches. This plant too tends to grow in soft sediments.

Watermoss was found in 4 (36%) of the 11 sites. This tiny leaved plant is appears prickly like a fine pine branch because of its sturdy tiny leaves and stems. This is another low-growing native.

Slender Naiad grows approximately 2 ft high and has a rather sturdy stem with very fine leaves. The leaves are spaced much farther apart from each other when compared to that of common water weed. The leaves are also much finer. This plant was found in 4 (36%) of the 11 sites.

White Stem Pondweed is a native plant that grows to heights of 8 feet or more and in fairly dense beds. This aquatic plant appears in 4 (36%) of the 11 sites, but is also very prevalent in the area designated as "F" on map in Appendix B of this report. This macrophyte makes good cover for predatory fish species such as Northern Pike as the patterning on the sides of the fish blend in well with sunlight as it filters down through this plant. The beds of this plant are not as dense as those of EWM because the habit of the plant requires more room between stems and leaves for sunlight to reach them. Unfortunately, this more open habit allows EWM to spring up in between the plants and ultimately overtake the bed.

Common waterweed is also a native plant to Eagle Lake and has short narrow leaves on a sturdy stem. This macrophyte is found at 3 (27%) of the 11 survey sites. The plant can grow to 2-3 feet and provides good habitat for predatory fish when found masses. This surveyor has not found them in large dense beds, but in small groups or a single plant among other natives.

Coontail is found in 3 (27%) of the 11 survey sites. This plant's leaves are finer than that of waterweed. As the stem reaches its end it will branch several times. Common waterweed does not do this. Each branch tends to taper at the end having a bottlebrush appearance, hence the name "coontail". This plant can grow in deeper and colder water than many of the other natives. This is a sturdy plant that can reach lengths of 4 feet and has a somewhat bushy appearance.

Flat-stem Pondweed is an easily identifiable plant in that its stem is flat and has leaves that branch off 6-8 inch intervals going up the stem until it reaches the top where there are more branchings and more leaves. This plant is not seen in dense beds or groups in Ticonderoga Bay, but rather singular plants here and there growing in and among other tall natives such as bassweed and whitestem pondweed. It is also found in the peripheries of EWM. This plant was found in 3 (27%) of the 11 sites surveyed.

Pipewort is a dense low growing very light green macrophyte. This plant forms a compact carpet in water and is found in depths ranging from 18 inches to as much as 8 feet deep in other parts of Eagle Lake. This plant makes an excellent stabilizer of shoreline sediments and is good camouflage for very young fishes. Although it appears prickly the leaves are flexible and almost plastic like to the touch. This plant is found along the northern shoreline going eastward in beds of varying size. This plant is found in 3 (27%) of the 11 sites surveyed.

Benthic Filamentous Algae is found at 2 (18%) of the 11 sites in Ticonderoga Bay. This surveyor has not found large mats of algae in Ticonderoga Bay on previous or subsequent dives in Ticonderoga Bay.

Leafy Pondweed is a bushy aquatic plant that has fine leaves and stems. The leaves are narrower as they approach the stem. This plant can grow to 3 feet in height and is usually light green in color. The stems tend to break easily and it is generally a rather tender plant growing in shallow waters of about 3-5 feet. This plant is found in 2 (18%) of the 11 sites.

Muskgrass is easily identifiable by its pungent skunk smell and was found at 2 (18%) of the 11 sites surveyed in Ticonderoga Bay.

Water Marigold has a bottle bush appearance, but on closer inspection the leaves are finely branched become more dense, shorter, and greener in color as they approach the end of the stem. The stem is fleshy and thick like EWM. This surveyor has observed this plant in a number of locations in Eagle Lake. All occurrences were the submerged version. This macrophyte is listed as Threatened on the NYS watch list. This plant is found at 2 (18%) of the sites surveyed.

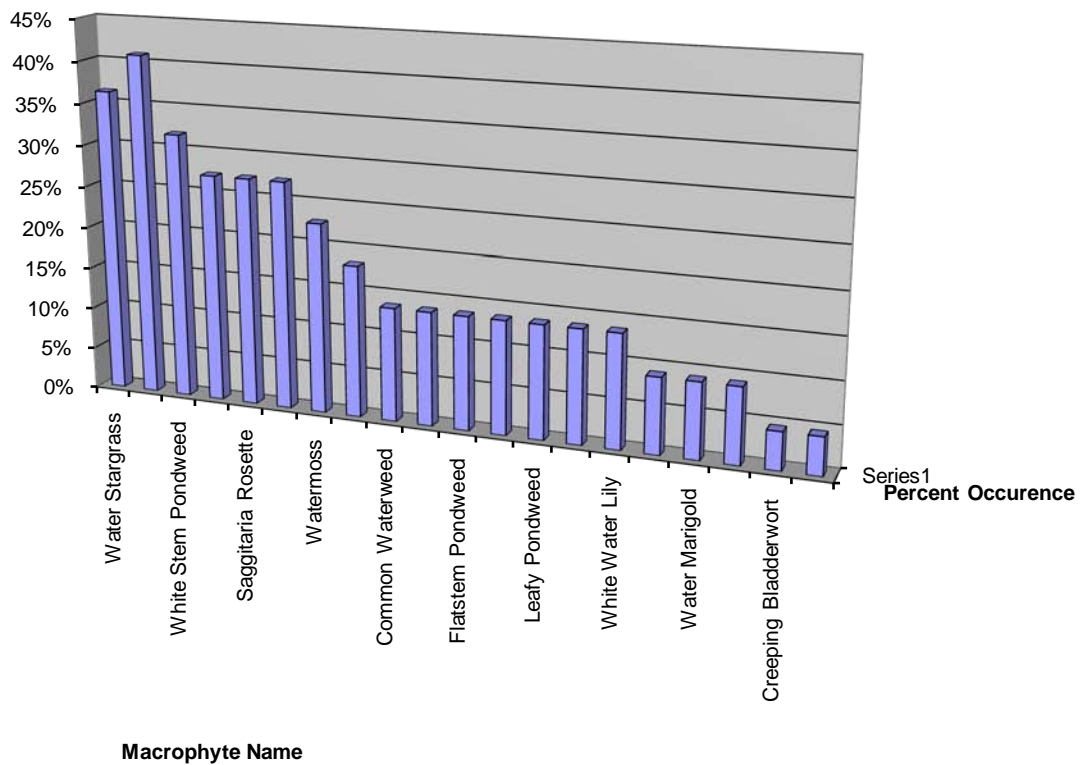
White Water Lily is seen at 3 sites of 11 in Ticonderoga Bay, but only in rake tosses at 2 (18%) sites. This floating macrophyte is often found in medium density beds along the shoreline. The leaf rises from the sediment on a single stem and can be as small as 3" in diameter and range as large as 5-6 inches in diameter. They are dark green in color and round in shape.

Bassweed is found at 1 site of 11 surveyed in Ticonderoga Bay. However, this surveyor knows that there are many more examples of bass weed in the southwestern end of Ticonderoga bay within the area marked "F" on the map in Appendix B of this report. This plant can grow to be 5 feet tall, has broad leaves and provides good habitat for large predatory fish to hide in. This plant has fleshy stems that rise from a rhizome that tends to grow in a straight line along the bottom.

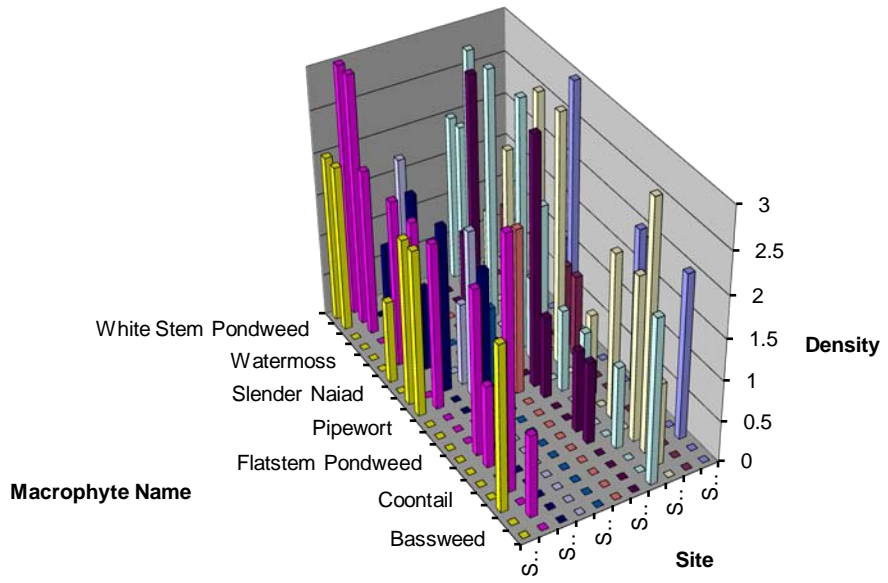
Creeping bladderwort is found at 1 site of 11. This very fine-stemmed plant is fragile. In this case the bladders came off the stems when the sample was hauled aboard the boat. This plant has been observed by this surveyor in Ticonderoga bay in a few areas, but they were healthy robust plants and in much better shape than this example. They are very light green in color.

Appendix A

Overall Percentage of Macrophyte Occurrence in Rake Tosses



Site Macrophyte Density



Eagle Lake Aquatic Macrophyte Distribution October 22, 2011									
Aquatic Macrophyte	Total Abundance		Trace Abundance		Sparse Abundance		Medium Abundance		
Total Sites 11	Samples	%	Sample	%	Sample	%	Sample	%	
Water Stargrass	8	36%	5	23%	2	9%	1	5%	
Robbins Pondweed	9	41%	4	18%	4	18%	1	5%	
White Stem Pondweed	7	32%	5	23%	1	5%	1	5%	
Eurasian Water Milfoil	6	27%	4	18%	2	9%			
Sagittaria Rosette	6	27%	3	14%	3	14%			
Slender Naiad	6	27%	1	5%	3	14%	2	9%	
Watermoss	5	23%	1	5%	2	9%	2	9%	
Tapegrass	4	18%	4	18%					
Common Waterweed	3	14%			2	9%	1	5%	
Coontail	3	14%	1	5%	1	5%	1	5%	
Flatstem Pondweed	3	14%	1	5%	2	9%			
Pipewort	3	14%	1	5%	1	5%	1	5%	
Leafy Pondweed	3	14%	2	9%	1	5%			
Muskgrass	3	14%	3	14%					
White Water Lily	3	14%	3	14%					
Benthic Filamentous Algae	2	9%	2	9%					
Water Marigold	2	9%			2	9%			
Bassweed	2	9%	1	5%	1	5%			
Creeping Bladderwort	1	5%	1	5%					
Watershield	1	5%	1	5%					

0 = no plants

1/T = trace = fingerful = 1-2 stems

2/S = sparse = handful = 3-10 stems

3/M = medium = rake full = 10+

4/D = dense = rake loaded and hard to haul into boat

Complete Data for Survey Conducted on October 22, 2011 of Ti Bay

Sample Point\Site # GPS	Site	Water Depth (ft)	Latitude	Longitude	Sample #	Tot Submerged Veg	Mean Avg Density for Site	Tot Floating Veg	Bassweed	Benthic Filamentous Algae	Common Waterweed	Coontail	Creeping Bladderwort	Eurasian Water Milfoil	Flatstem Pondweed	Leafy Pondweed	Muskgrass	Pipewort	Robbins Pondweed	Arrowhead Submersed Flo	Slender Naiad	Tapegrass	Water Marigold	Watermoss	Watershield	Water Stargrass	White Stem Pondweed	White Water Lily
945A	1	5'	N43.53.110'	W073.34.799'	1	0	S 2	T 1																				T 1
945B		5'			2	M 3					S 2			S 2	S 2						M 3	T 1		T 1				
946A	2	9' 2"	N43.52.889'	W073.33.916'	3	T 1	T 1	0											T 1									
946B		9' 2"			4	T 1														T 1							T 1	
947A	3	5' 8"	N43.52.887'	W073.33.881'	5	M 3	M 3	S 2			M 3	S 2		S 2					T 1		M 3			S 2		T 1		
947B		5' 8"			6	M 3				T 1				T 1	T 1				M 3									
948A	4	6' 0"	N43.52.974'	W073.33.884'	7	S 2	M 3	0	T 1					T 1		T 1			S 2		S 2					S 2	T 1	
948B		6' 0"			8	M 3			S 2			T 1				T 1				T 1	S 2	T 1		M 3		M 3	T 1	
949A	5	3' 0"	N43.52.876'	W073.33.782'	9	M 3	M 3	S 2										M 3							T 1			T 1
949B		3' 0"			10	S 2							T 1	T 1			T 1						M 3					T 1
950A	6	3' 5"	N43.52.908'	W073.33.758'	11	0	T 1	0																				
950B		3' 5"			12	S 2												S 2										
951A	7	6' 7"	N43.52.950'	W073.33.835'	13	T 1	T 1	0												T 1								T 1
951B		6' 7"			14	0																						
952A	8	8' 10"	N43.52.966'	W073.33.937'	15	S 2	S 2	0												S 2							S 2	
952B		8' 10"			16	T 1																						
953A	9	9' 10"	N43.52.968'	W073.33.980'	17	T 1	S 2	0								T 1												
953B		9' 10"			18	M 3								T 1		S 2				S 2		T 1	S 2				T 1	
954A	10	10' 2"	N43.52.928'	W073.33.932'	19	M 3	M 3	0				M 3			S 2					S 2		S 2				T 1	M 3	
954B		10' 2"			20	M 3				T 1				T 1						T 1			S 2			T 1	T 1	
955A	11	9' 3"	N43.52.918'	W073.33.853'	21	M 3	M 3	0			S 2									S 2								S 2
955R		9' 3"			22	S 2														S 2		T 1						T 1

Rake Densities for Macrophytes



Trace



Medium



Sparse



Dense

The above photos were obtained from the Eagle Lake Survey of 2008 created by Allied Biological.

Floating Aquatic Plant Densities



Trace



Medium



Sparse

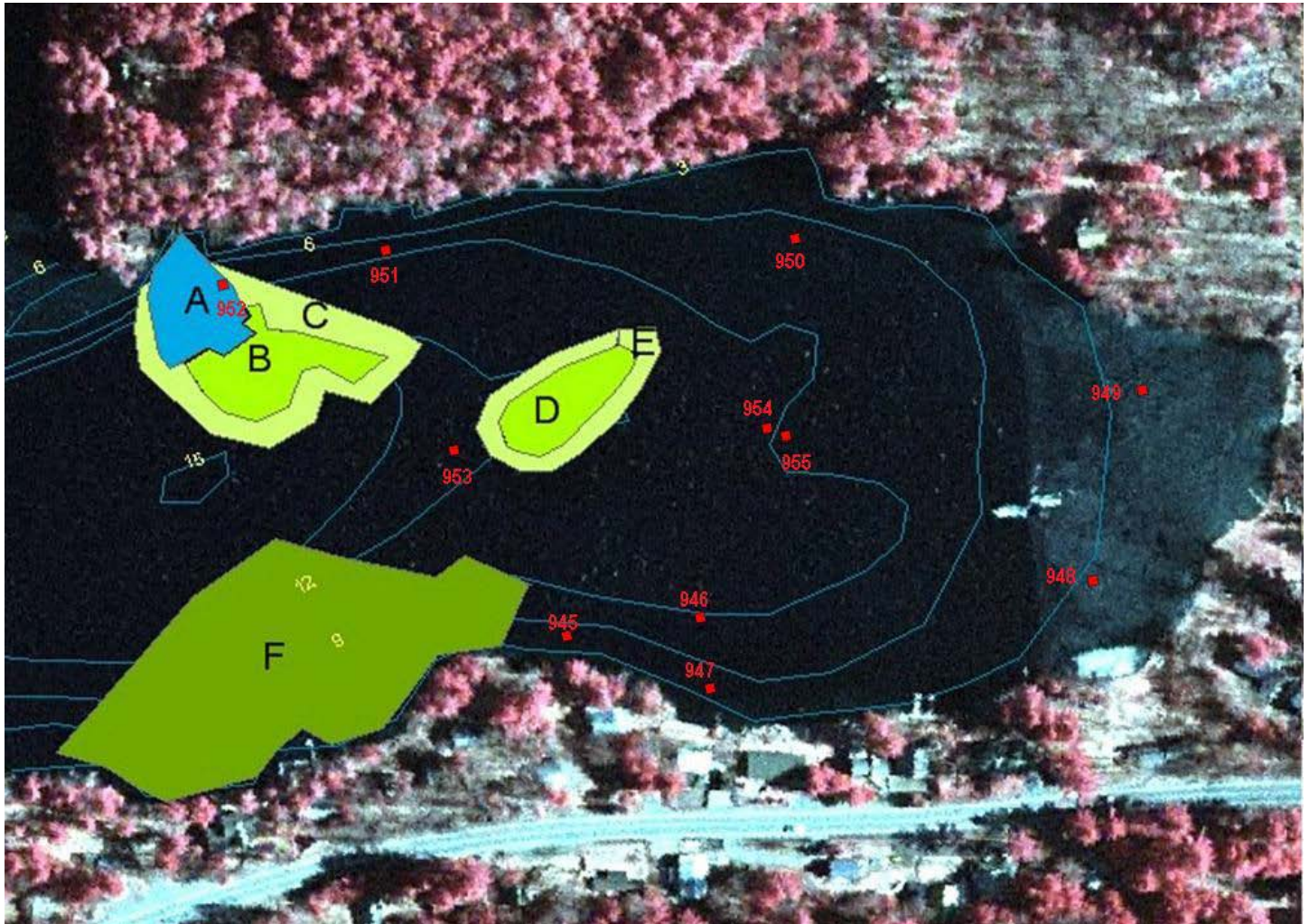


Dense

The above photos were obtained from the Eagle Lake Survey of 2008 created by Allied Biological.


Appendix B

Ti Bay Survey Points, Depth Contours, EWM beds, Peripheries, Matting, and Mixed EWM and Native Aquatic Macrophytes



A  = Area Matted in 2010, mats removed fall 2011

F  = Area of Mixed EWM and Native Plants (i.e. White Stem Pondweed, etc.)

B & D  = EWM Beds

E & C  = EWM Bed Peripheries

Survey sites starting with 945 - 955

3 foot Depth Contours

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