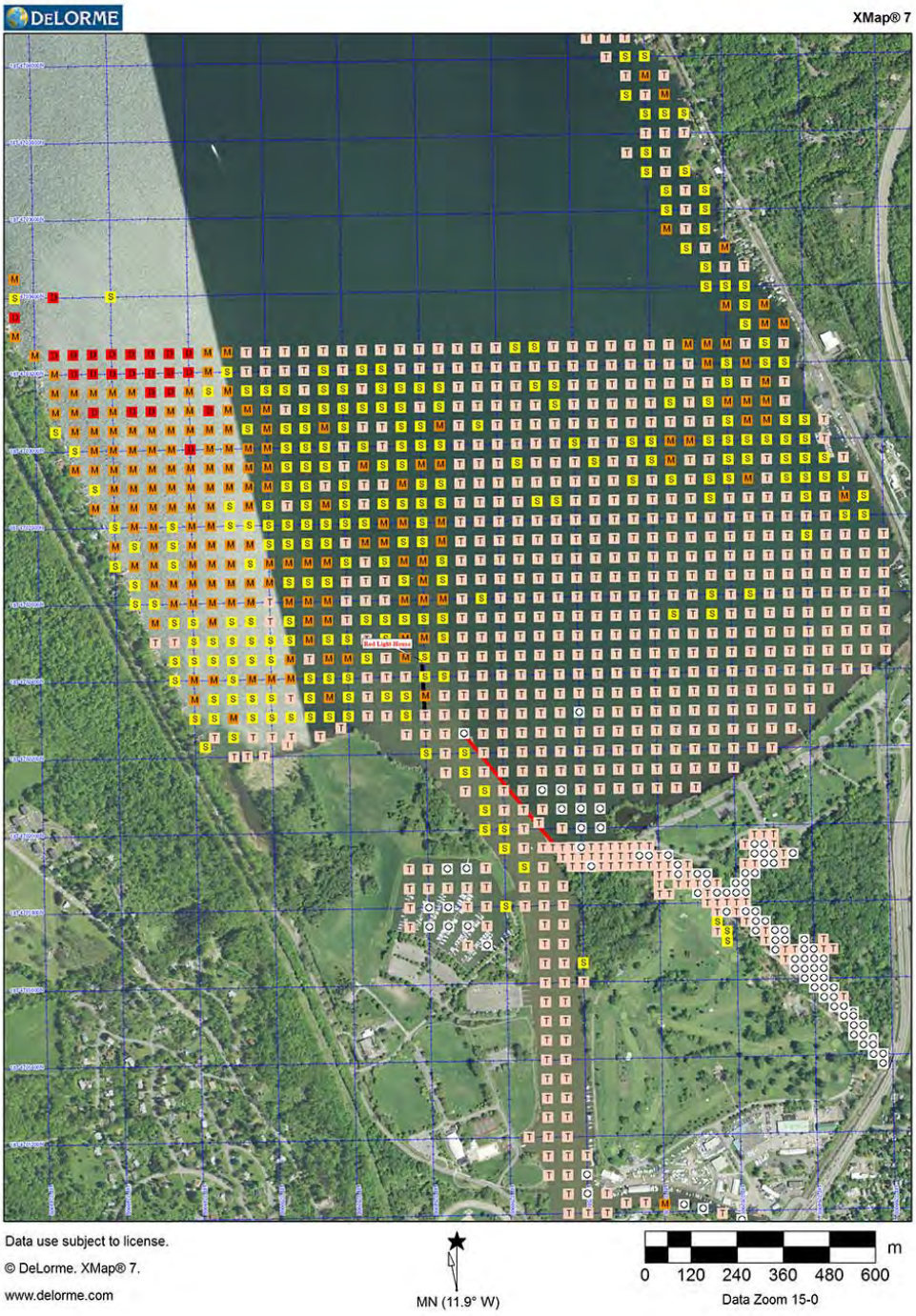
2018 Aquatic Plant Report of the Cayuga Inlet and Southern Cayuga Lake

Monoecious Hydrilla Eradication Project



Abundance - All Species Combined (Native + Non-native)

Websites with detailed information and annual reports

www.Stophydrilla.org

http://www.hydrillacollaborative.com/Home/CaseStudies

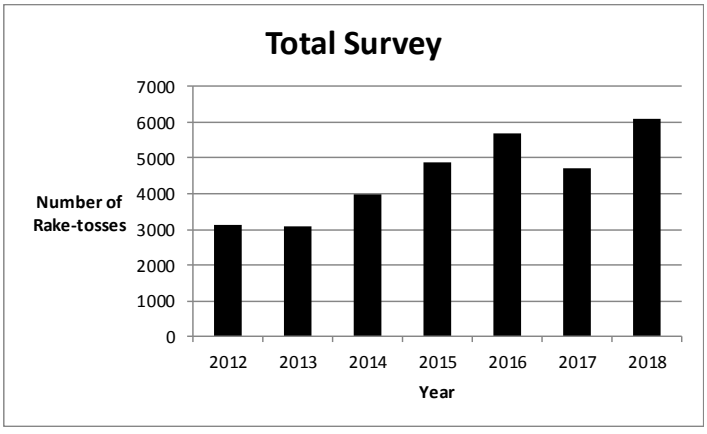
Cover Map and Monitoring Numbers

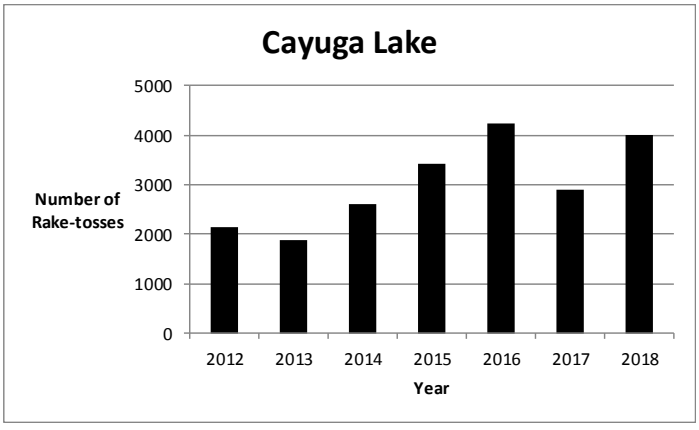
The cover shows the results of our rake-toss survey describing the abundance of All Plant Species Combined (Native + Non-native) at the southern end of Cayuga Lake, Cayuga Inlet and Fall Creek during 2018. Each individual colored square represents an evaluation of the total plant species abundance at a predetermined location identified by the interception of the X and Y lines of the Universal Transverse Mercator (UTM) coordinate system at North American Datum 1983 (NAD 83), true north.

This method assumes that the data values recorded from the collections of the two rake-tosses at the point of the line intercepts is representative of the aquatic plant species present with the abundance (an estimate of mass) of individual species at the time of sampling. Each colored icon is an estimate of mass within at least a 50m X 50m area.

The numbers of rake-tosses evaluated in 2018 within Cayuga Lake was 4000 compared to 2902 in 2017, 4230 in 2016, 3416 in 2015, 2616 in 2014, 1886 in 2013 and 2128 in 2012. The numbers of rake-tosses made in 2018 to evaluate the ongoing Cayuga Inlet and Fall Creek herbicide treatments was 2118 compared to 1826 in 2017, 1468 in 2016, 1462 in 2015, 1364 in 2014, 1184 in 2013 and 980 in 2012.

Rake-tosses				
Year	Cayuga Lake	Cayuga Inlet	Fall Creek	Total
2012	2128	928	52	3108
2013	1886	978	206	3070
2014	2616	932	432	3980
2015	3416	882	580	4878
2016	4230	896	572	5698
2017	2902	1254	572	4728
2018	4000	1254	864	6118





Contents

Report to the

Tompkins County Soil and Water Conservation District, Cayuga Inlet and Southern Cayuga Lake Hydrilla Task Force, New York State Department of Environmental Conservation, New York State Office of Parks, Recreation & Historic Preservation, United States Fish and Wildlife Service, The Nature Conservancy and Finger Lakes PRISM. Additionally, to Oswego County Soil and Water Conservation District, City of Ithaca, Tompkins County Health Department, Finger Lakes-Lake Ontario Watershed Protection Alliance, Tompkins County Water Resource Council and Tompkins County Environmental Management Council.

Prepared by

Racine-Johnson Aquatic Ecologists
1185 Ellis Hollow Road
Ithaca, NY 14850

Johnson, Robert L.
Crutchfield, Melcolm G.
Herman, Erica M.
Miroiu, Mihai C.
Riggs, Joellen M.
Rofe, Jordan (NYS DEC Intern)
Rooney, Melanie K.

rlj5@cornell.edu
January 2019

Tables

Figures

Background and Executive Summary

We submit this 2018 annual report to Tompkins County Soil and Water Conservation District, Cayuga Inlet and Southern Cayuga Lake Hydrilla Task Force, New York State Department of Environmental Conservation, New York State Office of Parks, Recreation & Historic Preservation, United States Fish and Wildlife Service, The Nature Conservancy and Finger Lakes PRISM. Additionally, to Oswego County Soil and Water Conservation District, City of Ithaca, Tompkins County Health Department, Finger Lakes-Lake Ontario Watershed Protection Alliance, Tompkins County Water Resource Council, Tompkins County Environmental Management Council and all other interested parties. This document summarizes the 2018 aquatic plant evaluations from the plant monitoring surveys in the Cayuga Inlet, Fall Creek and the south end of Cayuga Lake, a report on the progress of eradication of the non-native invasive species, *Hydrilla verticillate* (hydrilla).

On August 5, 2011, the identification and expert verification of monoecious *Hydrilla verticillata* (hydrilla) in the Cayuga Inlet at Ithaca, NY prompted a rapid response to stop the spread from the Cayuga Inlet of this non-native invasive to connecting waterways leading to the neighboring Finger Lakes and the Great Lakes. Local efforts began immediately to identify the location and extent of the hydrilla growth. Several volunteers sampled the Inlet and tributary waterways by recording the GPS (global positioning system) locations of hydrilla found by tethered double-headed garden rakes. We depicted the initial 2011 – 2012 hydrilla findings in Figure 1 (findings are from the 2012 final project report and refer you to that report for details). Figures 1 - 11 further shows the progress in eradicating hydrilla growth from the Cayuga Inlet from 2013 through 2018 as measured by our rake-toss and visual plant survey methods. We did not find any hydrilla growing in the Cayuga Inlet in 2015 through 2018 or Fall Creek in 2017 and 2018.

Hydrilla locations identified by this project from 2011 through 2018 are available on the website.

http://www.hydrillacollaborative.com/Home/CaseStudies

We report the locations as UTM coordinates and depict on maps in individual yearly reports. This report lists aquatic plant data collected by surveys in 2018 using the line intercept method (Madsen 1999) in Cayuga Inlet, Fall Creek and Cayuga Lake by Racine-Johnson Aquatic Ecologists of Ithaca, NY. We determined the presence and location of plant species by this line intercept method and additionally added an estimate of each species' abundance (estimated biomass) from each rake-toss. We depicted this 2018 information in tables, graphs, abundance maps and pie charts to provide the status of the aquatic plant community. The "Management Plan" for this project requires that we document the progress of hydrilla eradication from known locations and the various management techniques used. Equally important is the monitoring effort to document depletion of the non-germinated hydrilla tubers still possibly viable in the sediments. These propagules are the product of previously matured hydrilla vegetative growth. The information collected about aquatic plant biology, the effectiveness of the various control methods and specific herbicide efficacy drive Ithaca's Local Hydrilla Task Force's ongoing management decisions.

The New York State and Local Hydrilla Task Force's plan of eradication for this infestation requires depletion of the population of subterranean hydrilla turions (tubers) to zero. This occurs primarily by first letting the current tubers germinate. With germination and termination of current tubers the prevention of any new vegetative growth is paramount. If new vegetative growth occurs, then that growth could produce new turions. Prevention of the initiation of any new turions (tubers or axially turions) is vital and accomplished by eliminating all new vegetative growth each season, by using herbicides or installing benthic barriers, before turion formation can take place. We illustrate in this report through graphs and figures tuber depletion, areas of implementation of herbicides and further show a dramatic decrease in hydrilla presence. The report details overall aquatic plant community composition and changes within the project area.

This report shows continuing progress toward the goal of eliminating hydrilla from the tributaries flowing into, and the southern end of, Cayuga Lake. Despite documented progress in the tributaries, the major challenges of locating hydrilla in the lake remain. The absence of any hydrilla at all sampled locations in the Cayuga Inlet and Fall Creek where tuber densities decreased to zero in 2015 and 2016 respectively and no vegetative growth found is encouraging (Table 3, pg. 41).

We continue intensive searches in the lake for hydrilla and document all finds and implement actions to eliminate the plant. As a result of new found hydrilla in front of Stewart Park in late summer 2017, monitoring efforts continued in these locations in 2018 along with applications of the cooper herbicide, Komeen Crystal at 1ppm of metallic cooper. The application occurred under the jurisdiction of the Army Corps who manage the treatment of hydrilla further north in Cayuga Lake at Aurora, New York. The Army Corps has treated that hydrilla with cooper as Komeen Crystal and reported good results. We conducted three additional surveys in front of Stewart Park on August 7, August 22 and October 9, 2018 to assess any change in the progression of hydrilla growth during the copper treatment. We documented hydrilla in multiple locations along Stewart Park, including finds outside of the treatment area (Figures 21, 23-25). Figure 22 shows the location of hydrilla growth within the area treated with copper (Komeen Crystal). The Blue Dots area are the actual clusters of hydrilla found, while the white number blocks are where we conducted the three rake-toss surveys. This report shows the results in tables 2-A, 2-B and 2-C of the rake-toss as estimates of abundance of mass and percentage of plant species on the rake. Rake-toss locations chosen were between original clusters of hydrilla before treatment, not on the cluster, to help prevent additional spread of hydrilla.

Figures 23-25 show in more detail the results of our rake-toss findings in the treatment area. Figure 23 shows the all species abundance (top) and the hydrilla density at rake-toss locations on August 7 before the first copper treatment on August 13, 2018. Of the 14 locations samples by two rake-tosses each we found a trace of hydrilla at one location.

Figure 24 are the rake-toss results on August 22 after the August 13 treatment of 4 acres showing little change in all species abundance (top) but a large increase in viable hydrilla finds (bottom).

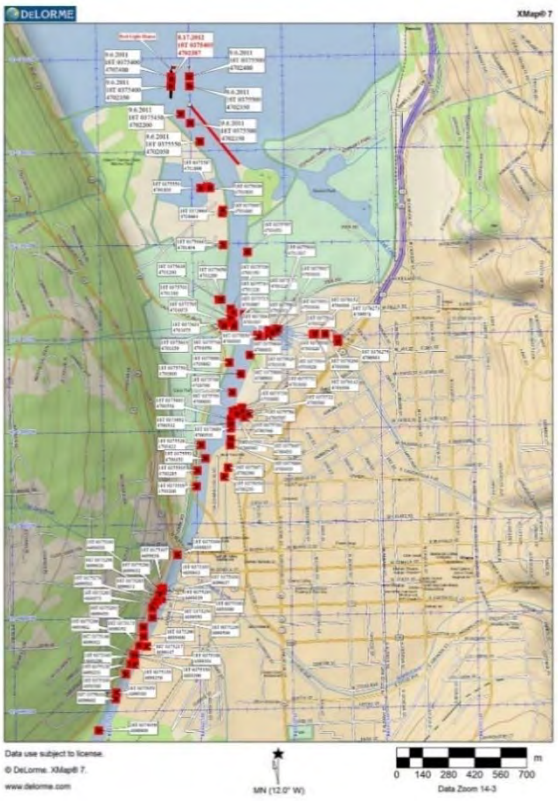
Figure 25 depicts the rake-toss results of October 9, 2018 after a second copper application to the area on September 10, 2018. We recorded a substantial decrease in all species abundance (top) however viable hydrilla persisted at the rake-toss locations and with further investigation throughout the treated area (Figure 2).

The failure to provide control of hydrilla growth with copper (Komeen Crystal) at the Stewart Park location at Ithaca appears to not deliver a high enough concentration of metallic cooper when applied at 1ppm to the area. There could be a multitude of reasons why the copper application did not work as desired at this location. A possible cause may be the shallow water depth of the area that results in a lower amount of granular copper formulation applied per surface area than applied in areas of greater depth where copper is effective because the label requires a 1ppm concentration application. A higher concentration of copper at the sediment surface, close to the target plant, even for a short time may make the difference in efficacy. Additionally, a higher flushing rate of the area with a northwest wind and an inadequate method of application to the treatment area.

Observations on August 22, 2018, the evaluation of the first treatment some hydrilla locations within the treatment area showed lush hydrilla plants between 18 and 24 inches tall while other locations that had similar pre-treatment growth were completely “burned off” or gone. This suggests some area plants received adequate copper while others received little.

Observations of the second treatment suggest a more even application with widespread damage to hydrilla. However, we noted that all hydrilla findings, throughout the treatment area, showed new regrowth from damaged hydrilla.

These observations suggest copper (Komeen Crystal) as applied (concentration and/or application) will not control hydrilla at this location.



Fall 2011 and 2012

2013

2014

2015 to 2018

Figure 1. Locations in the Cayuga Inlet where rake-toss surveys identified *Hydrilla verticillata* in: 2011 and 2012 (top left), where we found hydrilla in 2013 (top right), in 2014 (bottom left) and in 2015 to 2017 (bottom right). In 2014, our rake-toss sampling found hydrilla only in the Cornell University Boathouse Bay within the Inlet. In 2015 to 2018, our extensive searches did not find hydrilla anywhere in the Cayuga Inlet after extensive rake-toss sampling and visual monitoring.

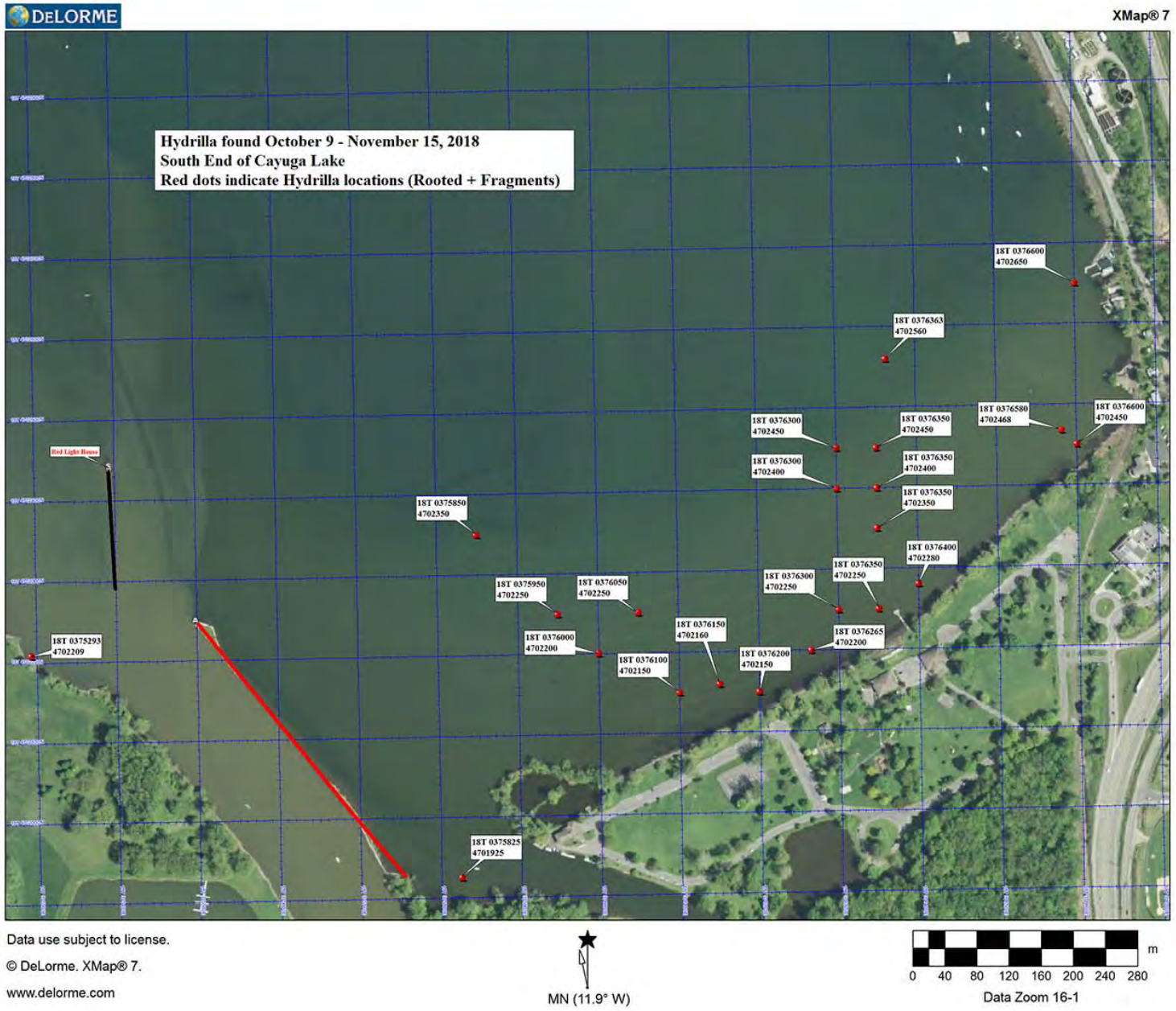


Figure 2. 2018 locations of new Hydrilla finds from October 9 - November 15, 2018 found by rake-toss and visual methods.

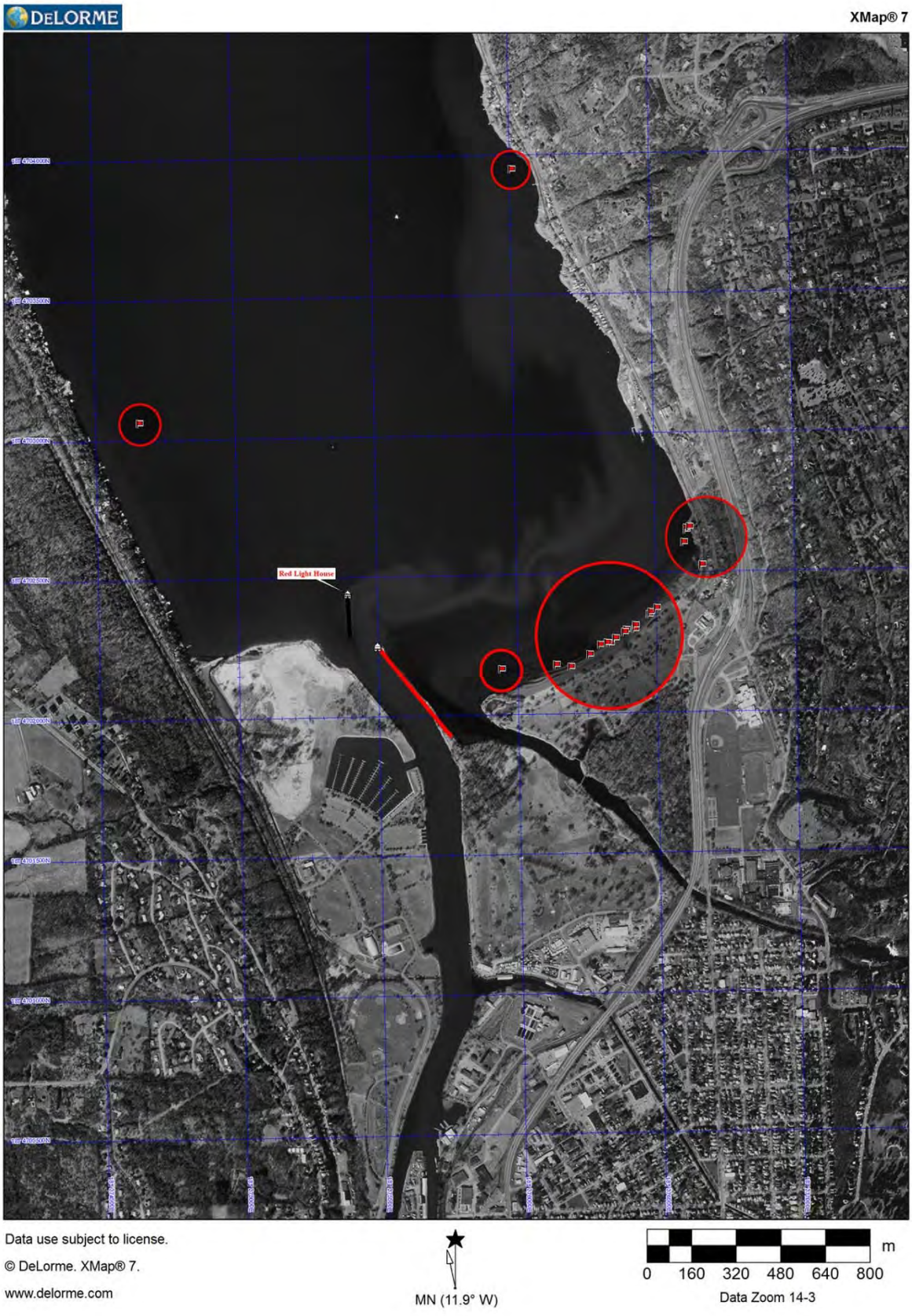


Figure 3. 2017 locations where we found hydrilla by rake-toss and visual searches. In the Cayuga Inlet and Fall Creek, we recorded 0 locations with growing hydrilla. In Cayuga Lake, we recorded 23 distinct locations with growing hydrilla. There were two outlier hydrilla finds, one in the southwest corner and the other to the north of the Merrill Sailing Center. We have listed the GPS of the locations in Coordinates 1, within the Appendix of this report and entered the final reports into **http://www.hydrillacollaborative.com/Home/CaseStudies**

Figure 4. 2016 locations where we found hydrilla by rake-toss and visual searches. In the Golf Course Lagoon in Fall Creek, we recorded 6 distinct locations with growing hydrilla. In the Cayuga Inlet and Cayuga Lake, we recorded 0 locations with the presence of hydrilla. We have listed the GPS of the locations in Coordinates 1, within the Appendix of this report and entered the final reports into **http://www.hydrillacollaborative.com/Home/CaseStudies**

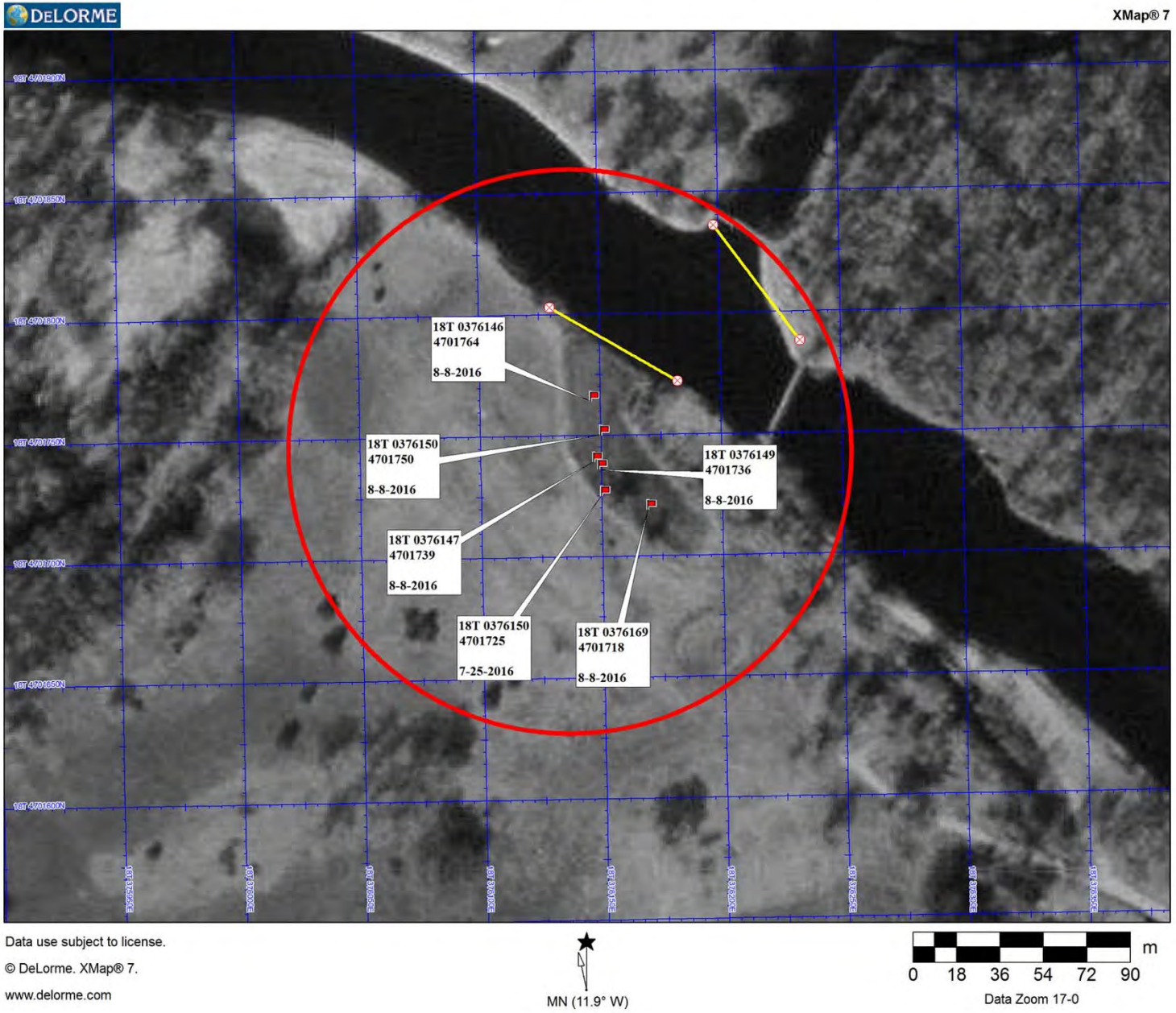


Figure 5. 2016 locations, identified by GPS and date, found in the Golf Course Lagoon in Fall Creek. GPS locations above are the only 2016 hydrilla vegetative growth found within the entire survey area.

Figure 6. 2015 locations where we found hydrilla by rake-toss and visual searches. In Fall Creek we recorded 63 distinct locations with growing hydrilla and in Cayuga Lake we recorded 8 locations with the presence of hydrilla.

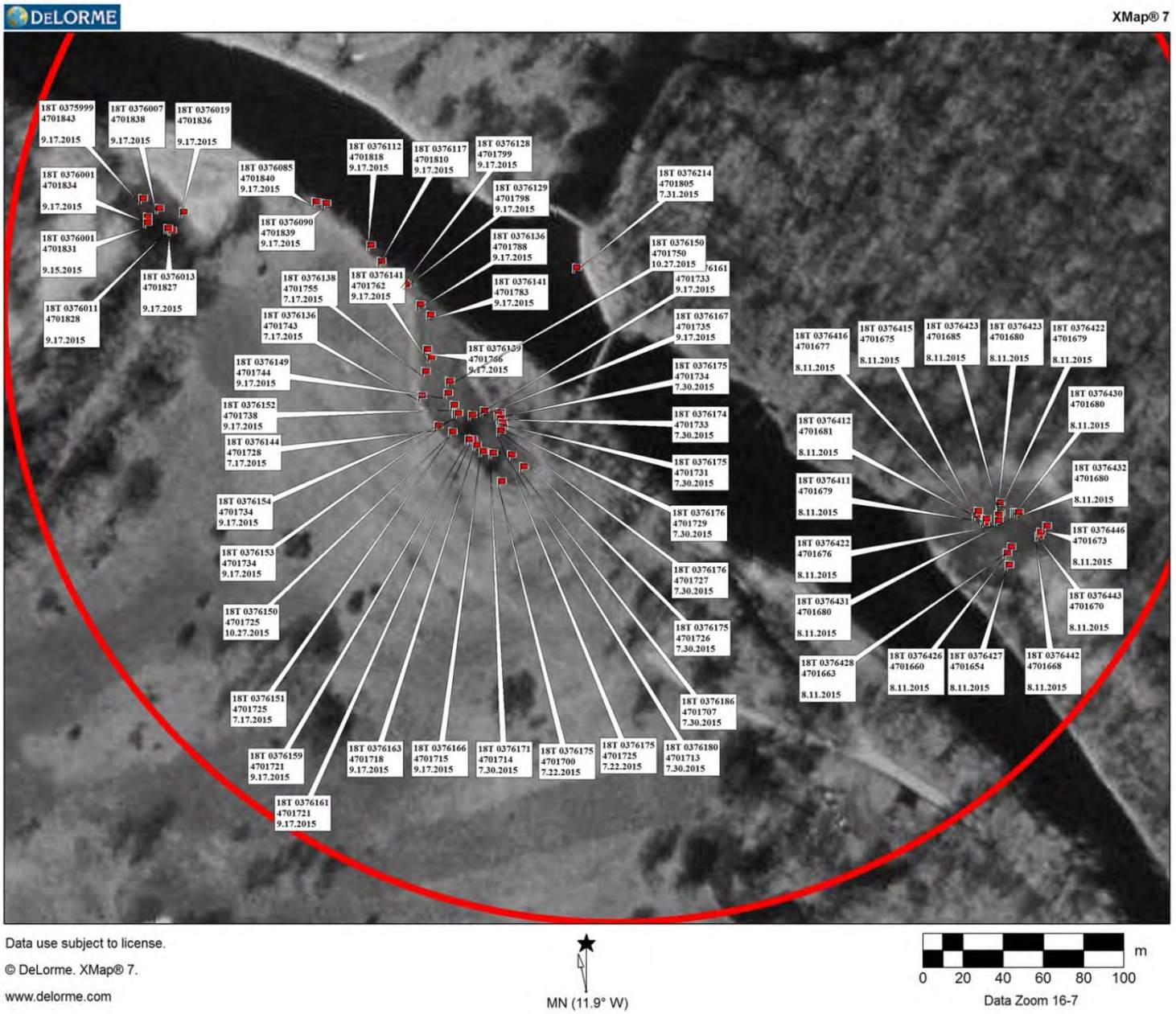


Figure 7. 2015 GPS locations in Fall Creek, where we found hydrilla by rake-toss and observation. GPS locations above include all 2015 growing hydrilla, found before or after herbicide treatments. In 2016, we only found hydrilla in the Golf Course Lagoon area of Fall Creek where we identified tubers produced in 2015.

Figure 8. 2014 locations where we found hydrilla by rake-toss and observation. In 2015 and 2016, we did not find any hydrilla growing at the Cornell University Boathouse Bay. In the SE corner of the lake the four locations with hydrilla inside the circle, to the left, did not reappear in 2015. In 2016, we did not find any hydrilla in the SE corner of the lake.

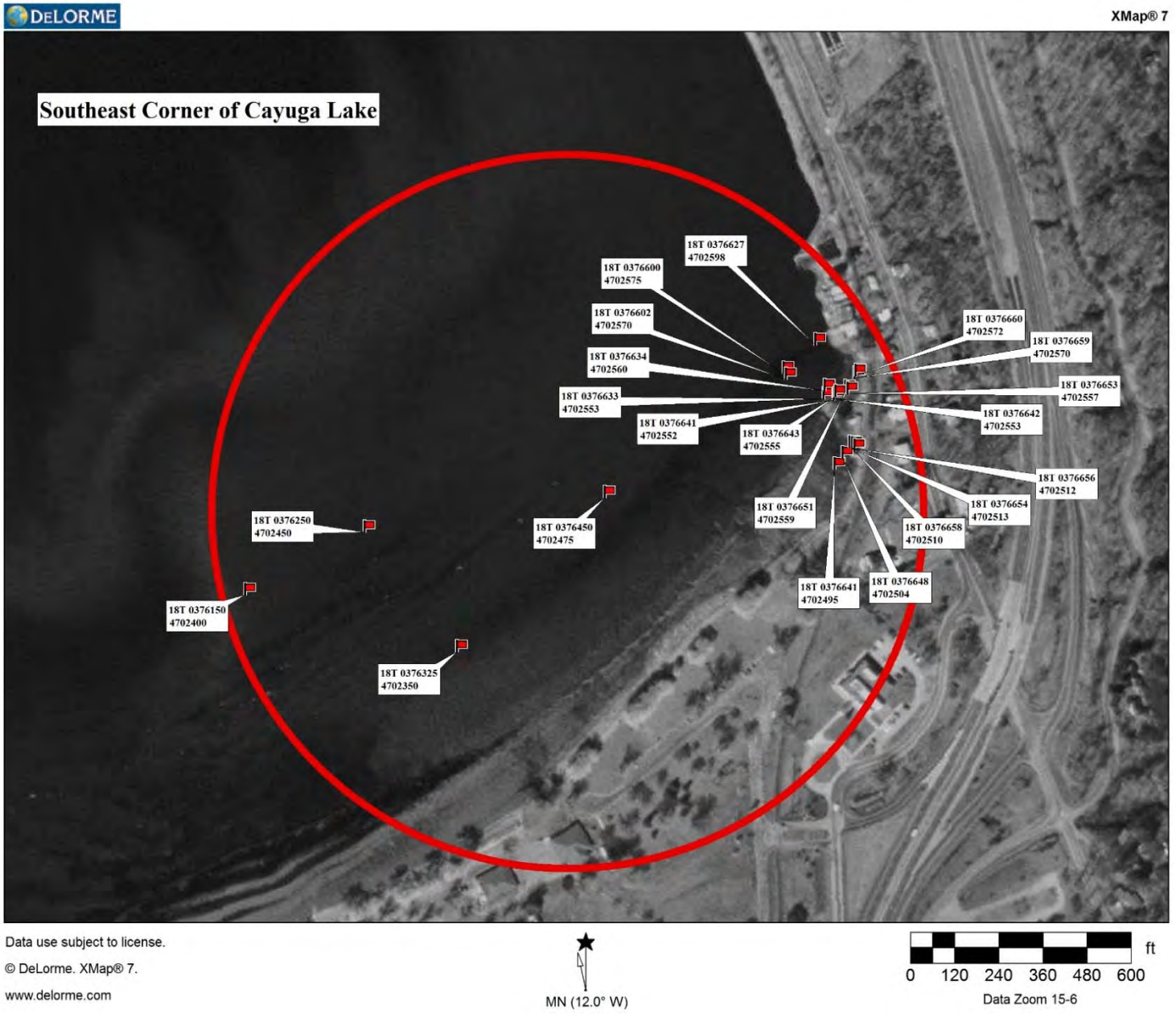


Figure 9. 2014 GPS locations where we found hydrilla by rake-toss and observation at the SE corner of Cayuga Lake. The four hydrilla finds in the extreme left within the circle in front of Stewart Park were fragments that did not materialize as rooted plants in 2015. The majority of the hydrilla finds in the SE corner were rooted patches and we covered those patches with benthic barriers in the early fall of 2014. We found no evidence of hydrilla at the benthic barrier sites in 2015 or 2016.

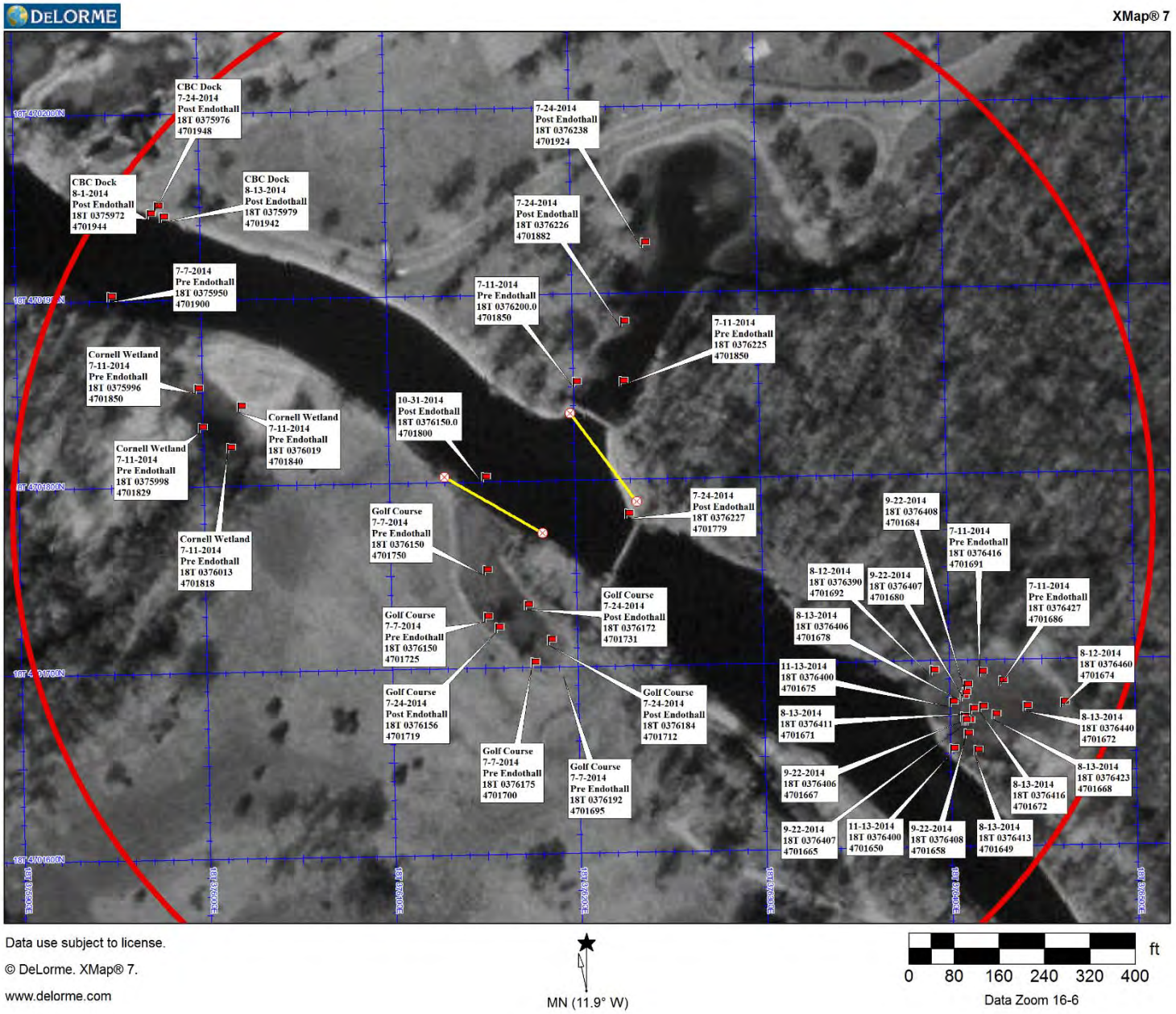


Figure 10. 2014 Fall Creek GPS locations where we found hydrilla within Fall Creek (pre- and post-herbicide application surveys). Locations identified above have hydrilla tubers in the sediment that need future treatments. The two yellow bars in the center are barrier curtains that aid hydrilla eradication efforts by limiting access to the Stewart Park Pond and the Golf Course Lagoon while possibly slowing the rate of dilution of herbicide treatments by limiting water flow in both areas.

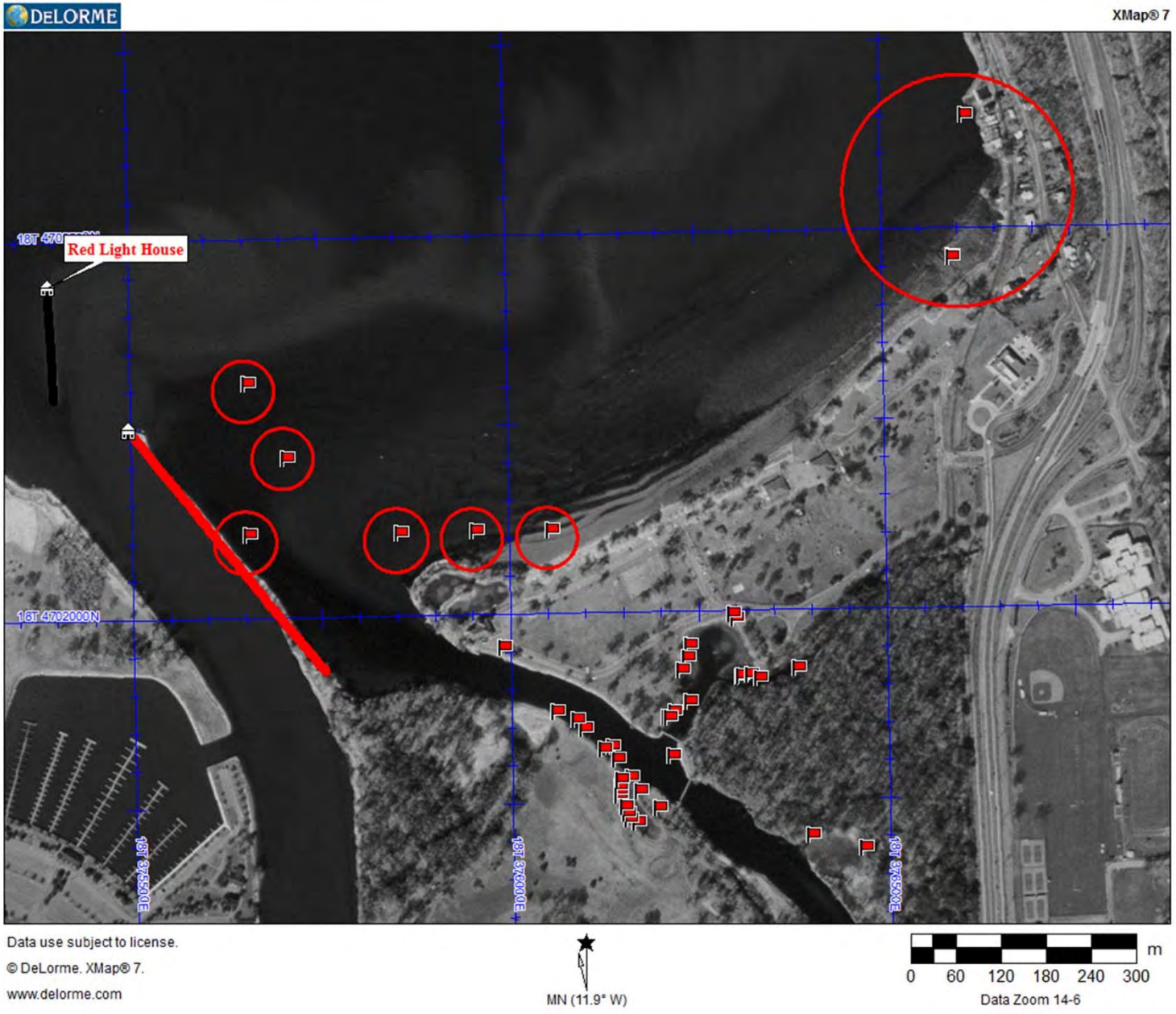


Figure 11. 2013 Cayuga Lake locations of hydrilla found by rake-toss. The two large rooted patches shown above in Cayuga Lake's SE corner discovered August 21, 2013. We successfully treated by hand removal and benthic barrier placement before Labor Day weekend of 2013. Hydrilla did not recur at those two locations from 2014 - 2016.

In 2018, no herbicide treatment occurred in Fall Creek. In 2017, the Ithaca Hydrilla Task Force's herbicide treatment began at Fall Creek on August 9, 2017 with the herbicide Sonar Genesis (fluridone liquid) applied as a continuous drip into Fall Creek, for 56 days, until October 4, 2017 (79.3-gals total) from one injection point. Applications of Sonar H4C (fluridone pellet) occurred on August 10, August 31 and September 14, 2017 (130.56 lbs. total) in the backwaters of Fall Creek. In 2016, application of herbicides Aquathol-K and Sonar H4C occurred on August 9 - 10, with additional bump applications of Sonar H4C later in the backwaters of Fall Creek.

In 2017 - 2018, no herbicide treatment occurred in the Cayuga Inlet. With the absence of hydrilla in the Cayuga Inlet in 2015, there was no Aquathol-K (endothall) application in the Inlet or Sonar H4C (fluridone pellet) application to the NYS Allan H. Treman Marina in 2016. A Sonar Genesis drip application for 70 days into the Cayuga Inlet started on July 22, 2016 and terminated on September 30 was the only herbicide application to the Inlet in 2016. In 2015 - 2018, our survey crews did not find any hydrilla in the Inlet after extensive rake-toss sampling, visual monitoring and tuber sampling.

In 2018, there were two applications of copper (Komeen Crystal) on August 13 and September 10, 2018 in front of Stewart Park on Cayuga Lake. This action resulted from leaving the known locations in front of Stewart Park, found late in 2017, the local task force chose to treat with copper in 2018. In 2017, we placed only benthic barriers in the southeast side of the lake to prevent the spread of hydrilla. In 2016, with the lack of hydrilla finds in 2015, we made no herbicide applications or placed any benthic barriers in the lake. The Ithaca Hydrilla Task Force made four applications of H4C fluridone pellets to 30 acres in the SE corner of Cayuga Lake in 2015. The dates of the applications of H4C were July 21, August 11, September 16 and October 1, 2015. The 2014 hydrilla finds at the left side in the treatment zone did not appear in 2015 preventing an adequate assessment of efficacy of the Sonar H4C applications (Figure 12).

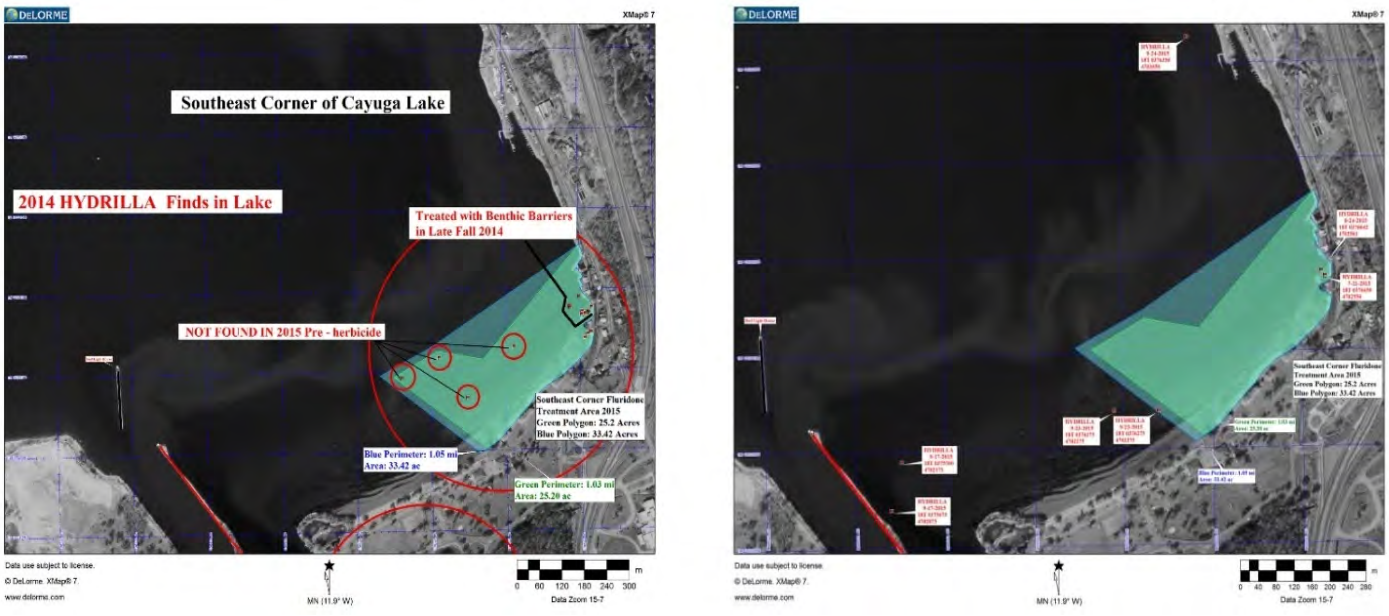


Figure 12. 2015 herbicide treatment area in Cayuga Lake shown as the teal green area above (right map). Hydrilla locations in 2014 (left map) determined the area of treatment with the herbicide fluridone as Sonar H4C, a pellet formulation.

The discovery of hydrilla growing in the southeast corner of Cayuga Lake on August 21, 2013 (Figure 13) prompted discussion within the Local Hydrilla Task Force as to a course of action. With the upcoming Labor Day holiday and the potential for increased traffic on the lake in the area with hydrilla, the Task Force recommendation was to remove the growth by hand. During the last week in August, we set up 2 mesh barriers around the hydrilla beds and hand-removed vegetative growth along with as much root and tuber growth from the sediment as possible. Before removing the surrounding mesh barrier, we placed several benthic barriers on the area of the lake bottom that was hand harvested. The extent of growth and its tuber development suggested all vegetative growth

found in late August 2013 likely arose from a single propagule at each of the two locations. From 2014 through 2016, we observed no hydrilla growth on or near these areas that we treated with hand harvesting and benthic barriers in 2013. In 2017 and 2018, we found additional growth of hydrilla near the original benthic barriers, along Stewart Park and to the right of the mouth of Fall Creek (Figures 2 and 3).

Figure 13. Hydrilla growth in the SE corner of Cayuga Lake found August 21, 2013 and removed by August 30, 2013, we did not find hydrilla at these remediated locations from 2014 through 2018.

In 2014, we found in the SE corner of Cayuga Lake new hydrilla growth starting on July 9, 2014 with the last hydrilla found on October 31, 2014. We did not remove the hydrilla plants, as we did in 2013, before placing the benthic barriers on top of the rooted growing hydrilla. Additionally, in 2014, the local task force conducted a two-day hand removal of hydrilla vegetative mass from the Fall Creek Cove, a location where herbicide treatments were ineffective at removing hydrilla. We hand removed hydrilla from some areas of the Golf Course Lagoon at Fall Creek in 2015 where growth persisted in late summer/early fall despite herbicide treatments.

Hydrilla found within Cayuga Lake in 2014 was at a distance from the two beds of hydrilla found in 2013 and we believe these 2014 plants started from other fragments that came into the lake later than the growth found in 2013. It is possible this 2014 Cayuga Lake hydrilla came from the Fall Creek area, likely during the major August 8, 2013 rain storm. We continued to find fragments in the SE corner in 2015 along with finds at the mouth of Fall Creek, which we believe, float into the lake from the Fall Creek infestation each year (Figures 6 – 11). In 2016, we found no hydrilla fragments in Cayuga Lake. In 2016, the only hydrilla found were rooted fragments at the Golf Course Lagoon in Fall Creek (Figures 4, 5, 14). In 2017, 23 locations had hydrilla found by rake-toss or visually in the southern end of Cayuga Lake (Figure 3). These locations, mainly in front of Stewart park, appeared again in 2018 along with 22 new locations of hydrilla presence found by rake-toss or visually in the southern end of Cayuga Lake (Figure 2, Coordinates 1).

Figure 14. 2015 photo of hydrilla with fully developed tubers in late summer at the herbicide treated Golf Course Lagoon suggesting future growth from those tubers will occur in 2016, as it did. The only area where we found hydrilla in 2016 (left). The hydrilla on the right was the late season hydrilla found in 2015 at 3.5 meters deep off the southeast shoreline just north of all previous hydrilla finds in the lake.

Due to the increase of hydrilla finds in 2017, the Local Hydrilla Task force decided to install on September 6 - 7, 2017 five additional benthic barrier mats to help prevent the spread of hydrilla. One barrier is to the right of the mouth of Fall Creek and the other four barriers are in the southeast corner of Cayuga Lake. There was no hand removal before placing these mats down, unlike placement of the 2013 benthic mats. Additionally, on September 20 and October 10, 2017, we found hydrilla, in deeper water, at one location in the southern west side of Cayuga Lake and one location above the Merrill Sailing Center respectively (Figure 3). This is the furthest north we have reported Ithaca hydrilla. Continued monitoring in front of Stewart Park was essential to determine if any additional benthic barriers need placement to stop further spread of hydrilla.

The Cayuga Inlet's monoecious biotype of hydrilla seems to germinate and emerge in late spring and often delays growth and elongation toward the surface until late July/early August. The plant continues to increase mass and produce turions (tubers) into the late fall. We document hydrilla spring emergence and subsequent growth by monitoring both tuber germination and vegetative emergence to determine the best timing for treatment options and aid early detection of new hydrilla growth. In Cayuga Lake and upstate New York, data and experience suggest the most probable time to find new areas of growth with rake-toss surveys, scuba and shallow water observations is after August 15 into the late fall.

Timing of rake-toss plant monitoring depends on the type and purpose of the surveys with our following dates of rake-toss surveys in 2018. The Fall Creek tributary all species monitoring began on July 11 and finished on August 7, 2018. Aquatic plant monitoring in the Cayuga Inlet and Lighthouse began on July 18 and finished on August 7, 2018. All species plant monitoring in Southern Cayuga Lake began on June 26 and finished on August 2, 2018. In all regular monitoring efforts, we recorded all plant species within the submersed plant communities and identified any new hydrilla locations. To continue our efforts in finding any new hydrilla locations in front of Stewart Park, additional monitoring took place on August 7, August 22 and October 9, 2018. In 2018, we conducted a second and third rake-toss survey of "hydrilla only" monitoring of the Cayuga Inlet and Fall Creek where we did not find any hydrilla. A second monitoring of Cayuga Lake for "hydrilla presence only" began in October 9, 2018 and finished on November 15, 2018.

The following website contains detailed information about the 2011 – 2018 Cayuga Inlet, Fall Creek and the Southern Cayuga Lake hydrilla eradication project.

http://www.hydrillacollaborative.com/Home/CaseStudies

Methods

The survey team applied a systematic search grid using the line intercept method (Madsen 1999) ADA361270 to hunt for the presence of monoecious *Hydrilla verticillata* (hydrilla). Additionally, we identified all individual aquatic plant species present and estimated the relative abundance of each species to document plant community structure. We sampled and recorded aquatic plant species presence and abundance at pre-selected locations determined by overlaying a UTM grid on maps of the Cayuga Inlet, Fall Creek and southern Cayuga Lake at Ithaca, NY in 2018 (Figure 15). Racine-Johnson Aquatic Ecologists from Ithaca, NY collected the 2018 rake-toss data presented in this report.

We used a basic line intercept sampling method to preselect locations to sample by using a global positioning system (GPS) to guide us to sampling points defined by a geographic information system (GIS). The monitoring crew tossed two tethered dual-headed rakes off a boat to collect data at each sample point of a 50m X 50m UTM (NAD 83 datum and true north) transect grid. In 2014 - 2017, we added a 25m X 25m grid in areas of high probability for hydrilla presence at the near-shore southern part of the lake. There was also an increase of sampling efforts in our 2017 plant survey by adding a 25m X 25m UTM search grid located north of the Merrill Sailing Center seen on our cover map. In 2018, we returned to only a 50m X 50m UTM search grid for Cayuga Lake, including north of the Merrill Sailing Center. This was to accommodate two surveys conducted on the lake survey area per year. This included one recording an aquatic plant species presence and abundance survey during summer and another “hydrilla presence or absence” survey during late fall. Hand-held and/or boat-mounted GPS equipment guided our movement to these locations. Members of the sampling crew tossed the double-headed rakes at each selected location and then pulled the rakes along the bottom about 10 meters. The individual throwing each rake lifted any plant mass into the boat or to shore. An estimate of overall plant abundance and individual species percentages of the total plant mass from each randomly tossed rake enhanced the basic line intercept method described by Madsen 1999.

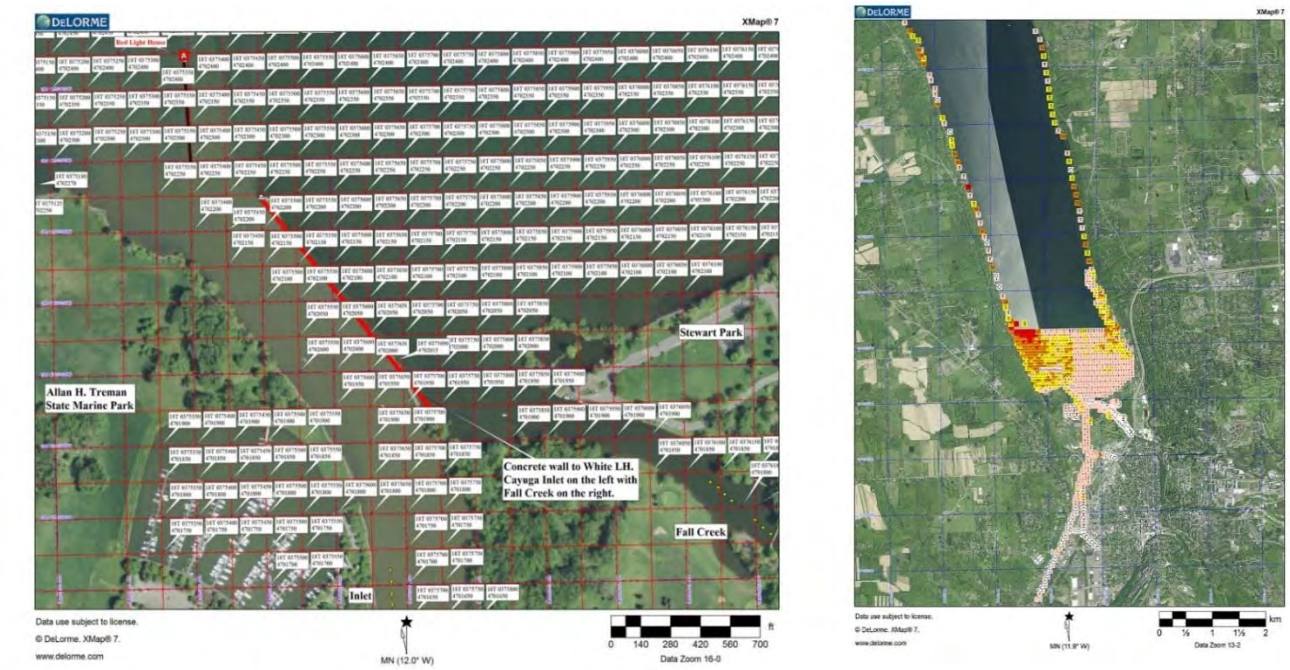


Figure 15. Example of a small section of our UTM grid used to predetermine locations to sample aquatic plant presence and abundance. Locations sampled are at points defined by the line intercepts of the NAD 1983 X coordinate East and NAD 1983 Y coordinate North. We have used this grid method of determining sample locations since 2012 on this project. The pictorial on the left shows the total area searched in 2018 and the estimated density for All Species Combined at each rake-toss location.

The monitoring team then separates each plant mass collected by rake into individual species, analyzes the separations by recording the species identification (Borman *et al*. 1999, Crow and Hellquist 1999) and assigns a percentage estimate of mass to each species (Figure 16). We use a classification of Dense, Medium, Sparse, Trace or Zero to classify the overall plant biomass of each individual rake-toss. A rating of "Dense" is more than an armful and difficult to get into the boat, while an arm-full or when all rake tines are full receives a "Medium" rating. A "Sparse" is when two hands are full or about 50% of the tines on the rake are full, a "Trace" is less than a small handful or when plants are on a couple of rake tines, and a "Zero" is a bare rake.

Figure 16. Sampling team on Cayuga (left) and processing a macrophyte sample from dual-headed rakes by separating to individual species for an estimate of each species' percentage of the whole mass (right).

To obtain an all-species combined (native and non-native) abundance value at a specific location for the pictorial abundance maps of Cayuga Lake, the Inlet and Fall Creek, we simply averaged the two on-water estimated rake abundance categories for the two rake-tosses at each location to produce a mean value. For example, at the sample location if rake-toss one is an armful or all the rake tines very full, we record that plant mass as a Medium or abundance rating of 3 (Table 1). If the second rake-toss at that location amounts to a small handful or less, or if using a similar method estimating amount on the rake as about two tines full on a rake we record as a Trace or an abundance value rating of 1 (Table 1). If we have a rake-toss of a value rating 3 (Medium) and the second rake-toss as a rating of 1 (Trace), we calculate the mean as 2 or a (Sparse) for that location. If we recorded one rake-toss as a (Medium) and the second as a bare rake (Zero), the mean would be a value of 1.5, also a (Sparse), (Table 1).

Table 1. Abundance categories used to describe rake-toss samples with the assumed mean dry weight values (g/m^2) and ranges used in the spreadsheet processing of field data. We use the table values to obtain an estimate of abundance for individual species or grouping of species.

Abundance Categories for Mass on Rake Tossed	Rake-toss Abundance Number	Dry Weight (g/m^2) Ranges associated with Total Plants Abundance	Mean Dry Biomass (g/m^2)	Dry Weight (g/m^2) Ranges associated with Single Species Abundance
"O" = no plant(s)	0	0.0	0.0	same
"T" = trace plant(s)	1	~0.0001 - 0.9999	0.5	same
"S" = sparse plant(s)	2	~1.0000 - 24.9999	13.0	same
"M" = medium plant(s)	3	~25.0000 - 99.9999	62.5	same
"D" = dense plant(s)	4	~100.0000 - 400.0000+	250.0	same

We based our abundance analysis for each rake-toss on our broad categories of rake-toss abundance reported in the field. Our abundance ratings originated from assumptions based on the biomass (g/m^2) relationship to rake-toss rating shown in (Figure 17) and determined by field experiments.

After observational data collected from pre-determined locations in Cayuga Lake, Cayuga Inlet and Fall Creek arrives at our office, members of our team enter the information into MS Excel spreadsheets, check the spreadsheet for data entry errors, perform analysis and list in a report. We specifically summarize the individual rake-toss results from the data tables and show in Table 3 (pg. 41) of this report. Data tables 1- 4 in the appendix are the actual field collected observations which we transform into pictorial depictions that appear as abundance values on Lake maps in Lake-1 through Lake-22. We also created abundance maps for the Inlet maps in Inlet-1 through Inlet-18 and Fall Creek maps in Fall Creek-1 through Fall Creek-15.

We show in Figures 1 – 11 specific depictions of hydrilla locations. Specific coordinate locations of new hydrilla finds in 2018 are in the appendix of this report as a table, Coordinates 1. Additionally, we recorded this data in final reports at **http://www.hydrillacollaborative.com/Home/CaseStudies**

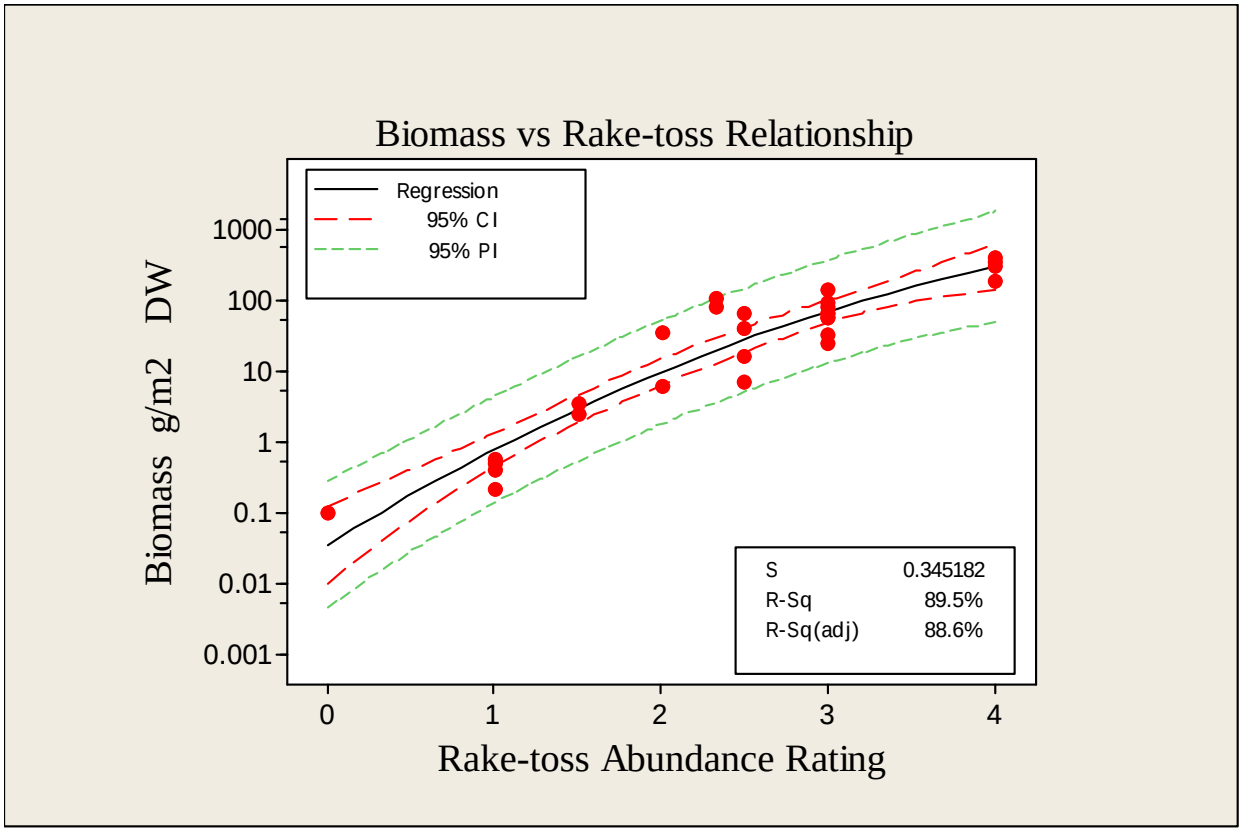


Figure 17. Best-fit line to describe the relationship between onsite estimates of abundance made with the rake-toss method of collection contrasted with an estimate of biomass (three in-lake biomass quadrat experiments described in Methods determine the regression equation).

To analyze the abundance data of individual species, we used the values in Table 1. Specifically, the standard assumed abundance rating or category as it relates to dry biomass (g/m^2). Figure 17 describes the foundation for Table 1 concluded from experiments conducted in Chautauqua Lake, NY during 2006 and 2007 (Johnson 2008). Along with additional data collected in 2011, we contrasted the "rake-toss" estimates at specific locations to the absolute dry biomass data collected from the same locations at the same time.

We used 28 lake locations, collected five 0.25m^2 quadrat samples from each location for a total of 140 biomass samples and determined dry mass by drying the quadrat samples to 105^{o}C. We calculated a mean biomass dry weight (g/m^2) for each of the 28 locations. From this quadrat biomass sampling and the accompanying rake-toss estimate of abundance, we determined the best-fit regression line shown in Figure 17.

In practice using the relationships in Table 1 and the 2018 rake-toss data sets, we calculated mean species abundances for each location sampled by using the field percent estimate of each biologist's rake-toss. With the use of GIS, we placed the resulting abundance values on individual species maps for each sampled location to create a visual record of the relative species abundance for all locations, which include Cayuga Lake, the Inlet and Fall Creek.

In the Results section, following the Cayuga Lake abundance maps, show the rake-toss results for the southern end of Cayuga. We included these results in detail in Table 3 and Data 1, but summarized on the Cayuga Lake Maps. The Results section also refers to the Lighthouse area (LH) in Table 3, Figure 18, Pie charts and listed in rake-toss Data 2. Figure 18 below shows the 29 (50m X 50m) locations of the Cayuga Inlet at the entrance to Cayuga Lake, described as the Lighthouse area (LH), now 30 locations. We feel this area (LH) needs to be a separate grouping from the Inlet "proper" evaluations because of the location at the intersection zone of the Cayuga Inlet and Cayuga Lake. We treat the area distinctly in this report.

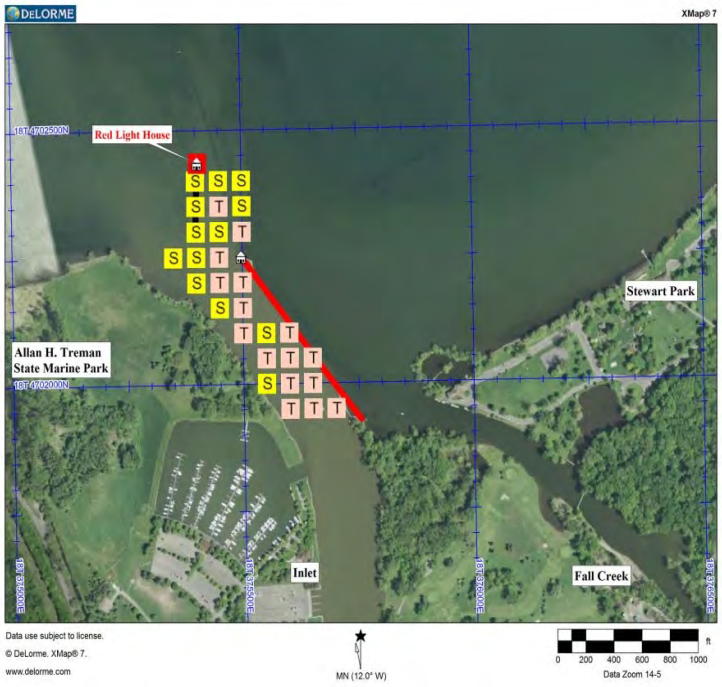


Figure 18. Map is of the Lighthouse area (LH) in 2013 with the 29 sampling locations at the transition zone between the Cayuga Inlet and Cayuga Lake. In 2014 through 2018, we evaluated by rake-toss 30 sampling locations both early summer and early fall.

Determining the density of subterranean hydrilla turions (tubers) within the area of previous hydrilla growth is a very important monitoring task that attempts to address potential future emergence of hydrilla from residual tubers and shape decisions of future treatment strategies (Netherland 1997). Since Fall of 2011, and the identification of hydrilla in the Cayuga Inlet, we have been measuring tuber density (number of turions per unit area) in areas that initially had dense vegetative growth of hydrilla. Summary graphs of mean tuber density numbers over several years at our chosen 7 historical locations (Figure 19 and 39) follow in the results section of this report. Graphs are an estimate of the mean tuber densities at a 95% confidence interval with the error pooled across groups. We increased sample size greatly as the tuber population decreased. We eliminated tuber sampling in 2017 and 2018 because numbers would likely be zero.

Figure 19 below describes the locations where our method of determining hydrilla turion (tuber) densities using the "Haller Hydrilla Sediment Corer", a post-hole digger that produces consistent sized cores from the sediments of the Cayuga Inlet and Fall Creek infestation. The corer removed a sediment plug with a surface area of 173 cm^2 and was approximately 22 cm in length that we placed in an individual plastic bag. Our initial measurements suggested most of the tubers in the Cayuga Inlet, Fall Creek and southeast corner of Cayuga Lake are resting at 10 to 15 centimeters down from the sediment surface. We processed cores individually by hand washing the sediment through fine mesh screens. At the washing station, the biologist separated the collected tubers into germinated or non-germinated growth stages. Prior to December 4, 2012, the tuber sampling crew collected ten cores at each of the four original Cayuga Inlet locations on each sampling date. From December 2012 to May 2014, we increased the numbers of cores from each location to 22 collected on each date. In June of 2014, we increased the number of cores collected on each date to 104 per location and starting in December of 2014, we doubled the number collected to 208 per location and continued that number through 2016. With a collection of 208 cores per sampling location on a date, we are sampling a minimum of 3,000 pounds of wet sediment from each location collected on a date to determine tuber density. The Hydrilla Task Force decided that we would not collect sediment samples in 2018 due to the decreasing presence of tubers in 2015 and 2016.

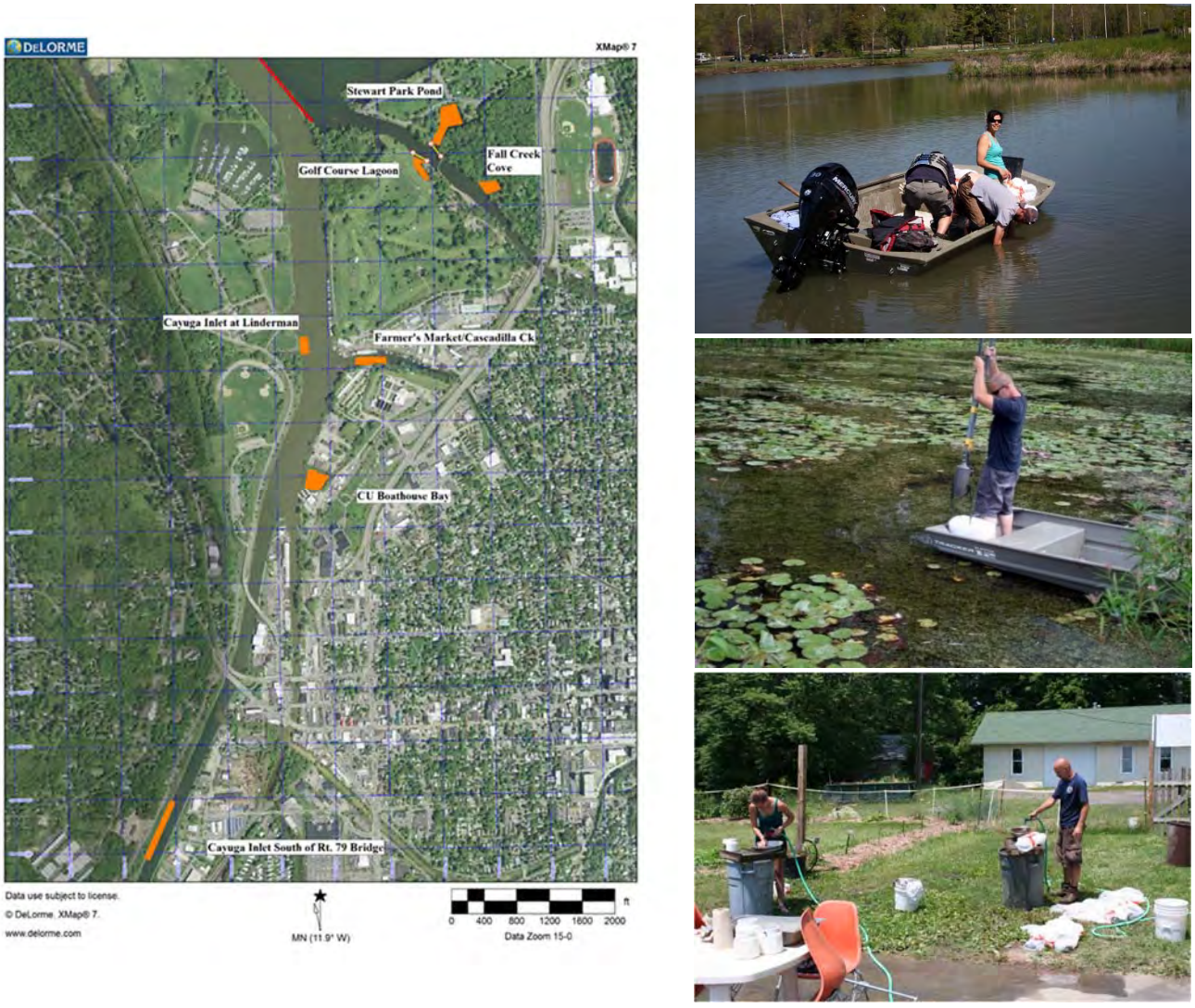


Figure 19. Map above shows the four locations in the Cayuga Inlet and three in Fall Creek where we routinely conduct sediment core removals, while the three additional photos show sample collection and processing.

Tuber density graphs in the results section show in the top graph total tubers found (germinated and non-germinated) and, in a second graph, non-germinated tubers found per 173 cm^2 surface area. The non-germinated tuber graph is an estimate of propagules (tubers) left in the sediment that have the potential to germinate and grow sometime in the future.

Results

This report summarizes and displays the results of the 2018 aquatic plant species monitoring along with 2011 – 2018 aquatic plant and hydrilla tuber monitoring history for Cayuga Lake and the Cayuga Inlet (Johnson 2013, 2014, 2015, 2016, 2017 and 2018). We summarize and display the results of the 2018 aquatic plant species monitoring of Cayuga Lake, the Cayuga Inlet and Fall Creek in the tables and figures that follow. Table 3 (page 41) summarizes the relative frequency of individual aquatic plant species collected by the rake-toss survey method in Cayuga Lake, the Lighthouse (LH) inlet area, the Cayuga Inlet proper and Fall Creek in 2018. Figures 26 – 29 (pages 42 – 45) depict in bar graphs relative frequency from 2012 – 2018.

In analyzing the recorded data, we suggest caution and point out that our observations are a point-in-time at a point location. Natural factors that primarily influence aquatic macrophyte (plant) communities are general seasonal growth patterns of a single species, available light and space, wave action and competition between species often strongly influenced by propagule production of individual species. Many other factors can also influence growth, but generally to a lesser extent, such as available nutrients, sediment types and herbivores.

Figure 20 below is an example showing contrasting abundances of the dominant species *Elodea sp.*, a native and *Nitellopsis obtusa* (starry stonewort), a non-native macro-alga, from the lake survey and are examples of the following Lake-1 through Lake-22 (pages 62-83). Similar maps follow for the Cayuga Inlet evaluations as Inlet-1 through Inlet-18 (pages 84-101) along with Fall Creek evaluations as Fall Creek-1 through Fall Creek-15 (pages 102-116). Maps also show sampling areas on the east shoreline north above the Merrill Sailing Center in 2018 on a 50m X 50m UTM grid to improve chances of locating isolated hydrilla.

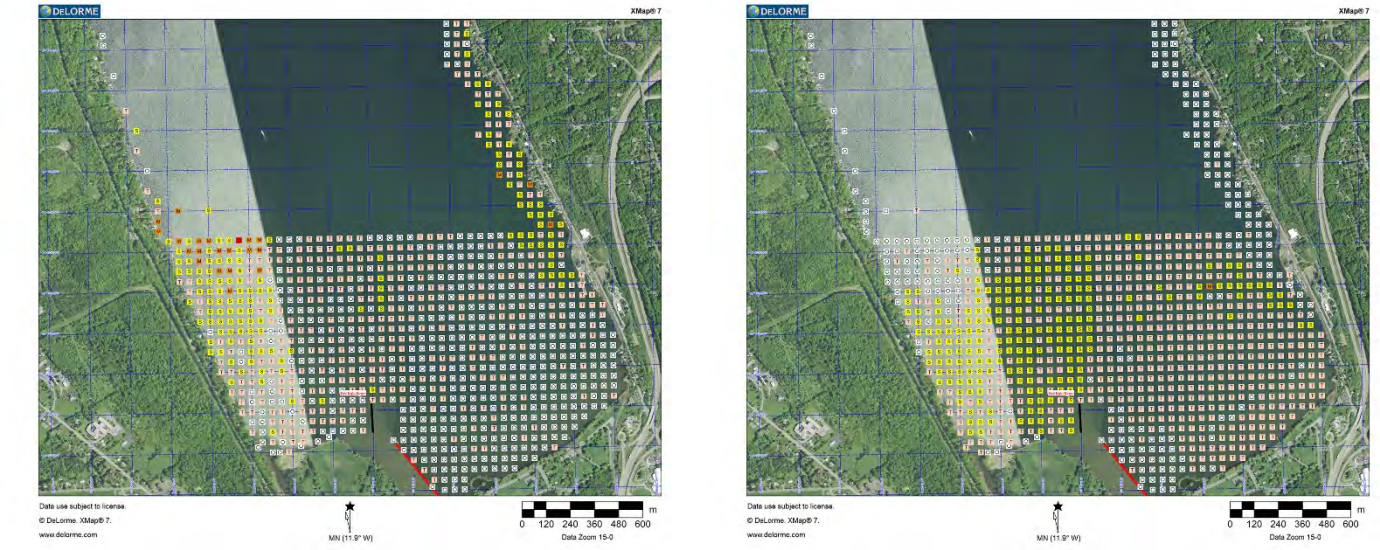


Figure 20. Maps of relative abundance of the native species *Elodea sp*. (left) and non-native macro-algae invader *Nitellopsis obtusa* (starry stonewort) (right), two dominant plants in southern Cayuga.

The 2014 post-herbicide evaluations of the Cayuga Inlet reported growing hydrilla at the Cornell University Boathouse Bay, suggesting that previous herbicide treatments (endothall one application followed by continuous drip of fluridone) that have worked very well in the Cayuga Inlet allowed growth at this location in 2014. We did not know if this hydrilla found at the CU Boathouse Bay matured enough in 2014 to produce new tubers. However, this discovery emphasizes the need to increase adequate monitoring in the future to locate new growth of hydrilla quickly in treated areas and of primary importance to prevent possible new hydrilla tuber formation. We did find and removed by hand high numbers of viable tubers in December 2014 from this location and interestingly did not have any further hydrilla growth in 2015 to the end of 2018 at the Cornell University Boathouse Bay (Table 4 and Figure 41).

In Fall Creek, with the high velocity stream flow, heavy feeding by waterfowl and major disturbances by common carp in the creek and backwaters continue to be a major challenge to the task of eliminating hydrilla. This is the area where, after the discovery of hydrilla on August 8, 2013, a major rainstorm that evening caused at the very least, thousands of hydrilla fragments and numerous turions to enter the lake from the new Fall Creek infestation.

While this and earlier reports contains a large data set of aquatic plant information, we suggest caution with any in-depth analysis despite some possible recent trend lines. Individual species have very different annual life cycles and can vary greatly in plant occurrence and mass throughout each seasonal growth period due to distinctive phenology. These changes in plant mass of individual species may occur as rapidly as two weeks while our collection of field data spans many weeks to months.

While there were likely possible herbicide effects on non-target species presence and abundance from pre-treatment to post-treatment within the Lighthouse area, Inlet and Fall Creek during treatment, we are unable to suggest long term effects on native species as we stopped herbicide treatments of endothall at the end of 2015 and of fluridone at the end of 2016 in the Inlet and no treatment added to Fall Creek in 2018. The data to date shows in the Lighthouse area, Inlet and Fall Creek a positive decrease of the target plant hydrilla and a positive increase in the natives *Najas flexilis* and *Potamogeton pusillus*. At the same time, we see a negative increase in Najas minor, a non-native. While *N. minor* was present in Cayuga Lake in 2012 before routine herbicide treatments began in the Cayuga Inlet our data does not show any increase in *N. minor* in the Lake. *N. minor's* presence together with shallow Inlet and Fall Creek water depths allow winter drawdown of the lake to expose bottom sediments at the edges of the Inlet and Fall Creek providing the ideal condition to crack the N. minor seed coat increasing germination in the spring and an increase in plant presence.

Figure 21. The top photograph is a newly formed tuber from the Stewart Park treated area dug up on 8-22-2018 at the same time as evaluation of the initial copper (Komeen Crystal) application occurred on 8-13-2018 (~ 4 acres). We found on 10-9-2018 by our rake-toss sampling off Stewart Park several locations with hydrilla fragments (bottom photos). Lush hydrilla on extreme left, bottom is from an area outside of the seven acres treated with copper (Komeen Crystal) with slightly damaged hydrilla in the center and right photos from inside the 9-10-2018 treatment area.

As a result of new found hydrilla in front of Stewart Park in late summer 2017, monitoring efforts continued in these locations in 2018 along with applications of the cooper herbicide, Komeen Crystal at 1ppm of metallic cooper. The application occurred under the jurisdiction of the Army Corps who manage the treatment of hydrilla further north in Cayuga Lake at Aurora, New York. The Army Corps has treated that hydrilla with cooper as Komeen Crystal and reported good results. We conducted three additional surveys in front of Stewart Park on August 7, August 22 and October 9, 2018 to assess any change in the progression of hydrilla growth during the copper treatment. We documented hydrilla in multiple locations along Stewart Park, including finds outside of the treatment area (Figures 21, 23-25). Figure 22 shows the location of hydrilla growth within the area treated with copper (Komeen Crystal). The Blue Dots area are the actual clusters of hydrilla found, while the white number blocks are where we conducted the three rake-toss surveys. This report shows the results in tables 2-A, 2-B and 2-C of the rake-toss as estimates of abundance of mass and percentage of plant species on the rake. Rake-toss locations chosen were between original clusters of hydrilla before treatment, not on the cluster, to help prevent additional spread of hydrilla.

Figures 23-25 show in more detail the results of our rake-toss findings in the treatment area. Figure 23 shows the all species abundance (top) and the hydrilla density at rake-toss locations on August 7 before the first copper treatment on August 13, 2018. Of the 14 locations samples by two rake-tosses each we found a trace of hydrilla at one location.

Figure 24 are the rake-toss results on August 22 after the August 13 treatment of 4 acres showing little change in all species abundance (top) but a large increase in viable hydrilla finds (bottom).

Figure 25 depicts the rake-toss results of October 9, 2018 after a second copper application to the area on September 10, 2018. We recorded a substantial decrease in all species abundance (top) however viable hydrilla persisted at the rake-toss locations and with further investigation throughout the treated area (Figure 2).

The failure to provide control of hydrilla growth with copper (Komeen Crystal) at the Stewart Park location at Ithaca appears to not deliver a high enough concentration of metallic cooper when applied at 1ppm to the area. There could be a multitude of reasons why the copper application did not work as desired at this location. A possible cause may be the shallow water depth of the area that results in a lower amount of granular copper formulation applied per surface area than applied in areas of greater depth where copper is effective because the label requires a 1ppm concentration application. A higher concentration of copper at the sediment surface, close to the target plant, even for a short time may make the difference in efficacy. Additionally, a higher flushing rate of the area with a northwest wind and an inadequate method of application to the treatment area.

Observations on August 22, 2018, the evaluation of the first treatment some hydrilla locations within the treatment area showed lush hydrilla plants between 18 and 24 inches tall while other locations that had similar pre-treatment growth were completely “burned off” or gone. This suggests some area plants received adequate copper while others received little.

Observations of the second treatment suggest a more even application with widespread damage to hydrilla. However, we noted that all hydrilla findings, throughout the treatment area, showed new regrowth from damaged hydrilla.

These observations suggest copper (Komeen Crystal) as applied (concentration and/or application) will not control hydrilla at this location.

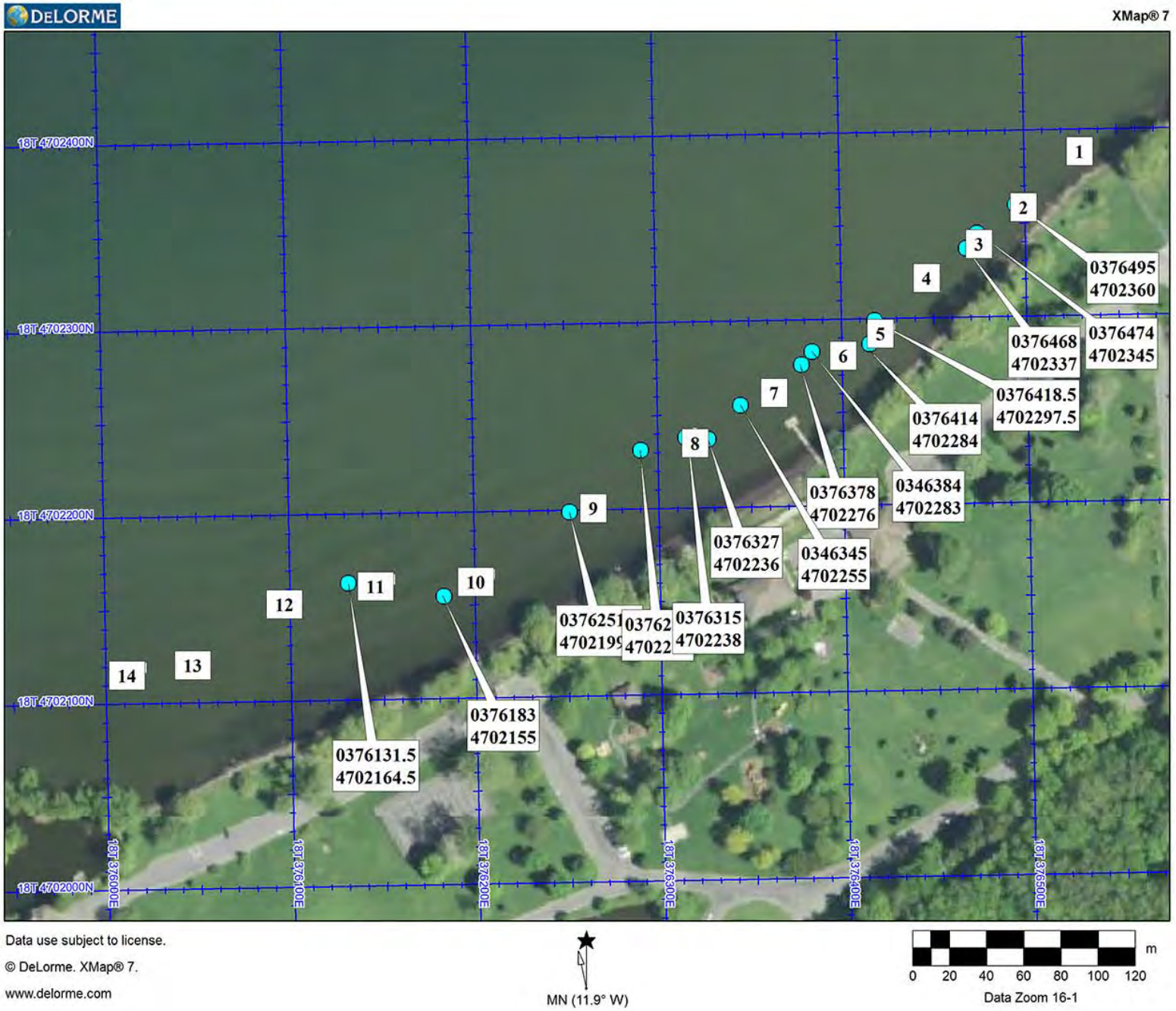


Figure 22. Individual hydrilla locations (Blue Dots) treated with copper (Komeen Crystal) in 2018 along numbered locations where we recorded rake-toss evaluations (Tables 2-A, 2-B, 2-C) within the copper treatment area.

Table 2-A. Rake-toss survey before treatment with copper (Komeen Crystal) on August 7, 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimates as part of the whole rake-toss collected.

Map ID #	Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Abundance #	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
1	8/7	376530	4702385	0.6	1	S	2		5	0.01	1				0.01				30				0.01					62										2	0.01	
1	8/7	376530	4702385	0.6	2	S	2		1									3	50				0.01					40								2		4		
2	8/7	376500	4702358	0.6	1	S	2												7				3					15										75		
2	8/7	376500	4702358	0.6	2	M	3				0.01		0.01					0.01	10				0.01					10		72						3		5		
3	8/7	376470	4702338	0.8	1	S	2	0.01	0.01				0.01					2	50		0.01		3					22		10	0.01				10		3		
3	8/7	376470	4702338	0.8	2	S	2		10	0.01									50				4					25		10	0.01				0.01		1		
4	8/7	376447	4702320	0.8	1	S	2		0.01										90				1					3							5		1		
4	8/7	376447	4702320	0.8	2	S	2			0.01								19	70		2		3					3							2		1		
5	8/7	376422	4702290	0.7	1	T	1			1	2							1	70									1		18					5		2		
5	8/7	376422	4702290	0.7	2	T	1		5	1								5	68				1					3							2		15		
6	8/7	376400	4702280	0.6	1	S	2			0.01			0.01					2	90				1					5							1		1		
6	8/7	376400	4702280	0.6	2	S	2			0.01								3	84				2					5							3		3		
7	8/7	376363	4702260	0.8	1	S	2		10				0.01					2	72				1					5							10		0.01		
7	8/7	376363	4702260	0.8	2	S	2		2	0.01			0.01						50				3					35							7		3		
8	8/7	376320	4702235	0.8	1	T	1	1	15										61				1					2							20				
8	8/7	376320	4702235	0.8	2	T	1	5	15	2			1						65				2					5							5				
9	8/7	376265	4702200	0.8	1	S	2						3						75		3		1					15							3				
9	8/7	376265	4702200	0.8	2	S	2	15	15	0.01									55		0.01		1					4							10		0.01		
10	8/7	376204	4702162	0.8	1	S	2	0.01	25		0.01							2	5									3			0.01				0.01		65		
10	8/7	376204	4702162	0.8	2	S	2		5	0.01				3	0.01				36		0.01		0.01					3							50		3	0.01	
11	8/7	376150	4702160	0.8	1	S	2	0.01											5									20			0.01				75				
11	8/7	376150	4702160	0.8	2	S	2	0.01		0.01									10									10							80				
12	8/7	376100	4702150	0.8	1	M	3			0.01									15								4	15		0.01	1				65				
12	8/7	376100	4702150	0.8	2	M	3												15									35			5				45		0.01		
13	8/7	376050	4702120	0.8	1	S	2	5											40									5			5				45			0.01	
13	8/7	376050	4702120	0.8	2	M	3		2	0.01			0.01					2	20		0.01						1	35			0.01				40			0.01	
14	8/7	376015	4702115	0.8	1	S	2		5										5				0.01					45							45				
14	8/7	376015	4702115	0.8	2	S	2	0.01			0.01							3	15				0.01					35			2				45				

Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
9	15	14	5	0	8	1	2	0	0	12	28	0	6	0	20	0	0	0	2	28	0	5	9	0	0	0	26	0	18	4	0

Table 2-B. Rake-toss survey on August 22, 2018 after first treatment applied on August 13, 2018 with copper (Komeen Crystal) to 4 areas. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimates as part of the whole rake-toss collected.

Map ID #	Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018 on 8/7	Depth (m) 2018 on 8/22	Rake toss #	Rake Abundance Rating	Abundance #	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
1	8/22	376530	4702385	0.6	0.7	1	S	2		20				5					3	5		3		16					2			1				15		30	0.01	
1	8/22	376530	4702385	0.6	0.7	2	M	3		10		1		0.01					2	15		1		10					2			5				50		4		
2	8/22	376500	4702358	0.6	0.8	1	S	2		2				3						2		0.01	0.01	2					0.01		35	0.01				26		30		
2	8/22	376500	4702358	0.6	0.8	2	S	2		5		0.01								10				17					2			1				10		55		
3	8/22	376470	4702338	0.8	0.7	1	T	1				3		1	2					5				30												14		45		
3	8/22	376470	4702338	0.8	0.7	2	S	2		10		1		0.01						2				10								8				49		20		
4	8/22	376447	4702320	0.8	0.8	1	T	1	1			2		7						3			1	10					2			1				65		8		
4	8/22	376447	4702320	0.8	0.8	2	S	2	1	1				1	10				5	5			0.01	10					2							55		10		
5	8/22	376422	4702290	0.7	0.5	1	T	1		7					2				10	5				1					3			2				70				
5	8/22	376422	4702290	0.7	0.5	2	S	2						1	1					2		2							3			0.01				89		2		
6	8/22	376400	4702280	0.6	0.6	1	S	2	1					3	1				10	5		0.01		0.01					0.01							75		5		
6	8/22	376400	4702280	0.6	0.6	2	S	2						2	1				0.01	3		0.01	0.01	0.01					2							70		22		
7	8/22	376363	4702260	0.8	0.6	1	S	2		1		2								1									3							93				
7	8/22	376363	4702260	0.8	0.6	2	S	2		1		0.01		0.01	0.01				9	4				0.01					1							85				
8	8/22	376320	4702235	0.8	0.8	1	T	1						20	2				2	3									2			1				60		10		
8	8/22	376320	4702235	0.8	0.8	2	T	1		2				26	5					2									5							50		10		
9	8/22	376265	4702200	0.8	0.8	1	T	1						1					10	3			1	1					3			1				80				
9	8/22	376265	4702200	0.8	0.8	2	M	3	0.01	0.01		2		1	0.01				15	2		0.01							0.01			4				75		1		
10	8/22	376204	4702162	0.8	0.9	1	T	1	1	20									5	5				1					8							60				
10	8/22	376204	4702162	0.8	0.9	2	S	2		40		2			0.01				6	10		1							1							40		0.01		
11	8/22	376150	4702160	0.8	0.8	1	S	2		5		1							5	10									1							75		3		
11	8/22	376150	4702160	0.8	0.8	2	S	2		5									10	5			0.01					0.01	10			0.01				70				
12	8/22	376100	4702150	0.8	0.8	1	M	3		2		1		0.01	0.01					35		1							45		0.01	3				13				
12	8/22	376100	4702150	0.8	0.8	2	M	3	2	8		1		0.01					1	40		2		0.01				0.01	20		5	1				20				
13	8/22	376050	4702120	0.8	0.8	1	S	2		2		2		1					2	50		5							5							33		0.01		
13	8/22	376050	4702120	0.8	0.8	2	S	2	0.01	5		3							2	25		5							15		0.01					45				
14	8/22	376015	4702115	0.8	0.8	1	S	2	1	5		0.01		5					0.01	10		2							38							37		2		
14	8/22	376015	4702115	0.8	0.8	2	S	2	1	5				1					7	8		0.01						0.01	26			0.01				50		2		

Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
9	21	0	15	0	20	12	0	0	0	19	28	0	14	6	15	0	0	0	3	26	0	4	15	0	0	0	28	0	19	1	0

Table 2-C. Rake-toss survey on October 9, 2018 after September 10, 2018 treatment with copper (Komeen Crystal) to a larger area of 7 acres. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimates as part of the whole rake-toss collected.

Map ID #	Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018 on 8/7	Depth (m) 2018 on 8/22	Depth (m) 2018 on 10/9	Rake toss #	Rake Abundance Rating	Abundance #	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
1	10/9	376530	4702385	0.6	0.7	0.6	1	S	2		10		0.01		3					2					5															80		
1	10/9	376530	4702385	0.6	0.7	0.6	2	M	3		2		1		5					2					30															60		
2	10/9	376500	4702358	0.6	0.8	0.7	1	T	1		10				73					5					1									1					10		
2	10/9	376500	4702358	0.6	0.8	0.7	2	T	1		3		8		75								1		2									1					10		
3	10/9	376470	4702338	0.8	0.7	0.7	1	T	1		14		2		20					40					1									1				2	20		
3	10/9	376470	4702338	0.8	0.7	0.7	2	T	1						23					50					4									1				5	17		
4	10/9	376447	4702320	0.8	0.8	0.7	1	T	1		3				15					59			1											2				5	15		
4	10/9	376447	4702320	0.8	0.8	0.7	2	T	1		3				10					40			3		1									2				15	26		
5	10/9	376422	4702290	0.7	0.5	0.6	1	T	1		20									15					3													60	2		
5	10/9	376422	4702290	0.7	0.5	0.6	2	T	1		2				2					63					1									5				25	2		
6	10/9	376400	4702280	0.6	0.6	0.6	1	T	1						1	5				8													2				45	39		
6	10/9	376400	4702280	0.6	0.6	0.6	2	T	1		2				15					70					1									1				1	10		
7	10/9	376363	4702260	0.8	0.6	0.7	1	T	1						1					65			1		2									1				8	20	2	
7	10/9	376363	4702260	0.8	0.6	0.7	2	T	1		30				13	4				25			2		1				3	2							5	15		
8	10/9	376320	4702235	0.8	0.8	0.7	1	T	1											30	1																4	65		
8	10/9	376320	4702235	0.8	0.8	0.7	2	T	1											60					1					10							4	25		
9	10/9	376265	4702200	0.8	0.8	0.7	1	T	1		10									7			2											1			65	15		
9	10/9	376265	4702200	0.8	0.8	0.7	2	T	1		30				4	10																		1			45	10		
10	10/9	376204	4702162	0.8	0.9	0.7	1	T	1																									100							
10	10/9	376204	4702162	0.8	0.9	0.7	2	T	1						15					30			1		1									1			17	35		
11	10/9	376150	4702160	0.8	0.8	0.8	1	T	1						40	1				40			1		1					2		10						5		
11	10/9	376150	4702160	0.8	0.8	0.8	2	T	1				15							40					6									2			2	35		
12	10/9	376100	4702150	0.8	0.8	0.8	1	T	1				8		15					30					1									1					45		
12	10/9	376100	4702150	0.8	0.8	0.8	2	T	1		80												1											4				15		
13	10/9	376050	4702120	0.8	0.8	0.8	1	T	1		20				70																									10	
13	10/9	376050	4702120	0.8	0.8	0.8	2	T	1		6		10		15										2									2					65		
14	10/9	376015	4702115	0.8	0.8	0.8	1	T	1				2		69					5			2		3					3				1					15		
14	10/9	376015	4702115	0.8	0.8	0.8	2	T	1		44		5		40										3									1				2	5		

Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Zannichellia palustris	Filamentous algae +
0	17	0	9	0	21	4	0	0	0	21	1	0	10	0	20	0	0	0	1	4	0	1	20	0	0	0	17	0	26	2	0

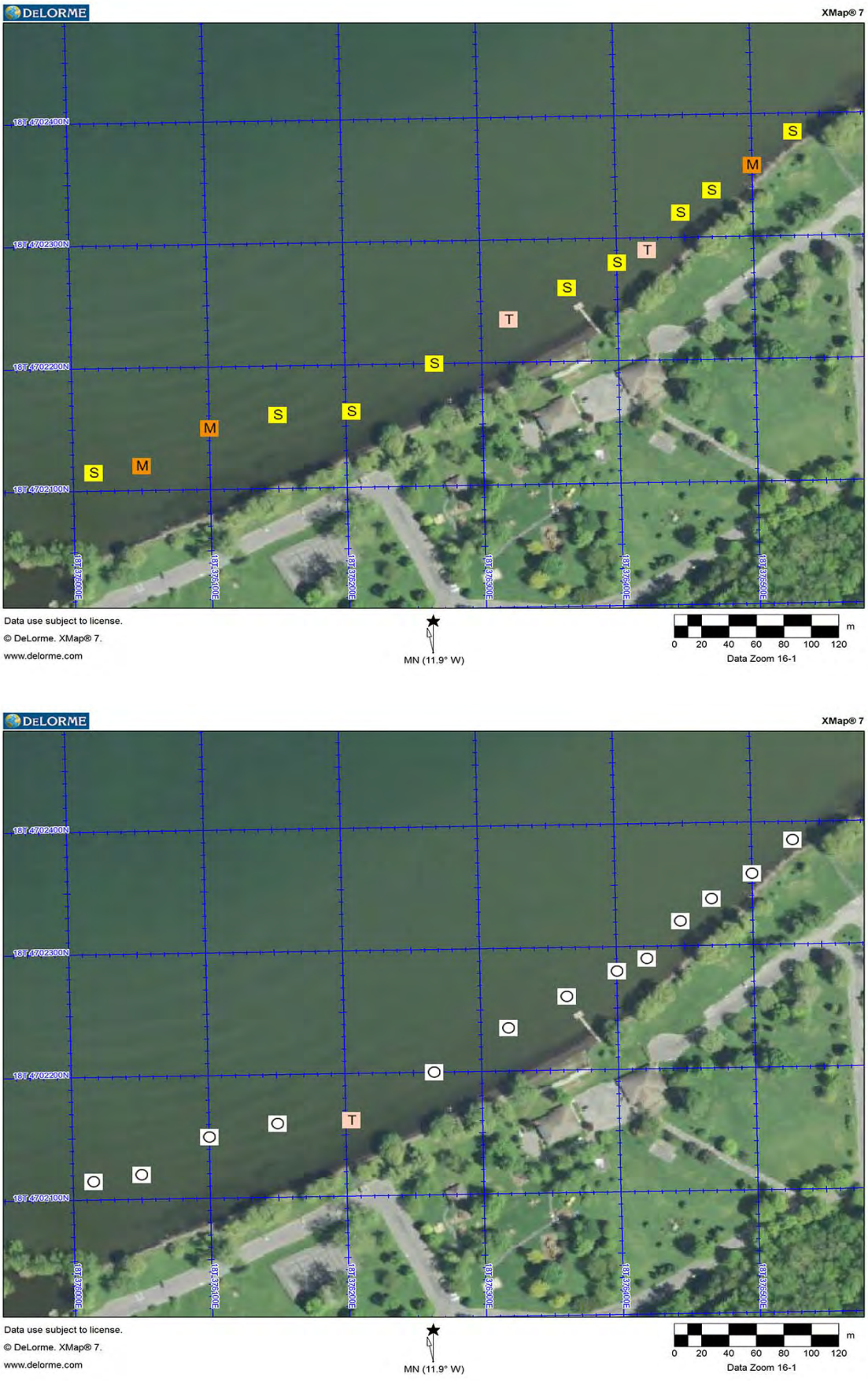
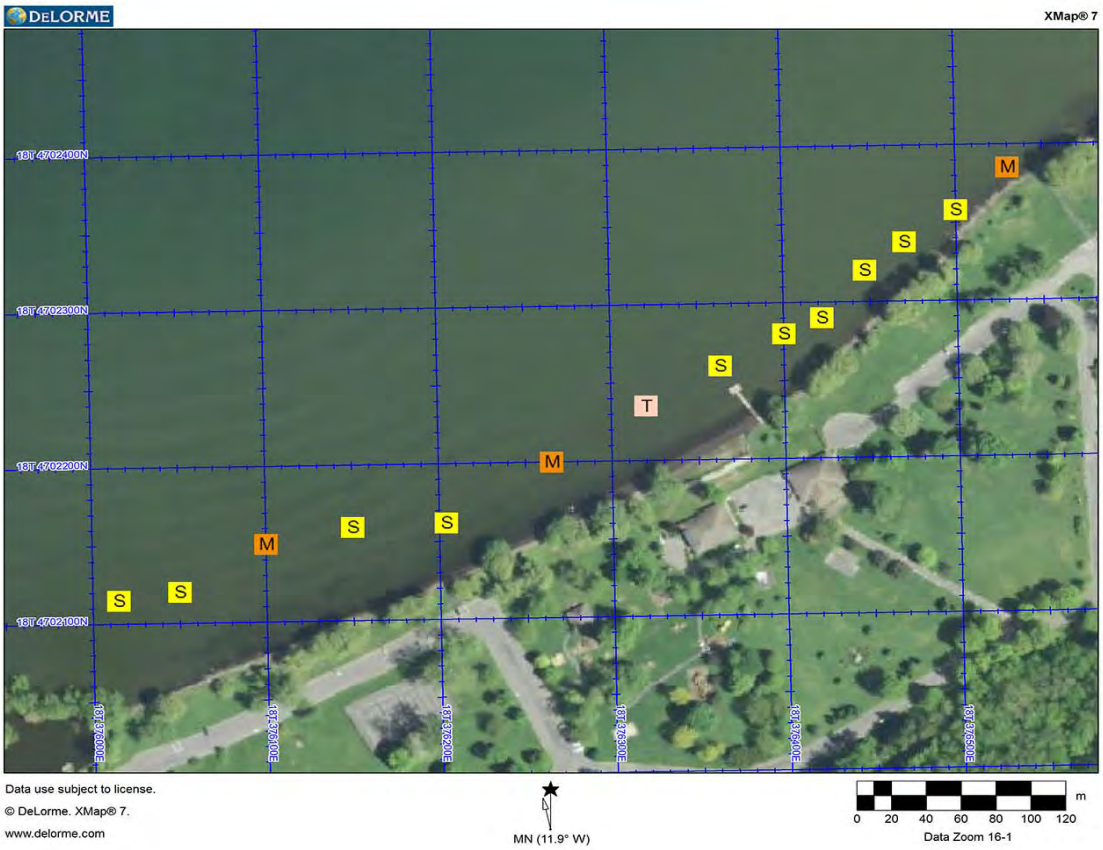


Figure 23. All species combined (top) and *Hydrilla verticillata* (hydrilla) (bottom) as abundance by two rake-tosses on August 7, 2018.



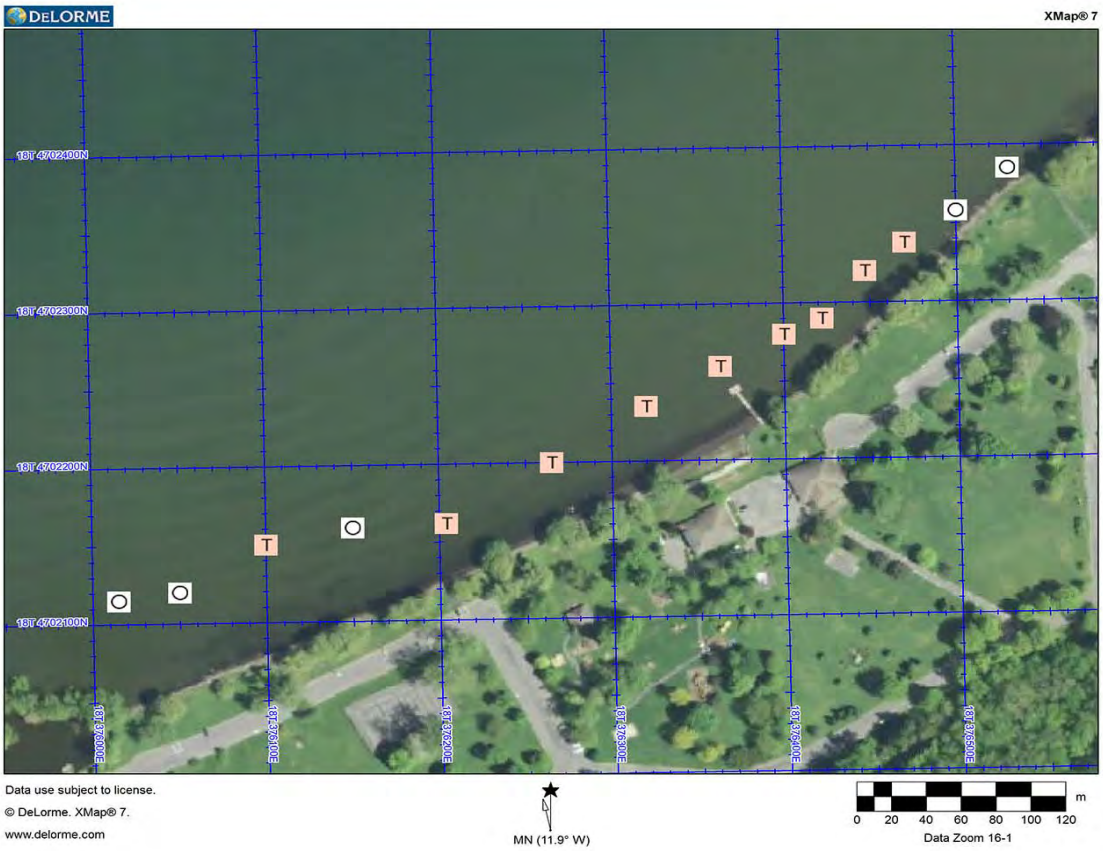
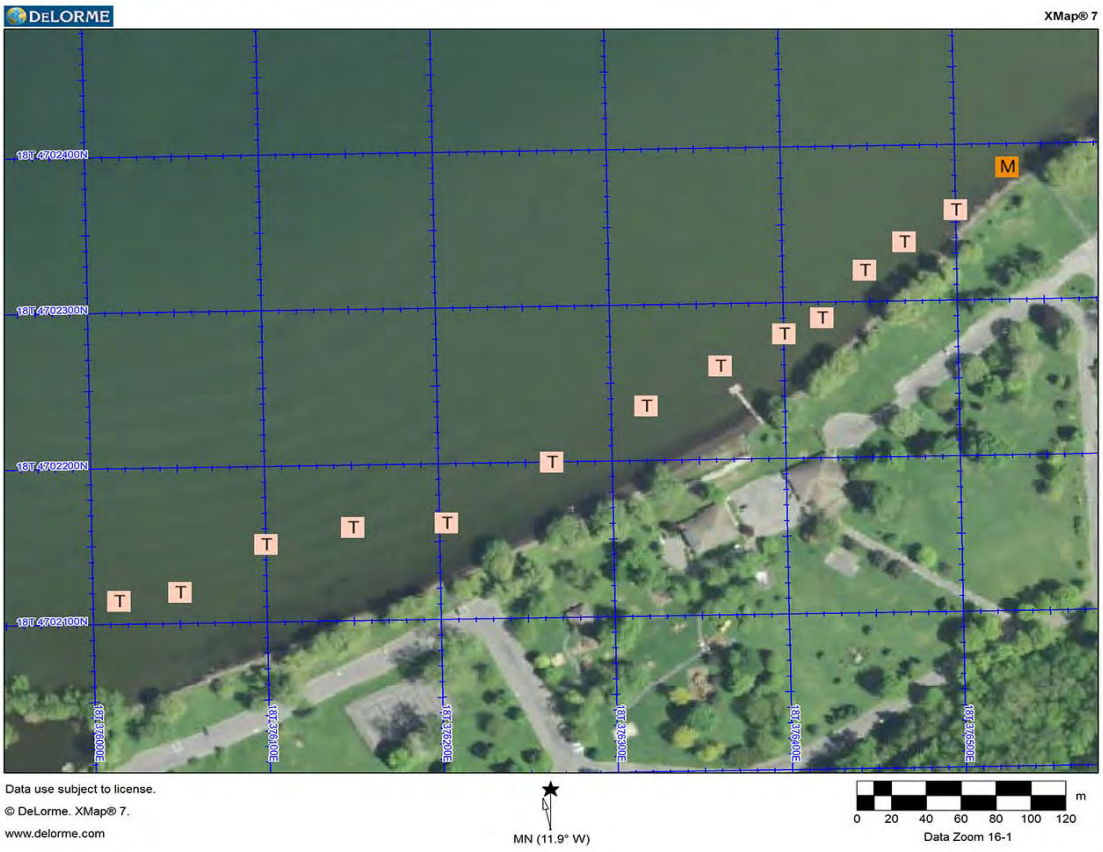


Figure 24. All species combined (top) and *Hydrilla verticillata* (hydrilla) (bottom) as abundance by two rake-tosses on August 22, 2018 after the application of copper on August 13, 2018.



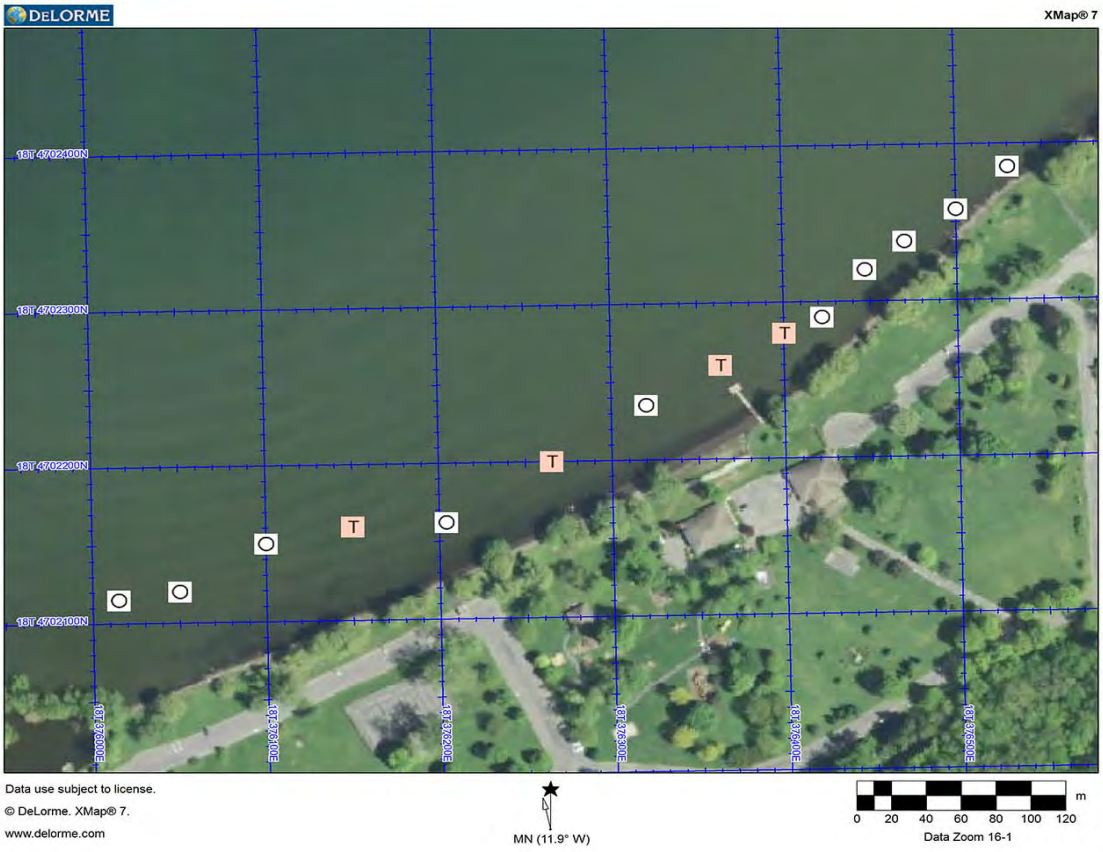


Figure 25. All species combined (top) and *Hydrilla verticillata* (hydrilla) (bottom) as abundance by two rake-tosses on October 9, 2018 evaluating the September 10th application of copper on an expanded area of 7 acres.

Tracking the frequency of occurrence presented in Figures 26, 27, 28 and 29 a few possible trends emerge. We do see in Figure 26 that there is a general similarity in the relative frequency of the Lake and Lighthouse areas despite the large difference in number of observations.

Two examples of significant increases from the previous 5 years in percent of occurrence of the invasive *Najas minor* and the native *Potamogeton pusillus* shown in Figures 30 (Inlet "proper") and 31 (LH, "Lighthouse locations") confirms these dramatic increases with pie charts. A possible conclusion might be that the herbicide treatment started in the fall of 2011 and stopped at the end of 2016 growing season likely allowed new growth leading to increases in occurrences. The herbicides used limited growth during the treatment years.

Additionally, when comparisons of relative abundance ratings of all species combined for years 2012 – 2018, shown in Figures 32-38 following, differences in plant mass from year to year are a few. The abundance ratings or categories estimating mass of all aquatic plants in total, changed a little from one year to the next for Cayuga Lake but difficult to see a trend. We do not see more than very slight changes or trends from one year to another or a pattern overall year.

Overall, the aquatic plant community in Cayuga Lake remains relatively stable when considering occurrence and mass with larger shifts between individual species through the growing season. We do note a very large presence in the occurrences and mass of the macro algae, *Nitellopsis obtusa*, in Cayuga Lake 2013 – 2018 compared to survey measures in the year 2012. This plant species continues to slowly expand its range in southern Cayuga Lake since Racine-Johnson Aquatic Ecologists first reported *Nitellopsis obtusa* from plant samplings of southern Cayuga in 2008. In 2018, we did not see as large of a presence of *Nitellopsis obtusa* in our recorded survey likely due to earlier sampling dates. The field-recorded rake-toss data are in tables Data 1 - Data 4 (pages 134-219) and new locations of hydrilla discoveries in 2018 are in table Coordinates 1 (page 220). Our hydrilla locations found in 2018 are on the web at **http://www.hydrillacollaborative.com/Home/CaseStudies** This same web site has all previous yearly reports that include all hydrilla locations from 2011 to 2018.

The tuber graphs Figure 40 through Figure 46 following (pages 55-61), show the rapid depletion of tuber numbers within the sediment from the initial discovery at all locations. These results appear to be in line with early research (Netherland 1997) that tubers may remain in the sediment up to four years before germinating. Our data suggests that longer time frames of management of hydrilla by herbicides to eradicate previously produced tubers may be excessive at specific locations.

Table 3. Relative Frequency (%) of aquatic plant species in 2018 recorded by the line intercept grid survey in Cayuga Lake, the Lighthouse Area (LH), the Cayuga Inlet proper and Fall Creek.

Scientific Name	Common Name	Lake 2018		Lighthouse 2018		Inlet 2018		Fall Creek 2018	
		FREQ	%	FREQ	%	FREQ	%	FREQ	%
Alisma gramineum	water plantain	20	1.01	7	11.67	1	0.28	19	6.64
Ceratophyllum demersum	coontail, hornwort	1165	58.54	45	75.00	62	17.32	40	13.99
Chara vulgaris	chara, muskgrass	163	8.19	0	0.00	0	0.00	0	0.00
Elodea sp.	elodea, common waterweed	840	42.21	21	35.00	20	5.59	4	1.40
Fontinalis sp.	water moss	6	0.30	0	0.00	7	1.96	16	5.59
Heteranthera dubia	water stargrass	206	10.35	9	15.00	5	1.40	2	0.70
Hydrilla verticillata	**hydrilla, water thyme**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
Iridaceae pseudacorus	yellow iris	0	0.00	0	0.00	0	0.00	0	0.00
Lemna minor	small duckweed	0	0.00	1	1.67	0	0.00	10	3.50
Lemna trisulca	ivy-leaved duckweed	0	0.00	0	0.00	0	0.00	0	0.00
Marsilea quadrifolia	**European waterclover**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**7**	**2.45**
Myriophyllum spicatum	**Eurasian watermilfoil**	**765**	**38.44**	**24**	**40.00**	**19**	**5.31**	**5**	**1.75**
Najas flexilis	slender naiad, bushy naiad	168	8.44	39	65.00	29	8.10	10	3.50
Najas guadalupensis	southern naiad	6	0.30	0	0.00	0	0.00	0	0.00
Najas minor	**brittle naiad**	**6**	**0.30**	**25**	**41.67**	**108**	**30.17**	**15**	**5.24**
Nitella flexilis	nitella, stonewort	1	0.05	0	0.00	0	0.00	0	0.00
Nitellopsis obtusa	**starry stonewort**	**1335**	**67.09**	**46**	**76.67**	**23**	**6.42**	**13**	**4.55**
Nuphar advena	yellow pond lily	0	0.00	0	0.00	1	0.28	4	1.40
Nuphar variegata	spatterdock	0	0.00	0	0.00	0	0.00	0	0.00
Nymphaea odorata	white water lily	3	0.15	0	0.00	1	0.28	12	4.20
Polygonum amphibium	water smartweed	0	0.00	0	0.00	0	0.00	0	0.00
Pontederia codorata	pickerel weed	0	0.00	0	0.00	0	0.00	0	0.00
Potamogeton crispus	**curly-leaf pondweed**	**595**	**29.90**	**9**	**15.00**	**2**	**0.56**	**3**	**1.05**
Potamogeton foliosus	leafy pondweed	40	2.01	0	0.00	0	0.00	0	0.00
Potamogeton hillii	Hill's pondweed	597	30.00	22	36.67	17	4.75	5	1.75
Potamogeton illinoensis	Illinois pondweed	0	0.00	0	0.00	0	0.00	0	0.00
Potamogeton praelongus	white stem pondweed	8	0.40	0	0.00	0	0.00	0	0.00
Potamogeton pusillus	small pondweed	1237	62.16	37	61.67	25	6.98	10	3.50
Potamogeton richardsonii	clasping-leaf pondweed	0	0.00	0	0.00	0	0.00	0	0.00
Potamogeton zosteriformis	flat-stem pondweed	27	1.36	0	0.00	0	0.00	0	0.00
Ranunculus trichophyllus	white water crowfoot	26	1.31	0	0.00	0	0.00	0	0.00
Sagittaria sp.	arrowhead	0	0.00	0	0.00	0	0.00	0	0.00
Sparganium eurycarpum	common bur-reed	0	0.00	0	0.00	0	0.00	2	0.70
Spirodela polyrhiza	great duckweed	0	0.00	0	0.00	0	0.00	1	0.35
Stuckenia pectinata	sago pondweed	943	47.39	12	20.00	20	5.59	36	12.59
Utricularia sp.	bladderwort	0	0.00	0	0.00	0	0.00	0	0.00
Vallisneria americana	wild celery, eel grass	188	9.45	5	8.33	14	3.91	2	0.70
Wolffia columbiana	watermeal	0	0.00	0	0.00	0	0.00	0	0.00
Zannichellia palustris	horned pondweed	467	23.47	16	26.67	28	7.82	10	3.50
Pithophora sp.	**benthic algae**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**
filamentous algae	**filamentous algae**	**474**	**23.82**	**0**	**0.00**	**46**	**12.85**	**24**	**8.39**
Total occurrences of all species from all rake tosses		8812		318		382		226	
		Mean		Mean		Mean		Mean	
Plant Species Occurrence (species per rake-toss)		**4.43**		**5.30**		**1.07**		**0.79**	
Non-native Species Occurrence (species per rake-toss)		**1.36**		**1.73**		**0.42**		**0.15**	
Native Plant Occurrence (species per rake-toss)		**3.07**		**3.57**		**0.64**		**0.64**	
		FREQ	%	FREQ	%	FREQ	%	FREQ	%
Plant Frequency (rake-tosses with a plant species)		**1930**	**96.98**	**58**	**96.67**	**185**	**44.26**	**99**	**34.62**
Non-native Plant Frequency (rake-tosses with a non-native plant)		**1725**	**86.68**	**53**	**88.33**	**127**	**30.38**	**35**	**12.24**
Native Plant Frequency (rake-tosses with a native plant)		**1898**	**95.38**	**56**	**93.33**	**143**	**34.21**	**96**	**33.57**
Number of Rake-tosses		**1990**		**60**		**358**		**286**	

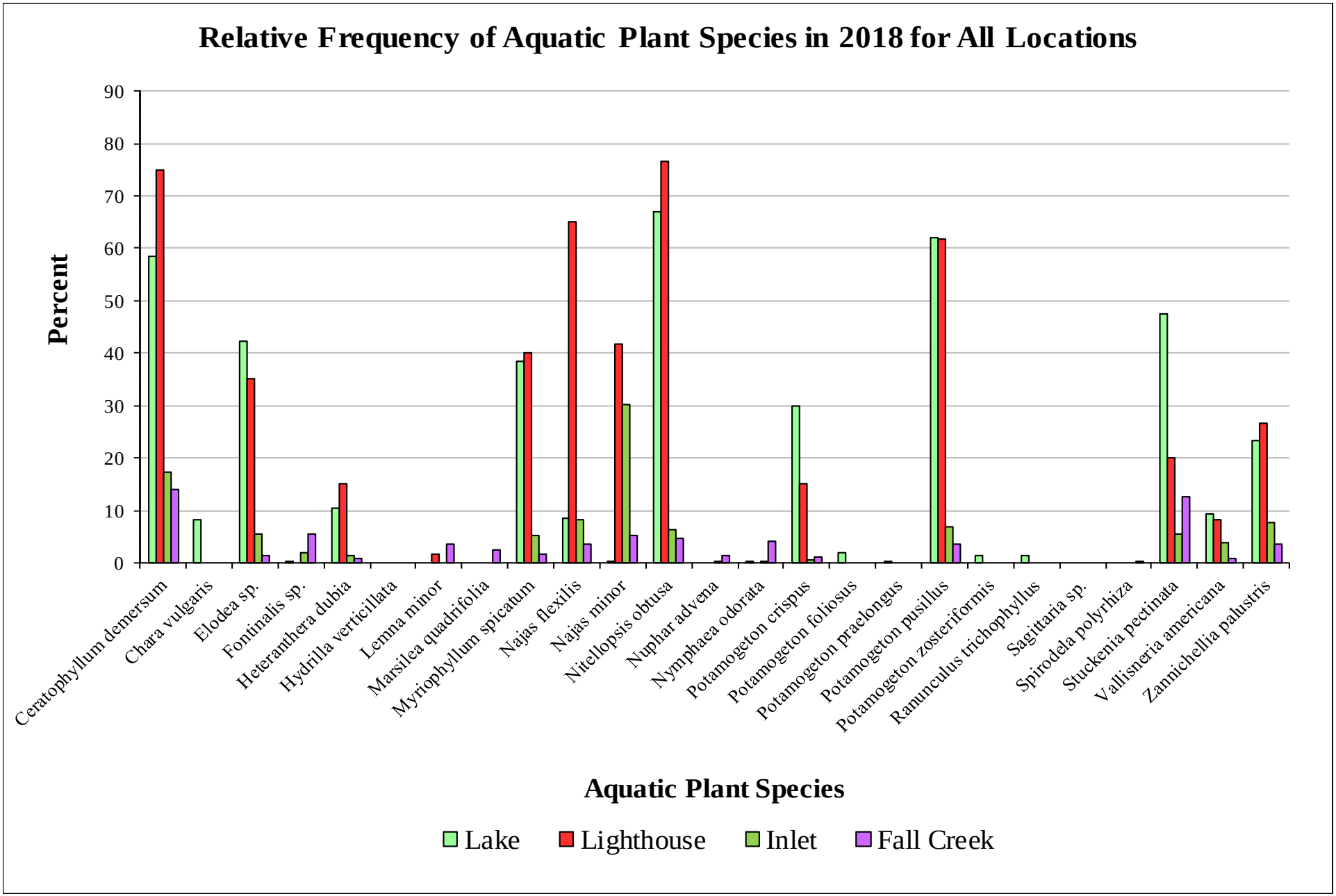


Figure 26. Percentage of an individual species occurred out of all rake-tosses made in the Lake, Lighthouse, Inlet proper and Fall Creek in 2018.

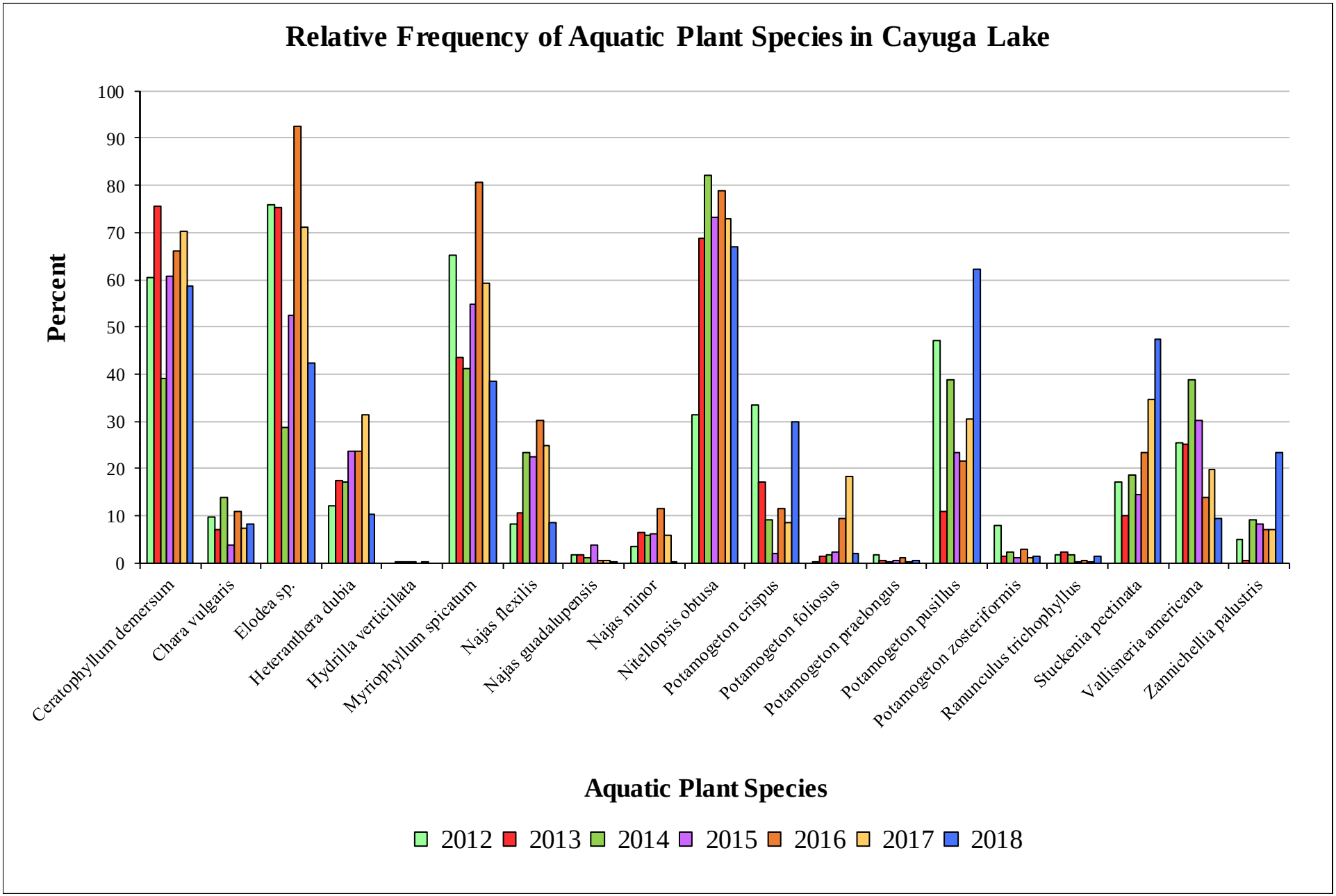
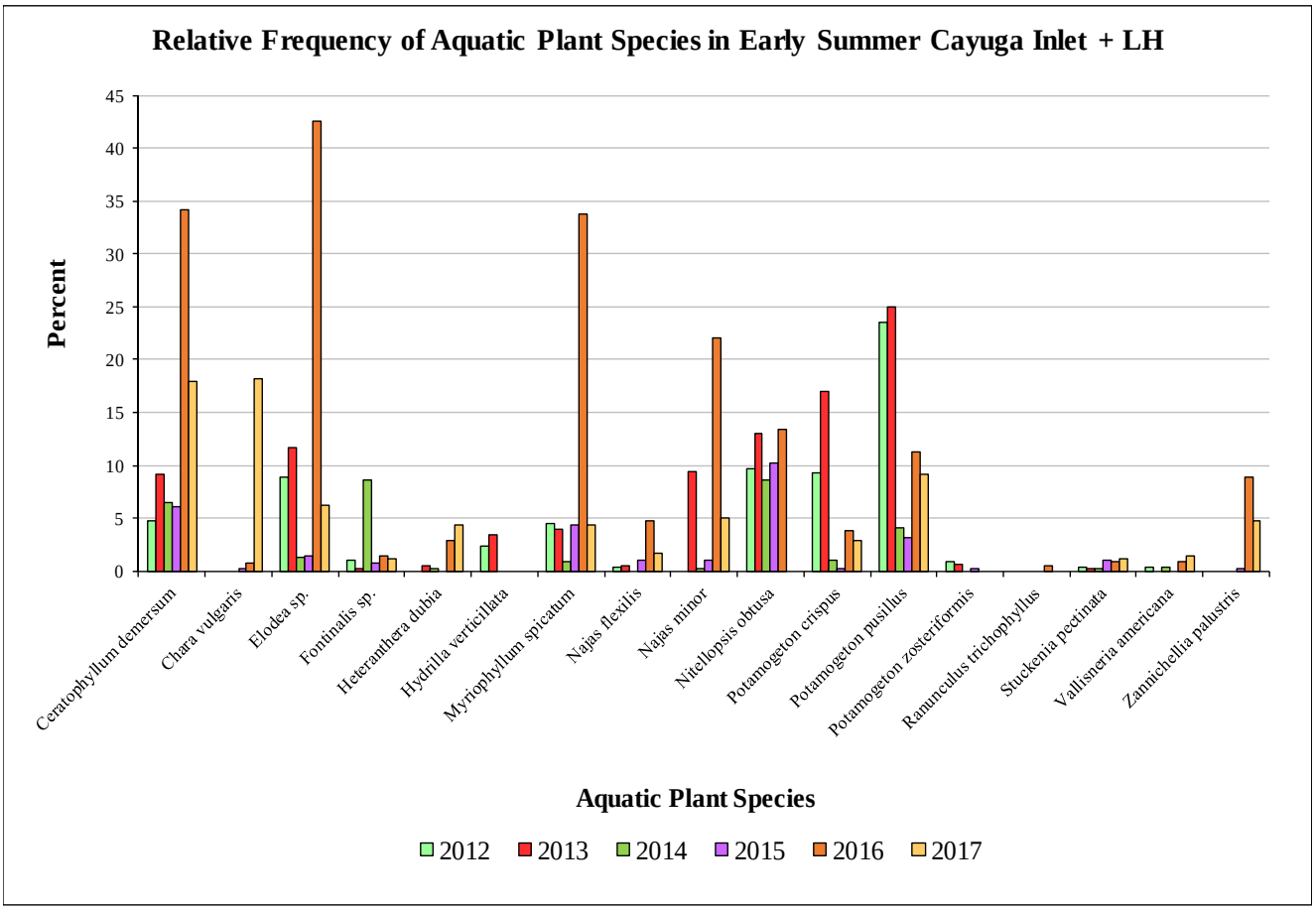


Figure 27. Percentage of an individual species occurred out of all rake-tosses made in the Lake during the stated year.



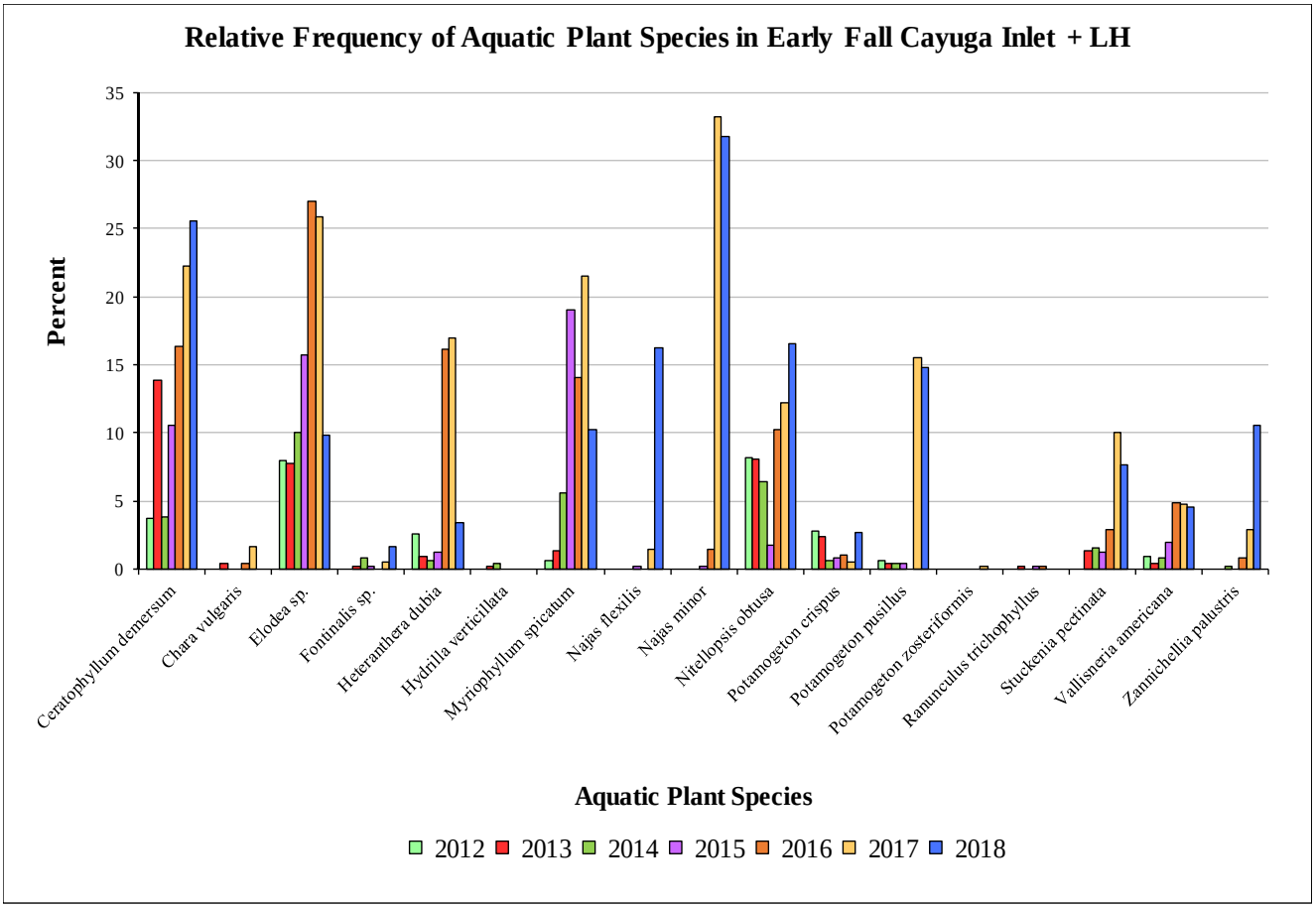
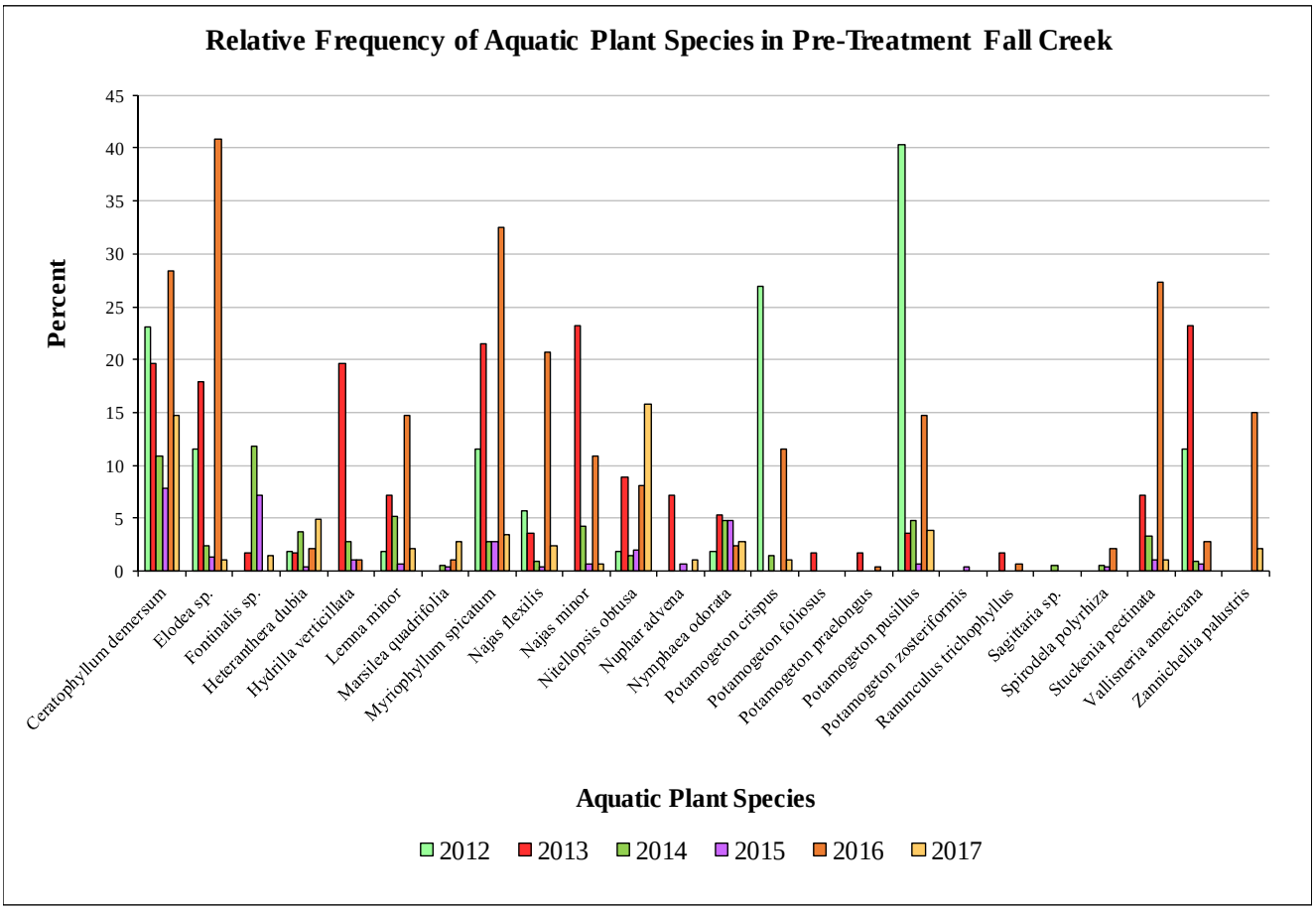


Figure 28. Percentage of an individual species occurred out of all rake-tosses made in the Inlet + LH during the stated year for early summer (top) and late summer/early fall (bottom).



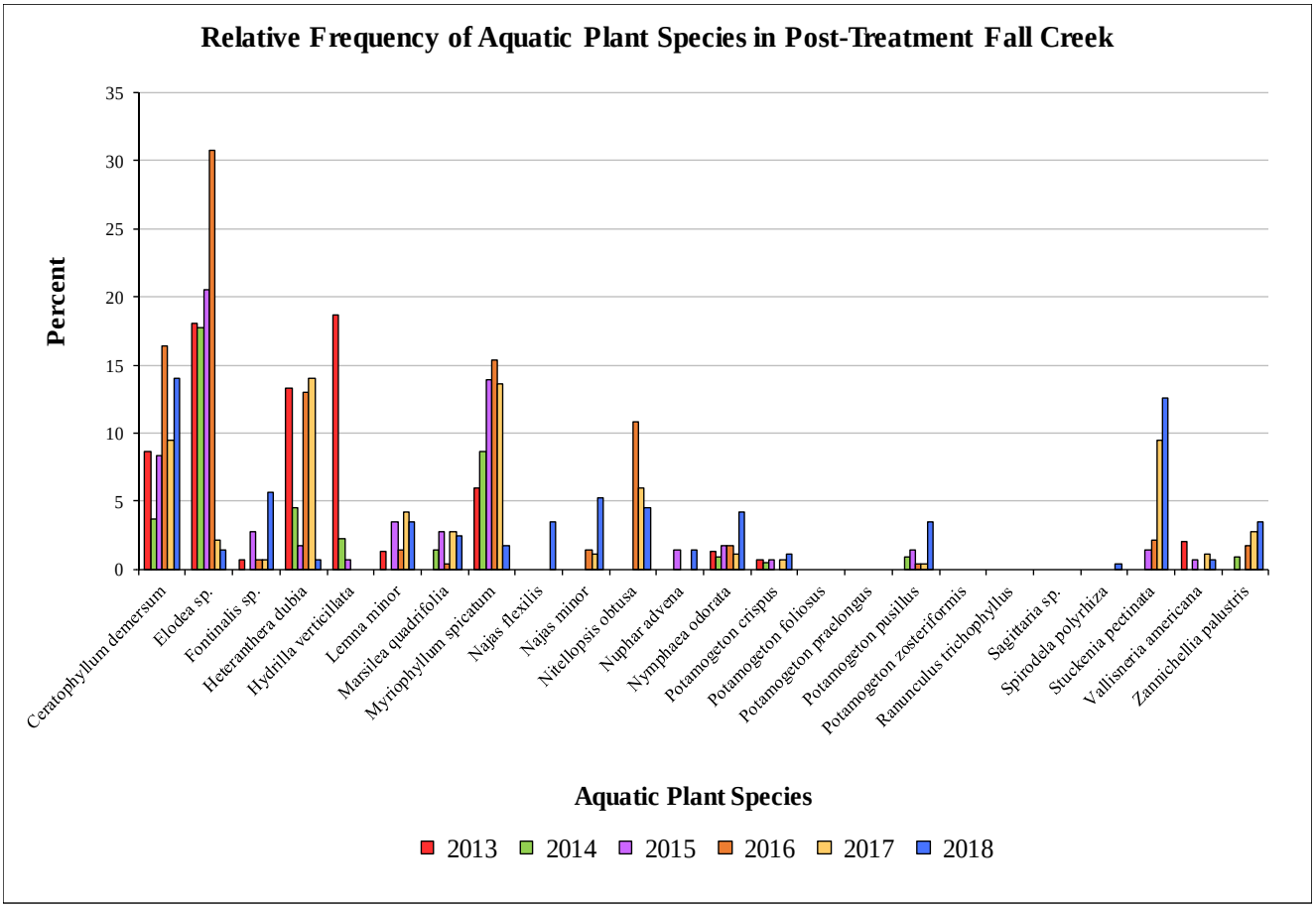


Figure 29. Percentage an individual species occurred out of all rake-tosses made in Fall Creek during the stated year for pre-treatment (top) and post-treatment (bottom).

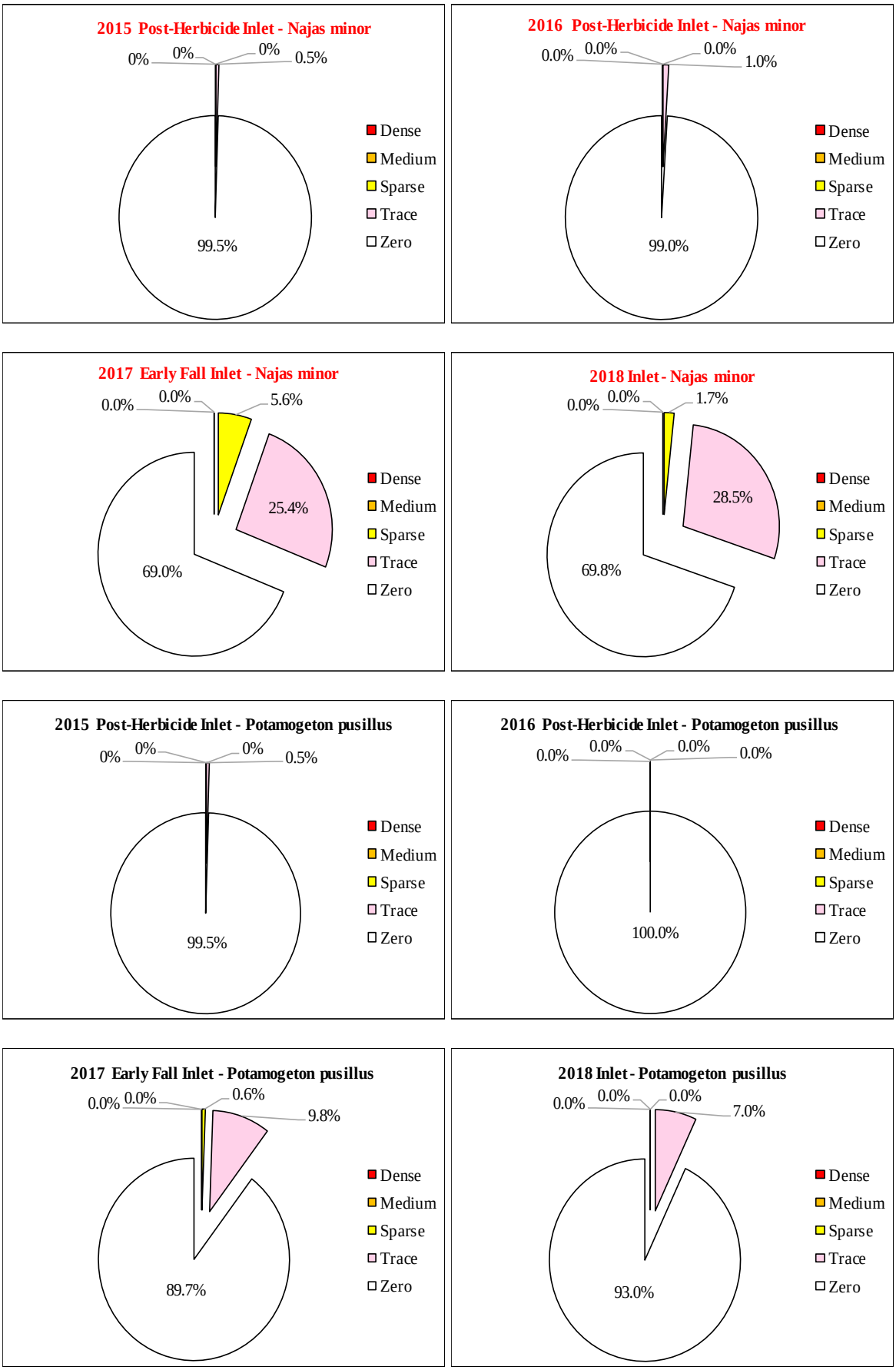


Figure 30. Inlet "proper". Percentages of each abundance category of the total rake-tosses (post herbicide or early fall) made in the Inlet proper from 2015 - 2018 to contrast the "Fall" plant mass of *Najas minor* and *Potamogeton pusillus*. In 2018, monitoring took place from July 18 to August 7, 2018.

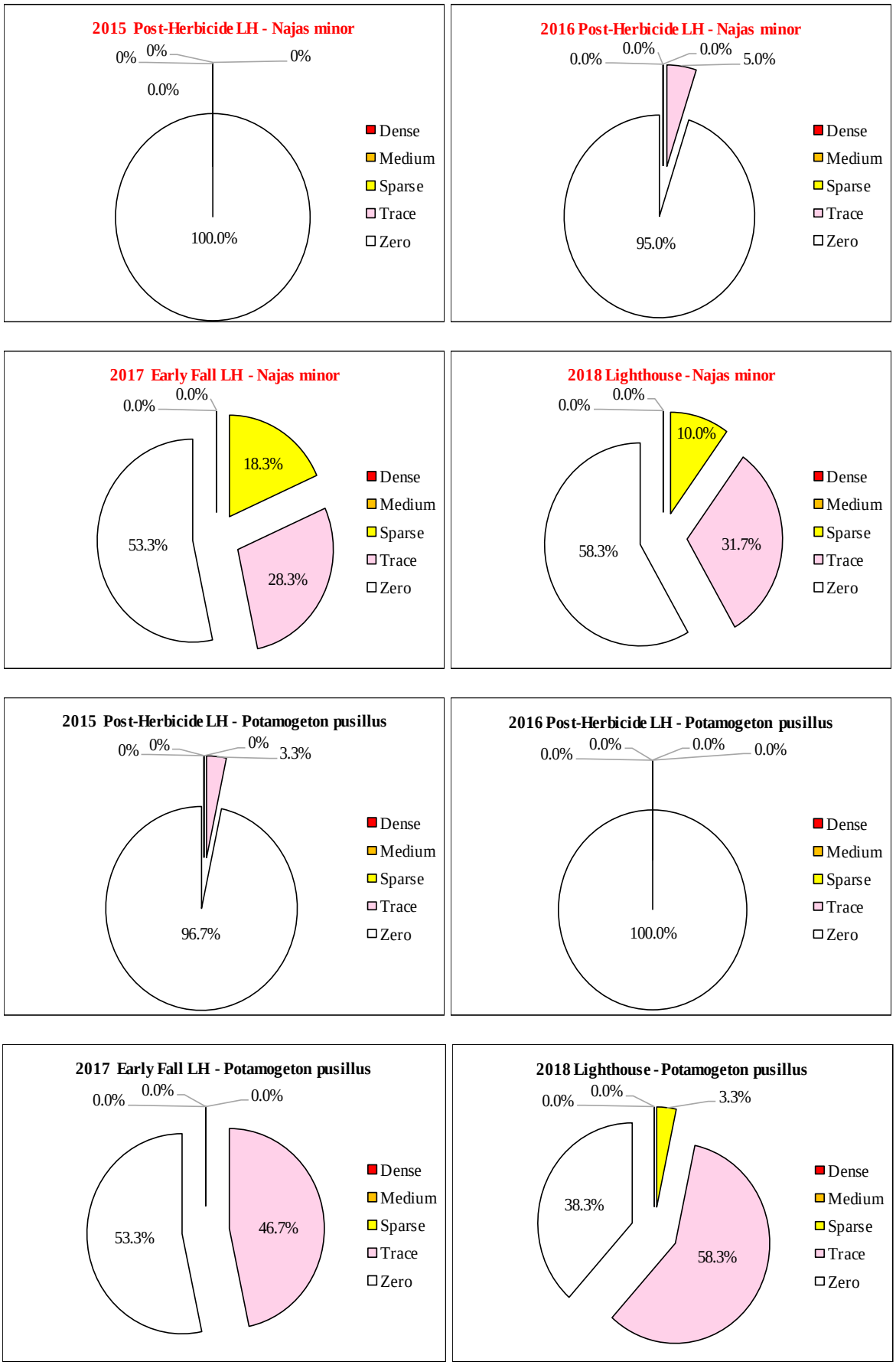


Figure 31. Lighthouse. Percentages of each abundance category of the total rake-tosses (post herbicide or early fall) made in the Lighthouse Area of the Inlet from 2015 - 2018 to contrast the "Fall" plant mass of *Najas minor* and Potamogeton pusillus. In 2018, monitoring took place on July 24, 2018.

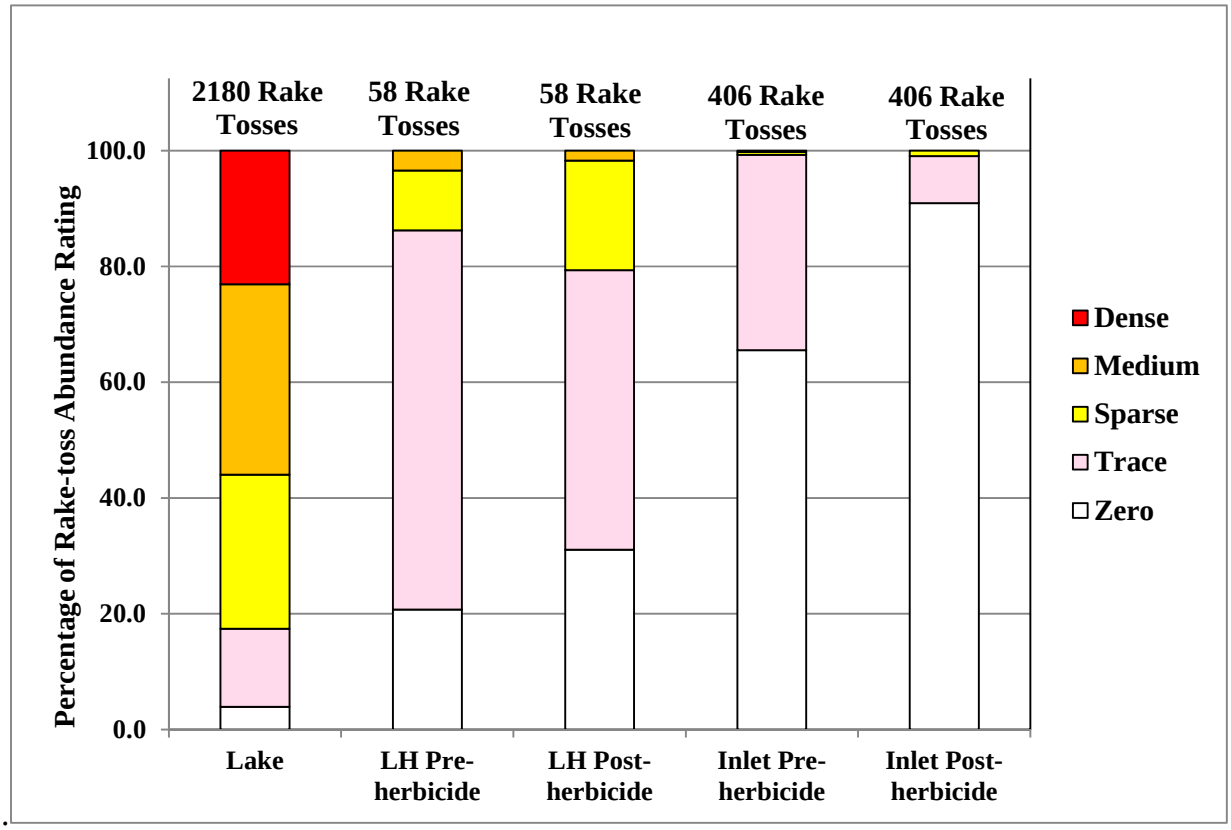


Figure 32. 2012 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet and the Inlet proper.

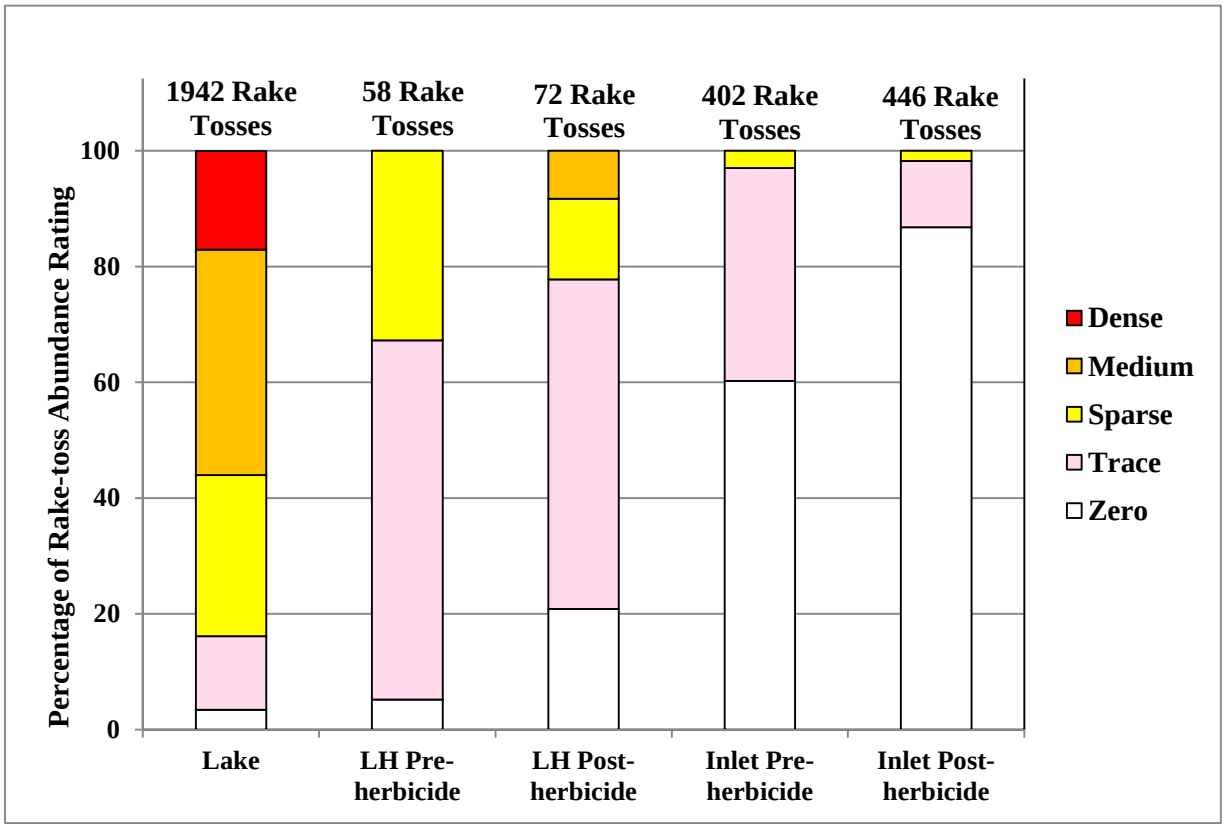


Figure 33. 2013 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet and the Inlet proper.

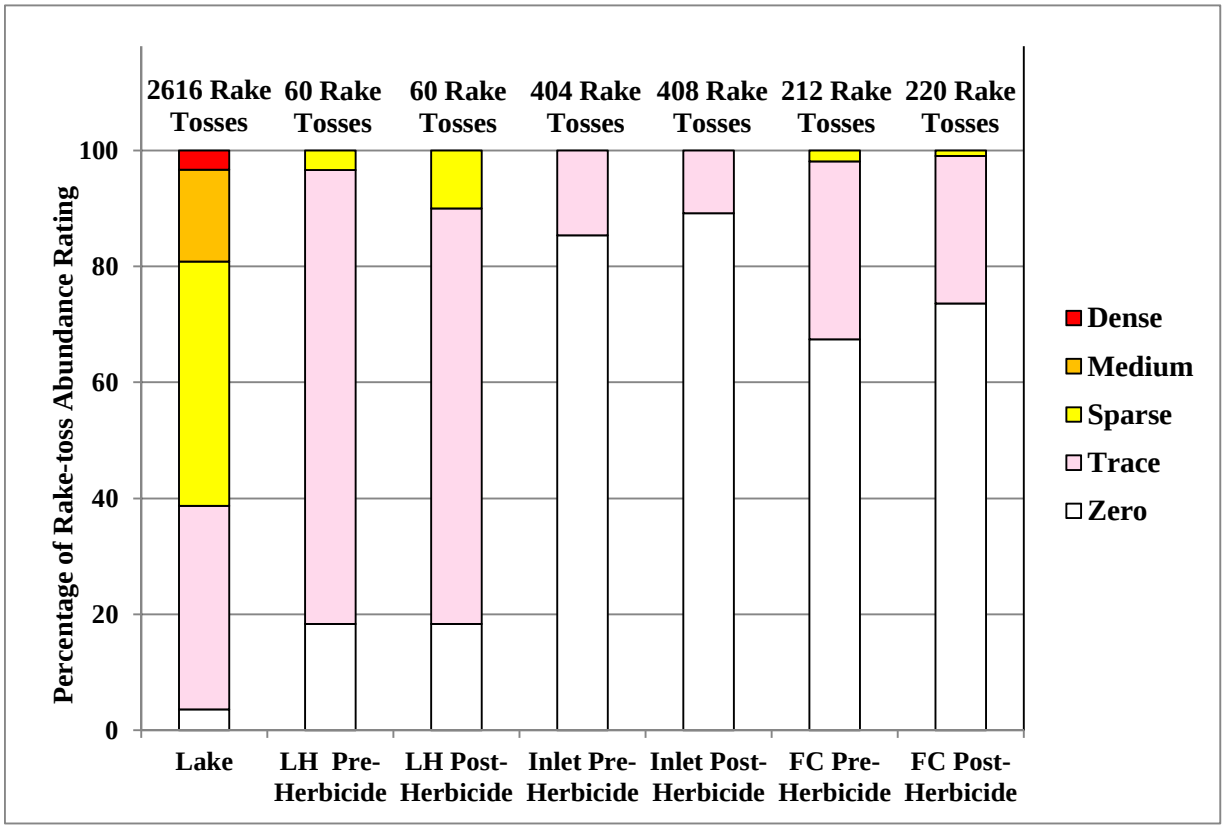


Figure 34. 2014 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet, the Inlet proper and the Fall Creek area.

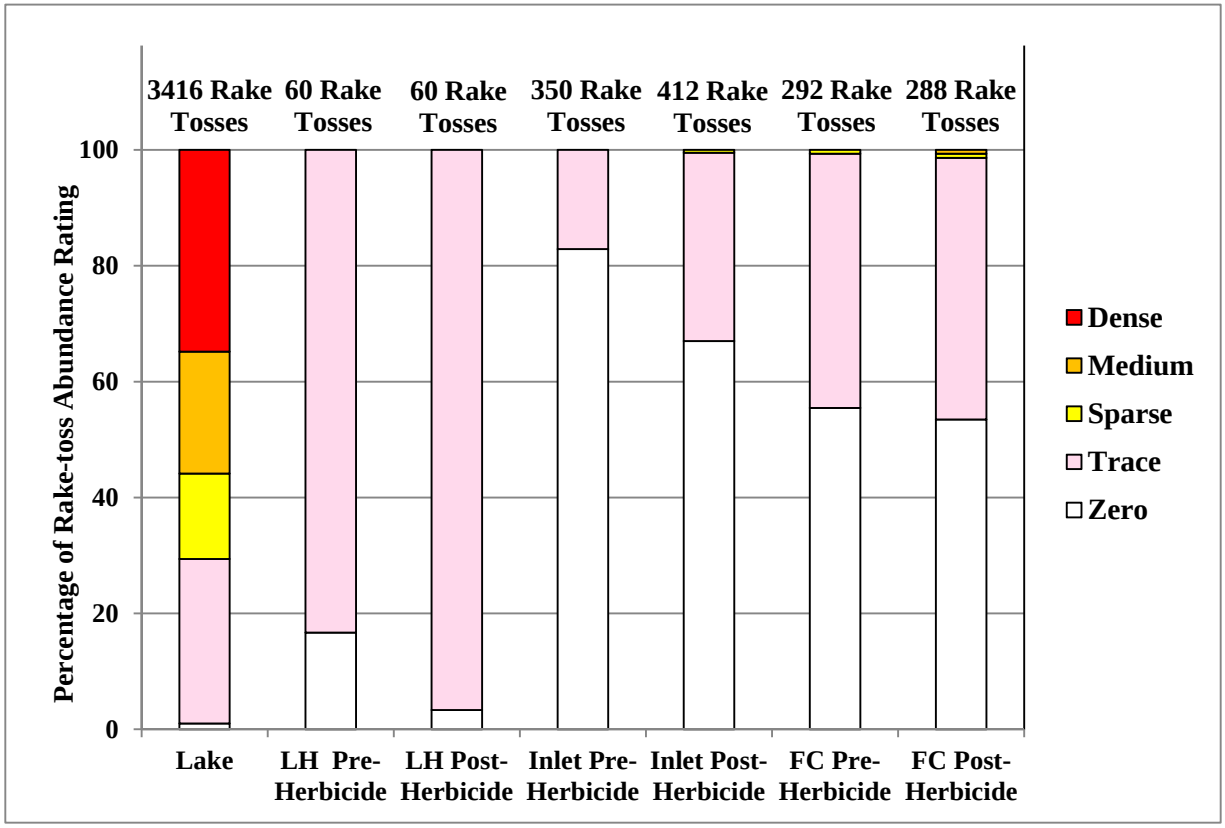


Figure 35. 2015 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet, the Inlet proper and the Fall Creek area.

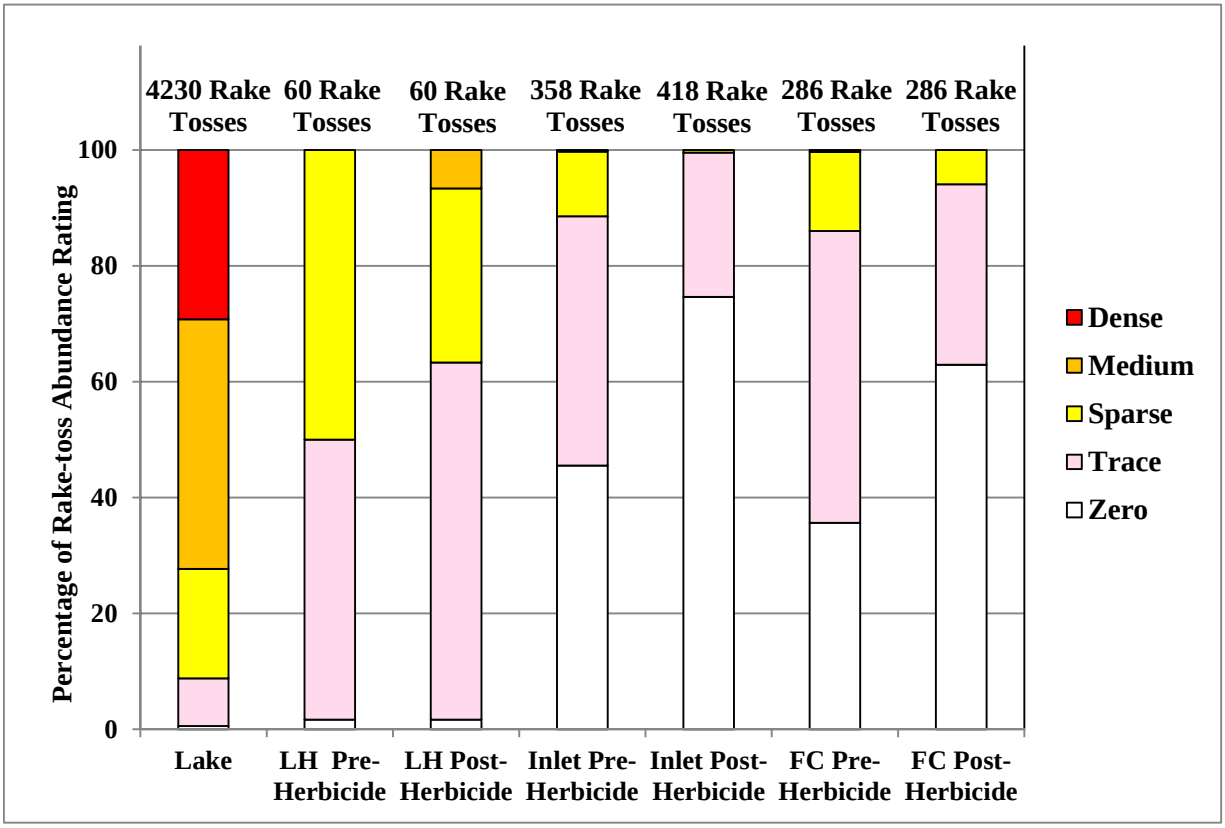


Figure 36. 2016 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet, the Inlet proper and the Fall Creek area.

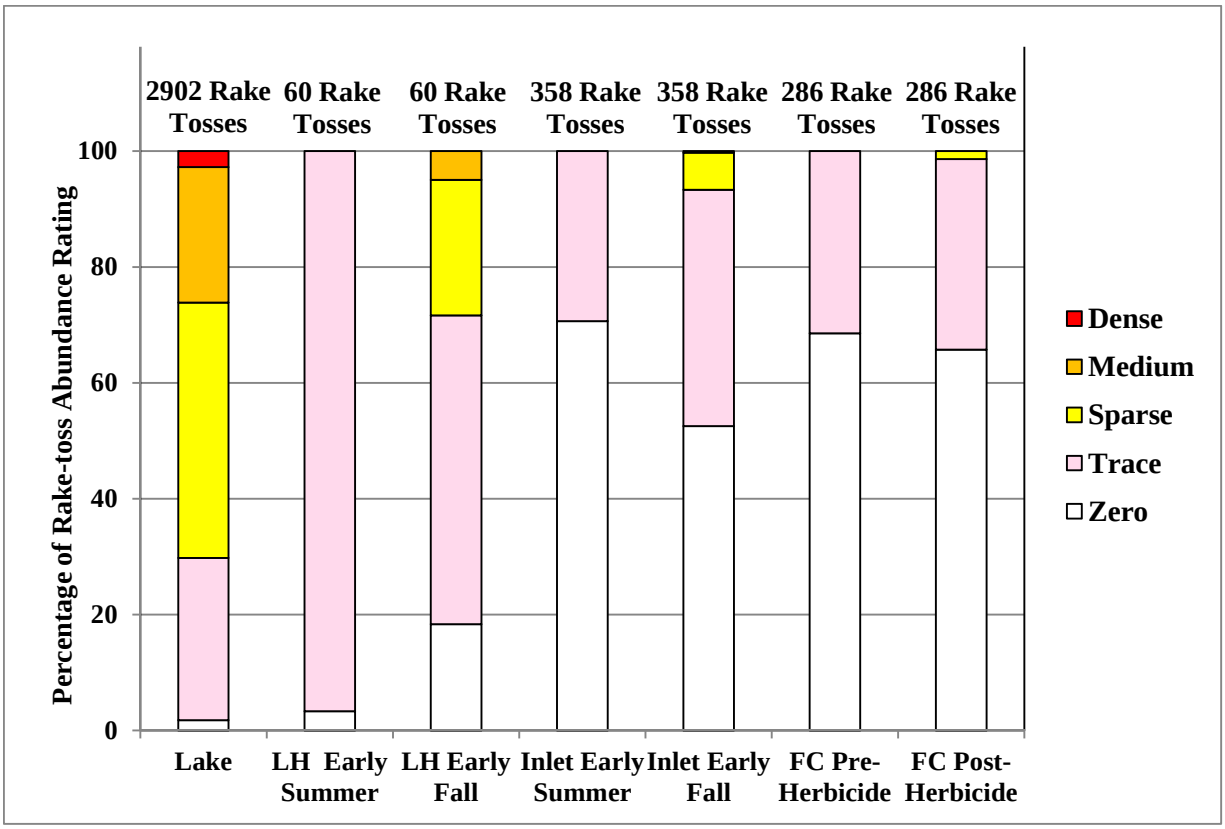


Figure 37. 2017 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet, the Inlet proper and the Fall Creek area.

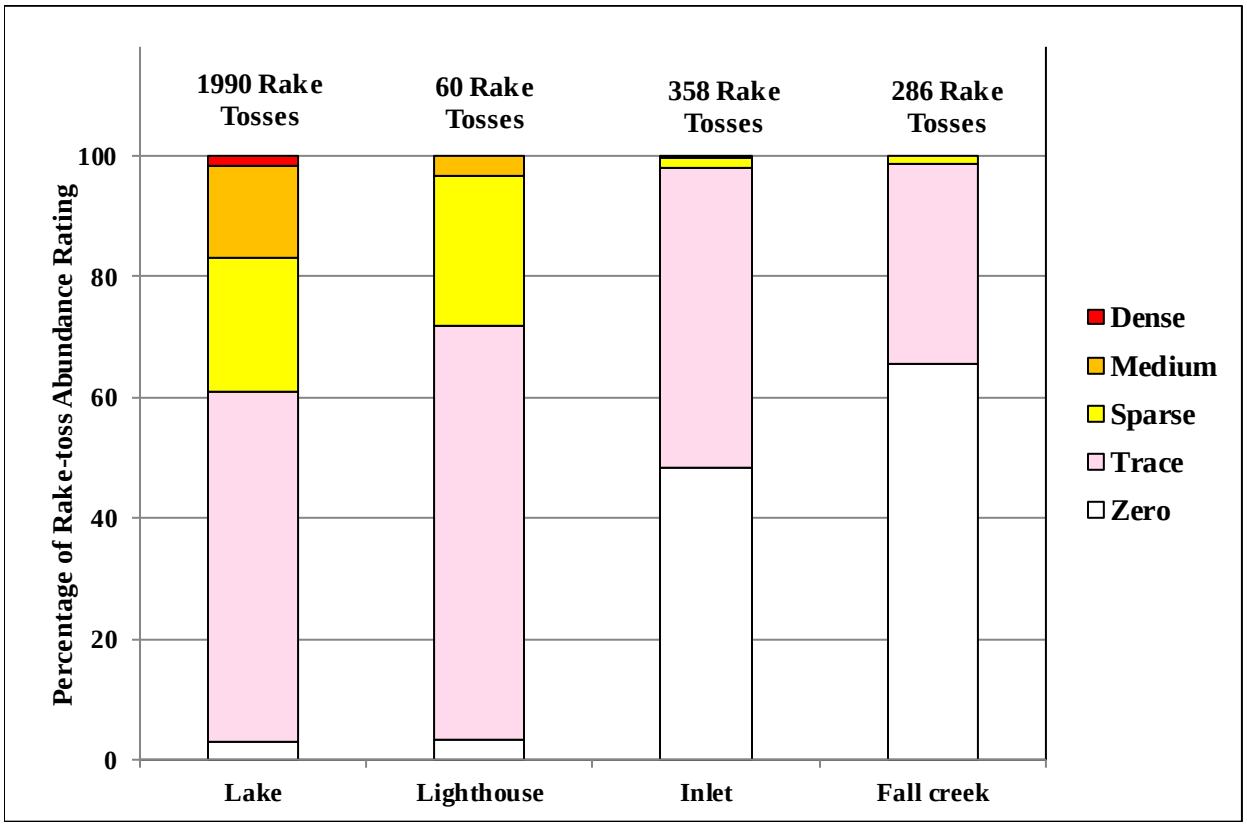


Figure 38. 2018 summary of the rake-toss abundance ratings for all rake-tosses made in surveys of Cayuga Lake, the Lighthouse Area of the Inlet, the Inlet proper and the Fall Creek area.

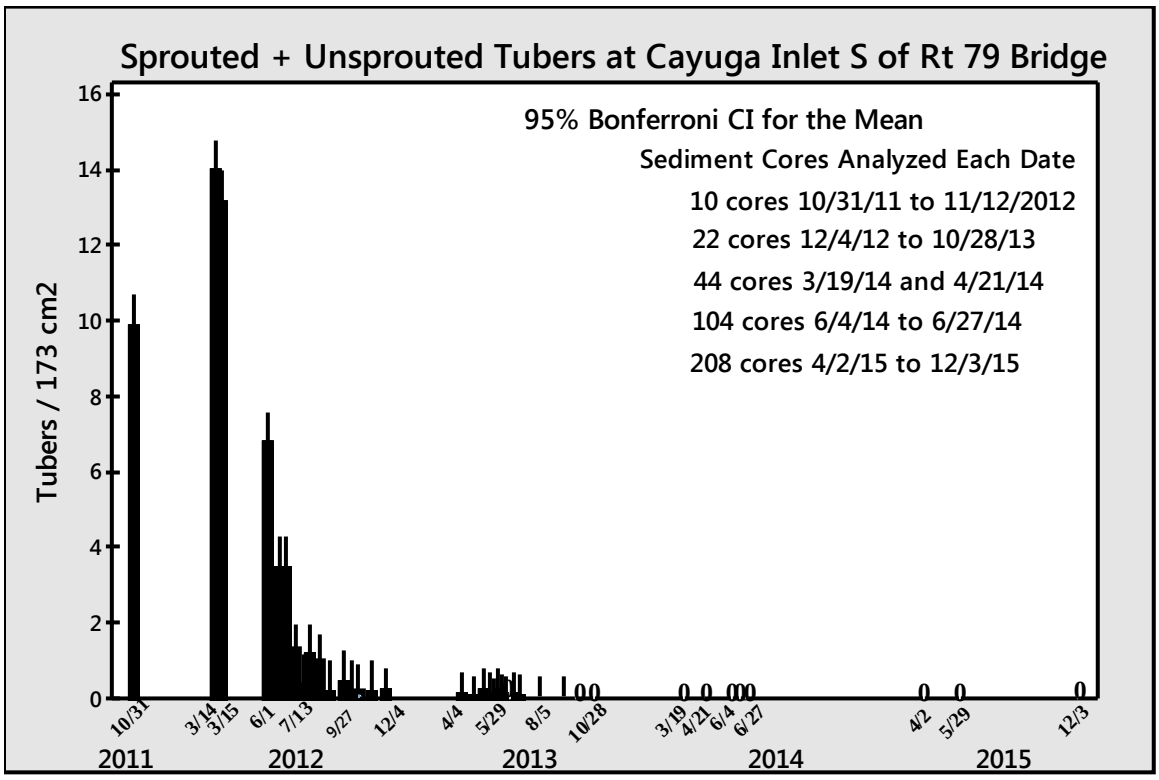
Figure 39. Historical locations of the hydrilla tuber sampling areas where we collected sediment samples. Hand washed sediment samples through fine mesh screens determined hydrilla tuber presence and density. In 2017 – 2018, we did not collect sediment samples from any of these locations.

Table 4. Hydrilla tuber density from 2014 to 2016 summarized by date collected, location, number of sediment cores removed, total tubers (sprouted + un-sprouted) recovered and the number of total tubers that had not sprouted. Location SI is the Inlet south of the Rt. 79 Bridge. FM is in Cascadilla Creek near the Farmer's Market. CUB is the bay at the Cornell University Crew Boathouse. LI is in the Cayuga Inlet at the mouth of Linderman Creek. GC is the lagoon in Fall Creek at the Golf Course. SP is the pond off Fall Creek at Stewart Park and FCC is the small cove on the east side of Fall Creek southeast of the footbridge crossing Fall Creek at Stewart Park. There were no sediment samples collected in 2017 - 2018.

2014 to 2016 Tuber Data Summary								
Date	Location	# of samples (n)	Total Tubers	Unsprouted	Total Tubers/n	Unsprouted Tubers/n	Total Tubers/m^2	Unsprouted Tubers/m^2
3/19/2014	SI	44	0	0	0.000	0.000	0.000	0.000
4/2/2014	FM	44	2	0	0.045	0.000	2.627	0.000
4/2/2014	CUB	44	0	0	0.000	0.000	0.000	0.000
4/3/2014	LI	44	0	0	0.000	0.000	0.000	0.000
4/7/2014	GC	44	86	84	1.955	1.909	112.980	110.352
4/9/2014	GC	44	40	30	0.909	0.682	52.549	39.411
4/21/2014	SI	44	0	0	0.000	0.000	0.000	0.000
4/21/2014	FM	44	2	1	0.045	0.023	2.627	1.314
4/21/2014	CUB	44	2	1	0.045	0.023	2.627	1.314
4/21/2014	LI	44	0	0	0.000	0.000	0.000	0.000
4/28/2014	GC	88	100	95	1.136	1.080	65.686	62.401
5/20/2014	GC	88	54	21	0.614	0.239	35.470	13.794
5/27/2014	SP	88	22	9	0.250	0.102	14.451	5.912
5/29/2014	FM	104	2	0	0.019	0.000	1.112	0.000
5/30/2014	CUB	104	0	0	0.000	0.000	0.000	0.000
6/2/2014	LI	104	0	0	0.000	0.000	0.000	0.000
6/4/2014	SI	104	0	0	0.000	0.000	0.000	0.000
6/10/2014	GC	88	51	9	0.580	0.102	33.500	5.912
6/12/2014	SP	88	16	0	0.182	0.000	10.510	0.000
6/16/2014	FM	104	0	0	0.000	0.000	0.000	0.000
6/16/2014	CUB	104	1	1	0.010	0.010	0.556	0.556
6/17/2014	SI	104	0	0	0.000	0.000	0.000	0.000
6/17/2014	LI	104	0	0	0.000	0.000	0.000	0.000
6/19/2014	GC	88	79	37	0.898	0.420	51.892	24.304
6/20/2014	SP	88	15	0	0.170	0.000	9.853	0.000
6/23/2014	CUB	104	0	0	0.000	0.000	0.000	0.000
6/27/2014	SI	104	0	0	0.000	0.000	0.000	0.000
6/27/2014	FM	104	0	0	0.000	0.000	0.000	0.000
6/27/2014	LI	104	0	0	0.000	0.000	0.000	0.000
12/9/2014	GC	208	59	5	0.284	0.024	16.396	1.390
12/22/2014	CUB	208	41	17	0.197	0.082	11.394	4.724
12/22/2014	FM	208	1	0	0.005	0.000	0.278	0.000
3/16/2015	FCC	130	9	6	0.069	0.046	4.002	2.668
4/2/2015	SI	208	0	0	0.000	0.000	0.000	0.000
4/13/2015	LI	208	0	0	0.000	0.000	0.000	0.000
4/20/2015	SP	104	7	1	0.067	0.010	3.891	0.556

Table 4. (Continued) Hydrilla tuber density from 2014 to 2016 summarized by date collected, location, number of sediment cores removed, total tubers (sprouted + un-sprouted) recovered and the number of total tubers that had not sprouted. Location SI is the inlet south of the Rt. 79 Bridge. FM is in Cascadilla Creek near the Farmer's Market. CUB is the bay at the Cornell University Crew Boathouse. LI is in the Cayuga Inlet at the mouth of Linderman Creek. GC is the lagoon in Fall Creek at the Golf Course. SP is the pond off Fall Creek at Stewart Park and FCC is the small cove on the east side of Fall Creek southeast of the footbridge crossing Fall Creek at Stewart Park. There were no sediment samples collected in 2017 - 2018.

2014 to 2016 Tuber Data Summary								
Date	Location	# of samples (n)	Total Tubers	Unsprouted	Total Tubers/n	Unsprouted Tubers/n	Total Tubers/m^2	Unsprouted Tubers/m^2
5/26/2015	LI	208	0	0	0.000	0.000	0.000	0.000
5/27/2015	FM	208	0	0	0.000	0.000	0.000	0.000
5/29/2015	SI	208	0	0	0.000	0.000	0.000	0.000
6/4/2015	CUB	208	0	0	0.000	0.000	0.000	0.000
6/5/2015	CUB	208	1	0	0.005	0.000	0.278	0.000
6/8/2015	GC	208	16	0	0.077	0.000	4.446	0.000
6/10/2015	FCC	208	6	0	0.029	0.000	1.667	0.000
6/11/2015	SP	208	4	1	0.019	0.005	1.112	0.278
6/9/2015	GC	208	17	5	0.082	0.024	4.724	1.390
7/10/2015	SP	208	3	1	0.014	0.005	0.834	0.278
7/15/2015	CUB	208	0	0	0.000	0.000	0.000	0.000
7/27/2015	FCC	208	0	0	0.000	0.000	0.000	0.000
12/3/2015	SI	208	0	0	0.000	0.000	0.000	0.000
12/3/2015	CUB	208	0	0	0.000	0.000	0.000	0.000
12/7/2015	GC	208	2	0	0.010	0.000	0.556	0.000
12/7/2015	SP	208	0	0	0.000	0.000	0.000	0.000
12/11/2015	LI	208	0	0	0.000	0.000	0.000	0.000
12/11/2015	FM	208	0	0	0.000	0.000	0.000	0.000
12/16/2015	FCC	208	0	0	0.000	0.000	0.000	0.000
5/2/2016	FM	208	0	0	0.000	0.000	0.000	0.000
5/6/2016	SP	208	0	0	0.000	0.000	0.000	0.000
5/10/2016	FCC	208	0	0	0.000	0.000	0.000	0.000
5/12/2016	GC	208	0	0	0.000	0.000	0.000	0.000
5/16/2016	CUB	208	0	0	0.000	0.000	0.000	0.000
11/14/2016	GC	208	0	0	0.000	0.000	0.000	0.000
11/16/2016	SP	208	0	0	0.000	0.000	0.000	0.000
11/28/2016	FM	208	0	0	0.000	0.000	0.000	0.000
12/1/2016	CUB	208	0	0	0.000	0.000	0.000	0.000
12/7/2016	FCC	208	0	0	0.000	0.000	0.000	0.000



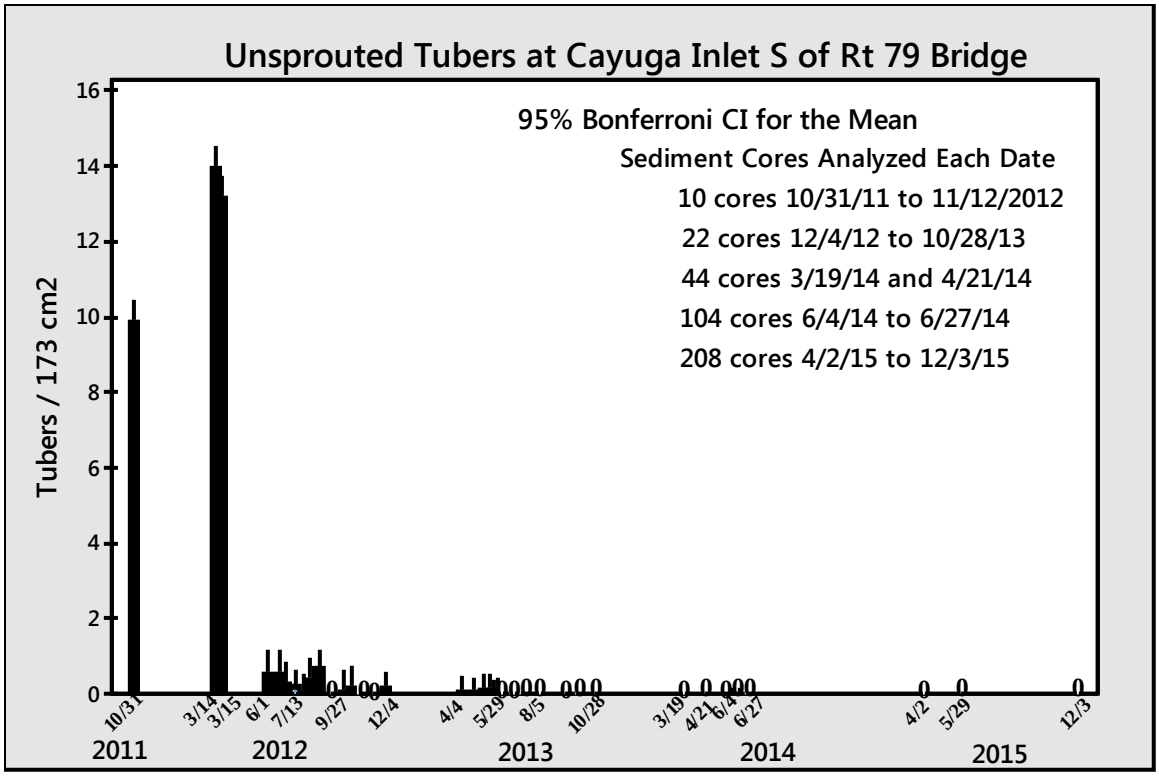
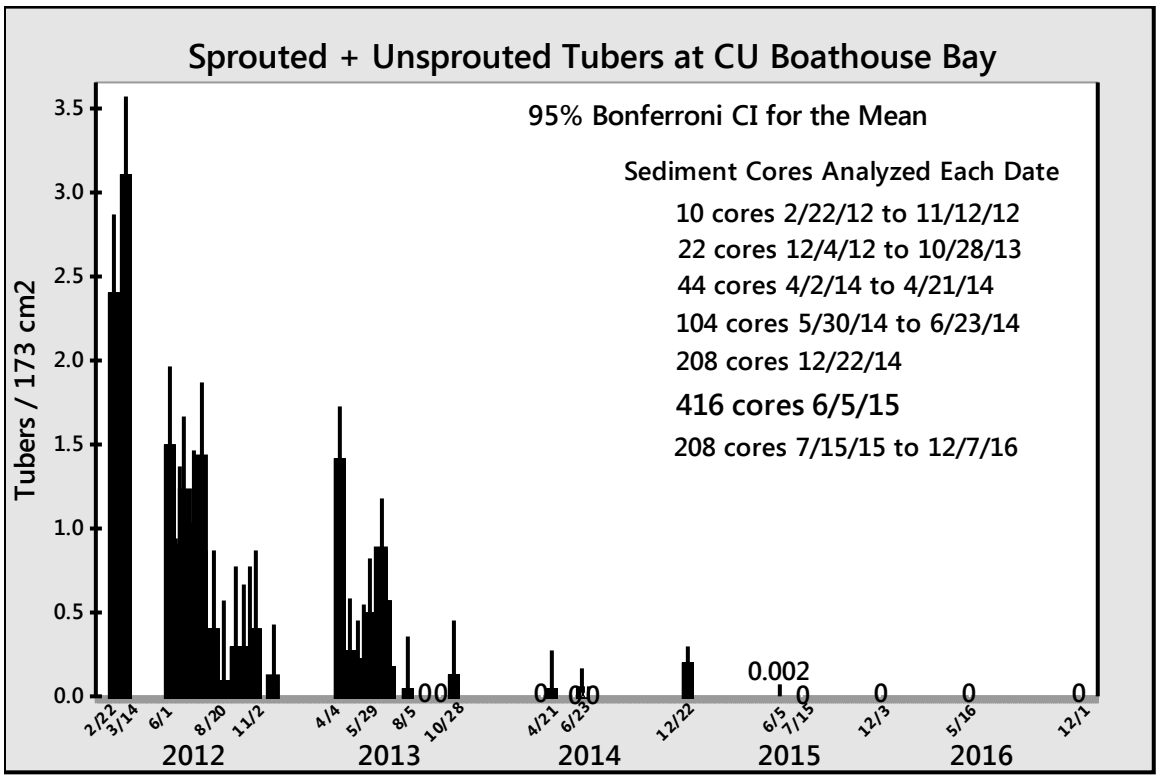


Figure 40. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Cayuga Inlet south of Rt.79 Bridge. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2011 - 2015.



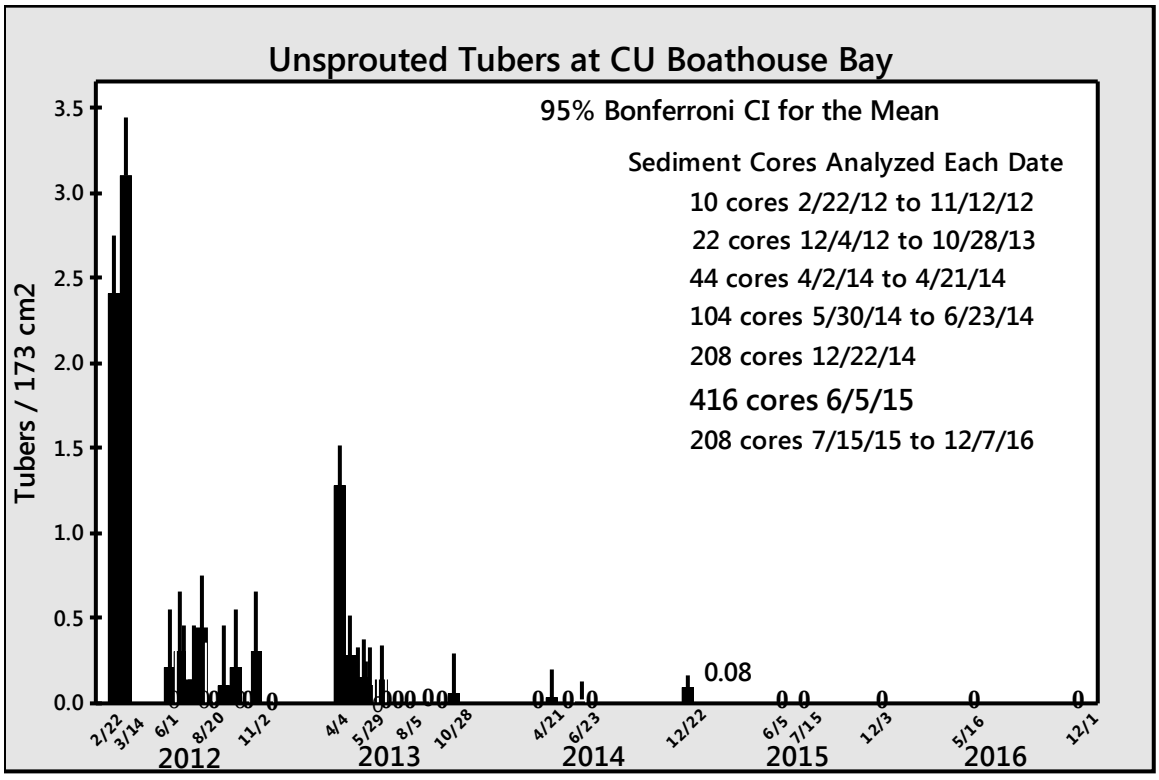


Figure 41. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area CU Boathouse Bay. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2012 - 2016.

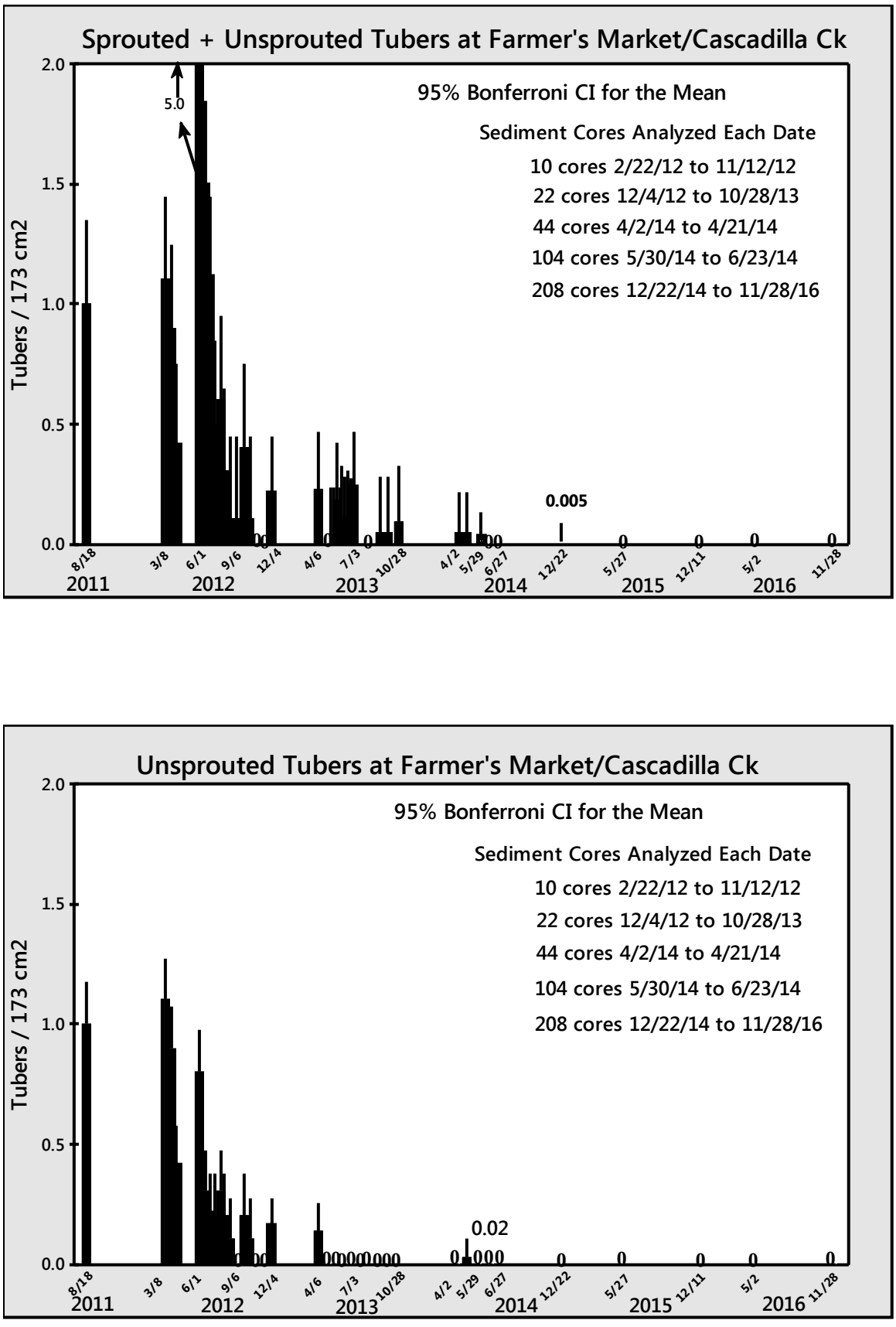


Figure 42. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Farmer's Market/Cascadilla Ck. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2011 - 2016.

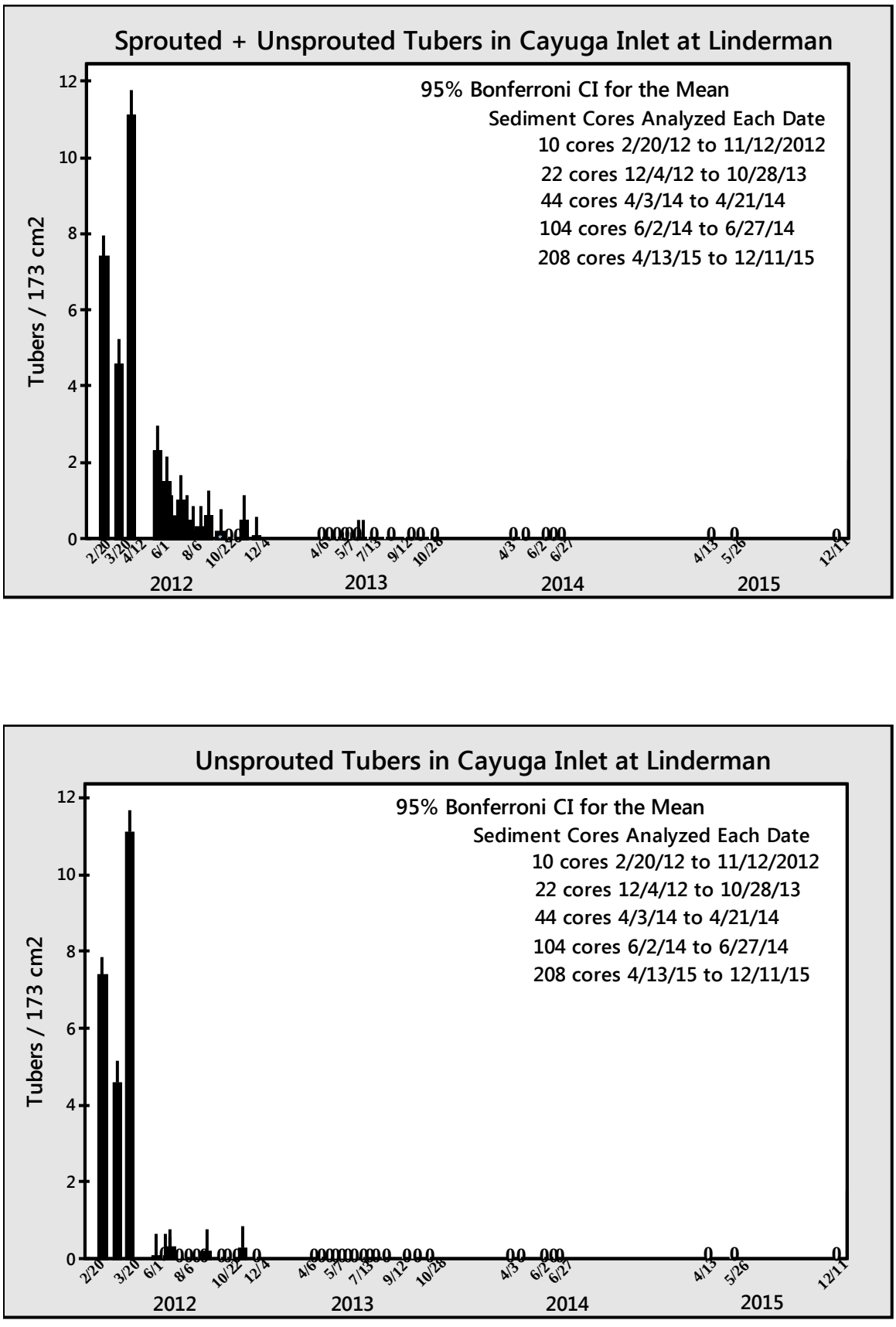


Figure 43. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Cayuga Inlet at Linderman. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2012 - 2015.

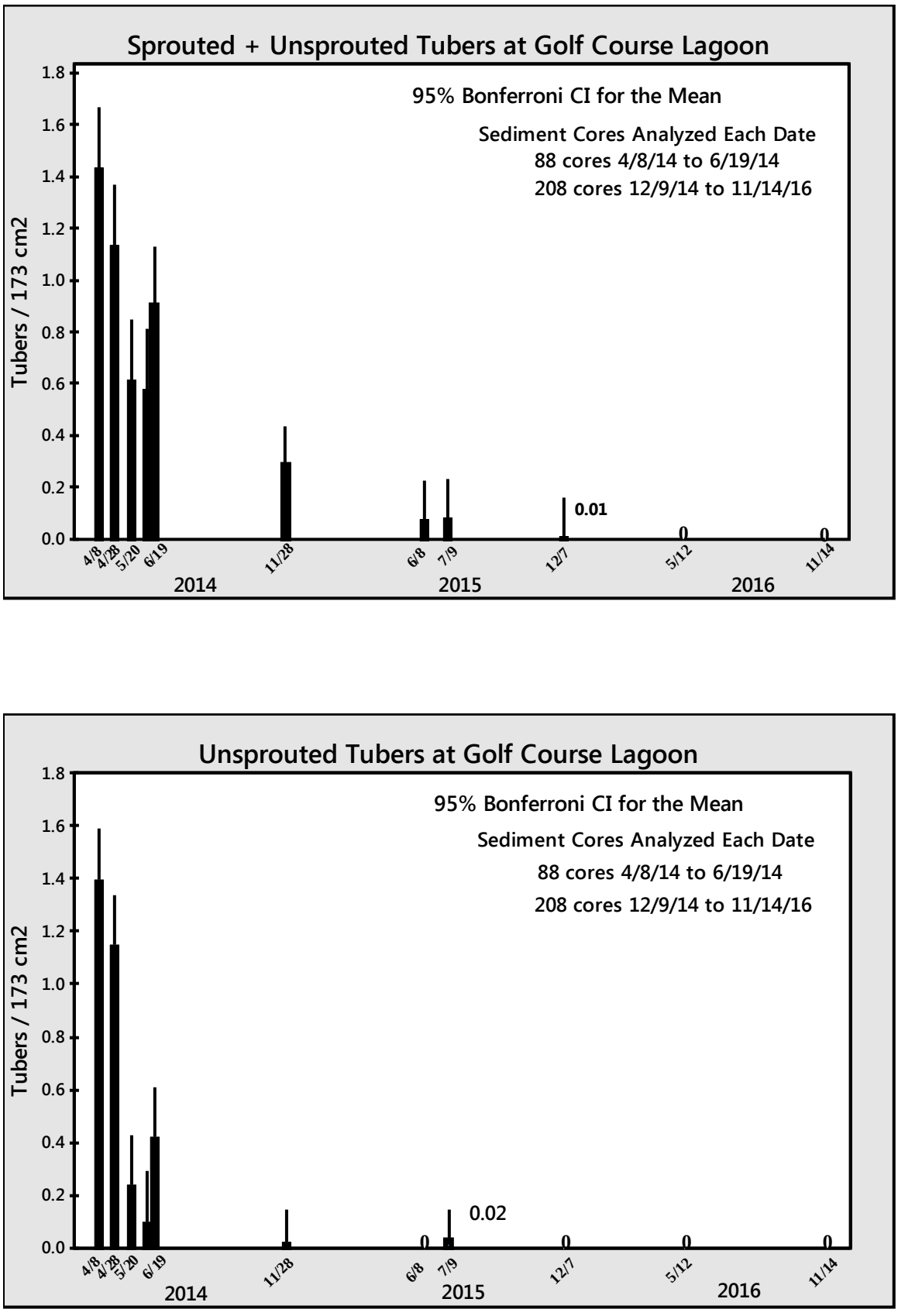


Figure 44. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Golf Course Lagoon. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2014 - 2016.

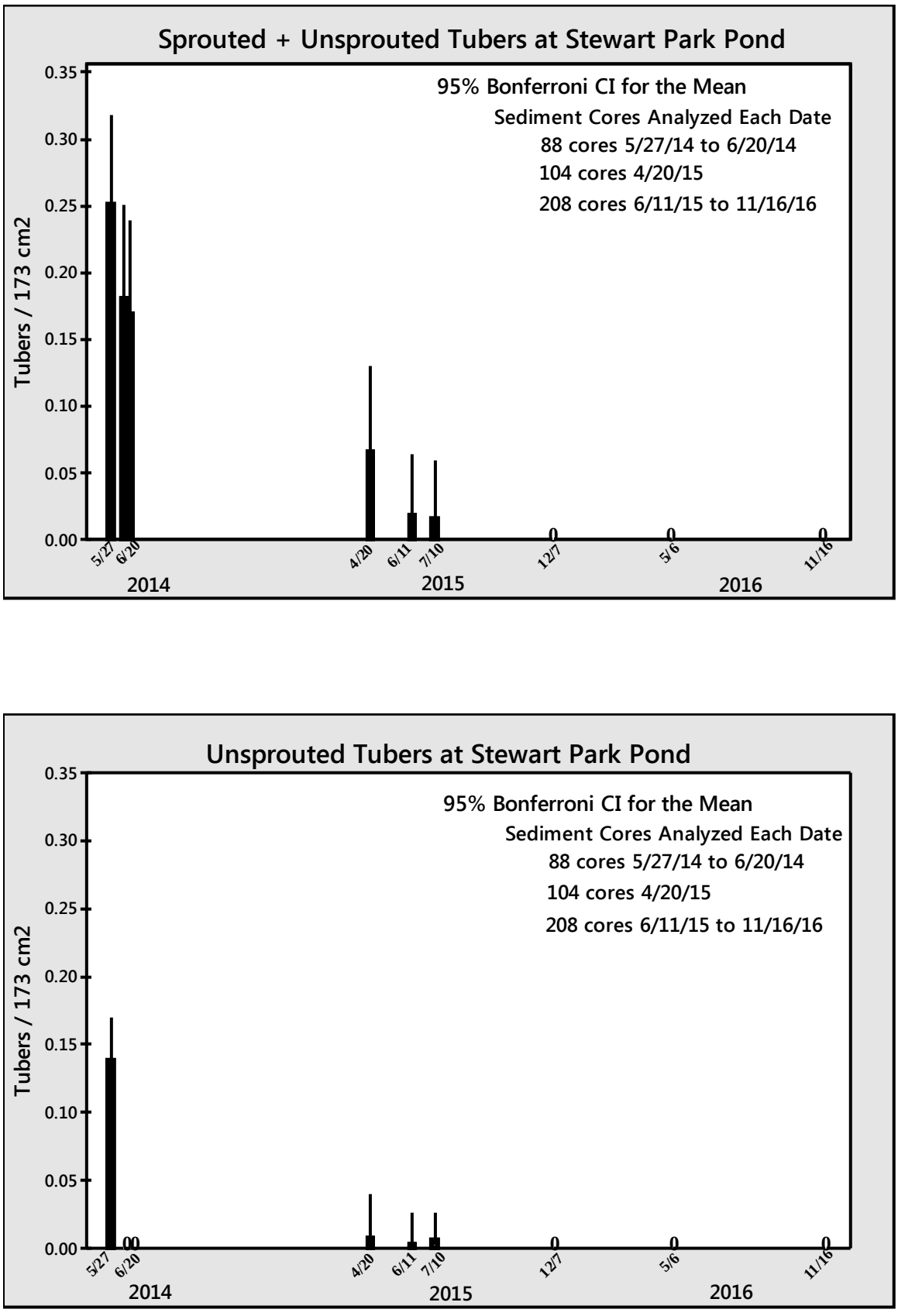


Figure 45. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Stewart Park Pond. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2014 - 2016.

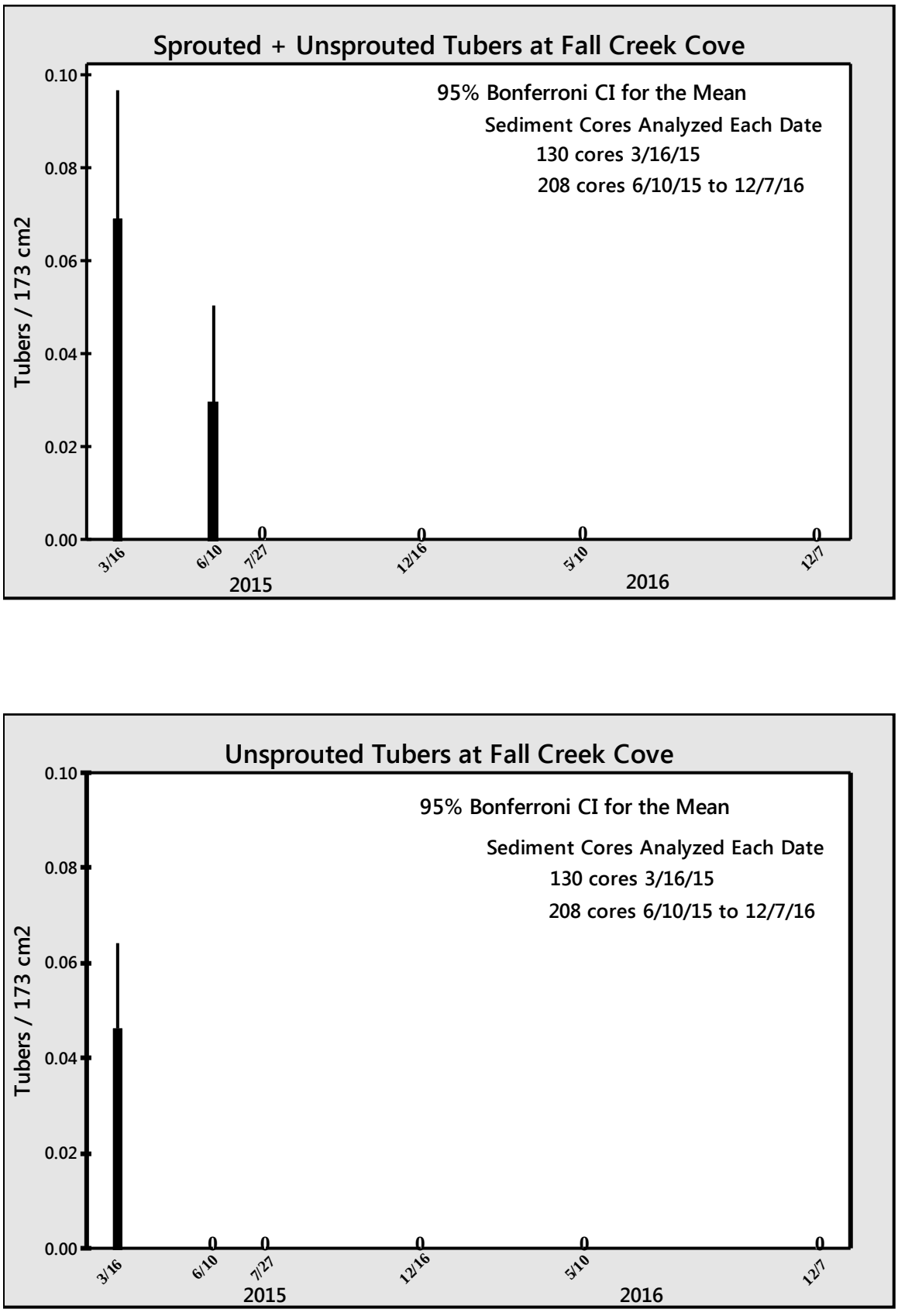
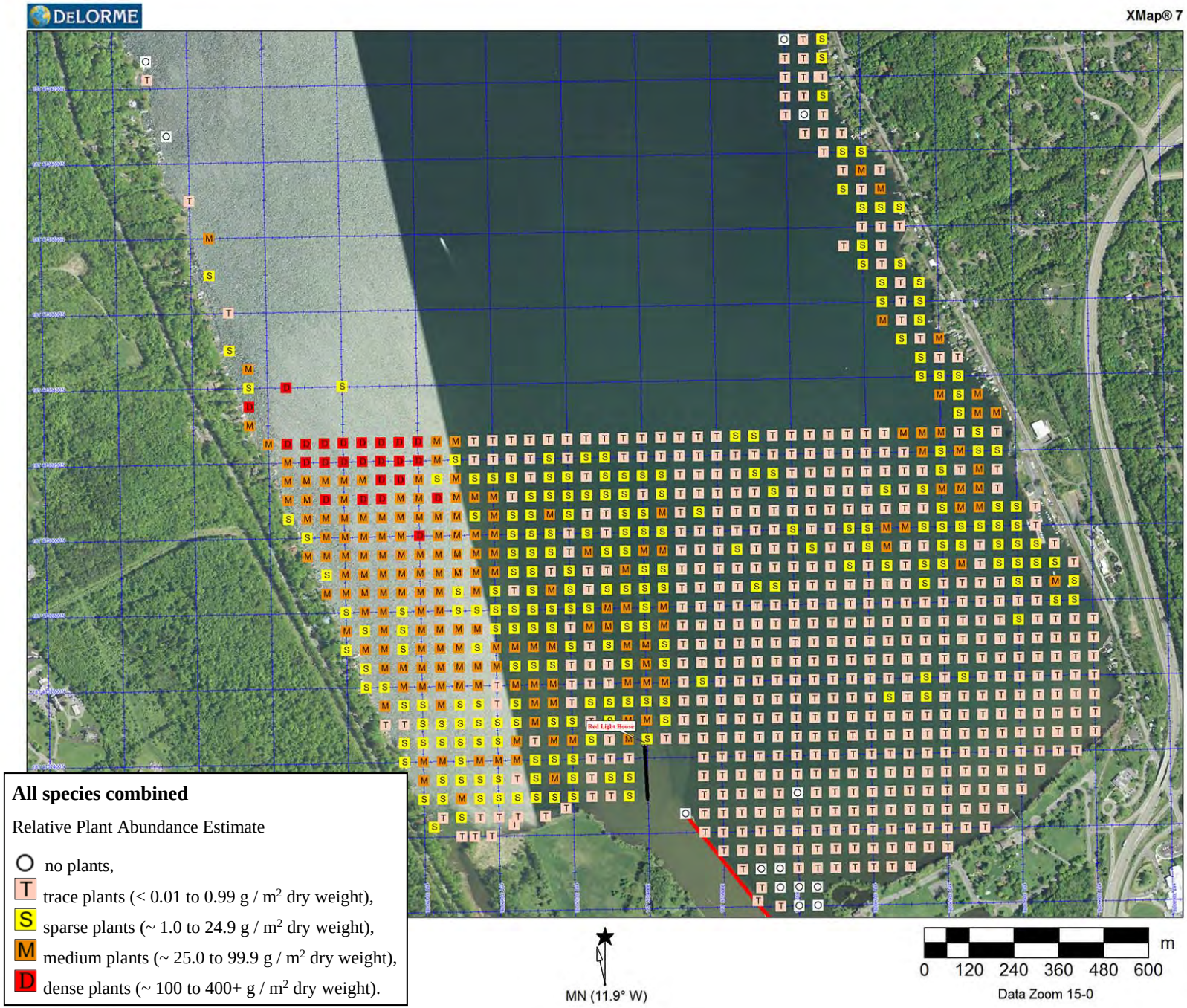
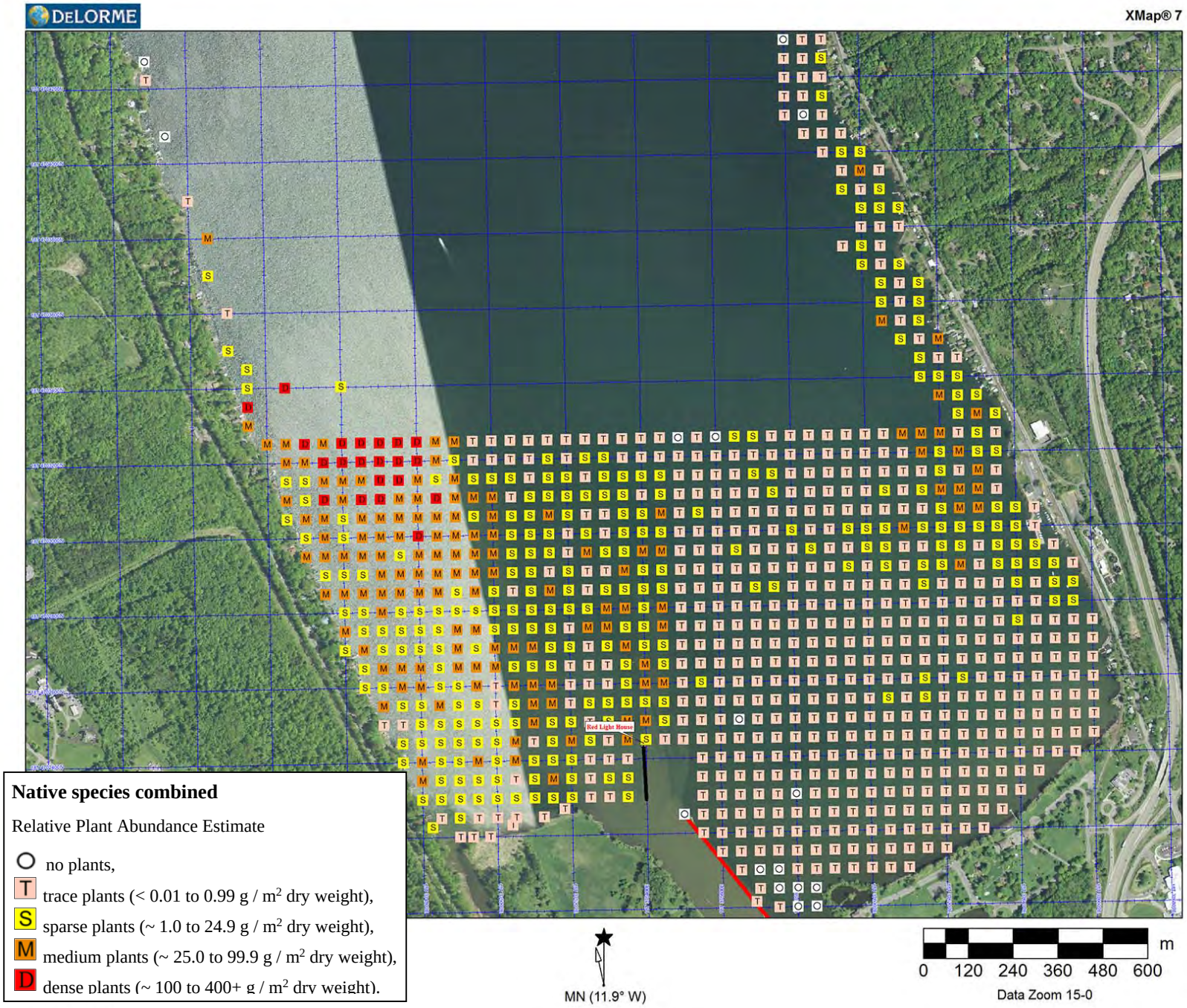


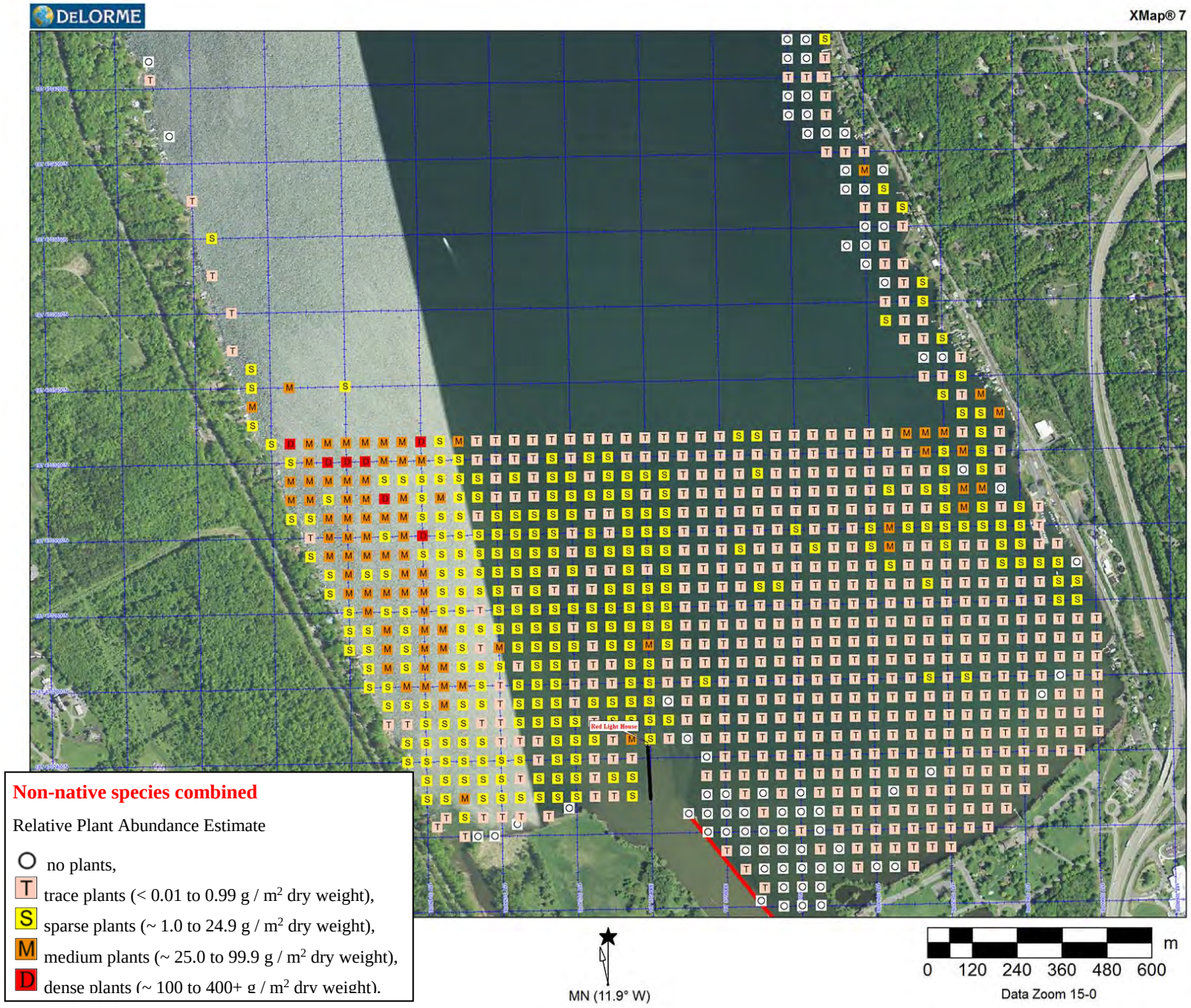
Figure 46. Mean density of subterranean hydrilla turions (tubers) measured by screening from sediment cores extracted from the sampling area Fall Creek Cove. Total tubers (top graph) and un-sprouted tubers (bottom graph) 2015 - 2016.



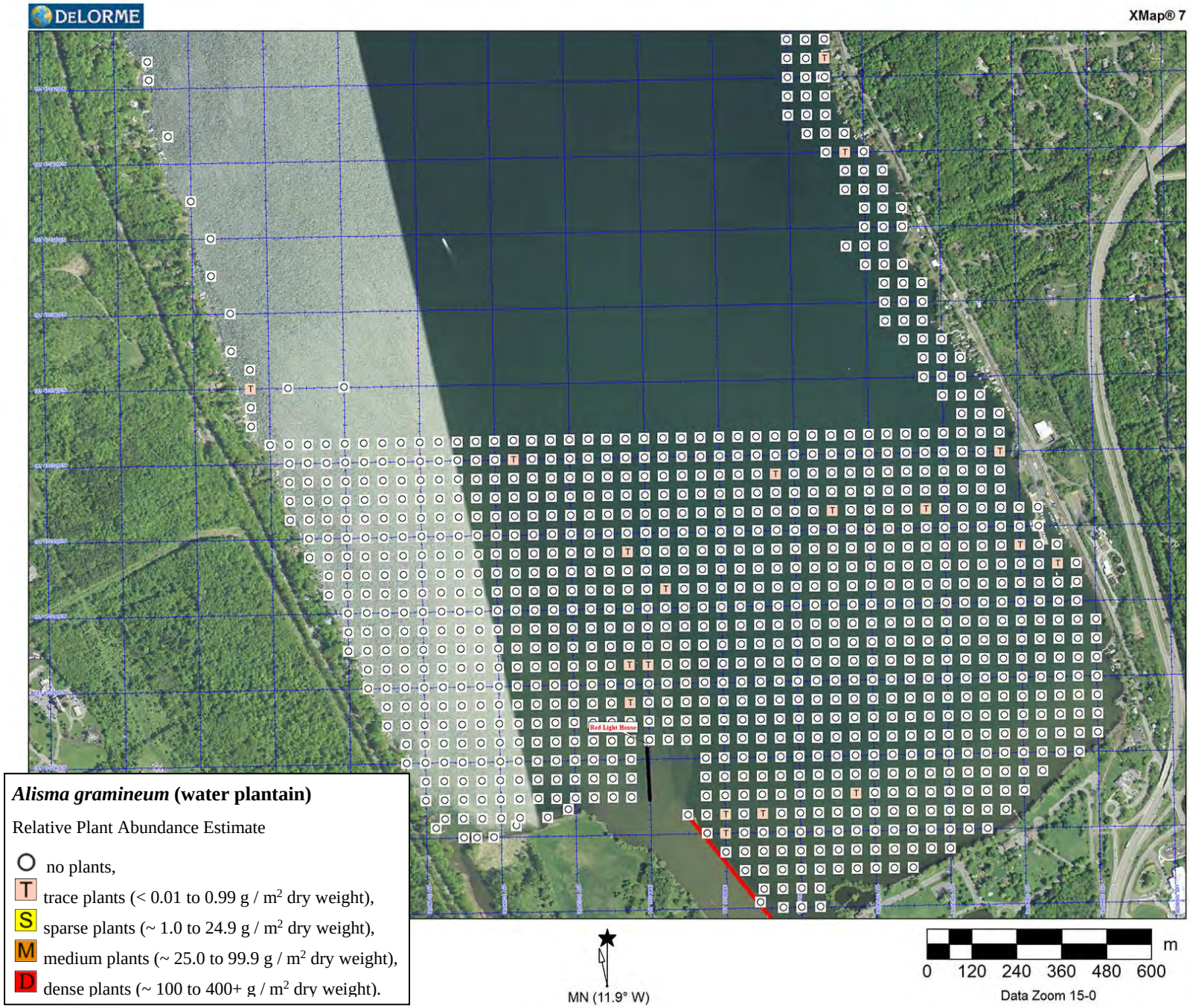
Lake-1. All species combined as abundance by two rake-tosses in 2018.



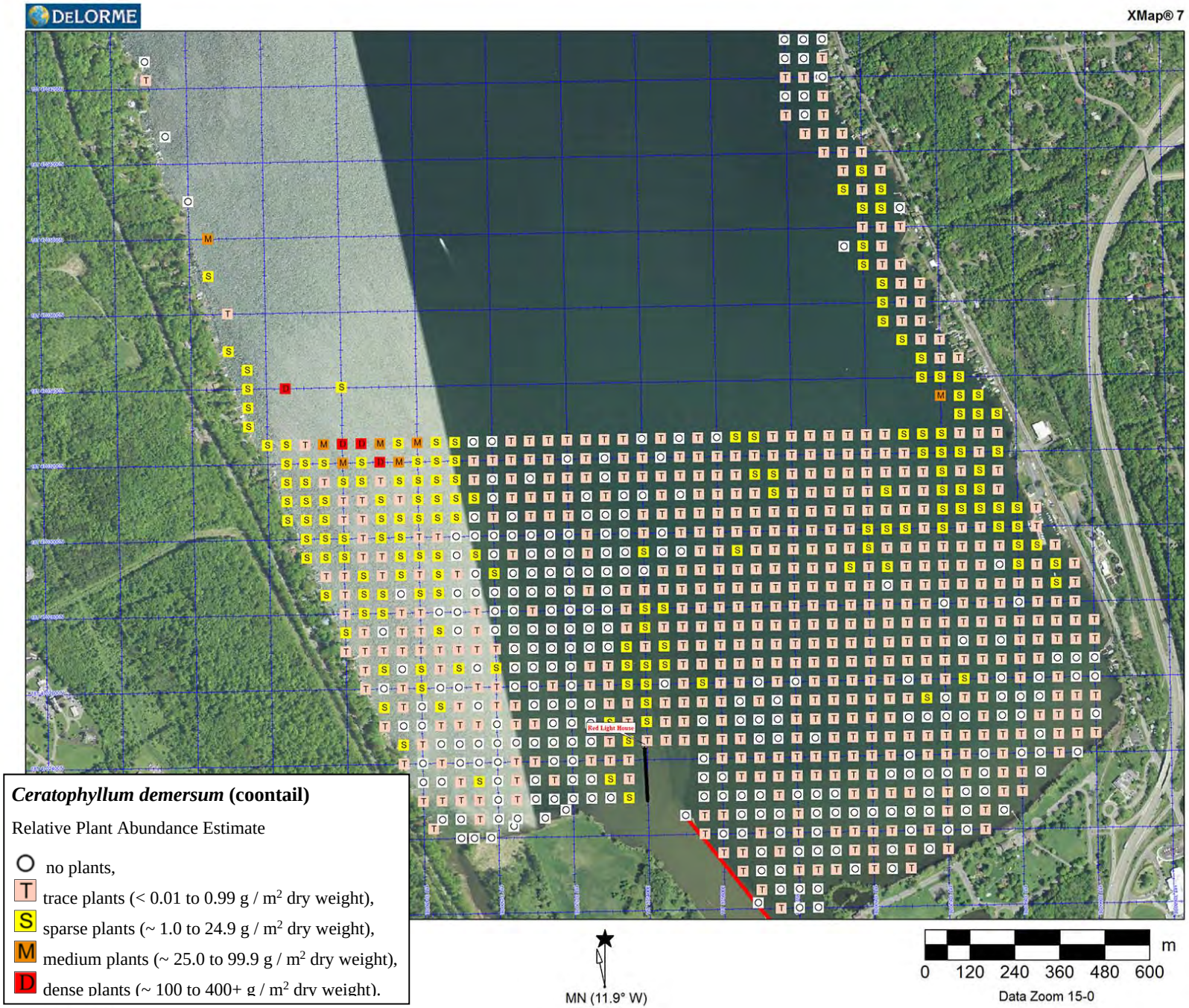
Lake-2. Native species combined as abundance by two rake-tosses in 2018.



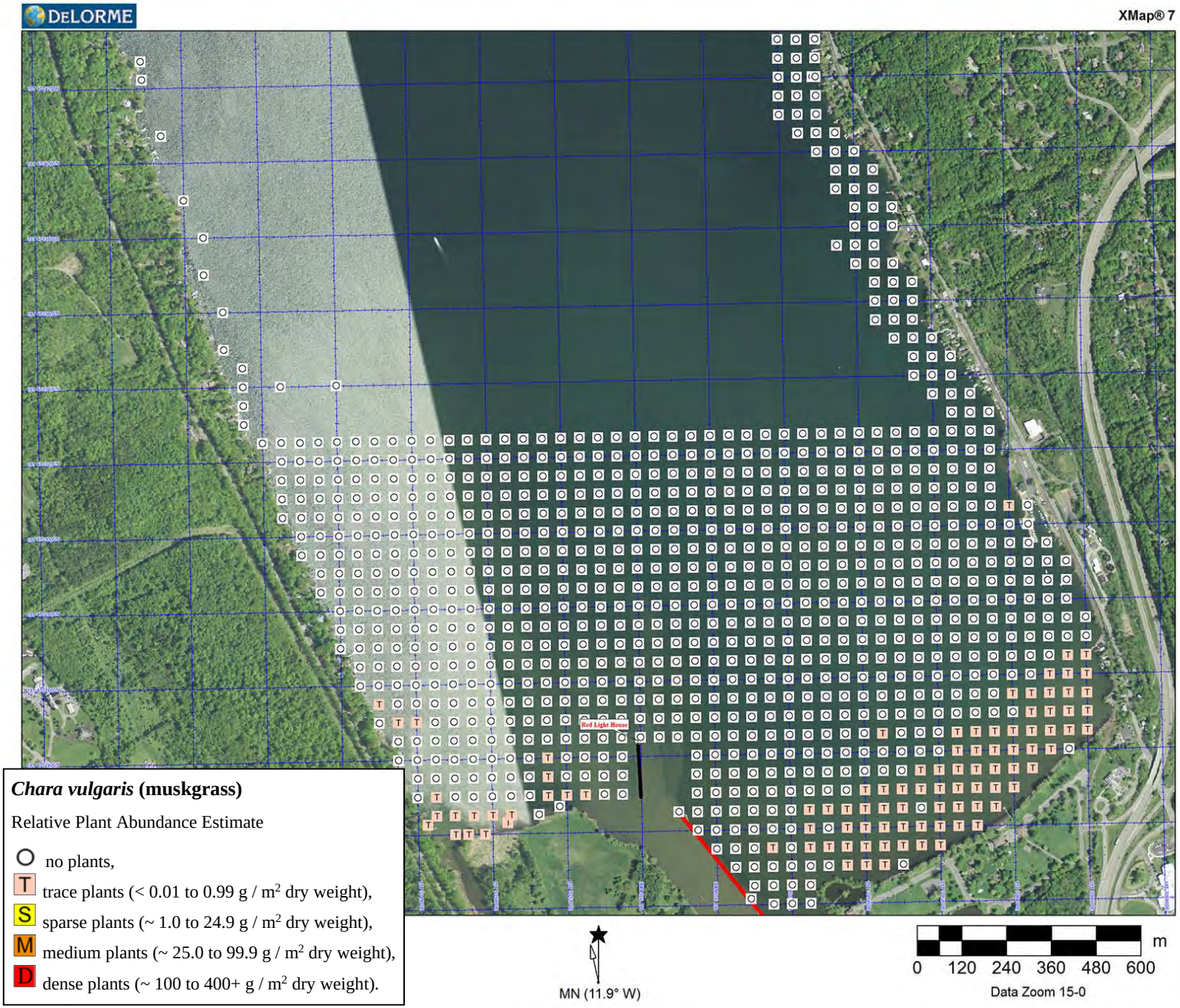
Lake-3. Non-native species combined as abundance by two rake-tosses in 2018.



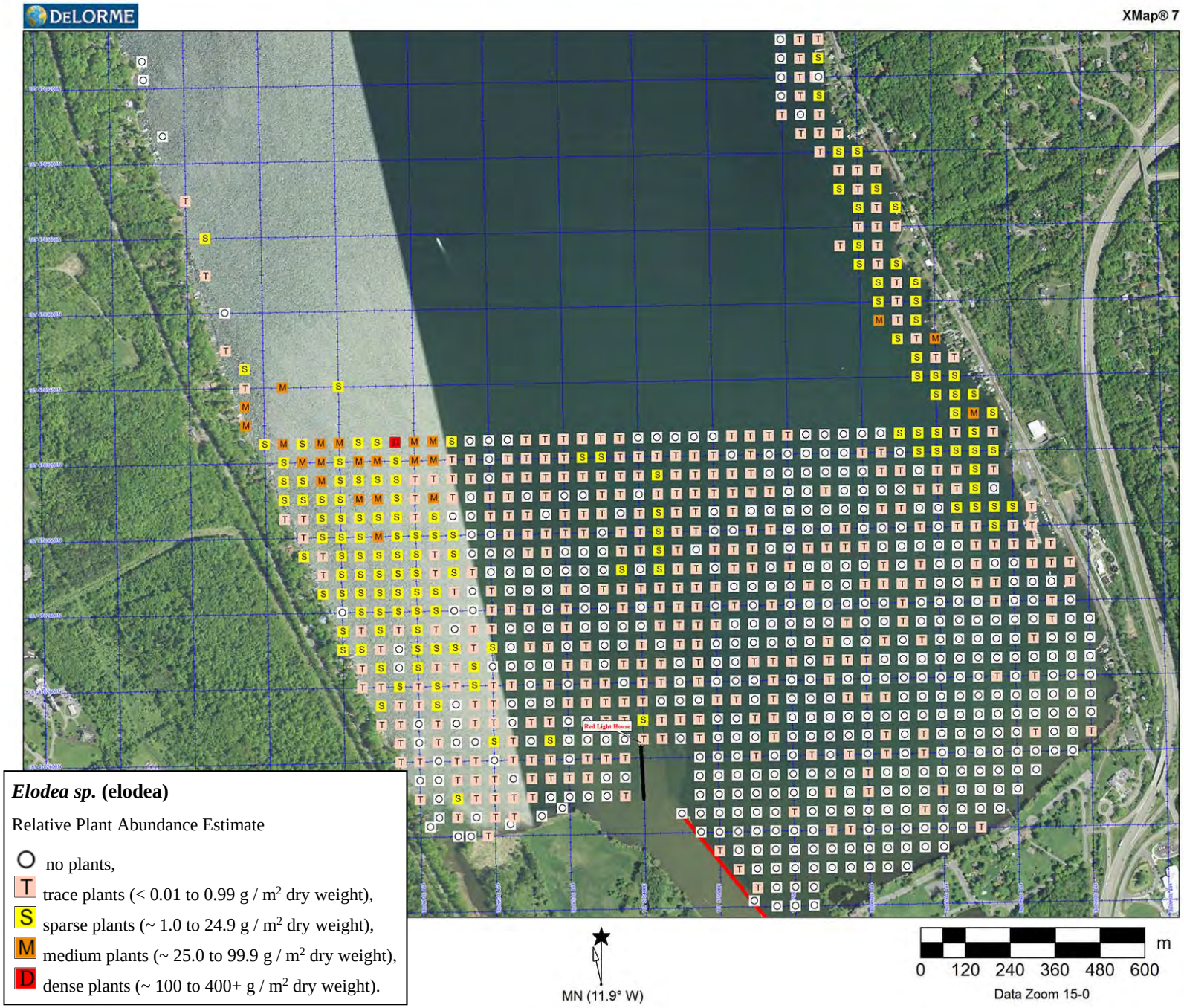
Lake-4. *Alisma gramineum* (water plantain) as abundance by two rake-tosses in 2018.



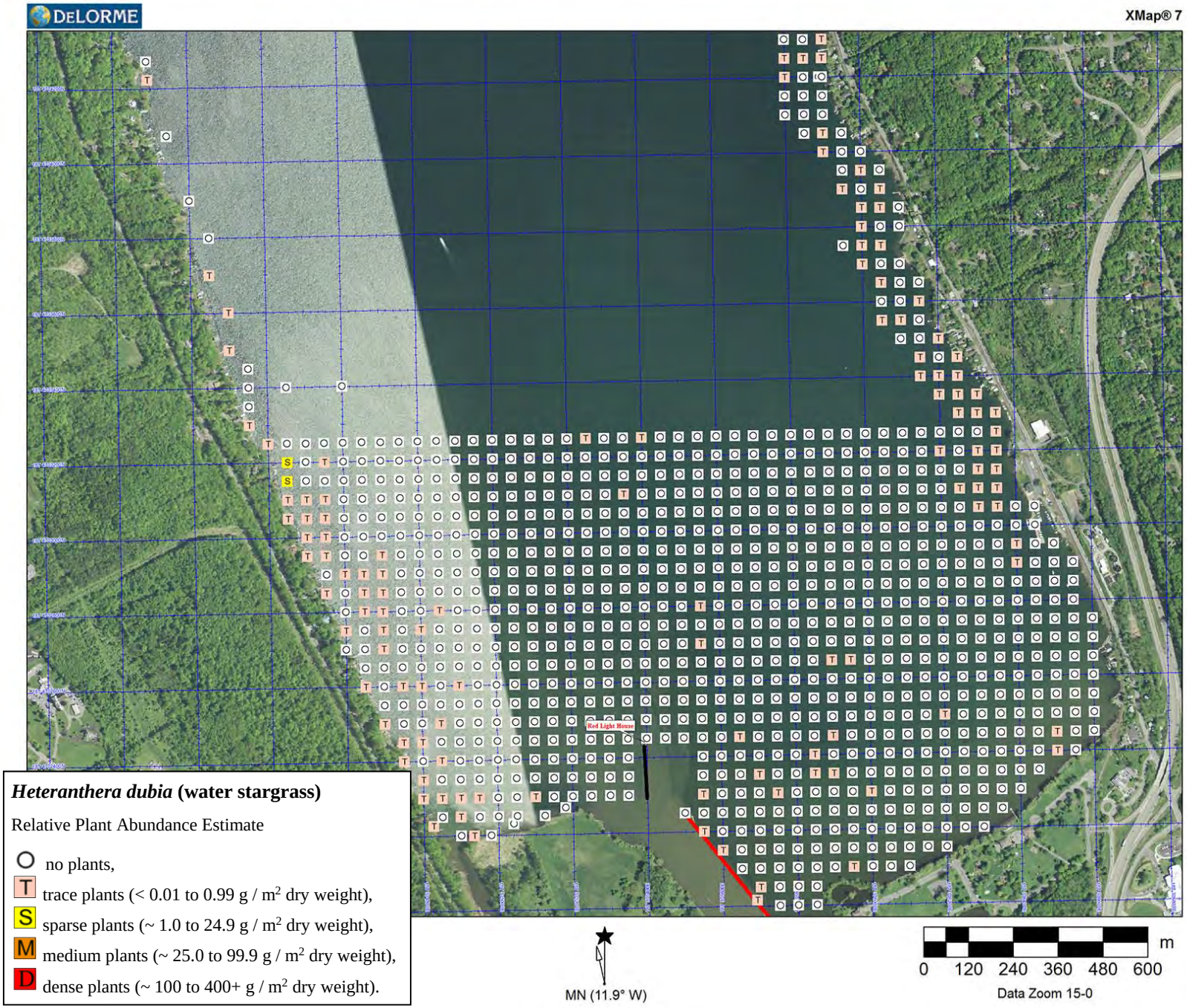
Lake-5. *Ceratophyllum demersum* (coontail) as abundance by two rake-tosses in 2018.



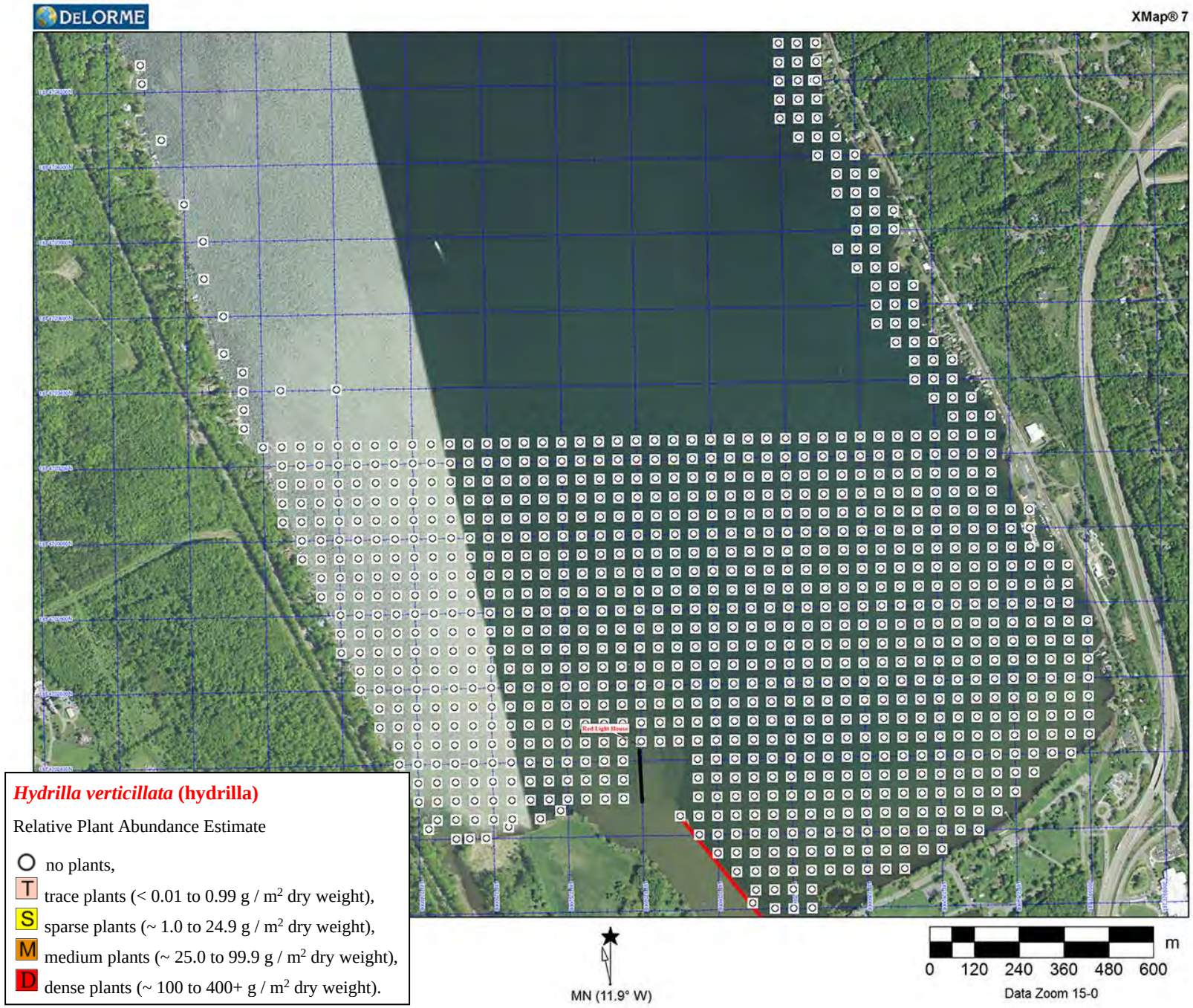
Lake-6. *Chara vulgaris* (muskgrass) as abundance by two rake-tosses in 2018.



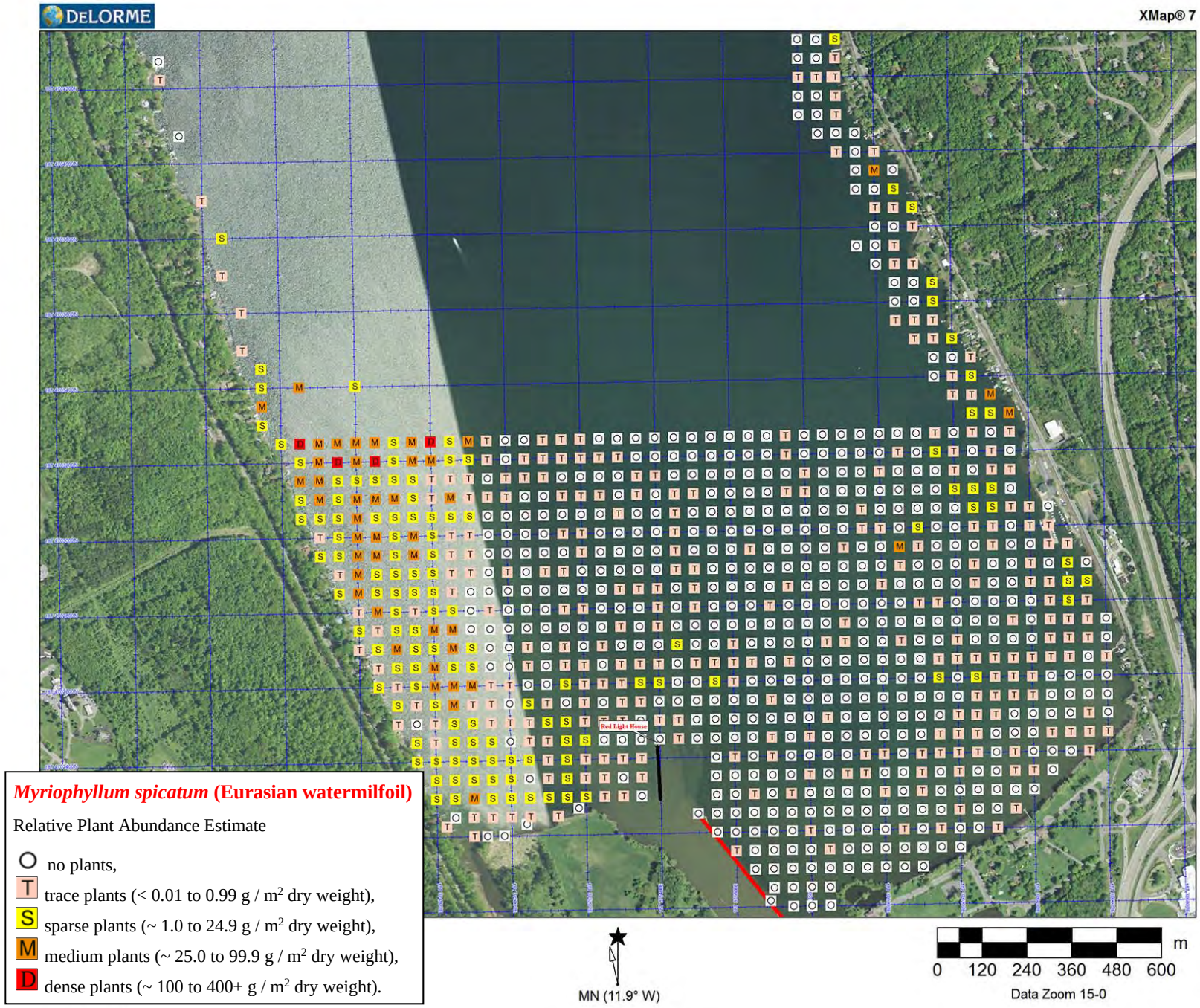
Lake-7. *Elodea sp.* (elodea) as abundance by two rake-tosses in 2018.



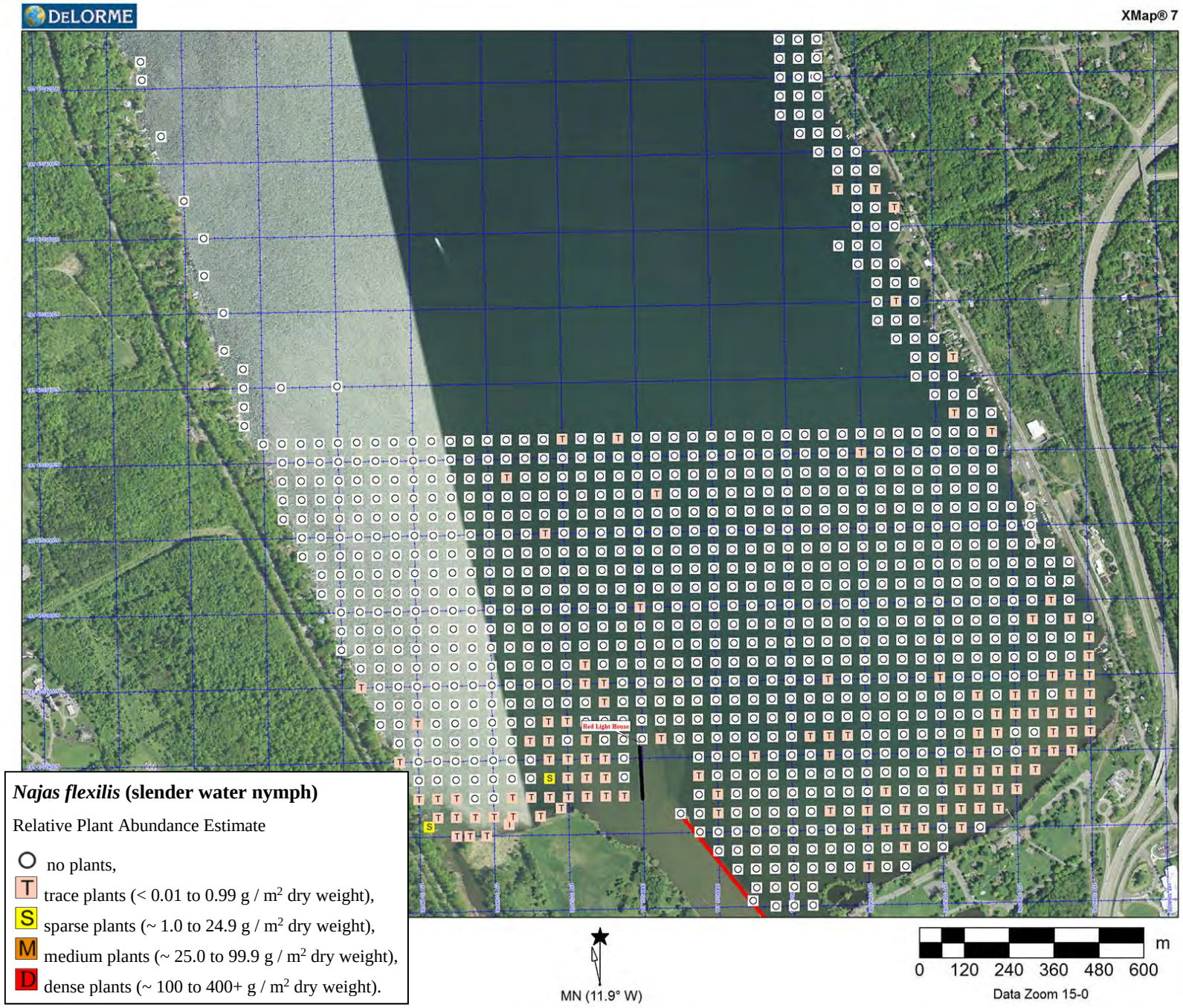
Lake-8. *Heteranthera dubia* (water stargrass) as abundance by two rake-tosses in 2018.



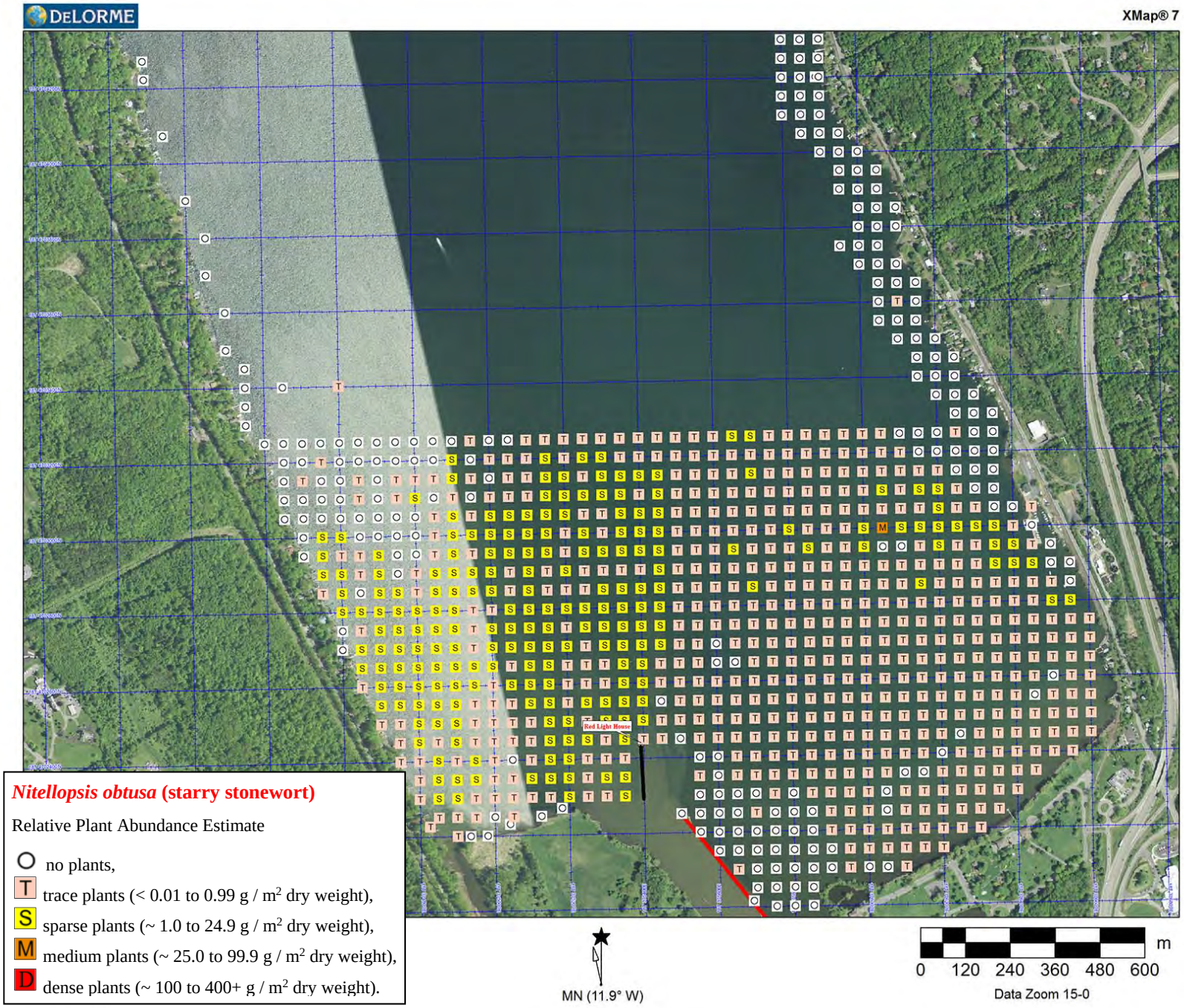
Lake-9. *Hydrilla verticillata* (hydrilla) as abundance by two rake-tosses in 2018.



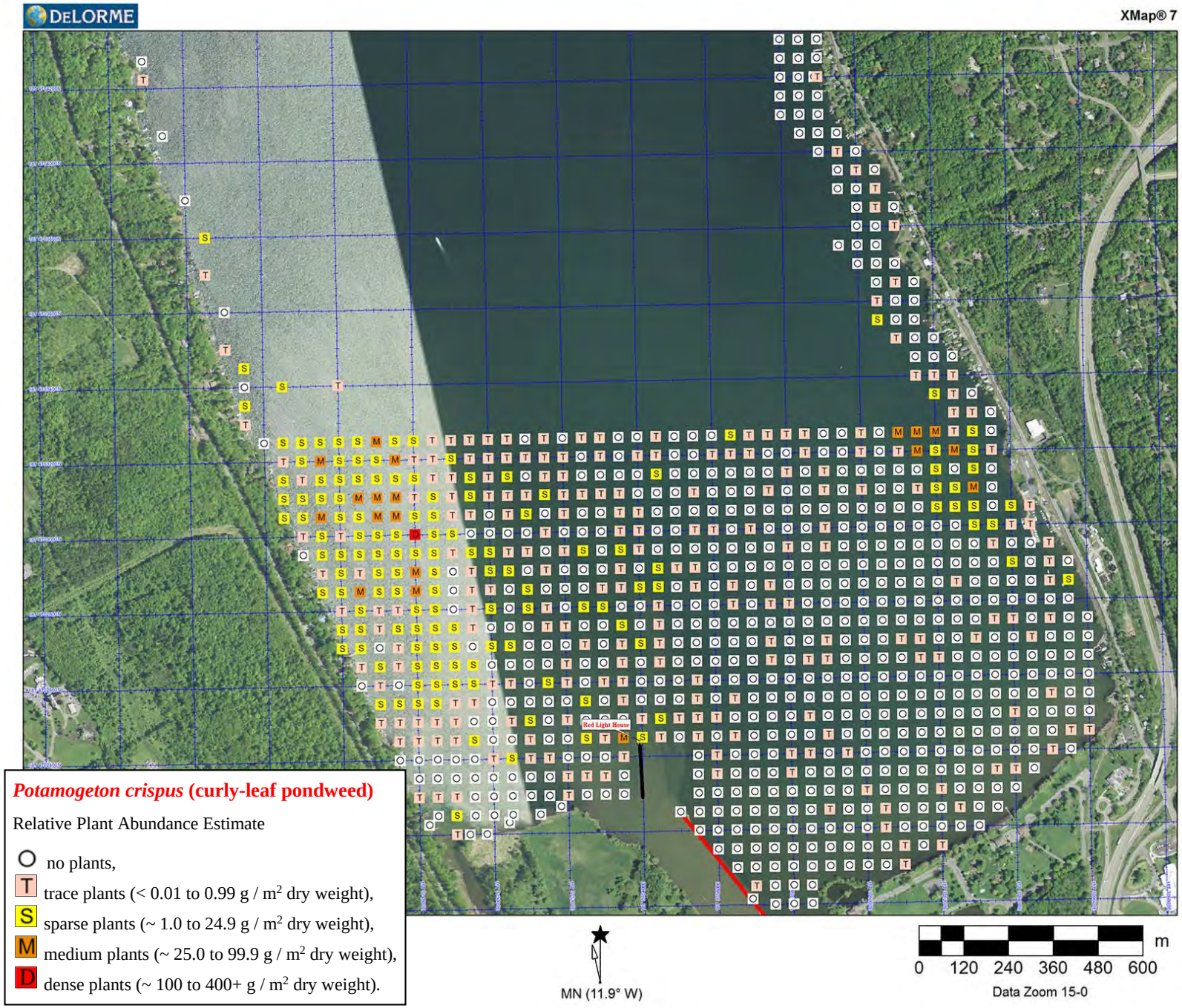
Lake-10. *Myriophyllum spicatum* (Eurasian watermilfoil) as abundance by two rake-tosses in 2018.



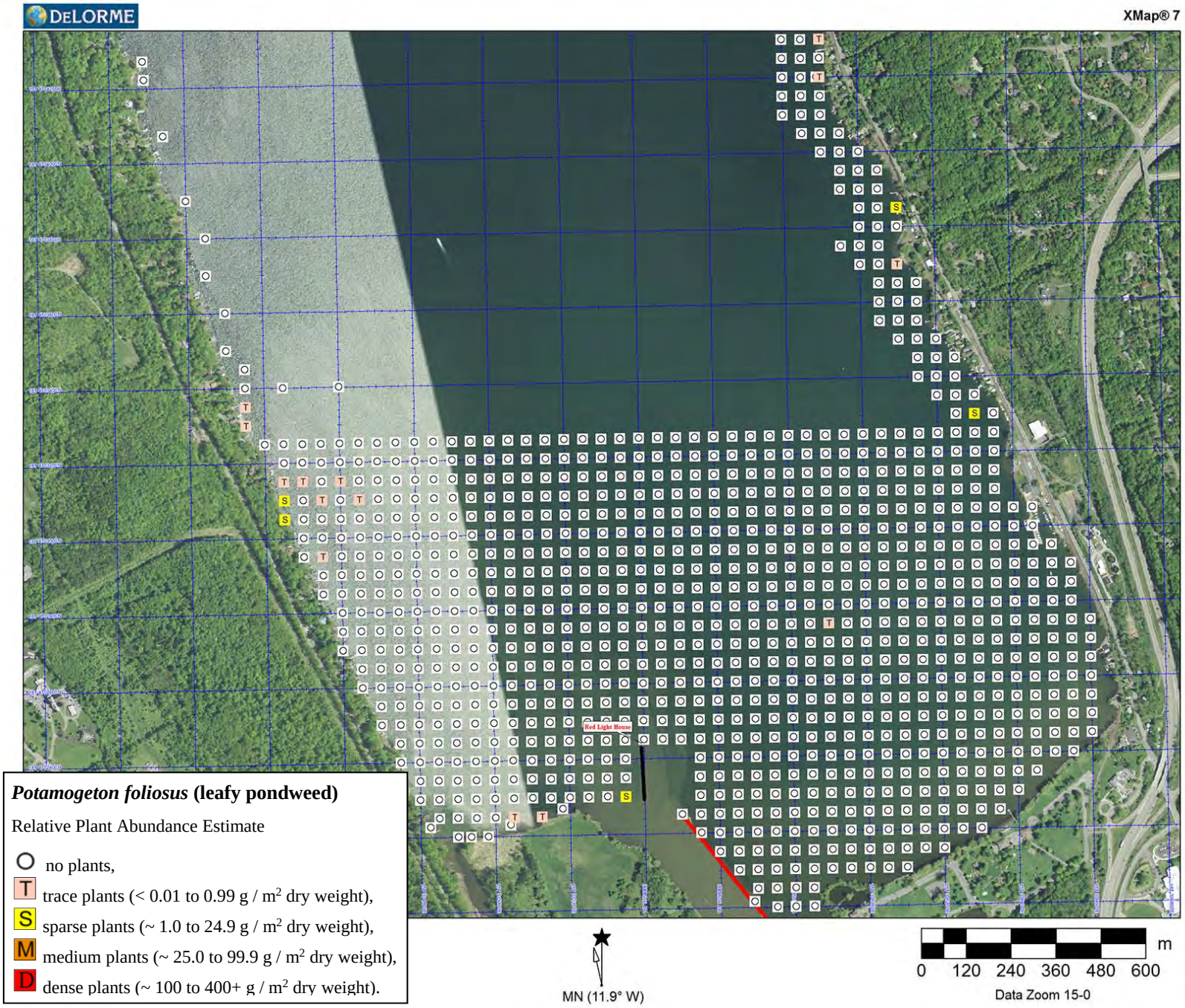
Lake-11. *Najas flexilis* (slender water nymph) as abundance by two rake-tosses in 2018.



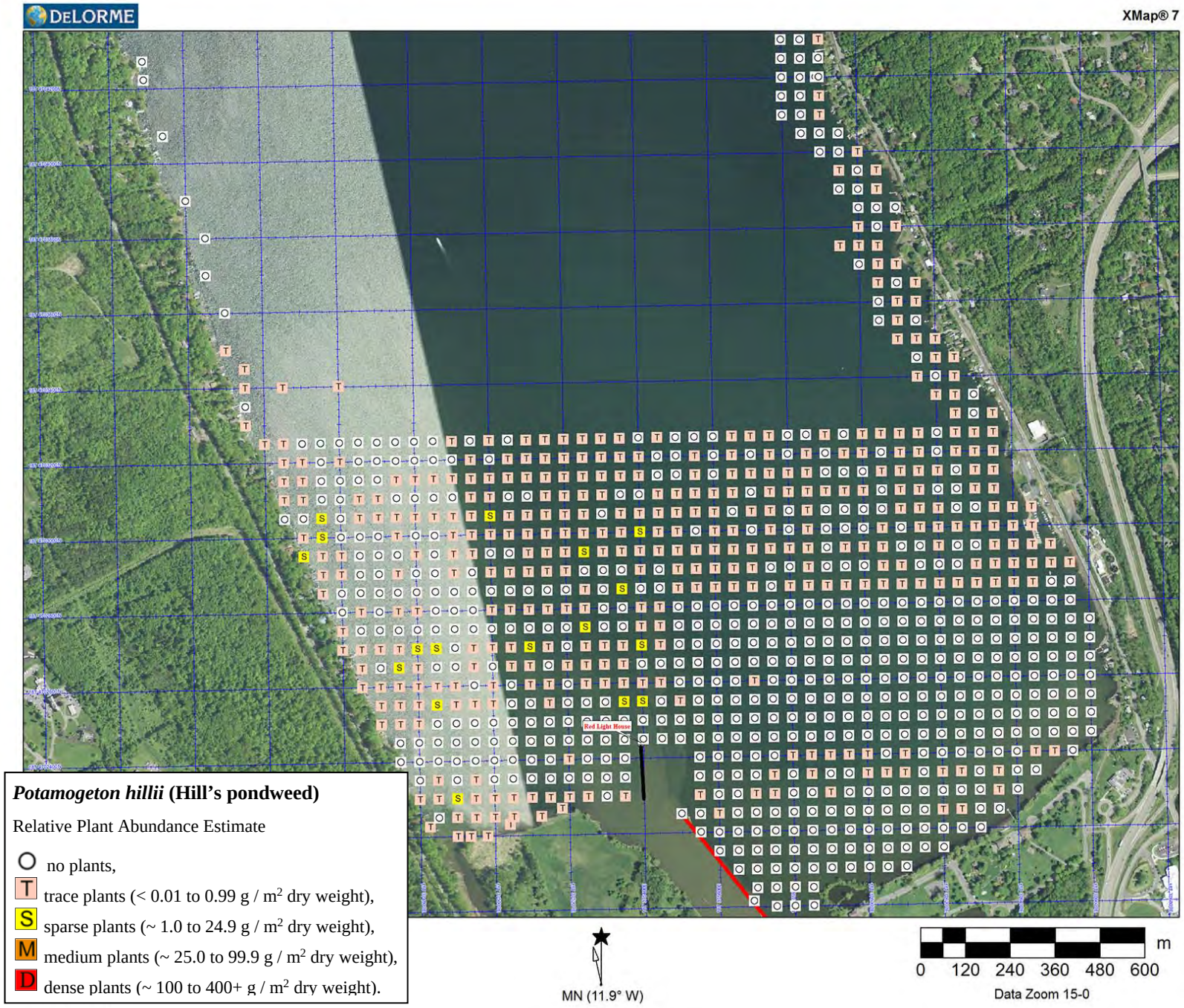
Lake-12. *Nitellopsis obtusa* (starry stonewort) as abundance by two rake-tosses in 2018.



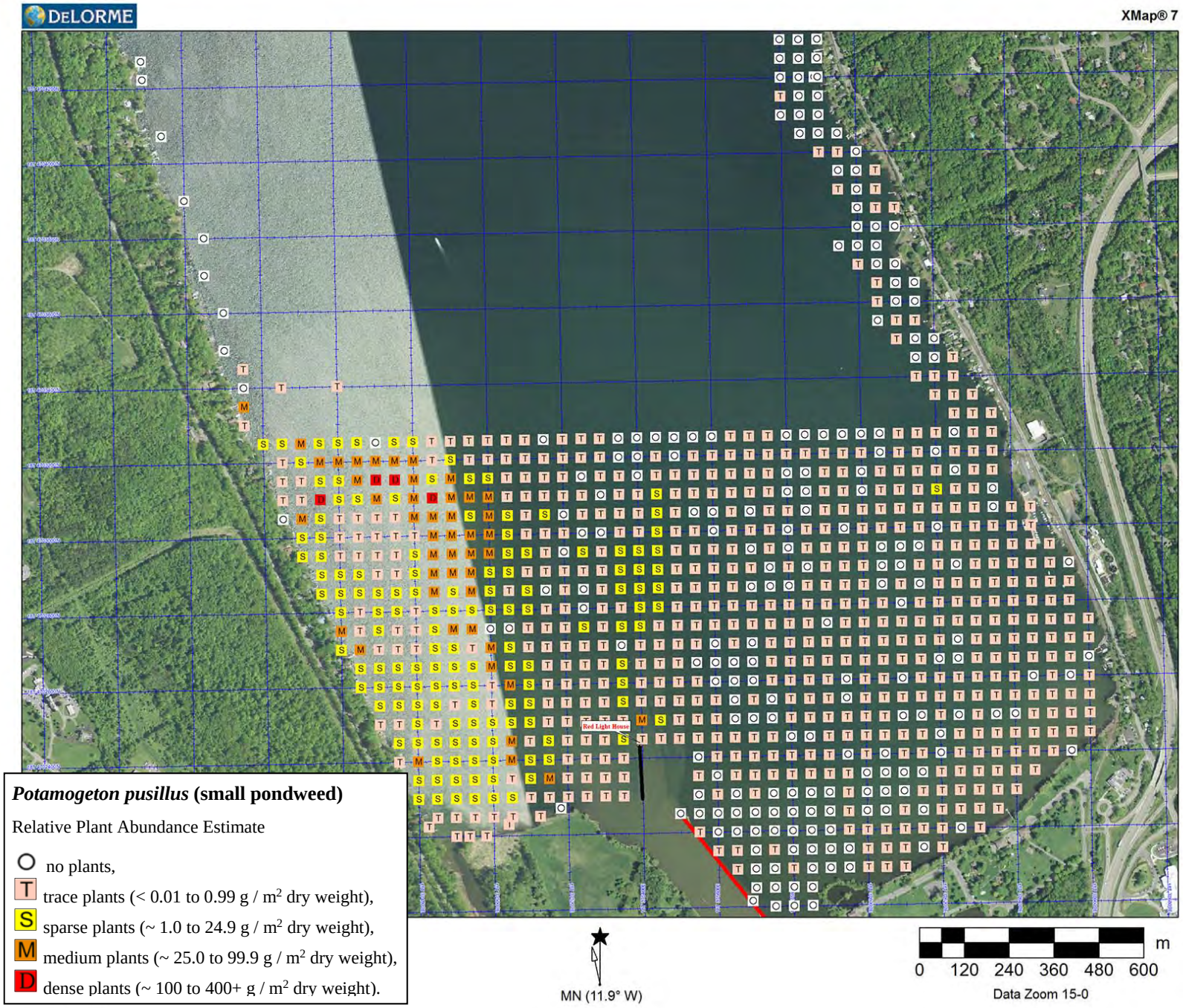
Lake-13. *Potamogeton crispus* (curly-leaf pondweed) as abundance by two rake-tosses in 2018.



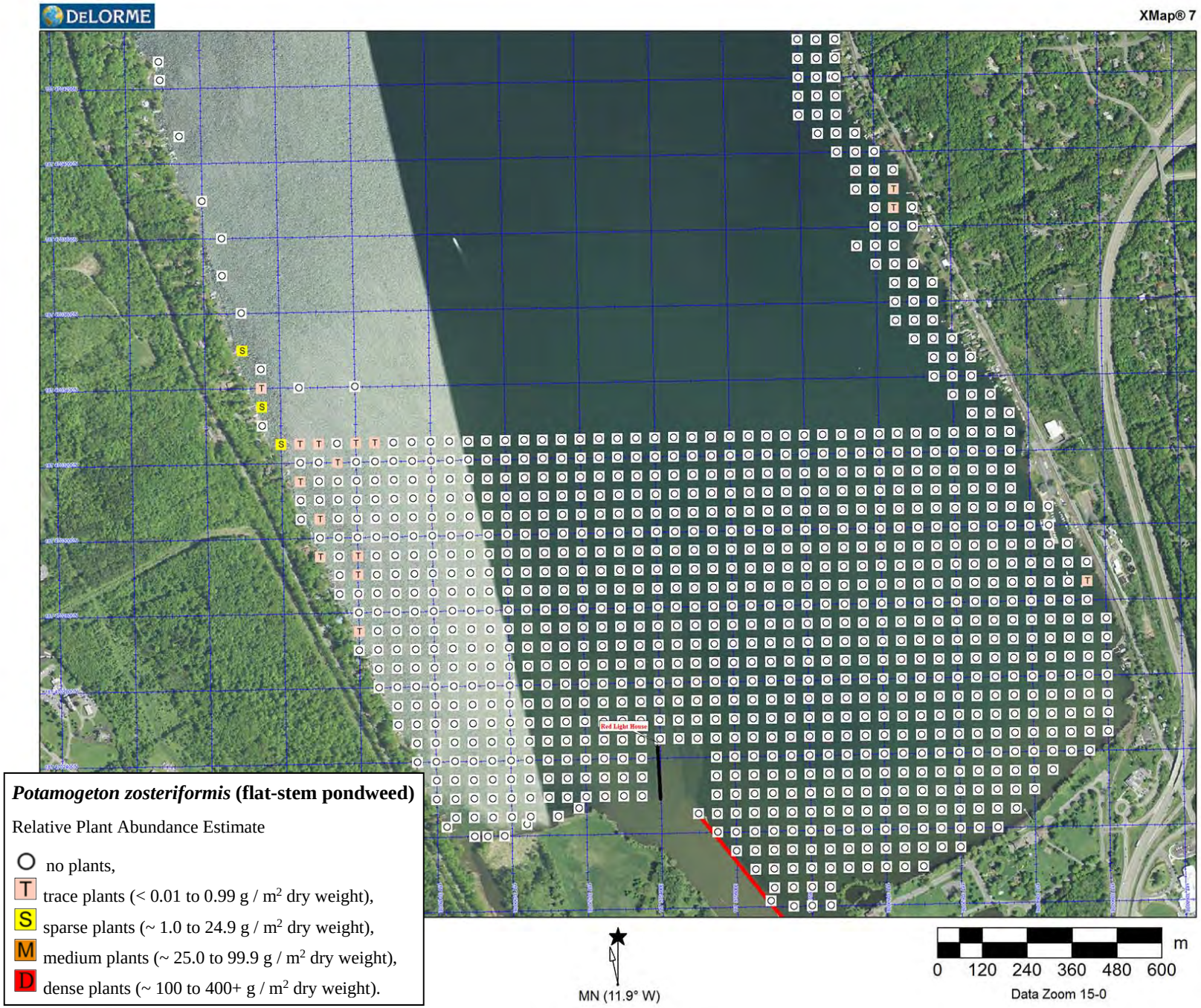
Lake-14. *Potamogeton foliosus* (leafy pondweed) as abundance by two rake-tosses in 2018.



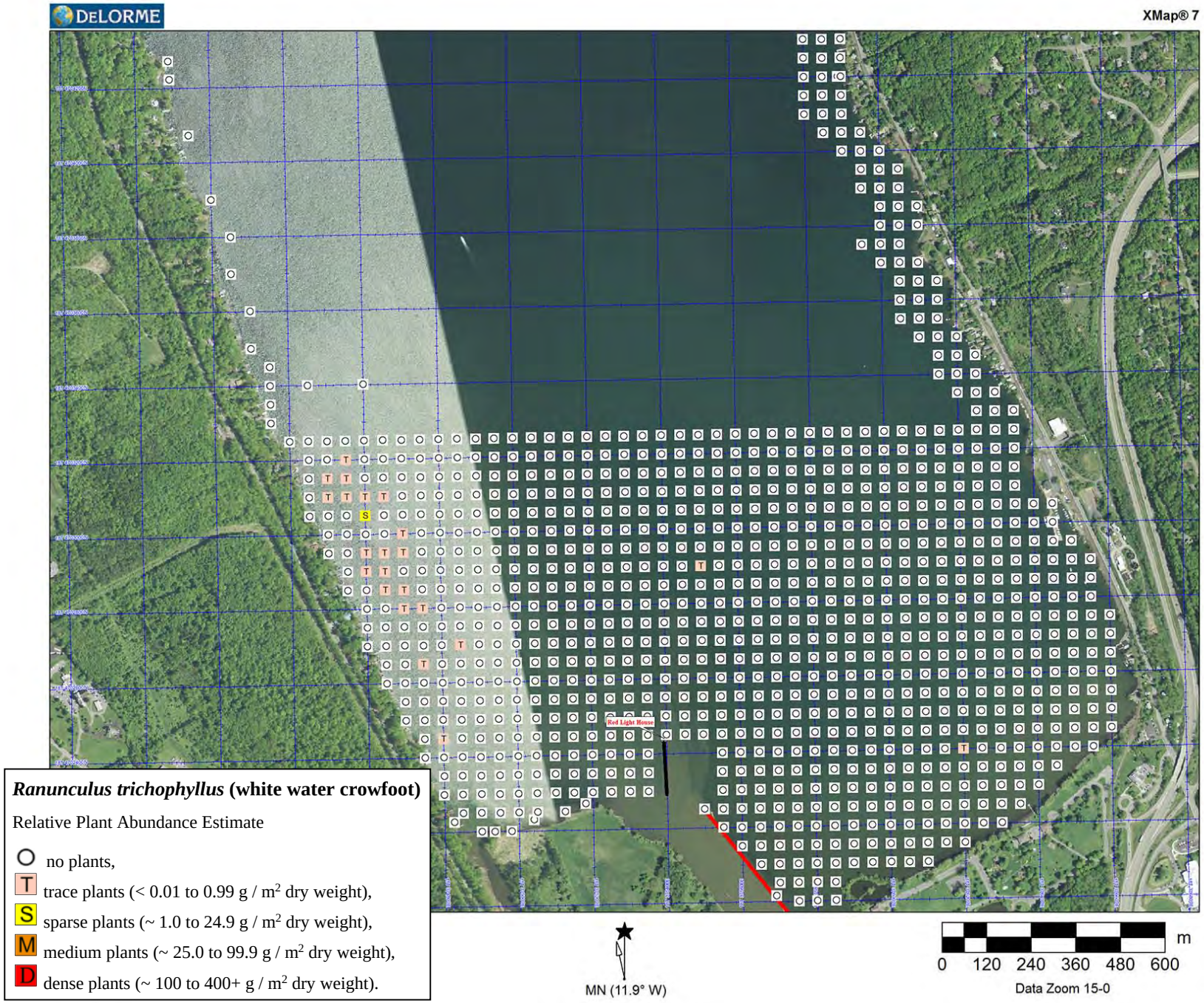
Lake-15. *Potamogeton hillii* (Hill's pondweed) as abundance by two rake-tosses in 2018.



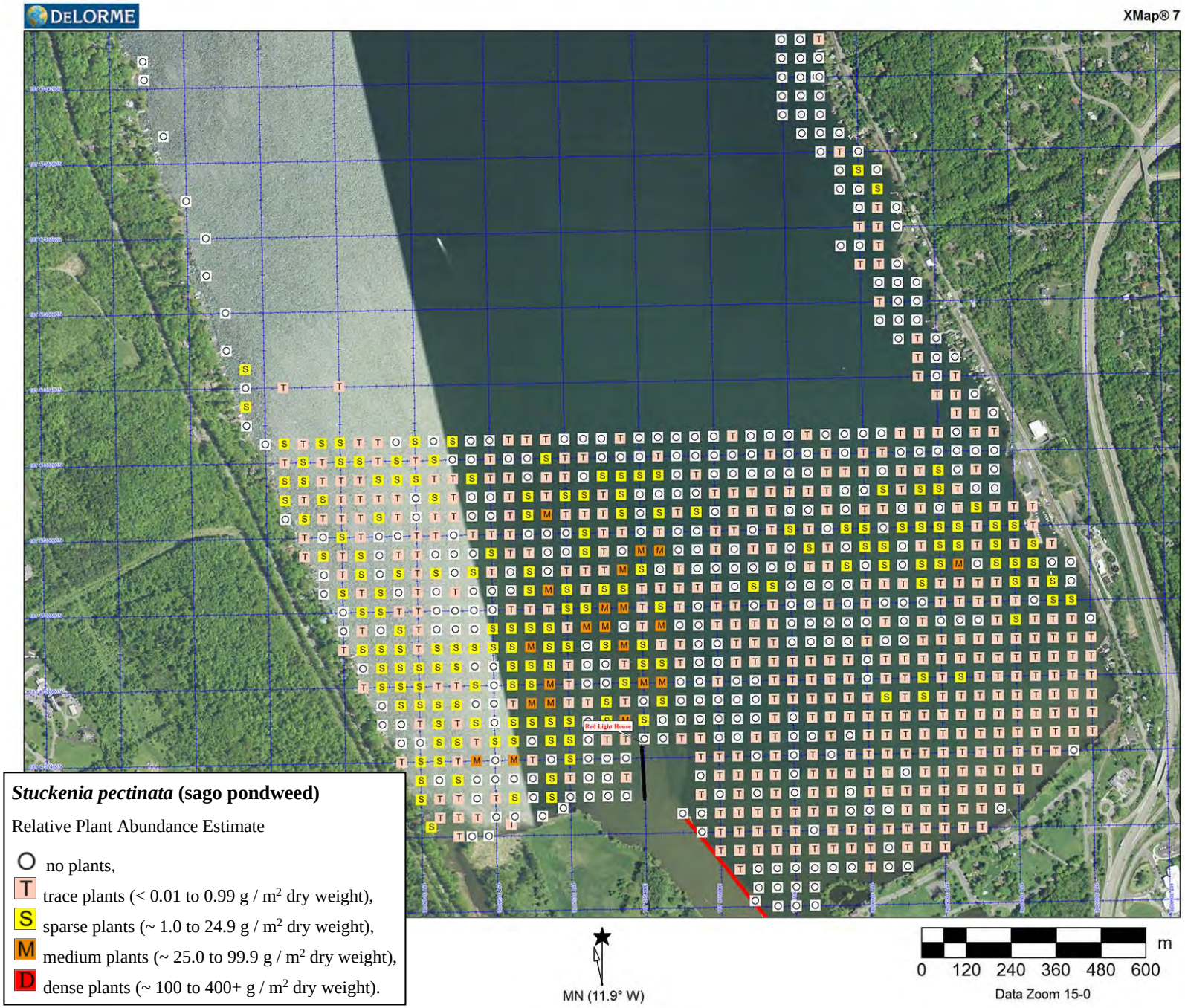
Lake-16. *Potamogeton pusillus* (small pondweed) as abundance by two rake-tosses in 2018.



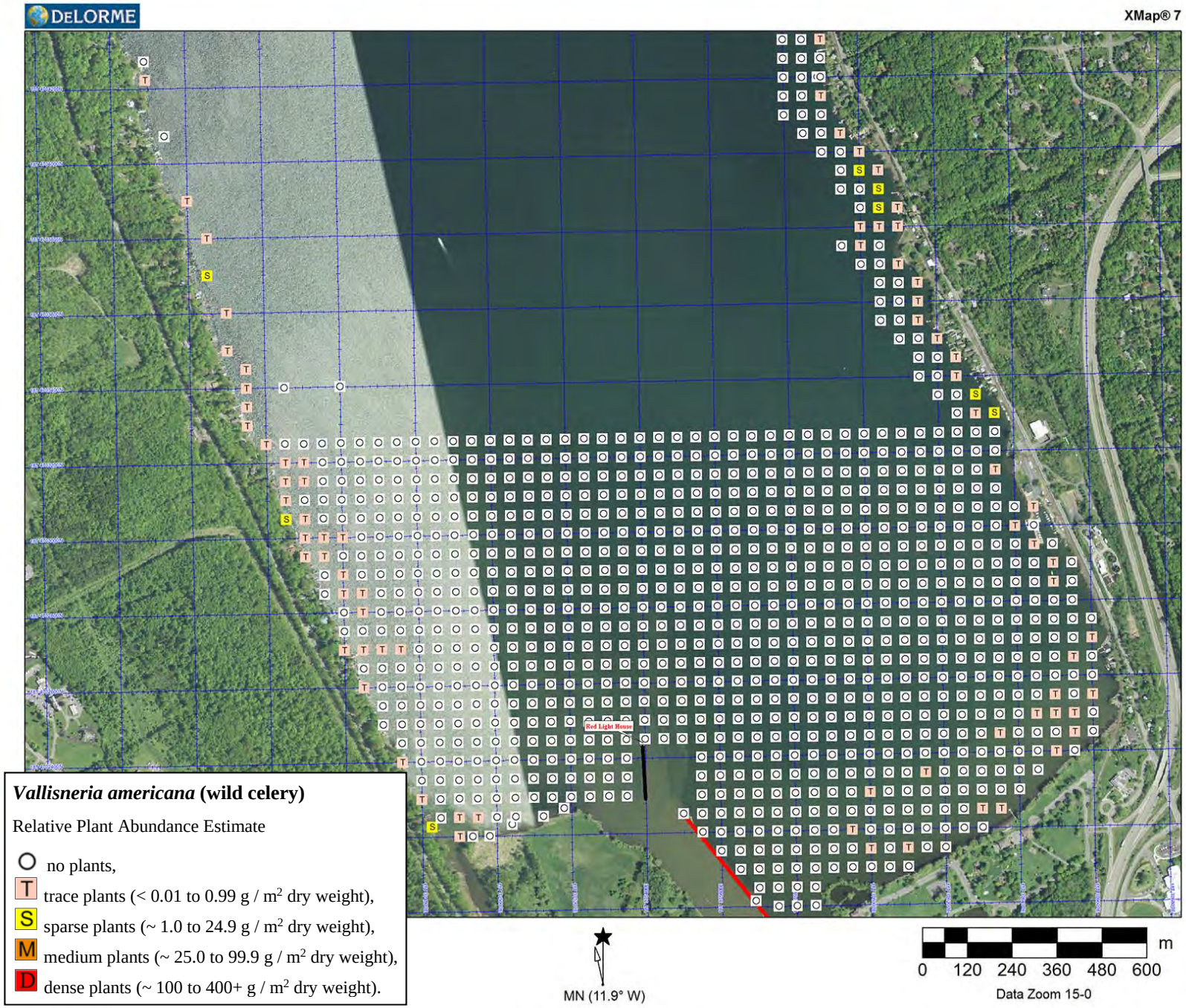
Lake-17. *Potamogeton zosteriformis* (flat-stem pondweed) as abundance by two rake-tosses in 2018.



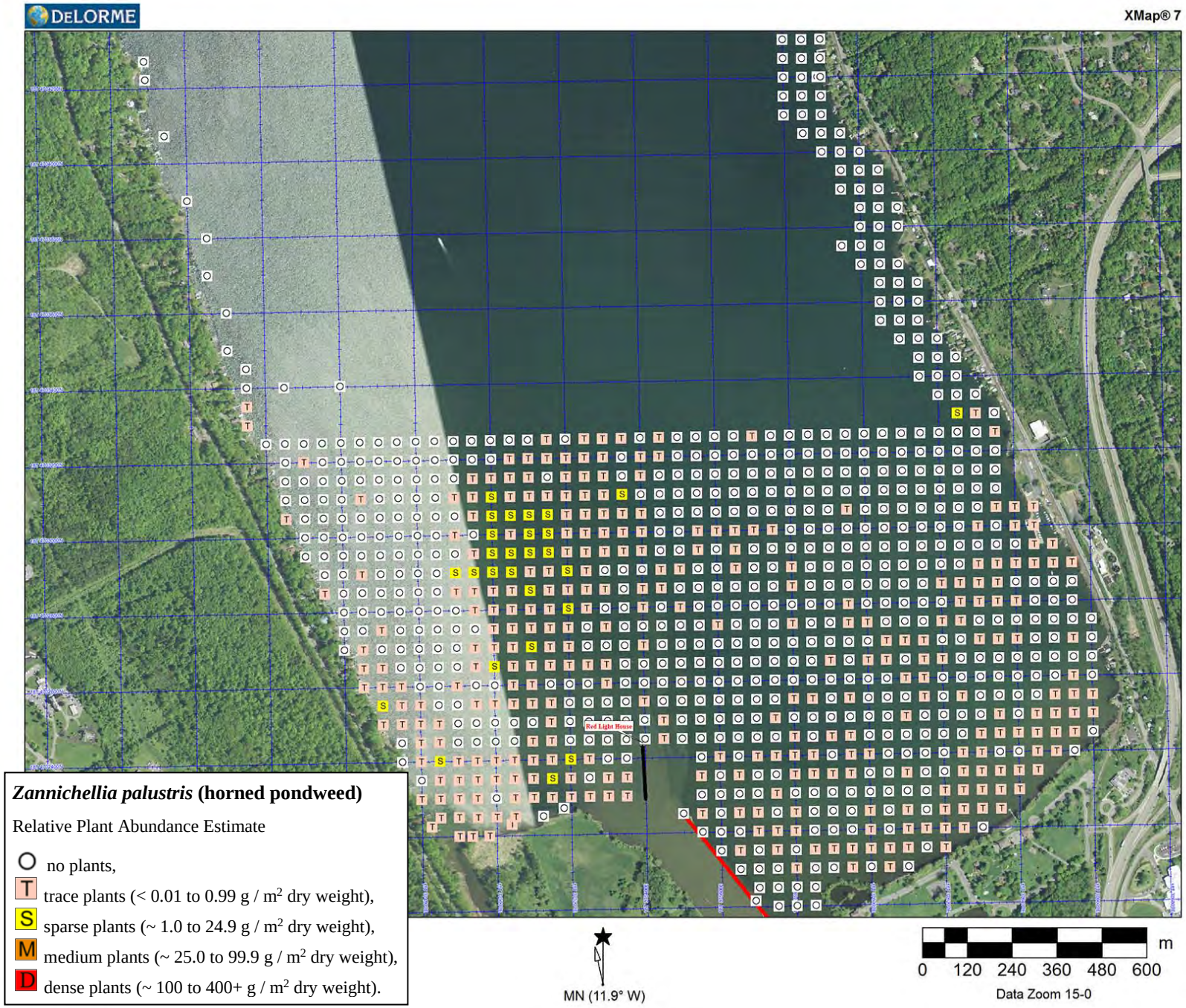
Lake-18. *Ranunculus trichophyllus* (white water crowfoot) as abundance by two rake-tosses in 2018.



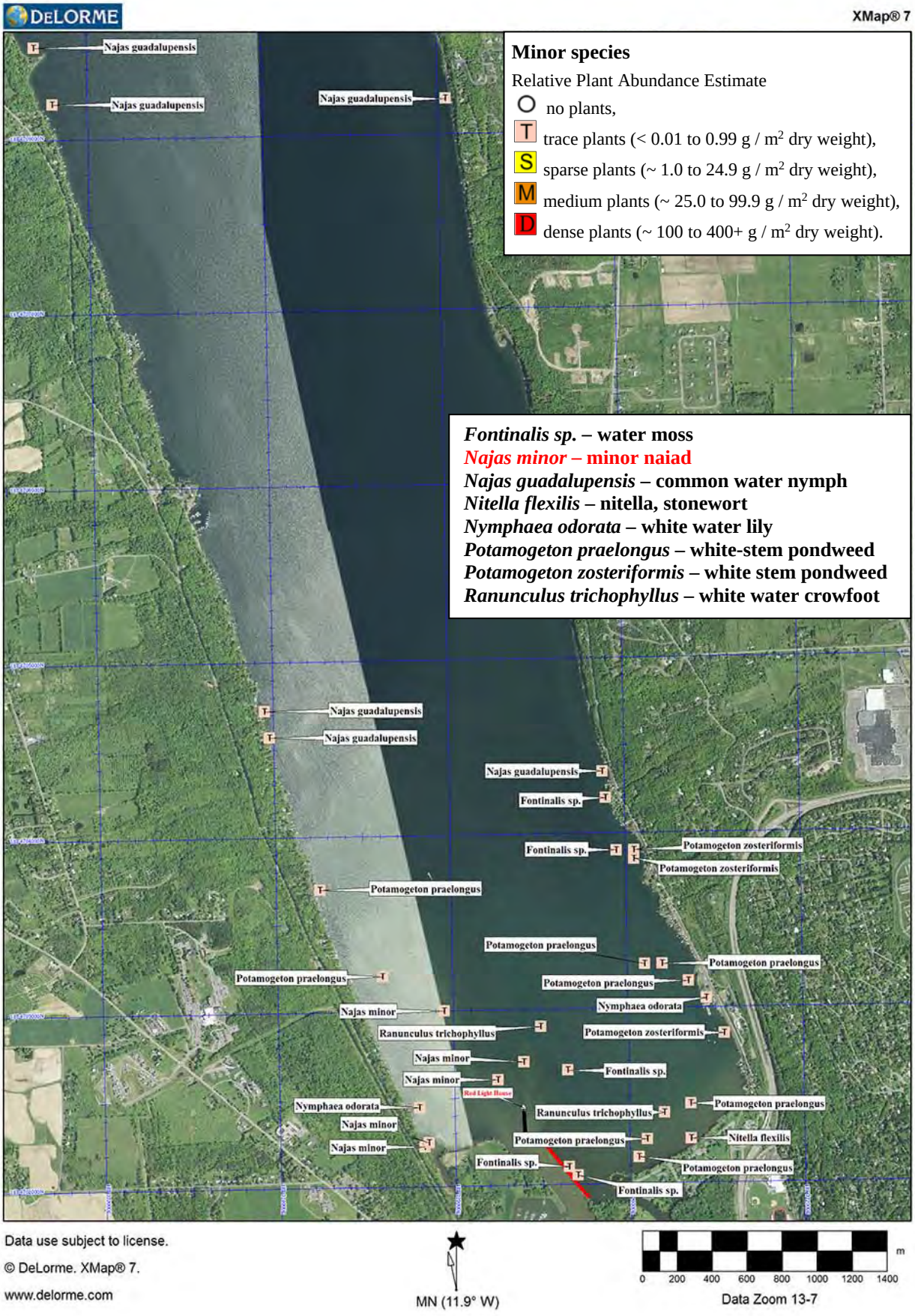
Lake-19. *Stuckenia pectinata* (sago pondweed) as abundance by two rake-tosses in 2018.



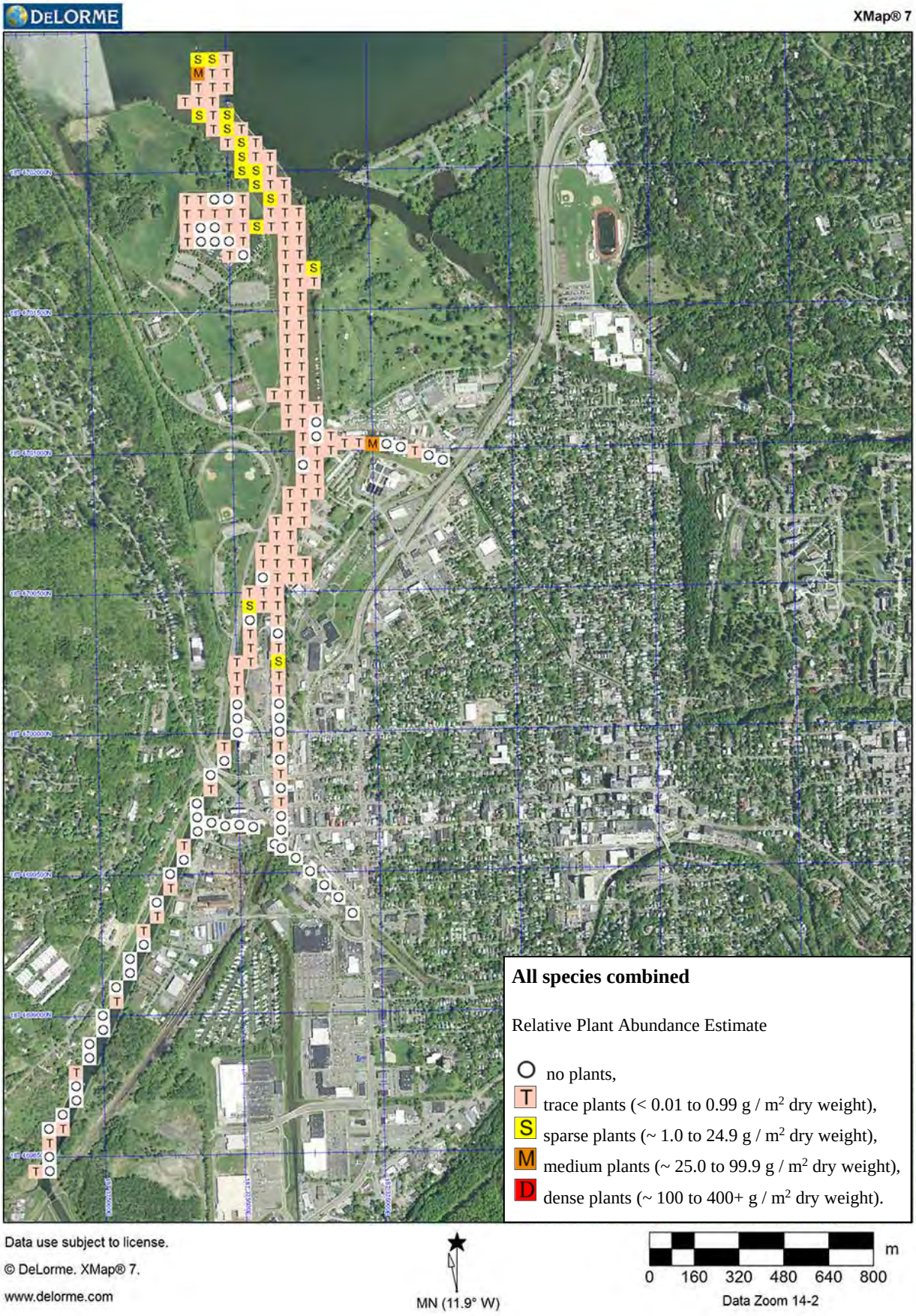
Lake-20. *Vallisneria americana* (wild celery) as abundance by two rake-tosses in 2018.



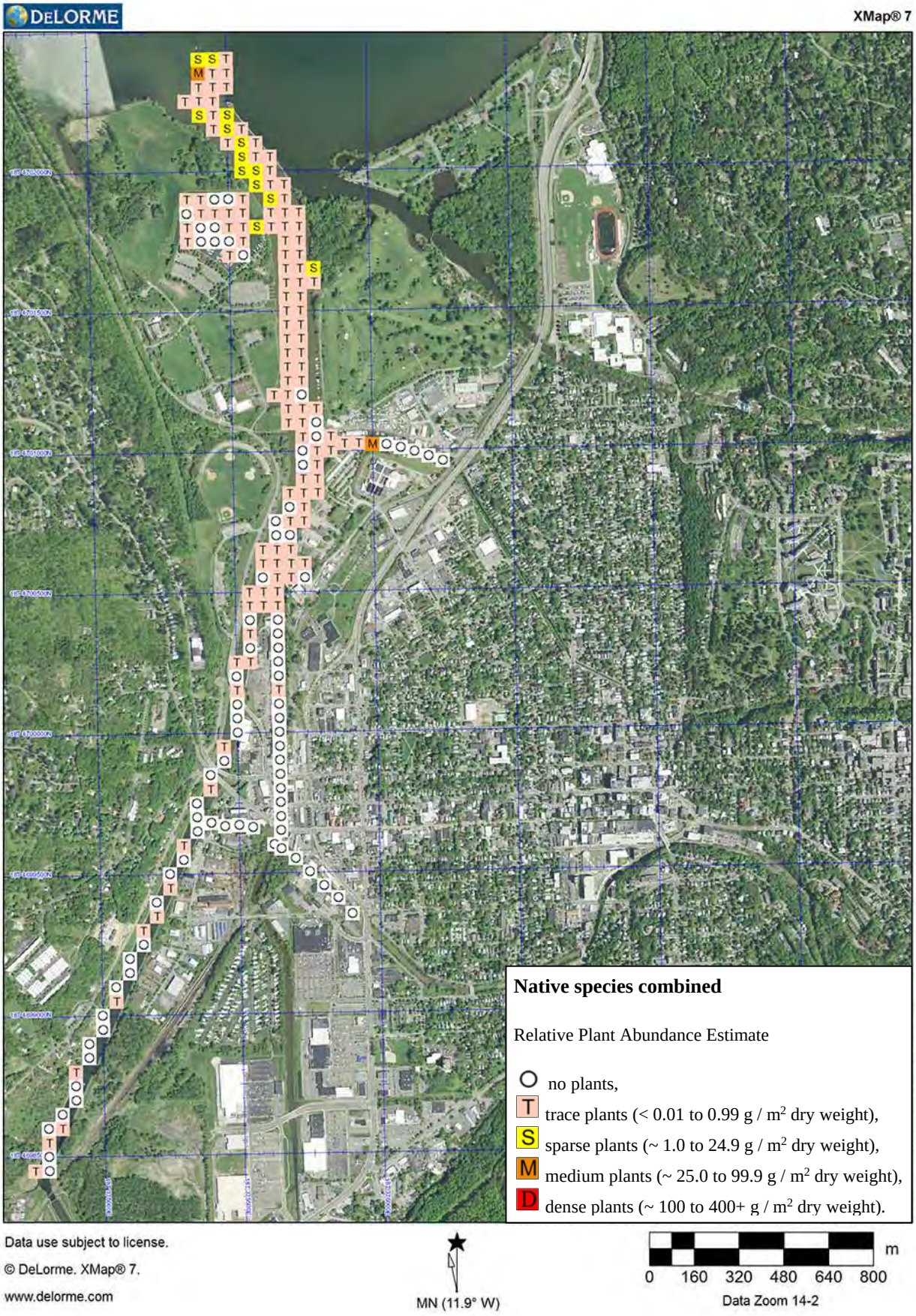
Lake-21. *Zannichellia palustris* (horned pondweed) as abundance by two rake-tosses in 2018.



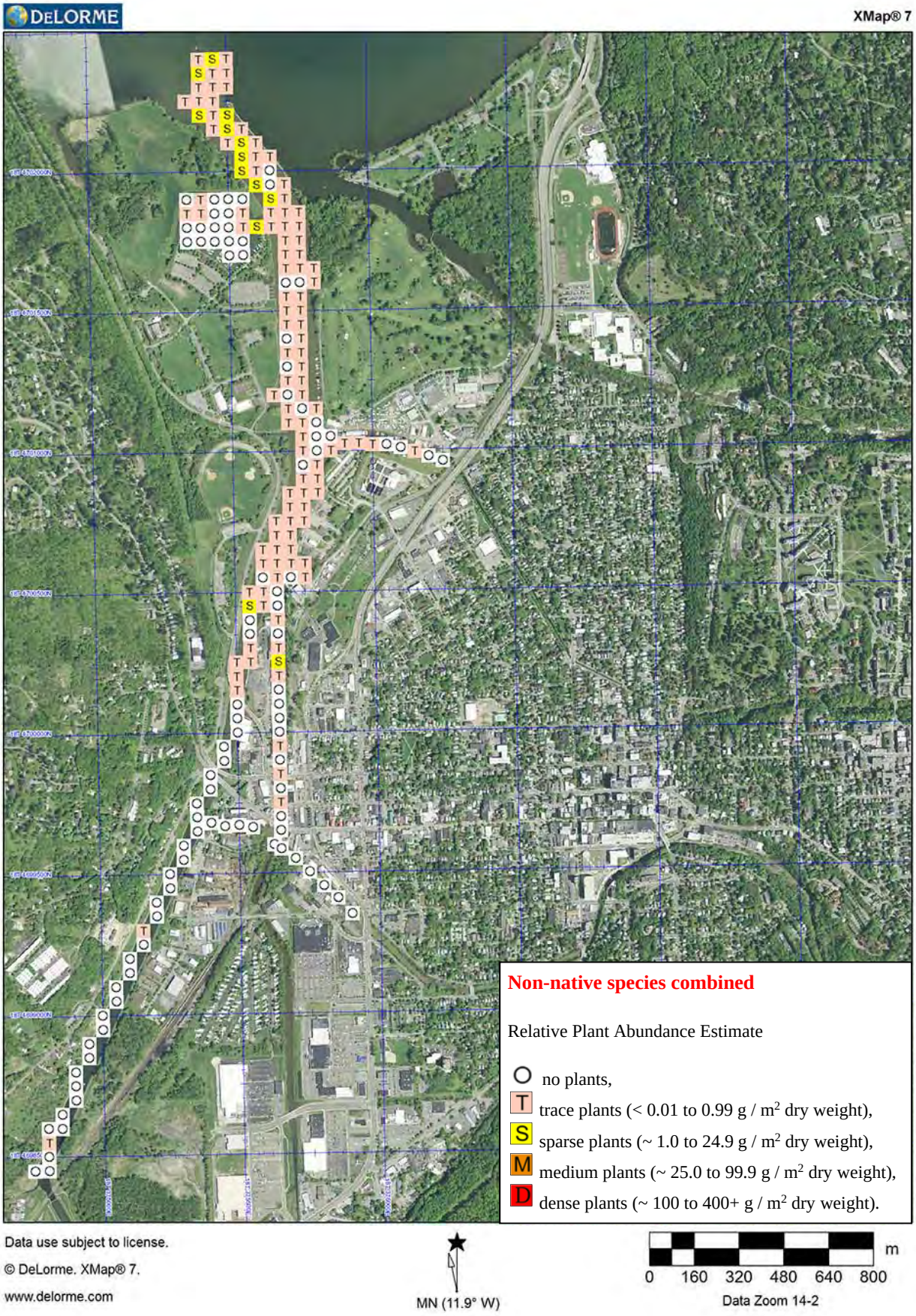
Lake-22. Minor species as abundance by two rake-tosses in 2018.



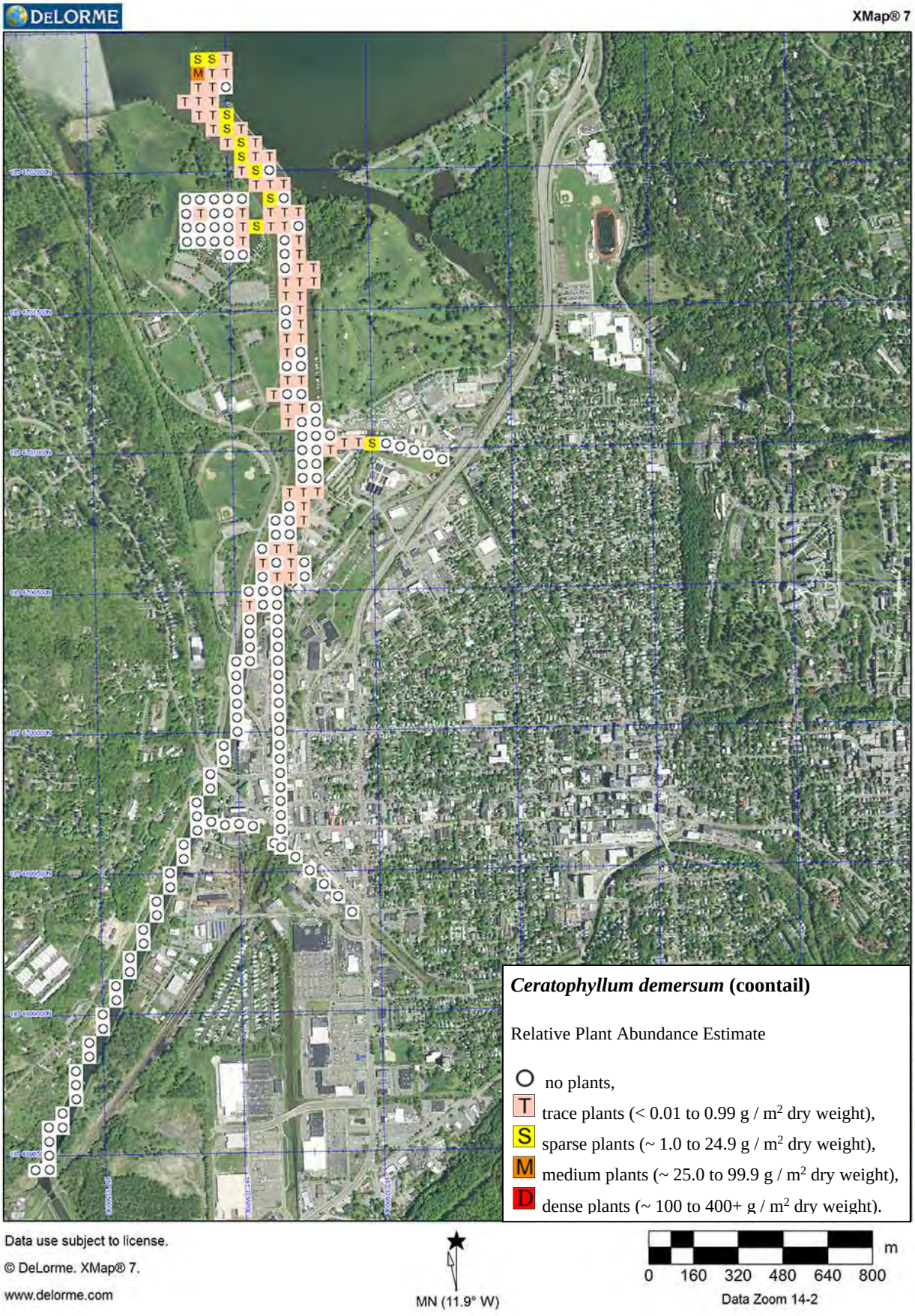
Inlet-1. All species combined as abundance by two rake-tosses in 2018.



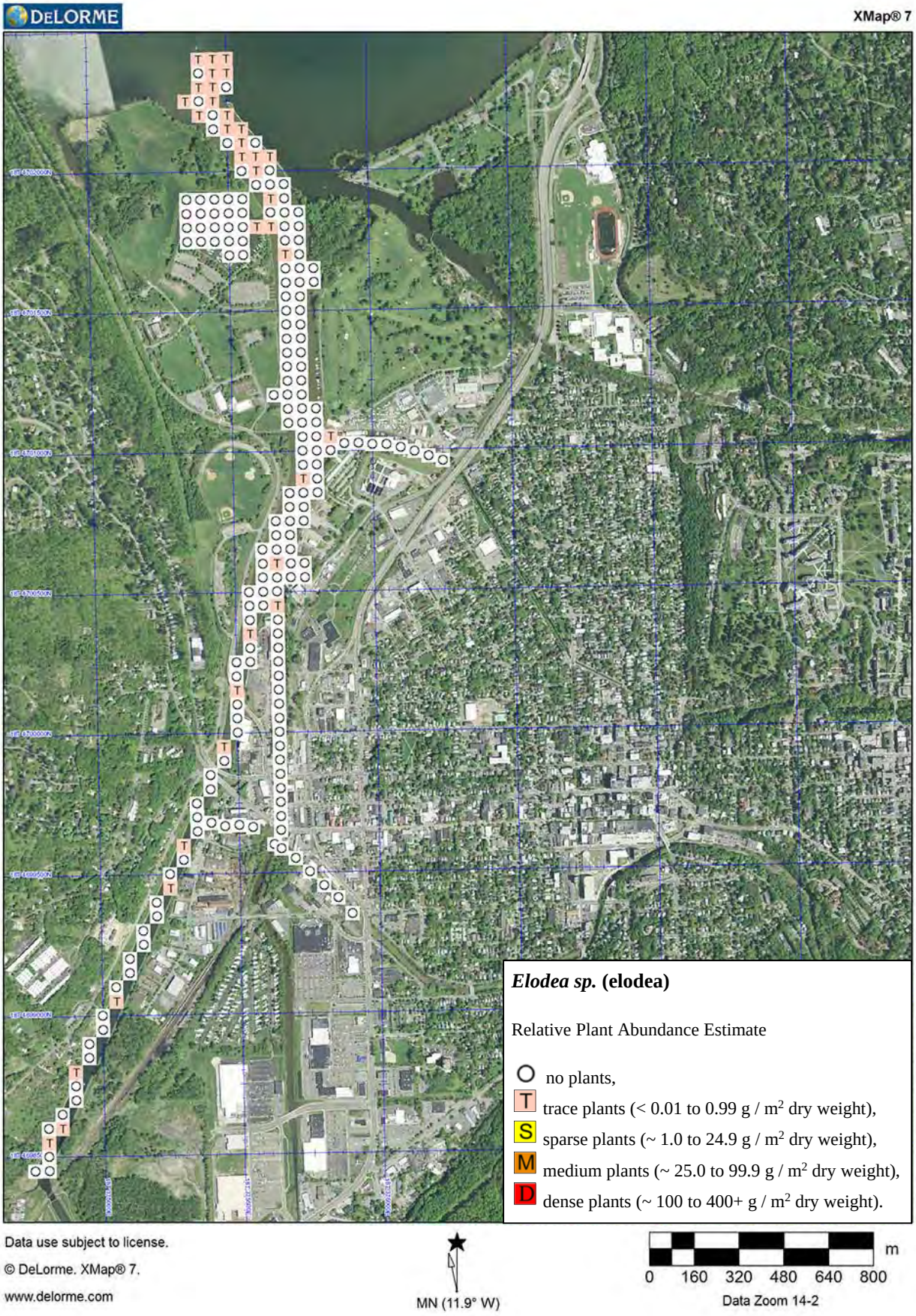
Inlet-2. Native species combined as abundance by two rake-tosses in 2018.



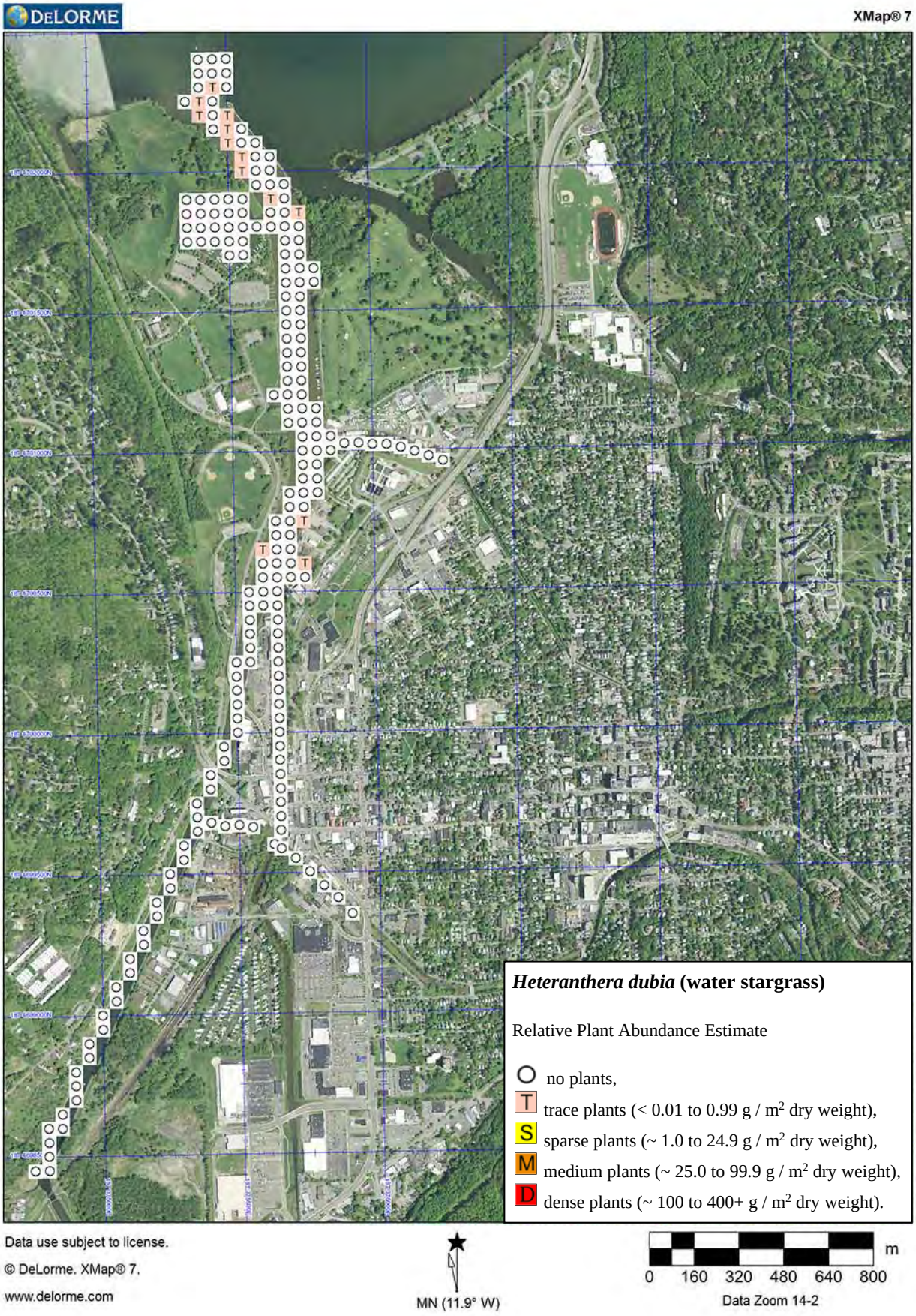
Inlet-3. Non-native species combined as abundance by two rake-tosses in 2018.



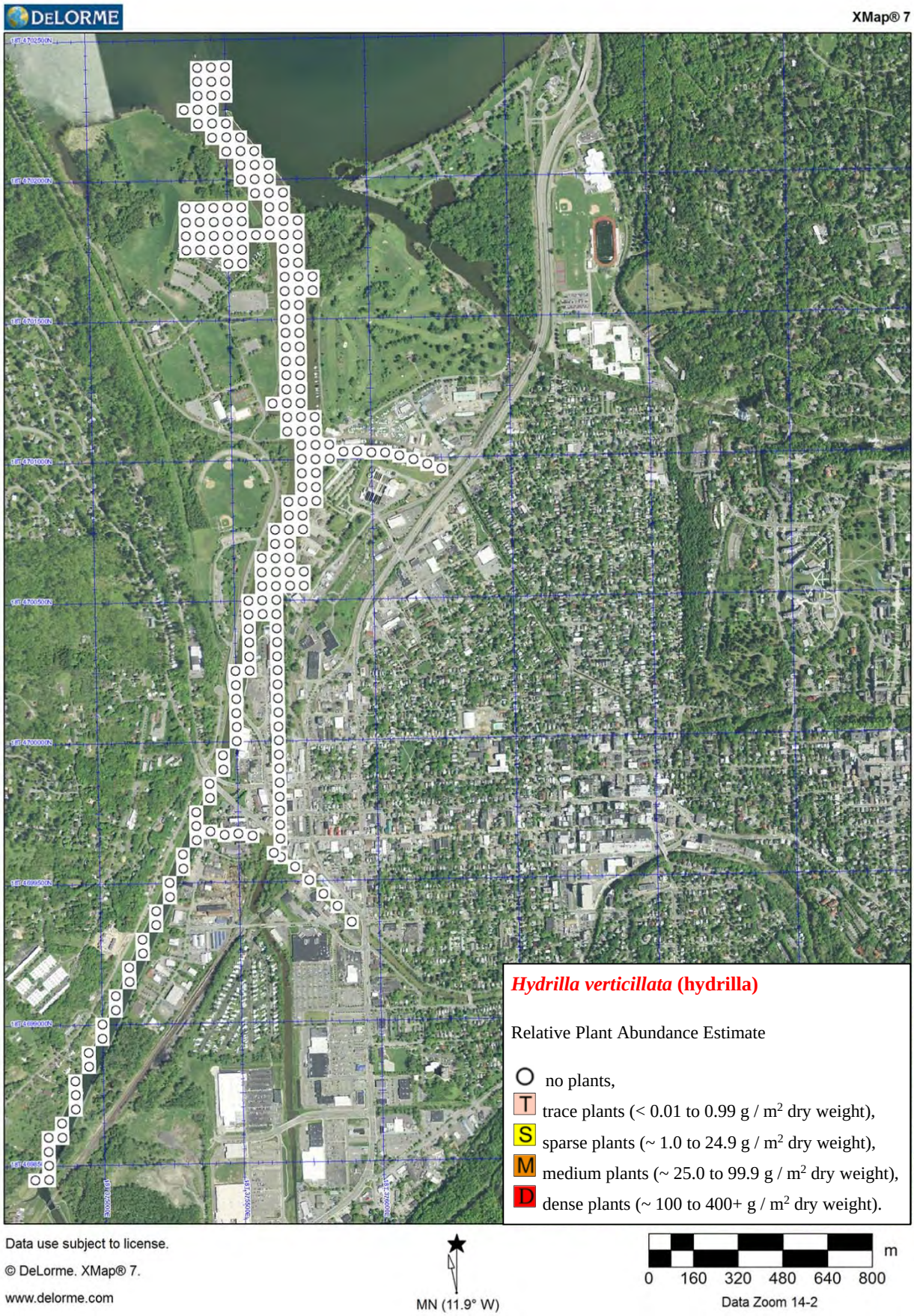
Inlet-4. *Ceratophyllum demersum* (coontail) as abundance by two rake-tosses in 2018.



Inlet-5. *Elodea sp.* (elodea) as abundance by two rake-tosses in 2018.

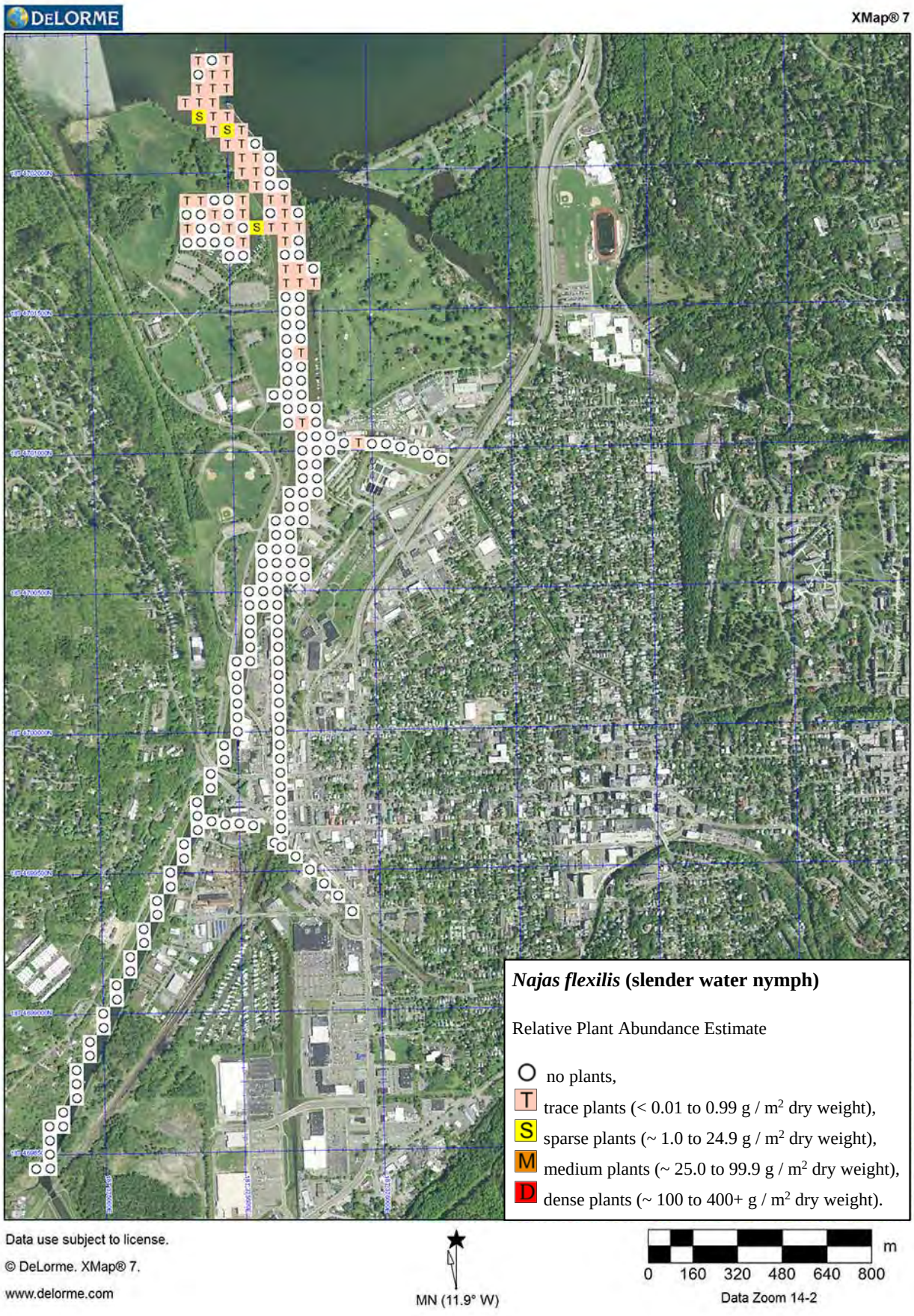


Inlet-6. *Heteranthera dubia* (water stargrass) as abundance by two rake-tosses in 2018.

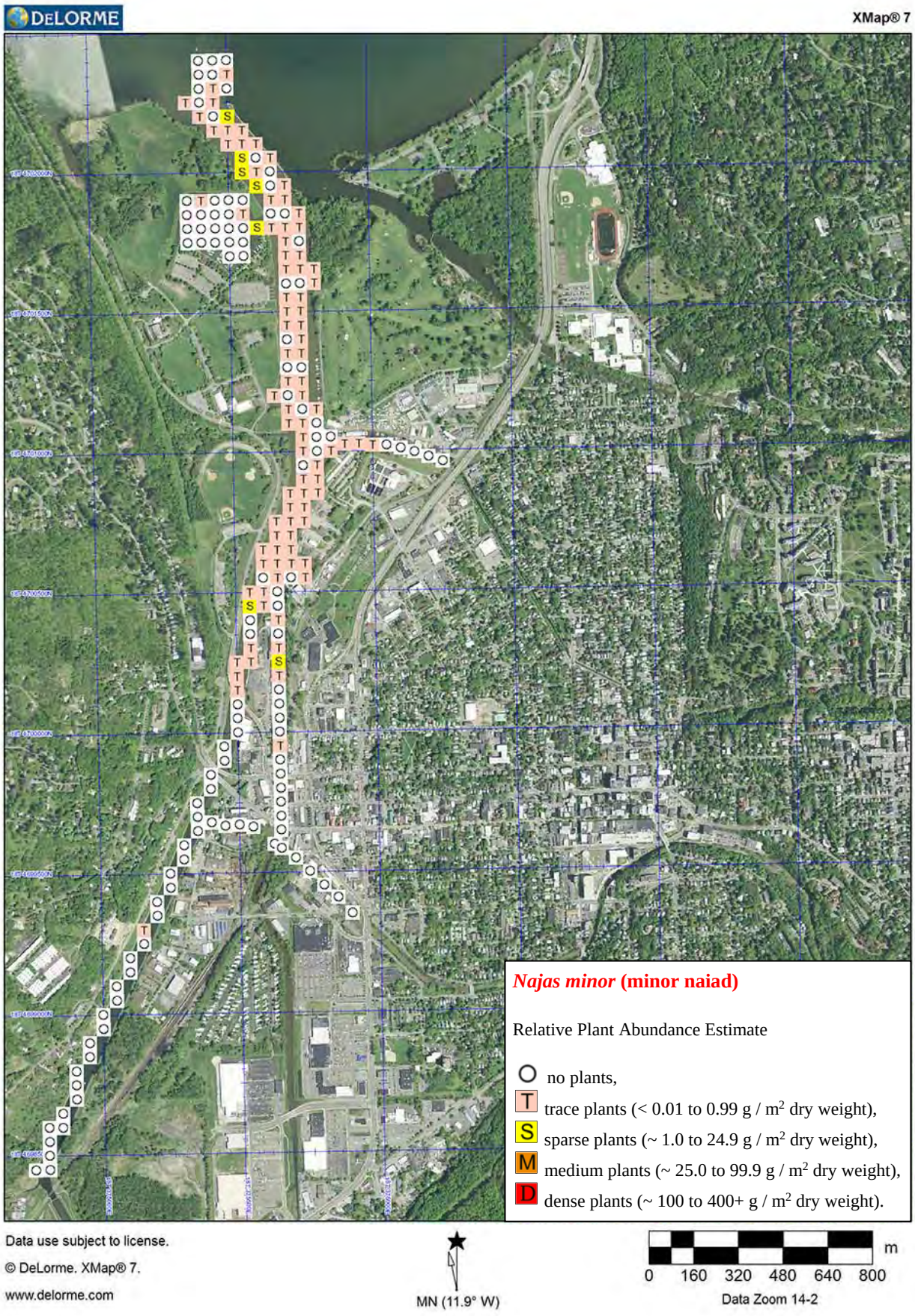


Inlet-7. *Hydrilla verticillata* (hydrilla) as abundance by two rake-tosses in 2018.

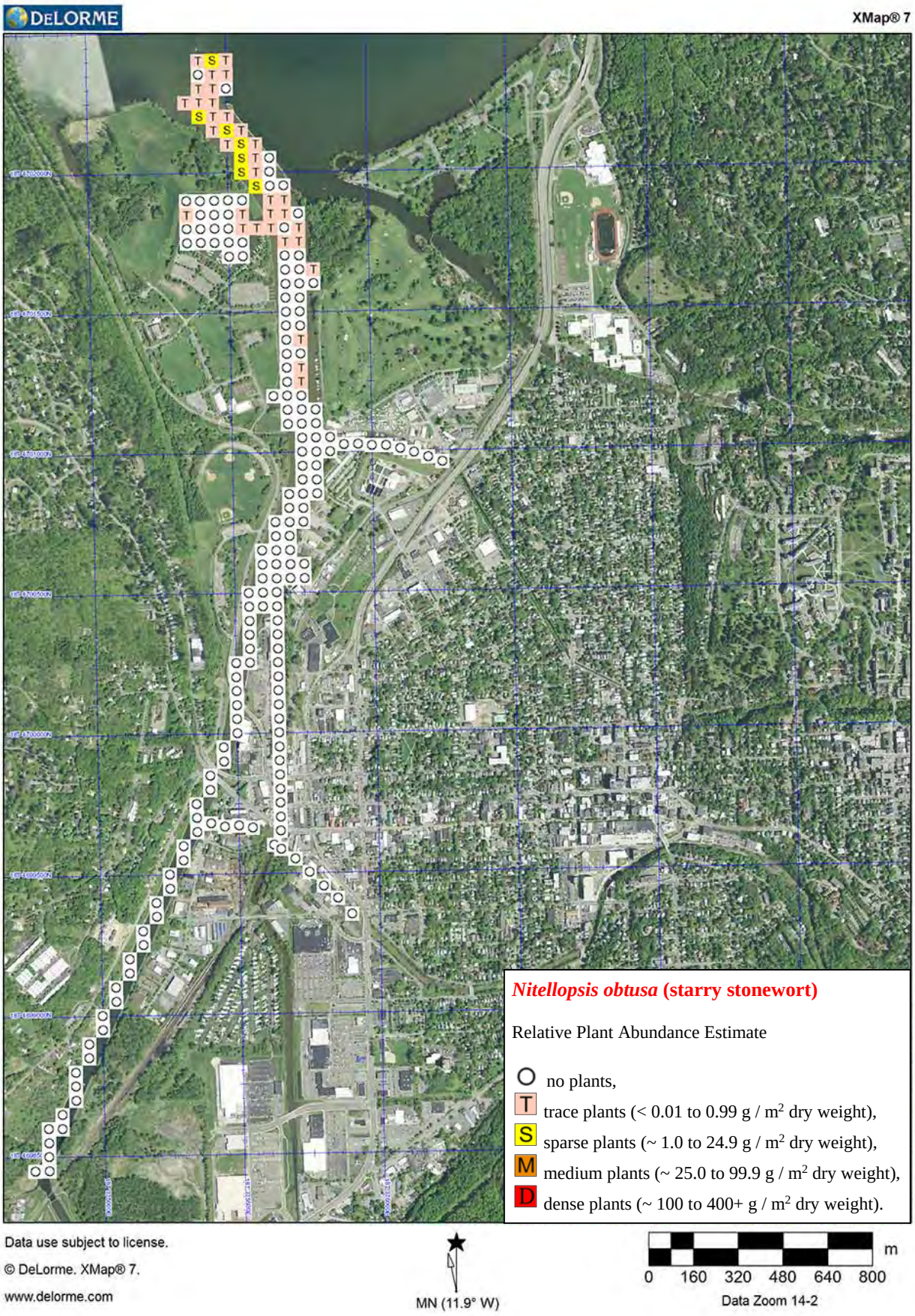
Inlet-8. *Myriophyllum spicatum* (Eurasian watermilfoil) as abundance by two rake-tosses in 2018.



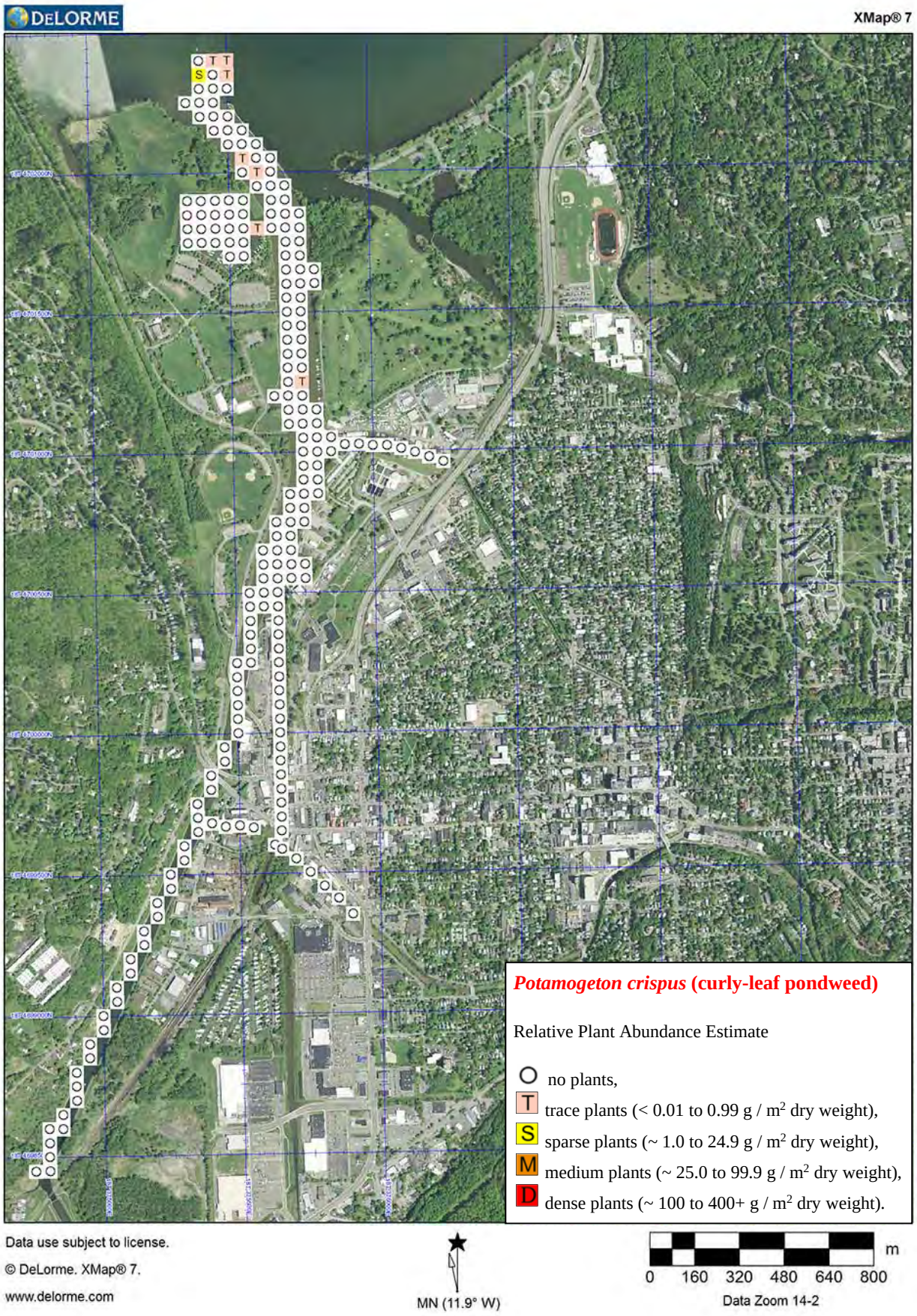
Inlet-9. *Najas flexilis* (slender water nymph) as abundance by two rake-tosses in 2018.



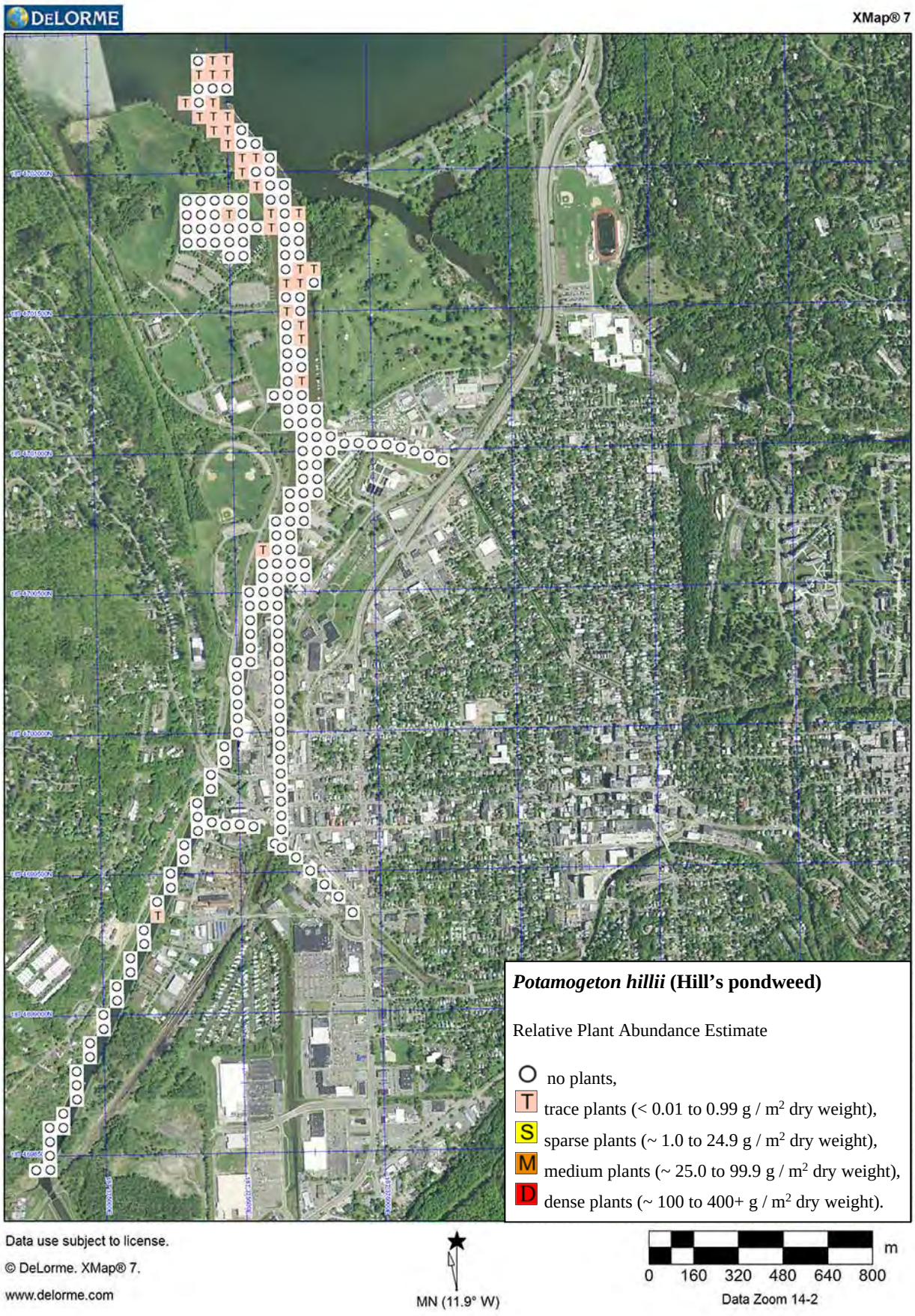
Inlet-10. *Najas minor* (minor naiad) as abundance by two rake-tosses in 2018.



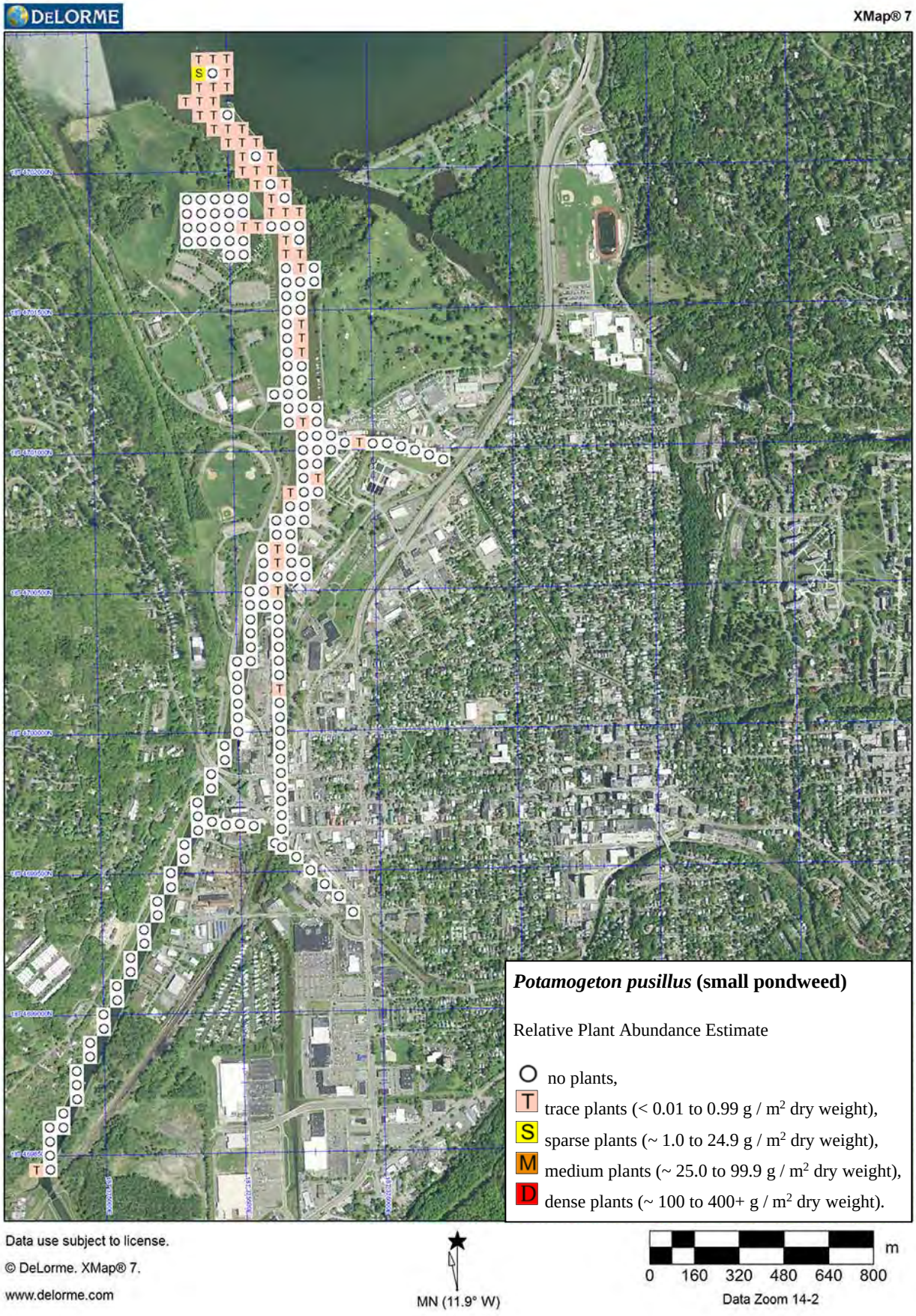
Inlet-11. *Nitellopsis obtusa* (starry stonewort) as abundance by two rake-tosses in 2018.



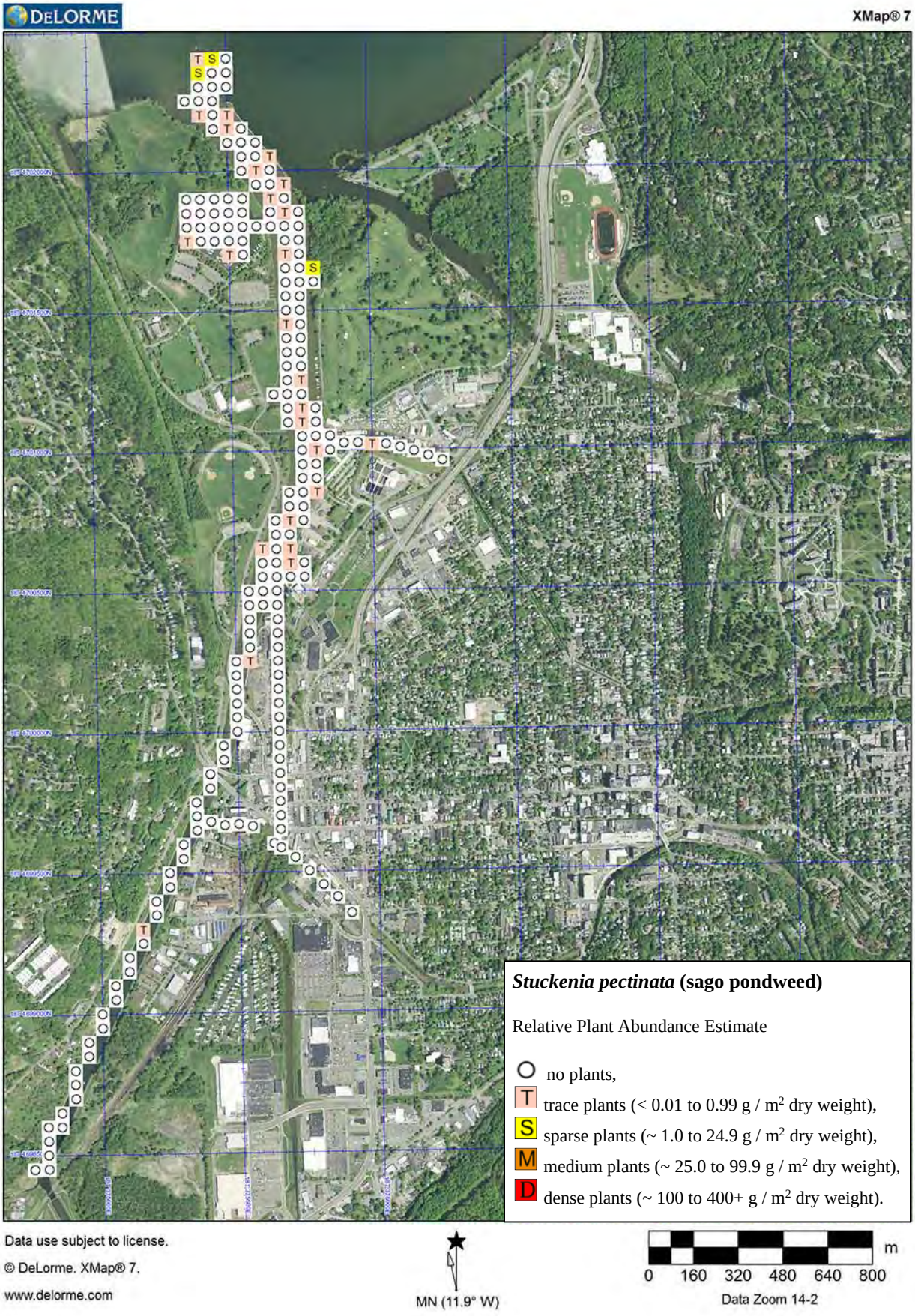
Inlet-12. *Potamogeton crispus* (curly-leaf pondweed) as abundance by two rake-tosses in 2018.



Inlet-13. *Potamogeton hillii* (Hill's pondweed) as abundance by two rake-tosses in 2018.

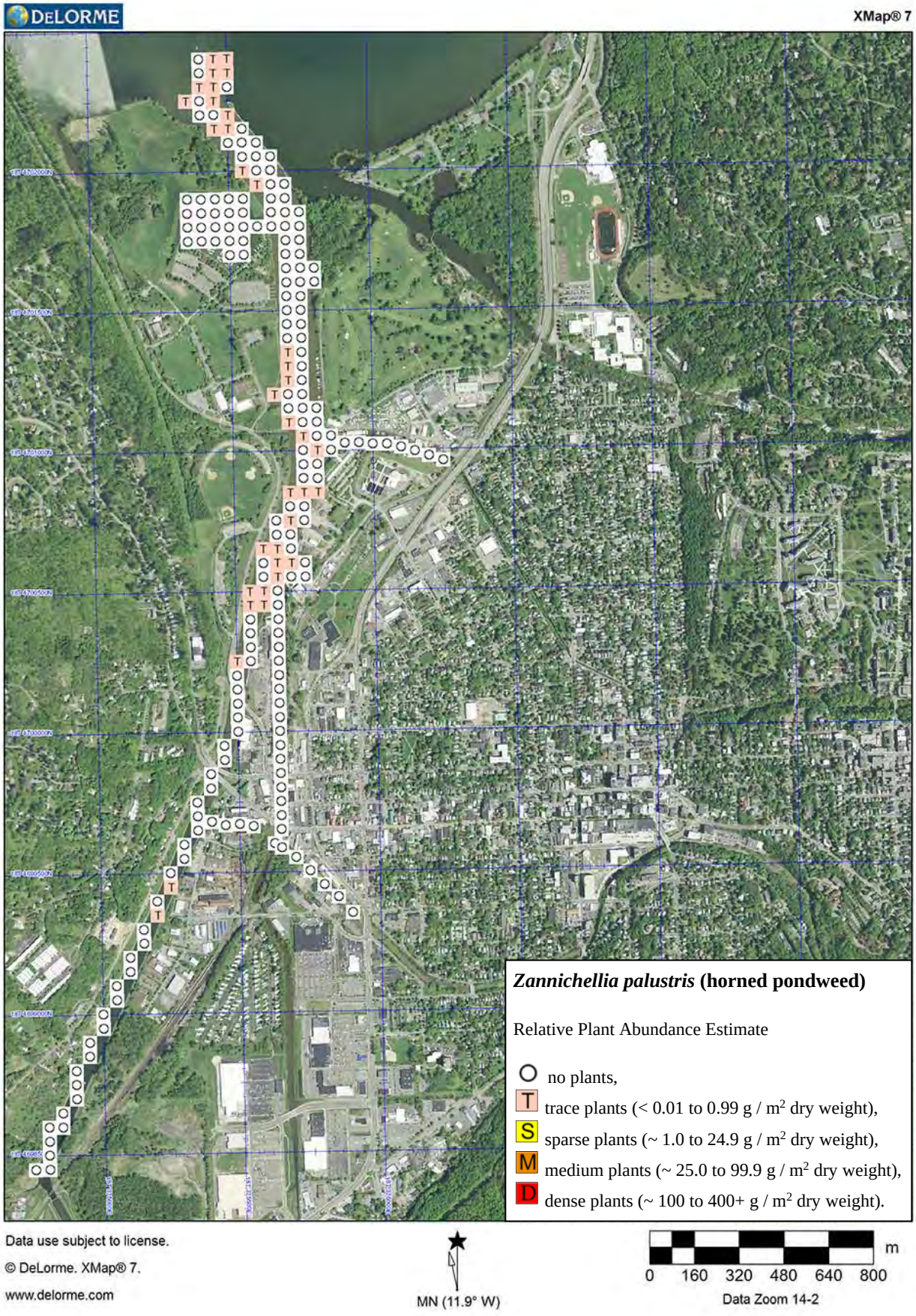


Inlet-14. *Potamogeton pusillus* (small pondweed) as abundance by two rake-tosses in 2018.



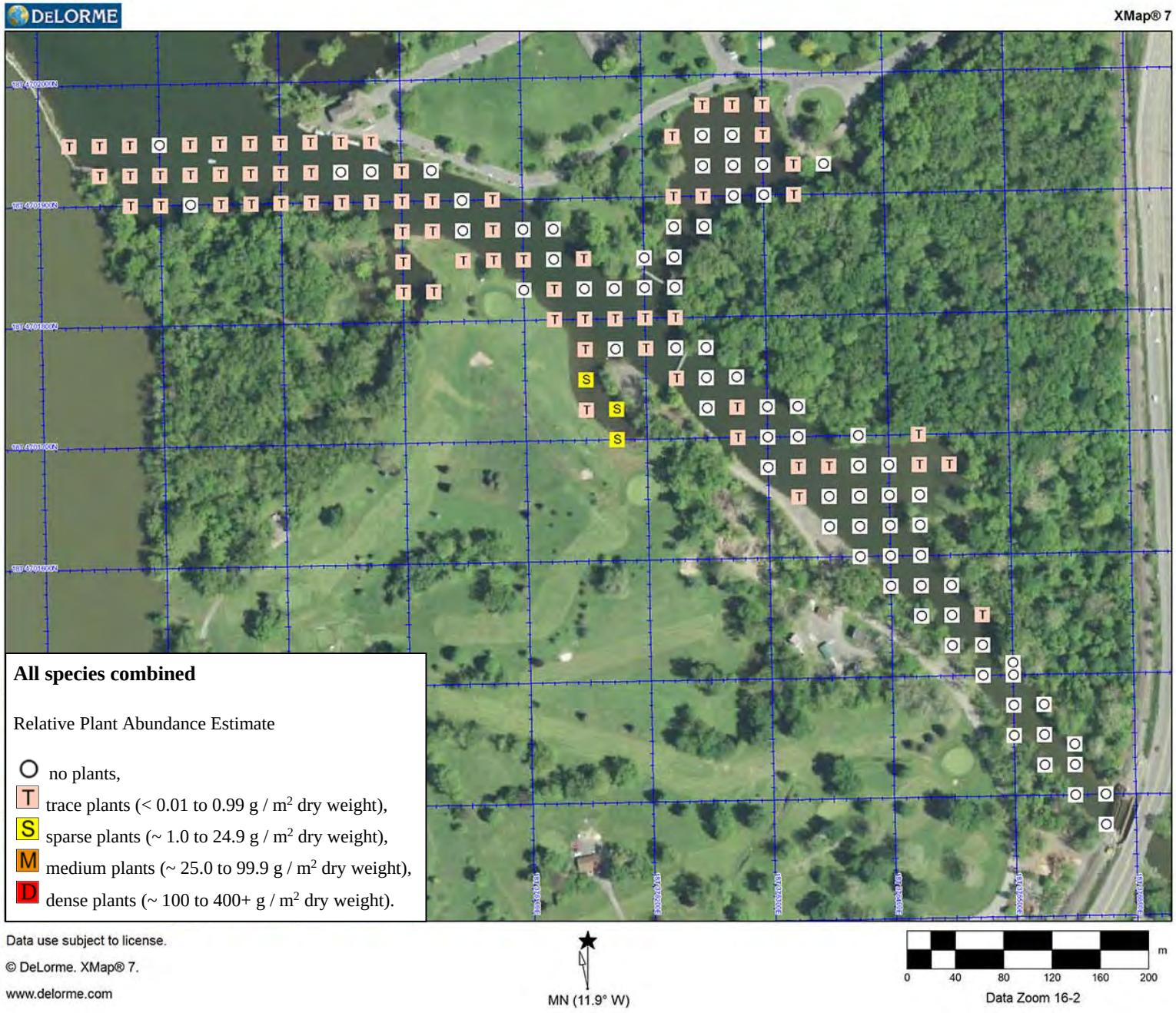
Inlet-15. *Stuckenia pectinata* (sago pondweed) as abundance by two rake-tosses in 2018.

Inlet-16. *Vallisneria americana* (wild celery) as abundance by two rake-tosses in 2018.

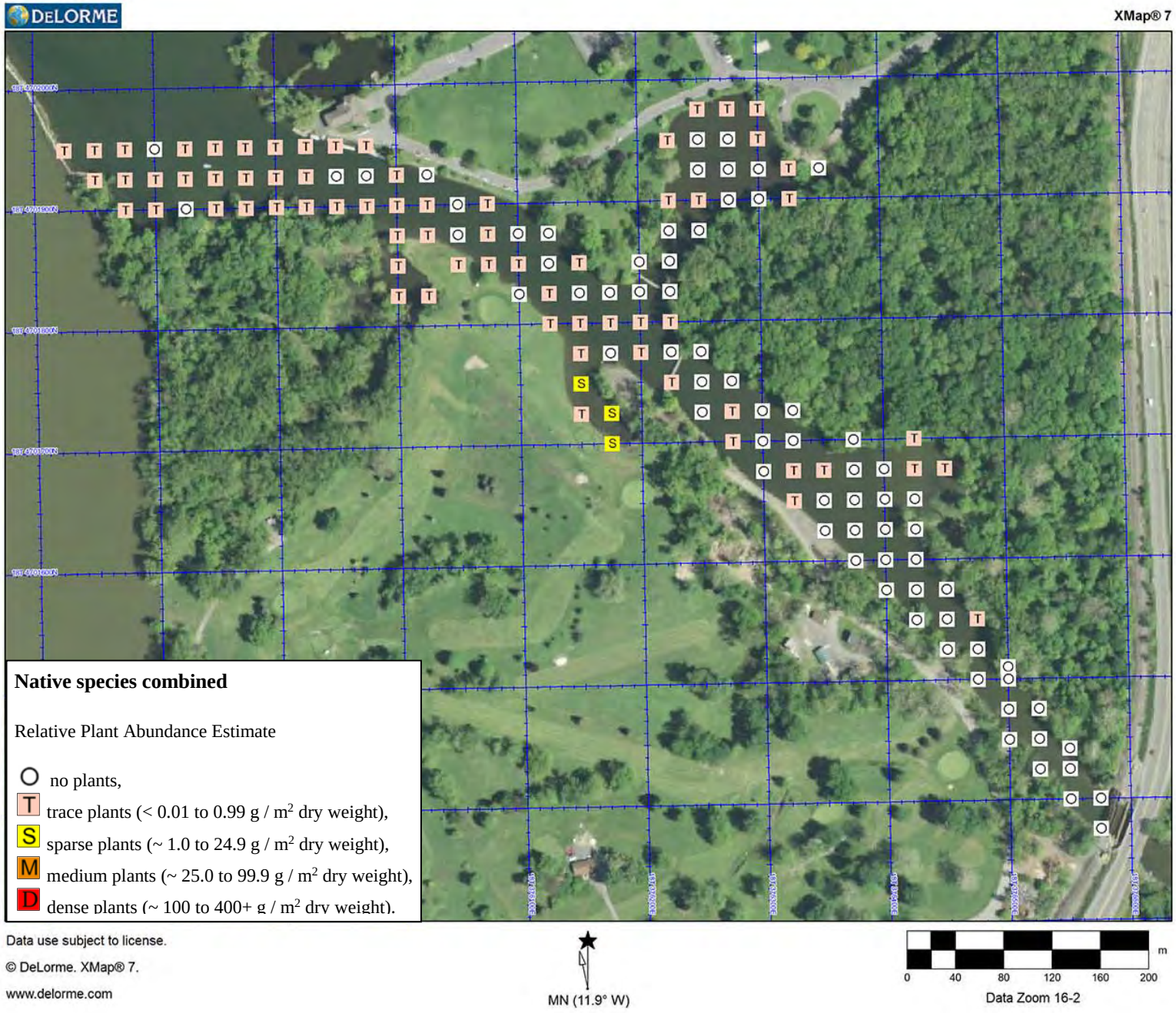


Inlet-17. *Zannichellia palustris* (horned pondweed) as abundance by two rake-tosses in 2018.

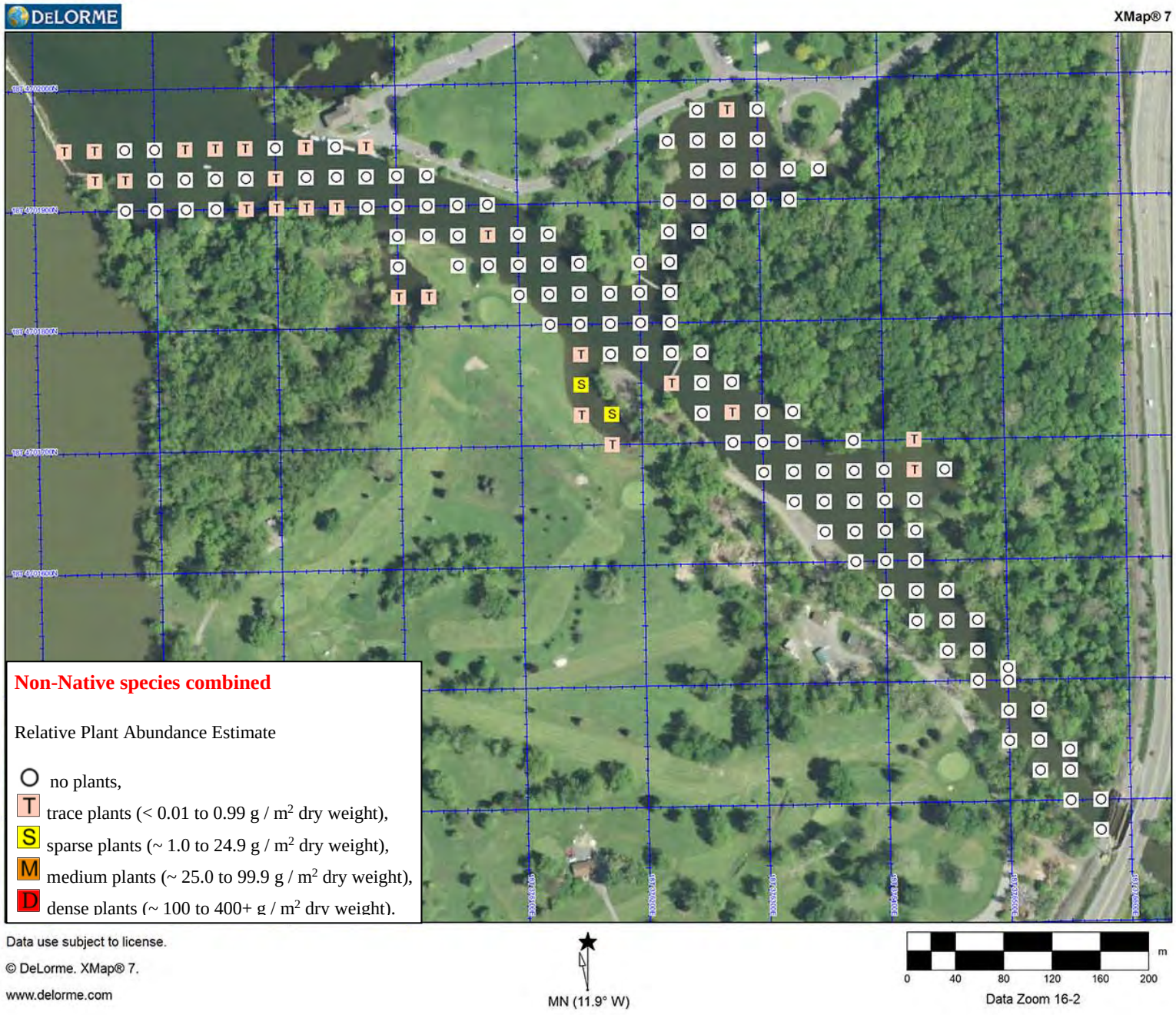
Map Inlet-18. Minor species as abundance by two rake-tosses in 2018.



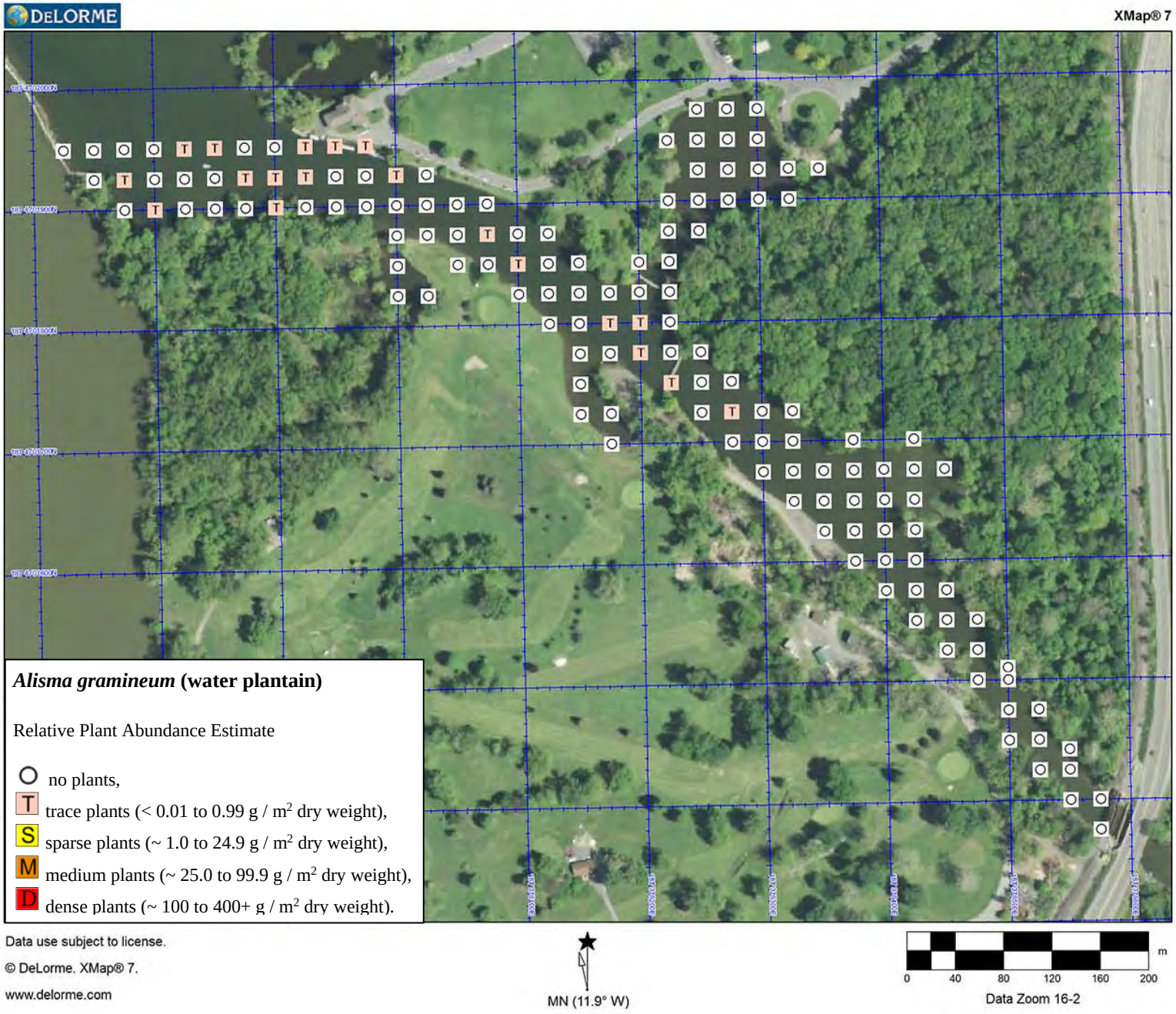
Fall Creek-1. All species combined as abundance by two rake-tosses in 2018.



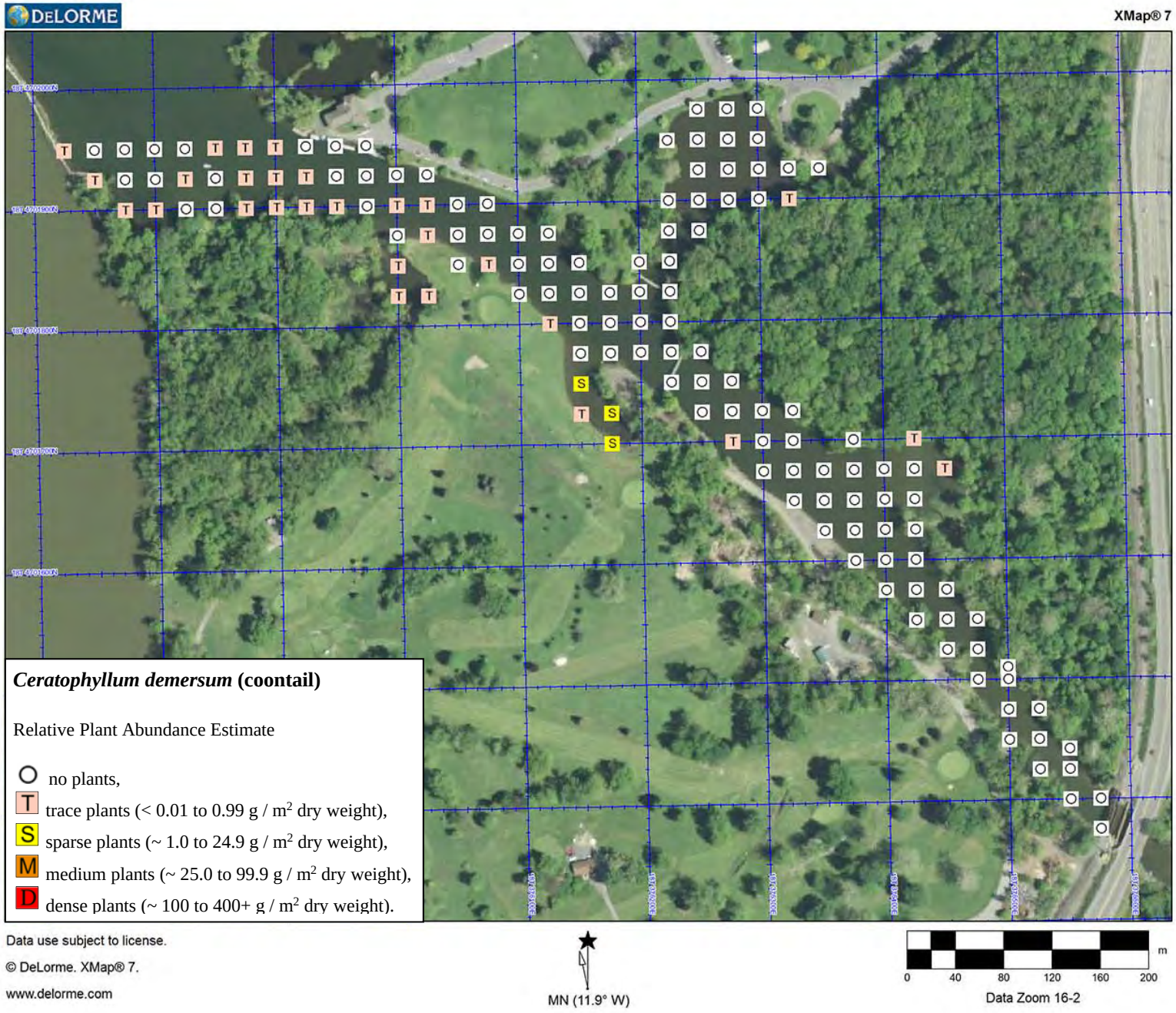
Fall Creek-2. Native species combined as abundance by two rake-tosses in 2018.



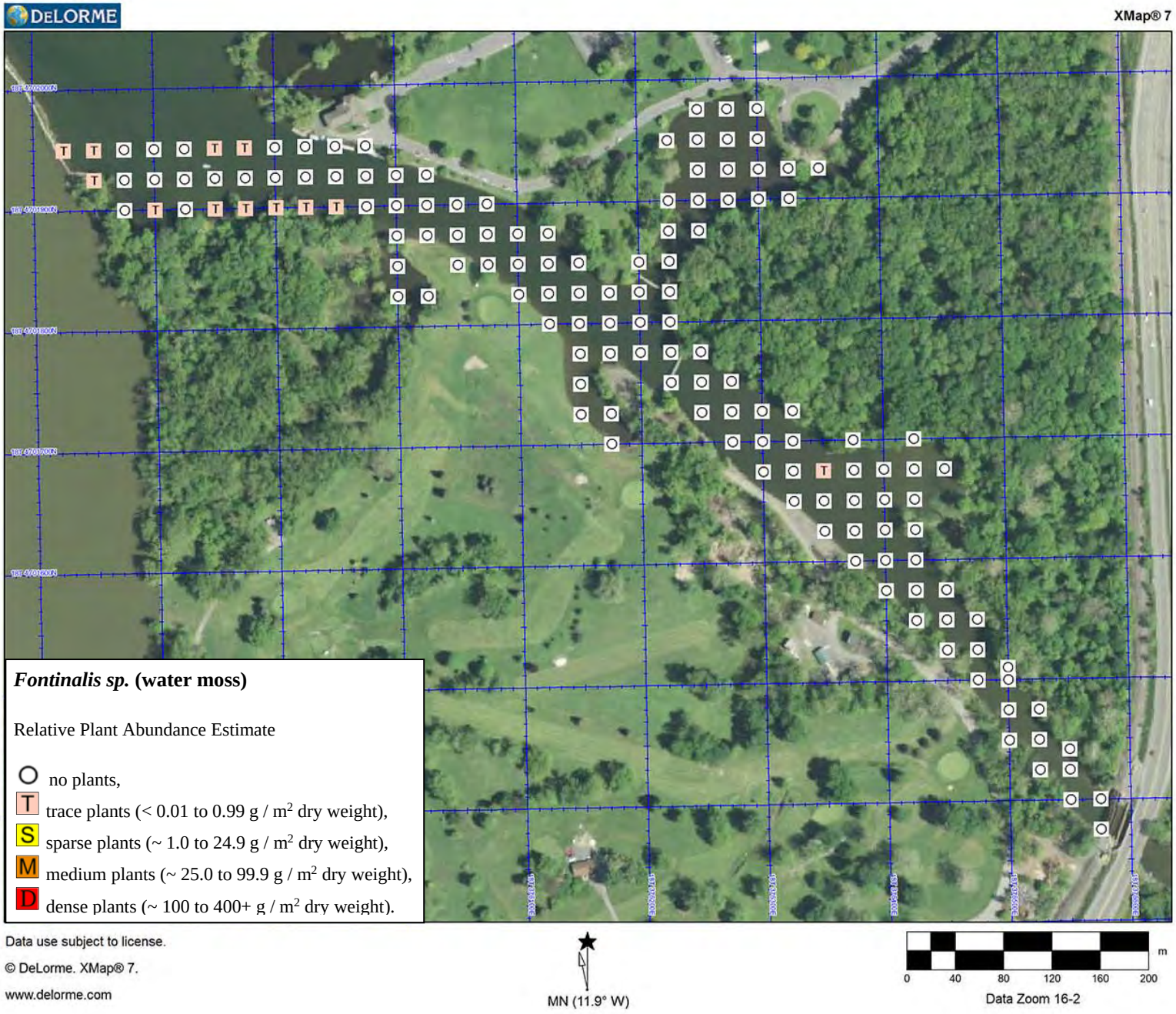
Fall Creek-3. Non-Native species combined as abundance by two rake-tosses in 2018.



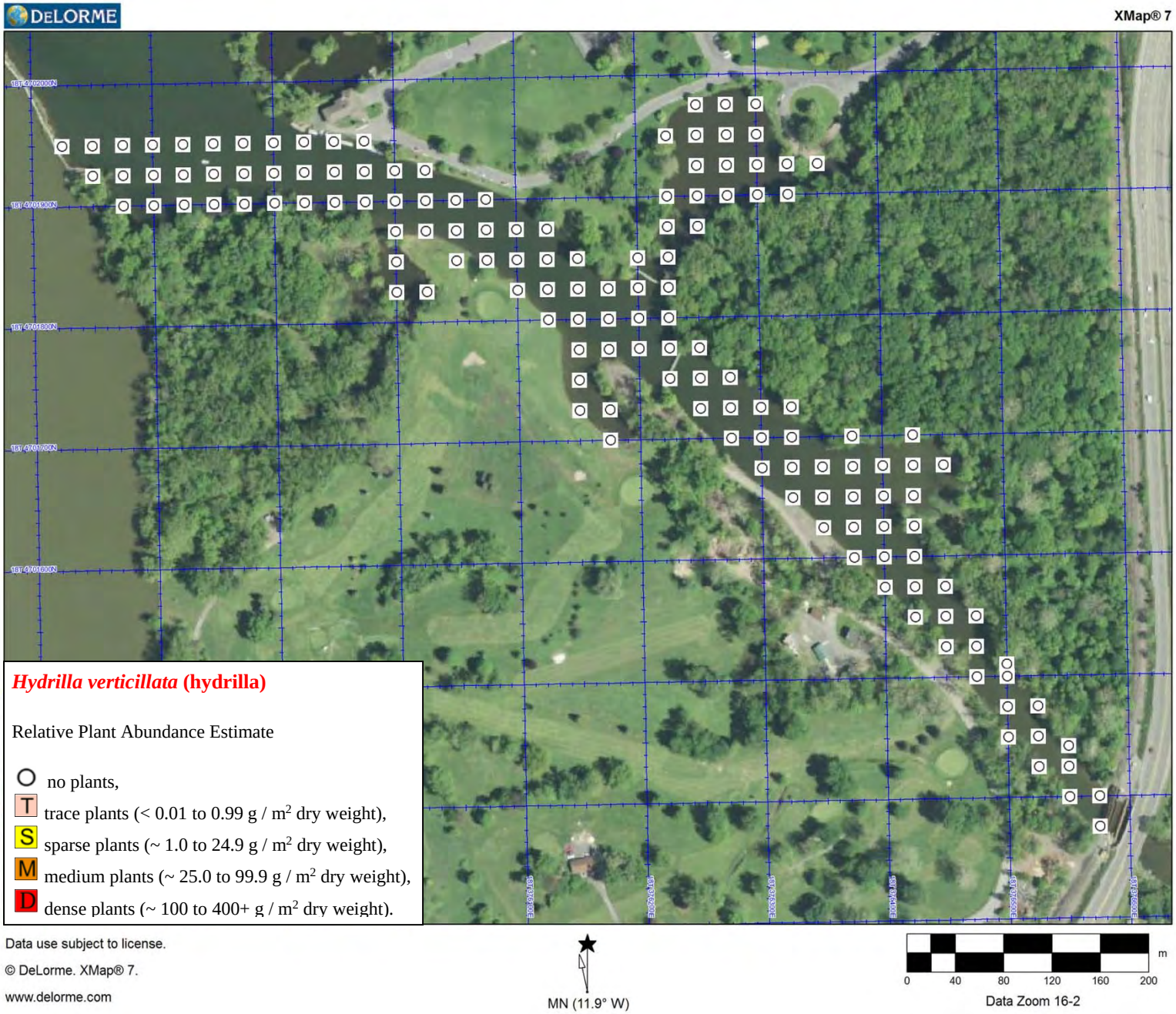
Fall Creek-4. *Alisma gramineum* (water plantain) as abundance by two rake-tosses in 2018.



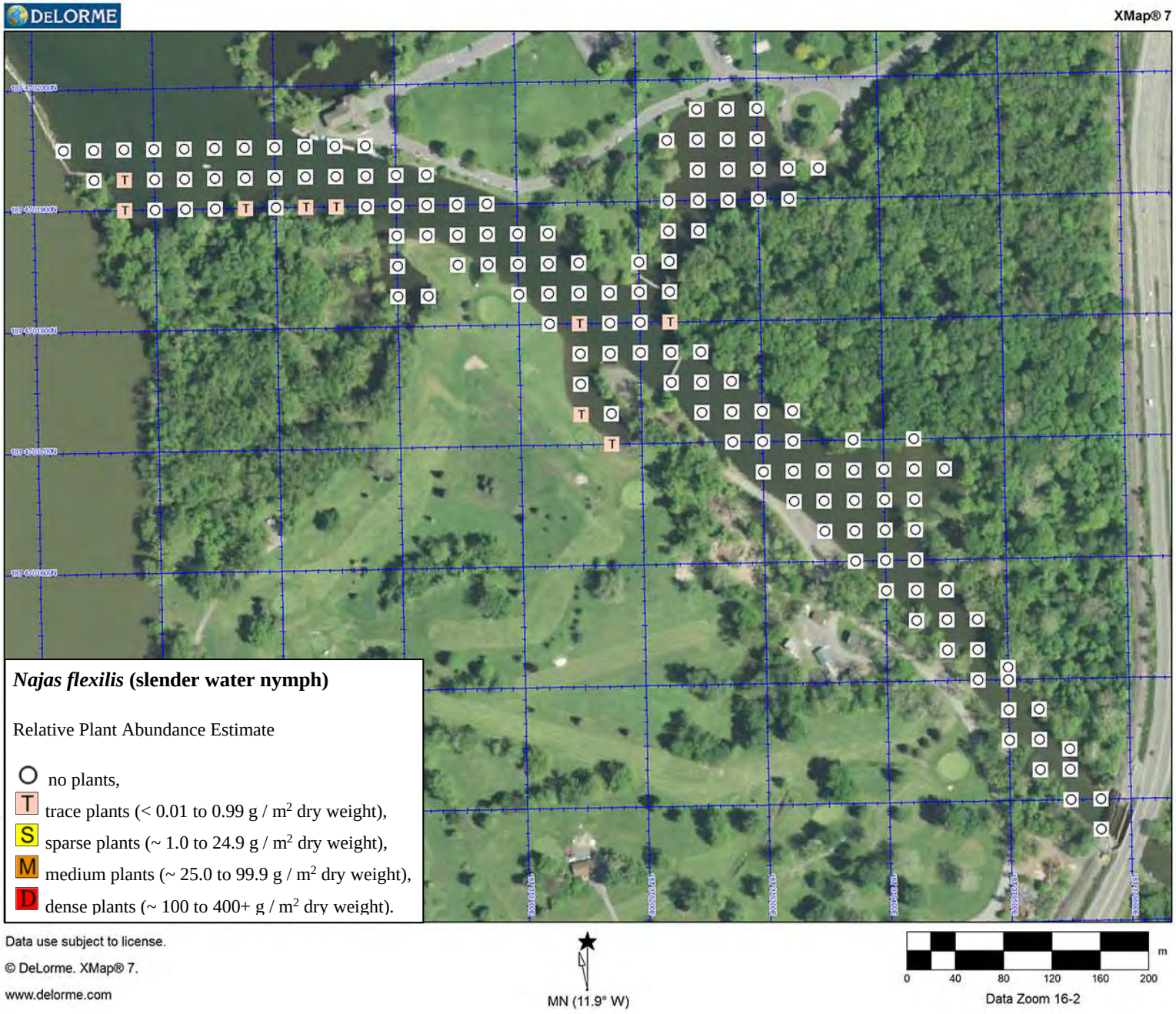
Fall Creek-5. *Ceratophyllum demersum* (coontail) as abundance by two rake-tosses in 2018.



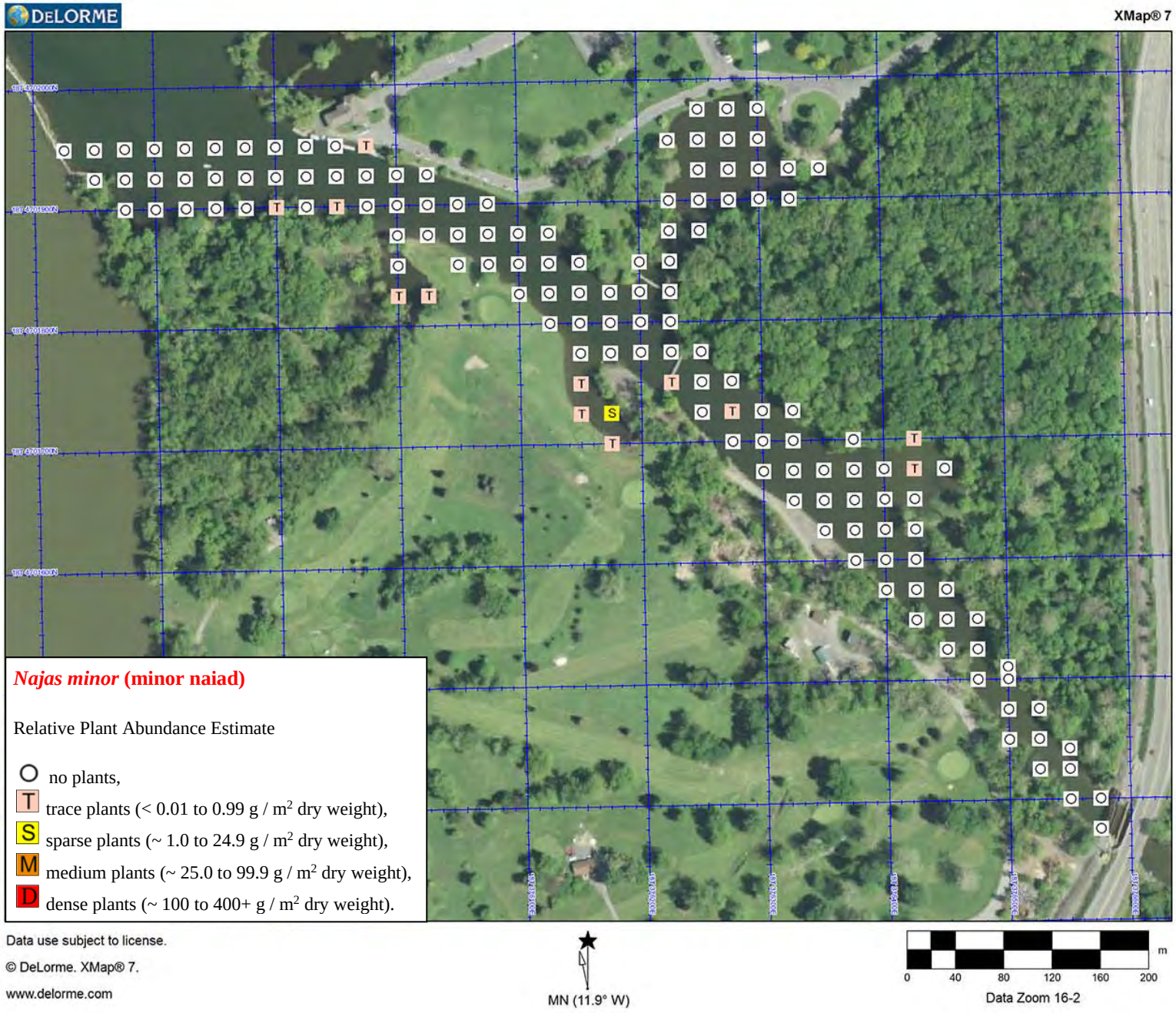
Fall Creek-6. *Fontinalis sp.* (water moss) as abundance by two rake-tosses in 2018.



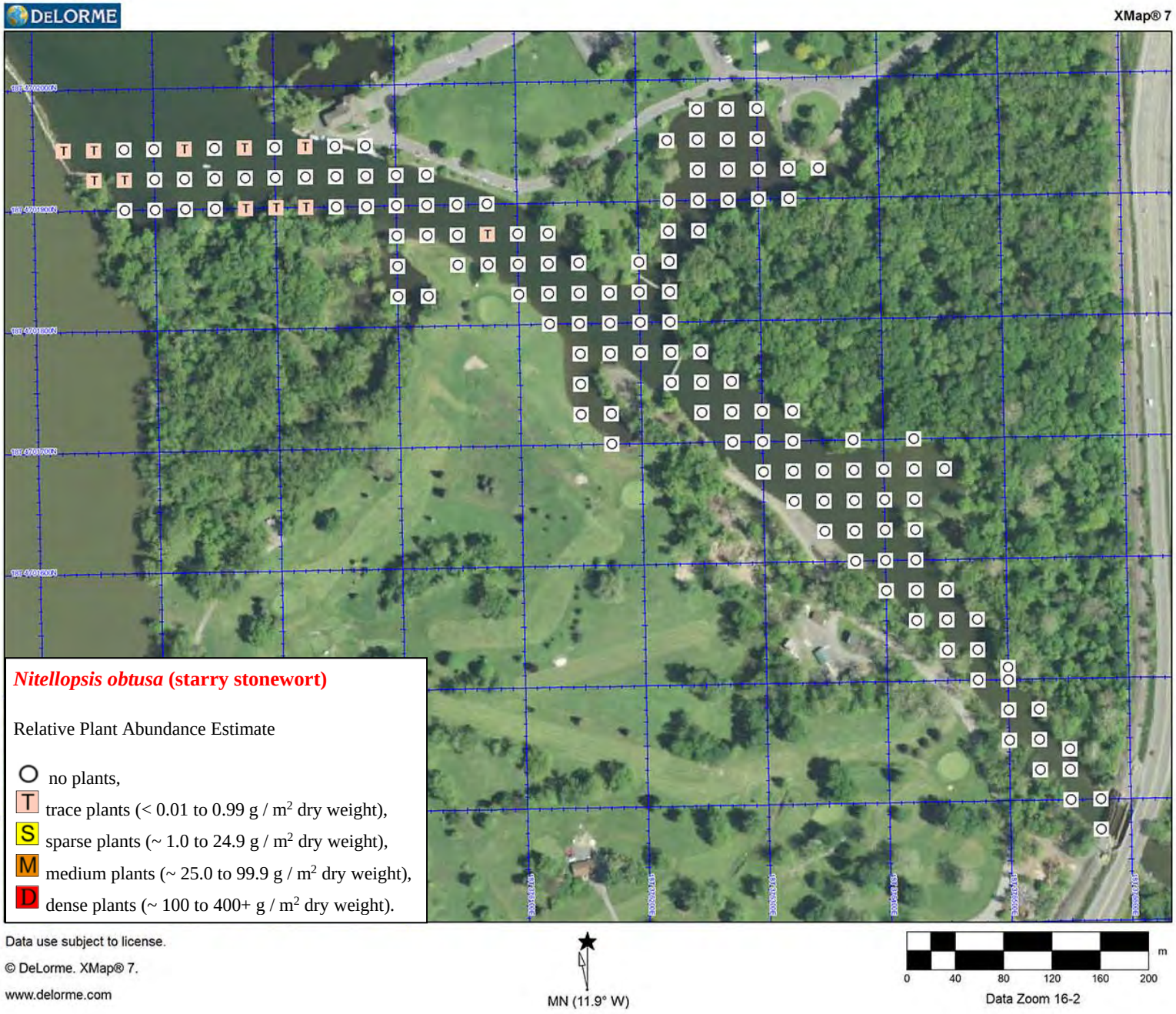
Fall Creek-7. *Hydrilla verticillata* (hydrilla) as abundance by two rake-tosses in 2018.



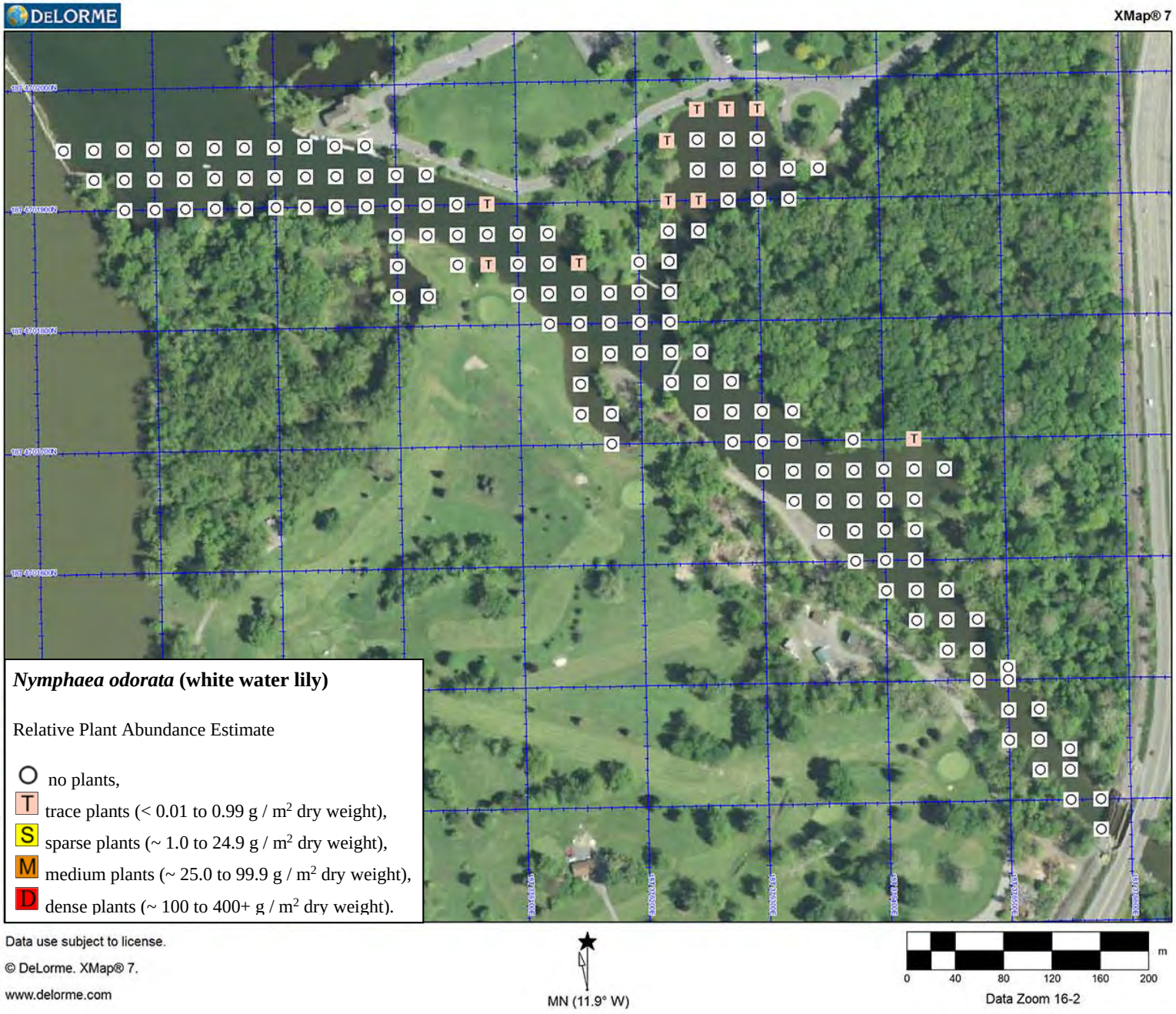
Fall Creek-8. *Najas flexilis* (slender water nymph) as abundance by two rake-tosses in 2018.



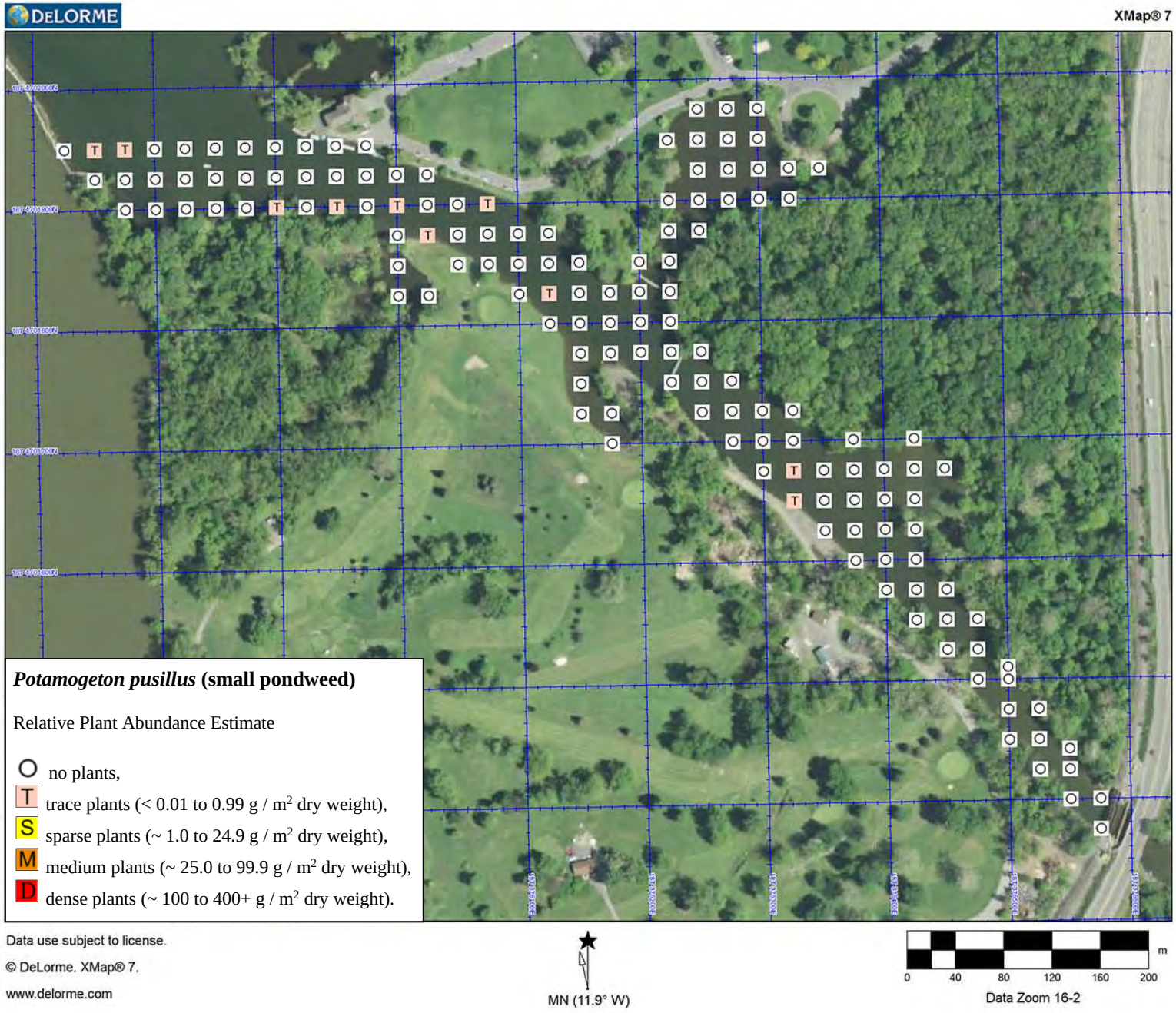
Fall Creek-9. *Najas minor* (minor naiad) as abundance by two rake-tosses in 2018.



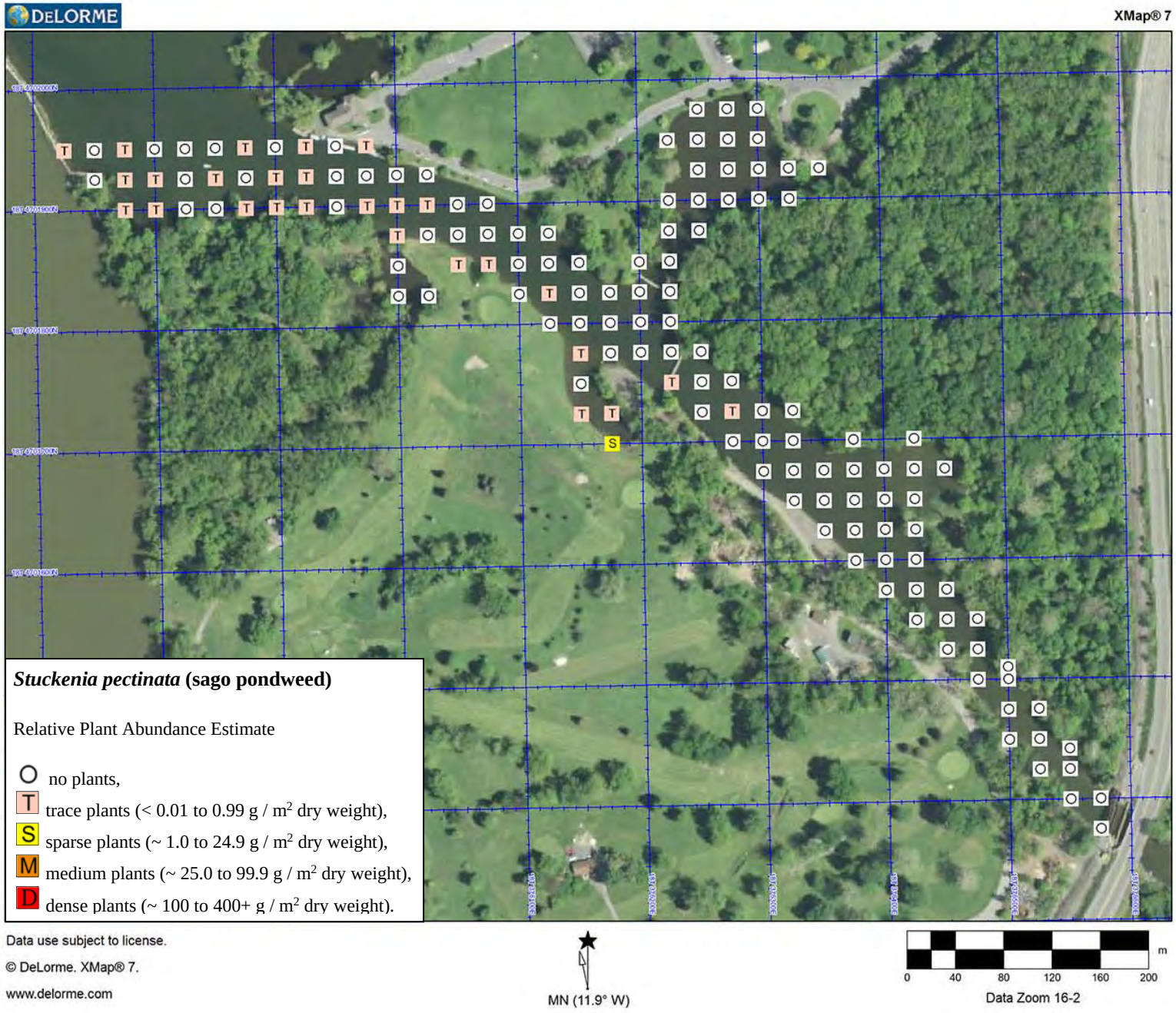
Fall Creek-10. *Nitellopsis obtusa* (starry stonewort) as abundance by two rake-tosses in 2018.



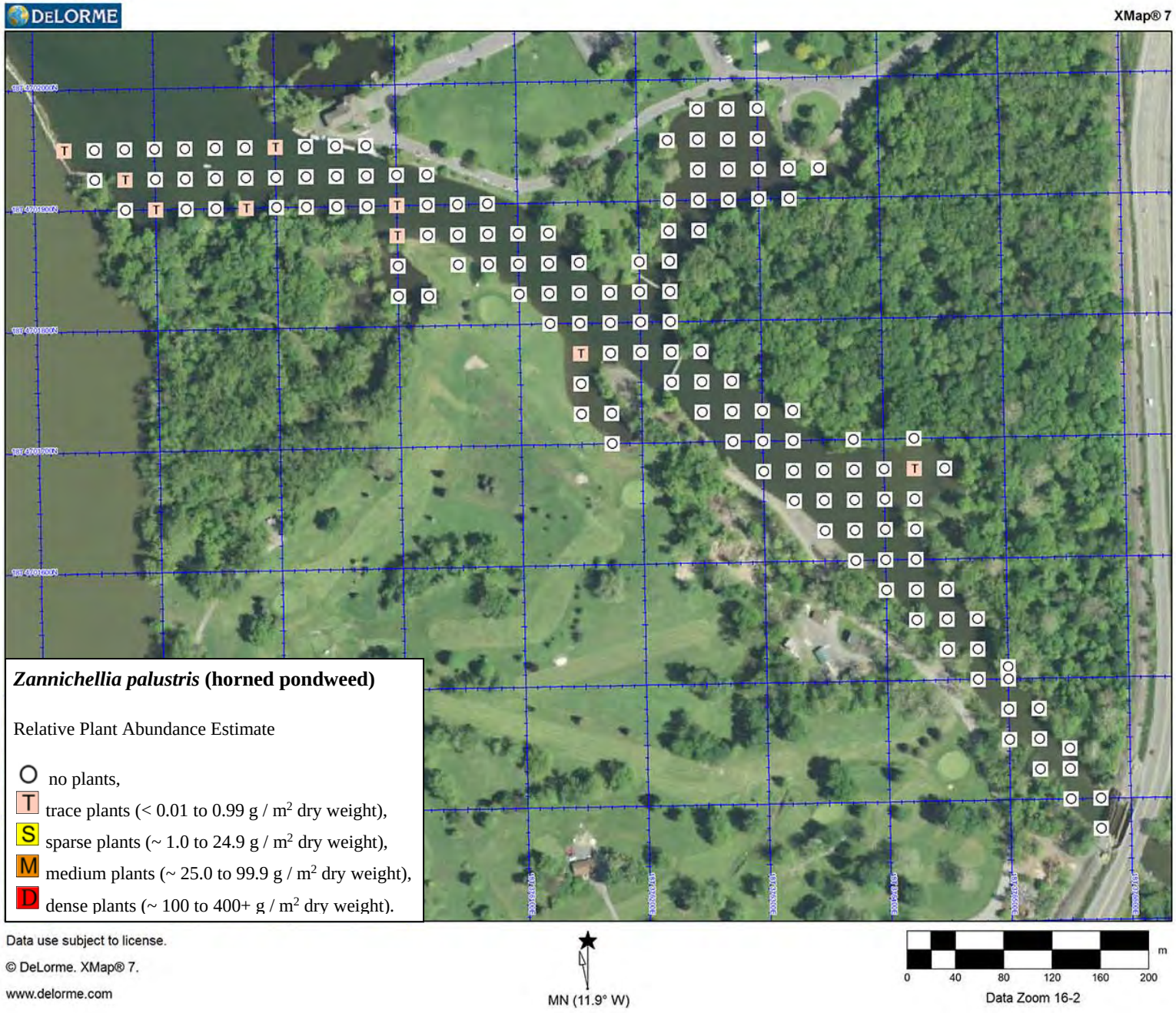
Fall Creek-11. *Nymphaea odorata* (white water lily) as abundance by two rake-tosses in 2018.



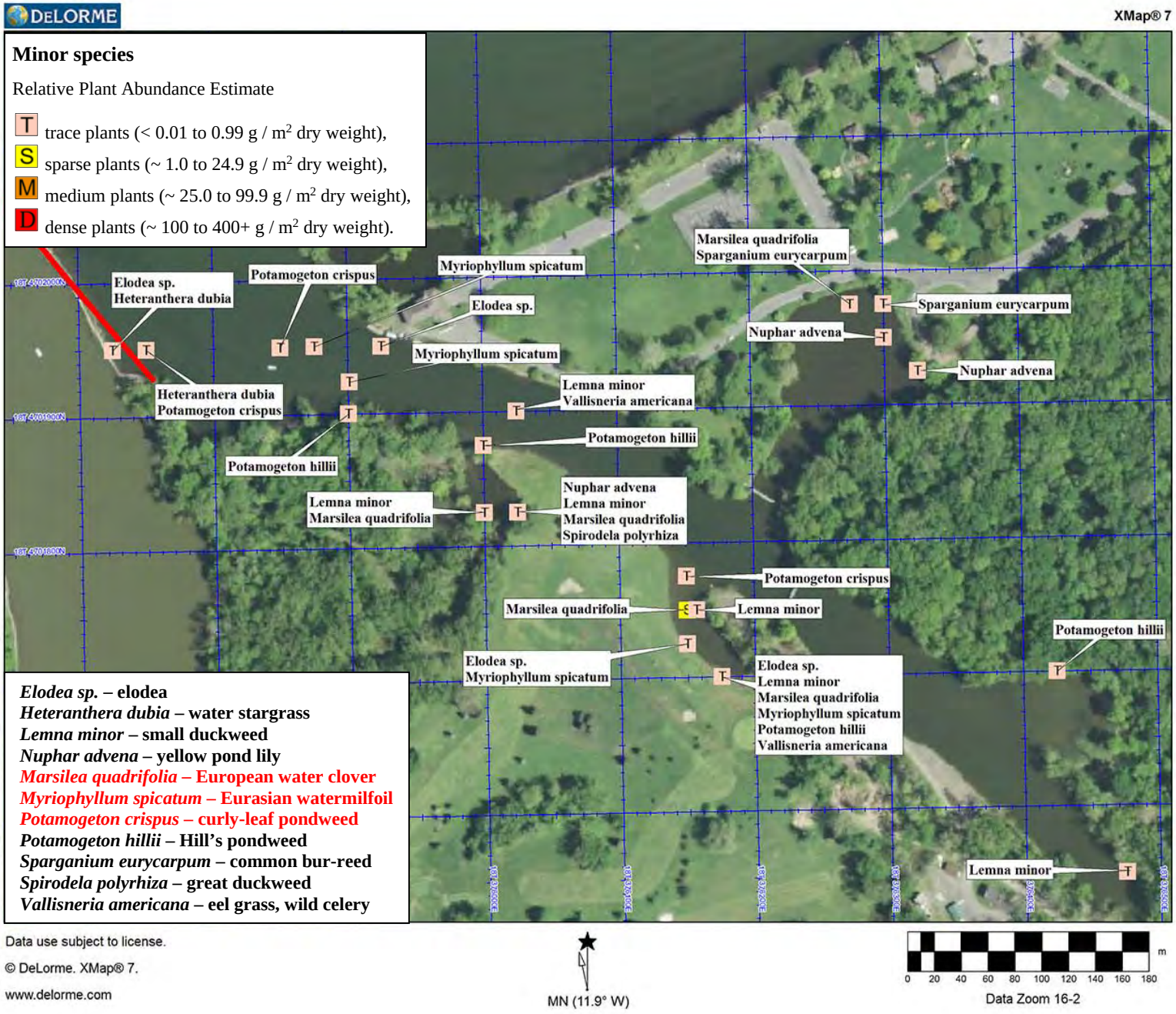
Fall Creek-12. *Potamogeton pusillus* (small pondweed) as abundance by two rake-tosses in 2018.



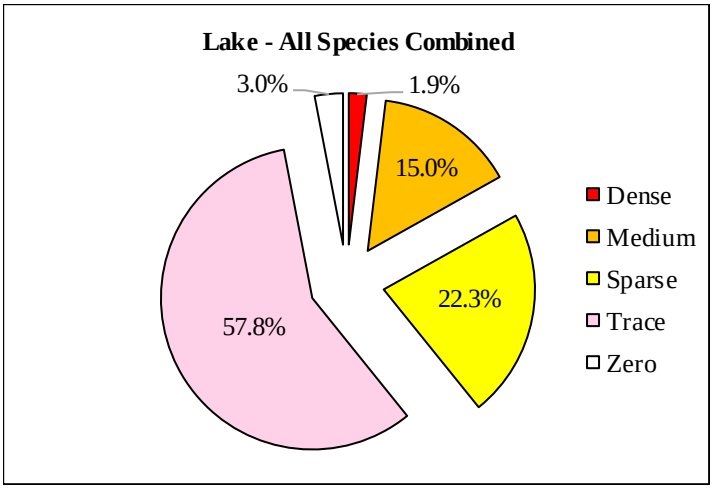
Fall Creek-13. *Stuckenia pectinata* (sago pondweed) as abundance by two rake-tosses in 2018.

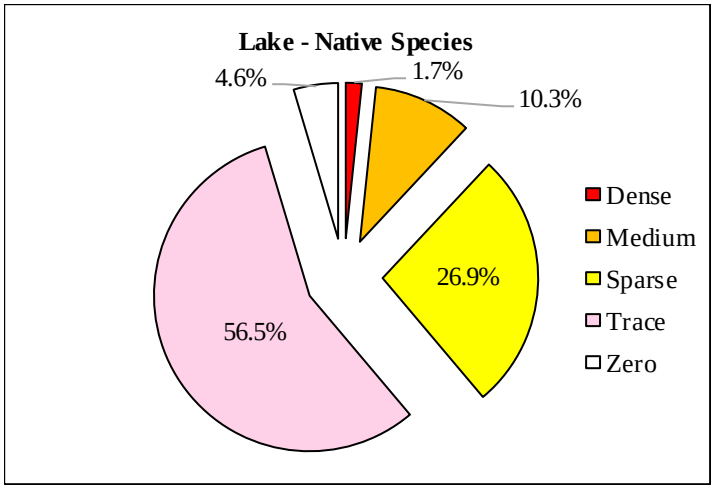


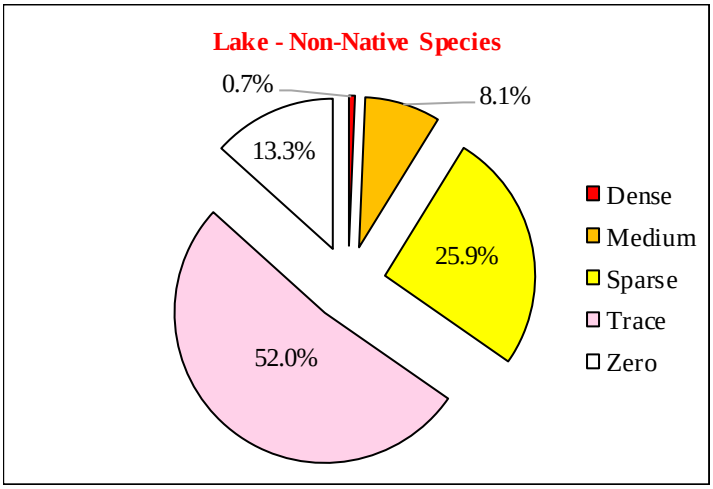
Fall Creek-14. *Zannichellia palustris* (horned pondweed) as abundance by two rake-tosses in 2018.

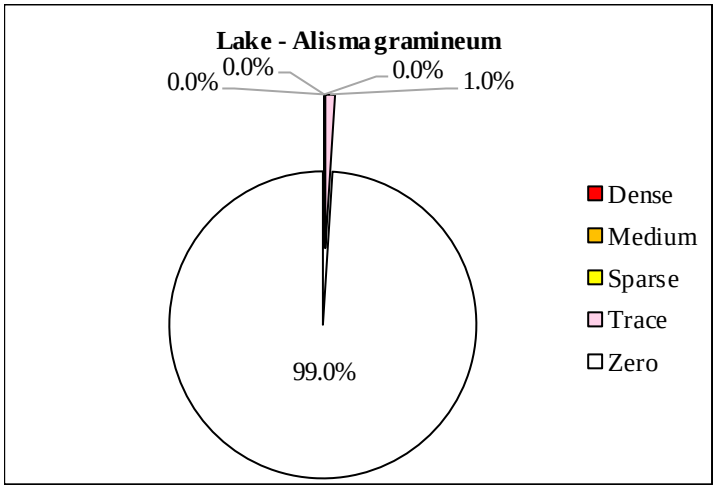


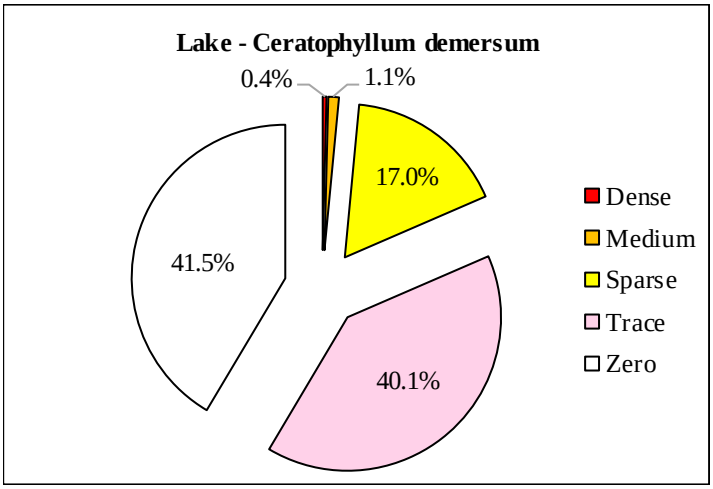
Fall Creek-15. Minor species found in Fall Creek as abundance by two rake-tosses in 2018.

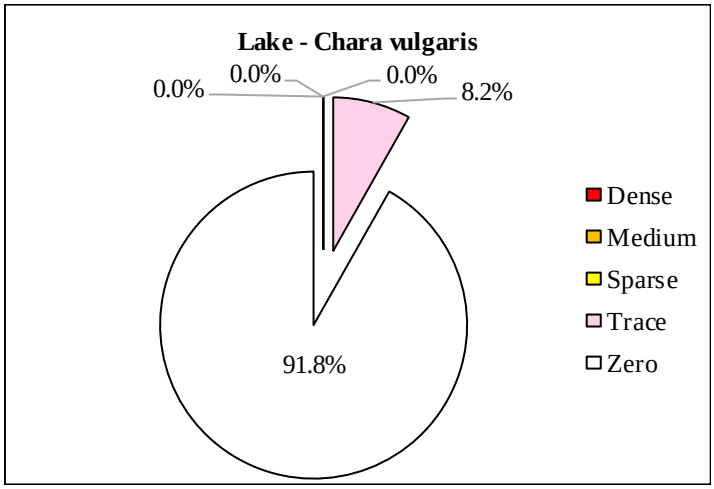




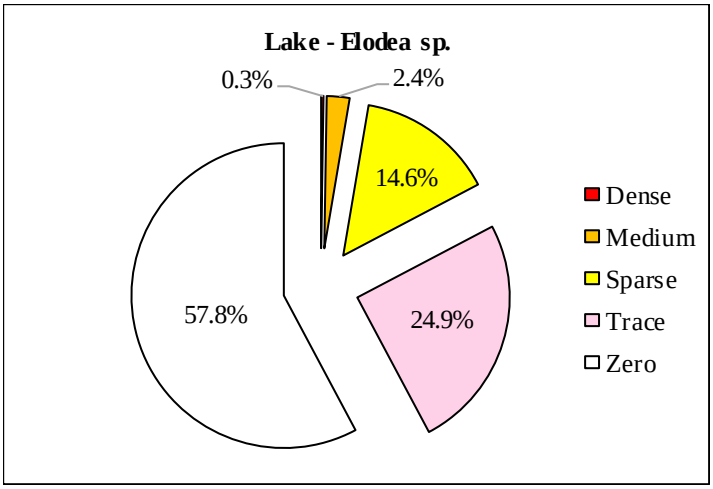


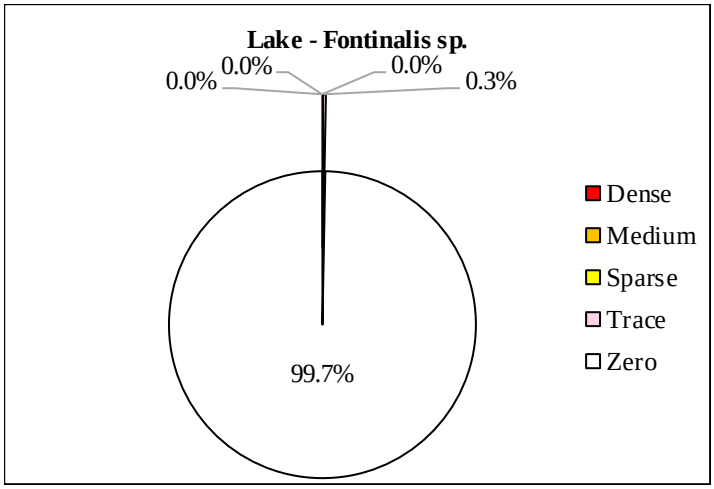


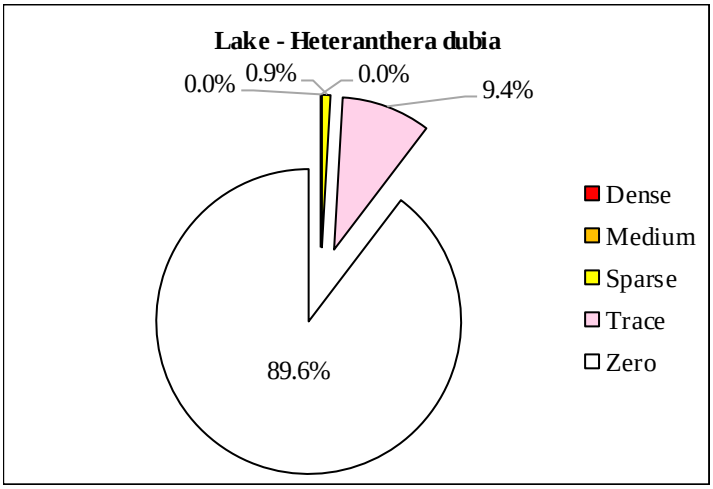


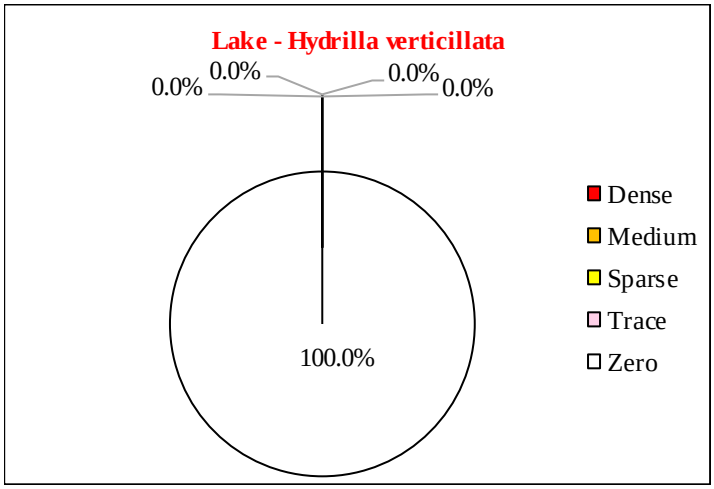


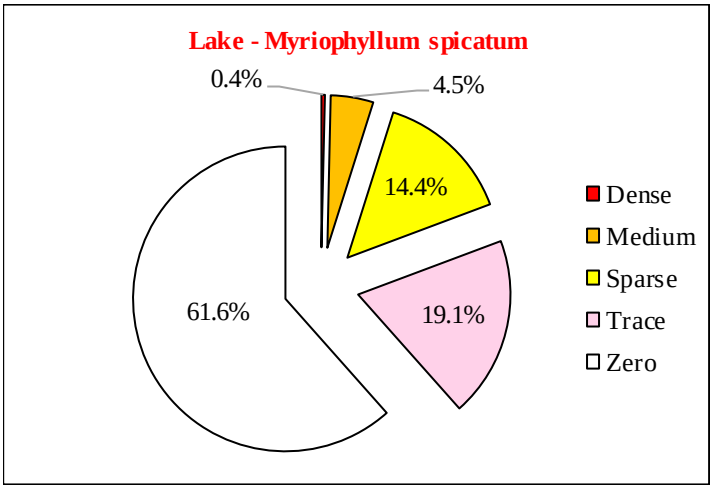
Lake-Pie 1. Percentages of each abundance category of the total 1,990 rake-tosses made in Cayuga Lake in 2018 for All species combined, Native species, Non-Native species, *Alisma gramineum*, *Ceratophyllum demersum* and *Chara vulgaris.*

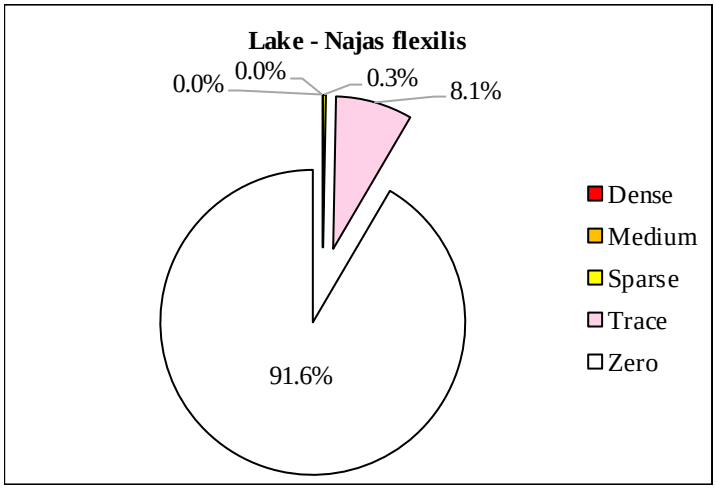




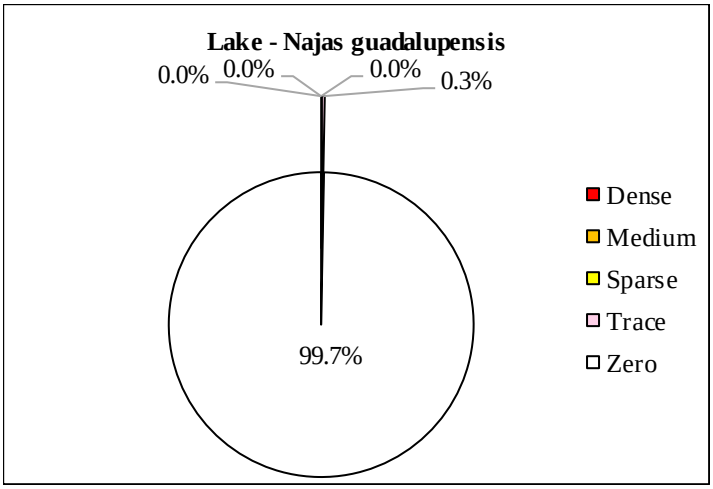


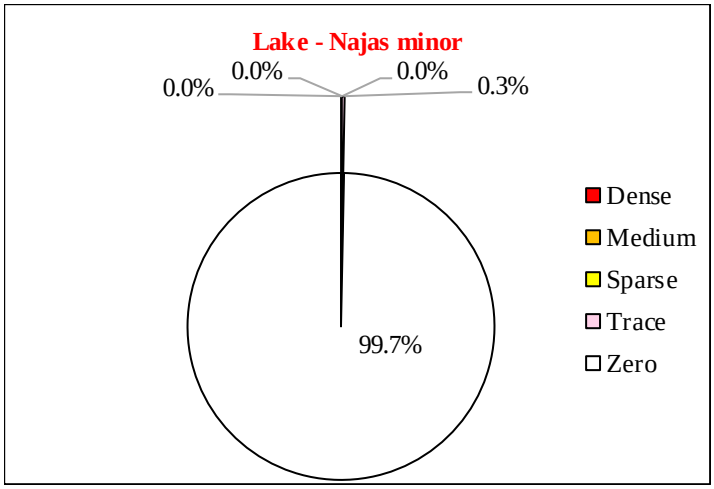


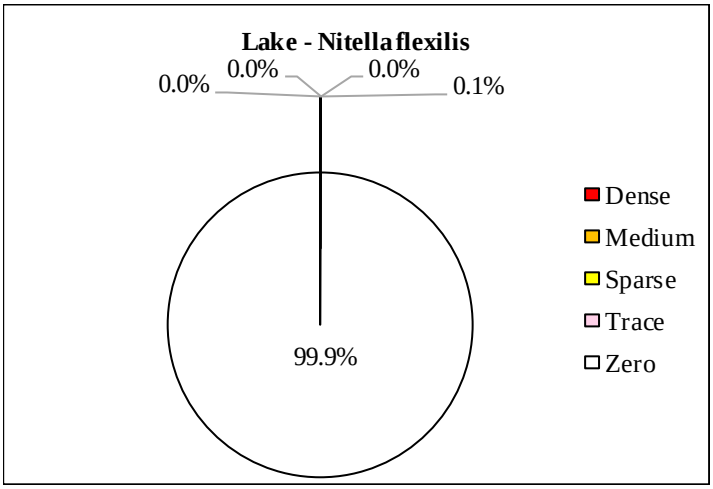


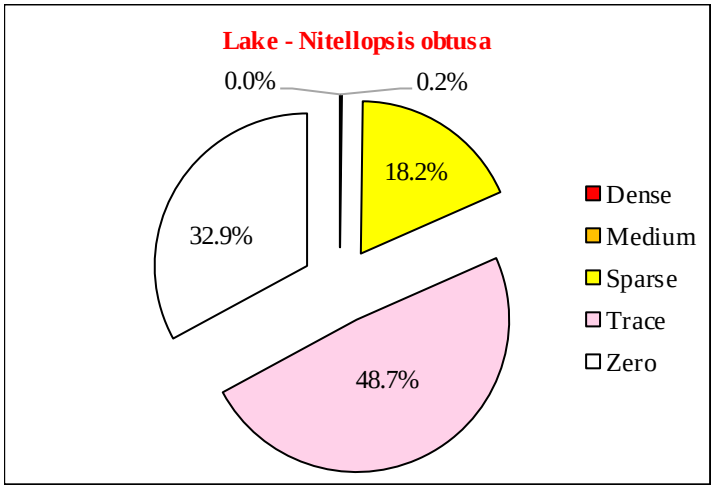


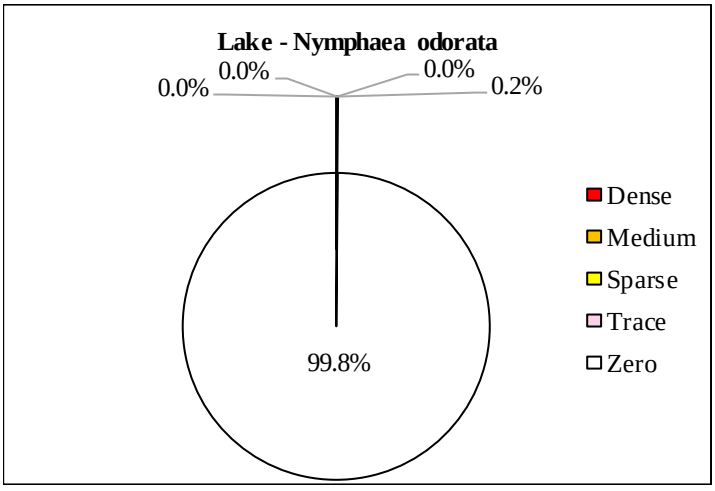
Lake-Pie 2. Percentages of each abundance category of the total 1,990 rake-tosses made in Cayuga Lake in 2018 for *Elodea sp.*, *Fontinalis sp.*, *Heteranthera dubia*, *Hydrilla verticillata*, *Myriophyllum spicatum* and *Najas flexilis*.

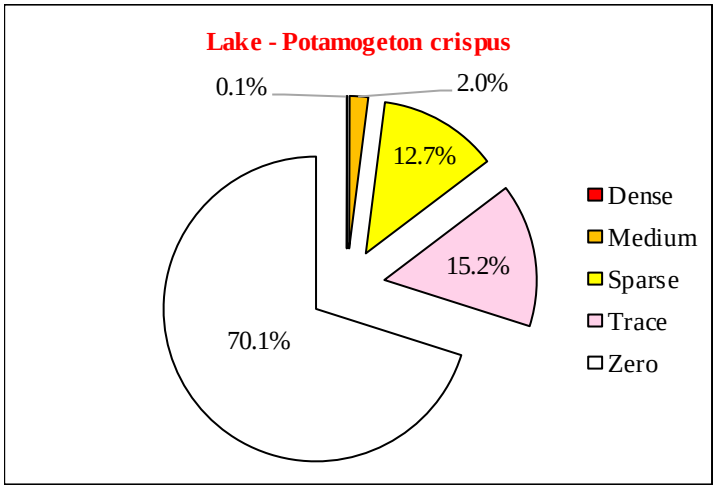




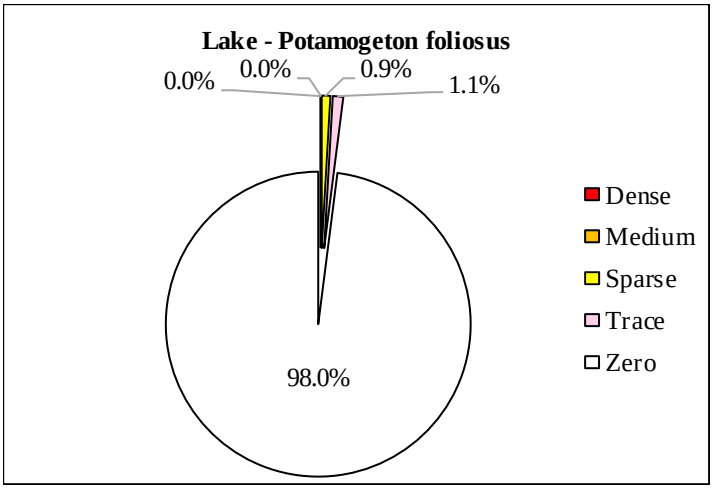


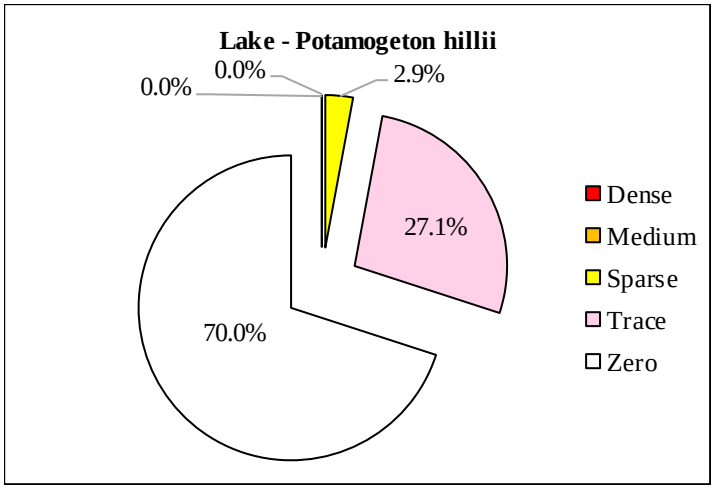


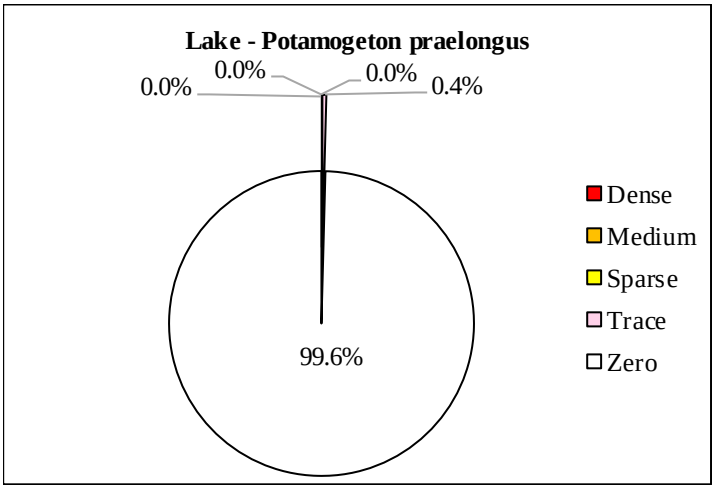


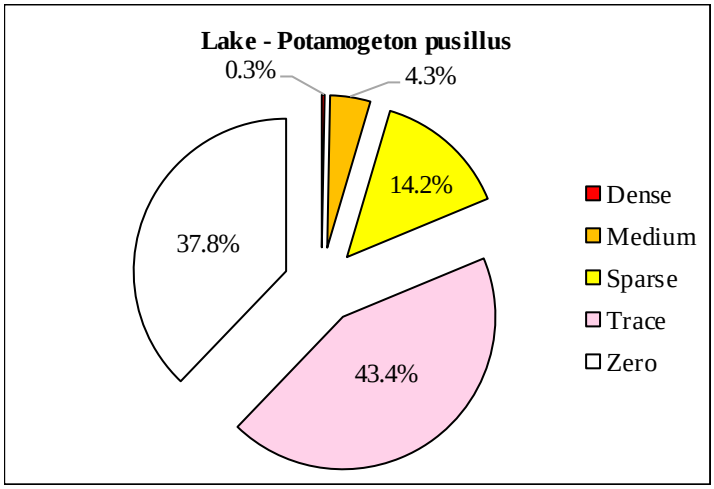


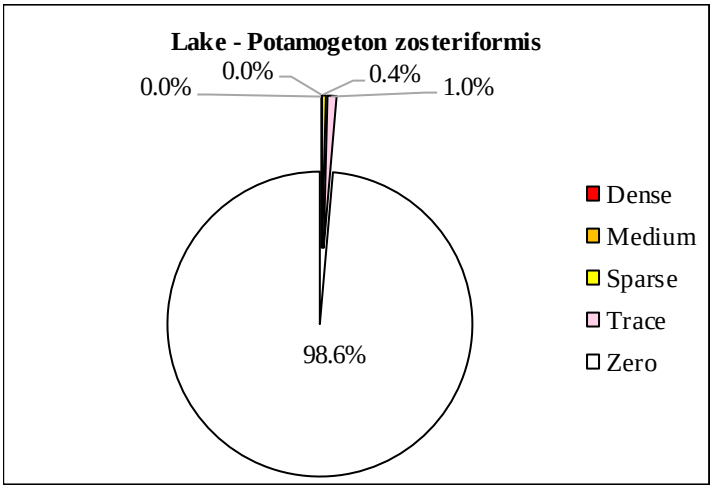
Lake-Pie 3. Percentages of each abundance category of the total 1,990 rake-tosses made in Cayuga Lake in 2018 for *Najas guadalupensis*, *Najas minor*, *Nitella flexilis*, *Nitellopsis obtusa*, *Nymphaea odorata* *and Potamogeton crispus*.

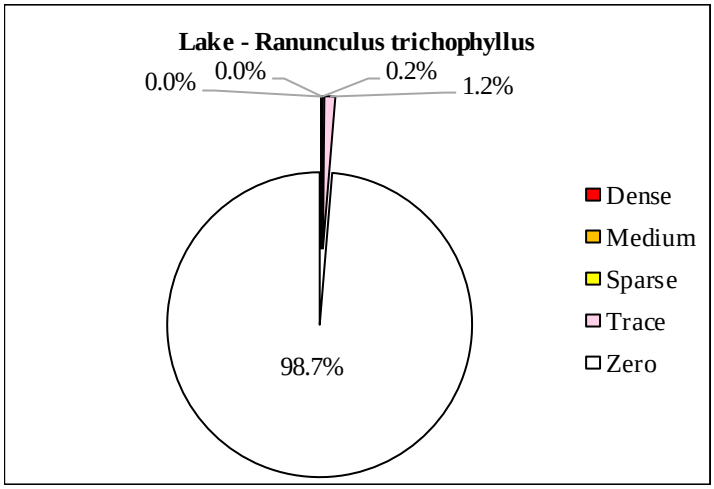




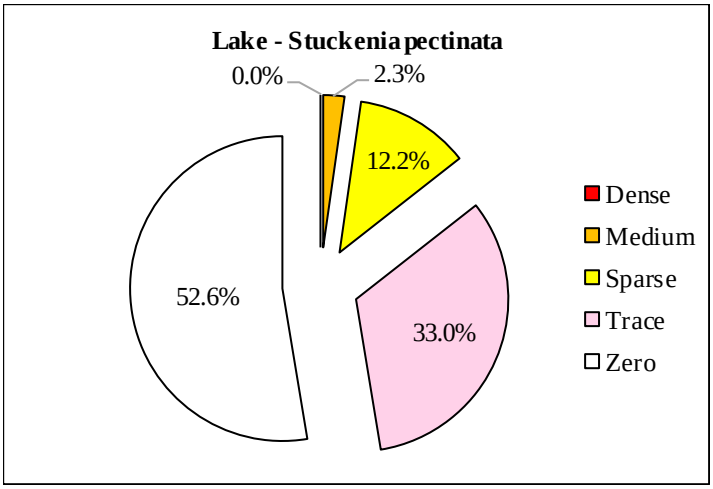


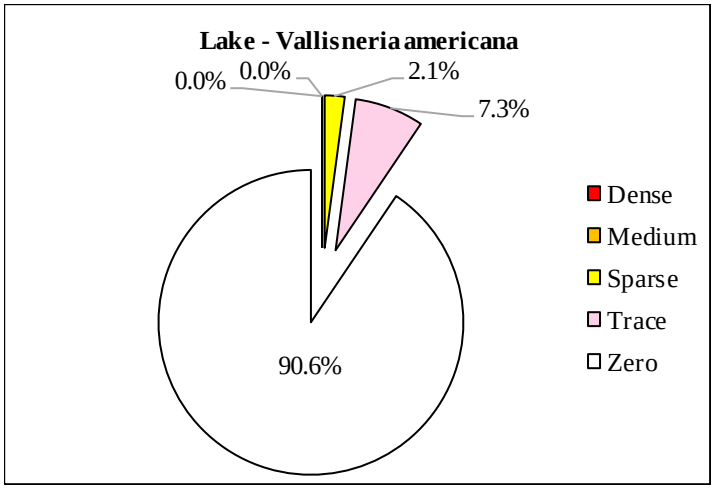


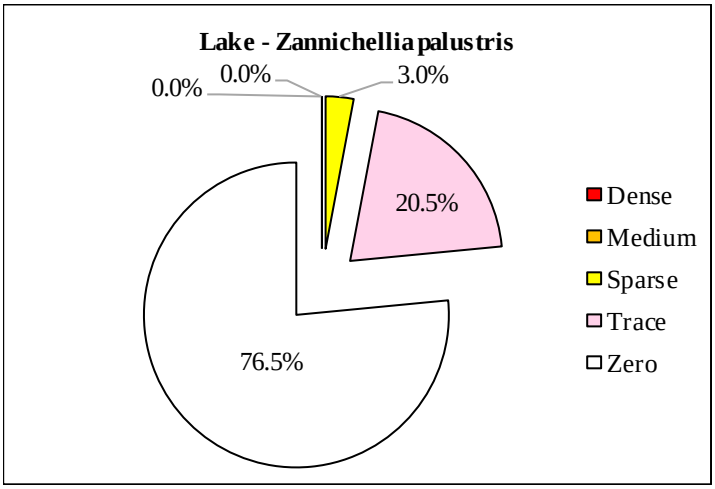




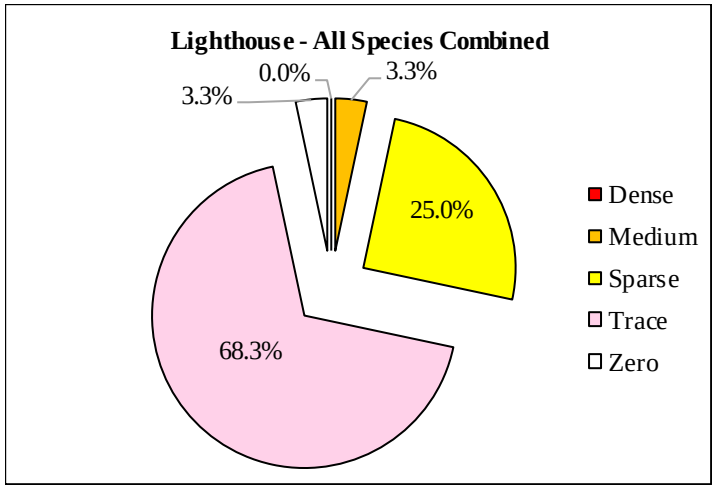
Lake-Pie 4. Percentages of each abundance category of the total 1,990 rake-tosses made in Cayuga Lake in 2018 for *Potamogeton foliosus*, *Potamogeton hillii*, *Potamogeton praelongus*, *Potamogeton pusillus*, *Potamogeton zosteriformis* and *Ranunculus trichophyllus*.

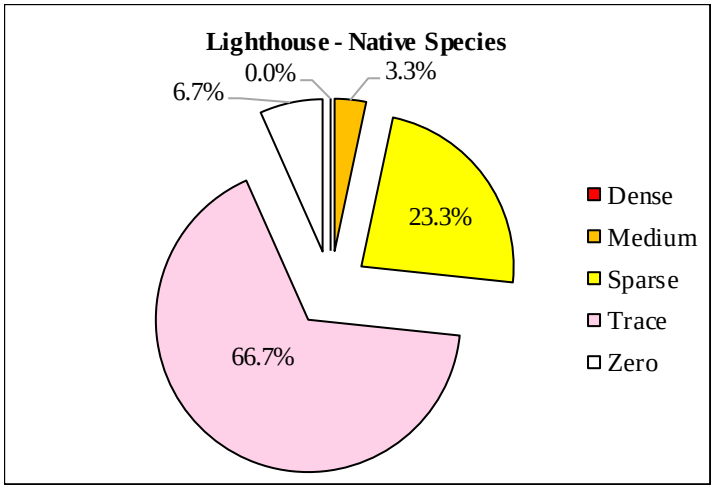


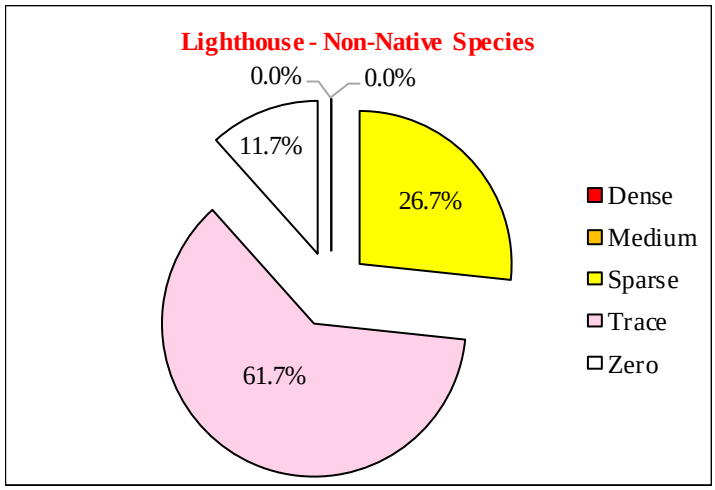


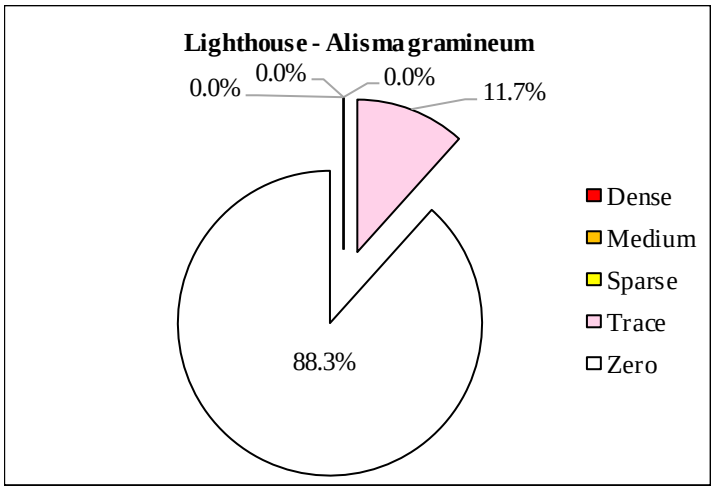


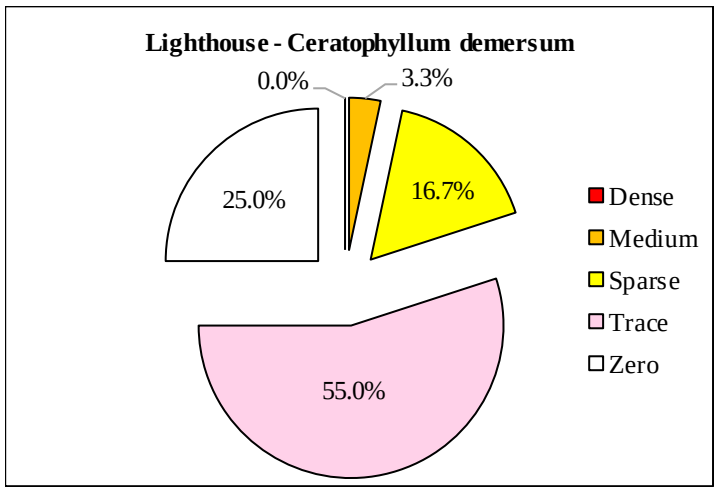
Lake-Pie 5. Percentages of each abundance category of the total 1,990 rake-tosses made in Cayuga Lake in 2018 for *Stuckenia pectinata*, *Vallisneria americana* and *Zannichellia palustris*.

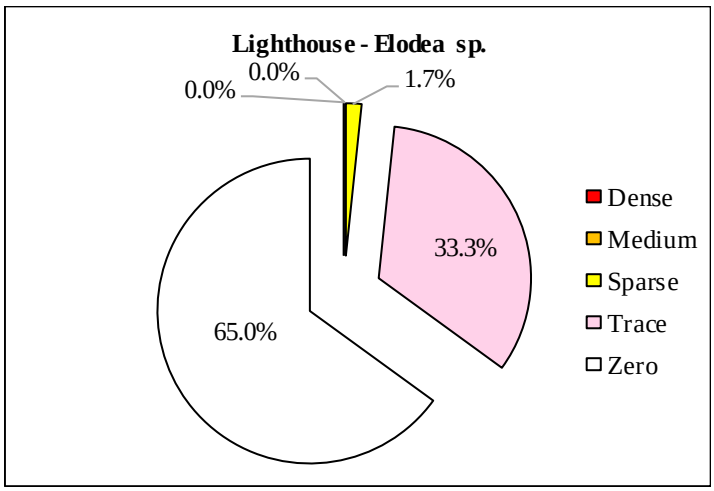




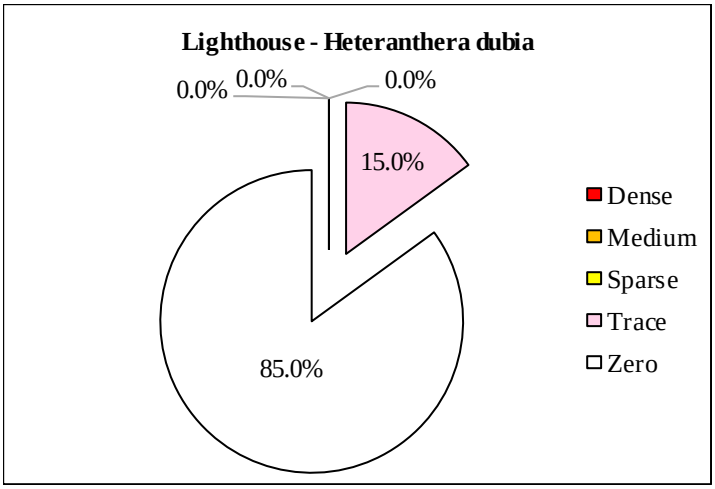


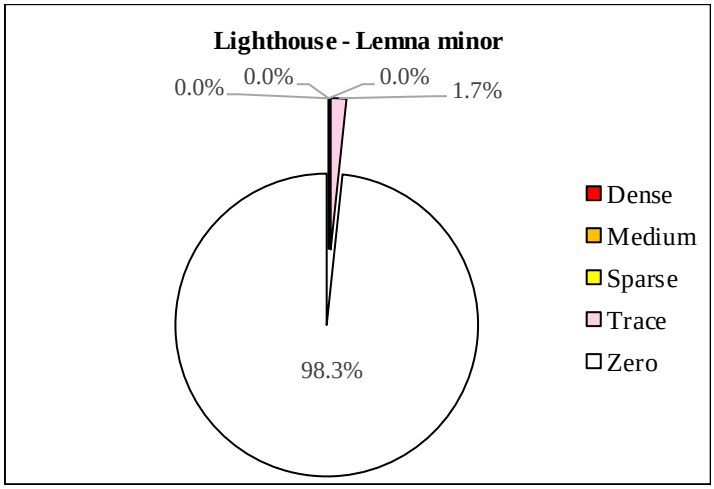


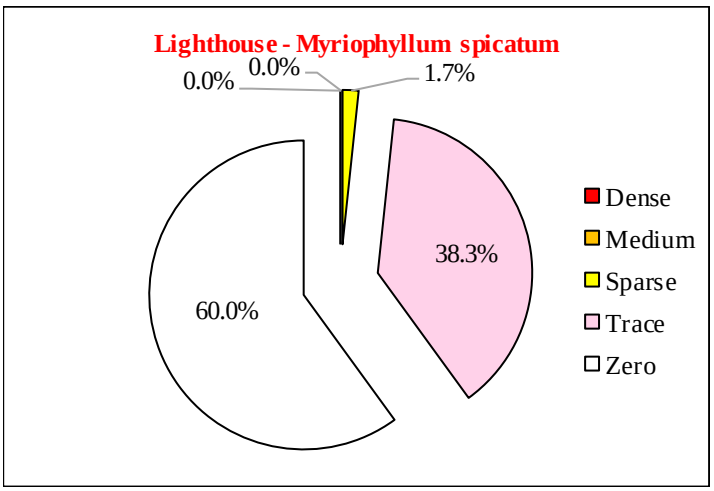


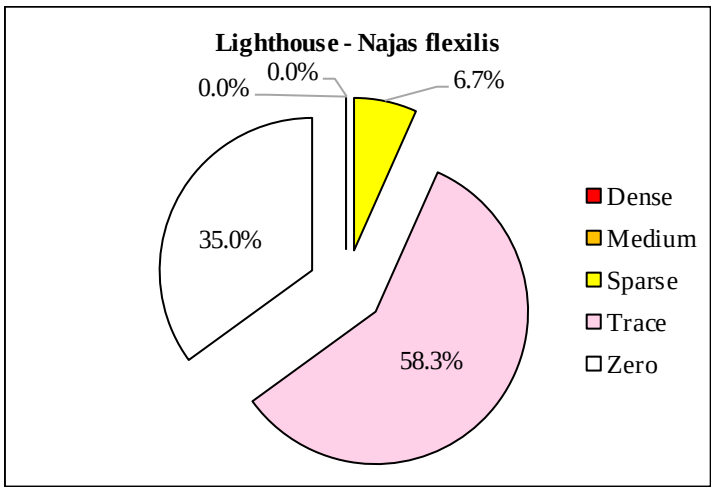


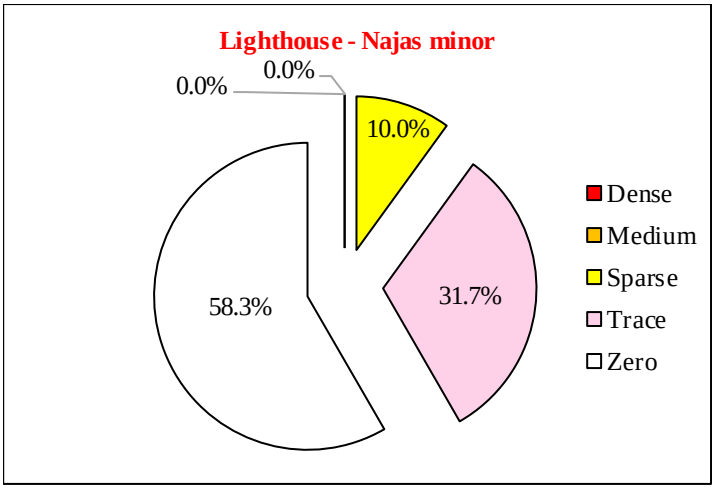
Lighthouse-Pie 1. Percentages of each abundance category of the total 60 rake-tosses made in the Lighthouse Area in 2018 for All species combined, Native species, Non-Native species, *Alisma gramineum*, *Ceratophyllum demersum* and *Elodea sp.*

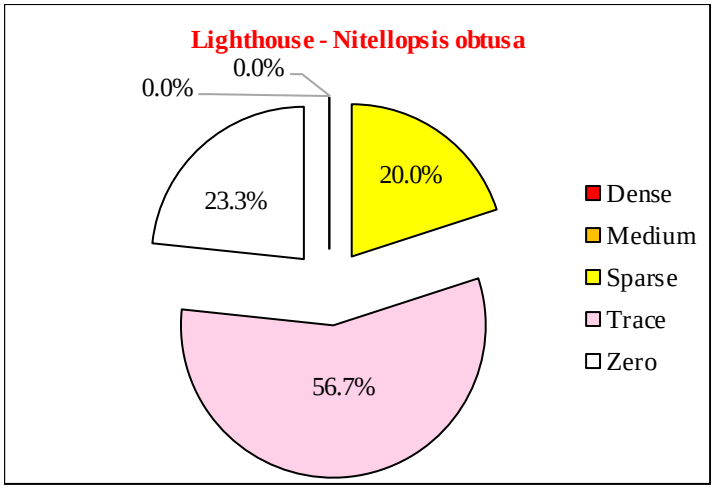




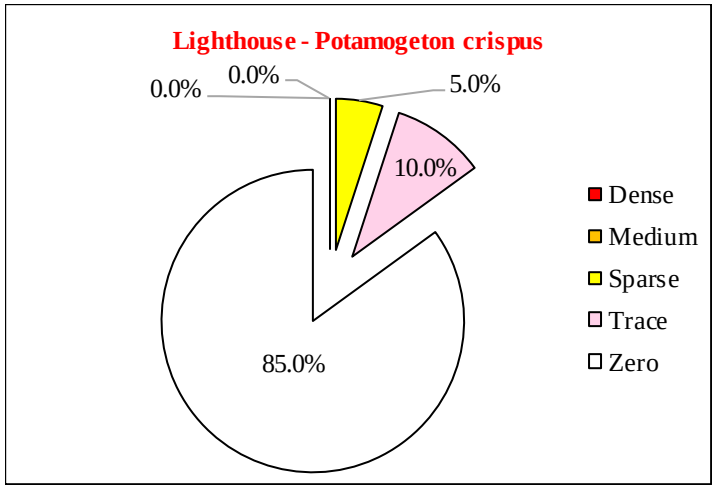


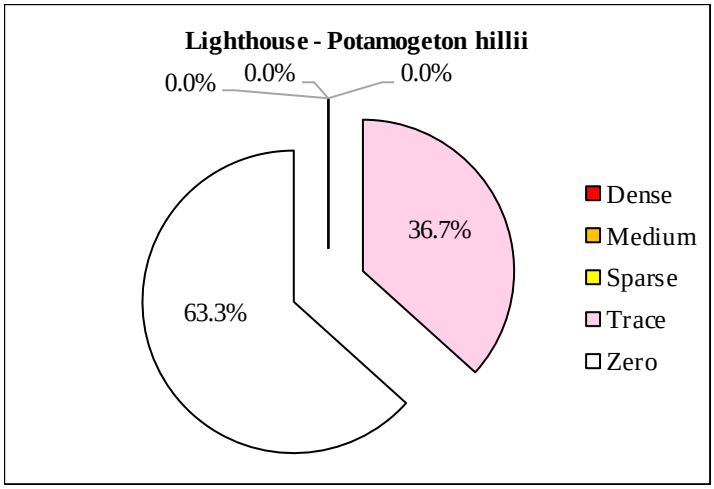


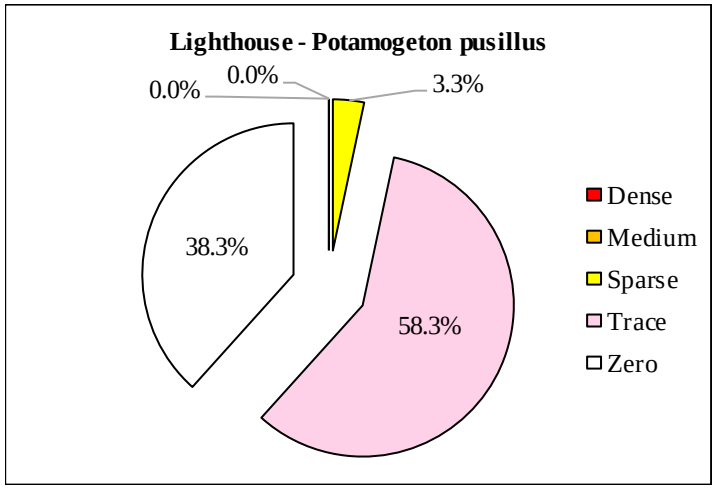


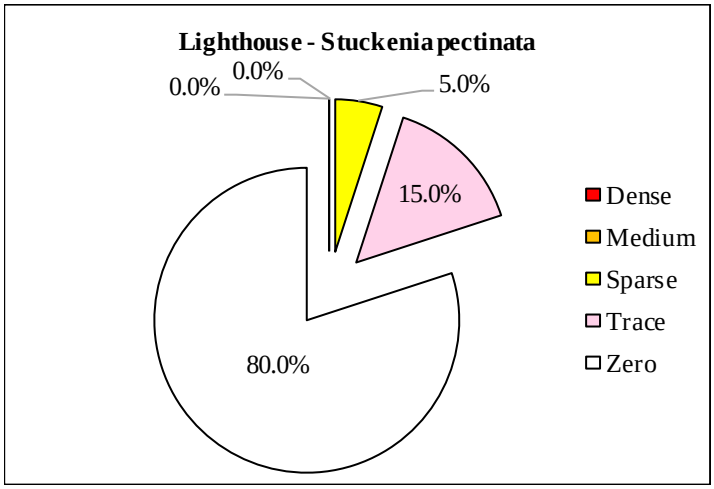


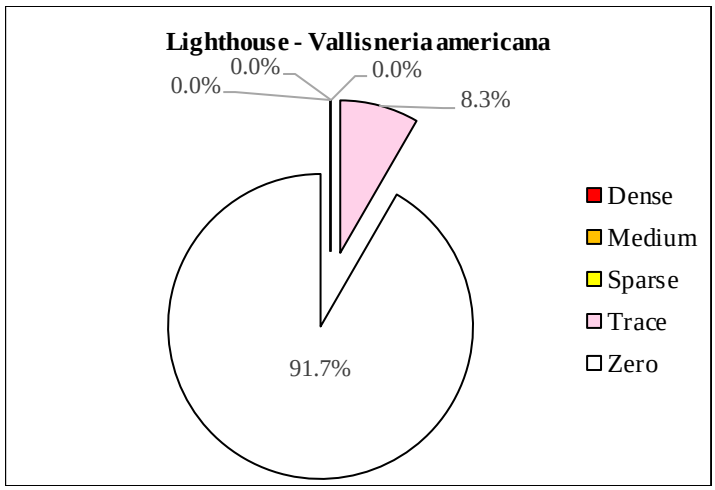
Lighthouse-Pie 2. Percentages of each abundance category of the total 60 rake-tosses made in the Lighthouse Area in 2018 for *Heteranthera dubia*, *Lemna minor*, *Myriophyllum spicatum*, *Najas flexilis*, *Najas minor* and *Nitellopsis obtusa*.

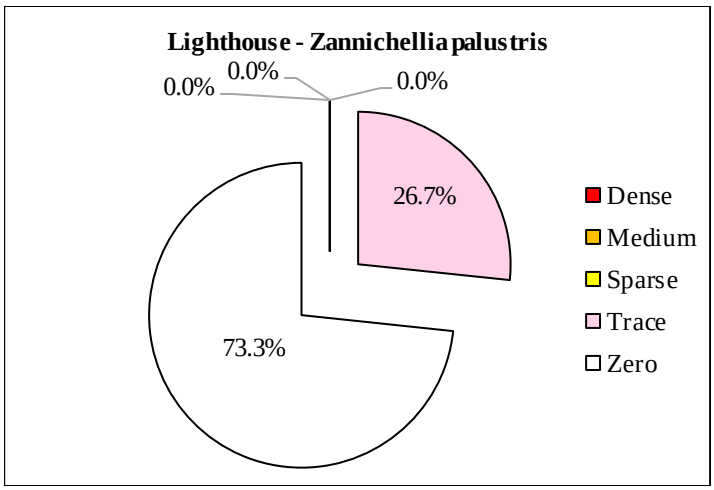




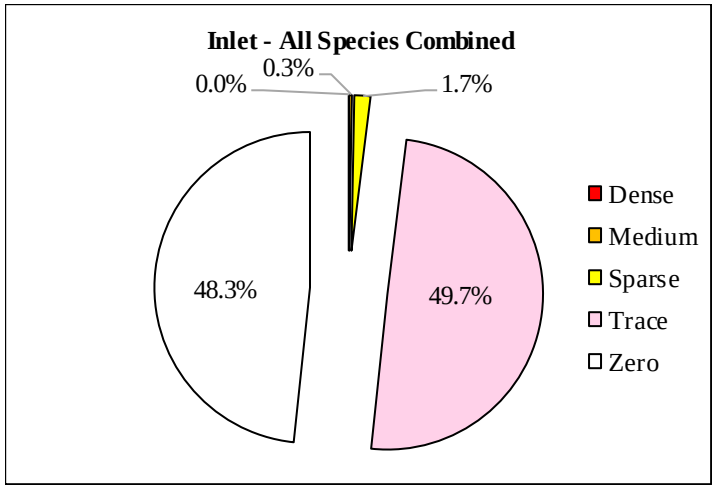


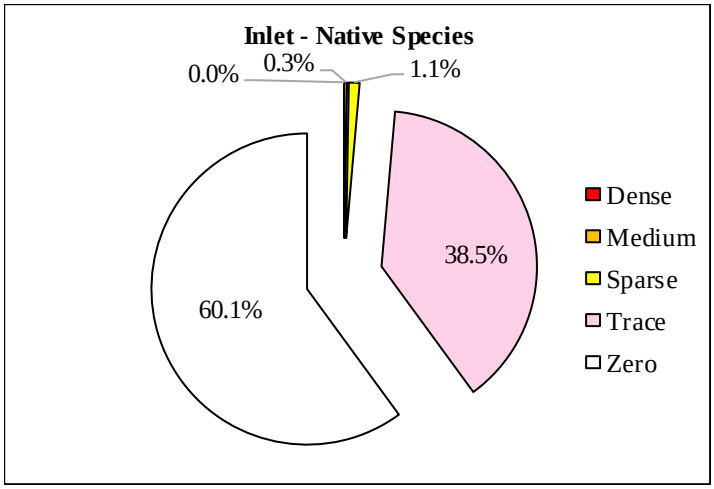


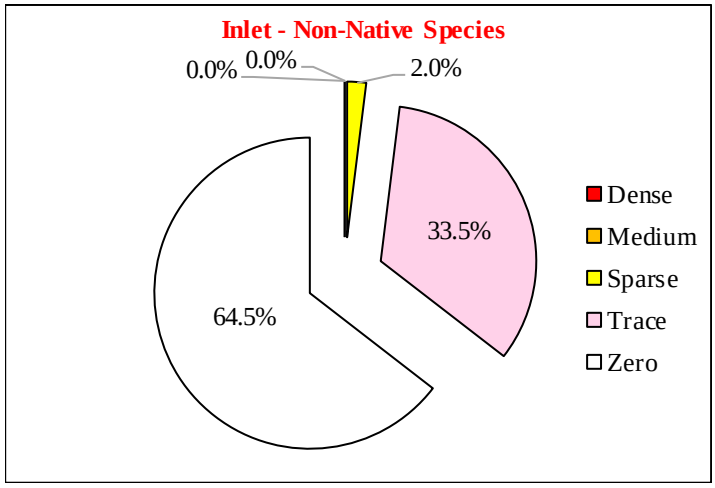


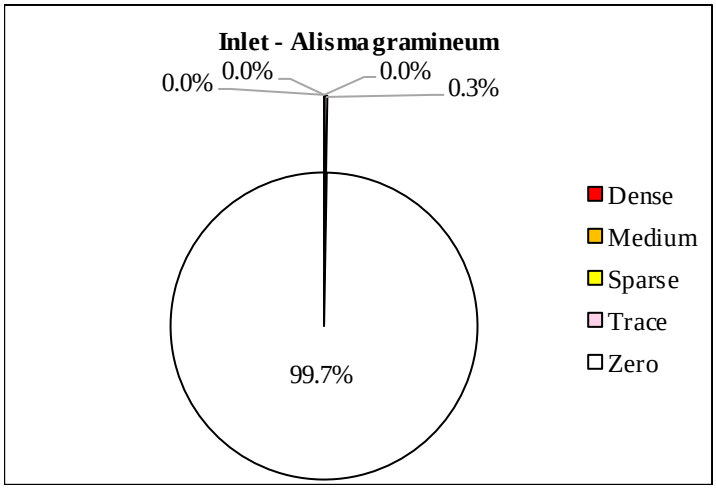


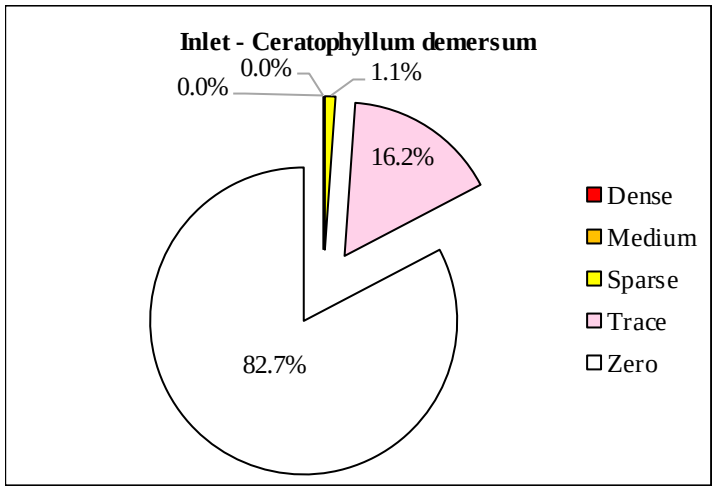
Lighthouse-Pie 3. Percentages of each abundance category of the total 60 rake-tosses made in the Lighthouse Area in 2018 for *Potamogeton crispus*, *Potamogeton hillii*, *Potamogeton pusillus*, *Stuckenia pectinata*, *Vallisneria americana* and *Zannichellia palustris.*

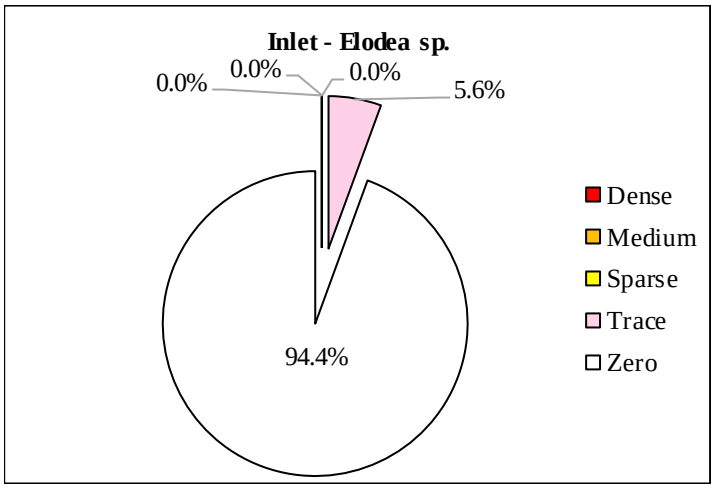




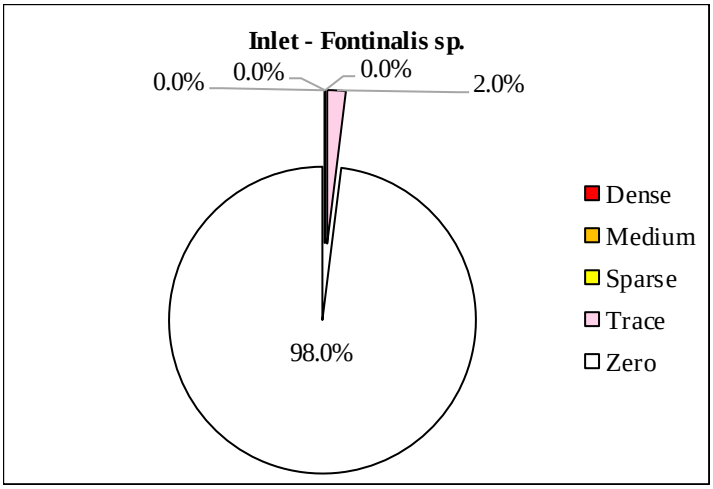


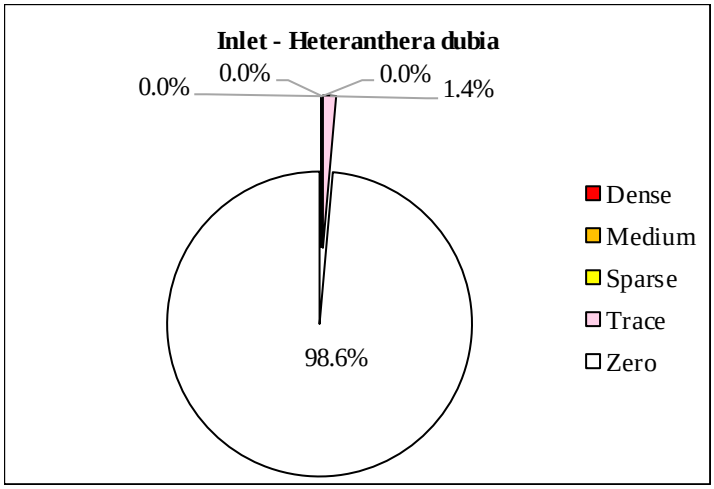


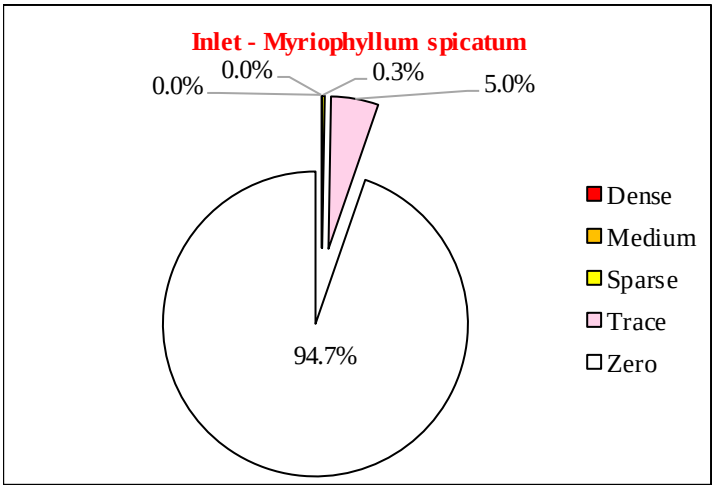


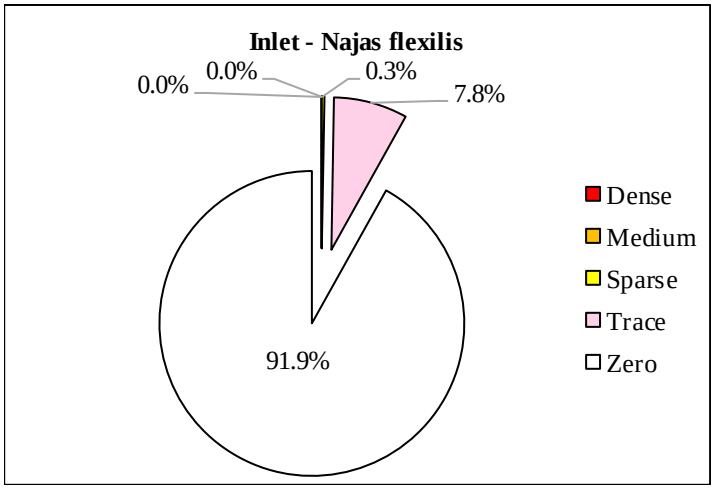


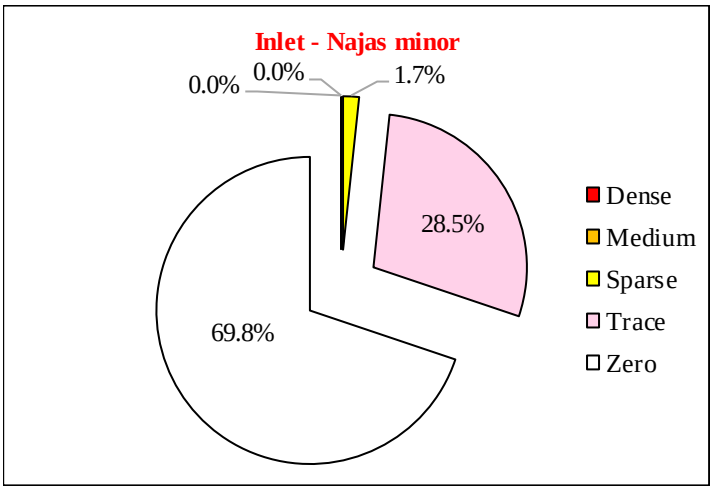
Inlet proper-Pie 1. Percentages of each abundance category of the total 358 rake-tosses made in the Inlet proper in 2018 for All species combined, Native species, Non-Native species, *Alisma gramineum*, *Ceratophyllum demersum*, and *Elodea sp*.

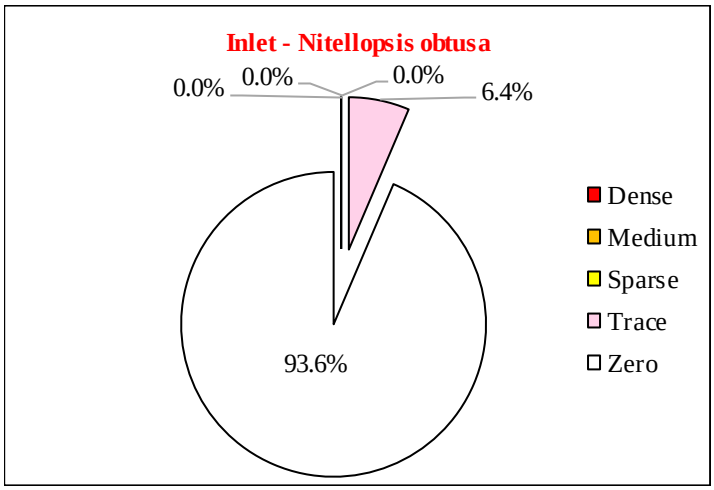




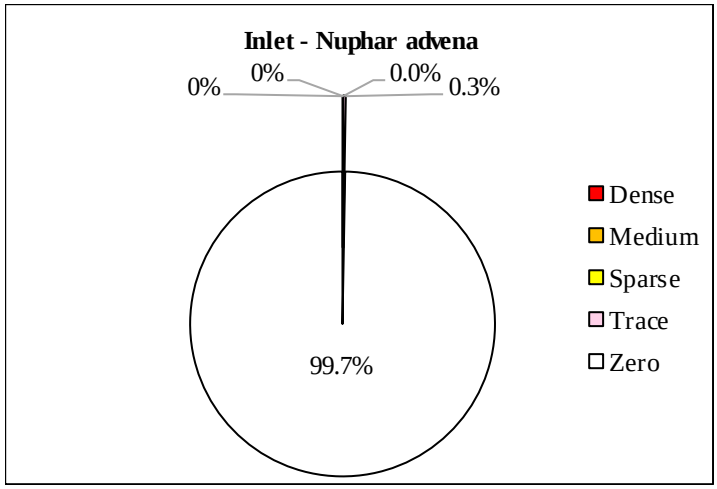


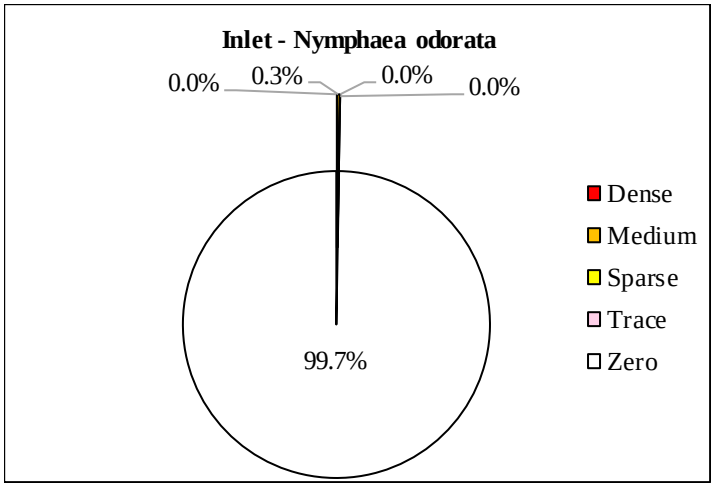


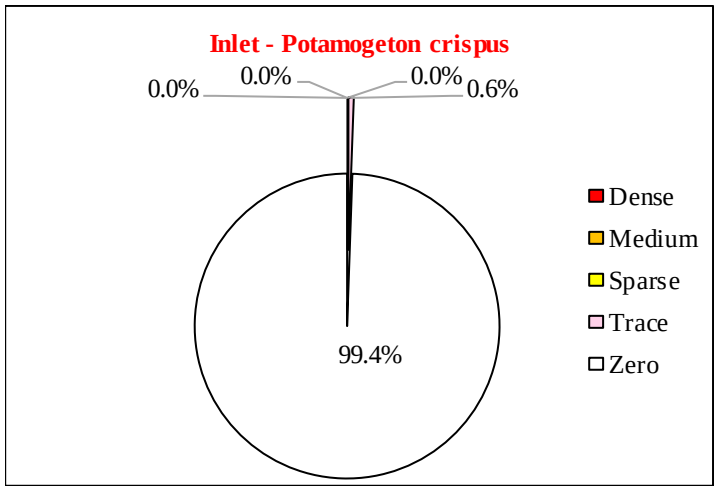


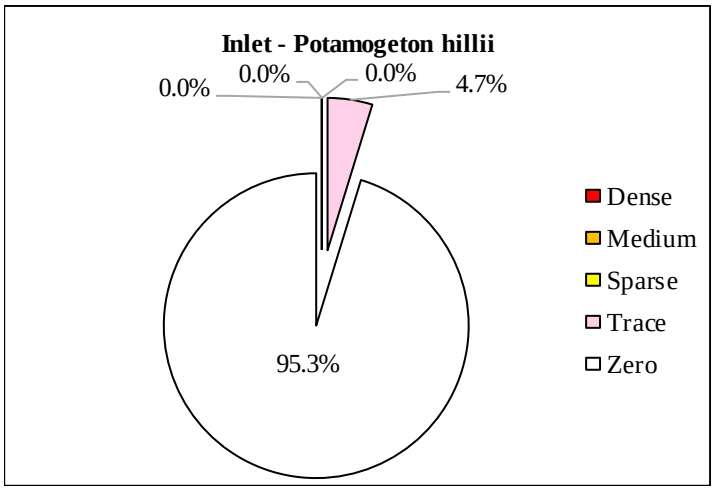


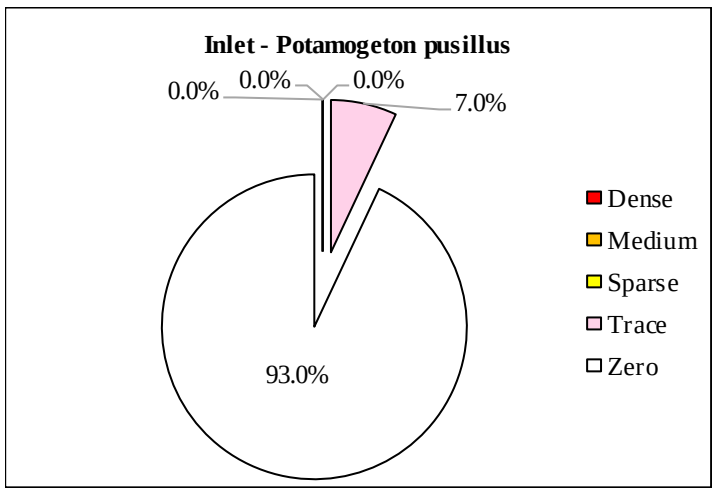
Inlet proper-Pie 2. Percentages of each abundance category of the total 358 rake-tosses made in the Inlet proper in 2018 for *Fontinalis sp.*, *Heteranthera dubia*, *Myriophyllum spicatum*, *Najas flexilis*, *Najas minor* and *Nitellopsis obtusa*.

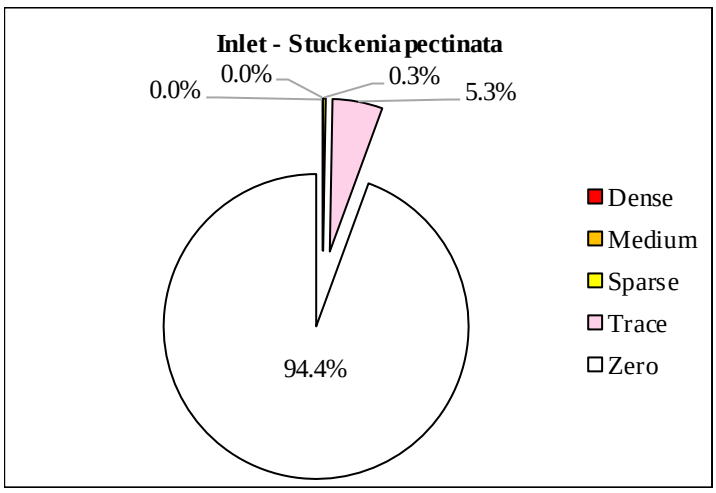




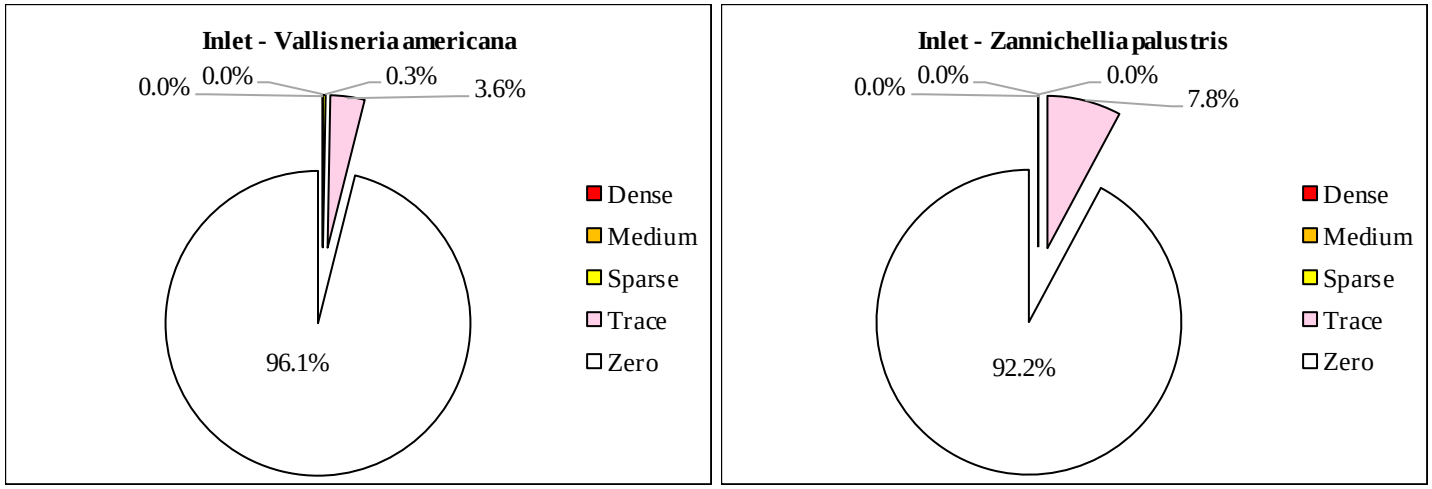




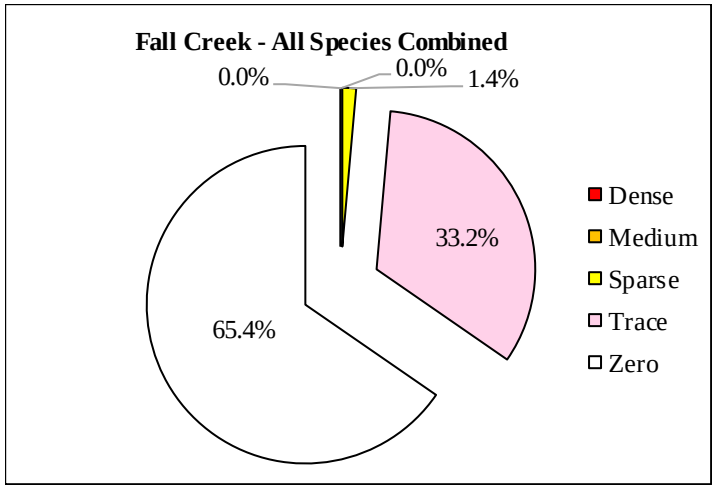


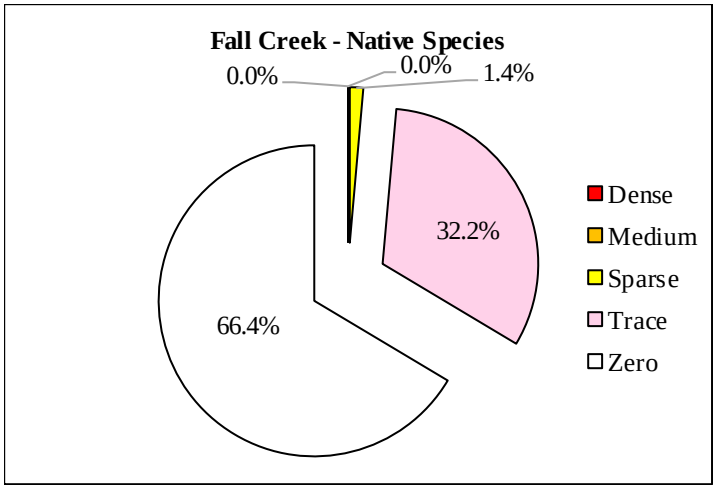


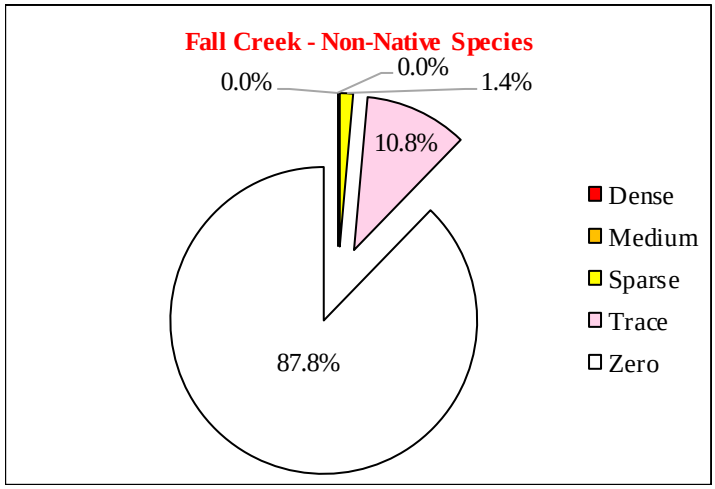
Inlet proper-Pie 3. Percentages of each abundance category of the total 358 rake-tosses made in the Inlet proper in 2018 for *Nuphar advena*, *Nymphaea odorata*, *Potamogeton crispus*, *Potamogeton hillii*, *Potamogeton pusillus* and *Stuckenia pectinata*.

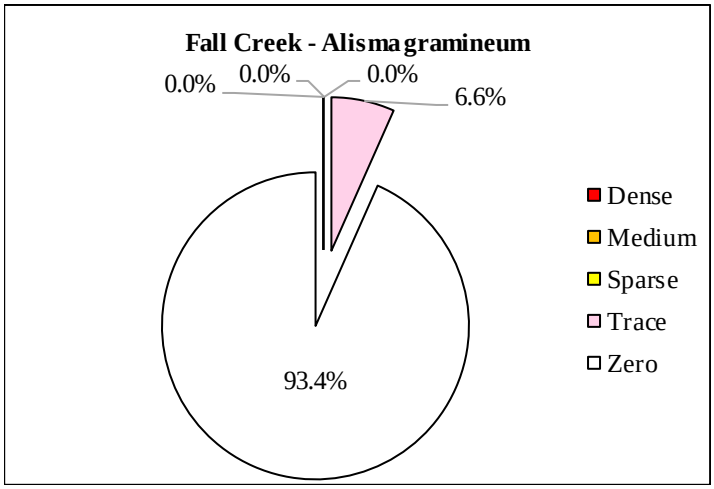


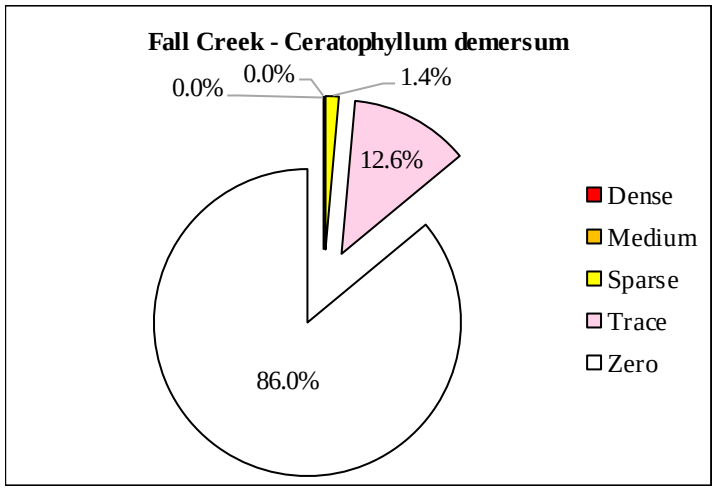
Inlet proper-Pie 4. Percentages of each abundance category of the total 358 rake-tosses made in the Inlet proper in 2018 for *Vallisneria americana* and *Zannichellia palustris*.

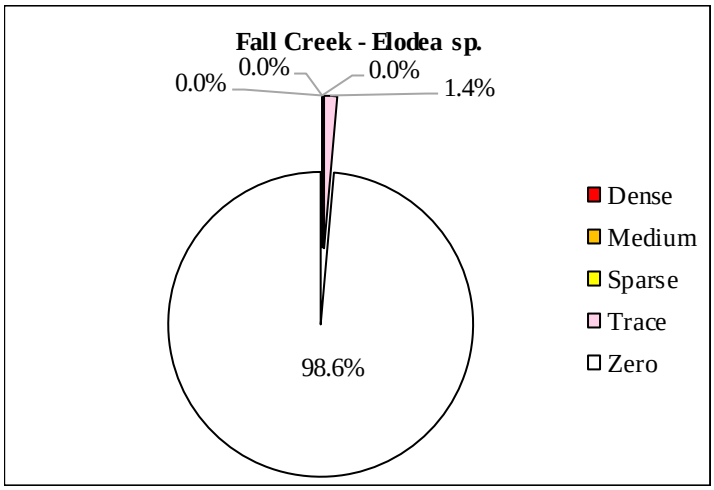




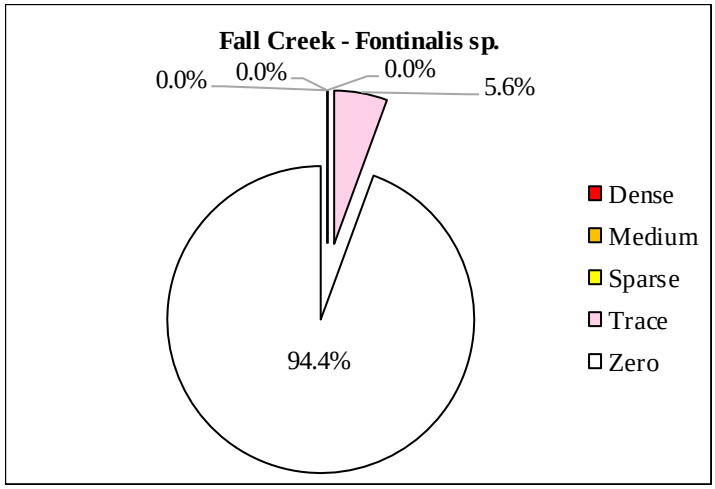


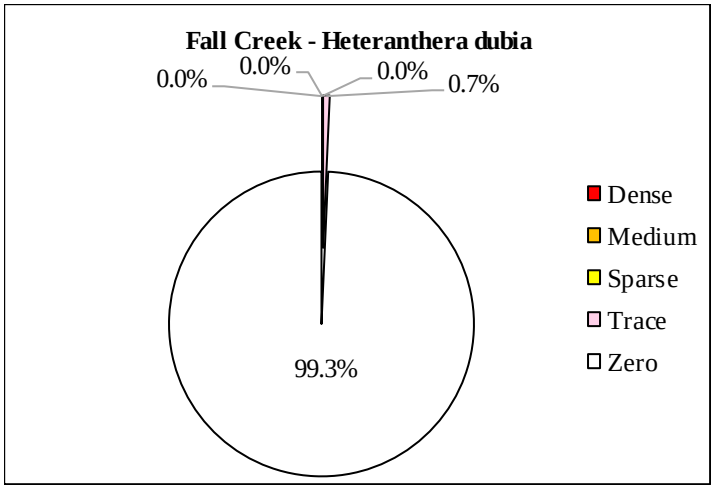


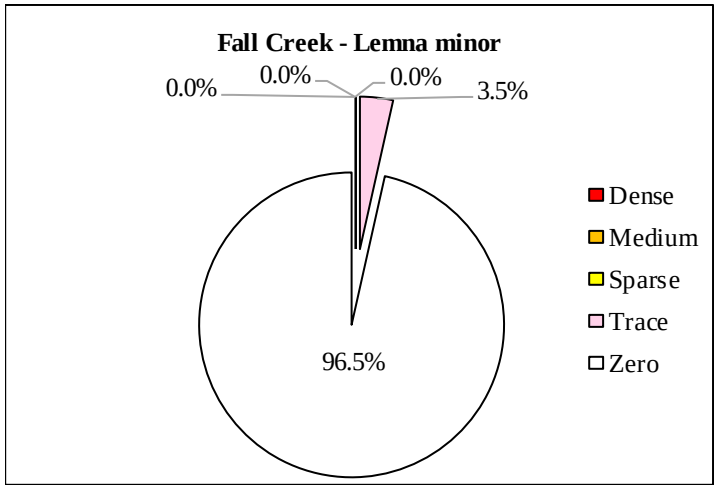


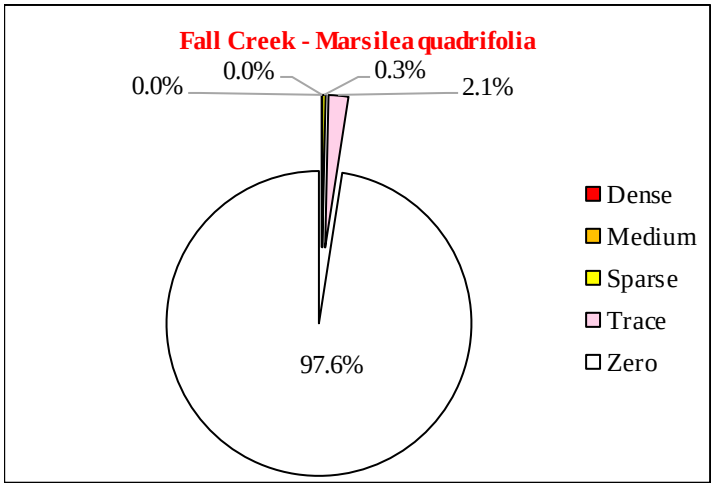


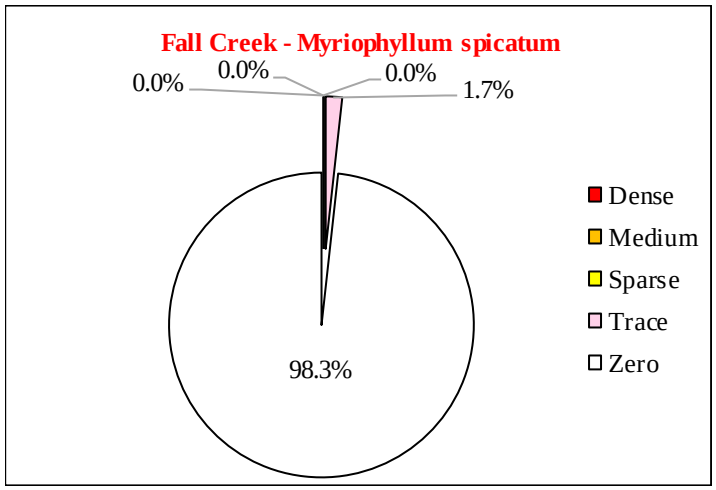
Fall Creek-Pie 1. Percentages of each abundance category of the total 286 rake-tosses made in Fall Creek in 2018 for All species combined, Native species, Non-Native species, *Alisma gramineum*, *Ceratophyllum demersum* and *Elodea sp.*

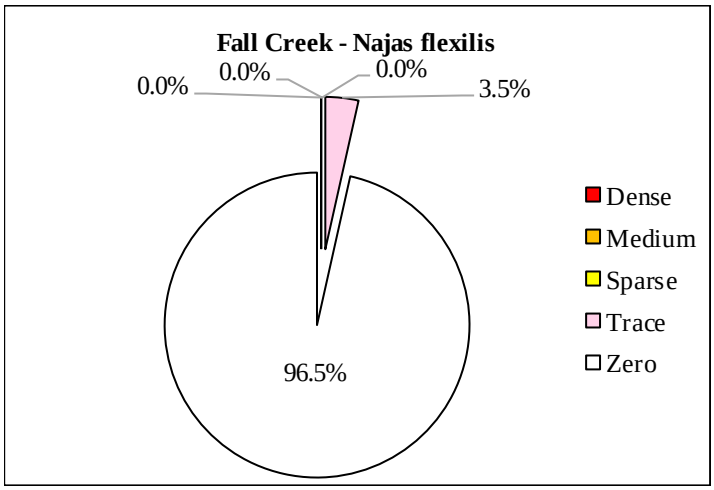




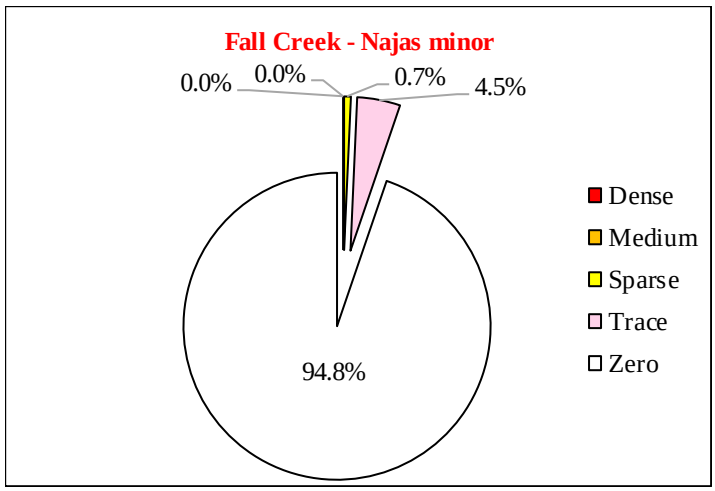


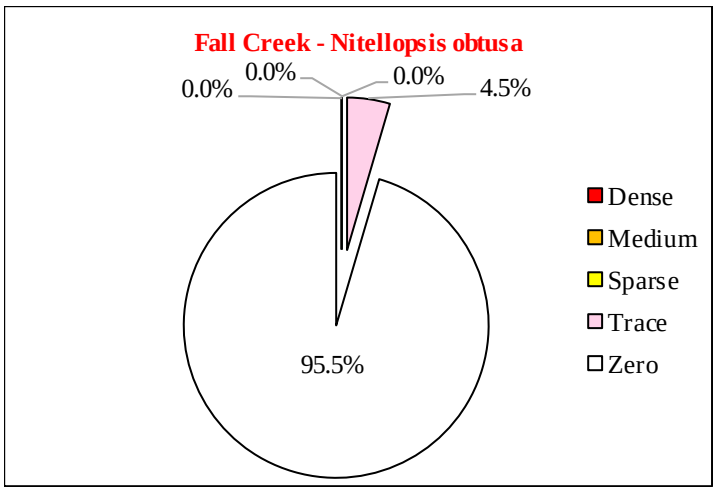


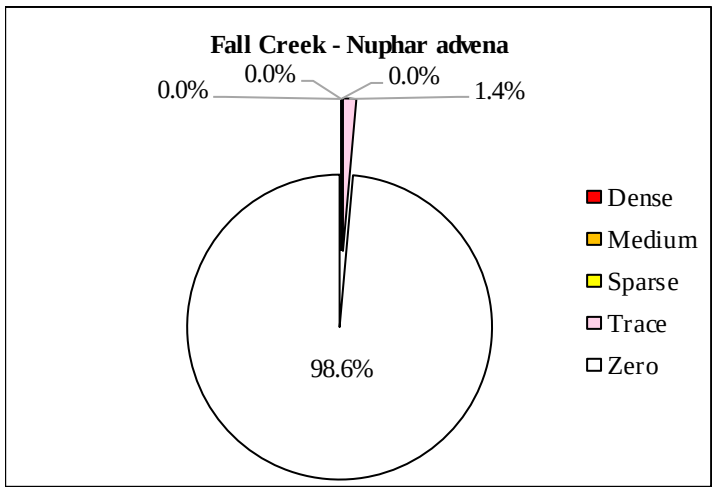


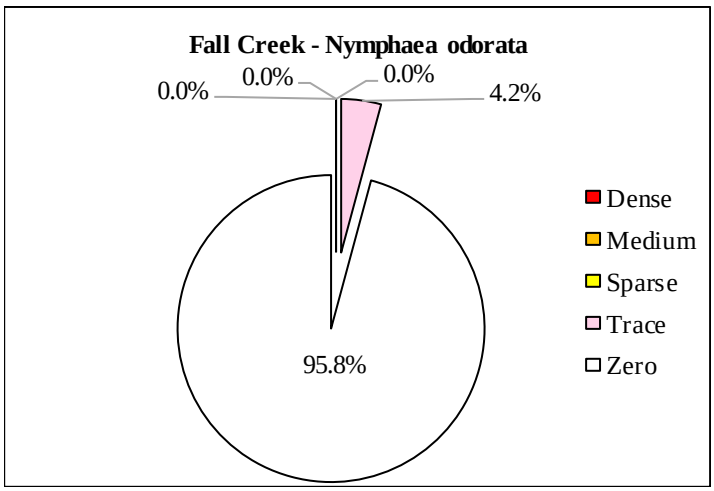


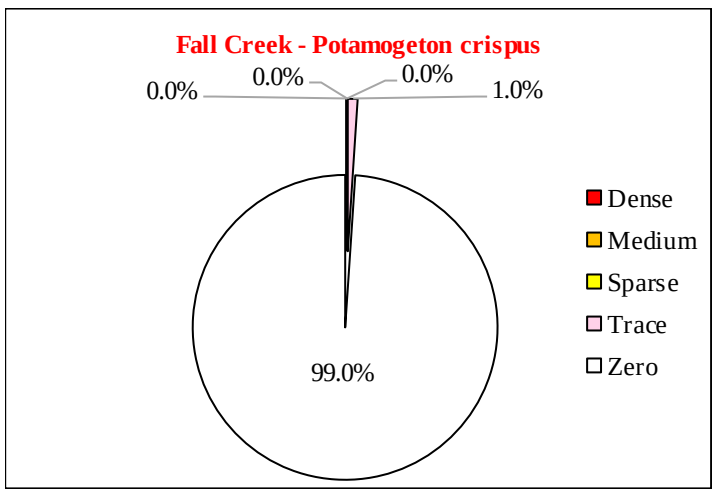
Fall Creek-Pie 2. Percentages of each abundance category of the total 286 rake-tosses made in Fall Creek in 2018 for *Fontinalis sp.*, *Heteranthera dubia*, *Lemna minor*, *Marsilea quadrifolia*, *Myriophyllum spicatum* and *Najas flexilis*.

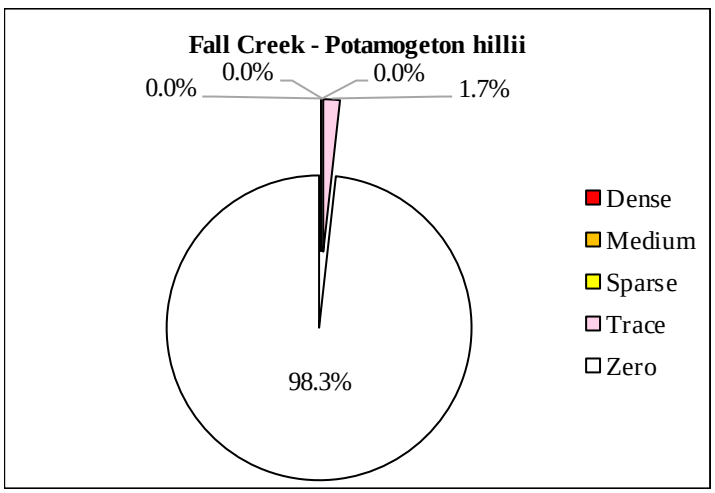




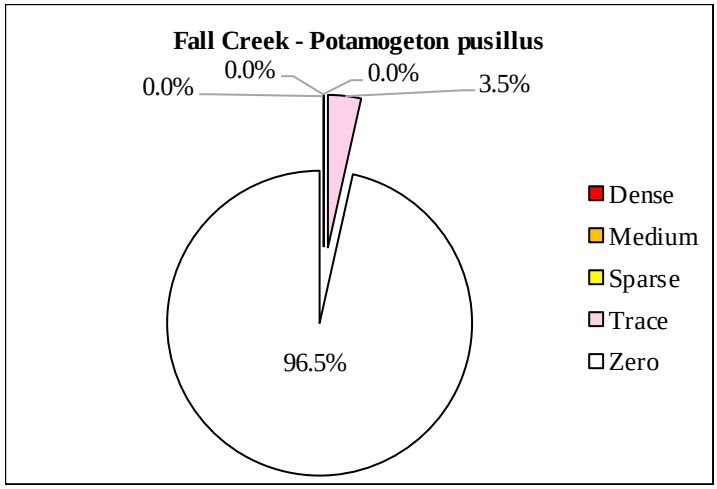


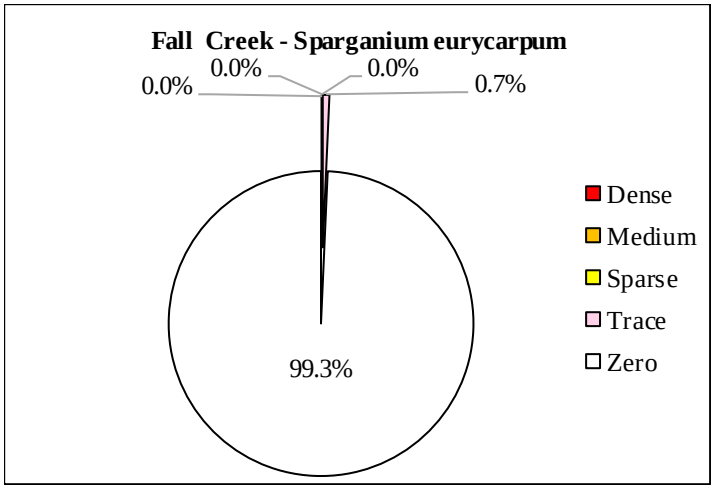


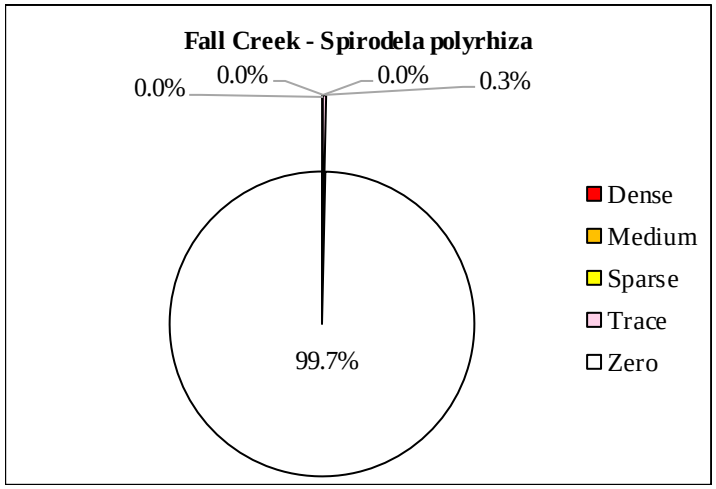


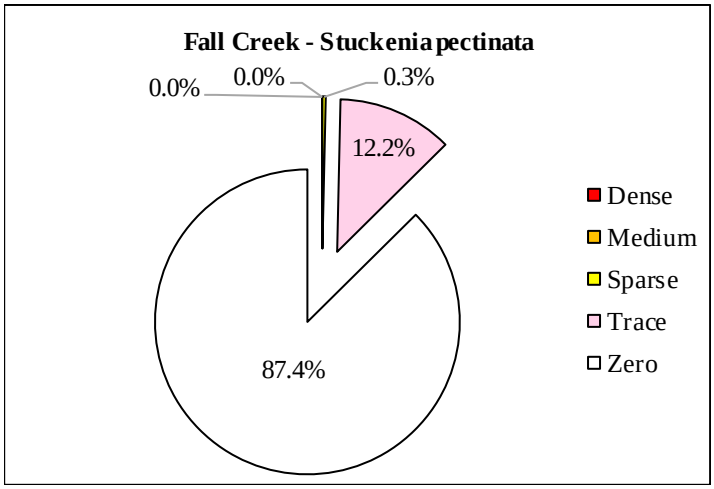


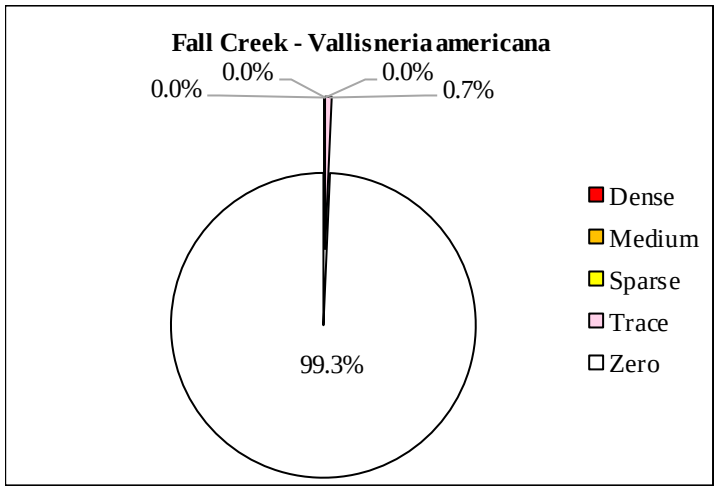
Fall Creek-Pie 3. Percentages of each abundance category of the total 286 rake-tosses made in Fall Creek in 2018 for *Najas minor*, *Nitellopsis obtusa*, *Nuphar advena*, *Nymphaea odorata*, *Potamogeton crispus* and *Potamogeton hillii*.

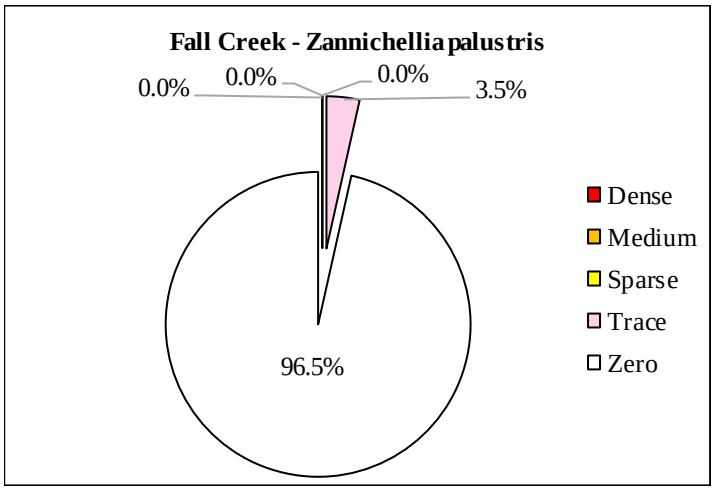












Fall Creek-Pie 4. Percentages of each abundance category of the total 286 rake-tosses made in Fall Creek in 2018 for *Potamogeton pusillus, Sparganium eurycarpum, Spirodela polyrhiza, Stuckenia pectinata, Vallisneria americana* and *Zannichellia palustris.*

Appendix

Data 1. Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	375850	4702000	1.80	1	O																																			0	0	0
6/26	375850	4702000	1.80	2	O																																			0	0	0
6/26	375800	4702000	1.50	1	O																																			0	0	0
6/26	375800	4702000	1.50	2	O																																			0	0	0
6/26	375750	4702000	1.60	1	O																																			0	0	0
6/26	375750	4702000	1.60	2	T		100																																	1	0	1
6/26	375690	4702015	0.60	1	O																																			0	0	0
6/26	375690	4702015	0.60	2	T						100																													1	0	1
6/26	375850	4702050	1.00	1	O																																			0	0	0
6/26	375850	4702050	1.00	2	O																																			0	0	0
6/26	375800	4702050	1.20	1	O																																			0	0	0
6/26	375800	4702050	1.20	2	O																																			0	0	0
6/26	375750	4702050	1.50	1	O																																			0	0	0
6/26	375750	4702050	1.50	2	O																																			0	0	0
6/26	375700	4702050	1.50	1	T		95			1	4																													3	0	3
6/26	375700	4702050	1.50	2	T		90		1		1															8														4	1	3
6/26	376100	4702100	0.60	1	O																																			0	0	0
6/26	376100	4702100	0.60	2	T		65														2					25				8										4	2	2
6/26	376050	4702100	0.70	1	T			5																						95										2	0	2
6/26	376050	4702100	0.70	2	T																																	100		1	0	1
6/26	376000	4702100	0.70	1	T		20	10									10													10					50					5	0	5
6/26	376000	4702100	0.70	2	T			5																						50					45					3	0	3
6/26	375950	4702100	0.90	1	T			1			99																													2	0	2
6/26	375950	4702100	0.90	2	T			5													5																		90		3	1	2
6/26	375900	4702100	1.00	1	T		100																																	1	0	1
6/26	375900	4702100	1.00	2	O																																			0	0	0
6/26	375850	4702100	1.00	1	O																																			0	0	0
6/26	375850	4702100	1.00	2	T		100																																	1	0	1
6/26	375800	4702100	1.00	1	T		100																																	1	0	1
6/26	375800	4702100	1.00	2	T																									10									90		2	0	2
6/26	375750	4702100	1.10	1	O																																			0	0	0
6/26	375750	4702100	1.10	2	O																																			0	0	0

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	375700	4702100	1.70	1	O																																			0	0	0
6/26	375700	4702100	1.70	2	O																																			0	0	0
6/26	375650	4702100	1.90	1	T		90																						1					9						3	0	3
6/26	375650	4702100	1.90	2	T				25	50											25																			3	1	2
6/26	376200	4702150	0.60	1	T		29	1																										70						3	0	3
6/26	376200	4702150	0.60	2	T		65	1													2				20				6					5				1		7	2	5
6/26	376150	4702150	0.80	1	T			6													4													90						3	1	2
6/26	376150	4702150	0.80	2	T			10													5													85						3	1	2
6/26	376100	4702150	0.80	1	T		30	3													2								10					55						5	1	4
6/26	376100	4702150	0.80	2	T			7									4				3				34									50		1		1		7	2	5
6/26	376050	4702150	1.00	1	T			3													2							90	2					3				3		5	1	4
6/26	376050	4702150	1.00	2	T																5								55					40						3	1	2
6/26	376000	4702150	1.00	1	T		77	1													5								2					5		5		5		7	1	6
6/26	376000	4702150	1.00	2	T		78	1													3								2					15				1		6	1	5
6/26	375950	4702150	1.00	1	T																													100						1	0	1
6/26	375950	4702150	1.00	2	T		85	1													2													5				7		5	1	4
6/26	375900	4702150	1.00	1	T			1																										94				5		3	0	3
6/26	375900	4702150	1.00	2	T			1																										99						2	0	2
6/26	375850	4702150	1.10	1	T																													50				50		2	0	2
6/26	375850	4702150	1.10	2	T			1								14																		65				20		4	1	3
6/26	375800	4702150	1.20	1	T																													100						1	0	1
6/26	375800	4702150	1.20	2	T																													100						1	0	1
6/26	375750	4702150	1.20	1	T			1																					55					44						3	0	3
6/26	375750	4702150	1.20	2	T		85																											1				14		3	0	3
6/26	375700	4702150	1.20	1	T																													100						1	0	1
6/26	375700	4702150	1.20	2	O																																			0	0	0
6/26	375650	4702150	1.50	1	T		85																											10				5		3	0	3
6/26	375650	4702150	1.50	2	T																								10					60				30		3	0	3
6/26	375600	4702150	1.80	1	T		95				4																		1											3	0	3
6/26	375600	4702150	1.80	2	T		75		1							18													1					5						5	1	4
6/26	376300	4702200	0.70	1	T											100																								1	1	0
6/26	376300	4702200	0.70	2	T		57	2	25												3								3					10						6	1	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	376250	4702200	0.80	1	T			1									17				2														55				25		5	1	4
6/26	376250	4702200	0.80	2	T												3				15														80				2		4	1	3
6/26	376200	4702200	0.90	1	T																1									60					39						3	1	2
6/26	376200	4702200	0.90	2	T			2													2														90				6		4	1	3
6/26	376150	4702200	0.90	1	T		45	1													1									18					35						5	1	4
6/26	376150	4702200	0.90	2	T		32	5								2	1				30														25				5		7	2	5
6/26	376100	4702200	1.00	1	T			5									1				5									2					85				2		6	1	5
6/26	376100	4702200	1.00	2	T			1													27									70					2						4	1	3
6/26	376050	4702200	1.00	1	T		80	10									1				1					2				1					5						7	2	5
6/26	376050	4702200	1.00	2	T			5								85					8														2						4	2	2
6/26	376000	4702200	1.00	1	T			44									2				2									50					2						5	1	4
6/26	376000	4702200	1.00	2	T		88	2																											5				5		4	0	4
6/26	375950	4702200	1.10	1	T		30	10	5												2									1					50		2				7	1	6
6/26	375950	4702200	1.10	2	T			2																						1					97						3	0	3
6/26	375900	4702200	1.20	1	T		95																												5						2	0	2
6/26	375900	4702200	1.20	2	T				65												5														30						3	1	2
6/26	375850	4702200	1.20	1	T			100																																	1	0	1
6/26	375850	4702200	1.20	2	O																																				0	0	0
6/26	375800	4702200	1.20	1	T											5																			95						2	1	1
6/26	375800	4702200	1.20	2	T		50																												30				20		3	0	3
6/26	375750	4702200	1.20	1	T																														100						1	0	1
6/26	375750	4702200	1.20	2	T																														5				95		2	0	2
6/26	375700	4702200	1.10	1	T		90																																10		2	0	2
6/26	375700	4702200	1.10	2	T																														60				40		2	0	2
6/26	375650	4702200	1.30	1	O																																				0	0	0
6/26	375650	4702200	1.30	2	T																														100						1	0	1
6/26	375600	4702200	1.40	1	O																																				0	0	0
6/26	375600	4702200	1.40	2	T	98																													2						2	0	2
6/26	375550	4702200	1.60	1	T						100																														1	0	1
6/26	375550	4702200	1.60	2	T		10				60																			30											3	0	3
7/17	374980	4702200	0.60	1	T			75	15								8													2											4	0	4
7/17	374980	4702200	0.60	2	T			5									10											60		5									20		5	0	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	374935	4702200	0.50	1	T			30			20						25											25													4	0	4
7/17	374935	4702200	0.50	2	T			10									60											28		1									1		5	0	5
7/17	374900	4702200	0.70	1	T			10								15	60											15													4	1	3
7/17	374900	4702200	0.70	2	T			30								3	52				2					1		2		3				1		5		1		10	3	7
7/17	374826	4702227	0.90	1	S			1			1					2	34		2		5							5		5				10		25		10		11	3	8
7/17	374826	4702227	0.90	2	S		5	2									20		1		1							3		3				55		10				9	2	7
7/17	375040	4702230	0.60	1	T																									3				97						2	0	2
7/17	375040	4702230	0.60	2	T			1									2											1						94				2		5	0	5
6/26	376350	4702250	0.70	1	T			5									10			1	20									60						2		2		7	1	6
6/26	376350	4702250	0.70	2	T			5								50	15													30										4	1	3
6/26	376300	4702250	0.80	1	T		50	2									1				5									2				40						6	1	5
6/26	376300	4702250	0.80	2	T			1									5				5									5				75		5		4		7	1	6
6/26	376250	4702250	0.80	1	T			1													3							1						95						4	1	3
6/26	376250	4702250	0.80	2	T			1									1				10					5		3		3				72				5		8	2	6
6/26	376200	4702250	1.00	1	T		3	1								1	1				10							1		10				71				2		9	2	7
6/26	376200	4702250	1.00	2	T		3	2									2				6							1		4				80				2		8	1	7
6/26	376150	4702250	1.20	1	T																100																				1	1	0
6/26	376150	4702250	1.20	2	T				60																									40						2	0	2
6/26	376100	4702250	1.20	1	T			1									1													8				90						4	0	4
6/26	376100	4702250	1.20	2	T			1													2								88	2				2				5		6	1	5
6/26	376050	4702250	1.20	1	T			100																																1	0	1
6/26	376050	4702250	1.20	2	T																					100														1	1	0
6/26	376000	4702250	1.20	1	O																																			0	0	0
6/26	376000	4702250	1.20	2	T			88									5				5																		2		4	1	3
6/26	375950	4702250	1.50	1	T			70													30																				2	1	1
6/26	375950	4702250	1.50	2	T																									100										1	0	1
6/26	375900	4702250	1.50	1	T			5																		50								45						3	1	2
6/26	375900	4702250	1.50	2	T												5				10													85						3	1	2
6/26	375850	4702250	1.40	1	T																													100						1	0	1
6/26	375850	4702250	1.40	2	T			1																										99						2	0	2
6/26	375800	4702250	1.40	1	T				70																									30						2	0	2
6/26	375800	4702250	1.40	2	T		30		45																									15					10	4	0	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	375750	4702250	1.40	1	T																													100						1	0	1
6/26	375750	4702250	1.40	2	T																													100						1	0	1
6/26	375700	4702250	1.40	1	T	40																																60		2	0	2
6/26	375700	4702250	1.40	2	T																1													95				4		3	1	2
6/26	375650	4702250	1.40	1	T																													100						1	0	1
6/26	375650	4702250	1.40	2	T																																	100		1	0	1
6/26	375600	4702250	1.40	1	T		12										1											2						85						4	0	4
6/26	375600	4702250	1.40	2	T	10	80																										10						3	0	3
6/26	375550	4702250	1.60	1	O																																			0	0	0
6/26	375550	4702250	1.60	2	T		98																															2		2	0	2
6/26	375500	4702250	1.50	1	O																																			0	0	0
6/26	375500	4702250	1.50	2	O																																			0	0	0
7/17	375125	4702250	0.70	1	T																									100									+	1	0	1
7/17	375125	4702250	0.70	2	T											10	10										75	2		3									+	5	1	4
7/17	375050	4702250	0.70	1	T			1									15				1						10	15		50								8	+	7	1	6
7/17	375050	4702250	0.70	2	T				30							5	2										10	15		35								3	+	7	1	6
7/17	375000	4702250	1.40	1	T			1								50	4													40								5		5	1	4
7/17	375000	4702250	1.40	2	T			10	15							25	1											44		2								3		7	1	6
7/17	374950	4702250	1.30	1	T		5	59								2	5				10							1		10						5		3		9	2	7
7/17	374950	4702250	1.30	2	T			45								20	10				3							10		5				5				2		8	2	6
7/17	374900	4702250	1.20	1	T			67									10				3							1		4						10		5		7	1	6
7/17	374900	4702250	1.20	2	S			3	10		0.01					5	10				1					44		10						5		10		2		11	3	8
7/17	374850	4702250	1.10	1	T			1													5													69				25		4	1	3
7/17	374850	4702250	1.10	2	T			20									10		1		2									5				59				3		7	2	5
7/17	375180	4702270	1.20	1	O																																			0	0	0
7/17	375180	4702270	1.20	2	T												2											98												2	0	2
6/26	376400	4702300	1.20	1	T		9	10									1				10									40				30						6	1	5
6/26	376400	4702300	1.20	2	T			3									5				2									80				8				2		6	1	5
6/26	376350	4702300	0.70	1	T			2									1				1							15		20				56				5		7	1	6
6/26	376350	4702300	0.70	2	T		5	2									3				3							2		45				30				10		8	1	7
6/26	376300	4702300	1.10	1	T			5																										95						2	0	2
6/26	376300	4702300	1.10	2	T			10									2				2									15				65				6		6	1	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	376250	4702300	1.10	1	T			10									3				1									20					64				2		6	1	5
6/26	376250	4702300	1.10	2	T			5									5				2									25					63						5	1	4
6/26	376200	4702300	1.20	1	T		2	5	5												5									2					80				1		7	1	6
6/26	376200	4702300	1.20	2	T			2													2					5									91						4	2	2
6/26	376150	4702300	1.30	1	T			1																											99						2	0	2
6/26	376150	4702300	1.30	2	T			1													2									27					70						4	1	3
6/26	376100	4702300	1.50	1	T			2																											98						2	0	2
6/26	376100	4702300	1.50	2	T		35	10								10					5														40						5	2	3
6/26	376050	4702300	1.50	1	T			10									5																		85						3	0	3
6/26	376050	4702300	1.50	2	T		70	5																											25						3	0	3
6/26	376000	4702300	1.60	1	T		45	1								4					2														40		8				6	2	4
6/26	376000	4702300	1.60	2	T		64	1	15		2										1					10									5		2				8	2	6
6/26	375950	4702300	1.60	1	T																10									90											2	1	1
6/26	375950	4702300	1.60	2	T	90	5														5																				3	1	2
6/26	375900	4702300	1.60	1	T																5														95						2	1	1
6/26	375900	4702300	1.60	2	T				90												5							5													3	1	2
6/26	375850	4702300	1.50	1	T																5														95						2	1	1
6/26	375850	4702300	1.50	2	O																																				0	0	0
6/26	375800	4702300	1.70	1	O																																				0	0	0
6/26	375800	4702300	1.70	2	O																																				0	0	0
6/26	375750	4702300	1.60	1	T						2										1														94				3		4	1	3
6/26	375750	4702300	1.60	2	T		92									1												2						3				2		5	1	4
6/26	375700	4702300	1.60	1	T																								100											1	0	1
6/26	375700	4702300	1.60	2	T																						100													1	0	1
6/26	375650	4702300	1.60	1	T											95																		5						2	1	1
6/26	375650	4702300	1.60	2	T											60																		40						2	1	1
6/26	375600	4702300	1.50	1	T												100																								1	0	1
6/26	375600	4702300	1.50	2	T																									100											1	0	1
6/26	375550	4702300	1.60	1	T						100																														1	0	1
6/26	375550	4702300	1.60	2	T																							30						70						2	0	2
7/17	375350	4702300	2.10	1	S		15		5								2				54						20	2		1								1		8	1	7
7/17	375350	4702300	2.10	2	T		30										1				60						5			3								1		6	1	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	375300	4702300	1.90	1	T												2				85									13											3	1	2
7/17	375300	4702300	1.90	2	T											5	8				85																		2		4	2	2
7/17	375250	4702300	1.60	1	T			5								15	10				65							3		1								1		7	2	5
7/17	375250	4702300	1.60	2	T			2									15				72							3		5								3		6	1	5
7/17	375200	4702300	1.70	1	S			2								41	5				35					10		0.01		5								2		8	3	5
7/17	375200	4702300	1.70	2	S			0.01								47	1				40							2		10										6	2	4
7/17	375150	4702300	1.80	1	S											50	2				3							2		3					40				+	6	2	4
7/17	375150	4702300	1.80	2	S			0.01								40	5				10							3		1					40			1	+	8	2	6
7/17	375100	4702300	1.80	1	S				2		0.01					71	10				10							2		5										7	2	5
7/17	375100	4702300	1.80	2	S				5							76	2				5							5		5								2		7	2	5
7/17	375050	4702300	1.80	1	S		0.01		5							75	0.01				2							2		10					2			4	+	9	2	7
7/17	375050	4702300	1.80	2	S											60	1				0.01							1		8					30			0.01	+	7	2	5
7/17	375000	4702300	1.80	1	S				3							70					0.01							2		20					5					6	2	4
7/17	375000	4702300	1.80	2	S											80					0.01							5		15										4	2	2
7/17	374950	4702300	1.90	1	S						0.01					70					0.01							10		20								0.01	+	6	2	4
7/17	374950	4702300	1.90	2	S		3		5							85					0.01							2		5								0.01	+	7	2	5
7/17	374900	4702300	1.80	1	M		3		4		0.01					75	0.01				5					1		5		4					1			2		11	3	8
7/17	374900	4702300	1.80	2	S						5					79					5							1		5					3			2		7	2	5
7/17	374850	4702300	1.70	1	S		3									35	0.01				40					0.01		5		14								3		8	3	5
7/17	374850	4702300	1.70	2	S			0.01			0.01					30					45							5		5					15					7	2	5
7/17	374800	4702300	1.80	1	S		5		3		0.01					20	0.01				5							1		60					5		0.01	1		11	2	9
7/17	374800	4702300	1.80	2	S											5	1				5					4		0.01		43					42			0.01		8	3	5
6/26	376450	4702350	0.70	1	T			1													1														98					3	1	2
6/26	376450	4702350	0.70	2	T			5									1				5									82					5			2		6	1	5
6/26	376400	4702350	0.80	1	T		3	5								3	2				1									63					20			3		8	2	6
6/26	376400	4702350	0.80	2	T		10	1									1				2					3				71					10			2		8	2	6
6/26	376350	4702350	0.90	1	T		1	5									1				3							1		30					49			10		8	1	7
6/26	376350	4702350	0.90	2	T			8								2	3				2					1				30					49			5		8	3	5
6/26	376300	4702350	1.20	1	T																														100					1	0	1
6/26	376300	4702350	1.20	2	T			3									1				1									10					83			2		6	1	5
6/26	376250	4702350	1.20	1	T		9	5									1				3							1							79			2		7	1	6
6/26	376250	4702350	1.20	2	T		15	5													3									7					70					5	1	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	376200	4702350	1.30	1	T			1								5	1				48							3		2					40						7	2	5
6/26	376200	4702350	1.30	2	T			3													5									2					90						4	1	3
6/26	376150	4702350	1.40	1	T																													100						1	0	1
6/26	376150	4702350	1.40	2	T			2																										70		28				3	0	3
6/26	376100	4702350	1.60	1	T																							90										10	+	2	0	2
6/26	376100	4702350	1.60	2	T											50																						50	+	2	1	1
6/26	376050	4702350	1.90	1	T																60							40												2	1	1
6/26	376050	4702350	1.90	2	T																90													10						2	1	1
6/26	376000	4702350	2.00	1	T		8		5												1							1						85					+	5	1	4
6/26	376000	4702350	2.00	2	T		39																					1						60					+	3	0	3
6/26	375950	4702350	2.10	1	T		90									2					5									1				2						5	2	3
6/26	375950	4702350	2.10	2	T																15													75				10		3	1	2
6/26	375900	4702350	2.00	1	T											2					65									3				30						4	2	2
6/26	375900	4702350	2.00	2	T		45				10										40																	5		4	1	3
6/26	375850	4702350	2.10	1	T						9										70									20				1						4	1	3
6/26	375850	4702350	2.10	2	T		60														36							2										2		4	1	3
6/26	375800	4702350	2.20	1	T		25														35					20				20										4	2	2
6/26	375800	4702350	2.20	2	T		68									10					20									1								1		5	2	3
6/26	375750	4702350	2.20	1	T		88														2							1		5				4						5	1	4
6/26	375750	4702350	2.20	2	T		90														4									1				5						4	1	3
6/26	375700	4702350	2.00	1	T		65				3										2									1				29						5	1	4
6/26	375700	4702350	2.00	2	T		94														1									3				2						4	1	3
6/26	375650	4702350	2.00	1	T		35																											65						2	0	2
6/26	375650	4702350	2.00	2	T		85														1									2				10				2		5	1	4
6/26	375600	4702350	1.80	1	O																																			0	0	0
6/26	375600	4702350	1.80	2	T																					99								1						2	1	1
6/26	375550	4702350	1.70	1	T																																	100		1	0	1
6/26	375550	4702350	1.70	2	T												2				1									60								37		4	1	3
7/17	375350	4702350	2.10	1	T		40														60																			2	1	1
7/17	375350	4702350	2.10	2	S		10									10					62									15				2				1		6	2	4
7/17	375300	4702350	2.10	1	S		15										1				65					15				4								0.01		6	2	4
7/17	375300	4702350	2.10	2	T		30										1				67									2										4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	375250	4702350	2.00	1	T				5								2				80					3				10											5	2	3
7/17	375250	4702350	2.00	2	T											1	2				80					7				10											5	3	2
7/17	375200	4702350	2.00	1	T												5				70									23									2		4	1	3
7/17	375200	4702350	2.00	2	S				3							10	2				50					5				10					5				15		8	3	5
7/17	375150	4702350	2.10	1	M		3	0.01	0.01							15	2				10									65					0.01				5		9	2	7
7/17	375150	4702350	2.10	2	M											10	3				40									40					5				2		6	2	4
7/17	375100	4702350	2.10	1	S				3							3					10									84										+	4	2	2
7/17	375100	4702350	2.10	2	S											5					10									82									3	+	4	2	2
7/17	375050	4702350	2.10	1	T																15									75									10	+	3	1	2
7/17	375050	4702350	2.10	2	T		20														4									75									1	+	4	1	3
7/17	375000	4702350	2.20	1	T											20					3									76									1	+	4	2	2
7/17	375000	4702350	2.20	2	S				12							25					5									55									3	+	5	2	3
7/17	374950	4702350	2.10	1	S		2		1							64					20							3		10										+	6	2	4
7/17	374950	4702350	2.10	2	S		20									30					15							3		30									2	+	6	2	4
7/17	374900	4702350	2.10	1	S											30					25									20					25				0.01	+	5	2	3
7/17	374900	4702350	2.10	2	T		20		20							20					20									20											5	2	3
7/17	374850	4702350	2.00	1	T											15					20							3		60									2		5	2	3
7/17	374850	4702350	2.00	2	S											50					23							2		25											4	2	2
7/17	374800	4702350	1.80	1	M						0.01					35					2									23					40						5	2	3
7/17	374800	4702350	1.80	2	S											5					5									20					70						4	2	2
6/26	376550	4702400	0.60	1	O																																				0	0	0
6/26	376550	4702400	0.60	2	T											49	50				1																				3	2	1
6/26	376500	4702400	0.80	1	T			5			1						3				3							2		39					40		2		5		9	1	8
6/26	376500	4702400	0.80	2	T		10	2									2				5					2		3		20					49		2		5		10	2	8
6/26	376450	4702400	1.00	1	T			5									1				1							1		19					70				3		7	1	6
6/26	376450	4702400	1.00	2	T			5													1							3		5					83				3		6	1	5
6/26	376400	4702400	1.10	1	T			10																						70					20						3	0	3
6/26	376400	4702400	1.10	2	T			19													1									35					45						4	1	3
6/26	376350	4702400	1.20	1	T		30	1								24																			45						4	1	3
6/26	376350	4702400	1.20	2	T		9	15													3									3					70						5	1	4
6/26	376300	4702400	1.20	1	T			2									2				24									2					70						5	1	4
6/26	376300	4702400	1.20	2	T																2														38				60		3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	376250	4702400	1.40	1	T		15	8													1									1					75						5	1	4
6/26	376250	4702400	1.40	2	T		6	35								20														2					35				2		6	1	5
6/26	376200	4702400	1.80	1	T		20									40																			40					+	3	1	2
6/26	376200	4702400	1.80	2	T																											10		90					+	2	0	2
6/26	376150	4702400	2.20	1	T		30									2					1									2				65					+	5	2	3
6/26	376150	4702400	2.20	2	T		60		10																									30					+	3	0	3
6/26	376100	4702400	2.20	1	T											80					1							2						17					+	4	2	2
6/26	376100	4702400	2.20	2	T																									30				70					+	2	0	2
6/26	376050	4702400	2.50	1	T																1													99					+	2	1	1
6/26	376050	4702400	2.50	2	T		10		3												1													86					+	4	1	3
6/26	376000	4702400	2.50	1	T		40									4					50							1						5						5	2	3
6/26	376000	4702400	2.50	2	T		30									2					65									1									2		5	2	3
6/26	375950	4702400	2.50	1	T		50									1					35							3						9				2		6	2	4
6/26	375950	4702400	2.50	2	T		40		5							5					5					2		2						41						7	3	4
6/26	375900	4702400	2.60	1	T		50														48							2												3	1	2
6/26	375900	4702400	2.60	2	T												1				97									2										3	1	2
6/26	375850	4702400	2.60	1	T						1										96									1									2	4	1	3
6/26	375850	4702400	2.60	2	T		35		6												45					3		4		4				3						7	2	5
6/26	375800	4702400	2.60	1	T		48														50																	2		3	1	2
6/26	375800	4702400	2.60	2	T																55					40		3		2										4	2	2
6/26	375750	4702400	2.60	1	T																5									5				90						3	1	2
6/26	375750	4702400	2.60	2	T		78														20																	2	+	3	1	2
6/26	375700	4702400	2.50	1	T		30									3					63									3									1		5	2	3
6/26	375700	4702400	2.50	2	T		17		20							3	1				57									2										6	2	4
6/26	375650	4702400	2.30	1	T																85									10				5						3	1	2
6/26	375650	4702400	2.30	2	T		45														55																			2	1	1
6/26	375600	4702400	2.30	1	T		75									18														2				5						4	1	3
6/26	375600	4702400	2.30	2	T		68									15										10				2				2				3		6	2	4
6/26	375550	4702400	2.20	1	T																													100						1	0	1
6/26	375550	4702400	2.20	2	O																																			0	0	0
7/17	375350	4702400	2.00	1	T				5							18					75									2										4	2	2
7/17	375350	4702400	2.00	2	T		2									15					75					8														4	3	1

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	375300	4702400	2.00	1	T		20									5					70									5											4	2	2
7/17	375300	4702400	2.00	2	T		15		5							10	2				65									3											6	2	4
7/17	375250	4702400	2.00	1	T				3							3	3				60									11									20		6	2	4
7/17	375250	4702400	2.00	2	T		3									4	2				70									16									5		6	2	4
7/17	375200	4702400	2.10	1	T																15									5					70				10		4	1	3
7/17	375200	4702400	2.10	2	S											7	1				35							2						30				25		6	2	4
7/17	375150	4702400	2.30	1	S			1								20	1				48					5				20								5		7	3	4
7/17	375150	4702400	2.30	2	S				4							20	1				30									35								10		6	2	4
7/17	375100	4702400	2.40	1	T				15							10					5					3				65								2	+	6	3	3
7/17	375100	4702400	2.40	2	S		3		0.01							0.01					2					10				68					15				2	+	8	3	5
7/17	375050	4702400	2.50	1	M				1							2										5				42					50				0.01	+	6	2	4
7/17	375050	4702400	2.50	2	M		3									4										2				45					46				0.01	+	6	2	4
7/17	375000	4702400	2.50	1	S											24					0.01									75									1	+	4	2	2
7/17	375000	4702400	2.50	2	M											50					0.01					0.01				50									0.01	+	5	3	2
7/17	374950	4702400	2.50	1	M				3							10					12									25					50					+	5	2	3
7/17	374950	4702400	2.50	2	M											40					4									15					40				1	+	5	2	3
7/17	374900	4702400	2.40	1	S				5							50					5									35					2				3	+	6	2	4
7/17	374900	4702400	2.40	2	S				0.01							50					10									35									5	+	5	2	3
7/17	374850	4702400	2.10	1	S											45					10									30					15						4	2	2
7/17	374850	4702400	2.10	2	M		2				0.01					40					5									40					8				5		7	2	5
7/17	374800	4702400	2.00	1	M											25					3									65					5				2		5	2	3
7/17	374800	4702400	2.00	2	M				1							10					0.01									78					10				1		6	2	4
7/17	374750	4702400	1.60	1	T				5		1					75	1				5									10					2		1				8	2	6
7/17	374750	4702400	1.60	2	S		2		1		2					70					12									3					10						7	2	5
6/26	376600	4702450	0.60	1	T																					98				2											2	1	1
6/26	376600	4702450	0.60	2	T		5	1	10							10	3				1					30				38					2						9	3	6
6/26	376550	4702450	0.80	1	T		10	5								5	2				5					1				37					30				5		9	3	6
6/26	376550	4702450	0.80	2	T			1									1				1									45					45		5		2		7	1	6
6/26	376500	4702450	0.90	1	T			2								2	2				1									45					45				3		7	2	5
6/26	376500	4702450	0.90	2	T		10	25			2					3	2				2									20					33				3		9	2	7
6/26	376450	4702450	1.00	1	T			1																											99						2	0	2
6/26	376450	4702450	1.00	2	T			4	5							20					1									5					60				5		7	2	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	376400	4702450	1.30	1	T		9	1									1				2								1					85				2		6	1	5
6/26	376400	4702450	1.30	2	T			1													4													95						3	1	2
6/26	376350	4702450	1.30	1	T		20	4									1				1									1				69		2		2		8	1	7
6/26	376350	4702450	1.30	2	T			5																					70	2				23						4	0	4
6/26	376300	4702450	1.60	1	T			4									1													45				50					+	4	0	4
6/26	376300	4702450	1.60	2	T		24	15									5				20									20				15				1	+	7	1	6
6/26	376250	4702450	1.80	1	T											90														2				8					+	3	1	2
6/26	376250	4702450	1.80	2	T		5	1								15																		79					+	4	1	3
6/26	376200	4702450	2.10	1	T		30									29					1													40					+	4	2	2
6/26	376200	4702450	2.10	2	T																1													99					+	2	1	1
6/26	376150	4702450	2.50	1	T		5									17					1									2				75					+	5	2	3
6/26	376150	4702450	2.50	2	T		15		4												1													80					+	4	1	3
6/26	376100	4702450	2.60	1	T		50														1									35				14					+	4	1	3
6/26	376100	4702450	2.60	2	T		94														5									1									+	3	1	2
6/26	376050	4702450	2.60	1	T		10														1									4				85					+	4	1	3
6/26	376050	4702450	2.60	2	T		70	1	15												2									5				7					+	6	1	5
6/26	376000	4702450	2.80	1	T		45														2									3				50					+	4	1	3
6/26	376000	4702450	2.80	2	T		19														1													80					+	3	1	2
6/26	375950	4702450	2.70	1	T												1				89									5								5	+	4	1	3
6/26	375950	4702450	2.70	2	T		60														30									5								5	+	4	1	3
6/26	375900	4702450	2.70	1	T		25				15						1				30									20								9	+	6	1	5
6/26	375900	4702450	2.70	2	T		90														5					3								2					+	4	2	2
6/26	375850	4702450	2.70	1	T												5				95																			2	1	1
6/26	375850	4702450	2.70	2	T																100																			1	1	0
6/26	375800	4702450	2.60	1	T		98														2																			2	1	1
6/26	375800	4702450	2.60	2	T		90									3					6																		1	+	4	2	2
6/26	375750	4702450	2.60	1	T																100																			1	1	0
6/26	375750	4702450	2.60	2	T				80												10									8				2						4	1	3
6/26	375700	4702450	2.60	1	T																													100						1	0	1
6/26	375700	4702450	2.60	2	T											50					30									20										3	2	1
6/26	375650	4702450	2.50	1	T		60														37					2				1										4	2	2
6/26	375650	4702450	2.50	2	T		37				2										60									1										4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
6/26	375600	4702450	2.50	1	T																100																				1	1	0
6/26	375600	4702450	2.50	2	T		60														10									30												3	1	2
6/26	375550	4702450	2.50	1	T		70		20												2									8												4	1	3
6/26	375550	4702450	2.50	2	T		50														1					42				2					5						5	2	3
6/26	375500	4702450	2.30	1	T																									1					99						2	0	2
6/26	375500	4702450	2.30	2	T		5																												95						2	0	2
7/17	375450	4702450	2.50	1	T		40		10							3	1				2									43									1		7	2	5
7/17	375450	4702450	2.50	2	T		10		9												1					25				55					5						5	2	3
7/17	375400	4702450	2.70	1	T		75														10									15												3	1	2
7/17	375400	4702450	2.70	2	S		2		8												2					78				10												5	2	3
7/17	375350	4702450	2.30	1	T		20														30					5									45						4	2	2
7/17	375350	4702450	2.30	2	M		5														10					80				5												4	2	2
7/17	375300	4702450	2.00	1	T		20														45					10				25												4	2	2
7/17	375300	4702450	2.00	2	T																25									5					70						3	1	2
7/17	375250	4702450	2.20	1	T																90									10												2	1	1
7/17	375250	4702450	2.20	2	S												2				70					25				3												4	2	2
7/17	375200	4702450	2.40	1	M											4					24									2					70						4	2	2
7/17	375200	4702450	2.40	2	S																50									5					45						3	1	2
7/17	375150	4702450	2.40	1	S											15	0.01				60									5					20						5	2	3
7/17	375150	4702450	2.40	2	M				10							13					20									5					50				2		6	2	4
7/17	375100	4702450	2.50	1	T											20	2				6					1				70									1		6	3	3
7/17	375100	4702450	2.50	2	T																30									70												2	1	1
7/17	375050	4702450	2.50	1	M											1					0.01									96					3						4	2	2
7/17	375050	4702450	2.50	2	M				3												0.01									95					2						4	1	3
7/17	375000	4702450	2.50	1	S				10												5									70					15					+	4	1	3
7/17	375000	4702450	2.50	2	S				10												4									85					1					+	4	1	3
7/17	374950	4702450	2.60	1	S											20					3					22				55												4	3	1
7/17	374950	4702450	2.60	2	S											10					10					5				60					15						5	3	2
7/17	374900	4702450	2.50	1	S											20					18									2					60					+	4	2	2
7/17	374900	4702450	2.50	2	S											10					5					0.01				45					40					+	5	3	2
7/17	374850	4702450	2.40	1	S				2							58					10					5				20					5						6	3	3
7/17	374850	4702450	2.40	2	S				2							40					5									35					18				0.01		6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	374800	4702450	2.10	1	S						0.01					5					35		2							53								5		6	2	4
7/17	374800	4702450	2.10	2	S		7									3					10					15				65			0.01					0.01		7	3	4
7/17	374750	4702450	2.00	1	S		25		1		0.01					20					4									50										6	2	4
7/17	374750	4702450	2.00	2	T		9		15							10					1					35				30										6	3	3
7/3	376600	4702500	0.90	1	T			10									3				2									15					65			5		6	1	5
7/3	376600	4702500	0.90	2	T			7									2				1									50					30			10		6	1	5
7/3	376550	4702500	1.00	1	T		3	5								1	3				1									15					61		1	10		9	2	7
7/3	376550	4702500	1.00	2	T			3									1				2									20					60		2	12		7	1	6
7/3	376500	4702500	1.20	1	T		9	2									2				1									30					55			1		7	1	6
7/3	376500	4702500	1.20	2	T			3									5				1									45					40		1	5		7	1	6
7/3	376450	4702500	1.20	1	T		20	5									3				5									5					60			2		7	1	6
7/3	376450	4702500	1.20	2	T		2	10													3									2					76		5	2		7	1	6
7/3	376400	4702500	1.40	1	T																30														70					2	1	1
7/3	376400	4702500	1.40	2	T												5				5					30									60					4	2	2
7/3	376350	4702500	1.60	1	T																5														95					2	1	1
7/3	376350	4702500	1.60	2	T												1				5														93			1		4	1	3
7/3	376300	4702500	2.10	1	T											44					1														55				+	3	2	1
7/3	376300	4702500	2.10	2	T		5														2									8					85				+	4	1	3
7/3	376250	4702500	2.40	1	T											18					2														80					3	2	1
7/3	376250	4702500	2.40	2	T											25					5														70					3	2	1
7/3	376200	4702500	2.50	1	T											30					13									2					55				+	4	2	2
7/3	376200	4702500	2.50	2	T						10					9					10									1					70				+	5	2	3
7/3	376150	4702500	2.80	1	T																1														99					2	1	1
7/3	376150	4702500	2.80	2	T																5														95					2	1	1
7/3	376100	4702500	3.00	1	T																3														95			2	+	3	1	2
7/3	376100	4702500	3.00	2	T																14														85			1	+	3	1	2
7/3	376050	4702500	3.00	1	T																40									35					25				+	3	1	2
7/3	376050	4702500	3.00	2	T		50														30									20									+	3	1	2
7/3	376000	4702500	3.00	1	T		75														5									10					10				+	4	1	3
7/3	376000	4702500	3.00	2	T																40									50					10				+	3	1	2
7/3	375950	4702500	3.00	1	T		30														70																		+	2	1	1
7/3	375950	4702500	3.00	2	T		12														2									1					85				+	4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	375900	4702500	3.00	1	T		90														4									1					5					+	4	1	3
7/3	375900	4702500	3.00	2	T		80														10									10										+	3	1	2
7/3	375850	4702500	3.00	1	T		45									10					4									1					40					+	5	2	3
7/3	375850	4702500	3.00	2	T		15														1					2									82					+	4	2	2
7/3	375800	4702500	3.00	1	T																90									10										+	2	1	1
7/3	375800	4702500	3.00	2	T		98														2																			+	2	1	1
7/3	375750	4702500	2.90	1	T																90																		10	+	2	1	1
7/3	375750	4702500	2.90	2	T				45												50														5					+	3	1	2
7/3	375700	4702500	2.80	1	T																100																				1	1	0
7/3	375700	4702500	2.80	2	T				70												30																				2	1	1
7/3	375650	4702500	2.80	1	T																100																			+	1	1	0
7/3	375650	4702500	2.80	2	T																100																			+	1	1	0
7/3	375600	4702500	2.70	1	T																99									1											2	1	1
7/3	375600	4702500	2.70	2	T		30														50					10				10											4	2	2
7/3	375550	4702500	2.50	1	T				20												50									30											3	1	2
7/3	375550	4702500	2.50	2	T																93					5				2											3	2	1
7/3	375500	4702500	2.50	1	T		90														2									8											3	1	2
7/3	375500	4702500	2.50	2	T		80		2												1					10				7											5	2	3
7/17	375450	4702500	2.50	1	S		3		5												1					50				40									1		6	2	4
7/17	375450	4702500	2.50	2	T		13		45							1					1									40											5	2	3
7/17	375400	4702500	2.50	1	M		10		5												5					2				73					5						6	2	4
7/17	375400	4702500	2.50	2	M		5		0.01							2					3									30					60						6	2	4
7/17	375350	4702500	2.10	1	S		5		3												22									0.01					70						5	1	4
7/17	375350	4702500	2.10	2	M		0.01		1												4														95						4	1	3
7/17	375300	4702500	2.10	1	S		3		3							5					30									1					58						6	2	4
7/17	375300	4702500	2.10	2	S		25														5														70						3	1	2
7/17	375250	4702500	2.20	1	T											25					65									10											3	2	1
7/17	375250	4702500	2.20	2	T											9					90									1											3	2	1
7/17	375200	4702500	2.40	1	S											2	0.01				30					0.01				0.01					68						6	3	3
7/17	375200	4702500	2.40	2	S											8					40									2					50						4	2	2
7/17	375150	4702500	2.50	1	S											25	1				35									3					35				1		6	2	4
7/17	375150	4702500	2.50	2	S				3							15	0.01				50									12					20						6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/17	375100	4702500	2.50	1	M				0.01							2					0.01					8				45					45						6	3	3
7/17	375100	4702500	2.50	2	S		3		2							35					10									50											5	2	3
7/17	375050	4702500	2.60	1	S											5					3									67					25					+	4	2	2
7/17	375050	4702500	2.60	2	S		3									5					2					2				88										+	5	3	2
7/17	375000	4702500	2.60	1	S				3							2					5									90											4	2	2
7/17	375000	4702500	2.60	2	S				5												5									90											3	1	2
7/17	374950	4702500	2.70	1	S		10									1					9									65					15					+	5	2	3
7/17	374950	4702500	2.70	2	S				2							2					2									34					60					+	5	2	3
7/18	374900	4702500	2.50	1	S											20					60					5				15										+	4	3	1
7/18	374900	4702500	2.50	2	S		5									40					35					5				10					5					+	6	3	3
7/18	374850	4702500	2.50	1	S				0.01							40					25									5					30					+	5	2	3
7/18	374850	4702500	2.50	2	S		5		10		0.01					45					30					0.01				10									0.01	+	8	3	5
7/18	374800	4702500	2.40	1	S			0.01								5					35					5		2		48					5						7	3	4
7/18	374800	4702500	2.40	2	T			2								5	1				40					2		2		5					42				1		9	3	6
7/18	374750	4702500	2.20	1	T			1	6												20							3		70										+	5	1	4
7/18	374750	4702500	2.20	2	T																17					2				80									1	+	4	2	2
7/18	374700	4702500	1.80	1	T		40									45										10		3		2											5	2	3
7/18	374700	4702500	1.80	2	T		50		11		1					2					1							2		30									3		8	2	6
7/3	376600	4702550	0.90	1	T		3	10									2				1									10					66		3		5		8	1	7
7/3	376600	4702550	0.90	2	T			5									4				1									25					50				15		6	1	5
7/3	376550	4702550	1.20	1	T			10									5				10									10					55				10		6	1	5
7/3	376550	4702550	1.20	2	T		30	30													5									10					25						5	1	4
7/3	376500	4702550	1.30	1	T		1	3													1														85		8		2		6	1	5
7/3	376500	4702550	1.30	2	T			2													5					1				42					40		10				6	2	4
7/3	376450	4702550	1.60	1	T			85																						5					10					+	3	0	3
7/3	376450	4702550	1.60	2	T			90									5																		5					+	3	0	3
7/3	376400	4702550	2.00	1	T			2								15														8					75					+	4	1	3
7/3	376400	4702550	2.00	2	T			5									2				3														90					+	4	1	3
7/3	376350	4702550	2.30	1	T											9					15									1					75					+	4	2	2
7/3	376350	4702550	2.30	2	T											14					25									1					60					+	4	2	2
7/3	376300	4702550	2.50	1	T											40	1				19									20					20					+	5	2	3
7/3	376300	4702550	2.50	2	T		15									45					5														35					+	4	2	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	376250	4702550	2.60	1	T		2									6					5									2					83				2		6	2	4
7/3	376250	4702550	2.60	2	T		35														50									10									5		4	1	3
7/3	376200	4702550	2.70	1	T																55									5					40					+	3	1	2
7/3	376200	4702550	2.70	2	T																3									1					96					+	3	1	2
7/3	376150	4702550	3.00	1	S		9														2									3					85				1	+	5	1	4
7/3	376150	4702550	3.00	2	S		12														2									1					85					+	4	1	3
7/3	376100	4702550	3.00	1	T		35														10									25					30					+	4	1	3
7/3	376100	4702550	3.00	2	T		20														2									5					73					+	4	1	3
7/3	376050	4702550	3.10	1	T		12														1									2					85					+	4	1	3
7/3	376050	4702550	3.10	2	S		2		2																					2					94					+	4	0	4
7/3	376000	4702550	3.20	1	T				30																										70					+	2	0	2
7/3	376000	4702550	3.20	2	T		35														5									10					50					+	4	1	3
7/3	375950	4702550	3.10	1	T		13		1												1														85					+	4	1	3
7/3	375950	4702550	3.10	2	T		60														2														37				1	+	4	1	3
7/3	375900	4702550	3.10	1	T		35														35									30										+	3	1	2
7/3	375900	4702550	3.10	2	T																30									20					50					+	3	1	2
7/3	375850	4702550	3.10	1	T		55														20									15					1				9	+	5	1	4
7/3	375850	4702550	3.10	2	T		85														10									5										+	3	1	2
7/3	375800	4702550	3.00	1	T																5														95						2	1	1
7/3	375800	4702550	3.00	2	T		64														15									10					1				10	+	5	1	4
7/3	375750	4702550	2.80	1	T																2														98						2	1	1
7/3	375750	4702550	2.80	2	T				30												70																			+	2	1	1
7/3	375700	4702550	2.90	1	T		78									15					5									2											4	2	2
7/3	375700	4702550	2.90	2	T																100																				1	1	0
7/3	375650	4702550	3.00	1	T																40					60														+	2	2	0
7/3	375650	4702550	3.00	2	T				20												80																				+	2	1	1
7/3	375600	4702550	2.70	1	T		34														65									1										+	3	1	2
7/3	375600	4702550	2.70	2	T				15												70									15										+	3	1	2
7/3	375550	4702550	2.60	1	T																100																				1	1	0
7/3	375550	4702550	2.60	2	T		45														10					40				5											4	2	2
7/3	375500	4702550	2.50	1	T		60														1									39											3	1	2
7/3	375500	4702550	2.50	2	T		49														1							45		5											4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375450	4702550	2.50	1	T		1																						19					80						3	0	3
7/18	375450	4702550	2.50	2	S																								0.01					100						2	0	2
7/18	375400	4702550	2.50	1	T		7		2												75							15		1											5	1	4
7/18	375400	4702550	2.50	2	S		40														40							20		0.01									0.01		5	1	4
7/18	375350	4702550	2.50	1	S		5		3												77					3		10		2											6	2	4
7/18	375350	4702550	2.50	2	S	0.01	1									2					72							10		15				0.01							7	2	5
7/18	375300	4702550	2.10	1	T		20														50									29				1							4	1	3
7/18	375300	4702550	2.10	2	S		7		1							2	0.01				35									10				45							7	2	5
7/18	375250	4702550	2.30	1	T																									10				90							2	0	2
7/18	375250	4702550	2.30	2	S				1												75					24				0.01											4	2	2
7/18	375200	4702550	2.50	1	T				2												30									1				67							4	1	3
7/18	375200	4702550	2.50	2	T											24					75									1											3	2	1
7/18	375150	4702550	2.50	1	S																14							1						85				0.01		4	1	3
7/18	375150	4702550	2.50	2	M																8									2				90							3	1	2
7/18	375100	4702550	2.60	1	M											0.01					5									10				85				0.01		5	2	3
7/18	375100	4702550	2.60	2	M																1									10				89						3	1	2
7/18	375050	4702550	2.60	1	S		0.01									50					4									35				10				1	+	6	2	4
7/18	375050	4702550	2.60	2	T																20									65				14				1		4	1	3
7/18	375000	4702550	2.70	1	T		5		15												30							2		45								3	+	6	1	5
7/18	375000	4702550	2.70	2	T				14												25									60								1		4	1	3
7/18	374950	4702550	2.80	1	T											5					3							2		90										4	2	2
7/18	374950	4702550	2.80	2	S				5							2					15					3				74								1		6	3	3
7/18	374900	4702550	2.70	1	S		2									10					40					8		0.01		10				30					+	7	3	4
7/18	374900	4702550	2.70	2	T																40					30		2		25				3					+	5	2	3
7/18	374850	4702550	2.60	1	M		3		2							65					5					3		10		10				2						8	3	5
7/18	374850	4702550	2.60	2	M		3		3							30					2					3		20		25				14						8	3	5
7/18	374800	4702550	2.50	1	S											30					20							5		15				30						5	2	3
7/18	374800	4702550	2.50	2	S				0.01							40					5					39		3		10				3				0.01		8	3	5
7/18	374750	4702550	2.40	1	S		3		2							1					10					44		5		15				20				0.01	+	9	3	6
7/18	374750	4702550	2.40	2	S											3					10							2		30				55					+	5	2	3
7/18	374700	4702550	2.10	1	M		5	0.01	3							5					10					10		2		55								10		9	3	6
7/18	374700	4702550	2.10	2	S				1							5					25							2		62								5		6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	376600	4702600	1.10	1	T			26									2				2									70										+	4	1	3
7/3	376600	4702600	1.10	2	T			5									5													80					10						4	0	4
7/3	376550	4702600	1.30	1	T			80									8				10														2						4	1	3
7/3	376550	4702600	1.30	2	T			45									1				5														48				1		5	1	4
7/3	376500	4702600	1.60	1	T		55	42									2													1									+	4	0	4
7/3	376500	4702600	1.60	2	T			97									2																		1					+	3	0	3
7/3	376450	4702600	2.00	1	T																100																			+	1	1	0
7/3	376450	4702600	2.00	2	T				20												20														60					+	3	1	2
7/3	376400	4702600	2.20	1	T											18					2														80						3	2	1
7/3	376400	4702600	2.20	2	T		10									45					15									5					25						5	2	3
7/3	376350	4702600	2.50	1	T				2							60					1									1					36					+	5	2	3
7/3	376350	4702600	2.50	2	T											60					5														35					+	3	2	1
7/3	376300	4702600	2.60	1	T		5									10					5									5					75					+	5	2	3
7/3	376300	4702600	2.60	2	T											70					10									10					10					+	4	2	2
7/3	376250	4702600	3.00	1	S		15									25					0.01									0.01					60					+	5	2	3
7/3	376250	4702600	3.00	2	S		5									5																		90					+	3	1	2
7/3	376200	4702600	3.10	1	T																5									25					70						3	1	2
7/3	376200	4702600	3.10	2	T		5										4				2									1					88						5	1	4
7/3	376150	4702600	3.10	1	S		10									30					0.01									0.01					60						5	2	3
7/3	376150	4702600	3.10	2	T		80														13									3					2				2		5	1	4
7/3	376100	4702600	3.20	1	T																60														40					+	2	1	1
7/3	376100	4702600	3.20	2	T																29														70				1	+	3	1	2
7/3	376050	4702600	3.30	1	T		14														1									2					83					+	4	1	3
7/3	376050	4702600	3.30	2	T																1														99					+	2	1	1
7/3	376000	4702600	3.30	1	T		85														14									1										+	3	1	2
7/3	376000	4702600	3.30	2	T		1														30									69										+	3	1	2
7/3	375950	4702600	3.30	1	T		95														5																			+	2	1	1
7/3	375950	4702600	3.30	2	T		18														2														80					+	3	1	2
7/3	375900	4702600	3.40	1	T		40		30												10									20										+	4	1	3
7/3	375900	4702600	3.40	2	T		40										1				3														56					+	4	1	3
7/3	375850	4702600	3.30	1	T		29														1														70						3	1	2
7/3	375850	4702600	3.30	2	T																1									1					98						3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	375800	4702600	3.30	1	T																2									3					95						3	1	2
7/3	375800	4702600	3.30	2	T																1														99						2	1	1
7/3	375750	4702600	3.20	1	T		76		1												5									3					15					+	5	1	4
7/3	375750	4702600	3.20	2	T		70														15									15										+	3	1	2
7/3	375700	4702600	3.10	1	T																							100												1	0	1
7/3	375700	4702600	3.10	2	T		99														1																				2	1	1
7/3	375650	4702600	3.00	1	T		99														1																				2	1	1
7/3	375650	4702600	3.00	2	T		99														1																				2	1	1
7/3	375600	4702600	3.00	1	T																100																				1	1	0
7/3	375600	4702600	3.00	2	T		30									29					1														40						4	2	2
7/3	375550	4702600	2.70	1	S		50		1							47					0.01									2										5	2	3
7/3	375550	4702600	2.70	2	S		90														0.01					10				0.01										4	2	2
7/3	375500	4702600	2.70	1	T		95														5																				2	1	1
7/3	375500	4702600	2.70	2	T		60														30									10											3	1	2
7/18	375450	4702600	2.60	1	M																									0.01					100						2	0	2
7/18	375450	4702600	2.60	2	S				14												0.01							1		0.01					85						5	1	4
7/18	375400	4702600	2.60	1	M		2		0.01							8					10							0.01		0.01					80						7	2	5
7/18	375400	4702600	2.60	2	M		10									5					22									3					60						5	2	3
7/18	375350	4702600	2.50	1	S		20									10					55					10		5		0.01										6	3	3
7/18	375350	4702600	2.50	2	M											2					40							2		11					45						5	2	3
7/18	375300	4702600	2.50	1	T		5		5								1				70					2		5		10									2		8	2	6
7/18	375300	4702600	2.50	2	T		10		9							10					60							1		10											6	2	4
7/18	375250	4702600	2.50	1	T											10	5		5		75									5											5	3	2
7/18	375250	4702600	2.50	2	T		5		20							10	1				60							2		2											7	2	5
7/18	375200	4702600	2.60	1	T											1					95									4											3	2	1
7/18	375200	4702600	2.60	2	T											30					2					12				1					55						5	3	2
7/18	375150	4702600	2.70	1	M				3							3					9									0.01					85						5	2	3
7/18	375150	4702600	2.70	2	M		2									15					15					10		3		0.01					55						7	3	4
7/18	375100	4702600	2.80	1	M																1									39					60				0.01	+	4	1	3
7/18	375100	4702600	2.80	2	S																30							10		20					40				0.01	+	5	1	4
7/18	375050	4702600	2.80	1	M				3												3									85					6				3		5	1	4
7/18	375050	4702600	2.80	2	M																5					2				93									0.01		4	2	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375000	4702600	2.80	1	T				20							5					5					2				68											5	3	2
7/18	375000	4702600	2.80	2	T		3									5					50							7		35											5	2	3
7/18	374950	4702600	2.90	1	S				2												15					13				35					35						5	2	3
7/18	374950	4702600	2.90	2	M		0.01		15							0.01					10					5				25					45						7	3	4
7/18	374900	4702600	2.90	1	M				2		0.01					68					3					15		0.01		10					2						8	3	5
7/18	374900	4702600	2.90	2	M											45					5					40				10									0.01		5	3	2
7/18	374850	4702600	2.80	1	S											60					30									10										+	3	2	1
7/18	374850	4702600	2.80	2	M				5							73					10					7		0.01		5					0.01					+	7	3	4
7/18	374800	4702600	2.70	1	M		10				0.01					40					10					10		0.01		15					15						8	3	5
7/18	374800	4702600	2.70	2	M		0.01		0.01							55					10									25					10						6	2	4
7/18	374750	4702600	2.60	1	M				8		0.01					30					15							0.01		15					30				2		8	2	6
7/18	374750	4702600	2.60	2	M		2		5		0.01					40					5									10					38						7	2	5
7/18	374700	4702600	2.30	1	T																1									70					29						3	1	2
7/18	374700	4702600	2.30	2	S				3							1					24					5		2		50					15				0.01	+	8	3	5
7/18	374650	4702600	2.00	1	S		2		7		0.01					10	1													70					10		0.01			+	8	1	7
7/18	374650	4702600	2.00	2	S		10		2							61	1				5							1		10					5		1		4	+	10	2	8
7/3	376600	4702650	1.20	1	T			2								15	1				2														80						5	2	3
7/3	376600	4702650	1.20	2	T			1																											99						2	0	2
7/3	376550	4702650	1.60	1	T			20													55														5		20			+	4	1	3
7/3	376550	4702650	1.60	2	T			10													5									5					75		5			+	5	1	4
7/3	376500	4702650	2.10	1	T											50					15									5					30					+	4	2	2
7/3	376500	4702650	2.10	2	T											40					4									1					55					+	4	2	2
7/3	376450	4702650	2.50	1	T		2									13					1									1					83					+	5	2	3
7/3	376450	4702650	2.50	2	T		5									26					3									1					65					+	5	2	3
7/3	376400	4702650	2.60	1	T		2									95					1									2										+	4	2	2
7/3	376400	4702650	2.60	2	T											5					20									5					70					+	4	2	2
7/3	376350	4702650	2.70	1	T		10									3					5									2					80					+	5	2	3
7/3	376350	4702650	2.70	2	T		20														5									5					70					+	4	1	3
7/3	376300	4702650	2.80	1	T		9														1														90						3	1	2
7/3	376300	4702650	2.80	2	T		5									20					55									3					17					+	5	2	3
7/3	376250	4702650	3.00	1	T																5														95					+	2	1	1
7/3	376250	4702650	3.00	2	T		5									5					20														70					+	4	2	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	376200	4702650	3.20	1	T		30									4					10					55													1	+	5	3	2
7/3	376200	4702650	3.20	2	T		5														10														85					+	3	1	2
7/3	376150	4702650	3.30	1	T											4					10					1				3				80				2	+	6	3	3
7/3	376150	4702650	3.30	2	T		50														1													49					+	3	1	2
7/3	376100	4702650	3.30	1	T																5									5				90					+	3	1	2
7/3	376100	4702650	3.30	2	T		8														2													90					+	3	1	2
7/3	376050	4702650	3.50	1	T		85														5									5								5	+	4	1	3
7/3	376050	4702650	3.50	2	T		60																											40					+	2	0	2
7/3	376000	4702650	3.50	1	T		50														40									5								5	+	4	1	3
7/3	376000	4702650	3.50	2	T		55		20												5									20									+	4	1	3
7/3	375950	4702650	3.50	1	T				80												19													1					+	3	1	2
7/3	375950	4702650	3.50	2	T		55		10		3										2									5				25					+	6	1	5
7/3	375900	4702650	3.50	1	T		50														30									18				1				1		5	1	4
7/3	375900	4702650	3.50	2	T		50		2		5										5					30				5				3						7	2	5
7/3	375850	4702650	3.50	1	T																35					20				5				40						4	2	2
7/3	375850	4702650	3.50	2	T		45														2					20				13				20						5	2	3
7/3	375800	4702650	3.50	1	T		50		15												20									2				13					+	5	1	4
7/3	375800	4702650	3.50	2	T		75														20									5									+	3	1	2
7/3	375750	4702650	3.50	1	T		40		2												52									3				3					+	5	1	4
7/3	375750	4702650	3.50	2	T		10		15							20					50					3								2					+	6	3	3
7/3	375700	4702650	3.40	1	T				5												15													80					+	3	1	2
7/3	375700	4702650	3.40	2	T		20														10													70					+	3	1	2
7/3	375650	4702650	3.30	1	O																																			0	0	0
7/3	375650	4702650	3.30	2	T		2			1						7																		90						4	1	3
7/3	375600	4702650	3.50	1	T		45									55																								2	1	1
7/3	375600	4702650	3.50	2	T		55									45																								2	1	1
7/3	375550	4702650	3.00	1	T		85		4							10					1																			4	2	2
7/3	375550	4702650	3.00	2	T		97														3																			2	1	1
7/3	375500	4702650	2.80	1	T		25									5					2									8				60						5	2	3
7/3	375500	4702650	2.80	2	T																20									45				35						3	1	2
7/19	375450	4702650	2.60	1	S		10														0.01									5				85						4	1	3
7/19	375450	4702650	2.60	2	S		10		0.01												0.01					15								75						5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	375400	4702650	2.60	1	T		5		3												75									17												4	1	3
7/19	375400	4702650	2.60	2	M	1	5		0.01							0.01					15									2					77							7	2	5
7/19	375350	4702650	2.50	1	S		10		2							10					55					5		10		5					3						8	3	5
7/19	375350	4702650	2.50	2	S	0.01	8		5							0.01					70							0.01		15					2						8	2	6
7/19	375300	4702650	2.50	1	T		20														70							5		5											4	1	3
7/19	375300	4702650	2.50	2	T											65					10									15									10		4	2	2
7/19	375250	4702650	2.50	1	T				5												65									5									25		4	1	3
7/19	375250	4702650	2.50	2	T		10		3								1				81							3		2											6	1	5
7/19	375200	4702650	2.70	1	T				8												2					20									70						4	2	2
7/19	375200	4702650	2.70	2	T											5					70					10		1		10					3				1		7	3	4
7/19	375150	4702650	2.80	1	S											1					13									0.01					85				1		5	2	3
7/19	375150	4702650	2.80	2	S																30														70						2	1	1
7/19	375100	4702650	2.80	1	S																80							2		15									3		4	1	3
7/19	375100	4702650	2.80	2	S																30							0.01		10					58				2		5	1	4
7/19	375050	4702650	2.90	1	S											1					2							0.01		60					37				0.01		6	2	4
7/19	375050	4702650	2.90	2	S											4					5							0.01		90					1						5	2	3
7/19	375000	4702650	3.00	1	M		5														15									75									5		4	1	3
7/19	375000	4702650	3.00	2	S		3														25									67									5		4	1	3
7/19	374950	4702650	3.00	1	M				8												10					15		2		65											5	2	3
7/19	374950	4702650	3.00	2	S				10												10					20		1		59									0.01		6	2	4
7/19	374900	4702650	3.00	1	M		4									6					30					15				35					10						6	3	3
7/19	374900	4702650	3.00	2	M		2		1							1					15					11				30					40						7	3	4
7/18	374850	4702650	2.70	1	S											35					35									15					15						4	2	2
7/18	374850	4702650	2.70	2	M		2		3							60					3					20				2					10						7	3	4
7/18	374800	4702650	2.80	1	M		3		5							45					10					30		2		1					4						8	3	5
7/18	374800	4702650	2.80	2	M		2		3							50					10					5				10					20						7	3	4
7/18	374750	4702650	2.60	1	M											10					10					2		5		2			1		70						7	3	4
7/18	374750	4702650	2.60	2	S																30									70											2	1	1
7/18	374700	4702650	2.40	1	M		5		5							20					20					5				45											6	3	3
7/18	374700	4702650	2.40	2	M		10		0.01							50					15					10				10					5				0.01	+	8	3	5
7/18	374650	4702650	2.00	1	S		5									1					5					2		5		82											6	3	3
7/18	374650	4702650	2.00	2	S		5		10												15							4		64									2		6	1	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	376600	4702700	1.50	1	T		14														1														85					+	3	1	2
7/3	376600	4702700	1.50	2	T												15				20									25					20		20			+	5	1	4
7/3	376550	4702700	2.00	1	T											40					55									5										+	3	2	1
7/3	376550	4702700	2.00	2	T		15									15					5									4					60				1	+	6	2	4
7/3	376500	4702700	2.40	1	T		5									35					35									5					20					+	5	2	3
7/3	376500	4702700	2.40	2	T		10									40					8									2					40					+	5	2	3
7/3	376450	4702700	2.50	1	T		12		3							3					10					1				1					70					+	7	3	4
7/3	376450	4702700	2.50	2	T																18									2					80					+	3	1	2
7/3	376400	4702700	2.80	1	T		13																							2					85					+	3	0	3
7/3	376400	4702700	2.80	2	T		25														20									4					50				1	+	5	1	4
7/3	376350	4702700	3.00	1	T																10									5					83				2	+	4	1	3
7/3	376350	4702700	3.00	2	T																2									5					91				2	+	4	1	3
7/3	376300	4702700	3.00	1	T																28					1				1					70					+	4	2	2
7/3	376300	4702700	3.00	2	T		30														50									1					18				1	+	5	1	4
7/3	376250	4702700	3.10	1	T																20														80					+	2	1	1
7/3	376250	4702700	3.10	2	T																5														95					+	2	1	1
7/3	376200	4702700	3.20	1	T		35														15									10					40					+	4	1	3
7/3	376200	4702700	3.20	2	T		18									2					20														60					+	4	2	2
7/3	376150	4702700	3.40	1	T		70														15									10					3				2	+	5	1	4
7/3	376150	4702700	3.40	2	T		10		5												15					30				3					37					+	6	2	4
7/3	376100	4702700	3.50	1	T																90									5									5	+	3	1	2
7/3	376100	4702700	3.50	2	T		50														5					40				5										+	4	2	2
7/3	376050	4702700	3.50	1	T		45														35									15									5	+	4	1	3
7/3	376050	4702700	3.50	2	T		55		10							10					15									10										+	5	2	3
7/3	376000	4702700	3.50	1	T																100																			+	1	1	0
7/3	376000	4702700	3.50	2	T		65														2									20					13					+	4	1	3
7/3	375950	4702700	3.60	1	T		70														20									10										+	3	1	2
7/3	375950	4702700	3.60	2	T		30														35									35										+	3	1	2
7/3	375900	4702700	3.60	1	T		65		25												8									2										+	4	1	3
7/3	375900	4702700	3.60	2	T		35									26					1					35				3										+	5	3	2
7/3	375850	4702700	3.70	1	T		85									5					5									5										+	4	2	2
7/3	375850	4702700	3.70	2	T		80														5									15										+	3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	375800	4702700	3.50	1	T		65														30									5										+	3	1	2
7/3	375800	4702700	3.50	2	T		65														35																			+	2	1	1
7/3	375750	4702700	3.50	1	T		70														22					3				4					1				+	5	2	3
7/3	375750	4702700	3.50	2	T		40														10														50					+	3	1	2
7/3	375700	4702700	3.50	1	T		28														2														70						3	1	2
7/3	375700	4702700	3.50	2	T																														100						1	0	1
7/3	375650	4702700	3.50	1	T		99														1																				2	1	1
7/3	375650	4702700	3.50	2	T		86														10									2					2						4	1	3
7/3	375600	4702700	3.30	1	T		65									35																								2	1	1
7/3	375600	4702700	3.30	2	T		95									5																								2	1	1
7/3	375550	4702700	3.20	1	T		5		85												10																			+	3	1	2
7/3	375550	4702700	3.20	2	T		65				10										20									5										+	4	1	3
7/3	375500	4702700	3.00	1	T				18												2														80						3	1	2
7/3	375500	4702700	3.00	2	T		27														1									2					70						4	1	3
7/19	375450	4702700	2.80	1	S		40									20					20							10		10										5	2	3
7/19	375450	4702700	2.80	2	T		15														15					9		15		1					45						6	2	4
7/19	375400	4702700	2.80	1	M				2												65					10		15		1					7				0.01		7	2	5
7/19	375400	4702700	2.80	2	S		10		1										0.01		65					4		10		10											7	3	4
7/19	375350	4702700	2.70	1	M		5														5					0.01		0.01							90						5	2	3
7/19	375350	4702700	2.70	2	M		1																					0.01							99						3	0	3
7/19	375300	4702700	2.70	1	S																30									0.01					70						3	1	2
7/19	375300	4702700	2.70	2	S																30							0.01		5					65						4	1	3
7/19	375250	4702700	2.70	1	T				14												80							1		5											4	1	3
7/19	375250	4702700	2.70	2	T											10					80					5		5													4	3	1
7/19	375200	4702700	2.80	1	S																58														40				2		3	1	2
7/19	375200	4702700	2.80	2	S																13									2					85				0.01		4	1	3
7/19	375150	4702700	2.90	1	S				4												85									0.01					1				10		5	1	4
7/19	375150	4702700	2.90	2	M											1					40							0.01							59				0.01		5	2	3
7/19	375100	4702700	2.90	1	S				1												20							60		0.01					14				5		6	1	5
7/19	375100	4702700	2.90	2	M																5							5		2					85				3		5	1	4
7/19	375050	4702700	3.00	1	S											5					15							2		70					2				6		6	2	4
7/19	375050	4702700	3.00	2	M																5					5		0.01		45					45				0.01		6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	375000	4702700	3.00	1	M																5					65		2		27					0.01				1		6	2	4
7/19	375000	4702700	3.00	2	M		2		5												13					0.01		0.01		60					20				0.01		8	2	6
7/19	374950	4702700	3.00	1	S		1		7												10							2							80						5	1	4
7/19	374950	4702700	3.00	2	T																45							3		50									2		4	1	3
7/19	374900	4702700	3.00	1	S																35														65						2	1	1
7/19	374900	4702700	3.00	2	M		2		5							5										30				58										5	2	3
7/19	374850	4702700	3.00	1	M		2		5							56					15					15		2		2				3						8	3	5
7/19	374850	4702700	3.00	2	M		1		5							61					15					10		2		5			0.01	1						9	3	6
7/19	374800	4702700	2.90	1	M		2		3							30					42					15		5		0.01				3						8	3	5
7/19	374800	4702700	2.90	2	S		5		10							50					33					0.01				2										6	3	3
7/19	374750	4702700	2.70	1	S											50					30													20		0.01				4	2	2
7/19	374750	4702700	2.70	2	T		10									5					76					2		1		1				5						7	3	4
7/19	374700	4702700	2.50	1	M						1					72					15							1		1				10						6	2	4
7/19	374700	4702700	2.50	2	M		2		2							35					5							0.01		2				54		0.01				8	2	6
7/19	374650	4702700	2.30	1	M				2							2					6					10		0.01		70				10		0.01		0.01		9	3	6
7/19	374650	4702700	2.30	2	M		1		5							4										2				50				38						6	2	4
7/19	374600	4702700	1.00	1	S		10		0.01							5										4		0.01		75				1		5			+	8	2	6
7/19	374600	4702700	1.00	2	S		5		55							1										25		0.01		11						3				7	2	5
7/3	376600	4702750	1.70	1	T		70														20									10									+	3	1	2
7/3	376600	4702750	1.70	2	T																100																		+	1	1	0
7/3	376550	4702750	2.10	1	T											15					10									15				60					+	4	2	2
7/3	376550	4702750	2.10	2	T		45									5	2				40									7				1					+	6	2	4
7/3	376500	4702750	2.50	1	T		60		1							10					5					10				2				12					+	7	3	4
7/3	376500	4702750	2.50	2	T		60		10							15					10									5									+	5	2	3
7/3	376450	4702750	2.80	1	T		45									3					2									5				45					+	5	2	3
7/3	376450	4702750	2.80	2	T		45									35	1				5									4				10					+	6	2	4
7/3	376400	4702750	3.00	1	S																5									2				93					+	3	1	2
7/3	376400	4702750	3.00	2	S		3														0.01					2				0.01				95					+	5	2	3
7/3	376350	4702750	3.00	1	T		8									1					10									1				80					+	5	2	3
7/3	376350	4702750	3.00	2	T																20					65				10				5					+	4	2	2
7/3	376300	4702750	3.10	1	T																80									20									+	2	1	1
7/3	376300	4702750	3.10	2	T		50														40									10									+	3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	376250	4702750	3.20	1	T		30														60									10										+	3	1	2
7/3	376250	4702750	3.20	2	T		20														60									3									17	+	4	1	3
7/3	376200	4702750	3.40	1	T																50									50											2	1	1
7/3	376200	4702750	3.40	2	T		50														35									5									10	+	4	1	3
7/3	376150	4702750	3.50	1	T																20														80						2	1	1
7/3	376150	4702750	3.50	2	T		20														5									5					70						4	1	3
7/3	376100	4702750	3.50	1	T		25														60									15										+	3	1	2
7/3	376100	4702750	3.50	2	T		54		30												15									1										+	4	1	3
7/3	376050	4702750	3.70	1	T		33														1									1					65					+	4	1	3
7/3	376050	4702750	3.70	2	T		80														5									15										+	3	1	2
7/3	376000	4702750	3.70	1	T																15									80									5		3	1	2
7/3	376000	4702750	3.70	2	T		85														1									14											3	1	2
7/3	375950	4702750	3.70	1	T		90														2									8										+	3	1	2
7/3	375950	4702750	3.70	2	T		85		10												1									3									1	+	5	1	4
7/3	375900	4702750	3.70	1	T		65														2						33													+	3	1	2
7/3	375900	4702750	3.70	2	T		75									15					10																			+	3	2	1
7/3	375850	4702750	3.70	1	T		75														5									20										+	3	1	2
7/3	375850	4702750	3.70	2	T		45														40									15										+	3	1	2
7/3	375800	4702750	3.70	1	T		95														5																			+	2	1	1
7/3	375800	4702750	3.70	2	T																45									35									20	+	3	1	2
7/3	375750	4702750	3.70	1	T		35														50									15										+	3	1	2
7/3	375750	4702750	3.70	2	T		28														35									2					35					+	4	1	3
7/3	375700	4702750	3.60	1	T		50														5									2					43					+	4	1	3
7/3	375700	4702750	3.60	2	T		30														40									2					28					+	4	1	3
7/3	375650	4702750	3.60	1	T		75														15									5					5					+	4	1	3
7/3	375650	4702750	3.60	2	T		30														5									5					60					+	4	1	3
7/3	375600	4702750	3.50	1	T		45														30									5					20					+	4	1	3
7/3	375600	4702750	3.50	2	T		49		10												10									5					25				1	+	6	1	5
7/3	375550	4702750	3.50	1	T		33														65									2										+	3	1	2
7/3	375550	4702750	3.50	2	T				5												65									30										+	3	1	2
7/3	375500	4702750	3.10	1	T		50		10												30									10										+	4	1	3
7/3	375500	4702750	3.10	2	T		50														25									25										+	3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	375450	4702750	3.00	1	M		2		0.01												8					0.01		0.01		0.01					90						7	2	5
7/19	375450	4702750	3.00	2	S				0.01												10					2				8					80						5	2	3
7/19	375400	4702750	2.90	1	S		4									1					45									50											4	2	2
7/19	375400	4702750	2.90	2	S		15														60							1		15					9						5	1	4
7/19	375350	4702750	2.90	1	S		1														40					24				35											4	2	2
7/19	375350	4702750	2.90	2	S		3														50					30				17											4	2	2
7/19	375300	4702750	2.90	1	T																25									40					15				20		4	1	3
7/19	375300	4702750	2.90	2	M											2					5														93						3	2	1
7/19	375250	4702750	2.90	1	M																10							5		15					70						4	1	3
7/19	375250	4702750	2.90	2	M																5									5					90						3	1	2
7/19	375200	4702750	3.00	1	T																77					10				1					10				2		5	2	3
7/19	375200	4702750	3.00	2	T				2												70					2				5					20				1		6	2	4
7/19	375150	4702750	3.00	1	S																37									0.01					60				3		4	1	3
7/19	375150	4702750	3.00	2	S																70					15				5					10						4	2	2
7/19	375100	4702750	3.10	1	T																43									2									55		3	1	2
7/19	375100	4702750	3.10	2	S																28									0.01					70				2		4	1	3
7/19	375050	4702750	3.10	1	S																20														70				10	+	3	1	2
7/19	375050	4702750	3.10	2	S																45														55					+	2	1	1
7/19	375000	4702750	3.20	1	S				1												39														60				0.01		4	1	3
7/19	375000	4702750	3.20	2	S				2												28														70						3	1	2
7/19	374950	4702750	3.20	1	M																0.01					3				97											3	2	1
7/19	374950	4702750	3.20	2	M		3		3												1									93											4	1	3
7/19	374900	4702750	3.20	1	S																0.01									100											2	1	1
7/19	374900	4702750	3.20	2	M																5					10				85											3	2	1
7/19	374850	4702750	3.10	1	M		10									35					30					15				10											5	3	2
7/19	374850	4702750	3.10	2	M				0.01							50					25					5				20											5	3	2
7/19	374800	4702750	3.00	1	M		3		15							64					15					1				2					0.01						7	3	4
7/19	374800	4702750	3.00	2	M				6		0.01					50					9					35				0.01											6	3	3
7/19	374750	4702750	3.00	1	S		1		3							50					15					5				1					25						7	3	4
7/19	374750	4702750	3.00	2	S		2									3					15					15				1					64						6	3	3
7/19	374700	4702750	2.80	1	S				10							25					55					5				5									0.01		6	3	3
7/19	374700	4702750	2.80	2	M				5		0.01					60					25					2				8											6	3	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	374650	4702750	2.50	1	T											20					20					20				20					20						5	3	2
7/19	374650	4702750	2.50	2	S		10		3							10					10					55				10					2						7	3	4
7/19	374600	4702750	2.00	1	M		20		47		2					8												3		20										6	1	5
7/19	374600	4702750	2.00	2	M		10		3		1					10										6		0.01		69		1									8	2	6
7/11	376550	4702800	2.20	1	S		5														40									5					50					+	4	1	3
7/11	376550	4702800	2.20	2	T											65					5									30										+	3	2	1
7/11	376500	4702800	2.70	1	S		10		3												65									2					20					+	5	1	4
7/11	376500	4702800	2.70	2	S		5		1							26	0.01				35									3					30					+	7	2	5
7/3	376450	4702800	3.00	1	T		45									1					45									9											4	2	2
7/3	376450	4702800	3.00	2	T		19									1					40									40											4	2	2
7/3	376400	4702800	3.00	1	T																3														95				2	+	3	1	2
7/3	376400	4702800	3.00	2	T																70									10					15				5	+	4	1	3
7/3	376350	4702800	3.30	1	T		5		5												40									4					45				1	+	6	1	5
7/3	376350	4702800	3.30	2	T																90									10										+	2	1	1
7/3	376300	4702800	3.40	1	T																														100						1	0	1
7/3	376300	4702800	3.40	2	T		30														40									10									20		4	1	3
7/3	376250	4702800	3.40	1	T		15														10									5									70		4	1	3
7/3	376250	4702800	3.40	2	T																75									9					1				15		4	1	3
7/3	376200	4702800	3.50	1	T																60									40										+	2	1	1
7/3	376200	4702800	3.50	2	T																60									10					30					+	3	1	2
7/3	376150	4702800	3.60	1	T		40														50									10										+	3	1	2
7/3	376150	4702800	3.60	2	T		35									15					40									10										+	4	2	2
7/3	376100	4702800	3.70	1	T				60												40																			+	2	1	1
7/3	376100	4702800	3.70	2	T		55		10							15					20																			+	4	2	2
7/3	376050	4702800	3.70	1	T																100																				1	1	0
7/3	376050	4702800	3.70	2	T		97														1									2											3	1	2
7/3	376000	4702800	3.80	1	T																														100						1	0	1
7/3	376000	4702800	3.80	2	T		35														2									3					60						4	1	3
7/3	375950	4702800	3.80	1	T		60														30																			10	+	3	1	2
7/3	375950	4702800	3.80	2	T		65																							35											2	0	2
7/3	375900	4702800	3.90	1	T																50														50						2	1	1
7/3	375900	4702800	3.90	2	T		50																							15					35						3	0	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/3	375850	4702800	3.90	1	T		70														15									15										+	3	1	2
7/3	375850	4702800	3.90	2	T		90														10																			+	2	1	1
7/3	375800	4702800	4.00	1	T																60									40										+	2	1	1
7/3	375800	4702800	4.00	2	T		60														8					30				2										+	4	2	2
7/3	375750	4702800	3.90	1	T		10		3												70									2					15					+	5	1	4
7/3	375750	4702800	3.90	2	T		40														30					25				5										+	4	2	2
7/3	375700	4702800	3.80	1	T																100																				1	1	0
7/3	375700	4702800	3.80	2	T		55									3					40									2										+	4	2	2
7/3	375650	4702800	3.70	1	T		40		30												10					5				5					10						6	2	4
7/3	375650	4702800	3.70	2	T		8														2														90						3	1	2
7/3	375600	4702800	3.50	1	T		90														5									5											3	1	2
7/3	375600	4702800	3.50	2	T		65														5														30						3	1	2
7/3	375550	4702800	3.50	1	T		50				2										3									45										+	4	1	3
7/3	375550	4702800	3.50	2	T				20												50									30										+	3	1	2
7/3	375500	4702800	3.40	1	T				85												5									10										+	3	1	2
7/3	375500	4702800	3.40	2	T		3		5							9					2														80				1	+	6	2	4
7/19	375450	4702800	3.10	1	S				4												35					5				1					55						5	2	3
7/19	375450	4702800	3.10	2	M		5		2												30							3		3					57						6	1	5
7/19	375400	4702800	3.00	1	S		15														60							10		10					3				2		6	1	5
7/19	375400	4702800	3.00	2	S		10									2	3				65									20					0.01						6	2	4
7/19	375350	4702800	3.00	1	M																7									3					90						3	1	2
7/19	375350	4702800	3.00	2	M		0.01		2												3									0.01					95						5	1	4
7/19	375300	4702800	3.00	1	M																8					7									85					+	3	2	1
7/19	375300	4702800	3.00	2	T																88									2					10					+	3	1	2
7/19	375250	4702800	3.00	1	S																25					50		5							20					+	4	2	2
7/19	375250	4702800	3.00	2	T																45							3							45				7	+	4	1	3
7/19	375200	4702800	3.10	1	S																28							2							65				5	+	4	1	3
7/19	375200	4702800	3.10	2	S				2							2					70							10		0.01									16		6	2	4
7/19	375150	4702800	3.20	1	T											5					65									5					15				10	+	5	2	3
7/19	375150	4702800	3.20	2	S											0.01					65					5		3		0.01					12				15	+	7	3	4
7/19	375100	4702800	3.20	1	T				5												75							6		1					3				10		6	1	5
7/19	375100	4702800	3.20	2	S		5														30					18				40					2				5		6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	375050	4702800	3.20	1	S																35								2		60					3				0.01		5	1	4
7/19	375050	4702800	3.20	2	S				1												40										50									9		4	1	3
7/19	375000	4702800	3.30	1	S				1												3								0.01		96									0.01		5	1	4
7/19	375000	4702800	3.30	2	S																2					28				70											3	2	1
7/19	374950	4702800	3.30	1	S		3									2					5					0.01				90									0.01	+	6	3	3
7/19	374950	4702800	3.30	2	S																5					3				92									0.01	+	4	2	2
7/19	374900	4702800	3.30	1	S																5									95											2	1	1
7/19	374900	4702800	3.30	2	S																20									80											2	1	1
7/19	374850	4702800	3.30	1	S											20					20					5				55											4	3	1
7/19	374850	4702800	3.30	2	M				5		0.01					30					10					15				40											6	3	3
7/19	374800	4702800	3.10	1	T		10		5							42					38									5											5	2	3
7/19	374800	4702800	3.10	2	M		2		4							75					4					10		2		2					1					8	3	5
7/19	374750	4702800	3.00	1	S				1							3					18							0.01		70			5		3					7	2	5
7/19	374750	4702800	3.00	2	S		10		30							10					8					0.01				40					2					7	3	4
7/19	374700	4702800	2.90	1	S		5		34		1					3					25					5				25					2					8	3	5
7/19	374700	4702800	2.90	2	M		10		50		0.01					10					15									10			0.01		5					8	2	6
7/19	374650	4702800	2.60	1	M		3		3		0.01					67					10					10		0.01		0.01					5		2			10	3	7
7/19	374650	4702800	2.60	2	M		1		15		1					75					5					0.01		1		2					0.01					9	3	6
7/19	374600	4702800	2.40	1	S																25					0.01				75											3	2	1
7/19	374600	4702800	2.40	2	S		10									3					7									80											4	2	2
7/11	376550	4702850	2.10	1	S		5									23										70				2										+	4	2	2
7/11	376550	4702850	2.10	2	T		5		5							65										20				2		3								+	6	2	4
7/11	376500	4702850	2.60	1	M		35									60					0.01									2					3					+	5	2	3
7/11	376500	4702850	2.60	2	S		13									40					0.01					2				0.01					45		0.01			+	7	3	4
7/11	376450	4702850	2.90	1	T		8									5					70							15		2										+	5	2	3
7/11	376450	4702850	2.90	2	T		10														70							5		10					5					+	5	1	4
7/11	376400	4702850	3.10	1	S		10									3					5							3							79					+	5	2	3
7/11	376400	4702850	3.10	2	T		5														40							3		50					2					+	5	1	4
7/11	376350	4702850	3.20	1	T		3		2												75							5		5					10					+	6	1	5
7/11	376350	4702850	3.20	2	T																30							15		45									10	+	4	1	3
7/11	376300	4702850	3.40	1	T				5												20							2		3					55				15	+	6	1	5
7/11	376300	4702850	3.40	2	T		10														80									8					2					+	4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376250	4702850	3.50	1	T		5														65					5		5		10					10					+	6	2	4
7/11	376250	4702850	3.50	2	T											3					60							10		2								25	+	5	2	3
7/11	376200	4702850	3.50	1	T		37														50							2		1				10					+	5	1	4
7/11	376200	4702850	3.50	2	T																90							8										2	+	3	1	2
7/11	376150	4702850	3.50	1	T		15														80							5												3	1	2
7/11	376150	4702850	3.50	2	S		10		2												30							0.01						58						5	1	4
7/11	376100	4702850	3.70	1	T		15		2												70									2				11						5	1	4
7/11	376100	4702850	3.70	2	T		18														80							2												3	1	2
7/11	376050	4702850	3.70	1	T				4												25							1						70						4	1	3
7/11	376050	4702850	3.70	2	T				25												30													45						3	1	2
7/11	376000	4702850	3.90	1	T		30														33							1		1				35						5	1	4
7/11	376000	4702850	3.90	2	T		70		8							15					5							1		1										6	2	4
7/11	375950	4702850	3.90	1	T		78														10							10		2									+	4	1	3
7/11	375950	4702850	3.90	2	T		75														23							1		1									+	4	1	3
7/11	375900	4702850	4.00	1	T		60														40																			2	1	1
7/11	375900	4702850	4.00	2	T		30														65							1		4										4	1	3
7/11	375850	4702850	4.00	1	T		5		5												89							1												4	1	3
7/11	375850	4702850	4.00	2	T																95									5										2	1	1
7/11	375800	4702850	4.00	1	T		40														55							5												3	1	2
7/11	375800	4702850	4.00	2	T		15														80							4										1		4	1	3
7/11	375750	4702850	4.00	1	T		80														10					10														3	2	1
7/11	375750	4702850	4.00	2	S		7									3					10					10									70						5	3	2
7/11	375700	4702850	3.90	1	S																30							0.01						70						3	1	2
7/11	375700	4702850	3.90	2	T		33														65							2												3	1	2
7/11	375650	4702850	3.90	1	T		23														50					25		2												4	2	2
7/11	375650	4702850	3.90	2	T		20														73							5		2										4	1	3
7/11	375600	4702850	3.80	1	T																95									5									+	2	1	1
7/11	375600	4702850	3.80	2	T		15		10												65							1		1				8					+	6	1	5
7/11	375550	4702850	3.60	1	T		35														60							2		1				2					+	5	1	4
7/11	375550	4702850	3.60	2	T				5												65					15				2				13					+	5	2	3
7/11	375500	4702850	3.40	1	T		5		70												20							3		2									+	5	1	4
7/11	375500	4702850	3.40	2	T				7							3					9							1						80					+	5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	375450	4702850	3.20	1	S		1		4												65					15				15											5	2	3
7/19	375450	4702850	3.20	2	T	2															12					30				30					25				1		6	2	4
7/19	375400	4702850	3.10	1	S		6		4												45					0.01				45									0.01	+	6	2	4
7/19	375400	4702850	3.10	2	S		5		5							2					20					20				47					1					+	7	3	4
7/19	375350	4702850	3.00	1	S		1		4												75					0.01		10		10											6	2	4
7/19	375350	4702850	3.00	2	S		1		4							3					32					5		15		15					25						8	3	5
7/19	375300	4702850	3.10	1	S				5							2					33					5				0.01					50				5		7	3	4
7/19	375300	4702850	3.10	2	T																70									10					5				15		4	1	3
7/19	375250	4702850	3.10	1	T																95							3											2	+	3	1	2
7/19	375250	4702850	3.10	2	T		2														35															60				3	+	4	1	3
7/19	375200	4702850	3.20	1	T				2												40									1					40				17	+	5	1	4
7/19	375200	4702850	3.20	2	S																2									0.01					95				3	+	4	1	3
7/19	375150	4702850	3.30	1	T																30														55				15	+	3	1	2
7/19	375150	4702850	3.30	2	M																2														98						2	1	1
7/19	375100	4702850	3.40	1	S																25					35				20									20	+	4	2	2
7/19	375100	4702850	3.40	2	S																20									10					60				10		4	1	3
7/19	375050	4702850	3.40	1	T																50									40									10		3	1	2
7/19	375050	4702850	3.40	2	T																25									70									5		3	1	2
7/19	375000	4702850	3.50	1	S				0.01												25									75									0.01		4	1	3
7/19	375000	4702850	3.50	2	S																5					3				92											3	2	1
7/19	374950	4702850	3.40	1	S																0.01					2				98											3	2	1
7/19	374950	4702850	3.40	2	M																15					0.01				85									0.01		4	2	2
7/19	374900	4702850	3.50	1	S																18									80					0.01				2		4	1	3
7/19	374900	4702850	3.50	2	S				12												20									65					3						4	1	3
7/19	374850	4702850	3.40	1	M		0.01		10							1					20					9				60											6	3	3
7/19	374850	4702850	3.40	2	M		5		5												15					5				70											5	2	3
7/19	374800	4702850	3.40	1	M		13		30							30					0.01					25				2					0.01						7	3	4
7/19	374800	4702850	3.40	2	M		5		10							12										70				3											5	2	3
7/19	374750	4702850	3.20	1	M				20							30					30					15				5											5	3	2
7/19	374750	4702850	3.20	2	M				25							25					5					40				5											5	3	2
7/19	374700	4702850	3.00	1	M				35		0.01					45					1					16				3			0.01		0.01						8	3	5
7/19	374700	4702850	3.00	2	M		10		30		0.01					20					5					15				10			0.01		10						9	3	6

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/19	374650	4702850	2.80	1	M		13		30		0.01					10										5				40			2		0.01						8	2	6
7/19	374650	4702850	2.80	2	M		3		5		0.01					5										76				10							1				7	2	5
7/19	374600	4702850	2.60	1	M		3									45					19					1				5					25		2			7	3	4
7/19	374600	4702850	2.60	2	M				5							40					2					40				0.01					13		0.01			7	3	4
7/19	374550	4702850	2.10	1	S		10				0.01					1										10		4		75										6	2	4
7/19	374550	4702850	2.10	2	M		3		75		2					5					0.01					5		0.01		10									0.01	9	3	6
7/11	376550	4702900	1.50	1	T				35																			45											20	+	3	0	3
7/11	376550	4702900	1.50	2	T		10																					90												+	2	0	2
7/11	376500	4702900	2.50	1	S	0.01	59		6							30										2		2								1			+	7	2	5
7/11	376500	4702900	2.50	2	S		65									20										3		0.01		5						7		0.01	+	7	2	5
7/12	376450	4702900	3.00	1	T		15														65							2		15								3		5	1	4
7/12	376450	4702900	3.00	2	S				3												15							1							80			1		5	1	4
7/12	376400	4702900	3.20	1	S		20				0.01					1					30					25		0.01		3					20			1		9	3	6
7/12	376400	4702900	3.20	2	T																82							4		10					3			1		5	1	4
7/12	376350	4702900	3.60	1	S																5									5					90					3	1	2
7/12	376350	4702900	3.60	2	S																24							0.01		0.01					75			1		5	1	4
7/12	376300	4702900	3.50	1	T																65									35										2	1	1
7/12	376300	4702900	3.50	2	T		15		9												30							1		30									15		6	1	5
7/12	376250	4702900	3.50	1	M		2									3					0.01													95					+	4	2	2
7/12	376250	4702900	3.50	2	S		1																											99						2	0	2
7/12	376200	4702900	3.60	1	T		19														20									1					60					4	1	3
7/12	376200	4702900	3.60	2	S		2														8									0.01					90					+	4	1	3
7/11	376150	4702900	3.60	1	T		95														5																				2	1	1
7/11	376150	4702900	3.60	2	S		8		2												15									0.01					75					5	1	4
7/11	376100	4702900	3.60	1	T		60														39							1												3	1	2
7/11	376100	4702900	3.60	2	T		40														60																				2	1	1
7/11	376050	4702900	3.90	1	T		38		2												60																			+	3	1	2
7/11	376050	4702900	3.90	2	S		25									5					10							0.01							60				+	5	2	3
7/11	376000	4702900	4.00	1	T		70														25									5										+	3	1	2
7/11	376000	4702900	4.00	2	T		50														45									5											3	1	2
7/11	375950	4702900	4.10	1	T		70														20									10											3	1	2
7/11	375950	4702900	4.10	2	S		20														10									0.01					70					4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	375900	4702900	4.10	1	T		30														25									5					40					+	4	1	3
7/11	375900	4702900	4.10	2	T		60														30									10										+	3	1	2
7/11	375850	4702900	4.00	1	T		49														50							1												3	1	2
7/11	375850	4702900	4.00	2	T		49														50													1						3	1	2
7/11	375800	4702900	4.10	1	T		70														26									2								2	+	4	1	3
7/11	375800	4702900	4.10	2	T		40		1												57									2									+	4	1	3
7/11	375750	4702900	4.10	1	T		70														30																			2	1	1
7/11	375750	4702900	4.10	2	T		30														70																			2	1	1
7/11	375700	4702900	4.00	1	T		60		5												30									5										4	1	3
7/11	375700	4702900	4.00	2	T		49														50							1												3	1	2
7/11	375650	4702900	4.00	1	T		10														85							2		3									+	4	1	3
7/11	375650	4702900	4.00	2	T		20		10												65									2								3	+	5	1	4
7/11	375600	4702900	3.90	1	T		38														60							2											+	3	1	2
7/11	375600	4702900	3.90	2	T																99									1									+	2	1	1
7/11	375550	4702900	3.70	1	T		30		5												20					40		5											+	5	2	3
7/11	375550	4702900	3.70	2	T		40														45							10		5									+	4	1	3
7/11	375500	4702900	3.50	1	T		20		8							1					10							29		1				30				1	+	8	2	6
7/11	375500	4702900	3.50	2	T				30												5					25		15		5					20					+	6	2	4
7/19	375450	4702900	3.40	1	S		8		20												15					55				2										5	2	3
7/19	375450	4702900	3.40	2	S		5		7							3					35					10				40									0.01		7	3	4
7/19	375400	4702900	3.20	1	S																5							2		53					40						4	1	3
7/19	375400	4702900	3.20	2	T																75							5		20											3	1	2
7/19	375350	4702900	3.20	1	S																3					5				10					82						4	2	2
7/19	375350	4702900	3.20	2	M				4												2									4					90						4	1	3
7/19	375300	4702900	3.30	1	T																98									2										+	2	1	1
7/19	375300	4702900	3.30	2	T																15									75					10					+	3	1	2
7/19	375250	4702900	3.40	1	T																70														30						2	1	1
7/19	375250	4702900	3.40	2	T																50									30									20		3	1	2
7/24	375200	4702900	3.40	1	S																75							0.01		2					15				8		5	1	4
7/24	375200	4702900	3.40	2	S																70							8		2									20		4	1	3
7/24	375150	4702900	3.40	1	T																70					15		10											5		4	2	2
7/24	375150	4702900	3.40	2	T											10					75									10									5		4	2	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375100	4702900	3.50	1	T																55								9		15				1				20		5	1	4
7/24	375100	4702900	3.50	2	S											0.01					20										10				65				5		5	2	3
7/24	375050	4702900	3.50	1	S																8					15		2		60								15		5	2	3
7/24	375050	4702900	3.50	2	S																5					5		0.01		75								15		5	2	3
7/24	375000	4702900	3.50	1	M		3														10					20				55				2				10		6	2	4
7/24	375000	4702900	3.50	2	S		5									1					30					3		0.01		56								5		7	3	4
7/24	374950	4702900	3.60	1	S																0.01					2				98								0.01		4	2	2
7/24	374950	4702900	3.60	2	M				0.01												10									80				5				5		5	1	4
7/24	374900	4702900	3.60	1	M											0.01					20							0.01		75								5		5	2	3
7/24	374900	4702900	3.60	2	M		1		10												9							0.01		80										5	1	4
7/24	374850	4702900	3.60	1	M		6									0.01					10					4				40				40						6	3	3
7/24	374850	4702900	3.60	2	M				2												18									80										3	1	2
7/24	374800	4702900	3.50	1	M		0.01		2							30					1					60				6				1						7	3	4
7/24	374800	4702900	3.50	2	M		2		10							45					2					35				6				0.01						7	3	4
7/24	374750	4702900	3.40	1	M		2		30							20										13		0.01						35						6	2	4
7/24	374750	4702900	3.40	2	M		3		17							30										50				0.01										5	2	3
7/24	374700	4702900	3.20	1	M				55		0.01					10					5					30				0.01										6	3	3
7/24	374700	4702900	3.20	2	S		1		15							55					25									4										5	2	3
7/24	374650	4702900	3.00	1	S		5		10							58					2					0.01				25			0.01							7	3	4
7/24	374650	4702900	3.00	2	M		3		20		0.01					60										2				5				10				0.01		8	2	6
7/24	374600	4702900	2.80	1	M		1		5		0.01					65					20									4		1		3		1				9	2	7
7/24	374600	4702900	2.80	2	M		2		10		0.01					57					15					4		0.01		10			0.01	0.01		2				11	3	8
7/24	374550	4702900	2.50	1	S		5		1							2					10							10		72										6	2	4
7/24	374550	4702900	2.50	2	S		2		4												30					5		1		58										6	2	4
7/11	376500	4702950	1.60	1	T		50		1							29										5		10		2								3		7	2	5
7/11	376500	4702950	1.60	2	T		20									20												45						15						4	1	3
7/11	376450	4702950	3.00	1	S		30		9												10							1		0.01				50					+	6	1	5
7/11	376450	4702950	3.00	2	T		35		8							5														5				44		2		1	+	7	1	6
7/12	376400	4702950	3.30	1	S	1	64		10		1										20									3				1						7	1	6
7/12	376400	4702950	3.30	2	T		20		5												63							10		2										5	1	4
7/12	376350	4702950	3.50	1	S		14		1												15							0.01		0.01				70						6	1	5
7/12	376350	4702950	3.50	2	T				3												48					2		10		2				35						6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376300	4702950	3.50	1	T		14														20									1					65					+	4	1	3
7/11	376300	4702950	3.50	2	T		75		15							1					5									4											5	2	3
7/11	376250	4702950	3.60	1	S		1														4									0.01					95						4	1	3
7/11	376250	4702950	3.60	2	S		9														10									1					80						4	1	3
7/11	376200	4702950	3.70	1	T		8														70							1		1					20						5	1	4
7/11	376200	4702950	3.70	2	S																48									2					50						3	1	2
7/11	376150	4702950	3.80	1	T		95														4														1						3	1	2
7/11	376150	4702950	3.80	2	T		65														20														15						3	1	2
7/11	376100	4702950	3.90	1	T											100																								1	1	0
7/11	376100	4702950	3.90	2	T		25									75																								2	1	1
7/11	376050	4702950	3.90	1	M		1									90												0.01						9						4	1	3
7/11	376050	4702950	3.90	2	M		1									99																		0.01						3	1	2
7/11	376000	4702950	4.00	1	T		20														5														75						3	1	2
7/11	376000	4702950	4.00	2	S		45		0.01												20							0.01		5					30						6	1	5
7/11	375950	4702950	4.10	1	T		60														39									1											3	1	2
7/11	375950	4702950	4.10	2	T		45		10												40							1		4											5	1	4
7/11	375900	4702950	4.20	1	T		60		20							2					10									8											5	2	3
7/11	375900	4702950	4.20	2	T		30														60					5								5					+	4	2	2
7/11	375850	4702950	4.20	1	T																70									10					20						3	1	2
7/11	375850	4702950	4.20	2	S		10		2												60							2		2					24						6	1	5
7/11	375800	4702950	4.20	1	T																95							5													2	1	1
7/11	375800	4702950	4.20	2	T		25														70					3		2													4	2	2
7/11	375750	4702950	4.20	1	T		2														8							1							89						4	1	3
7/11	375750	4702950	4.20	2	T		18														80							1		1										+	4	1	3
7/11	375700	4702950	4.20	1	T				40												57							2							1						4	1	3
7/11	375700	4702950	4.20	2	T		49														50							1													3	1	2
7/11	375650	4702950	4.20	1	S		57		2												35							1		2									3		6	1	5
7/11	375650	4702950	4.20	2	T		25									2					66									5									2		5	2	3
7/11	375600	4702950	4.10	1	T		35		10												50							3		2										+	5	1	4
7/11	375600	4702950	4.10	2	T		15		10												50							15		8					2					+	6	1	5
7/11	375550	4702950	3.80	1	T		10														65							20											5		4	1	3
7/11	375550	4702950	3.80	2	T																							5		75									20		3	0	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	375500	4702950	3.70	1	T				84												1									15										+	3	1	2
7/11	375500	4702950	3.70	2	T				5												85								10											+	3	1	2
7/23	375450	4702950	3.50	1	M				10												6								0.01		4				80						5	1	4
7/23	375450	4702950	3.50	2	S				10							5													5		0.01				80						5	1	4
7/23	375400	4702950	3.50	1	M		7														3									0.01				90						4	1	3
7/23	375400	4702950	3.50	2	S		1		3												35					15		5		34				5				2		8	2	6
7/23	375350	4702950	3.40	1	S	0.01			1												60							10		20								9		6	1	5
7/23	375350	4702950	3.40	2	S	0.01			6												20					35		2		35								2		7	2	5
7/23	375300	4702950	3.40	1	S																80									0.01				15				5		4	1	3
7/23	375300	4702950	3.40	2	T																79							1										20		3	1	2
7/23	375250	4702950	3.50	1	M		2														30									8				60						4	1	3
7/23	375250	4702950	3.50	2	S																1					50		25		20				0.01				4		6	2	4
7/23	375200	4702950	3.50	1	T											5					85					1		8										1	+	5	3	2
7/23	375200	4702950	3.50	2	T																95							3										2		3	1	2
7/23	375150	4702950	3.50	1	T																10									5								85		3	1	2
7/23	375150	4702950	3.50	2	S				5												60							15										20		4	1	3
7/23	375100	4702950	3.60	1	S																65					10				10								15		4	2	2
7/23	375100	4702950	3.60	2	S				0.01												38					2		0.01		30				5				25		7	2	5
7/24	375050	4702950	3.60	1	S																0.01					1				67				2				30		5	2	3
7/24	375050	4702950	3.60	2	S		0.01														30									50				0.01				20		5	1	4
7/24	375000	4702950	3.60	1	M																10					5				68				15				2		5	2	3
7/24	375000	4702950	3.60	2	M																5					15				75								5		4	2	2
7/24	374950	4702950	3.70	1	M		7														3									90								0.01		4	1	3
7/24	374950	4702950	3.70	2	M																					25		0.01		75										3	1	2
7/24	374900	4702950	3.60	1	M				3							2					10							0.01		85										5	2	3
7/24	374900	4702950	3.60	2	M				5																	2		2		91										4	1	3
7/24	374850	4702950	3.60	1	M				0.01																	10				90										3	1	2
7/24	374850	4702950	3.60	2	M		5									2					0.01					0.01				93										5	3	2
7/24	374800	4702950	3.60	1	S		3		35							20										35				7										5	2	3
7/24	374800	4702950	3.60	2	M		5		30							25										20		0.01		20				0.01						7	2	5
7/24	374750	4702950	3.50	1	M		3		20							76										1				0.01				0.01						6	2	4
7/24	374750	4702950	3.50	2	M		5		10							70										15				0.01										5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	374700	4702950	3.40	1	M		2		35		0.01					15					15					30				3			0.01								8	3	5
7/24	374700	4702950	3.40	2	M				40							30					20					10				0.01			0.01								6	3	3
7/24	374650	4702950	3.20	1	M		2		38							50					0.01					2				1			2		5						8	3	5
7/24	374650	4702950	3.20	2	M				30							40										30				0.01					0.01						5	2	3
7/24	374600	4702950	3.00	1	M		9		20							65					2							2		2			0.01								7	2	5
7/24	374600	4702950	3.00	2	M		0.01		3							31										60				1		3			2						7	2	5
7/24	374550	4702950	2.60	1	M		5				0.01					5					5					70	0.01	0.01		9					5		1				10	3	7
7/24	374550	4702950	2.60	2	M		3		2							40					5					5		0.01		40					5						8	3	5
7/24	374500	4702950	1.80	1	S		20		2		0.01					54												2		5		5			10		2				9	1	8
7/24	374500	4702950	1.80	2	M		58		10		0.01					15												5		10					0.01		2				8	1	7
7/12	376450	4703000	2.10	1	T		15		51							2										2				15					15						6	2	4
7/12	376450	4703000	2.10	2	T		28		50							10												5		5								2		6	1	5
7/12	376400	4703000	3.30	1	T		70		9							5					5							3		2					1		5				8	2	6
7/12	376400	4703000	3.30	2	S		25		3							3					3					10		2		0.01					52		1		1		10	3	7
7/12	376350	4703000	3.50	1	S		20		33												15					20		5		5					2						7	2	5
7/12	376350	4703000	3.50	2	S		20		15												10					2		0.01		3					50						7	2	5
7/12	376300	4703000	3.10	1	T		45		1							10					10					30				4											6	3	3
7/12	376300	4703000	3.10	2	S		12		3							10					30					40		0.01		3					2			0.01			9	3	6
7/12	376250	4703000	3.60	1	T		6									3					40							1		10					40						6	2	4
7/12	376250	4703000	3.60	2	S		10		7							3					40									0.01					40						6	2	4
7/12	376200	4703000	3.70	1	S		20														30							0.01							50				+		4	1	3
7/12	376200	4703000	3.70	2	S		5														15														80				+		3	1	2
7/12	376150	4703000	3.70	1	T		10														20							2		3					65						5	1	4
7/12	376150	4703000	3.70	2	S		15		0.01												15									0.01					70						5	1	4
7/12	376100	4703000	3.90	1	S		50									35					15									0.01											4	2	2
7/12	376100	4703000	3.90	2	M		50									25					5														20						4	2	2
7/12	376050	4703000	4.00	1	M		20														80									0.01											3	1	2
7/12	376050	4703000	4.00	2	M		10														90							0.01													3	1	2
7/12	376000	4703000	4.10	1	S		30									5					0.01														65						4	2	2
7/12	376000	4703000	4.10	2	S		40														50									1					9					+	4	1	3
7/12	375950	4703000	4.20	1	T		49														50														1						3	1	2
7/12	375950	4703000	4.20	2	S		5		2							1					3														89						5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	375900	4703000	4.20	1	T		50														15									35											3	1	2
7/12	375900	4703000	4.20	2	T		30														45					20				5											4	2	2
7/12	375850	4703000	4.20	1	T		18														80									2											3	1	2
7/12	375850	4703000	4.20	2	T		60														30							1							9						4	1	3
7/12	375800	4703000	4.30	1	T		50														30													20						3	1	2
7/12	375800	4703000	4.30	2	S		5														25													70						3	1	2
7/12	375750	4703000	4.20	1	T		37														60									3										3	1	2
7/12	375750	4703000	4.20	2	T		30		9												44							1						15				1		6	1	5
7/12	375700	4703000	4.00	1	T		30		5												60									5										4	1	3
7/12	375700	4703000	4.00	2	T		15														35					45				1								4		5	2	3
7/12	375650	4703000	4.10	1	T		57														40							2		1									+	4	1	3
7/12	375650	4703000	4.10	2	T		30														62							2		1				2				3	+	6	1	5
7/11	375600	4703000	4.10	1	T		53														40							5						2						4	1	3
7/11	375600	4703000	4.10	2	T		63														20					5		5						5				2		6	2	4
7/11	375550	4703000	4.00	1	T		30		5												25					30				10									+	5	2	3
7/11	375550	4703000	4.00	2	T		30		8												50									10								2	+	5	1	4
7/11	375500	4703000	3.80	1	T				20												55							10		15									+	4	1	3
7/11	375500	4703000	3.80	2	T		15		35												45							5											+	4	1	3
7/23	375450	4703000	3.60	1	T				25												65							1		9										4	1	3
7/23	375450	4703000	3.60	2	S				20							10					15							5		35				15						6	2	4
7/23	375400	4703000	3.60	1	T				34												65									1										3	1	2
7/23	375400	4703000	3.60	2	S		5		3												47					5		30		5								5		7	2	5
7/23	375350	4703000	3.50	1	S				2												68							5		10				5				10		6	1	5
7/23	375350	4703000	3.50	2	S																70					10				5				10				5		5	2	3
7/23	375300	4703000	3.50	1	T																70													30						2	1	1
7/23	375300	4703000	3.50	2	T																20							3						70				7		4	1	3
7/23	375250	4703000	3.50	1	S		2														50							10						30				8		5	1	4
7/23	375250	4703000	3.50	2	S				0.01												20							1						79						4	1	3
7/26	375200	4703000	3.60	1	T				5												82							10		2								1		5	1	4
7/26	375200	4703000	3.60	2	T											2					70							8										20		4	2	2
7/26	375150	4703000	3.80	1	T				18								1				69							5		5								2		6	1	5
7/26	375150	4703000	3.80	2	S											4					50					4		2		10								30		6	3	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/26	375100	4703000	3.80	1	T				5												63							2		5									25		5	1	4
7/26	375100	4703000	3.80	2	S																55							5		10									30		4	1	3
7/26	375050	4703000	3.90	1	S				0.01												40							9		45				1				5		6	1	5
7/26	375050	4703000	3.90	2	S																50							5		35								10		4	1	3
7/26	375000	4703000	3.90	1	M																3							0.01		90				1				6		5	1	4
7/26	375000	4703000	3.90	2	M																5									85								10		3	1	2
7/26	374950	4703000	3.90	1	S														0.01									0.01		100										3	1	2
7/26	374950	4703000	3.90	2	M																5							2		92				1						4	1	3
7/26	374900	4703000	3.90	1	M											0.01					1					5		1		93								0.01		6	3	3
7/26	374900	4703000	3.90	2	M				5												4					0.01		1		90										5	2	3
7/26	374850	4703000	3.90	1	M		2		10							0.01					2					10				75				1						7	3	4
7/26	374850	4703000	3.90	2	M		1		4							3										45				47										5	2	3
7/26	374800	4703000	3.90	1	M		1		40							19										40				0.01				0.01						6	2	4
7/26	374800	4703000	3.90	2	D		0.01		5							15										80				0.01										5	2	3
7/26	374750	4703000	3.60	1	M		5		5							50										40				0.01										5	2	3
7/26	374750	4703000	3.60	2	M		2		3							55										40		0.01		0.01										6	2	4
7/26	374700	4703000	3.60	1	M		5		65							15										15				0.01			0.01							6	2	4
7/26	374700	4703000	3.60	2	M		10		40							40										10				0.01										5	2	3
7/26	374650	4703000	3.40	1	M		2		5							50										40				0.01				3						6	2	4
7/26	374650	4703000	3.40	2	M		1		14							55										30				0.01										5	2	3
7/26	374600	4703000	3.20	1	M		1		2							83					11					0.01				1						0.01				8	3	5
7/26	374600	4703000	3.20	2	M		3		10							85					0.01					0.01				0.01				2						7	3	4
7/26	374550	4703000	2.80	1	M		3		2		0.01					15					0.01					65		3		12						0.01				9	3	6
7/26	374550	4703000	2.80	2	M		5		3		2					55					5					10		10		10										8	3	5
7/26	374500	4703000	2.50	1	S		14		1		1					3										5		2		70				3		1				9	2	7
7/26	374500	4703000	2.50	2	S		28		5		3															2		5		42				3		12				8	1	7
7/12	376450	4703050	1.00	1	T		10		10														60			3				5				10				2		7	1	6
7/12	376450	4703050	1.00	2	T		10		15												2		50					10		5						5		3		8	1	7
7/12	376400	4703050	3.00	1	S		15	0.01	20							0.01										60		5												6	2	4
7/12	376400	4703050	3.00	2	S		30		35							0.01										23		2		3				5				2		8	2	6
7/12	376350	4703050	3.50	1	S		55		40																			5						0.01				0.01		5	0	5
7/12	376350	4703050	3.50	2	S		50		39		1					2												2						5				1		7	1	6

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	376300	4703050	3.60	1	S		10		45							15					2					25				0.01					3						7	3	4
7/12	376300	4703050	3.60	2	M		10		5		0.01					10										30									45						6	2	4
7/12	376250	4703050	3.60	1	S		5		30							57					0.01					3				0.01					5					+	7	3	4
7/12	376250	4703050	3.60	2	M		20		0.01							20										60				0.01										+	5	2	3
7/12	376200	4703050	3.80	1	T																39					60				1											3	2	1
7/12	376200	4703050	3.80	2	S		25														20					50		2		3											5	2	3
7/12	376150	4703050	3.90	1	T		25														50									2					23						4	1	3
7/12	376150	4703050	3.90	2	T	2	22														75							1													4	1	3
7/12	376100	4703050	3.90	1	T		30														66							2		2											4	1	3
7/12	376100	4703050	3.90	2	T		40		5												50							1		4											5	1	4
7/12	376050	4703050	4.10	1	T		20														79									1											3	1	2
7/12	376050	4703050	4.10	2	T		50		10												35									1					4						5	1	4
7/12	376000	4703050	4.20	1	T		37														60									2					1						4	1	3
7/12	376000	4703050	4.20	2	T		70														25									5											3	1	2
7/12	375950	4703050	4.30	1	T		43														55									2										+	3	1	2
7/12	375950	4703050	4.30	2	T		60									14					15									1									10		5	2	3
7/12	375900	4703050	4.40	1	T	1	70														19									10										+	4	1	3
7/12	375900	4703050	4.40	2	T		40														40									2					18					+	4	1	3
7/12	375850	4703050	4.40	1	T		38														60							2												+	3	1	2
7/12	375850	4703050	4.40	2	T		50														48							2												+	3	1	2
7/12	375800	4703050	4.40	1	T																95									5										+	2	1	1
7/12	375800	4703050	4.40	2	T		49														50									1										+	3	1	2
7/12	375750	4703050	4.40	1	T		65														20							10							5					+	4	1	3
7/12	375750	4703050	4.40	2	T		30														50							1		1					18					+	5	1	4
7/12	375700	4703050	4.40	1	T		40														50							2							8					+	4	1	3
7/12	375700	4703050	4.40	2	T		10														70														20					+	3	1	2
7/12	375650	4703050	4.40	1	T		40														55									4					1					+	4	1	3
7/12	375650	4703050	4.40	2	T		60		5												33									2										+	4	1	3
7/12	375600	4703050	4.10	1	T		80														15							5												+	3	1	2
7/12	375600	4703050	4.10	2	T		20														70							10												+	3	1	2
7/12	375550	4703050	4.10	1	T																98							1							1					+	3	1	2
7/12	375550	4703050	4.10	2	S		10		10												10							0.01							70					+	5	1	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	375500	4703050	4.00	1	T		12		5												80							2		1										+	5	1	4
7/12	375500	4703050	4.00	2	T		2		40												50							5		1					2					+	6	1	5
7/26	375450	4703050	4.00	1	T		2		10							1					57									20					10						6	2	4
7/26	375450	4703050	4.00	2	M				13							2					15							0.01		15					55						6	2	4
7/26	375400	4703050	3.90	1	S				10												72					5		10		2									1		6	2	4
7/26	375400	4703050	3.90	2	S		5		3												67					10		0.01		10									5		7	2	5
7/26	375350	4703050	3.80	1	S																30									5					60				5		4	1	3
7/26	375350	4703050	3.80	2	S																65					10		2							20				3		5	2	3
7/26	375300	4703050	3.90	1	T																70									5									25		3	1	2
7/26	375300	4703050	3.90	2	T				5							5					83									1					1				5		6	2	4
7/26	375250	4703050	3.90	1	T				10												70							5		1					4				10		6	1	5
7/26	375250	4703050	3.90	2	T																70							1											29		3	1	2
7/26	375200	4703050	3.90	1	S		2		3												82							5							5				3		6	1	5
7/26	375200	4703050	3.90	2	S				5												80					10		3											2		5	2	3
7/26	375150	4703050	3.90	1	M		2														10									5					80				3		5	1	4
7/26	375150	4703050	3.90	2	S																60							4							1				35		4	1	3
7/26	375100	4703050	4.00	1	S																45					35		1		9									10		5	2	3
7/26	375100	4703050	4.00	2	S		2		1												30							7		5					30				25		7	1	6
7/26	375050	4703050	4.00	1	S				1												15									55					14				15		5	1	4
7/26	375050	4703050	4.00	2	S																55					5		3		25									12		5	2	3
7/26	375000	4703050	4.00	1	S																10							0.01		60					30				30		4	1	3
7/26	375000	4703050	4.00	2	M		1		2												7							5		75									10		6	1	5
7/26	374950	4703050	4.00	1	S																0.01					3		3		93									1		5	2	3
7/26	374950	4703050	4.00	2	S																5					0.01				95											3	2	1
7/26	374900	4703050	4.00	1	M		2									5					10					1		2		80											6	3	3
7/26	374900	4703050	4.00	2	M		25														15									60					0.01						4	1	3
7/26	374850	4703050	4.00	1	M		11		4							0.01					0.01							0.01		85					0.01						7	2	5
7/26	374850	4703050	4.00	2	M		15		4							15										5		0.01		60					1						7	2	5
7/26	374800	4703050	3.90	1	M		18		2																			0.01		80											4	0	4
7/26	374800	4703050	3.90	2	M		10		1							9										10				70											5	2	3
7/26	374750	4703050	3.80	1	M		2		30							30										34		0.01		1					3						7	2	5
7/26	374750	4703050	3.80	2	M		2		15							5										74		2		2					0.01						7	2	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/26	374700	4703050	3.60	1	M		3		20							20										46				1					10						6	2	4
7/26	374700	4703050	3.60	2	M		5		10							10										71		0.01		2					2						7	2	5
7/26	374650	4703050	3.50	1	M		2		13							15										70				0.01					0.01						6	2	4
7/26	374650	4703050	3.50	2	M		0.01		42							55										3		0.01		0.01											6	2	4
7/26	374600	4703050	3.30	1	M		1		5							80										9				0.01			5		0.01						7	2	5
7/26	374600	4703050	3.30	2	M		0.01		15							85										0.01				0.01											5	2	3
7/26	374550	4703050	3.10	1	M		2									5										85		3		5											5	2	3
7/26	374550	4703050	3.10	2	M		2		10		0.01					45										36		4		3					0.01						8	2	6
7/26	374500	4703050	2.60	1	M		10		3		0.01					10										2				65		0.01			10						9	2	7
7/26	374500	4703050	2.60	2	M		20									30										5				45		0.01									5	2	3
7/26	374450	4703050	1.60	1	S		15		2		0.01					30										40	8									5					7	2	5
7/26	374450	4703050	1.60	2	S		55									10											20									15		0.01		5	1	4
7/12	376350	4703100	3.60	1	T		20																					80												2	0	2
7/12	376350	4703100	3.60	2	T						5																	95												2	0	2
7/12	376300	4703100	3.70	1	M		25		25		0.01					15										35				0.01											6	2	4
7/12	376300	4703100	3.70	2	M		30		10		0.01					5										55		0.01		0.01											7	2	5
7/12	376250	4703100	3.90	1	S		45		8							30					0.01					15				0.01					2				+	7	3	4
7/12	376250	4703100	3.90	2	M		15		0.01		0.01					10					0.01					75				0.01									+	7	3	4
7/12	376200	4703100	3.90	1	S		45		2												10					5				3					35					6	2	4
7/12	376200	4703100	3.90	2	M		70									10					5					10				5											5	3	2
7/12	376150	4703100	4.00	1	S		5														25							0.01						70				+	4	1	3
7/12	376150	4703100	4.00	2	S		5		3												30					0.01				0.01					62				+	6	2	4
7/12	376100	4703100	4.00	1	T		30														65									5										3	1	2
7/12	376100	4703100	4.00	2	T		32														60							2		3				3					5	1	4
7/12	376050	4703100	4.10	1	T		5														63									2				30				+	4	1	3
7/12	376050	4703100	4.10	2	S		30														20									0.01				50				+	4	1	3
7/12	376000	4703100	4.30	1	T		60														39							1										+	3	1	2
7/12	376000	4703100	4.30	2	T		33														64					1		2										+	4	2	2
7/12	375950	4703100	4.30	1	T		85														14							1										+	3	1	2
7/12	375950	4703100	4.30	2	T		49														50									1								+	3	1	2
7/12	375900	4703100	4.40	1	T		19														80							1										+	3	1	2
7/12	375900	4703100	4.40	2	T		15		3												50					25		1		1				5				+	7	2	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	375850	4703100	4.50	1	T		45														40							1							14					+	4	1	3
7/12	375850	4703100	4.50	2	T		40														55							5												+	3	1	2
7/12	375800	4703100	4.50	1	T		75									1					20							4												+	4	2	2
7/12	375800	4703100	4.50	2	T		80														15													5					+	3	1	2
7/12	375750	4703100	4.50	1	S		92		0.01												5					1		2		0.01									+	6	2	4
7/12	375750	4703100	4.50	2	S		90									8					0.01									1				1					+	5	2	3
7/12	375700	4703100	4.50	1	T		20														75									5									+	3	1	2
7/12	375700	4703100	4.50	2	T		20		5												70													5					+	4	1	3
7/12	375650	4703100	4.40	1	T		14		1												80							3		2									+	5	1	4
7/12	375650	4703100	4.40	2	T		25		5												42							1		2				25					+	6	1	5
7/12	375600	4703100	4.40	1	T		30														20													50					+	3	1	2
7/12	375600	4703100	4.40	2	T		35		5												12							1		2				45					+	6	1	5
7/12	375550	4703100	4.20	1	T		30		10												59							1											+	4	1	3
7/12	375550	4703100	4.20	2	T		5														83					10				2									+	4	2	2
7/12	375500	4703100	4.10	1	T				13												85							2											+	3	1	2
7/12	375500	4703100	4.10	2	T											8					90									2									+	3	2	1
7/26	375450	4703100	4.10	1	S		2		5												75							3		15										5	1	4
7/26	375450	4703100	4.10	2	S		5		2							3	0.01				70									20										6	2	4
7/26	375400	4703100	4.00	1	T																60									40										2	1	1
7/26	375400	4703100	4.00	2	T																80									20										2	1	1
7/26	375350	4703100	3.90	1	S						0.01					2					60					10				8				0.01				20		7	3	4
7/26	375350	4703100	3.90	2	S				0.01												30									5				60				5		5	1	4
7/26	375300	4703100	4.00	1	T																70							2						23				5		4	1	3
7/26	375300	4703100	4.00	2	S		5		3												75					2								1				14		6	2	4
7/26	375250	4703100	4.00	1	T											4					35					10				1				50						5	3	2
7/26	375250	4703100	4.00	2	S																30							0.01		1				66				3		5	1	4
7/26	375200	4703100	4.00	1	S		2									0.01					23					2				1				70				2		7	3	4
7/26	375200	4703100	4.00	2	T		9														20					10		10		1				5				45		7	2	5
7/26	375150	4703100	4.10	1	S		3		3							0.01					64					20		3		5								2		8	3	5
7/26	375150	4703100	4.10	2	S		5														60					20		2		3				0.01				10		7	2	5
7/26	375100	4703100	4.10	1	T																40					1				40								19		4	2	2
7/26	375100	4703100	4.10	2	S		0.01														10									5				80				5		5	1	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/26	375050	4703100	4.10	1	T																20									60					5				15		4	1	3
7/26	375050	4703100	4.10	2	T		3		2												5					10				60									20		6	2	4
7/26	375000	4703100	4.10	1	M											1					2					0.01				90									7		5	3	2
7/26	375000	4703100	4.10	2	M				1																			0.01		95									4		4	0	4
7/31	374950	4703100	4.00	1	M		3									2												0.01		94									1		5	1	4
7/31	374950	4703100	4.00	2	M		3																			10				87									0.01		4	1	3
7/31	374900	4703100	4.00	1	M		2									2					1					1				93									1		6	3	3
7/31	374900	4703100	4.00	2	M		2		0.01							1					1					1				94					1				0.01		8	3	5
7/31	374850	4703100	4.10	1	D		10		10							20										10				45					5						6	2	4
7/31	374850	4703100	4.10	2	D		2		36							10										0.01				50					2						6	2	4
7/31	374800	4703100	4.00	1	M		2		0.01												5									93											4	1	3
7/31	374800	4703100	4.00	2	M		8		3							1					0.01					3				85											6	3	3
7/31	374750	4703100	3.90	1	M				5							5					0.01					50				40					0.01						6	3	3
7/31	374750	4703100	3.90	2	M		0.01		5							5					3					65				20					2						7	3	4
8/1	374700	4703100	3.80	1	D		0.01		30							20										30		0.01		20											6	2	4
8/1	374700	4703100	3.80	2	D		1		44							15										25		0.01		15					0.01						7	2	5
8/1	374650	4703100	3.70	1	M		2		14							35					1					30	0.01			15					3						8	3	5
8/1	374650	4703100	3.70	2	D		0.01		60							20					0.01					15		0.01		5			0.01		0.01				0.01		10	3	7
8/1	374600	4703100	3.50	1	M		1		15							70										10				4			0.01								6	2	4
8/1	374600	4703100	3.50	2	M		2		40							50										5				1					2						6	2	4
8/1	374550	4703100	3.20	1	D		2		5							2										5	0.01			83					3						7	2	5
8/1	374550	4703100	3.20	2	M		2		15		0.01					20										13				50			0.01		0.01						8	2	6
8/1	374500	4703100	3.00	1	M		5		3		0.01					88										3		0.01		0.01			1								8	2	6
8/1	374500	4703100	3.00	2	M		2		10		0.01					83										5				0.01					0.01						7	2	5
8/1	374450	4703100	2.40	1	M		10		18		2					10										2		2		0.01					55		1				9	2	7
8/1	374450	4703100	2.40	2	M		10		2		1					30										45	5			0.01					7						8	2	6
7/12	376350	4703150	2.90	1	T		25		20							35												5	3	10							2				7	1	6
7/12	376350	4703150	2.90	2	T		10		76		5					5												2		2											6	1	5
7/12	376300	4703150	3.80	1	S		20		20		0.01					2										55				0.01					3						7	2	5
7/12	376300	4703150	3.80	2	M		30		30							2										38		0.01		0.01											6	2	4
7/12	376250	4703150	3.50	1	T				100																																1	0	1
7/12	376250	4703150	3.50	2	T		65		35																																2	0	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	376200	4703150	4.00	1	S		48		10							5					0.01					20		1		1					15					+	8	3	5
7/12	376200	4703150	4.00	2	S		35																			30		0.01							35					+	4	1	3
7/12	376150	4703150	4.00	1	T		16														60							2		2					20					+	5	1	4
7/12	376150	4703150	4.00	2	T		30														65							5											+	3	1	2
7/12	376100	4703150	4.10	1	T																70									1				29					+	3	1	2
7/12	376100	4703150	4.10	2	T		30		4												60							1						5						5	1	4
7/12	376050	4703150	4.20	1	T		55		12												30							2		1									+	5	1	4
7/12	376050	4703150	4.20	2	T		50														43							2		5									+	4	1	3
7/12	376000	4703150	4.40	1	T																70													30						2	1	1
7/12	376000	4703150	4.40	2	T		10									5					50													35						4	2	2
7/12	375950	4703150	4.50	1	T																30													70						2	1	1
7/12	375950	4703150	4.50	2	T		20														75									1				4						4	1	3
7/12	375900	4703150	4.40	1	T		29														70									1									+	3	1	2
7/12	375900	4703150	4.40	2	T																35					5								60					+	3	2	1
7/12	375850	4703150	4.50	1	T		35														64							1												3	1	2
7/12	375850	4703150	4.50	2	T		35														65																			2	1	1
7/12	375800	4703150	4.50	1	T		35									10					55																			3	2	1
7/12	375800	4703150	4.50	2	T		56														3					40		1												4	2	2
7/12	375750	4703150	4.50	1	T		80														15							4		1									+	4	1	3
7/12	375750	4703150	4.50	2	S	5	80														10							4		1									+	5	1	4
7/12	375700	4703150	4.50	1	S		70														29							1											+	3	1	2
7/12	375700	4703150	4.50	2	T		55		2												40							2		1									+	5	1	4
7/12	375650	4703150	4.50	1	T				13												85							2												3	1	2
7/12	375650	4703150	4.50	2	T		50		5												43									2										4	1	3
7/12	375600	4703150	4.50	1	T		40														60																		2	1	1
7/12	375600	4703150	4.50	2	T		40		5												50									5										4	1	3
7/12	375550	4703150	4.40	1	T																													100						1	0	1
7/12	375550	4703150	4.40	2	T		60		15												20							2		3										5	1	4
7/12	375500	4703150	4.20	1	T		20		15												65																		+	3	1	2
7/12	375500	4703150	4.20	2	T				24												75									1										3	1	2
8/1	375450	4703150	4.10	1	S		2		8												40					10				0.01				40						6	2	4
8/1	375450	4703150	4.10	2	S		2		10												73					10				5										5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/1	375400	4703150	4.00	1	S		0.01														5														95						3	1	2
8/1	375400	4703150	4.00	2	S		10		5							5					65							10							0.01				5		7	2	5
8/1	375350	4703150	4.00	1	S		2		8												50														40						4	1	3
8/1	375350	4703150	4.00	2	T											10					85							3		2										4	2	2
8/1	375300	4703150	4.00	1	T				9												45									1				35				10		5	1	4
8/1	375300	4703150	4.00	2	S				0.01												17							3						80				0.01		5	1	4
8/1	375250	4703150	4.00	1	T		3		2												80							14										1		5	1	4
8/1	375250	4703150	4.00	2	T		10														80							9										1		4	1	3
8/1	375200	4703150	4.10	1	T				2												75							19		1				2				1		6	1	5
8/1	375200	4703150	4.10	2	S		0.01		2												80					3		5		5								5		7	2	5
8/1	375150	4703150	4.10	1	T				5												85							5		5										4	1	3
8/1	375150	4703150	4.10	2	S		4														80					6		5		5				0.01						6	2	4
8/1	375100	4703150	4.10	1	T				5							5					80							5		4								1		6	2	4
8/1	375100	4703150	4.10	2	T				25												45							20		5								5		5	1	4
8/1	375050	4703150	4.20	1	S		3		1												3					78		2		10				0.01				3		8	2	6
8/1	375050	4703150	4.20	2	T				1							2	1				15							10		66								5		7	2	5
8/1	375000	4703150	4.10	1	T																					3		2		90				5						4	1	3
8/1	375000	4703150	4.10	2	S											5										5		0.01		90								0.01		5	2	3
8/1	374950	4703150	4.30	1	S				2												3					3				12				80				0.01		6	2	4
8/1	374950	4703150	4.30	2	S		5		1												5					20		1		68										6	2	4
8/1	374900	4703150	4.30	1	M		5		2							2					15					1				75				0.01						7	3	4
8/1	374900	4703150	4.30	2	M		7		1												10					2		0.01		80				0.01						7	2	5
8/1	374850	4703150	4.30	1	S		35		1												10							7		45				2						6	1	5
8/1	374850	4703150	4.30	2	S		25		3							2										5		0.01		60				5						7	2	5
8/1	374800	4703150	4.20	1	M		5		0.01							0.01					0.01					15		0.01		75				5						8	3	5
8/1	374800	4703150	4.20	2	M		3		2												2					0.01		0.01		90				3						7	2	5
8/1	374750	4703150	4.10	1	D		14		5							5										1		0.01		75				0.01						7	2	5
8/1	374750	4703150	4.10	2	M		1									14					0.01					0.01		0.01		80				5						7	3	4
8/1	374700	4703150	4.00	1	D		0.01		1							14										2				80				3						6	2	4
8/1	374700	4703150	4.00	2	M		1		4							10										0.01				80				5						6	2	4
8/1	374650	4703150	3.70	1	M		3		3							20										14				60										5	2	3
8/1	374650	4703150	3.70	2	M		3		10							40					0.01					15				30				2						7	3	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/1	374600	4703150	3.60	1	M		5		45							30										18	0.01			2											6	2	4
8/1	374600	4703150	3.60	2	M		5		35							20										30				10					0.01						6	2	4
8/1	374550	4703150	3.50	1	M		2		50							40										3				5			0.01								6	2	4
8/1	374550	4703150	3.50	2	M		0.01		45							40										5				10					0.01						6	2	4
8/1	374500	4703150	3.00	1	M		1		3							83					0.01					2	0.01			1					10		0.01				9	3	6
8/1	374500	4703150	3.00	2	M		10		3							85					0.01							0.01		0.01			0.01		0.01						9	2	7
8/1	374450	4703150	2.50	1	M		10		5		2					75										5	1	1		0.01		1			0.01		0.01					11	2	9
8/1	374450	4703150	2.50	2	M		3		10		2					50										10		0.01		0.01		1			24		0.01					10	2	8
7/12	376350	4703200	2.60	1	T	5	15		70																	9		1														5	1	4
7/12	376350	4703200	2.60	2	S		30		66		0.01															1		3		0.01												6	1	5
7/12	376300	4703200	3.60	1	T				98																					2												2	0	2
7/12	376300	4703200	3.60	2	S		9		30		0.01					1										60		0.01		0.01												7	2	5
7/12	376250	4703200	4.10	1	S		14		55																	30		1														4	1	3
7/12	376250	4703200	4.10	2	M		2		13																	85		0.01		0.01												5	1	4
7/12	376200	4703200	4.20	1	S		14		75		1															10																4	1	3
7/12	376200	4703200	4.20	2	S		7		30							3										60																4	2	2
7/12	376150	4703200	4.20	1	M		28		2																	70		0.01		0.01												5	1	4
7/12	376150	4703200	4.20	2	M		15		15							5										65				0.01												5	2	3
7/12	376100	4703200	4.20	1	T		52														40					5		2		1												5	2	3
7/12	376100	4703200	4.20	2	T		5														60					30		4		1												5	2	3
7/12	376050	4703200	4.50	1	T		33									2					65																				+	3	2	1
7/12	376050	4703200	4.50	2	T		25		10												50															15					+	4	1	3
7/12	376000	4703200	4.40	1	T		20		11								2				65					1		1												+	6	2	4
7/12	376000	4703200	4.40	2	T		20														68									2					10					+	4	1	3
7/12	375950	4703200	4.50	1	T		16														80							3		1										+	4	1	3
7/12	375950	4703200	4.50	2	T																98							2												+	2	1	1
7/12	375900	4703200	4.50	1	T		30														5									1					64					+	4	1	3
7/12	375900	4703200	4.50	2	T		70														30																				+	2	1	1
7/12	375850	4703200	4.60	1	T		80														18									2												3	1	2
7/12	375850	4703200	4.60	2	T		12														50					35		1		2												5	2	3
7/12	375800	4703200	4.60	1	T																90									10												2	1	1
7/12	375800	4703200	4.60	2	T		50														50																					2	1	1

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	375750	4703200	4.70	1	T		30									13					40							2							15						5	2	3
7/12	375750	4703200	4.70	2	T		50														45							2		1					2						5	1	4
7/12	375700	4703200	4.60	1	T		75														20					1				4										+	4	2	2
7/12	375700	4703200	4.60	2	T		73		15												10									2										+	4	1	3
7/12	375650	4703200	4.50	1	T		45														50					2		2		1										+	5	2	3
7/12	375650	4703200	4.50	2	T		65														34							1												+	3	1	2
7/12	375600	4703200	4.50	1	T		43		5												50									2										+	4	1	3
7/12	375600	4703200	4.50	2	T				20												70					2				8										+	4	2	2
7/12	375550	4703200	4.50	1	T		80		10												4							5		1											5	1	4
7/12	375550	4703200	4.50	2	T				30												60							10												+	3	1	2
7/12	375500	4703200	4.40	1	T		80														20																				2	1	1
7/12	375500	4703200	4.40	2	T		30		15												55																				3	1	2
8/1	375450	4703200	4.30	1	T				5												89									3					1				2		5	1	4
8/1	375450	4703200	4.30	2	T				14												70					15				1											4	2	2
8/1	375400	4703200	4.20	1	T		2		3												90							3											2		5	1	4
8/1	375400	4703200	4.20	2	T		4		40												55					1															4	2	2
8/1	375350	4703200	4.20	1	T		25		5												70																				3	1	2
8/1	375350	4703200	4.20	2	T				20												70							10													3	1	2
8/1	375300	4703200	4.10	1	T																90					5				5											3	2	1
8/1	375300	4703200	4.10	2	S				20							1					75							2											2		5	2	3
8/1	375250	4703200	4.10	1	S		2		14							5					70							2		5									2		7	2	5
8/1	375250	4703200	4.10	2	S		2		5							3					77							5		5					0.01				3		8	2	6
8/1	375200	4703200	4.30	1	T				2							1					65					20		5		2									5		7	3	4
8/1	375200	4703200	4.30	2	T				5							1					55					10		15		3					1				10		8	3	5
8/1	375150	4703200	4.20	1	S		3		3							5					72					10		2		5											7	3	4
8/1	375150	4703200	4.20	2	S				4												40									0.01					55				1		5	1	4
8/1	375100	4703200	4.20	1	T		25		10												5									60											4	1	3
8/1	375100	4703200	4.20	2	T				15							4					10					1		50		10									10		7	3	4
8/1	375050	4703200	4.30	1	T	50	10		10												10							5		10									5		7	1	6
8/1	375050	4703200	4.30	2	T		2		5							2					5					78		1		5					1				2		8	3	5
8/1	375000	4703200	4.30	1	T																1					19				80											3	2	1
8/1	375000	4703200	4.30	2	T		4														1					5				50					40						5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/1	374950	4703200	4.30	1	T		39																					1		60											3	0	3
8/1	374950	4703200	4.30	2	T		4		3							2										15				76											5	2	3
8/1	374900	4703200	4.40	1	S		20		5							15					35					10				15											6	3	3
8/1	374900	4703200	4.40	2	S		30		0.01							35					15					15				5											6	3	3
8/1	374850	4703200	4.30	1	M		5		60							30										1				0.01					4						6	2	4
8/1	374850	4703200	4.30	2	M		5		60							28										2				0.01					5						6	2	4
8/2	374800	4703200	4.40	1	M		15		5							15										0.01				65					0.01						6	2	4
8/2	374800	4703200	4.40	2	D		10		40							40										0.01				10					0.01						6	2	4
8/2	374750	4703200	4.20	1	D		50		5							10										5				25					5						6	2	4
8/2	374750	4703200	4.20	2	D		5		5							30										30				30					0.01						6	2	4
8/2	374700	4703200	4.10	1	D		70		8							10										10				2					0.01						6	2	4
8/2	374700	4703200	4.10	2	D		25		30							7										8				30											5	2	3
8/2	374650	4703200	4.00	1	D		10		10							40										5				30					5						6	2	4
8/2	374650	4703200	4.00	2	D		5		40							45										5				5											5	2	3
8/2	374600	4703200	4.00	1	D		15		15							48										5			0.01	15					2						7	2	5
8/2	374600	4703200	4.00	2	D		35		5							30										5		0.01		25					0.01						7	2	5
8/2	374550	4703200	3.50	1	D		2		10							65										15				8		0.01			0.01						7	2	5
8/2	374550	4703200	3.50	2	D		5		15		0.01					50					0.01					15				15		0.01	0.01								9	3	6
8/2	374500	4703200	3.40	1	M		1		74							10										5				5					2		0.01		3		8	2	6
8/2	374500	4703200	3.40	2	D		1		20							60										11		0.01		5					3						7	2	5
8/2	374450	4703200	1.70	1	S		15		60		0.01					15										1		9		0.01					0.01						8	2	6
8/2	374450	4703200	1.70	2	M		5		60		5					27										1		0.01							0.01		2				8	2	6
7/12	376350	4703250	2.70	1	T		40		52		2					3	1																	1				1		7	1	6
7/12	376350	4703250	2.70	2	T		51		40		2						1											5		1											6	0	6
7/12	376300	4703250	3.20	1	S		5		20																	75		0.01												+	4	1	3
7/12	376300	4703250	3.20	2	T		15		65																					10					10					+	4	0	4
7/12	376250	4703250	4.00	1	T		45		40																	14		1													4	1	3
7/12	376250	4703250	4.00	2	T		65		15							5					1					9		5													6	3	3
7/12	376200	4703250	4.20	1	S		13		5																	80			2	0.01					0.01						6	1	5
7/12	376200	4703250	4.20	2	M		20		10																	70				0.01											4	1	3
7/12	376150	4703250	4.40	1	M		20		8							2										70		0.01		0.01					0.01						7	2	5
7/12	376150	4703250	4.40	2	M		15		5							0.01										80		0.01		0.01											6	2	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/12	376100	4703250	4.40	1	M		5		5																	90		0.01													+	4	1	3
7/12	376100	4703250	4.40	2	M		15		10																	75			0.01	0.01					0.01							6	1	5
7/12	376050	4703250	4.40	1	T		35														65																				2	1	1
7/12	376050	4703250	4.40	2	T		45														53							2													3	1	2
7/12	376000	4703250	4.50	1	T		15														85																				2	1	1
7/12	376000	4703250	4.50	2	T		57														40					2		1													4	2	2
7/12	375950	4703250	4.70	1	T		20														80																			+	2	1	1
7/12	375950	4703250	4.70	2	T		15														85																			+	2	1	1
7/12	375900	4703250	4.70	1	T		60														40																				2	1	1
7/12	375900	4703250	4.70	2	T		60														30							10												+	3	1	2
7/12	375850	4703250	4.70	1	T		30														70																				2	1	1
7/12	375850	4703250	4.70	2	T		60														20					15									5						4	2	2
7/12	375800	4703250	4.80	1	T		55														40					5															3	2	1
7/12	375800	4703250	4.80	2	T		40		40												5					15															4	2	2
7/12	375750	4703250	4.80	1	T		76		5							2					5					10		1		1										7	3	4
7/12	375750	4703250	4.80	2	T		35		3												10					50				2											5	2	3
7/12	375700	4703250	4.80	1	S		80														19					0.01		1		0.01								0.01	+	6	2	4
7/12	375700	4703250	4.80	2	S		72		5												20					0.01		1		2									+	6	2	4
7/12	375650	4703250	4.70	1	S		68														30							0.01		0.01					2				+	5	1	4
7/12	375650	4703250	4.70	2	S		30		2												50					18		0.01												+	5	2	3
7/12	375600	4703250	4.70	1	T																100																				1	1	0
7/12	375600	4703250	4.70	2	T																100																				1	1	0
7/12	375550	4703250	4.60	1	T																100																			+	1	1	0
7/12	375550	4703250	4.60	2	T		1														99																			+	2	1	1
7/12	375500	4703250	4.50	1	T																100																				1	1	0
7/12	375500	4703250	4.50	2	T																100																				1	1	0
8/2	375450	4703250	4.20	1	T		5														20					55		20													4	2	2
8/2	375450	4703250	4.20	2	T		30														35					25													10		4	2	2
8/2	375400	4703250	4.30	1	T																100																				1	1	0
8/2	375400	4703250	4.30	2	T						1										99																				2	1	1
8/2	375350	4703250	4.30	1	T												1				79							10								2				8		5	1	4
8/2	375350	4703250	4.30	2	T		10		5												75							10													4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/2	375300	4703250	4.20	1	T		9		15												70							5											1		5	1	4
8/2	375300	4703250	4.20	2	T		10		4												65					1				20											5	2	3
8/2	375250	4703250	4.30	1	T				40												40					3		10		2									5		6	2	4
8/2	375250	4703250	4.30	2	T		9		10		1										75							2		2									1		7	1	6
8/2	375200	4703250	4.50	1	T		5		35							3	1				50							5		1											7	2	5
8/2	375200	4703250	4.50	2	T		15		22												60							1		2											5	1	4
8/2	375150	4703250	4.40	1	T				18							5					65					1		5							5				1		7	3	4
8/2	375150	4703250	4.40	2	T		10		1												65					20		3							1						6	2	4
8/2	375100	4703250	4.60	1	T		65									9					10							1							15						5	2	3
8/2	375100	4703250	4.60	2	T		25		10							5					5							5		50											6	2	4
8/2	375050	4703250	4.60	1	T		60																			1									39						3	1	2
8/2	375050	4703250	4.60	2	T		50																			15				35											3	1	2
8/2	375000	4703250	4.60	1	T																									100											1	0	1
8/2	375000	4703250	4.60	2	T																					30		5		65											3	1	2
8/2	374950	4703250	4.60	1	T											5					10									85											3	2	1
8/2	374950	4703250	4.60	2	T																10					30				60											3	2	1
8/2	374900	4703250	4.50	1	M		15		15							65										0.01		0.01		0.01					5						7	2	5
8/2	374900	4703250	4.50	2	M		5		40							55										0.01		0.01		0.01					0.01						7	2	5
8/2	374850	4703250	4.50	1	M		5		70							25										0.01				0.01											5	2	3
8/2	374850	4703250	4.50	2	M		5		65							30										0.01				0.01											5	2	3
8/2	374800	4703250	4.40	1	D		30		30							35										3				2					0.01						6	2	4
8/2	374800	4703250	4.40	2	D		12		35							50										1				0.01					2						6	2	4
8/2	374750	4703250	4.30	1	D		10		70							15										3				2											5	2	3
8/2	374750	4703250	4.30	2	D		10		60							30										0.01				0.01											5	2	3
8/2	374700	4703250	4.30	1	D		65		15							5										15															4	2	2
8/2	374700	4703250	4.30	2	M		35		20							18										25									2						5	2	3
8/2	374650	4703250	4.00	1	D		73		10							10										5				2					0.01						6	2	4
8/2	374650	4703250	4.00	2	D		65		9							25										1				0.01		0.01									6	2	4
8/2	374600	4703250	4.00	1	D		55		30							6										5				4		0.01			0.01						7	2	5
8/2	374600	4703250	4.00	2	D		35		30							15										10				5					5						6	2	4
8/2	374550	4703250	3.90	1	M		15		30							40										5				5					5						6	2	4
8/2	374550	4703250	3.90	2	D		30		20							40										5				5											5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/2	374500	4703250	3.20	1	M				28							40										2				30		0.01									5	2	3
8/2	374500	4703250	3.20	2	D		0.01		5							30										5				60		0.01			0.01						7	2	5
8/2	374450	4703250	3.10	1	M		2		50							35										5		0.01		5		2			1						8	2	6
8/2	374450	4703250	3.10	2	D		1		16							75										5		0.01		1		0.01			2						8	2	6
8/2	374400	4703250	2.90	1	M		30		30		1					20														10		7					2				7	1	6
8/2	374400	4703250	2.90	2	M		25		25		1					15												0.01		20		14					0.01				8	1	7
7/31	376350	4703300	2.00	1	M		8		5							85												0.01		0.01							2				6	1	5
7/31	376350	4703300	2.00	2	M		3		3		2					77																					15				5	1	4
7/31	376300	4703300	3.00	1	M		20		67							5										2	5			0.01					1		0.01				8	2	6
7/31	376300	4703300	3.00	2	M		15		65		0.01					5										0.01	12			3									0.01		8	2	6
7/31	376250	4703300	3.60	1	S		45		15		0.01					11										2		5		0.01					2			20		9	2	7
7/31	376250	4703300	3.60	2	S		50		40		0.01					8	0.01											0.01		2					0.01						8	1	7
8/2	374350	4703300	2.50	1	M		23		30							40										2		1		2							2		0.01		8	2	6
8/2	374350	4703300	2.50	2	M		10		70		2					16											2										0.01		0.01		7	1	6
7/31	376300	4703350	2.50	1	M		4		20		1					70														0.01							5				6	1	5
7/31	376300	4703350	2.50	2	M		5		10		0.01					70																					15				5	1	4
7/31	376250	4703350	3.60	1	S		50		41		0.01					5										1		2		1					0.01						8	2	6
7/31	376250	4703350	3.60	2	S		37		50		1															5				5					2						6	1	5
7/31	376200	4703350	4.00	1	M		57		35		0.01					3										3		1		1											7	2	5
7/31	376200	4703350	4.00	2	M		60		37		0.01															3									0.01						5	1	4
8/2	374350	4703350	3.00	1	D		3		20							35														40		2						0.01		6	1	5
8/2	374350	4703350	3.00	2	D		4		40							18										2	0.01			30		5			1		0.01			9	2	7
7/31	376250	4703400	2.70	1	S		10		5		3					79														1					0.01		2				7	1	6
7/31	376250	4703400	2.70	2	S		68		20		2					3										2		1							2		2				8	2	6
7/31	376200	4703400	4.00	1	S		60		31		3					4										2															5	2	3
7/31	376200	4703400	4.00	2	S		65		30							4										1				0.01											5	2	3
7/31	376150	4703400	4.10	1	S		35		60		0.01															5		0.01		0.01											6	1	5
7/31	376150	4703400	4.10	2	S		35		60																	4									1						4	1	3
8/2	374600	4703400	4.80	1	S		5		75							15										0.01				0.01					5						6	2	4
8/2	374600	4703400	4.80	2	S		37		40							10					0.01							1		10					2						7	2	5
8/2	374450	4703400	4.00	1	D		55		10							20										15									0.01						5	2	3
8/2	374450	4703400	4.00	2	D		65		15							15										5		0.01		0.01					0.01						7	2	5

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/2	374350	4703400	2.90	1	T	1	40		5							40												5				4				5				7	1	6
8/2	374350	4703400	2.90	2	S		70		5							15												0.01								10				5	1	4
7/31	376250	4703450	2.10	1	T		2		45		5					35	2											10		1										7	1	6
7/31	376250	4703450	2.10	2	T		4		30		2					15	1											15								33				7	1	6
7/31	376200	4703450	3.50	1	T				100																															1	0	1
7/31	376200	4703450	3.50	2	T		13		85																			2												3	0	3
7/31	376150	4703450	4.20	1	T		28		70		2																														3	0	3
7/31	376150	4703450	4.20	2	S		30		70		0.01																								0.01						4	0	4
8/2	374350	4703450	3.50	1	S		4		50							30										13		0.01		1				0.01		2				8	2	6
8/2	374350	4703450	3.50	2	M		4		30							45										5				0.01				15		1				7	2	5
7/31	376200	4703500	2.10	1	M		2		70		0.01					28												0.01												5	1	4
7/31	376200	4703500	2.10	2	S		5		60							30												2								3				5	1	4
7/31	376150	4703500	4.20	1	T				99																			1												2	0	2
7/31	376150	4703500	4.20	2	T		30		20							25																			25						4	1	3
7/31	376100	4703500	4.70	1	T		47		48							4														1										4	1	3
7/31	376100	4703500	4.70	2	S		25		70							3										2		0.01		0.01										6	2	4
8/2	374300	4703500	2.50	1	S		50		5		5																	0.01				40				0.01				6	0	6
8/2	374300	4703500	2.50	2	S		53		3		2					2										10		0.01				20				10				8	2	6
7/31	376150	4703550	2.90	1	T		64		15							5														1						15				5	1	4
7/31	376150	4703550	2.90	2	S		5		80							10																				5				4	1	3
7/31	376100	4703550	4.80	1	T		24		70		1					1												1		3										6	1	5
7/31	376100	4703550	4.80	2	T		34		60		3																	2		1										5	0	5
7/31	376050	4703550	5.00	1	M		8		85		0.01					2										5														5	2	3
7/31	376050	4703550	5.00	2	M		15		80																	5														3	1	2
7/31	376150	4703600	2.60	1	S		2		30		1					60												2								5				6	1	5
7/31	376150	4703600	2.60	2	S		10		35		0.01					45																				10				5	1	4
7/31	376100	4703600	4.60	1	T		20		75								1				1							3												5	1	4
7/31	376100	4703600	4.60	2	T		24		75																			1												3	0	3
7/31	376050	4703600	5.00	1	S		9		90																	1				0.01										4	1	3
7/31	376050	4703600	5.00	2	S		10		85																	5								0.01						4	1	3
8/2	374300	4703600	4.00	1	T		60									1																				39				3	1	2
8/2	374300	4703600	4.00	2	T		55				5																									40				3	0	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	376150	4703650	2.30	1	T				60							20												1									19				4	1	3
7/31	376150	4703650	2.30	2	S		5		70							20												0.01									5				5	1	4
7/31	376100	4703650	4.40	1	T				50																	50															2	1	1
7/31	376100	4703650	4.40	2	T		29		70																	1															3	1	2
7/31	376050	4703650	5.00	1	T		14		85		1																														3	0	3
7/31	376050	4703650	5.00	2	S		20		80																			0.01		0.01											4	0	4
7/31	376100	4703700	1.00	1	S		5		85							5												0.01									5				5	1	4
7/31	376100	4703700	1.00	2	S				94																		3										3				3	0	3
7/31	376050	4703700	4.70	1	T				75							22												2							1						4	1	3
7/31	376050	4703700	4.70	2	T		10		75							10												5													4	1	3
7/31	376000	4703700	5.20	1	T		18		80		1																			1											4	0	4
7/31	376000	4703700	5.20	2	S		15		85		0.01																								0.01						4	0	4
8/2	374250	4703700	2.50	1	T		45									10													15									30				4	1	3
8/2	374250	4703700	2.50	2	S		80		0.01		0.01					5										0.01													15				6	2	4
7/31	376050	4703750	4.70	1	T		65		33																			1							1							4	0	4
7/31	376050	4703750	4.70	2	T		40		55		1					3																			1							5	1	4
7/31	376000	4703750	5.10	1	T		60		33		1																	1										5				5	0	5
7/31	376000	4703750	5.10	2	S		30		70		0.01																															3	0	3
7/31	375950	4703750	5.50	1	O																																				0	0	0
7/31	375950	4703750	5.50	2	T				95																			5													2	0	2
7/31	376100	4703800	2.60	1	T		60		15							15										5		2									3				6	2	4
7/31	376100	4703800	2.60	2	T		5		90																			5													3	0	3
7/31	376050	4703800	4.10	1	T		5		15																										5		75				4	0	4
7/31	376050	4703800	4.10	2	T		85		5																												10				3	0	3
7/31	376000	4703800	5.20	1	T		25		70		1																	1							3						5	0	5
7/31	376000	4703800	5.20	2	T		7		90		1																	1									1				5	0	5
8/2	374250	4703800	3.80	1	S		85		13																	2										0.01				4	1	3
8/2	374250	4703800	3.80	2	M		65		10							10										15										0.01				5	2	3
7/31	376100	4703850	1.70	1	S				45							10											40			0.01						5				5	1	4
7/31	376100	4703850	1.70	2	S				65							20	0.01										10			0.01						5				6	1	5
7/31	376050	4703850	3.10	1	S		65		10		0.01					1														0.01		1			10		13				8	1	7
7/31	376050	4703850	3.10	2	S		85		5																	1									5		4				5	1	4

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	376000	4703850	5.10	1	T		16		80		1					3																									4	1	3
7/31	376000	4703850	5.10	2	S		24		75		1																														3	0	3
7/31	376050	4703900	2.60	1	S		37		15							30	0.01									3		2		0.01					3		10				9	2	7
7/31	376050	4703900	2.60	2	M		15		10		0.01					45										0.01				0.01		1			25		4				9	2	7
7/31	376000	4703900	4.20	1	T		60		40																																2	0	2
7/31	376000	4703900	4.20	2	T		35		65																																2	0	2
7/31	375950	4703900	5.70	1	S		25		75	0.01							0.01													0.01											5	0	5
7/31	375950	4703900	5.70	2	S		15		85		0.01																			0.01											4	0	4
8/2	374200	4703900	3.60	1	T											100																								1	1	0
8/2	374200	4703900	3.60	2	T				65							10																					25				3	1	2
7/31	376050	4703950	2.50	1	T		80		20																																2	0	2
7/31	376050	4703950	2.50	2	T		60		17																			1		2						20				5	0	5
7/31	376000	4703950	2.60	1	M		47		0.01		0.01					50										2									1				6	2	4
7/31	376000	4703950	2.60	2	M		20		3							60																			5		12				5	1	4
7/31	375950	4703950	5.50	1	T		28		70																			2												3	0	3
7/31	375950	4703950	5.50	2	T		55		45																																2	0	2
7/31	376000	4704000	2.70	1	S		5		85							10																									3	1	2
7/31	376000	4704000	2.70	2	S		7		90							2												0.01									1				5	1	4
7/31	375950	4704000	5.20	1	S	0.01	5		95																					0.01											4	0	4
7/31	375950	4704000	5.20	2	S		10		90																	0.01									0.01						4	1	3
7/31	375900	4704000	6.40	1	T		9		90																					1											3	0	3
7/31	375900	4704000	6.40	2	T				97		2					1																									3	1	2
7/31	375950	4704050	3.60	1	T				100																																1	0	1
7/31	375950	4704050	3.60	2	T		50																															50			2	0	2
7/31	375900	4704050	6.40	1	T		65		35																																2	0	2
7/31	375900	4704050	6.40	2	T		50		49		1																														3	0	3
7/31	375850	4704050	8.10	1	O																																				0	0	0
7/31	375850	4704050	8.10	2	T		75		25																																2	0	2
8/2	374142	4704072	8.00	1	O																																				0	0	0
8/2	374142	4704072	8.00	2	O																																				0	0	0
7/31	375900	4704100	5.20	1	T		14		85																			1													3	0	3
7/31	375900	4704100	5.20	2	T		45		50							4												1													4	1	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	375850	4704100	7.00	1	O																																			0	0	0
7/31	375850	4704100	7.00	2	O																																			0	0	0
7/31	375800	4704100	9.30	1	T				100																															1	0	1
7/31	375800	4704100	9.30	2	T		10		90																															2	0	2
7/31	375900	4704150	3.00	1	T		30		30																			2									38				4	0	4
7/31	375900	4704150	3.00	2	S		10		70							15												0.01								5				5	1	4
7/31	375850	4704150	7.20	1	T				100																															1	0	1
7/31	375850	4704150	7.20	2	T				100																															1	0	1
7/31	375800	4704150	10.0	1	T																									100										1	0	1
7/31	375800	4704150	10.0	2	O																																			0	0	0
7/31	375900	4704200	1.50	1	T																						100													1	0	1
7/31	375900	4704200	1.50	2	T											30										10	60													3	2	1
7/31	375892	4704200	3.10	1	T				99	1																														2	0	2
7/31	375892	4704200	3.10	2	T					3						97																								2	1	1
7/31	375850	4704200	6.10	1	T		48		50							2																								3	1	2
7/31	375850	4704200	6.10	2	T				100																															1	0	1
7/31	375800	4704200	9.00	1	O																																			0	0	0
7/31	375800	4704200	9.00	2	T		20				40					40																								3	1	2
8/2	374093	4704222	2.30	1	T		95				5																													2	0	2
8/2	374093	4704222	2.30	2	T						5					60										30											5				4	2	2
7/31	375900	4704250	4.20	1	T				100																															1	0	1
7/31	375900	4704250	4.20	2	S	0.01	5		90		0.01					5																								5	1	4
7/31	375850	4704250	7.50	1	T				100																															1	0	1
7/31	375850	4704250	7.50	2	T				95		5																													2	0	2
7/31	375800	4704250	12.0	1	O																																			0	0	0
7/31	375800	4704250	12.0	2	T						100																														1	0	1
8/2	374090	4704272	7.00	1	O																																			0	0	0
8/2	374090	4704272	7.00	2	O																																			0	0	0
7/31	375900	4704300	2.00	1	S				3		2					90												1							0.01		4				6	1	5
7/31	375900	4704300	2.00	2	T											35											60										5				3	1	2
7/31	375850	4704300	8.00	1	T				100																															1	0	1
7/31	375850	4704300	8.00	2	O																																			0	0	0

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	375800	4704300	12.0	1	O																																				0	0	0
7/31	375800	4704300	12.0	2	O																																				0	0	0
7/31	375877	4704350	5.00	1	T		5		80									1								13												1		5	1	4
7/31	375877	4704350	5.00	2	T		8		90																	2															3	1	2
8/2	374021	4704422	2.70	1	S		15		4		0.01					80																					1			5	1	4
8/2	374021	4704422	2.70	2	M		20		25		2					50	0.01																				3			6	1	5
7/31	375840	4704500	2.30	1	S		3		85		0.01					5										2											5			6	2	4
7/31	375840	4704500	2.30	2	M				70							10										10		1		0.01						9			6	2	4
8/2	373978	4704572	3.00	1	T																																100			1	0	1
8/2	373978	4704572	3.00	2	T				40							5		2								20		30									3			6	2	4
7/31	375808	4704650	1.70	1	T				8		2					65											15										10			5	1	4
7/31	375808	4704650	1.70	2	S		2		15							70										3	5									5			6	2	4
8/2	373951	4704722	3.00	1	T		60		20		2					5		1								1		10									1			8	2	6
8/2	373951	4704722	3.00	2	T		65		15		2					1										11		1					2				3			8	2	6
7/31	375775	4704800	1.10	1	S				40							25											35													3	1	2
7/31	375775	4704800	1.10	2	M				13							80											2										5			4	1	3
8/2	373923	4704872	1.90	1	O																																				0	0	0
8/2	373923	4704872	1.90	2	O																																				0	0	0
7/31	375746	4704950	1.20	1	T											70										27		3													3	2	1
7/31	375746	4704950	1.20	2	S		2									90														3							5			4	1	3
8/2	373874	4704972	3.90	1	T		85		15																																2	0	2
8/2	373874	4704972	3.90	2	T		5		25																												70			3	0	3
8/2	373837	4705072	2.50	1	S		35		2		0.01					60																					3			5	1	4
8/2	373837	4705072	2.50	2	M		35		25		0.01					35										0.01										5			6	2	4
7/31	375715	4705100	1.10	1	T											100																									1	1	0
7/31	375715	4705100	1.10	2	T						20					80																									2	1	1
8/2	373806	4705222	3.60	1	T		55		44		1																														3	0	3
8/2	373806	4705222	3.60	2	T		50		30		4					15												1													5	1	4
7/31	375683	4705250	1.90	1	O																																				0	0	0
7/31	375683	4705250	1.90	2	T						15					85																									2	1	1
8/2	373771	4705372	2.00	1	T		20									25										20		15									20			5	2	3
8/2	373771	4705372	2.00	2	T		44									55																					1			3	1	2

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	375669	4705400	1.50	1	O																																			0	0	0
7/31	375669	4705400	1.50	2	T		100																																	1	0	1
8/2	373731	4705471	3.80	1	M		90		2							5										3														4	2	2
8/2	373731	4705471	3.80	2	M		85		2							5										8														4	2	2
7/31	375636	4705550	3.20	1	M		4		65		0.01					15											15	1		0.01						0.01			8	1	7
7/31	375636	4705550	3.20	2	M		5		65		0.01					10											20	0.01		0.01									7	1	6
8/2	373690	4705571	3.50	1	S		65		3		2					30										0.01														5	2	3
8/2	373690	4705571	3.50	2	S		85									14										1														3	2	1
7/31	375610	4705700	3.40	1	M		10		70		0.01					8										10		0.01		0.01						2			8	2	6
7/31	375610	4705700	3.40	2	M		10		70							10										2	1			0.01						7			7	2	5
8/2	373623	4705721	3.80	1	T		40		25							35																								3	1	2
8/2	373623	4705721	3.80	2	T		70		30																															2	0	2
7/31	375572	4705850	2.60	1	M		1		23		3					70												2									1			6	1	5
7/31	375572	4705850	2.60	2	M				60		4					32										2	1	1												6	2	4
8/2	373586	4705872	3.00	1	M		10		50							35										5				0.01									5	2	3
8/2	373586	4705872	3.00	2	D		15		80							4										1														4	2	2
7/31	375543	4706000	1.50	1	T											2																					98			2	1	1
7/31	375543	4706000	1.50	2	S				18							80												0.01									2			4	1	3
8/2	373511	4706071	3.50	1	T		55		40																	5														3	1	2
8/2	373511	4706071	3.50	2	T		65		33																	2														3	1	2
7/31	375524	4706150	2.00	1	O																																			0	0	0
7/31	375524	4706150	2.00	2	O																																			0	0	0
8/2	373431	4706222	3.20	1	T		50		50																															2	0	2
8/2	373431	4706222	3.20	2	T		50		50																															2	0	2
7/31	375492	4706300	2.60	1	S		15		60		0.01															15	7	0.01		2						1		0.01		9	1	8
7/31	375492	4706300	2.60	2	S		3		60		2					20										0.01	10	5								0.01				8	2	6
8/2	373402	4706322	3.50	1	S		75		15							7										3										0.01				5	2	3
8/2	373402	4706322	3.50	2	M		70		22		0.01					1										5										2				6	2	4
7/31	375463	4706450	1.60	1	T				100																															1	0	1
7/31	375463	4706450	1.60	2	T				35							60																					5				3	1	2
8/2	373348	4706472	2.00	1	M						2					85											8										5				4	1	3
8/2	373348	4706472	2.00	2	M				0.01							80										15				2						3				5	2	3

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/2	373306	4706622	3.50	1	S		85		2																	13															3	1	2
8/2	373306	4706622	3.50	2	S		65		5							15										15															4	2	2
8/2	373296	4706722	3.70	1	S		80		15																	4											1				4	1	3
8/2	373296	4706722	3.70	2	S		75		19		1															5															4	1	3
7/31	375385	4706750	1.80	1	S		15		3							2											60	1									19				6	1	5
7/31	375385	4706750	1.80	2	M		30		3							20										5	30	2								10				7	2	5
7/31	375299	4706850	1.00	1	T											100																								1	1	0
7/31	375299	4706850	1.00	2	T				30							70																								2	1	1
8/2	373269	4706872	7.50	1	O																																			0	0	0
8/2	373269	4706872	7.50	2	O																																			0	0	0
7/31	375231	4707000	2.70	1	S											95																					5				2	1	1
7/31	375231	4707000	2.70	2	S				5							85																					10				3	1	2
8/2	373162	4707022	3.70	1	T		65		5							30																								3	1	2
8/2	373162	4707022	3.70	2	T		65		35																															2	0	2
8/2	373131	4707122	3.00	1	T		5		25		1					30										30		1		2						5		1		9	2	7
8/2	373131	4707122	3.00	2	S		10		15		2					10										60				0.01						3				7	2	5
7/31	375197	4707150	2.10	1	S											97																					3				2	1	1
7/31	375197	4707150	2.10	2	S				15							85																					0.01				3	1	2
7/31	375167	4707300	3.10	1	T				18		2					70																					10				4	1	3
7/31	375167	4707300	3.10	2	S		5		20		0.01					70																					5				5	1	4
8/2	373039	4707372	2.50	1	S		20		10							20										50		0.01												5	2	3
8/2	373039	4707372	2.50	2	M		2		30							15										53		0.01												5	2	3
7/31	375145	4707450	3.40	1	T											75										23										2				3	2	1
7/31	375145	4707450	3.40	2	S		10		10		5					70												3								2				6	1	5
8/2	373050	4707450	10.0	1	O																																			0	0	0
8/2	373050	4707450	10.0	2	O																																			0	0	0
8/2	373000	4707550	6.80	1	T				100																															1	0	1
8/2	373000	4707550	6.80	2	T		15		85																															2	0	2
7/31	375133	4707600	3.20	1	T											95																					5				2	1	1
7/31	375133	4707600	3.20	2	S				5		10					80												2								3				5	1	4
8/2	373000	4707650	5.20	1	T				100																															1	0	1
8/2	373000	4707650	5.20	2	O																																			0	0	0

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hilli	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/31	375113	4707750	3.40	1	T				10							85																				5				3	1	2
7/31	375113	4707750	3.40	2	T				80		15					1																				4				4	1	3
8/2	372925	4707800	5.60	1	T		99																											1					2	0	2
8/2	372925	4707800	5.60	2	T				80																										20				2	0	2
7/31	375090	4707900	2.00	1	S											100																							1	1	0
7/31	375090	4707900	2.00	2	T											100																							1	1	0
8/2	372900	4707900	5.00	1	T		42		50		2					5												1											5	1	4
8/2	372900	4707900	5.00	2	T		35		65																														2	0	2
7/31	375064	4708050	4.00	1	T		7		20																	70				3										4	1	3
7/31	375064	4708050	4.00	2	T		30		60							10																							3	1	2
8/2	372800	4708100	3.10	1	S		0.01		30		2					35										33													5	2	3
8/2	372800	4708100	3.10	2	M		4		50		1					40										5											0.01			6	2	4
7/31	375047	4708200	4.60	1	S		48		45							3										2											2			5	2	3
7/31	375047	4708200	4.60	2	S		45		25							7		0.01								20	0.01										3			7	2	5
8/2	372800	4708200	4.20	1	S		80		14		2					1		0.01								1									2					7	2	5
8/2	372800	4708200	4.20	2	S		60		32		2					5										0.01		0.01							1					7	2	5
8/2	372750	4708250	3.50	1	S		70		5		5					0.01																					20			5	1	4
8/2	372750	4708250	3.50	2	M		75		5							10												0.01									10			5	1	4
7/31	375020	4708350	2.70	1	S		7		3							90										0.01														4	2	2
7/31	375020	4708350	2.70	2	M				20		3					50										25											2			5	2	3
8/2	372750	4708350	4.00	1	T		70		30																														2	0	2
8/2	372750	4708350	4.00	2	T		75		15																											10			3	0	3
8/2	372700	4708350	2.90	1	S		30		25		6					10										25											4			6	2	4
8/2	372700	4708350	2.90	2	M		79		5		0.01					10										0.01		0.01							3			8	2	6
7/31	374984	4708500	2.50	1	T				5							60																					35			3	1	2
7/31	374984	4708500	2.50	2	T											55										20											25			3	2	1
8/2	372700	4708525	3.00	1	S		25		1		17					55										2														5	2	3
8/2	372700	4708525	3.00	2	S		40		3		5					41		0.01								10		1												7	2	5
8/2	372600	4708600	1.50	1	T		30				2					55																8					5			5	1	4
8/2	372600	4708600	1.50	2	S		5		2		0.01					60										13	15										5		0.01	8	2	6
7/31	374900	4708650	2.40	1	T											100																								1	1	0
7/31	374900	4708650	2.40	2	T											100																								1	1	0

Data 1. (Continued) Cayuga Lake rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/2	372550	4708700	3.20	1	S		97		0.01		3																														3	**0**	3
8/2	372550	4708700	3.20	2	M		90		5		0.01					**5**																									4	**1**	3
8/2	372450	4708850	1.50	1	T				20		1					**20**										**40**														5	**2**	3
8/2	372450	4708850	1.50	2	T				90																			10												2	**0**	2
8/2	372300	4708950	2.70	1	S		2		8		30					**40**																								5	**1**	4
8/2	372300	4708950	2.70	2	S		7		3		50					**40**																								5	**1**	4
	Rake Toss	1990				20	1165	163	840	6	206	**0**	0	0	**0**	**765**	168	6	**6**	1	**1335**	0	3	0	0	**595**	40	597	8	1237	0	27	26	0	943	0	188	0	467	**474**			
	"O"	60																																								
	"T"	1150																																								
	"S"	444																																								
	"M"	298																																								
	"D"	38																																								

Data 2. Lighthouse rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375700	4701950	2.60	1	T															100																						1	1	0
7/24	375700	4701950	2.60	2	T		65										20			10											4					1						5	2	3
7/24	375650	4701950	2.80	1	T		100																																			1	0	1
7/24	375650	4701950	2.80	2	T		100																																			1	0	1
7/24	375600	4701950	1.00	1	S		5											1		62		30							0.01		0.01						2				7	2	5
7/24	375600	4701950	1.00	2	S		5											2		50		39							1		3								0.01		7	2	5
7/24	375650	4702000	3.00	1	O																																					0	0	0
7/24	375650	4702000	3.00	2	T																										100											1	0	1
7/24	375600	4702000	2.00	1	T		90											5				4					1															4	2	2
7/24	375600	4702000	2.00	2	S		81		3									5		5		2									2					2						7	2	5
7/24	375550	4702000	1.30	1	S													3		50		40									2							5		0.01		6	2	4
7/24	375550	4702000	1.30	2	S		4				0.01									40		54							2													5	2	3
7/24	375650	4702050	2.80	1	T															5																95						2	1	1
7/24	375650	4702050	2.80	2	T		60		25								2														13											4	1	3
7/24	375600	4702050	3.00	1	T		70											10				20																				3	1	2
7/24	375600	4702050	3.00	2	T		79		5								10					5							1													5	2	3
7/24	375550	4702050	1.50	1	T		30		5								2	5		15		40							2		1											8	3	5
7/24	375550	4702050	1.50	2	S		20				0.01							10		25		40					2		2		1											8	3	5
7/24	375600	4702100	3.10	1	O																																					0	0	0
7/24	375600	4702100	3.10	2	T		62										25			10		1									2											5	3	2
7/24	375550	4702100	2.60	1	S		50		5									3		2		40									0.01											6	2	4
7/24	375550	4702100	2.60	2	S		60		2									3		0.01		35									0.01											6	2	4
7/24	375500	4702100	1.50	1	T		80											10				8									2											4	1	3
7/24	375500	4702100	1.50	2	T						5						10	68		2		5							10													6	3	3
7/24	375550	4702150	3.00	1	T		85		5									8													2											4	0	4
7/24	375550	4702150	3.00	2	T		30										7	10		1		50									2											6	3	3
7/24	375500	4702150	1.70	1	S		39		10		0.01						4	20		0.01		20							0.01		5					2			0.01		11	3	8
7/24	375500	4702150	1.70	2	S		20		5								2	32				35							0.01		1					5					8	2	6
7/24	375450	4702150	1.50	1	T												27	35				2							5		30								1		6	2	4
7/24	375450	4702150	1.50	2	T		50										17			2		4									25								2		6	3	3
7/24	375500	4702200	3.00	1	T	30	2				3							11		35		1																3		15		8	2	6
7/24	375500	4702200	3.00	2	S	5	55		5								4	3		25		0.01							0.01							0.01			3		10	3	7

Data 2. (Continued) Lighthouse rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375450	4702200	2.50	1	T		80							1			7	2				10																			5	2	3
7/24	375450	4702200	2.50	2	T		80											1				12							5		2										5	1	4
7/24	375400	4702200	1.50	1	T				5								3	30		1		59							2												6	3	3
7/24	375400	4702200	1.50	2	S		2				1						12	30				50									5					0.01					7	2	5
7/24	375450	4702250	2.00	1	T													10				75									15										3	1	2
7/24	375450	4702250	2.00	2	T	1	60		1								10	8		2		3							5										10		9	3	6
7/24	375400	4702250	2.70	1	T																	100																			1	1	0
7/24	375400	4702250	2.70	2	T		40				1						3	2				52									2										6	2	4
7/24	375350	4702250	2.00	1	T		13		5									2				75							1		4										6	1	5
7/24	375350	4702250	2.00	2	T		2											5		3		77									3									10	6	2	4
7/24	375500	4702300	1.60	1	T																										100										1	0	1
7/24	375500	4702300	1.60	2	T												95	5																							2	1	1
7/24	375450	4702300	2.10	1	T		25				1						3	66		2		3																			6	3	3
7/24	375450	4702300	2.10	2	T		2		10		1						3	69				5									5									5	8	2	6
7/24	375400	4702300	2.60	1	T																	60																		40	2	1	1
7/24	375400	4702300	2.60	2	T		87		5									1				5									2										5	1	4
7/24	375500	4702350	2.00	1	T	3	15										10	25		2		3					1		3									1	37		10	4	6
7/24	375500	4702350	2.00	2	T		15		35									30		2		5							5		3							5			8	2	6
7/24	375450	4702350	2.10	1	T													65				34							1												3	1	2
7/24	375450	4702350	2.10	2	T		5		1									74				8							2										10		6	1	5
7/24	375400	4702350	2.60	1	M		65																				5				10					20					4	1	3
7/24	375400	4702350	2.60	2	M	1	70																				15		1		8					5					6	1	5
7/24	375500	4702400	2.20	1	T		55										1	2				5					15				15								7	7	3	4
7/24	375500	4702400	2.20	2	T		15		1								2	2				20					3		4		50								3	9	3	6
7/24	375450	4702400	2.50	1	S	0.01	41		1													50					0.01		3		3					0.01			2	9	2	7
7/24	375450	4702400	2.50	2	S		20															10					10				5					55					5	2	3
7/24	375400	4702400	2.80	1	T	3	77		15													2									2					1					6	1	5
7/24	375400	4702400	2.80	2	S		87		3								5	0.01				3									2										6	2	4
	Rake Toss	60				7	45	0	21	0	9	0	0	1	0	0	24	39	0	25	0	46	0	0	0	0	9	0	22	0	37	0	0	0	0	12	0	5	0	16	0			
	"O"	2																																										
	"T"	41																																									
	"S"	15																																									
	"M"	2																																									
	"D"	0																																									

Data 3. Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	374800	4698450	0.70	1	O																																			+	0	0	0
7/18	374800	4698450	0.70	2	O																																			+	0	0	0
7/18	374750	4698450	0.50	1	O																																				0	0	0
7/18	374750	4698450	0.50	2	T																										100										1	0	1
7/18	374800	4698500	0.60	1	O																																			+	0	0	0
7/18	374800	4698500	0.60	2	O																																			+	0	0	0
7/18	374800	4698550	0.50	1	O																																				0	0	0
7/18	374800	4698550	0.50	2	T				95								5																							+	2	1	1
7/18	374850	4698600	0.60	1	O																																			+	0	0	0
7/18	374850	4698600	0.60	2	T				100																															+	1	0	1
7/18	374800	4698600	0.50	1	O																																			+	0	0	0
7/18	374800	4698600	0.50	2	O																																			+	0	0	0
7/18	374850	4698650	0.40	1	O																																			+	0	0	0
7/18	374850	4698650	0.40	2	O																																			+	0	0	0
7/18	374900	4698700	1.00	1	O																																			+	0	0	0
7/18	374900	4698700	1.00	2	O																																			+	0	0	0
7/18	374900	4698750	0.30	1	O																																			+	0	0	0
7/18	374900	4698750	0.30	2	O																																			+	0	0	0
7/18	374900	4698800	0.40	1	T				100																															+	1	0	1
7/18	374900	4698800	0.40	2	O																																			+	0	0	0
7/18	374950	4698850	0.50	1	O																																			+	0	0	0
7/18	374950	4698850	0.50	2	O																																			+	0	0	0
7/18	374950	4698900	0.30	1	O																																			+	0	0	0
7/18	374950	4698900	0.30	2	O																																			+	0	0	0
7/18	375000	4698950	0.30	1	O																																			+	0	0	0
7/18	375000	4698950	0.30	2	O																																			+	0	0	0
7/18	375000	4699000	0.50	1	O																																			+	0	0	0
7/18	375000	4699000	0.50	2	O																																			+	0	0	0
7/18	375050	4699050	0.30	1	T				30	70																														+	2	0	2
7/18	375050	4699050	0.30	2	O																																			+	0	0	0
7/18	375050	4699100	0.40	1	O																																				0	0	0
7/18	375050	4699100	0.40	2	O																																				0	0	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zamichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375100	4699150	0.50	1	O																																			+	0	0	0
7/18	375100	4699150	0.50	2	O																																			+	0	0	0
7/18	375100	4699200	0.30	1	O																																				0	0	0
7/18	375100	4699200	0.30	2	O																																				0	0	0
7/18	375150	4699250	1.00	1	O																																			+	0	0	0
7/18	375150	4699250	1.00	2	O																																			+	0	0	0
7/18	375150	4699300	0.50	1	O																																			+	0	0	0
7/18	375150	4699300	0.50	2	T															60																	40				+	2	1	1
8/7	375900	4699350	1.10	1	O																																				0	0	0
8/7	375900	4699350	1.10	2	O																																				0	0	0
7/18	375200	4699350	0.50	1	T																								25											75		2	0	2
7/18	375200	4699350	0.50	2	O																																				0	0	0
7/18	375200	4699400	0.50	1	O																																			+	0	0	0
7/18	375200	4699400	0.50	2	O																																			+	0	0	0
8/7	375850	4699408	1.20	1	O																																				0	0	0
8/7	375850	4699408	1.20	2	O																																				0	0	0
7/18	375250	4699450	0.30	1	T				100																															+	1	0	1
7/18	375250	4699450	0.30	2	T																																		100	+	1	0	1
8/7	375800	4699451	1.40	1	O																																				0	0	0
8/7	375800	4699451	1.40	2	O																																				0	0	0
7/18	375250	4699500	0.50	1	O																																			+	0	0	0
7/18	375250	4699500	0.50	2	O																																			+	0	0	0
8/7	375750	4699501	1.30	1	O																																				0	0	0
8/7	375750	4699501	1.30	2	O																																				0	0	0
8/7	375700	4699550	1.80	1	O																																				0	0	0
8/7	375700	4699550	1.80	2	O																																				0	0	0
7/18	375300	4699550	0.50	1	O																																				0	0	0
7/18	375300	4699550	0.50	2	O																																				0	0	0
8/7	375650	4699585	1.50	1	O																																				0	0	0
8/7	375650	4699585	1.50	2	O																																				0	0	0
8/7	375625	4699600	1.70	1	O																																				0	0	0
8/7	375625	4699600	1.70	2	O																																				0	0	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375300	4699600	0.50	1	T				100																																1	0	1
7/18	375300	4699600	0.50	2	T				100																																1	0	1
8/7	375650	4699650	1.20	1	O																																				0	0	0
8/7	375650	4699650	1.20	2	O																																				0	0	0
7/18	375350	4699650	0.30	1	O																																			+	0	0	0
7/18	375350	4699650	0.30	2	O																																			+	0	0	0
8/7	375550	4699663	2.50	1	O																																				0	0	0
8/7	375550	4699663	2.50	2	O																																				0	0	0
7/18	375450	4699667	1.00	1	O																																				0	0	0
7/18	375450	4699667	1.00	2	O																																				0	0	0
7/18	375500	4699671	1.20	1	O																																				0	0	0
7/18	375500	4699671	1.20	2	O																																				0	0	0
7/18	375400	4699681	0.50	1	O																																				0	0	0
7/18	375400	4699681	0.50	2	O																																				0	0	0
8/7	375650	4699700	2.40	1	O																																				0	0	0
8/7	375650	4699700	2.40	2	O																																				0	0	0
7/18	375350	4699700	0.50	1	O																																				0	0	0
7/18	375350	4699700	0.50	2	O																																				0	0	0
8/7	375650	4699750	2.10	1	T												100																								1	1	0
8/7	375650	4699750	2.10	2	O																																				0	0	0
7/18	375350	4699750	0.40	1	O																																				0	0	0
7/18	375350	4699750	0.40	2	O																																				0	0	0
8/7	375650	4699800	1.90	1	O																																				0	0	0
8/7	375650	4699800	1.90	2	O																																				0	0	0
7/18	375400	4699800	3.10	1	T					100																															1	0	1
7/18	375400	4699800	3.10	2	O																																				0	0	0
8/7	375650	4699850	2.20	1	O																																				0	0	0
8/7	375650	4699850	2.20	2	T												100																								1	1	0
7/18	375400	4699850	2.50	1	O																																				0	0	0
7/18	375400	4699850	2.50	2	O																																				0	0	0
8/7	375650	4699900	2.00	1	O																																				0	0	0
8/7	375650	4699900	2.00	2	O																																				0	0	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zamichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375450	4699900	3.20	1	O																																				0	0	0
7/18	375450	4699900	3.20	2	O																																				0	0	0
8/7	375650	4699950	1.30	1	O																																				0	0	0
8/7	375650	4699950	1.30	2	T															100																					1	1	0
7/18	375450	4699950	2.00	1	O																																				0	0	0
7/18	375450	4699950	2.00	2	T				100																																1	0	1
8/7	375650	4700000	0.70	1	O																																				0	0	0
8/7	375650	4700000	0.70	2	O																																				0	0	0
7/18	375500	4700000	2.20	1	O																																				0	0	0
7/18	375500	4700000	2.20	2	O																																				0	0	0
8/7	375650	4700050	2.00	1	O																																				0	0	0
8/7	375650	4700050	2.00	2	O																																				0	0	0
7/18	375500	4700050	2.80	1	O																																				0	0	0
7/18	375500	4700050	2.80	2	O																																				0	0	0
8/7	375650	4700100	1.40	1	O																																				0	0	0
8/7	375650	4700100	1.40	2	O																																				0	0	0
7/18	375500	4700100	0.50	1	O																																				0	0	0
7/18	375500	4700100	0.50	2	O																																				0	0	0
8/7	375650	4700150	1.70	1	O																																				0	0	0
8/7	375650	4700150	1.70	2	T																										100										1	0	1
7/18	375500	4700150	2.50	1	T				10											90																					2	1	1
7/18	375500	4700150	2.50	2	O																																				0	0	0
8/7	375650	4700200	1.80	1	T															100																					1	1	0
8/7	375650	4700200	1.80	2	O																																				0	0	0
7/18	375500	4700200	1.00	1	T															100																				+	1	1	0
7/18	375500	4700200	1.00	2	O																																			+	0	0	0
8/7	375650	4700250	1.20	1	T															100																					1	1	0
8/7	375650	4700250	1.20	2	S															100																					1	1	0
7/18	375550	4700250	1.50	1	T															95																	5				2	1	1
7/18	375550	4700250	1.50	2	O																																				0	0	0
7/18	375500	4700250	0.80	1	T															95																				5		2	1	1
7/18	375500	4700250	0.80	2	T															98																				2		2	1	1

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/7	375650	4700300	1.50	1	T															100																						1	1	0
8/7	375650	4700300	1.50	2	O																																					0	0	0
7/18	375550	4700300	1.50	1	T															100																						1	1	0
7/18	375550	4700300	1.50	2	T															100																						1	1	0
8/7	375650	4700350	1.00	1	O																																					0	0	0
8/7	375650	4700350	1.00	2	O																																					0	0	0
7/18	375550	4700350	2.60	1	O																																					0	0	0
7/18	375550	4700350	2.60	2	T				100																																	1	0	1
8/7	375650	4700400	1.70	1	T															100																						1	1	0
8/7	375650	4700400	1.70	2	O																																					0	0	0
7/18	375550	4700400	2.60	1	O																																					0	0	0
7/18	375550	4700400	2.60	2	O																																					0	0	0
8/7	375650	4700450	1.80	1	T				100																																	1	0	1
8/7	375650	4700450	1.80	2	T				100																																	1	0	1
7/18	375600	4700450	1.70	1	T																																			100		1	0	1
7/18	375600	4700450	1.70	2	T															100																						1	1	0
7/18	375550	4700450	1.50	1	T		70													10																					20		3	1	2
7/18	375550	4700450	1.50	2	S															100																					0.01		2	1	1
7/18	375650	4700500	1.80	1	O																																					0	0	0
7/18	375650	4700500	1.80	2	T																											100										1	0	1
7/18	375600	4700500	1.10	1	O																																					0	0	0
7/18	375600	4700500	1.10	2	T															99																					1		2	1	1
7/18	375550	4700500	1.80	1	T															50																					50		2	1	1
7/18	375550	4700500	1.80	2	T															97																					3		2	1	1
7/18	375750	4700550	1.50	1	T															100																							1	1	0
7/18	375750	4700550	1.50	2	O																																					0	0	0
7/18	375700	4700550	1.20	1	O																																					0	0	0
7/18	375700	4700550	1.20	2	T		100																																			1	0	1
7/18	375650	4700550	2.00	1	T															100																							1	1	0
7/18	375650	4700550	2.00	2	T		70																																	30		2	0	2
7/18	375600	4700550	2.30	1	O																																					0	0	0
7/18	375600	4700550	2.30	2	O																																					0	0	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375750	4700600	1.20	1	T						2						90			8																						3	2	1
7/18	375750	4700600	1.20	2	T												80			20																						2	2	0
7/18	375700	4700600	0.70	1	T		10													85																3				2	+	4	1	3
7/18	375700	4700600	0.70	2	T		20													80																					+	2	1	1
7/18	375650	4700600	2.00	1	O																																				0	0	0
7/18	375650	4700600	2.00	2	T				40											30											15									15		4	1	3
7/18	375600	4700600	2.70	1	O																																				0	0	0
7/18	375600	4700600	2.70	2	T		98			1										1																						3	1	2
7/18	375700	4700650	1.50	1	T		85													14																1						3	1	2
7/18	375700	4700650	1.50	2	T		98										2																									2	1	1
7/18	375650	4700650	2.10	1	T		99																																	1		2	0	2
7/18	375650	4700650	2.10	2	T															45											55											2	1	1
7/18	375600	4700650	1.50	1	T						2									89									5								2			2		5	1	4
7/18	375600	4700650	1.50	2	T															85									5											10		3	1	2
7/18	375700	4700700	1.00	1	O																																				0	0	0
7/18	375700	4700700	1.00	2	T															100																						1	1	0
7/18	375650	4700700	3.00	1	T															100																						1	1	0
7/18	375650	4700700	3.00	2	O																																				0	0	0
7/18	375750	4700750	1.00	1	T		3				1									91																		5				4	1	3
7/18	375750	4700750	1.00	2	O																																				0	0	0
7/18	375700	4700750	3.00	1	O																																				0	0	0
7/18	375700	4700750	3.00	2	T															75																15				10		3	1	2
7/18	375650	4700750	1.50	1	T															100																						1	1	0
7/18	375650	4700750	1.50	2	O																																				0	0	0
7/18	375750	4700800	1.20	1	T		100																																		1	0	1
7/18	375750	4700800	1.20	2	T															100																						1	1	0
7/18	375700	4700800	3.00	1	T															100																						1	1	0
7/18	375700	4700800	3.00	2	O																																				0	0	0
7/18	375800	4700850	1.50	1	T															60																40						2	1	1
7/18	375800	4700850	1.50	2	T		47													50																2				1		4	1	3
7/18	375750	4700850	2.10	1	T		100																																		1	0	1
7/18	375750	4700850	2.10	2	T															60																					40		2	1	1

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375700	4700850	2.50	1	T		85													10										5												3	1	2
7/18	375700	4700850	2.50	2	T		2													96																				2		3	1	2
7/18	375800	4700900	0.90	1	T															100																						1	1	0
7/18	375800	4700900	0.90	2	T															95										5												2	1	1
7/18	375750	4700900	3.00	1	T															100																						1	1	0
7/18	375750	4700900	3.00	2	T				30											70																						2	1	1
7/18	375800	4700950	1.70	1	O																																				0	0	0
7/18	375800	4700950	1.70	2	T															65																				35			2	1	1
7/18	375750	4700950	2.10	1	O																																				0	0	0
7/18	375750	4700950	2.10	2	O																																				0	0	0
7/26	376250	4700959	0.90	1	O																																				0	0	0
7/26	376250	4700959	0.90	2	O																																				0	0	0
7/26	376200	4700976	1.10	1	O																																				0	0	0
7/26	376200	4700976	1.10	2	O																																				0	0	0
7/26	376150	4700993	1.10	1	T												100																								1	1	0
7/26	376150	4700993	1.10	2	O																																				0	0	0
7/26	375850	4701000	1.10	1	T		40													60																						2	1	1
7/26	375850	4701000	1.10	2	T															100																						1	1	0
7/18	375800	4701000	2.50	1	T					30																														70		2	0	2
7/18	375800	4701000	2.50	2	T																																100					1	0	1
7/18	375750	4701000	2.70	1	T															100																						1	1	0
7/18	375750	4701000	2.70	2	T												100																								1	1	0
7/26	376100	4701007	1.00	1	O																																				0	0	0
7/26	376100	4701007	1.00	2	O																																				0	0	0
7/26	376050	4701018	0.50	1	O																																				0	0	0
7/26	376050	4701018	0.50	2	O																																				0	0	0
7/26	376000	4701020	0.80	1	M		5													2				93													0.01				4	1	3
7/26	376000	4701020	0.80	2	O																																				0	0	0
7/26	375950	4701025	0.70	1	T															100																						1	1	0
7/26	375950	4701025	0.70	2	T		40										4	5		50											1										5	2	3
7/26	375900	4701025	1.00	1	T		30													70																						2	1	1
7/26	375900	4701025	1.00	2	T															100																						1	1	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/26	375850	4701050	1.20	1	T				95	5																															2	0	2
7/26	375850	4701050	1.20	2	O																																				0	0	0
7/18	375800	4701050	1.70	1	O																																				0	0	0
7/18	375800	4701050	1.70	2	O																																				0	0	0
7/18	375750	4701050	2.00	1	O																																				0	0	0
7/18	375750	4701050	2.00	2	T															98																				2	2	1	1
7/18	375800	4701100	1.80	1	O																																				0	0	0
7/18	375800	4701100	1.80	2	O																																				0	0	0
7/18	375750	4701100	2.60	1	T																										50					50					2	0	2
7/18	375750	4701100	2.60	2	T													30		70																					2	1	1
7/18	375700	4701100	1.00	1	T		20													80																				+	2	1	1
7/18	375700	4701100	1.00	2	T		28										5			65																				2	4	2	2
7/18	375800	4701150	2.00	1	T															100																					1	1	0
7/18	375800	4701150	2.00	2	T																		100																	1	0	1
7/18	375750	4701150	1.70	1	T		100																																	1	0	1
7/18	375750	4701150	1.70	2	T																															100				1	0	1
7/18	375700	4701150	1.50	1	T		100																																	1	0	1
7/18	375700	4701150	1.50	2	T		95													5																					2	1	1
7/18	375750	4701200	2.30	1	O																																				0	0	0
7/18	375750	4701200	2.30	2	T															100																					1	1	0
7/18	375700	4701200	1.50	1	T																																	100			1	0	1
7/18	375700	4701200	1.50	2	O																																				0	0	0
7/18	375650	4701200	1.10	1	T															100																					1	1	0
7/18	375650	4701200	1.10	2	T		17													80																				3	3	1	2
7/18	375750	4701250	2.70	1	T															3		25					2		70											4	3	1
7/18	375750	4701250	2.70	2	T		50													35									10							5				4	1	3
7/18	375700	4701250	1.10	1	T		1													97																			2	3	1	2
7/18	375700	4701250	1.10	2	T		24													75																			1	3	1	2
7/18	375750	4701300	2.10	1	T					40												60																		2	1	1
7/18	375750	4701300	2.10	2	O																																				0	0	0
7/18	375700	4701300	2.00	1	O																																				0	0	0
7/18	375700	4701300	2.00	2	T																																			100		1	0	1

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/18	375750	4701350	2.00	1	T												80	2		10										8												4	2	2
7/18	375750	4701350	2.00	2	T												85			10										5												3	2	1
7/18	375700	4701350	1.80	1	T		98																															2		2	0	2
7/18	375700	4701350	1.80	2	T					5										95																					2	1	1
7/18	375750	4701400	1.60	1	T		75															1																24				3	1	2
7/18	375750	4701400	1.60	2	T		35										55			2		3							2		3									6	3	3
7/18	375700	4701400	2.50	1	T		100																																	1	0	1
7/18	375700	4701400	2.50	2	O																																			0	0	0
7/26	375750	4701450	2.30	1	T		95													5																					2	1	1
7/26	375750	4701450	2.30	2	T																								60		40									2	0	2
7/18	375700	4701450	2.20	1	T															100																					1	1	0
7/18	375700	4701450	2.20	2	T															10																10		80				3	1	2
7/26	375750	4701500	2.10	1	T															100																					1	1	0
7/26	375750	4701500	2.10	2	T		70													30																					2	1	1
7/26	375700	4701500	2.50	1	T																								100												1	0	1
7/26	375700	4701500	2.50	2	T															100																					1	1	0
7/26	375750	4701550	2.30	1	T		100																																	1	0	1
7/26	375750	4701550	2.30	2	T															100																					1	1	0
7/26	375700	4701550	2.50	1	T															1																		99				2	1	1
7/26	375700	4701550	2.50	2	T		20													10																		70				3	1	2
7/26	375800	4701600	1.90	1	T		70													25																		5				3	1	2
7/26	375800	4701600	1.90	2	T		70											5		25																						3	1	2
7/26	375750	4701600	2.50	1	T													100																								1	0	1
7/26	375750	4701600	2.50	2	T		98																						2												2	0	2
7/26	375700	4701600	2.50	1	T		100																																		1	0	1
7/26	375700	4701600	2.50	2	T		80											5											15												3	0	3
7/24	375800	4701650	1.50	1	T		35													45		1																19				4	2	2
7/24	375800	4701650	1.50	2	S		5													10									2								20		63				5	1	4
7/24	375750	4701650	2.50	1	T													3		95									2												3	1	2
7/24	375750	4701650	2.50	2	T		90													5											5												3	1	2
7/26	375700	4701650	2.60	1	O																																				0	0	0
7/26	375700	4701650	2.60	2	T													15		85																						2	1	1

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375750	4701700	2.00	1	T															100																						1	1	0
7/24	375750	4701700	2.00	2	T		80																								20											2	0	2
7/24	375700	4701700	2.50	1	T																														100							1	0	1
7/24	375700	4701700	2.50	2	T				95											2											3											3	1	2
7/24	375550	4701700	2.50	1	O																																					0	0	0
7/24	375550	4701700	2.50	2	O																																					0	0	0
7/24	375500	4701700	2.50	1	T																														100							1	0	1
7/24	375500	4701700	2.50	2	O																																					0	0	0
7/24	375750	4701750	2.50	1	T		99															1																				2	1	1
7/24	375750	4701750	2.50	2	T																																	100				1	0	1
7/24	375700	4701750	2.60	1	T													3		95											2											3	1	2
7/24	375700	4701750	2.60	2	T															60		40																				2	2	0
7/24	375550	4701750	2.60	1	T		100																																			1	0	1
7/24	375550	4701750	2.60	2	T													100																								1	0	1
7/24	375500	4701750	2.50	1	O																																					0	0	0
7/24	375500	4701750	2.50	2	O																																					0	0	0
7/24	375450	4701750	2.50	1	O																																					0	0	0
7/24	375450	4701750	2.50	2	O																																					0	0	0
7/24	375400	4701750	2.60	1	O																																					0	0	0
7/24	375400	4701750	2.60	2	O																																					0	0	0
7/24	375350	4701750	2.50	1	O																																					0	0	0
7/24	375350	4701750	2.50	2	T																														100							1	0	1
7/24	375750	4701800	2.10	1	T															39		1																		60			3	2	1
7/24	375750	4701800	2.10	2	T													50		50																							2	1	1
7/24	375700	4701800	2.60	1	T															100																							1	1	0
7/24	375700	4701800	2.60	2	T		40											60																									2	0	2
7/24	375650	4701800	1.90	1	T		15		10									25		35										5										10			6	1	5
7/24	375650	4701800	1.90	2	T	4	35		20									5		30		1								5													7	2	5
7/24	375600	4701800	2.70	1	T		30										20	20		25											5											5	2	3
7/24	375600	4701800	2.70	2	S		50		5								10	15		15		2					0.01				3											8	4	4
7/24	375550	4701800	2.50	1	T																	100																					1	1	0
7/24	375550	4701800	2.50	2	T		60															25										15											3	1	2

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375500	4701800	2.50	1	T													100																								1	0	1
7/24	375500	4701800	2.50	2	O																																					0	0	0
7/24	375450	4701800	2.60	1	O																																					0	0	0
7/24	375450	4701800	2.60	2	O																																					0	0	0
7/24	375400	4701800	2.60	1	O																																					0	0	0
7/24	375400	4701800	2.60	2	O																																					0	0	0
7/24	375350	4701800	2.50	1	T													100																								1	0	1
7/24	375350	4701800	2.50	2	O																																					0	0	0
7/24	375750	4701850	1.10	1	T																99										1											2	1	1
7/24	375750	4701850	1.10	2	T		15				3										75								2										5			5	1	4
7/24	375700	4701850	2.50	1	T		93																1								4						2					4	1	3
7/24	375700	4701850	2.50	2	T		15										65	15					3								2											5	2	3
7/24	375650	4701850	1.70	1	T		95																1							4												3	1	2
7/24	375650	4701850	1.70	2	T		20																70								10												3	1	2
7/24	375550	4701850	2.50	1	T		95																5																				2	1	1
7/24	375550	4701850	2.50	2	T													10			85		5																				3	2	1
7/24	375500	4701850	2.60	1	T																									100												1	0	1
7/24	375500	4701850	2.60	2	O																																					0	0	0
7/24	375450	4701850	2.60	1	T													100																								1	0	1
7/24	375450	4701850	2.60	2	O																																					0	0	0
7/24	375400	4701850	2.60	1	O																																					0	0	0
7/24	375400	4701850	2.60	2	T		97										3																									2	1	1
7/24	375350	4701850	2.50	1	T																		100																				1	1	0
7/24	375350	4701850	2.50	2	O																																					0	0	0
7/24	375700	4701900	3.10	1	T													40					60																				2	1	1
7/24	375700	4701900	3.10	2	T												65				30		5																				3	3	0
7/24	375650	4701900	2.50	1	S		85				0.01							2			10		3								0.01											6	2	4
7/24	375650	4701900	2.50	2	S		80		5								1	6			5		3														0.01					7	3	4
7/24	375550	4701900	2.60	1	T													100																									1	0	1
7/24	375550	4701900	2.60	2	T													100																									1	0	1
7/24	375500	4701900	2.60	1	O																																					0	0	0
7/24	375500	4701900	2.60	2	O																																					0	0	0

Data 3. (Continued) Inlet proper rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Iridaceae pseudacorus	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/24	375450	4701900	2.50	1	O																																				0	0	0
7/24	375450	4701900	2.50	2	O																																				0	0	0
7/24	375400	4701900	1.90	1	T													100																							1	0	1
7/24	375400	4701900	1.90	2	T															100																					1	1	0
7/24	375350	4701900	2.20	1	T													100																							1	0	1
7/24	375350	4701900	2.20	2	T													100																							1	0	1
	Rake Toss	358				1	62	0	20	7	5	0	0	0	0	0	19	29	0	108	0	23	1	1	0	0	2	0	17	0	25	0	0	0	0	20	0	14	0	28	46			
	"O"	173																																									
	"T"	178																																									
	"S"	6																																									
	"M"	1																																									
	"D"	0																																									

Data 4. Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/7	376575	4701375	0.60	1	O																																					0	0	0
8/7	376575	4701375	0.60	2	O																																					0	0	0
8/7	376575	4701400	0.50	1	O																																					0	0	0
8/7	376575	4701400	0.50	2	O																																					0	0	0
8/7	376550	4701400	0.80	1	O																																					0	0	0
8/7	376550	4701400	0.80	2	O																																					0	0	0
8/7	376550	4701425	0.50	1	O																																					0	0	0
8/7	376550	4701425	0.50	2	O																																					0	0	0
8/7	376525	4701425	0.60	1	O																																					0	0	0
8/7	376525	4701425	0.60	2	O																																					0	0	0
8/7	376550	4701442	0.50	1	O																																					0	0	0
8/7	376550	4701442	0.50	2	O																																					0	0	0
8/7	376525	4701450	0.60	1	O																																					0	0	0
8/7	376525	4701450	0.60	2	O																																					0	0	0
8/7	376500	4701450	0.60	1	O																																					0	0	0
8/7	376500	4701450	0.60	2	O																																					0	0	0
8/7	376525	4701475	0.50	1	O																																					0	0	0
8/7	376525	4701475	0.50	2	O																																					0	0	0
8/7	376500	4701475	0.80	1	O																																					0	0	0
8/7	376500	4701475	0.80	2	O																																					0	0	0
8/7	376500	4701500	0.70	1	O																																					0	0	0
8/7	376500	4701500	0.70	2	O																																					0	0	0
8/7	376475	4701500	0.90	1	O																																					0	0	0
8/7	376475	4701500	0.90	2	O																																					0	0	0
8/7	376500	4701510	0.90	1	O																																					0	0	0
8/7	376500	4701510	0.90	2	O																																					0	0	0
8/7	376475	4701525	0.70	1	O																																					0	0	0
8/7	376475	4701525	0.70	2	O																																					0	0	0
8/7	376450	4701525	1.00	1	O																																					0	0	0
8/7	376450	4701525	1.00	2	O																																					0	0	0
8/7	376475	4701550	0.60	1	O																																					0	0	0
8/7	376475	4701550	0.60	2	T								100																														1	0	1

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/7	376450	4701550	0.70	1	O																																					0	0	0
8/7	376450	4701550	0.70	2	O																																					0	0	0
8/7	376425	4701550	0.70	1	O																																					0	0	0
8/7	376425	4701550	0.70	2	O																																					0	0	0
8/7	376450	4701575	0.80	1	O																																					0	0	0
8/7	376450	4701575	0.80	2	O																																					0	0	0
8/7	376425	4701575	0.60	1	O																																					0	0	0
8/7	376425	4701575	0.60	2	O																																					0	0	0
8/7	376400	4701575	1.10	1	O																																					0	0	0
8/7	376400	4701575	1.10	2	O																																					0	0	0
8/7	376425	4701600	0.60	1	O																																					0	0	0
8/7	376425	4701600	0.60	2	O																																					0	0	0
8/7	376400	4701600	0.70	1	O																																					0	0	0
8/7	376400	4701600	0.70	2	O																																					0	0	0
8/7	376375	4701600	1.00	1	O																																					0	0	0
8/7	376375	4701600	1.00	2	O																																					0	0	0
8/7	376425	4701625	0.90	1	O																																					0	0	0
8/7	376425	4701625	0.90	2	O																																					0	0	0
8/7	376400	4701625	0.60	1	O																																					0	0	0
8/7	376400	4701625	0.60	2	O																																					0	0	0
8/7	376375	4701625	1.00	1	O																																					0	0	0
8/7	376375	4701625	1.00	2	O																																					0	0	0
8/7	376350	4701625	1.00	1	O																																					0	0	0
8/7	376350	4701625	1.00	2	O																																					0	0	0
8/7	376425	4701650	0.80	1	O																																					0	0	0
8/7	376425	4701650	0.80	2	O																																					0	0	0
8/7	376400	4701650	0.60	1	O																																					0	0	0
8/7	376400	4701650	0.60	2	O																																					0	0	0
8/7	376375	4701650	0.70	1	O																																					0	0	0
8/7	376375	4701650	0.70	2	O																																					0	0	0
8/7	376350	4701650	1.00	1	O																																					0	0	0
8/7	376350	4701650	1.00	2	O																																					0	0	0

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/7	376325	4701650	1.20	1	O																																					0	0	0
8/7	376325	4701650	1.20	2	T																										100												1	0	1
8/7	376450	4701675	0.30	1	O																																				+	0	0	0
8/7	376450	4701675	0.30	2	T		100																																		+	1	0	1
8/7	376425	4701675	0.40	1	T														99																						1	+	2	1	1
8/7	376425	4701675	0.40	2	O																																				+	0	0	0
8/7	376400	4701675	0.50	1	O																																				+	0	0	0
8/7	376400	4701675	0.50	2	O																																				+	0	0	0
8/7	376375	4701675	0.70	1	O																																				+	0	0	0
8/7	376375	4701675	0.70	2	O																																				+	0	0	0
8/7	376350	4701675	0.80	1	O																																				+	0	0	0
8/7	376350	4701675	0.80	2	T					100																																1	0	1
8/7	376325	4701675	1.00	1	T																										100												1	0	1
8/7	376325	4701675	1.00	2	O																																					0	0	0
8/7	376300	4701675	0.80	1	O																																					0	0	0
8/7	376300	4701675	0.80	2	O																																					0	0	0
8/7	376425	4701700	0.40	1	T														100																						+	1	1	0
8/7	376425	4701700	0.40	2	T		55																	5					40												+	3	0	3
8/7	376375	4701700	1.00	1	O																																					0	0	0
8/7	376375	4701700	1.00	2	O																																					0	0	0
8/7	376325	4701700	0.70	1	O																																				+	0	0	0
8/7	376325	4701700	0.70	2	O																																				+	0	0	0
8/7	376300	4701700	1.00	1	O																																					0	0	0
8/7	376300	4701700	1.00	2	O																																					0	0	0
8/7	376275	4701700	1.20	1	T		100																																			1	0	1
8/7	376175	4701700	0.50	1	T		25						1		1		5												2								65		1			+	7	1	6
8/7	376175	4701700	0.50	2	S		46		5				0.01		5	3	0.01		1										0.01								40					+	9	3	6
8/7	276275	4701700	1.20	2	O																																					0	0	0
8/7	376325	4701725	1.50	1	O																																					0	0	0
8/7	376325	4701725	1.50	2	O																																					0	0	0
8/7	376300	4701725	1.00	1	O																																				+	0	0	0
8/7	376300	4701725	1.00	2	O																																					0	0	0

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
8/7	376275	4701725	1.50	1	T	100																																			+	1	0	1
8/7	376275	4701725	1.50	2	T														95																			5						2	1	1
8/7	376250	4701725	2.00	1	O																																				+	0	0	0
8/7	376250	4701725	2.00	2	O																																					0	0	0
8/7	376175	4701725	0.40	1	S		55												43																			2				+	3	1	2
8/7	376175	4701725	0.40	2	S		20												80																			0.01				+	3	1	2
8/7	376150	4701725	0.30	1	T		93									5																					2				+	3	1	2
8/7	376150	4701725	0.30	2	T		65		2							12	3		3																		15				+	6	2	4
8/7	376275	4701750	1.10	1	O																																					0	0	0
8/7	376275	4701750	1.10	2	O																																					0	0	0
8/7	376250	4701750	1.50	1	O																																					0	0	0
8/7	376250	4701750	1.50	2	O																																					0	0	0
8/7	376225	4701750	2.90	1	O																																					0	0	0
8/7	376225	4701750	2.90	2	T	29													1																			70					3	1	2
8/7	376150	4701750	0.20	1	T								1		95				4																								3	2	1
8/7	376150	4701750	0.20	2	S		25						0.01		70				5																								4	2	2
8/7	376250	4701775	1.60	1	O																																					0	0	0
8/7	376250	4701775	1.60	2	O																																					0	0	0
7/11	376225	4701775	2.50	1	O																																					0	0	0
7/11	376225	4701775	2.50	2	O																																					0	0	0
7/11	376200	4701775	2.50	1	O																																					0	0	0
7/11	376200	4701775	2.50	2	T	100																																				1	0	1
7/11	376175	4701775	2.50	1	O																																					0	0	0
7/11	376175	4701775	2.50	2	O																																					0	0	0
7/11	376150	4701775	0.30	1	O																																					0	0	0
7/11	376150	4701775	0.30	2	T																						50										5				45		3	1	2
7/11	376225	4701800	1.40	1	O																																					0	0	0
7/11	376225	4701800	1.40	2	T												100																									1	0	1
7/11	376200	4701800	1.50	1	T	100																																				1	0	1
7/11	376200	4701800	1.50	2	O																																					0	0	0
7/11	376175	4701800	2.50	1	T	100																																				1	0	1
7/11	376175	4701800	2.50	2	O																																					0	0	0

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376150	4701800	2.50	1	O																																					0	0	0
7/11	376150	4701800	2.50	2	T												100																										1	0	1
7/11	376125	4701800	0.60	1	O																																					0	0	0
7/11	376125	4701800	0.60	2	T		100																																			1	0	1
7/11	376225	4701825	1.00	1	O																																					0	0	0
7/11	376225	4701825	1.00	2	O																																					0	0	0
7/11	376200	4701825	1.20	1	O																																					0	0	0
7/11	376200	4701825	1.20	2	O																																					0	0	0
7/11	376175	4701825	1.50	1	O																																					0	0	0
7/11	376175	4701825	1.50	2	O																																					0	0	0
7/11	376150	4701825	2.50	1	O																																					0	0	0
7/11	376150	4701825	2.50	2	O																																					0	0	0
7/11	376125	4701825	1.60	1	T																																100					1	0	1
7/11	376125	4701825	1.60	2	T																										50						50					2	0	2
7/11	376100	4701825	0.60	1	O																																					0	0	0
7/11	376100	4701825	0.60	2	O																																					0	0	0
8/7	376025	4701825	0.40	1	T								1						29			69														1						4	1	3
8/7	376025	4701825	0.40	2	T		60						1		39																											3	1	2
8/7	376000	4701825	0.20	1	T								1		99																											+	2	1	1
8/7	376000	4701825	0.20	2	T		60						1						39																							+	3	1	2
7/11	376225	4701850	1.10	1	O																																					0	0	0
7/11	376225	4701850	1.10	2	O																																					0	0	0
7/11	376200	4701850	1.70	1	O																																					0	0	0
7/11	376200	4701850	1.70	2	O																																					0	0	0
7/11	376150	4701850	1.50	1	T																				100																		1	0	1
7/11	376150	4701850	1.50	2	O																																					0	0	0
7/11	376125	4701850	2.50	1	O																																					0	0	0
7/11	376125	4701850	2.50	2	O																																					0	0	0
7/11	376100	4701850	2.70	1	T	100																																				1	0	1
7/11	376100	4701850	2.70	2	O																																					0	0	0
7/11	376075	4701850	2.50	1	T		15																		75												10					3	0	3
7/11	376075	4701850	2.50	2	T																																100					1	0	1

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376050	4701850	0.30	1	O																																					0	0	0
7/11	376050	4701850	0.30	2	T																																100						1	0	1
8/7	376000	4701850	0.30	1	T		100																																				1	0	1
8/7	376000	4701850	0.30	2	O																																						0	0	0
7/11	376250	4701875	1.00	1	O																																						0	0	0
7/11	376250	4701875	1.00	2	O																																						0	0	0
7/11	376225	4701875	0.70	1	O																																						0	0	0
7/11	376225	4701875	0.70	2	O																																						0	0	0
7/11	376125	4701875	1.00	1	O																																						0	0	0
7/11	376125	4701875	1.00	2	O																																						0	0	0
7/11	376100	4701875	2.60	1	O																																						0	0	0
7/11	376100	4701875	2.60	2	O																																						0	0	0
7/11	376075	4701875	2.60	1	T	50															50																						2	1	1
7/11	376075	4701875	2.60	2	O																																						0	0	0
7/11	376050	4701875	2.50	1	O																																						0	0	0
7/11	376050	4701875	2.50	2	O																																						0	0	0
7/11	376025	4701875	0.60	1	T		100																																				1	0	1
7/11	376025	4701875	0.60	2	T																										100												1	0	1
7/11	376000	4701875	0.30	1	T																								20								70				10		3	0	3
7/11	376000	4701875	0.30	2	T																																				100		1	0	1
7/11	376325	4701900	0.60	1	T		100																																				1	0	1
7/11	376325	4701900	0.60	2	T		100																																				1	0	1
7/11	376300	4701900	0.60	1	O																																						0	0	0
7/11	376300	4701900	0.60	2	O																																						0	0	0
7/11	376275	4701900	0.90	1	O																																						0	0	0
7/11	376275	4701900	0.90	2	O																																						0	0	0
7/11	376250	4701900	1.00	1	T																				100																		1	0	1
7/11	376250	4701900	1.00	2	O																																						0	0	0
7/11	376225	4701900	0.60	1	T																				100																		1	0	1
7/11	376225	4701900	0.60	2	O																																						0	0	0
7/11	376075	4701900	0.70	1	T																				100																		1	0	1
7/11	376075	4701900	0.70	2	T																										100												1	0	1

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376050	4701900	2.60	1	O																																					0	0	0
7/11	376050	4701900	2.60	2	O																																					0	0	0
7/11	376025	4701900	2.40	1	T		75						1																							15		9				4	0	4
7/11	376025	4701900	2.40	2	O																																					0	0	0
7/11	376000	4701900	1.40	1	T																																			100		1	0	1
7/11	376000	4701900	1.40	2	T		75																								5					20						3	0	3
7/11	375975	4701900	0.40	1	O																																					0	0	0
7/11	375975	4701900	0.40	2	T																															100						1	0	1
7/11	375950	4701900	0.60	1	T		15			25							10		50																							4	1	3
7/11	375950	4701900	0.60	2	T		99																								1											2	0	2
7/11	375925	4701900	0.50	1	T					99											1																						2	1	1
7/11	375925	4701900	0.50	2	T		95										4																			1						3	0	3
7/11	375900	4701900	1.00	1	T	40	34			1									8		5								2		10										7	2	5
7/11	375900	4701900	1.00	2	T		97			1																										2						3	0	3
7/11	375875	4701900	1.10	1	T		60			1							38				1																						4	1	3
7/11	375875	4701900	1.10	2	T																															70					30		2	0	2
7/11	375850	4701900	1.00	1	T					100																																1	0	1
7/11	375850	4701900	1.00	2	T					100																																1	0	1
7/11	375825	4701900	1.10	1	O																																					0	0	0
7/11	375825	4701900	1.10	2	O																																					0	0	0
7/11	375800	4701900	1.20	1	T	1	94																																		5		3	0	3
7/11	375800	4701900	1.20	2	T					1																										99						2	0	2
7/11	375775	4701900	1.10	1	T																															100						1	0	1
7/11	375775	4701900	1.10	2	T		70										29																			1						3	0	3
7/11	376350	4701925	0.50	1	O																																					0	0	0
7/11	376350	4701925	0.50	2	O																																					0	0	0
7/11	376325	4701925	0.50	1	T																	100																					1	0	1
7/11	376325	4701925	0.50	2	O																																					0	0	0
7/11	376300	4701925	0.60	1	O																																					0	0	0
7/11	376300	4701925	0.60	2	O																																					0	0	0
7/11	376275	4701925	0.70	1	O																																					0	0	0
7/11	376275	4701925	0.70	2	O																																					0	0	0

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376250	4701925	0.50	1	O																																					0	0	0
7/11	376250	4701925	0.50	2	O																																					0	0	0
7/11	376025	4701925	2.10	1	O																																					0	0	0
7/11	376025	4701925	2.10	2	O																																					0	0	0
7/11	376000	4701925	1.20	1	T	100																																				1	0	1
7/11	376000	4701925	1.20	2	O																																					0	0	0
7/11	375975	4701925	2.60	1	O																																					0	0	0
7/11	375975	4701925	2.60	2	O																																					0	0	0
7/11	375950	4701925	2.50	1	O																																					0	0	0
7/11	375950	4701925	2.50	2	O																																					0	0	0
7/11	375925	4701925	2.50	1	T																																100					1	0	1
7/11	375925	4701925	2.50	2	T	30	70																																			2	0	2
7/11	375900	4701925	2.00	1	T		60									39																				1					3	1	2
7/11	375900	4701925	2.00	2	T	29	70																														1					3	0	3
7/11	375875	4701925	1.60	1	T	30	70																																			2	0	2
7/11	375875	4701925	1.60	2	O																																					0	0	0
7/11	375850	4701925	1.30	1	O																																					0	0	0
7/11	375850	4701925	1.30	2	T																																100					1	0	1
7/11	375825	4701925	1.20	1	O																																					0	0	0
7/11	375825	4701925	1.20	2	T		100																																			1	0	1
7/11	375800	4701925	1.30	1	O																																					0	0	0
7/11	375800	4701925	1.30	2	T																																100					1	0	1
7/11	375775	4701925	1.10	1	T	20											35				15																				30		4	1	3
7/11	375775	4701925	1.10	2	T																																100					1	0	1
7/11	375750	4701925	1.10	1	T					90											10																					2	1	1
7/11	375750	4701925	1.10	2	T		90			5											5																					3	1	2
7/11	376300	4701950	0.50	1	T																	100																				1	0	1
7/11	376300	4701950	0.50	2	T																	100																				1	0	1
7/11	376275	4701950	0.50	1	O																																					0	0	0
7/11	376275	4701950	0.50	2	O																																					0	0	0
7/11	376250	4701950	0.80	1	O																																					0	0	0
7/11	376250	4701950	0.80	2	O																																					0	0	0

Data 4. (Continued) Fall Creek rake-toss measurements recorded in 2018. We recorded each rake-toss as either D = dense; M = medium; S = sparse; T = trace; or O = zero as an abundance rating. The values for each plant species in each row are the biologist's percentage estimate as part of the whole rake-toss.

Date Sampled in 2018	NAD83 X cord EAST 18T	NAD83 Y cord NORTH	Depth (m) 2018	Rake toss #	Rake Abundance Rating	Alisma gramineum	Ceratophyllum demersum	Chara vulgaris	Elodea sp.	Fontinalis sp.	Heteranthera dubia	Hydrilla verticillata	Lemna minor	Lemna trisulca	Marsilea quadrifolia	Myriophyllum spicatum	Najas flexilis	Najas guadalupensis	Najas minor	Nitella flexilis	Nitellopsis obtusa	Nuphar advena	Nuphar variegata	Nymphaea odorata	Polygonum amphibium	Pontederia cordata	Potamogeton crispus	Potamogeton foliosus	Potamogeton hillii	Potamogeton praelongus	Potamogeton pusillus	Potamogeton richardsonii	Potamogeton zosteriformis	Ranunculus trichophyllus	Sparganium eurycarpum	Spirodela polyrhiza	Stuckenia pectinata	Utricularia sp.	Vallisneria americana	Wolffia columbiana	Zannichellia palustris	Filamentous algae +	Total Species	Non-native Species	Native Species
7/11	376225	4701950	0.50	1	T																			100																		1	0	1
7/11	376225	4701950	0.50	2	O																																					0	0	0
7/11	375975	4701950	1.90	1	T														20																	80						2	1	1
7/11	375975	4701950	1.90	2	T	100																																			1	0	1
7/11	375950	4701950	1.50	1	O																																				0	0	0
7/11	375950	4701950	1.50	2	T	100																																			1	0	1
7/11	375925	4701950	2.10	1	T				100																																1	0	1
7/11	375925	4701950	2.10	2	T	39															1															60						3	1	2
7/11	375900	4701950	2.80	1	T		99																																1		2	0	2
7/11	375900	4701950	2.80	2	T		100																																		1	0	1
7/11	375875	4701950	2.60	1	T		67			1						30					1															1						5	2	3
7/11	375875	4701950	2.60	2	T		85														1															14						3	1	2
7/11	375850	4701950	2.10	1	O																																				0	0	0
7/11	375850	4701950	2.10	2	T	20	75			1																	4															4	1	3
7/11	375825	4701950	1.60	1	T	99															1																					2	1	1
7/11	375825	4701950	1.60	2	O																																				0	0	0
7/11	375800	4701950	1.40	1	O																																				0	0	0
7/11	375800	4701950	1.40	2	O																																				0	0	0
7/11	375775	4701950	1.30	1	T																										100										1	0	1
7/11	375775	4701950	1.30	2	T																																100				1	0	1
7/11	375750	4701950	1.30	1	T																										100										1	0	1
7/11	375750	4701950	1.30	2	T					10	50										10						30														4	2	2
7/11	375725	4701950	1.00	1	T		5			1	69																									20			5		5	0	5
7/11	375725	4701950	1.00	2	T				10	10											80																				3	1	2
7/11	376300	4701975	0.20	1	T																			70											30						2	0	2
7/11	376300	4701975	0.20	2	T																																				0	0	0
7/11	376275	4701975	0.40	1	T										1									59											40						3	1	2
7/11	376275	4701975	0.40	2	T																			100																		1	0	1
7/11	376250	4701975	0.50	1	T																			100																		1	0	1
7/11	376250	4701975	0.50	2	T																			100																		1	0	1
	Rake Toss	286				19	40	0	4	16	2	0	10	0	7	5	10	0	15	0	13	4	0	12	0	0	3	0	5	0	10	0	0	0	2	1	36	0	2	0	10	24			
	"O"	178																																										
	"T"	104																																										
	"S"	4																																										
	"M"	0																																										
	"D"	0																																										

Coordinates 1. Dates and locations of hydrilla discoveries in southern Cayuga Lake during 2018, using true north and North American Datum 1983. There was no hydrilla found in Fall Creek or the Cayuga Inlet.

Date Sampled	UTM X coord EAST	UTM Y coord North	Method Found	Latitude	Longitude
H. verticillata Findings - Cayuga Lake 2018					
8/7/2018	18T 376204	4702162	Rake toss	N 42.4619124	W 76.5057256
8/22/2018	18T 346384	4702283	Rake toss/visual	N 42.4630433	W 76.5035651
8/22/2018	18T 376131.5	4702164.5	Rake toss/visual	N 42.4619000	W 76.5066109
8/22/2018	18T 376183	4702155	Rake toss/visual	N 42.4629497	W 76.5059564
8/22/2018	18T 376251.5	4702199	Rake toss/visual	N 42.4622520	W 76.5051384
8/22/2018	18T 376289	4702231	Rake toss/visual	N 42.4625437	W 76.5047021
8/22/2018	18T 376315	4702238	Rake toss/visual	N 42.4626242	W 76.5043885
8/22/2018	18T 376320	4702235	Rake toss	N 42.4625856	W 76.5043309
8/22/2018	18T 376327	4702236	Rake toss/visual	N 42.4626209	W 76.5042559
8/22/2018	18T 376345	4702255	Rake toss/visual	N 42.4627751	W 76.5040339
8/22/2018	18T 376363	4702260	Rake toss	N 42.4628179	W 76.5038160
8/22/2018	18T 376378	4702276	Rake toss/visual	N 42.4629562	W 76.5036522
8/22/2018	18T 376414	4702284	Rake toss/visual	N 42.4630567	W 76.5031750
8/22/2018	18T 376418.5	4702297.5	Rake toss/visual	N 42.4631976	W 76.5031341
8/22/2018	18T 376422	4702290	Rake toss	N 42.4630990	W 76.5031025
8/22/2018	18T 376447	4702320	Rake toss	N 42.4633715	W 76.5028046
8/22/2018	18T 376468	4702337	Rake toss/visual	N 42.4635195	W 76.5025615
8/22/2018	18T 376474	4702345	Rake toss/visual	N 42.4635999	W 76.5024524
8/22/2018	18T 376495	4702360	Rake toss/visual	N 42.4637407	W 76.5022069
10/9/2018	18T 375825	4701925	Rake toss/visual	N 42.4597154	W 76.5102811
10/9/2018	18T 375850	4702350	Rake toss/visual	N 42.4635469	W 76.5100778
10/9/2018	18T 375950	4702250	Rake toss/visual	N 42.4626617	W 76.5088366
10/9/2018	18T 376000	4702200	Rake toss/visual	N 42.4622182	W 76.5082164
10/9/2018	18T 376050	4702250	Rake toss/visual	N 42.4626778	W 76.5076163
10/9/2018	18T 376100	4702150	Rake toss/visual	N 42.4617864	W 76.5069863
10/9/2018	18T 376150	4702160	Rake toss/visual	N 42.4618856	W 76.5063803
10/9/2018	18T 376200	4702150	Rake toss/visual	N 42.4617995	W 76.5057800
10/9/2018	18T 376265	4702200	Rake toss/visual	N 42.4622605	W 76.5049920
10/9/2018	18T 376300	4702250	Rake toss/visual	N 42.4627174	W 76.5045764
10/9/2018	18T 376300	4702400	Rake toss/visual	N 42.4640672	W 76.5046136
10/9/2018	18T 376300	4702450	Rake toss/visual	N 42.4645176	W 76.5046200
10/9/2018	18T 376350	4702250	Rake toss/visual	N 42.4627272	W 76.5039729
10/9/2018	18T 376350	4702350	Rake toss/visual	N 42.4636273	W 76.5039964
10/9/2018	18T 376350	4702400	Rake toss/visual	N 42.4640777	W 76.5040065
10/9/2018	18T 376350	4702450	Rake toss/visual	N 42.4645256	W 76.5040168
10/9/2018	18T 376363	4702560	Rake toss/visual	N 42.4655163	W 76.5038782
10/9/2018	18T 376400	4702280	Rake toss/visual	N 42.4630058	W 76.5033665
10/9/2018	18T 376580	4702468	Rake toss/visual	N 42.4647257	W 76.5012077
10/9/2018	18T 376600	4702450	Rake toss/visual	N 42.4645675	W 76.5009737
10/9/2018	18T 376600	4702650	Rake toss/visual	N 42.4663686	W 76.5010164
11/15/2018	18T 375293	4702209	Rake toss	N 42.4621837	W 76.5168211

References

Borman, S., R. Korth, J. Temte. 1999. Through the Looking Glass: A Field Guide to Aquatic Plants. Wisconsin Lakes Partnership, University of Wisconsin-Extension. Reindl Printing, Inc. Merrill, WI. pp. 1-238.

Crow, G. E. and C. B. Hellquist. 2000. Aquatic and Wetland Plants of Northeastern North America. The University of Wisconsin Press. 2 Volumes. pp. 1-480; 1-400.

Madsen, J. D. 1999. Point and line intercept methods for aquatic plant management. APCRP Technical Notes Collection (TN APCRP-M1-02), U.S. Army Engineer Research and Development Center, Vicksburg, MS. pp. 1-16. ADA361270

Netherland, M. D. 1997. Tuber Ecology of Hydrilla. J. Aquatic Plant Management 35: pp. 1-10.

Johnson, R. L. 2008. Aquatic Plant and Aquatic Macroinvertebrate Monitoring in Chautauqua Lake during 2007. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-49.

Johnson, R. L. 2013. Cayuga Lake and Cayuga Inlet Aquatic Plant Community 2012. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-179.

Johnson, R. L. 2014. 2013 Monitoring Report of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-272.

Johnson, R. L. 2015. 2014 Monitoring Report of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-271.

Johnson, R. L. 2016. 2015 Monitoring Report of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-299.

Johnson, R. L. 2017. 2016 Aquatic Plant Report of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-336.

Johnson, R. L. 2018. 2017 Aquatic Plant Report of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project. Racine-Johnson Aquatic Ecologists, 1185 Ellis Hollow Road, Ithaca, NY 14850. pp. 1-292.

www.Stophydrilla.org Local website of the Cayuga Inlet and Southern Cayuga Lake Monoecious Hydrilla Eradication Project.

Current and past final reports of Ithaca Hydrilla Task Force plant monitoring found in:
http://www.hydrillacollaborative.com/Home/CaseStudies