Aquatic Plant Management Plan

for

Round and Little Round Lakes
Sawyer County, Wisconsin

2020-2024

Prepared for:
Round Lake Property Owners Association

Prepared by:
Aquatic Plant and Habitat Services LLC
Sara Hatleli, Sarahatleli97@gmail.com
N4236 Hwy 54, Black River Falls, WI 54615
715-299-4604

Photos from Cover Page: 1) Fragment of Eurasian watermilfoil collected from Little Round Lake in 2014. 2) Photo (with artistic effect) from educational event sponsored by RLPOA and held at Props Landing Waterfront Grille in June 2018. 3) Sunset on Richardson's Bay. 4) Survey rake full of living/healthy Eurasian watermilfoil mixed with native species from Round Lake bed Z19. 5) Frogg Bay in Little Round Lake, 2014.

Final Draft Approved by Scott VanEgeren, Water Resources Management Specialist, Wisconsin Department of Natural Resources. October 28, 2020. See Appendix E.

Special thanks to the Round Lake Aquatic Plant Management Committee for their assistance and feedback during the development of this document: Jim Nancekivell, David Rutt, & Kevin Bushnick.

Table of Contents

List of Figures

List of Tables

1.0 Executive Summary

Round and Little Round Lakes are located approximately 7 miles east of Hayward in Sawyer County, Wisconsin. The lakes are connected by a narrow channel at the southern end of Round Lake. Round Lake is over 3,324 acres in surface area with very clear water, a maximum depth of 74 feet, and is predominantly sand-bottom with sparse vegetation in many areas but abundant vegetation in some areas, especially bays. Little Round Lake is 179 acres with clear water, a maximum depth of 38 feet, and abundant vegetation.

The lakes are a premiere destination for recreation in the Hayward area. Residents and visitors use the lakes for fishing, water-skiing, jet skiing, fishing, swimming, SCUBA diving, snorkeling, kayaking, and paddle boarding. These are just some recreational activities that were observed in 2014 and 2019.

Eurasian water-milfoil (EWM) was discovered on Round Lake in 1993 and Little Round Lake in 1999. Since then, management efforts related to aquatic plants have largely focused on the control of EWM. The Round Lake Property Owners Association (RLPOA) is engaged in management activities on both Round and Little Round Lakes. The first aquatic plant management plan was completed in 2009 by Harmony Environmental, updated in 2015 by Aquatic Plant & Habitat Services, and updated again in this current document. A large component of this plan addressed the management of EWM and protecting native species.

Many of the same goals from the previous plans have been included in this updated version, although the specific objectives have been changed. These goals are intended to follow the Wisconsin Department of Natural Resources Aquatic Plant Management Strategy for the Northern Region and for the RLPOA to maintain eligibility for AIS control grants.

This updated management plan provides background information on the lakes, identifies the issues and need for management, reviews past management activities, and presents management options. All these components were analyzed to develop a strategy that includes the following goals:

Goal 1 – Provide educational opportunities pertaining to aquatic plants and aquatic invasive species.
Goal 2 – Prevent the introduction and spread of aquatic invasive species.
Goal 3 – Control existing aquatic invasive species to minimize navigation impairment.
Goal 4 – Protect native aquatic plants.
Goal 5 – Maintain desirable trophic states (high water quality) in the lakes.

Section 1 - Round & Little Round Lakes Background Information

2.0 Study Site

Round Lake is located in Sawyer County, Wisconsin with a surface area of 3,324 acres. The maximum depth is 74 feet and the mean depth is 33 feet. Connected by a narrow channel to the south is Little Round Lake with a surface area of 179 acres, maximum depth of 38 feet and mean depth of 12 feet. The lakes are considered two different waterbodies (WBIC, Round 2395600, Little Round 2395500) and the Round Lake Property Owners Association serves members on both lakes. The lakes are situated approximately 7 miles east of Hayward, Wisconsin (Figure 1). Water clarity for Little Round Lake is clear and the lake is oligotrophic with abundant vegetation. Water clarity for Round Lake is very high and the lake is considered oligotrophic with low nutrients and sparse vegetation overall but there are some areas with locally abundant vegetation.

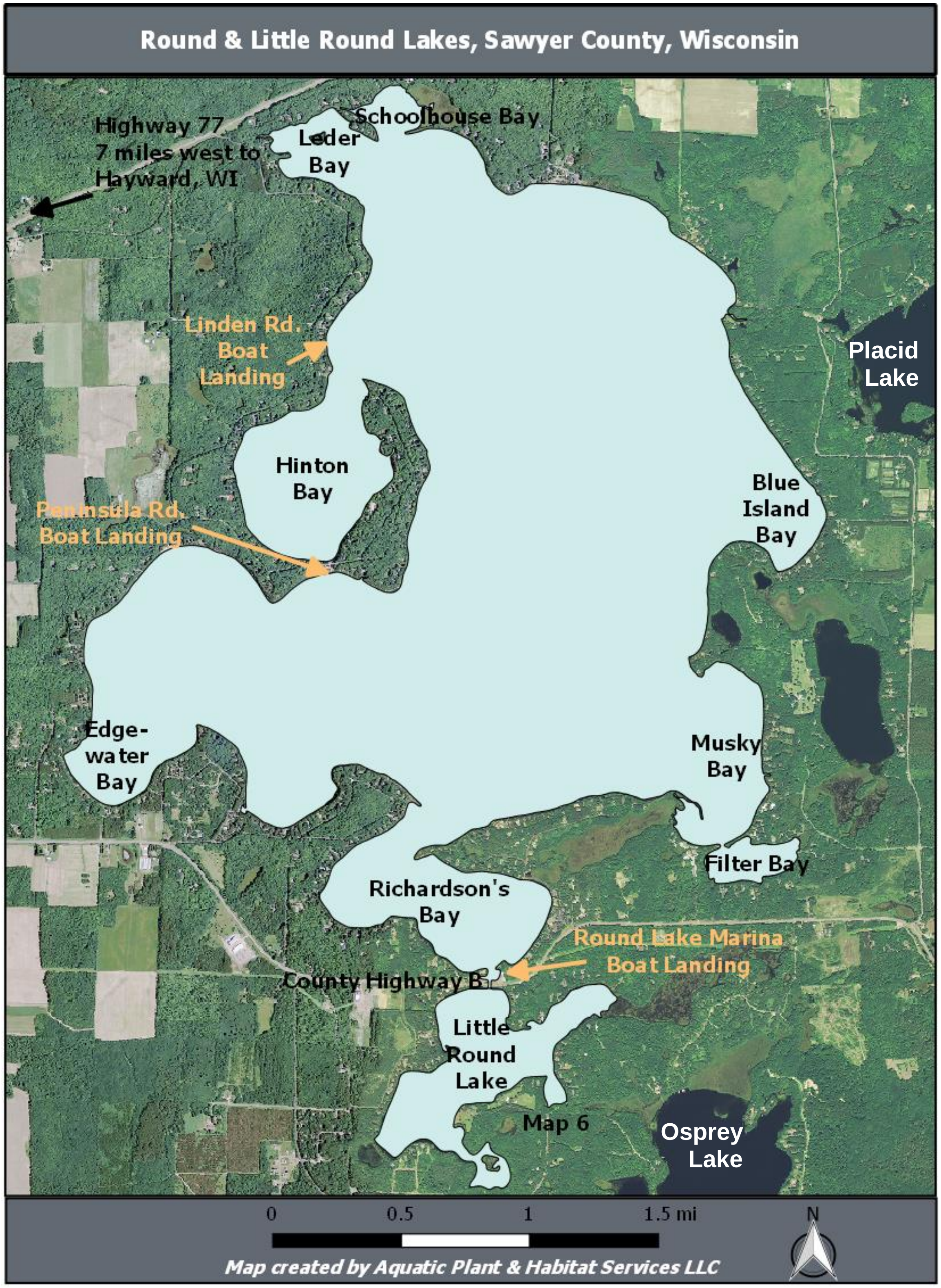
Both lakes were originally classified as seepage lakes, meaning they were landlocked with no surface water inlet or outlet and the primary source of water being precipitation or runoff. Although they are both still listed as seepage lakes (WDNR, 2020), a surface water outlet channel was dug in 1941 between Little Round Lake and Osprey Lake to the east-southeast, which is the direction of surface water flow.

Both lakes are probably better described as "manipulated seepage" lakes as summarized in the Fishery Management Plan (Wolter & Neuswanger, 2017): "*Prior to the great drought and the raising of the Tiger Cat Flowage in the 1930's, Round Lake lacked a well-defined, permanent outlet. What originally existed was a series of adjacent, loosely connected, smaller, seepage lakes. There appears to have been occasional outflow from the east side of Little Round to Osprey Lake during extremely wet periods."*

Around 1940, a series of canals were dug to connect the surface waters of Tiger Cat Flowage to Round Lake. Canal 1 connected Tiger Cat Flowage to Burns Lake, Cannal 2 connected Burns Lake to Placid Lake, Cannal 3 connected Placid Lake to a natural depression or slough, and Cannal 4 connected the slough to the northeast area of Round Lake (Sawyer County Records, Appendix A).

Again, from Wolter & Neuswanger (2019), "*After the Tiger Cat Chain was raised, groundwater infiltration into Round Lake appears to have increased. Water levels rose 3-5 feet, joining adjacent lakes into one larger lake, and in turn, sending permanent out-flow downstream into Osprey Lake in the Couderay River watershed. Based on this watershed history, Round Lake (and Little Round Lake) is now probably best described as a "manipulated seepage lake."*

Figure 1 - Study Site Map



3.0 Watershed, Shore Lands, and Water Quality Implications

3.1 Watershed

Round and Little Round Lakes are situated within a sub-watershed of 14 square miles, which is within the larger Couderay River watershed of 212 square miles (Figure 3). Not including open water area (5.68 square miles for both lakes) forested land covers 68% of the Round Lakes sub-watershed and is the most common land use with agriculture covering 15% of the sub-watershed (Figure 2).

Figure 2 – Land Cover Types of Round Lakes Sub-Watershed

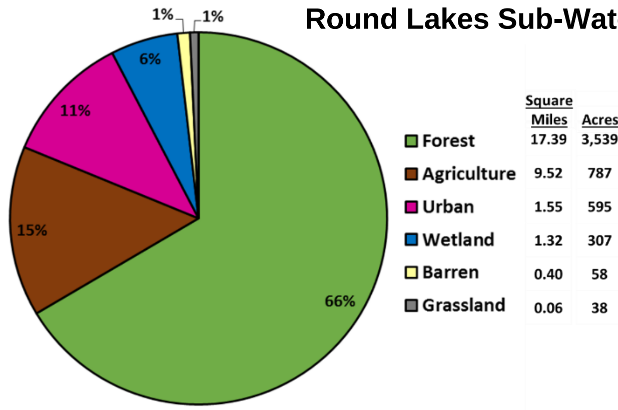
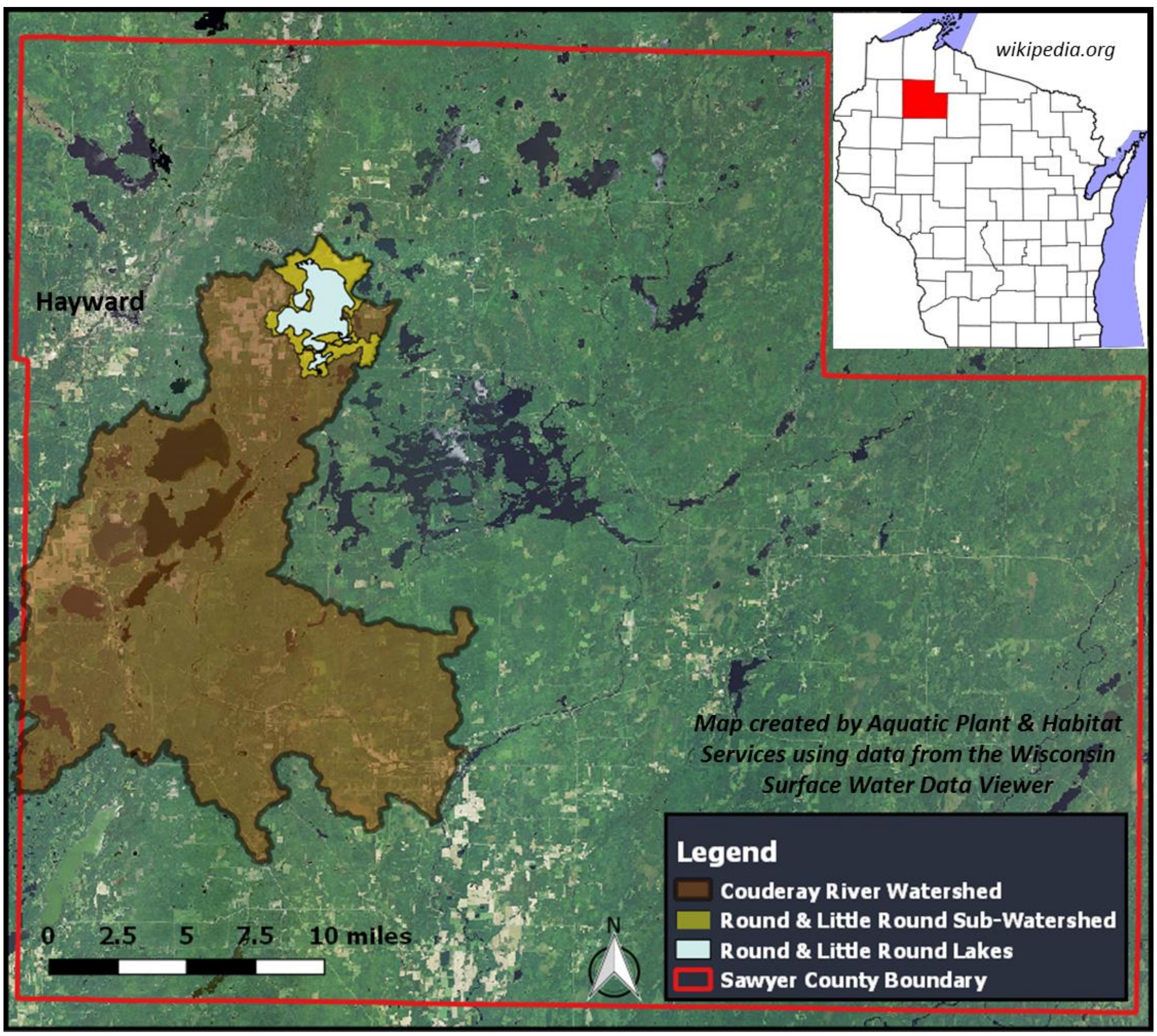


Figure 3 – Round Lakes Sub-Watershed & Watershed



3.2 Water Quality Implications

The water quality of a lake, stream, or river is directly impacted by its watershed, which includes land that is directly adjacent to a lake. When waterfront land changes from forest-covered to a house, driveway, deck, garage, septic systems, lawns and sandy beaches, the water quality will be directly affected. It is the cumulative land cover change of many waterfront properties that leads to a decline in water quality. For example, the amount of phosphorus that enters a lake typically increases as land use changes from forested to residential (Panuska & Lillie, 1995 and Jeffrey, 1985). A developed site with a lawn will yield more runoff volume carrying phosphorus and nitrogen than a forested site (Graczyk et. al. 2003). Phosphorus is generally the key nutrient that leads to algae and nuisance aquatic plant growth. Phosphorus sources include human waste (leaky septic systems), animal waste (farm runoff), soil erosion, detergents, and lawn fertilizers (Shaw et al. 2004). Detergents and lawn fertilizer are presumed less of an issue with recent laws. Developed sites have more impervious surface that does not allow precipitation to infiltrate into the soils. This precipitation becomes surface water runoff in higher volumes and at warmer temperatures than at non-developed sites (Galli, 1988). The warmer water that flows into the lake can lead to increased lake water temperatures, and as water temperatures increase the amount of dissolved oxygen it can “hold” will decrease. The combined impacts of increased water temperatures, lower dissolved oxygen, and higher phosphorus can all result from shoreland development.

3.3 Shore Land Buffer Surveys

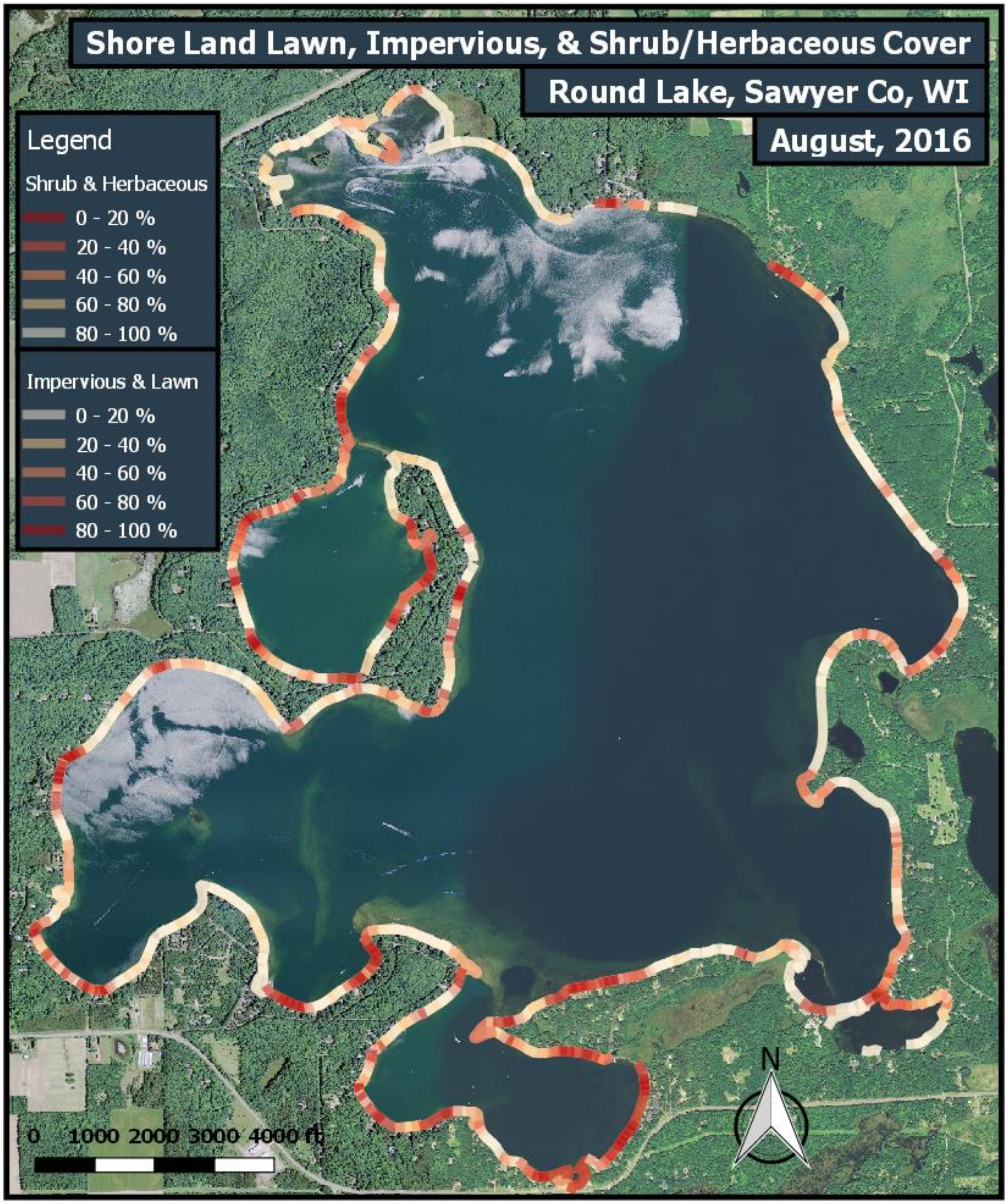
Round Lake

A survey of riparian zones of Round Lake was completed in 2016. Shoreland data was collected for a total of 552 land parcels. Lawn and shrub/herbaceous plants were the most common cover types in the riparian zone. The areas of concern are the darker red areas in Figure 4, which illustrates where there is high lawn and impervious surface coupled with low shrub and herbaceous cover. One could reasonably expect greater negative impacts to water quality in these areas based on the percent cover types found during the survey.

Little Round Lake

A shoreline and buffer survey was completed in 2012 on Little Round Lake. The survey was conducted as a part of the AIS Control Grant from WDNR from 2010 through 2012. Results indicate that 73% of the shoreline (where the water meets the land at ordinary water level) is natural vegetation. Seventy-five percent (75%) of the shore land buffer, or area from the shoreline and extending 35 feet onto shore, was considered natural vegetation (Figure 4).

Figure 4 – Shrub, Herbaceous, Impervious, & Lawn Cover for the Riparian Zone of Round Lake



4.0 Trophic State & Water Quality

Trophic state and water quality are often used interchangeably and while the two are related, they are not the same. Trophic state describes the biological condition of a lake using a scale that is based on measurable and objective criteria. Water quality is an objective descriptor of a lake's condition based on the observer's use of the lake. For example, clear-water lakes are often described as having "good" or "excellent" water quality, which may be true for swimmers or SCUBA divers. The same ultra-clear system may have low productivity and thus a limited fishery leading to an "average" water quality classification by an angler. This section describes the trophic state of Round Lakes using Carlson's Trophic State Index (1977).

Water clarity, total phosphorus, and chlorophyll-*a* are variables used to determine the productivity or trophic state of a lake. Each variable can be used independently to gain insight on the approximate trophic state. However, combining data for clarity, phosphorus, and chlorophyll-*a* yields a more accurate lake classification. The Carlson Trophic State Index (TSI) is frequently used to determine biomass in aquatic systems. The trophic state of a lake is defined as the total weight of living biological material (or biomass) in a lake at a specific location and time. Eutrophication is the movement of a lake's trophic state in the direction of more plant biomass. Eutrophic lakes tend to have abundant aquatic plant growth, high nutrient concentrations, and low water clarity due to algae blooms. Oligotrophic lakes, on the other end of the spectrum, are nutrient poor and have little plant and algae growth. Mesotrophic lakes have intermediate nutrient levels and only occasional algae blooms (Red ovals in Figure 5 represent Round & Little Round Lakes ranges). Water quality data are available for Round & Little Round Lakes since 2005 thanks to Lac Courte Orielles Land Conservation Department.

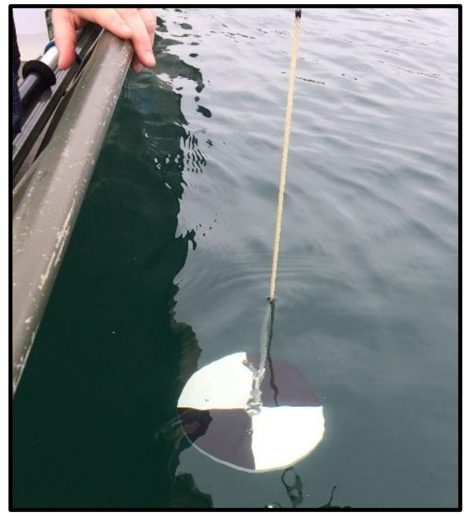
Figure 5 – Trophic State Gradient adapted from Simpson & Carlson (1996)

TSI	Chlorophyll-a (ug/L)	Secchi Depth (ft)	Total Phosphorus (ug/L)	Attributes	Fisheries & Recreation
<30	<0.95	>26	<6	Oligotrophic: Clear water, oxygen throughout the year in the hypolimnion	Salmonid fisheries dominate
30-40	0.95 - 2.6	13 - 26	6 - 12	Oligotrophic: Hypolimnia of shallower lakes may become anoxic	Salmonid fisheries in deep lakes only
40-50	2.6 - 7.3	6.5 - 13	12 - 24	Mesotrophic: Water moderately clear; increasing probability of hypolimnetic anoxia during summer	Hypolimnetic anoxia results in loss of salmonids. Walleye may predominate
50-60	7.3 - 20	3 – 6.5	24 - 48	Eutrophic: Anoxic hypolimnia, macrophyte problems possible	Warm-water fisheries only. Bass may dominate.
60-70	20 - 56	1.5 - 3	48 - 96	Eutrophic: Blue-green algae dominate, algal scums and macrophyte problems	Nuisance macrophytes, algal scums, and low transparency may discourage swimming and boating.
70-80	56 - 155	0.75 – 1.5	96 - 192	Hypereutrophic: (light limited productivity). Dense algae and macrophytes	Rough fish dominate; summer fish kills possible
>80	>155	<0.75	192 - 384	Algal scums, few macrophytes	

4.1 Water Clarity

The depth to which light can penetrate, or water clarity, is a factor that limits aquatic plant growth. Water clarity is measured by lowering a black and white Secchi disk (8 inches diameter) in the water and recording the depth of disappearance. The disk is then lowered further and slowly raised until it reappears. The Secchi depth is the mid-point between the depth of disappearance and the depth of reappearance. Because light penetration is usually associated with nutrient levels and algae growth, a lake is considered eutrophic when Secchi depths are less than 6.5 feet. Secchi depths vary throughout the year, with shallower readings in summer when algae concentrations increase, thus limiting light penetration. Conversely, deeper readings occur in spring and late fall when algae growth is lower.

Figure 6 – Secchi Disk

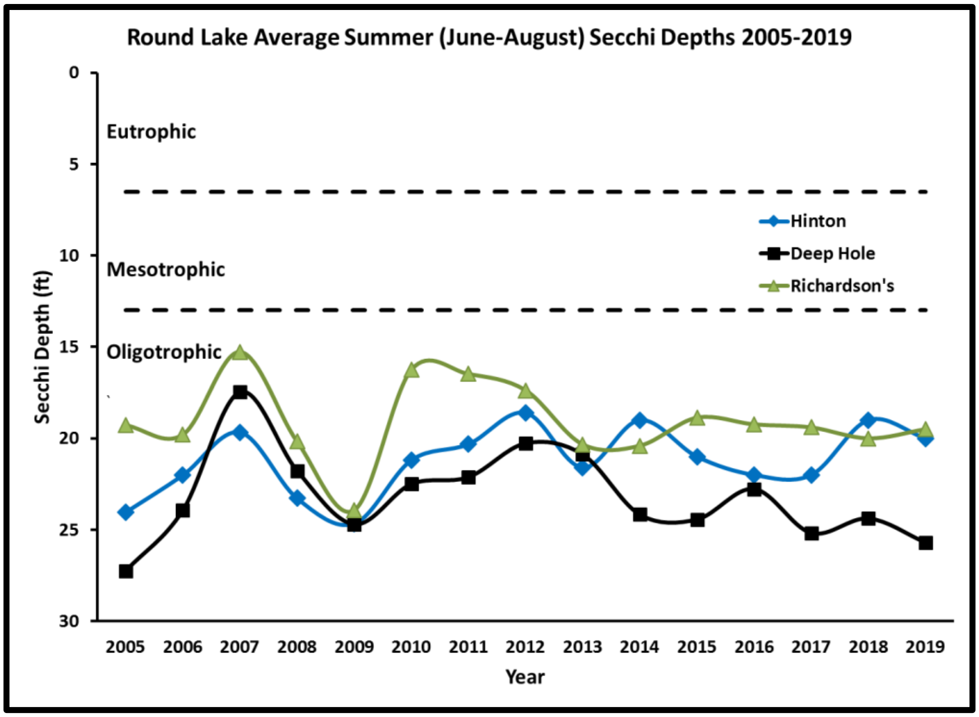


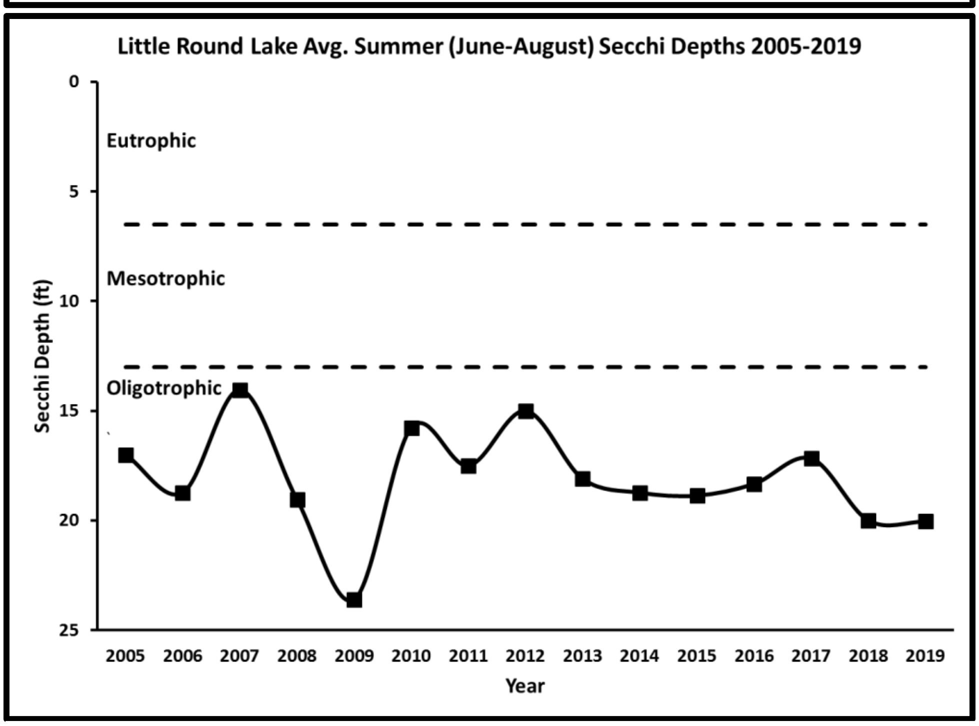
The 2009-2013 Aquatic Plant Management Plan for Round and Little Round Lakes by Harmony Environmental included average summer Secchi data between 1995 and 2005. Average summer Secchi depths in Round Lake ranged from 17 feet to 32 feet between 1995 and 2005. Average annual Secchi depths in Little Round Lake ranged from 17 feet to 25 feet between 1999 and 2005.

The Lac Courte Orielles Land Conservation (LCO) Department provided more recent water clarity data (2005-2019) for Round and Little Round Lakes. Round Lake was monitored at three sites; one in Hinton Bay, one in the main basin (deep hole), and one in Richardson's Bay. With average summer Secchi depths ranging from 15 feet to 27 feet among the three monitoring sites, data continue to classify Round Lake is classified as an **OLIGOTROPHIC** system (Figure 7). The average Secchi depth for all years between 2005 and 2019 was 23 feet for the main basin deep hole, 21 feet in Hinton Bay, and 19 feet for the Richardson's Bay site.

Little Round Lake was monitored by LCO at one site between 2005 and 2019. Average summer Secchi depths ranged from 14 feet to 24 feet (Figure 7). With overall average Secchi depth of 18 feet, Little Round Lake is classified as an **OLIGOTROPHIC** system from a water clarity standpoint.

Figure 7 - Secchi Depth Graphs for Round and Little Round Lakes (2005-2019)





Data provided by Lac Courte Orielles Land Conservation Department.
Graphs created by Aquatic Plant & Habitat Services LLC.

4.2 Phosphorus

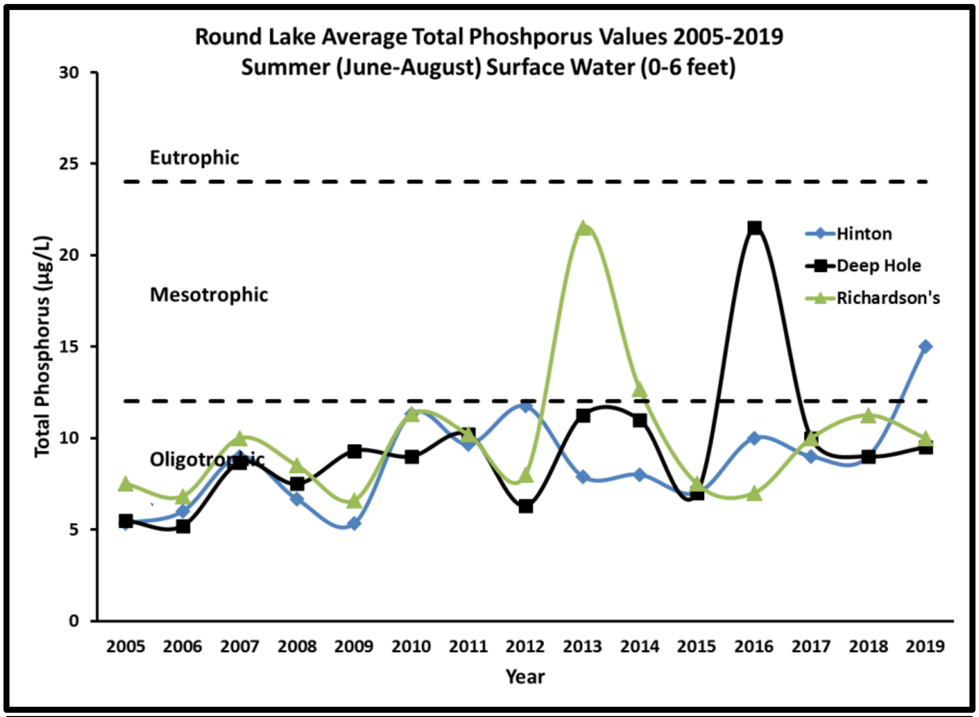
Phosphorus is an important nutrient for plant growth and is commonly the limiting nutrient for plant production in Wisconsin lakes. As a limiting factor, adding small quantities of phosphorus to a lake can lead to dramatic increases in plant and algae growth and should therefore be the focus of management efforts to protect or improve water quality. Phosphorus can be monitored at various depths because when a lake is thermally stratified in summer (warm water at surface, cooler water at bottom), higher levels of phosphorus are found in deeper waters. This is due to decomposition and sinking of dead zooplankton and algae, thereby causing a "build-up" of nutrients in deeper waters that do not readily mix during thermal stratification. Also due to the lack of mixing in summer, the oxygen levels in deeper waters fall. When dissolved oxygen is absent at the sediment-water interface, chemical changes allow phosphorus that was trapped in the sediment to be re-suspended into the water column thereby causing internal phosphorus loading.

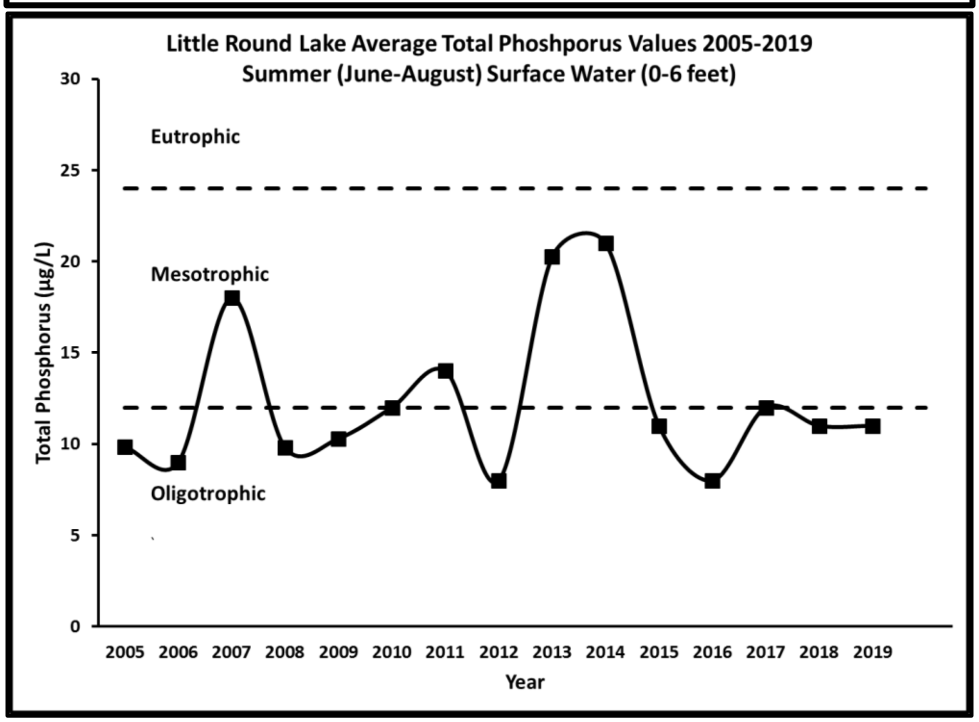
Total phosphorus was monitored in Round Lake from 1995 through 2005 with Trophic State Index (TSI) values ranging from 24 (approx 4µg/l, oligotrophic) to 50 (approx. 24 µg/l, borderline eutrophic). Water samples were collected from the main basin Deep Hole site in Round Lake. The TSI value of 50 occurred in 1997 while every other year yielded TSI values for phosphorus that were within the range of oligotrophic classification. Total phosphorus was monitored in Little Round Lake from 1999 through 2005 with TSI values ranging from 31 (approx. 6 µg/l) to 39.5 (approx. 11.6 µg/l), which is just barely within the range for oligotrophic classification.

More recent total phosphorus data reveal similar findings. Surface water (0-6 feet) samples of Round and Little Round Lakes were collected by the Lac Courte Orielles Land Conservation Department from 2005-2019. In Round Lake there were three sites, including a site in Hinton Bay, Richardson's Bay, and the main basin (deep hole). Average total phosphorus values ranged from 5 to15 µg/l in Hinton Bay, 7 to 22 µg/l in Richardson's Bay, and from 5 to 22 µg/l at the deep hole site in the main basin (Figure 8). Most mean summer values fall within or near the oligotrophic range, except for the mean summer value of 22 µg/l in Richardson's Bay in 2013 and 22 µg/l in the deep hole in 2016. Overall averages from 2005-2019 were 9 µg/l for Hinton Bay and the deep hole site and 10 µg/l for Richardson's Bay. Although some years yield more mesotrophic averages, phosphorus data continue to classify Round Lake as an **OLIGOTROPHIC** system.

Little Round Lake was monitored for total phosphorus at one site with average summer values ranging from 8 to 21 µg/l (Figure 8). Approximately 25% of the summer averages between 2005 and 2019 fell within the mesotrophic classification while the remaining 75% fell within the oligotrophic classification. Overall mean total phosphorus in Little Round Lake between 2005 and 2019 was 12 µg/l, which is borderline between **OLIGOTROPHIC** and **MESOTROPHIC** according to phosphorus data alone.

Figure 8 - Total Phosphorus Graphs for Round and Little Round Lakes (2005-2019)





Data provided by Lac Courte Orielles Land Conservation Department.
Graphs created by Aquatic Plant & Habitat Services LLC.

4.3 Chlorophyll-*a*

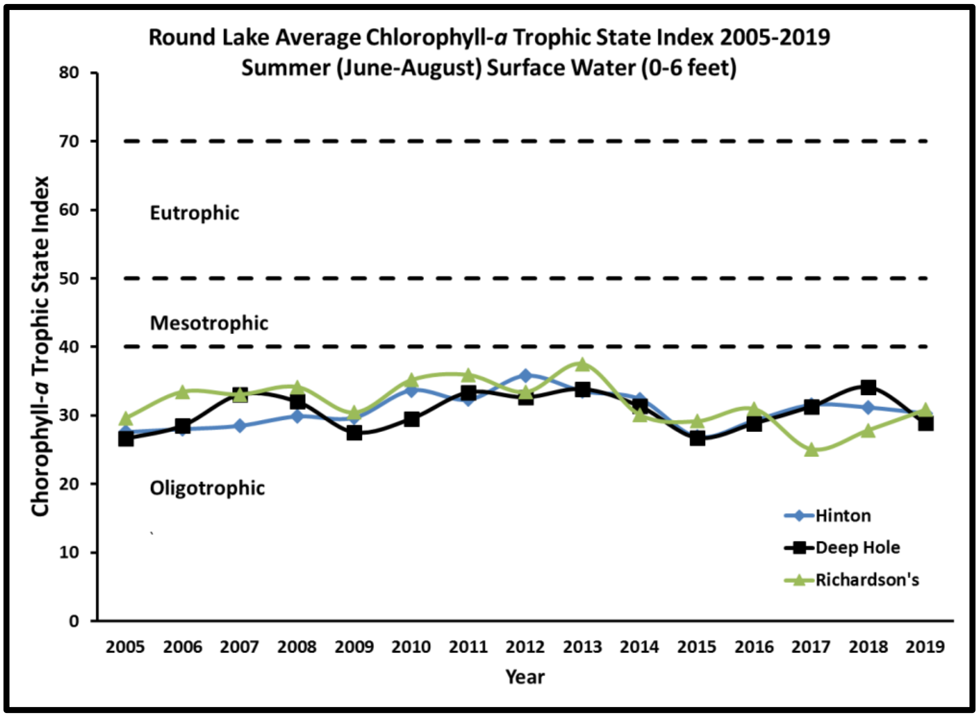
Chlorophyll-*a* is the green pigment found in plants and algae. The concentration of chlorophyll-*a* is used as a measure of the algal population in a lake. For trophic state classification, preference is given to the chlorophyll-*a* trophic state index (TSI_{CHL}) because it is the most accurate at predicting algal biomass. The equations for calculating TSI are based on Carlson & Simpson (1996).

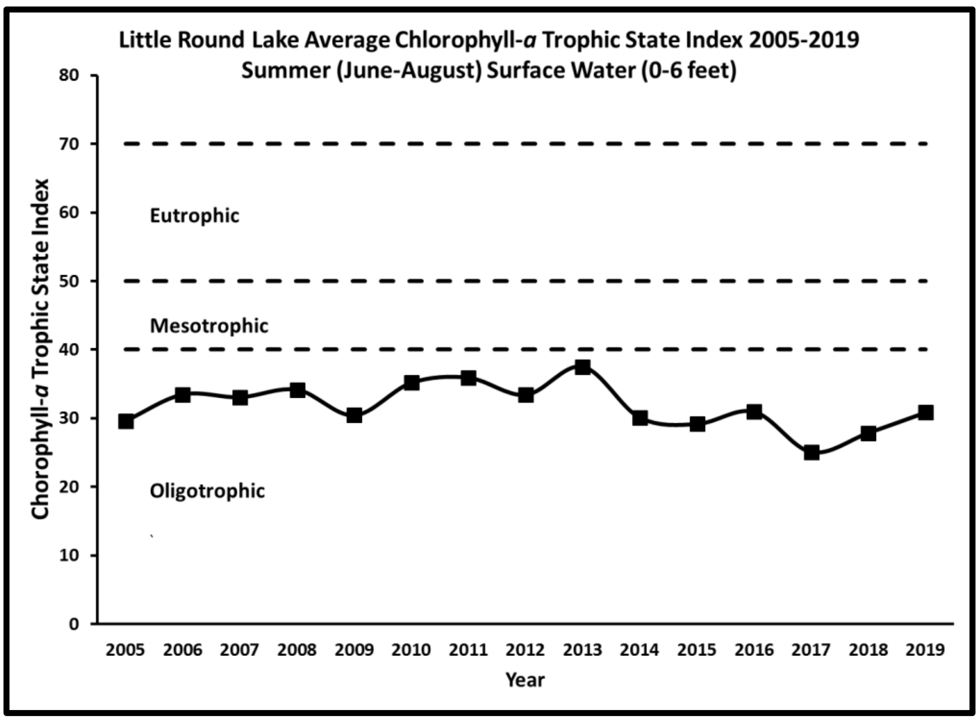
Chlorophyll-*a* was monitored in Round Lake from 1995 through 2005 and in Little Round Lake from 1999-2005. Round Lake TSI_{CHL} values ranged from 30 to 39 (oligotrophic). Little Round Lake TSI_{CHL} values ranged from 34.5 to 39.5 (oligotrophic)

The Lac Courte Orielles (LCO) Land Conservation Department conducted chlorophyll-*a* monitoring of Round and Little Round Lakes between 2005 and 2019. Three sites in Round Lake included one in Hinton Bay, one Richardson's Bay, and one in the main basin at the deep hole site. Hinton Bay surface water TSI_{CHL} values ranged from 28-36, Richardson's Bay ranged from 29-38, and the main basin deep hole site ranged from 27-34 (Figure 9). All average TSI_{CHL} values fell within the **OLIGOTROPHIC** range and were consistent with trends since 1995. Overall averages from 2005-2019 were 31 in Hinton Bay and the Deep Hole site and 33 in Richardson's Bay.

Little Round Lake TSI_{CHL} was monitored at one site with values ranging from 30 to 38, which are within the **OLIGOTROPHIC** classification (Figure 9). These findings are also consistent with previous TSI_{CHL} trends since 1995. The overall mean TSI_{CHL} in Little Round Lake from 2005-2019 was 33.

Figure 9 - Chlorophyll-*a* Trophic State Graphs for Round and Little Round Lakes (2005-2019)





Data provided by Lac Courte Orielles Land Conservation Department.
Graphs created by Aquatic Plant & Habitat Services LLC.

5.0 Aquatic Plants

An aquatic plant survey of Round was completed by Aquatic Plant and Habitat Services LLC August 17th–21st, 2019. An aquatic plant survey of Little Round was completed by Endangered Resource Services LLC July 21st-22nd, 2019. The plant surveys followed a statewide standard protocol developed by Hauxwell et al. (2010) that requires navigation to pre-determined latitude-longitude coordinates. The plants were surveyed from a boat using a double-sided rake head on a telescopic pole or rope, depending on site depth. Rake fullness was determined using guidelines in Figure 10. Survey results are presented separately for Round and Little Round because the resolution of survey points was different for each lake. In other words, the survey points were 230ft (70m) apart in Round Lake and 105ft (32m) apart in Little Round Lake. Maps of these survey grids for each lake are in Appendix B.

Figure 10 – Total Rake Fullness Illustration

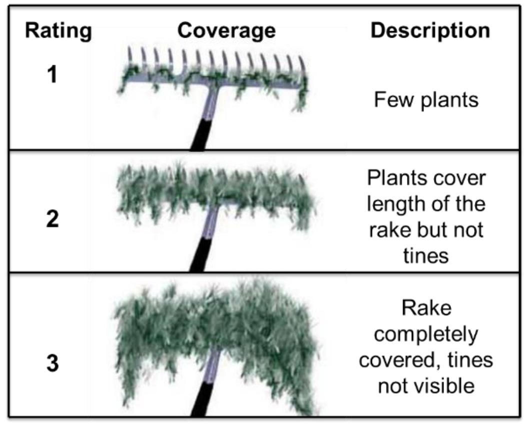


Table 1 – Aquatic Plant Survey Results for Round & Little Round Lakes

Summary Statistic			ROUND			LITTLE ROUND		
			2007	2014	2019	2005	2014	2019
1	Total # of sites visited		942	1009	1008	352	403	670
2	Total # of sites with vegetation		297	425	594	246	322	374
3	Max. depth of plants (feet)		21	23	24	23.6	23	26
4	Total # of sites shallower than max. depth of plants		587	980	970	345	385	455
5	Frequency of occurrence at sites shallower than max. depth of plants (Littoral FOO)		51%	43%	61%	71%	84%	82%
6	Average # of species per site	a) Shallower than max. depth	-	0.92	1.48	1.68	2.57	2.45
		b) Vegetated sites only	1.94	2.13	2.42	2.35	3.07	2.98
		c) Native shallower than max. depth	-	0.92	1.45	1.60	2.54	2.39
		d) Native species at vegetated sites only	1.93	2.12	2.38	2.26	3.04	2.92
7	Species Richness	a) Total # species on rake at all sites	42	37	41	32	37	56
		b) Including visuals	47	42	43	35	40	64
8	Simpson's Diversity Index		0.94	0.92	0.92	0.90	0.92	0.94
9	Mean Coefficient of Conservatism		6.88	6.56	6.76	6.9	6.7	6.7
10	Floristic Quality Index		44.1	38.2	41.1	35.1	38.9	48.0
11	Eurasian Watermilfoil Frequency of Occurrence		1.02%	0.41%	2.89%	0.90%	3.12%	5.27%

Round Lake

There were a possible 2,749 survey points in Round Lake based on the point-intercept survey grid (Appendix B). An aquatic plant survey in 2014 revealed a maximum rooting depth of 23ft. Of the 2,749 possible survey points, 980 were ≤23ft. The maximum rooting depth was 24ft in 2019 and there were 970 survey points that were ≤24ft. Over half of those sites (594 or 61%) had vegetation present (Table 1, Figure 10) while 22% of sample points lake-wide had plants present (594/2,749). Although plant abundance was low on a lake-wide scale, the diversity was high with a species richness of 41 species found on the rake, another 2 species within 6ft of survey points but not on the rake, and another 2 species found greater than 6ft from survey points. The Simpson Diversity Index was also high with a value of 0.92 out of a maximum possible value of 1.00. The Floristic Quality Index was 41.1, which is higher than the average value of 24.3 for other lakes in the same ecoregion. Overall, the aquatic plant community of Round Lake is diverse, heterogeneous, and comprised of species with an overall average sensitivity to disturbance.

Slender naiad (*Najas flexilis*), variable pondweed (*Potamogeton gramineus*), and fern pondweed (*Potamogeton robbinsii*) were the three most common species found in 2019 with littoral frequency of 20%, 18%, and 17% of survey points respectively (Table 2). Together, they accounted for 36% of the total relative frequency, which is a relatively low combined relative frequency and further supports that Round Lake has a heterogeneous plant community.

Perfoliate pondweed (*Potamogeton perfoliatus)* was the only species with a conservatism(C) value of 9 or 10 found during the survey (Table 2, Figure 11). The C value estimates the likelihood of that plant species occurring in an environment that is relatively unaltered from pre-settlement conditions. As human disturbance occurs, species with a low C value are more likely to dominate a lake. There were six species of special concern found during the survey (Table 2, Figure 11). Species of special concern are those believed to be of low abundance in Wisconsin and therefore listed in an advisory capacity before they become threatened or endangered.

Of the 2,749 sample points, 1,741 (63%) were not actually sampled because they were too deep for aquatic plant growth (Figure 13).

Table 2 - Round Lake Individual Species Statistics, 2019

Common Name	Scientific Name	FOO in Veg. Areas	Littoral Frequency	Relative Frequency	# Sites	Avg. Rake Fullness	# Visual
Slender naiad	*Najas flexilis*	33.33	20.41	13.02	198	1.03	0
Variable pondweed	*Potamogeton gramineus*	29.12	17.84	11.37	173	1.05	2
Fern pondweed	*Potamogeton robbinsii*	28.45	17.42	11.11	169	1.31	0
Wild celery	*Vallisneria americana*	25.25	15.46	9.86	150	1.29	2
Muskgrasses	*Chara sp.*	23.91	14.64	9.34	142	1.04	0
Small pondweed	*Potamogeton pusillus*	18.35	11.24	7.17	109	1.09	0
Common waterweed	*Elodea canadensis*	14.48	8.87	5.65	86	1.15	0
Flat-stem pondweed	*Potamogeton zosteriformis*	13.97	8.56	5.46	83	1.10	4
Nitella	*Nitella sp.*	10.44	6.39	4.08	62	1.00	0
Needle spikerush	*Eleocharis acicularis*	8.59	5.26	3.35	51	1.02	0
Water marigold	*Bidens beckii*	6.73	4.12	2.63	40	1.03	0
Clasping-leaf pondweed	*Potamogeton richardsonii*	6.23	3.81	2.43	37	1.14	5
Coontail	*Ceratophyllum demersum*	5.89	3.61	2.30	35	1.63	0
Northern water-milfoil	*Myriophyllum sibiricum*	5.56	3.40	2.17	33	1.00	0
Eurasian water milfoil	*Myriophyllum spicatum*	4.71	2.89	1.84	28	1.29	5
Filamentous algae		2.86	1.75	-	17	1.12	0
White-stem pondweed	*Potamogeton praelongus*	2.53	1.55	0.99	15	1.13	3
Large-leaf pondweed	*Potamogeton amplifolius*	2.02	1.24	0.79	12	1.17	10
Dwarf water-milfoil	*Myriophyllum tenellum*	1.85	1.13	0.72	11	1.00	0
Watershield	*Brasenia schreberi*	1.52	0.93	0.59	9	1.56	6
White water lily	*Nymphaea odorata*	1.52	0.93	0.59	9	1.33	14
Perfoliate pondweed	*Potamogeton perfoliatus*	1.52	0.93	0.59	9	1.11	0
Stiff pondweed	*Potamogeton strictifolius*	1.35	0.82	0.53	8	1.63	0
Quillwort	*Isoetes sp.*	1.18	0.72	0.46	7	1.00	1
Crested arrowhead	*Sagittaria cristata*	1.18	0.72	0.46	7	1.14	0
Water star-grass	*Heteranthera dubia*	0.84	0.52	0.33	5	1.00	0
Brown-fruited rush	*Juncus pelocarpus*	0.84	0.52	0.33	5	1.00	0
Floating-leaf pondweed	*Potamogeton natans*	0.67	0.41	0.26	4	2.00	1
White water crowfoot	*Ranunculus aquatilis*	0.67	0.41	0.26	4	1.00	0
Waterwort	*Elatine minima*	0.51	0.31	0.20	3	1.00	3
Flat-leaf bladderwort	*Utricularia intermedia*	0.51	0.31	0.20	3	1.33	0
Common bladderwort	*Utricularia vulgaris*	0.51	0.31	0.20	3	1.00	1
Creeping spearwort	*Ranunculus flammula*	0.34	0.21	0.13	2	1.00	0
Aquatic moss		0.34	0.21	-	2	1.00	0
Creeping spikerush	*Eleocharis palustris*	0.17	0.10	0.07	1	1.00	9
Spatterdock	*Nuphar variegata*	0.17	0.10	0.07	1	1.00	3
Fries' pondweed	*Potamogeton friesii*	0.17	0.10	0.07	1	1.00	0
Illinois pondweed	*Potamogeton illinoensis*	0.17	0.10	0.07	1	1.00	0
Water bulrush	*Schoenoplectus subterminalis*	0.17	0.10	0.07	1	1.00	1
Softstem bulrush	*Schoenoplectus tabernaemontani*	0.17	0.10	0.07	1	1.00	8
Bur-reed	*Sparganium sp.*	0.17	0.10	0.07	1	1.00	0
Sago pondweed	*Stuckenia pectinata*	0.17	0.10	0.07	1	1.00	1
Small bladderwort	*Utricularia minor*	0.17	0.10	0.07	1	1.00	0
Water smartweed	*Persicaria amphibium*	0.00	0.00	0.00	0	0.00	3
Broad-leaved cattail	*Typha latifolia*	0.00	0.00	0.00	0	0.00	1
Stemless bur-reed	*Sparganium emersum*	*	*	*	*	*	*
Ribbon-leaf pondweed	*Potamogeton epihydrus*	*	*	*	*	*	*

Non-native invasive species | species of special concern | species with high coefficient of conservatism (9 or 10)

*Not found at or near any sample points, but observed in the lake during the survey

Figure 11 – Round Lake Total Rake Fullness Map, 2019

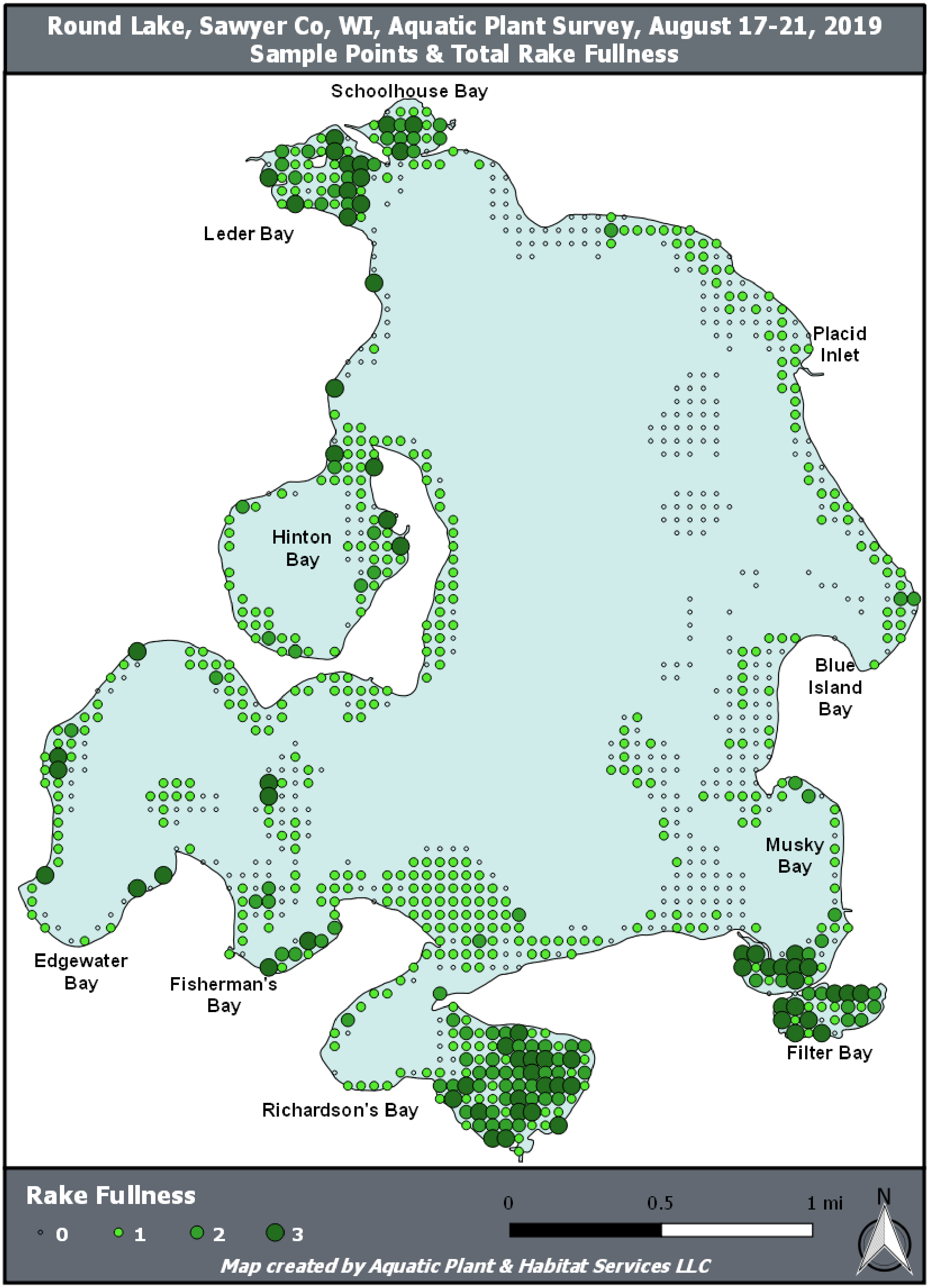


Figure 12 – Round Lake Sensitive Species Map, 2019

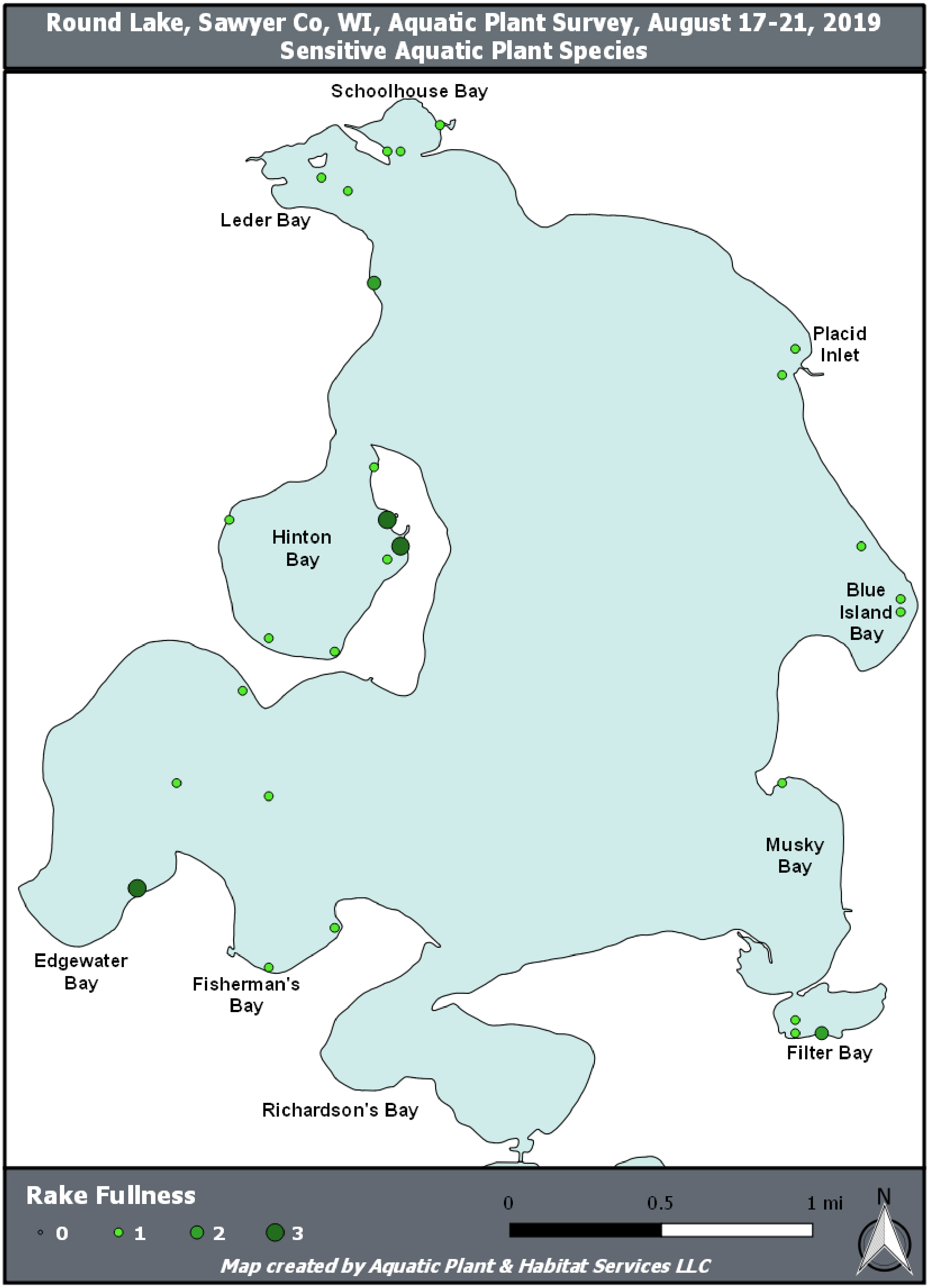
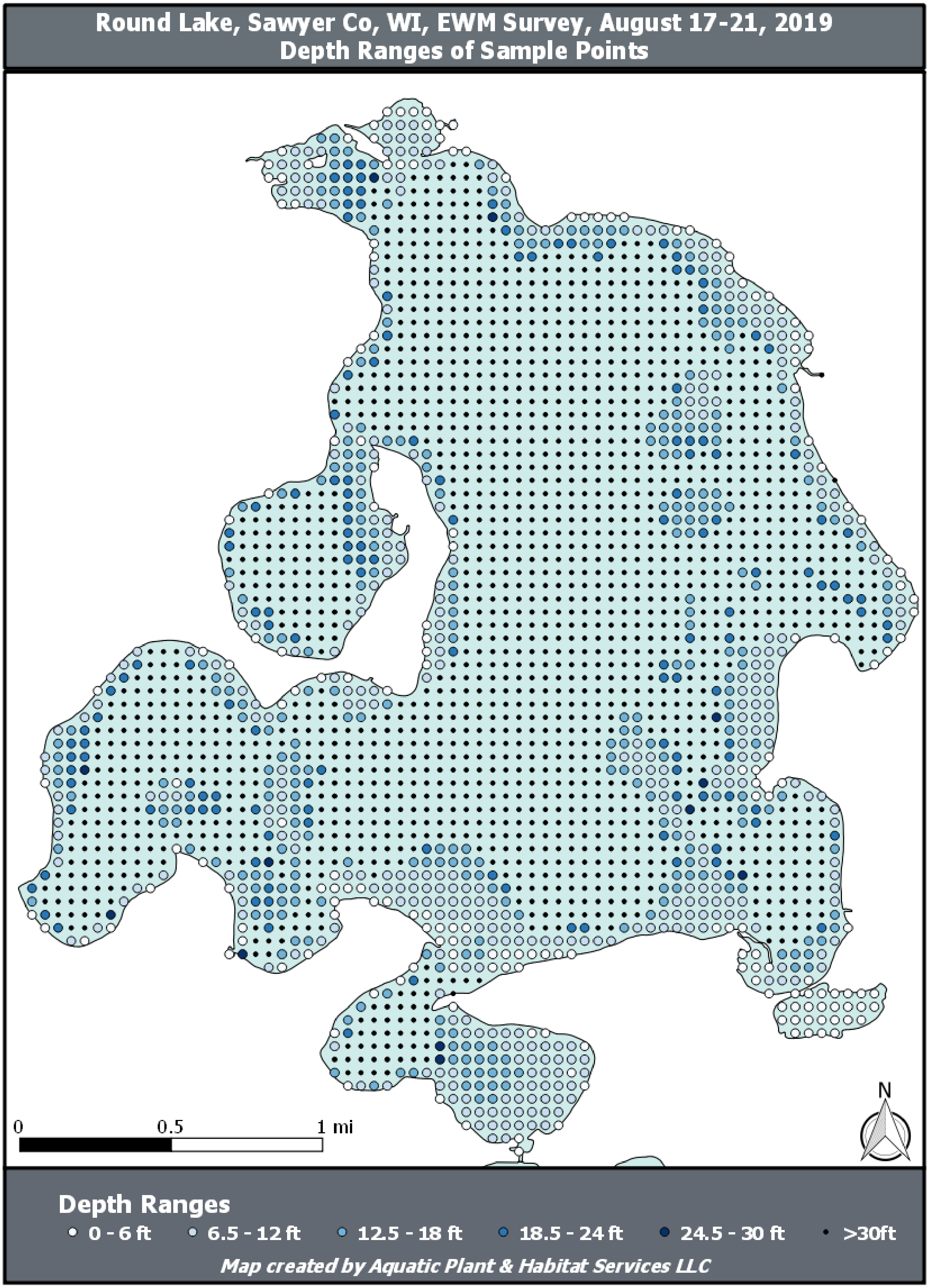


Figure 13 – Round Lake Depth Range Map, 2019



5.1 Little Round Lake

There were a possible 698 survey points, 455 of which were shallower than the maximum rooting depth of 26 feet. Of those 455 sites, 374 had vegetation present (82%). Species richness was very high with 56 species found on the rake at survey points and another eight species found within 6 feet of survey points, and another four species greater than 6 feet from survey points. The Simpson Diversity Index was high at 0.94. The Floristic Quality Index was very high at 48, which is higher than the average value for other lakes in the same ecoregion. Overall, the aquatic plant community of Little Round Lake is highly diverse, heterogeneous, and comprised of species with an overall average sensitivity to disturbance.

Fern pondweed (*Potamogeton robbinsii*), water celery (*Vallisneria americana*), and watershield (*Brasenia schreberi*) were the most common species found in 2019 with littoral frequency of 41%, 19%, and 18%, respectively (Table 3). Together, they accounted for 32% of the total relative frequency, which is a low combined relative frequency and further supports that Little Round Lake has a heterogeneous plant community.

There were 11 species with a conservatism(C) value of 9 or 10 found during the survey (Table 3, Figure 12). The C value estimates the likelihood of that plant species occurring in an environment that is relatively unaltered from pre-settlement conditions. As human disturbance occurs, species with a low C value are more likely to dominate a lake. There were three species of special concern found during the survey (Table 3, Figure 12). Species of special concern are those believed to be of low abundance in Wisconsin and therefore listed in an advisory capacity before they become threatened or endangered.

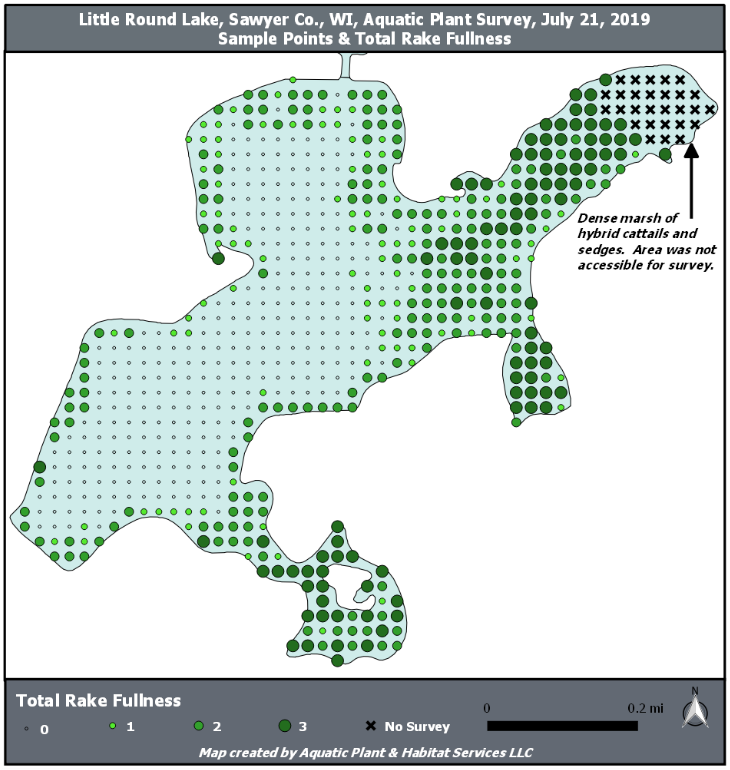
Table 3 – Little Round Lake Individual Species Statistics, 2019

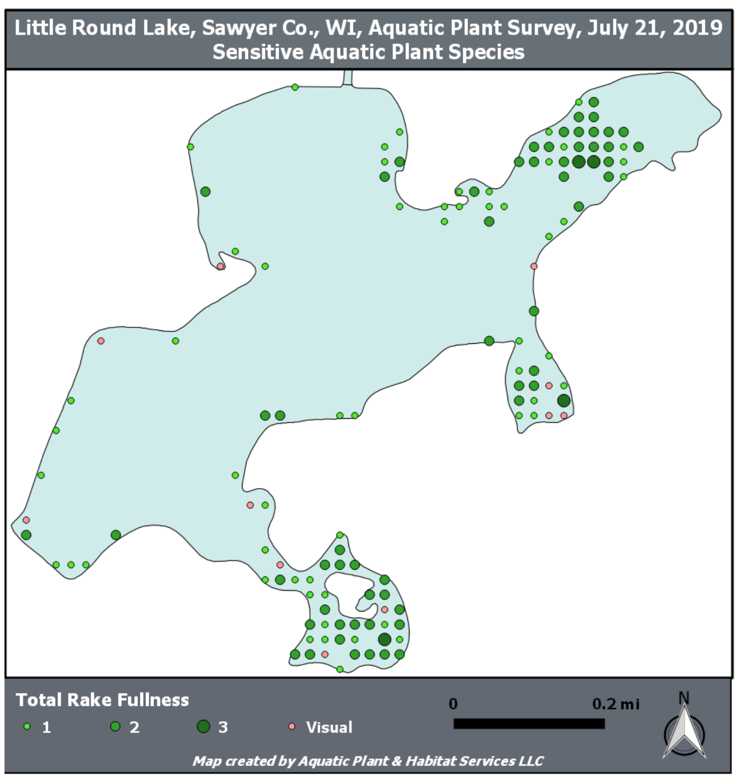
Common Name	Scientific Name	FOO in Veg. Areas	Littoral Frequency	Relative Frequency	# Sites	Avg. Rake Fullness	# Visual
Fern pondweed	*Potamogeton robbinsii*	49.47	40.66	16.62	185	1.73	0
Wild celery	*Vallisneria americana*	23.26	19.12	7.82	87	1.28	3
Watershield	*Brasenia schreberi*	21.66	17.80	7.28	81	2.49	4
Common waterweed	*Elodea canadensis*	17.38	14.29	5.84	65	1.22	0
Slender naiad	*Najas flexilis*	14.71	12.09	4.94	55	1.24	0
Flat-leaf bladderwort	*Utricularia intermedia*	13.90	11.43	4.67	52	1.67	2
White water lily	*Nymphaea odorata*	13.10	10.77	4.40	49	1.20	14
Small pondweed	*Potamogeton pusillus*	12.57	10.33	4.22	47	1.15	0
Coontail	*Ceratophyllum demersum*	11.76	9.67	3.95	44	1.20	0
Large-leaf pondweed	*Potamogeton amplifolius*	9.63	7.91	3.23	36	1.19	17
Variable pondweed	*Potamogeton gramineus*	9.63	7.91	3.23	36	1.08	6
Small bladderwort	*Utricularia minor*	8.02	6.59	2.70	30	1.27	0
Water bulrush	*Schoenoplectus subterminalis*	7.75	6.37	2.61	29	1.59	3
Spatterdock	*Nuphar variegata*	6.68	5.49	2.25	25	1.28	10
Filamentous algae		6.68	5.49		25	1.20	0
Eurasian water milfoil	*Myriophyllum spicatum*	6.42	5.27	2.16	24	1.54	1
Muskgrass	*Chara sp.*	6.42	5.27	2.16	24	1.29	1
Common bladderwort	*Utricularia vulgaris*	6.42	5.27	2.16	24	1.13	7
Flat-stem pondweed	*Potamogeton zosteriformis*	5.08	4.18	1.71	19	1.16	8
Robbins' spikerush	*Eleocharis robbinsii*	4.81	3.96	1.62	18	1.44	2
Dwarf water-milfoil	*Myriophyllum tenellum*	4.81	3.96	1.62	18	1.33	1
Water marigold	*Bidens beckii*	3.21	2.64	1.08	12	1.00	0
Needle spikerush	*Eleocharis acicularis*	3.21	2.64	1.08	12	1.33	0
Perfoliate pondweed	*Potamogeton perfoliatus*	3.21	2.64	1.08	12	1.25	4
Water star-grass	*Heteranthera dubia*	2.94	2.42	0.99	11	1.00	0
Creeping bladderwort	*Utricularia gibba*	2.94	2.42	0.99	11	1.00	1
Bald spikerush	*Eleocharis erythropoda*	2.67	2.20	0.90	10	1.20	7
Narrow-leaved woolly sedge	*Carex lasiocarpa*	2.41	1.98	0.81	9	1.33	5
Stiff pondweed	*Potamogeton strictifolius*	2.14	1.76	0.72	8	1.25	0
Crested arrowhead	*Sagittaria cristata*	2.14	1.76	0.72	8	1.13	0
Arrow arum	*Peltandra virginica*	1.60	1.32	0.54	6	2.33	10
Small duckweed	*Lemna minor*	1.34	1.10	0.45	5	1.00	0
Northern water-milfoil	*Myriophyllum sibiricum*	1.34	1.10	0.45	5	1.00	0
Floating-leaf pondweed	*Potamogeton natans*	1.34	1.10	0.45	5	1.00	4
Vasey's pondweed	*Potamogeton vaseyi*	1.34	1.10	0.45	5	1.40	0
Aquatic moss		1.34	1.10		5	1.20	0
Brown-fruited rush	*Juncus pelocarpus*	1.07	0.88	0.36	4	2.00	1
Whorled water-milfoil	*Myriophyllum verticillatum*	1.07	0.88	0.36	4	2.25	1
Creeping spearwort	*Ranunculus flammula*	1.07	0.88	0.36	4	1.25	2
Spiny spored-quillwort	*Isoetes echinospora*	0.80	0.66	0.27	3	1.00	0
Nitella	*Nitella sp.*	0.80	0.66	0.27	3	1.00	0
Pickerelweed	*Pontederia cordata*	0.80	0.66	0.27	3	1.00	5
Fries' pondweed	*Potamogeton friesii*	0.80	0.66	0.27	3	1.00	0
White-stem pondweed	*Potamogeton praelongus*	0.80	0.66	0.27	3	1.33	5
Three-way sedge	*Dulichium arundinaceum*	0.53	0.44	0.18	2	1.00	7
Waterwort	*Elatine minima*	0.53	0.44	0.18	2	1.00	2
Water smartweed	*Polygonum amphibium*	0.53	0.44	0.18	2	1.00	3
Clasping-leaf pondweed	*Potamogeton richardsonii*	0.53	0.44	0.18	2	1.00	0
Short-stemmed bur-reed	*Sparganium emersum*	0.53	0.44	0.18	2	1.00	2
Water horsetail	*Equisetum fluviatile*	0.27	0.22	0.09	1	1.00	0
Pipewort	*Eriocaulon aquaticum*	0.27	0.22	0.09	1	1.00	1
Leafy pondweed	*Potamogeton foliosus*	0.27	0.22	0.09	1	2.00	0
Common arrowhead	*Sagittaria latifolia*	0.27	0.22	0.09	1	1.00	0
Hardstem bulrush	*Schoenoplectus acutus*	0.27	0.22	0.09	1	1.00	0
Large duckweed	*Spirodela polyrhiza*	0.27	0.22	0.09	1	1.00	0
Broad-leaved cattail	*Typha latifolia*	0.27	0.22	0.09	1	1.00	0
Hybrid cattail	*Typha x. glauca*	0.27	0.22	0.09	1	3.00	2
Twin-stemmed bladderwort	*Utricularia geminiscapa*	0.27	0.22	0.09	1	1.00	0
Bottle brush sedge	*Carex comosa*	0.00	0.00	0.00	0	0.00	1
Illinois pondweed	*Potamogeton illinoensis*	0.00	0.00	0.00	0	0.00	1
American bur-reed	*Sparganium americanum*	0.00	0.00	0.00	0	0.00	2
Slender riccia	*Riccia fluitans*	0.00	0.00	0.00	0	0.00	1
Narrow-panicled rush	*Juncus brevicaudatus*	0.00	0.00	0.00	0	0.00	1
Carex oligosperma	*Few-seeded hop sedge*	0.00	0.00	0.00	0	0.00	1
Round-leaved sundew	*Drosera rotundifolia*	0.00	0.00	0.00	0	0.00	1
Common yellow lake sedge	*Carex utriculata*	0.00	0.00	0.00	0	0.00	1
White beak-rush	*Rhynchospora alba*	0.00	0.00	0.00	0	0.00	1
Sweet-flag	*Acorus americanus*	*	*	*	*	*	*
Yellow iris	*Iris pseudacorus*	*	*	*	*	*	*
Aquatic forget-me-not	*Mysotis scorpioides*	*	*	*	*	*	*
Wool grass	*Scirpus cyperinus*	*	*	*	*	*	*

Non-native invasive species	species of special concern,	species with high coefficient of conservatism (9 or 10)

*Not found at or near any sample points, but observed in the lake during the survey

Figure 14 – Little Round Lake Total Rake Fullness & Sensitive Species Maps, 2019





6.0 Fishery

Game fish species in Round and Little Round Lakes include smallmouth and largemouth bass, walleye, muskellunge, northern pike, and panfish. Round Lake is considered a two-story fishery with presence of coldwater ciscoe and although not abundant, they still serve as a food source for walleye and muskellunge. The main body of Round Lake is conducive to spawning and natural recruitment of walleye and smallmouth bass due to its sand and gravel substrate and low abundance of aquatic plants. Conversely, Little Round Lake and Richardson's Bay of Round Lake are deemed excellent largemouth bass habitat. The only fish species stocked in recent years (since 2006) were muskellunge. There have been 20 stocking events of musky since 1975 occuring on average every 2-3 years.

Fish surveys were conducted by the WDNR in spring 2019, which included two separate fyke netting surveys and two nights of elecrofishing. The results presented in this section are presented in greater detail in a WDNR report summarizing those surveys (Wolter, 2019)[1]. The results are believed to be a good representation of the fish populations with the possible exception of muskellunge because low capture rates did not coincide with surveyors observations. Catch rates for adult walleye were considerably higher in 2019 when compared to previous years and size structure was similar to past surveys with 85% of walleyes over minimum length limit of 15 inches and 24% over 20 inches (walleye >20 inches are a "no harvest" size). Muskellunge were difficult to capture during the fyke netting survey and catch rates were not as high as expected. Even so, observations support potential for Round Lake to produce trophy muskellunge. Northern pike were found at low density but most surveyed were over 21 inches. Smallmouth bass were found in greater abundance than previous years while the size structure was largely the same with 79% at a size of ≥14 inches. Largemouth bass ≥ 8 inches were found at a rate of 10 per mile. Experimental panfish regulations enacted in 2016 were more restrictive than previously. This may have benefitted black crappie size structure, 69% of which were over 10 inches in 2019. This was a noted increase from past surveys. Bluegill size was somewhat higher and abundance somewhat lower in 2019 compared to 2016. Yellow perch were captured at a low rate, which is similar to previous years and prompts questions about survey methods for this species in a deep, clear-water lake like Round Lake.

Table 4 – Fish Community Status, 2018*

Species	Abundance	History	Current Population Status
Walleye	Common	Introduced	NR; declining
Muskellunge	Rare	Native	Stocked; increasing
N. pike	Present	Introduced	NR; stable
Smallmouth bass	Common	Native	NR; increasing
Largemouth bass	Present	Native	NR; increasing
Bluegill	Common	Native	NR; stable
Black crappie	Rare	Introduced	NR; stable
Yellow perch	Common	Native	NR; stable
Cisco	Present	Native	NR; unknown
Rock bass	Common	Native	NR; stable
Trout	Present becoming rare	Introduced	Stocked; discontinued
NR= Self-sustaining exclusively through natural reproduction; stocking usually not needed.			

Copied from Round Lake Fishery Management Plan, 2017

[1] Full report available at *https://dnr.wi.gov/topic/fishing/documents/north/SawyerRoundSpring2019.pdf*

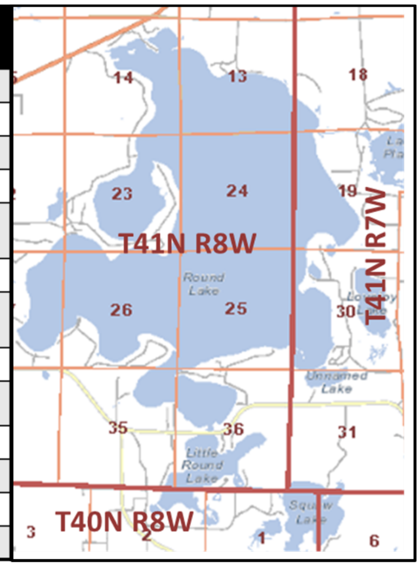
7.0 Wildlife

The Wisconsin Natural Heritage Inventory (NHI) lists species and natural communities that are known or suspected to be rare in Wisconsin. The species are legally designated as endangered or threatened or they may be listed in an advisory capacity of special concern. The NHI lists species according to township and range, which includes T41N 08W, T10N 07W, and T40N 08W for Round and Little Round Lakes. There are 12 NHI species in the Round Lakes area (Table 5 – Rare Plant & Animal Species in the Round Lakes AreaTable 5).

The common loon was surveyed by volunteers on Little Round Lake through the Northland College LoonWatch Program[2]. Since 2014, there was generally one nesting pair each summer that produced 2 chicks in 2015, 2016, and 2018. There are no LoonWatch volunteers on Round Lake.

Table 5 – Rare Plant & Animal Species in the Round Lakes Area

Common Name	Scientific Name	State Status	Township & Range
Elktoe (mussel)	Alasmidonta marginata	Special Concern	T41N08W
Common Goldeneye (bird)	Bucephala clangula	Special Concern	T41N08W
Climbing Fumitory (plant)	Adlumia fungosa	Special Concern	T40N08W
Lake Chubsucker (fish)	Erimyzon sucetta	Special Concern	T40N08W
Least Darter (fish)	Etheostoma microperca	Special Concern	T40N08W T41N07W
Longear Sunfish (fish)	Lepomis megalotis	Threatened	T40N08W
Vasey's Pondweed (plant)	Potamogeton vaseyi	Special Concern	T40N08W T41N07W
Black Tern (bird)	Chlidonias niger	Endangered	T41N07W
Spruce Grouse (bird)	Falcipennis canadensis	Threatened	T41N07W
Pronghorned Clubtail (dragonfly)	Phanogomphus graslinellus	Special Concern	T41N07W
American Shoreweed (plant)	Littorella uniflora	Special Concern	T41N07W
Mountain Cranberry (plant)	Vaccinium vitis-idaea ssp. Minus	Endangered	T41N07W
Information retrieved from http://dnr.wi.gov/topic/NHI/data 3 May 2020.			



2 http://www.northland.edu/sigurd-olson-environmental-institute-loon-watch.htm

Section 2
Issues and Need for Management

8.0 Aquatic Invasive Species

Aquatic invasive species (AIS) are defined by their tendency to out-compete native species thereby threatening the diversity and balance of plants and animals that are native to a particular system. The aquatic invasive plant of greatest concern in Round and Little Round Lakes is Eurasian water-milfoil (*Myriophyllum spicatum*). The only other non-native species found during the 2019 aquatic plant surveys was flowering rush (*Butomus umbellatus*) at one site in Round Lake. Purple loosestrife (*Lythrum salicaria*) was found at one site in Little Round Lake in 2014 but was not documented in 2019. Neither seem to be a serious threat to the lake ecosystems or recreation at this time. However, their presence warrants monitoring and recommendations are made in Sub-section 22.0. Banded mystery snails and rusty crayfish are also documented in Round Lake (WDNR 2020).

Eurasian water-milfoil (EWM) was discovered in Round Lake in 1993 and in Little Round Lake in 1999. EWM poses a threat to aquatic plant communities because it thrives in areas of disturbance (natural or human-induced), it can grow to form mats of surface vegetation that block sunlight for other aquatic plants, and those surface mats of vegetation can impair boat navigation (WDNR, 2014a).

8.1 Round Lake Eurasian Watermilfoil

Eurasian watermilfoil had low littoral occurrence in Round Lake from a lake-wide perspective during point-intercept (PI) surveys in 2007 (1.02%), 2014 (0.41%), and 2019 (2.89%, Figure 15). The methods used for PI surveys are summarized on page 20. EWM bed surveys were also completed in June and August 2019 employing different methods than the lake-wide point-intercept surveys. The locations of EWM were visited based on areas identified by the RLPOA. A meander approach was also used to find additional EWM locations. The perimeter of EWM beds were delineated to map location and size of the bed. At each bed the overall EWM density, plant height, and average water depth were recorded.

EWM bed surveys revealed 12 acres in 2017, 26 acres in 2018, and 15 acres in 2019. It is important to note that the purpose of the 2017 EWM acreage survey was to prioritize DASH[3] work for that summer and not as comprehensive as 2018 and 2019 surveys. Therefore, EWM acreage is likely a low estimate in 2017. During the 2019 point-intercept and EWM surveys, EWM was found at sites ranging in depth from 1 to 20 feet, but most of the EWM was concentrated in areas less than 13 feet deep.

During the 2019 EWM survey in Round Lake, Hinton Bay was the location of greatest EWM occurrence at 9.5 acres followed by Musky Bay (1.81 acres), Blue Island Bay (1.20 acres), and the Placid Inlet area (1.10 acres) (Figure 16). EWM in the entire southwest section of Round Lake, including Fisherman's Bay and Edgewater Bay, was very low at 1.36 acres over a large area. The 1.36 acres of EWM in this southwest area was largely concentrated in two beds, one located centrally at 0.5 acres and the other along its northern shore at 0.4 acres. These findings are presented in greater detail in the 2019 EWM Survey Report (Hatleli, 2019).

[3] DASH = Diver Assisted Suction Harvesting. See Sub-section 16.0 for more information.

Figure 15 – Round Lake EWM Map, Point-Intercept Survey 2019

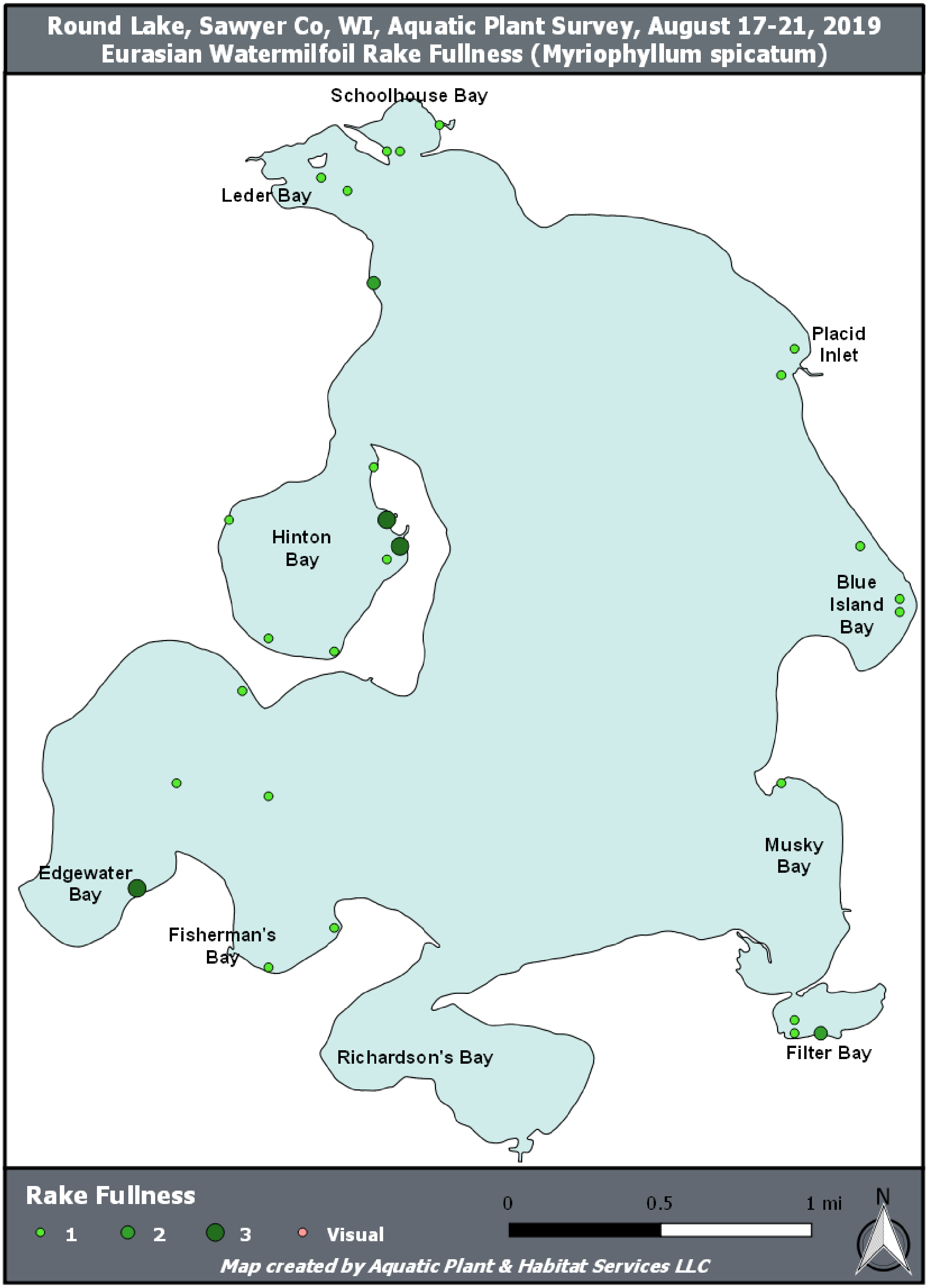
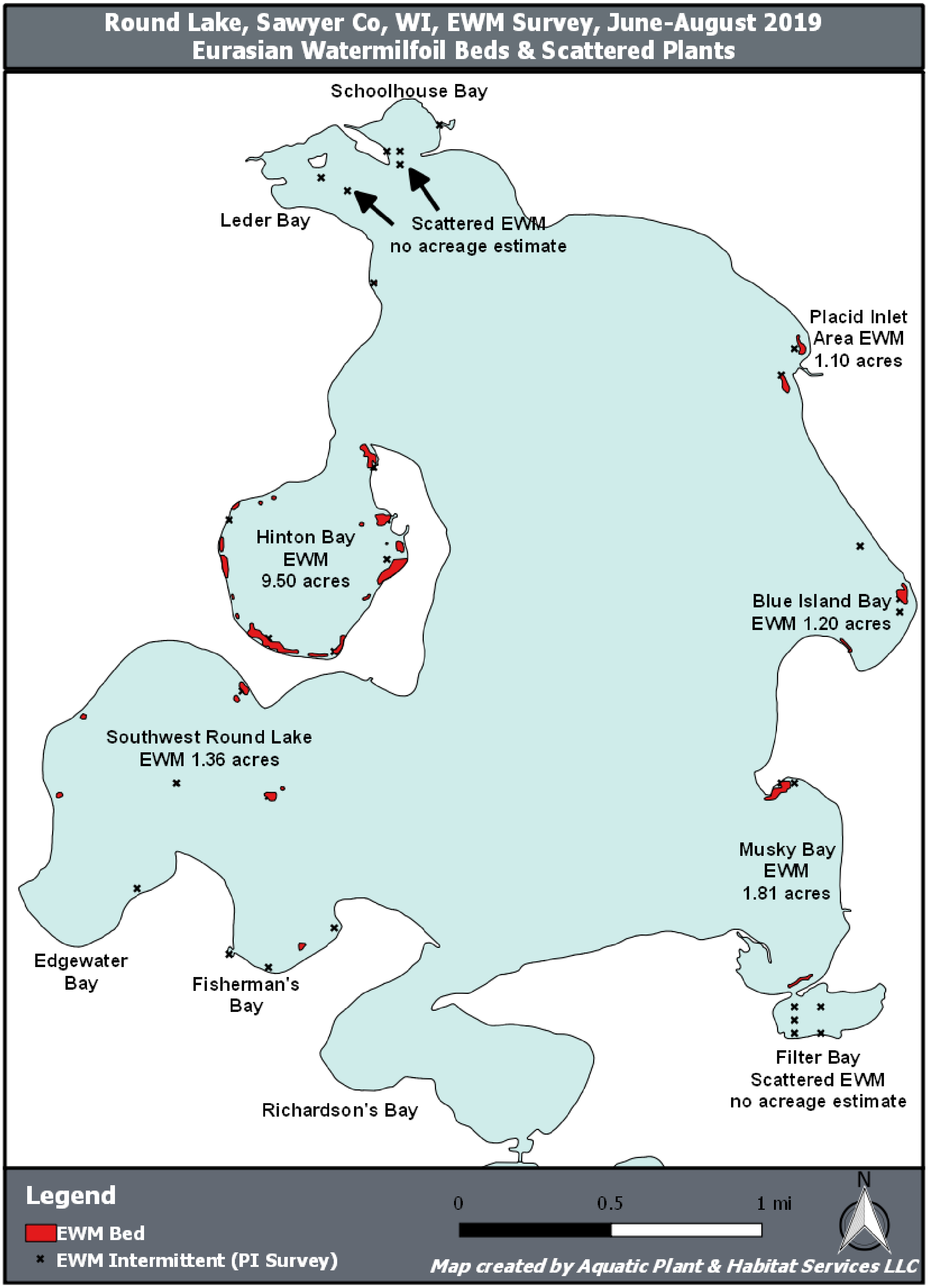


Figure 16 – Round Lake EWM Map, EWM Survey 2019



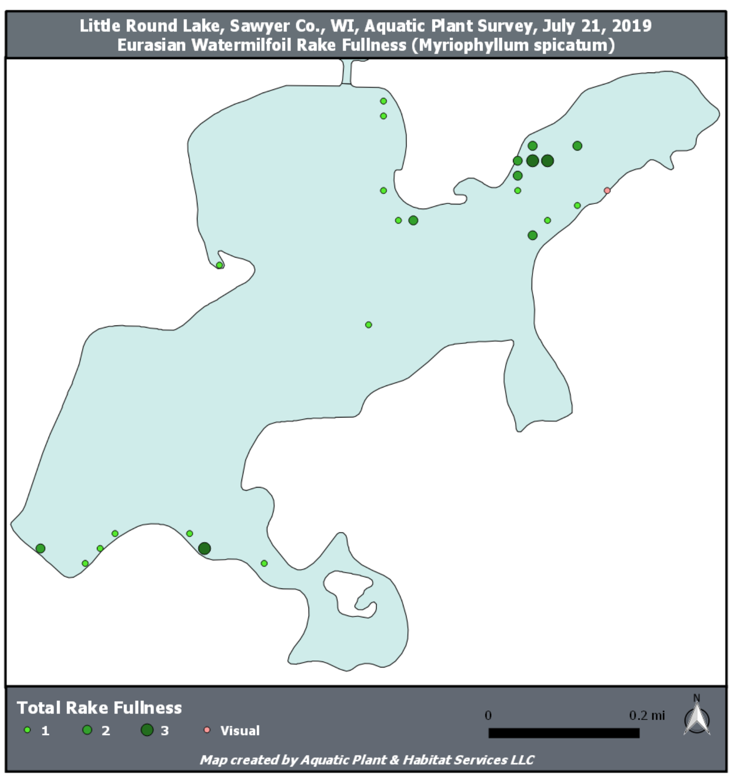
8.2 Little Round Lake Eurasian Watermilfoil

Eurasian watermilfoil had low littoral occurrence in Little Round Lake from a lake-wide survey perspective during point-intercept surveys in 2005 (0.90%), 2014 (3.12%), and 2019 (5.27%, Figure 17). The methods used for PI surveys are summarized on page 20. The methods used for PI surveys are summarized on page 32.

Surveys targeting EWM acreage estimates revealed 3.3 acres in 2017, 5.9 acres in 2018, and 1.9 acres in 2019 (likely to be 2.5 acres in 2019, read below). It is important to note that the purpose of the 2017 EWM acreage survey was to prioritize DASH[4] work for that summer and not as comprehensive as 2018 and 2019 surveys. Therefore, EWM acreage is likely a low estimate in 2017. During the 2019 point-intercept and EWM surveys, EWM was found at sites ranging in depth from 3 to 15 feet, but most of the EWM was concentrated in areas between 3 feet and 10 feet deep.

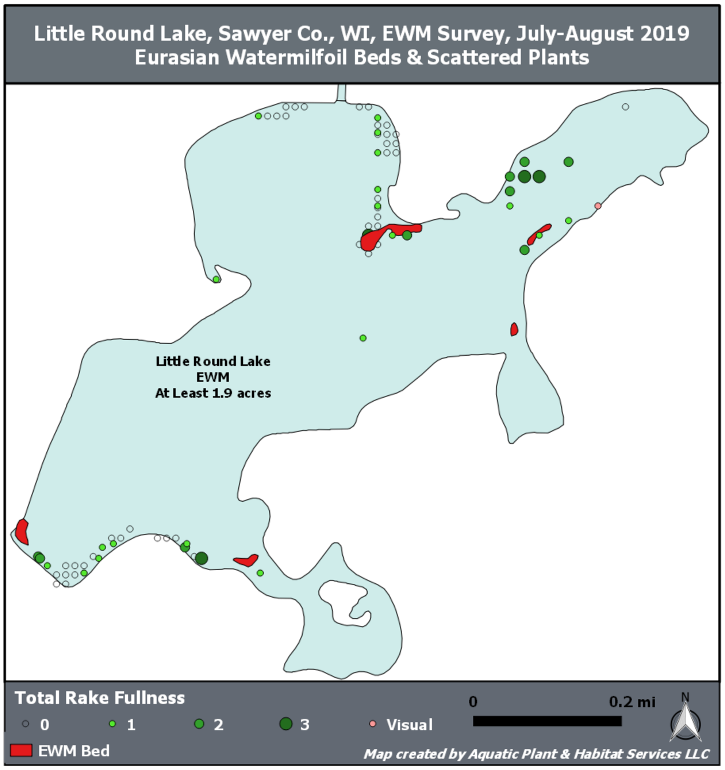
During the 2019 EWM survey in Little Round Lake, five beds of EWM were mapped totaling 1.9 acres (Figure 18). An area of high EWM occurrence was documented during the point-intercept survey along the northern shore of the northeast arm. This area was not documented during the EWM survey and likely adds another 0.6 acres to the total EWM acreage in the lake yielding a more realistic estimate of 2.5 acres. These results are presented in greater detail in the 2019 Eurasian Watermilfoil Survey Results (Hatleli, 2019).

Figure 17 – Little Round Lake EWM Map, Point Intercept Survey 2019



[4] DASH = Diver Assisted Suction Harvesting. See Sub-section 16.0 for more information.

Figure 18 – Little Round Lake EWM Map, EWM Survey 2019



9.0 Public Review and Comment

A draft of this management plan was available to the general public for review and comment from June 10th through June 26th, 2020. A public notice was placed in the local paper, the Sawyer County Record, on June 10th. The plan was made available on the Round Lake Property Owners Association website at roundlakes.org for the duration of the public comment period.

Comments received during the review period pertained to diver assisted suction harvesting (DASH), specifically concerns about EWM fragments leading to greater EWM issues in Hinton Bay. To summarize, the lake resident observed EWM fragmentation during DASH operations in 2018 and recommended that any future DASH operations should only be done if EWM fragments can be captured to prevent their spread and growth in new locations.

The RLPOA met via conference call on June 20th, 2020 in order to talk about this comment and others. The RLPOA agreed there should be language in this APMP that plans for capture of EWM fragments if DASH is used again in the future. The following language was added under Goal 3b in Sub-Section 22.0.
"If a DASH contractor is hired to provide EWM control services on Round Lake, the contractor will also be asked to provide a plan for capturing EWM fragments caused by the act of DASH."

During the June 20th conference call, the RLPOA made note of its ongoing efforts to work with lake users in finding new EWM locations. In 2018, the RLPOA launched an effort among Round Lake users to report EWM locations using the "My GPS Coordinates" smart phone application. These coordinates are automatically emailed to the RLPOA by a user who finds an EWM location. The EWM sightings are compiled and have been verified by Aquatic Plant and Habitat Services during EWM surveys in the past. This same process is planned for the future and added to Goal 2b in Sub-Section 21.0.
"RLPOA will continue promoting a GPS App to lake users that will capture coordinates when the user locates new locations of EWM. The coordinates are then automatically emailed to RLPOA. Sightings of new EWM infestations will be verified and the information will be used for prioritizing areas that need to be surveyed and potentially controlled. The GPS App will be promoted at Round Lakes annual meetings and educational events listed in Goal 1a."

9.1 Adoption by the RLPOA

The RLPOA received updates and changes to the plan via email on June 29th, 2020. The plan was adopted via email by the RLPOA on July 11th, 2020.

9.2 Approval by the DNR

The APMP was provided to the DNR on July 14th, 2020 with the request for official approval. The plan was officially approved by the DNR on October 28th, 2020 (Appendix E).

Section 3
Past Aquatic Plant Management Activities

10.0 Education & Outreach

The Round Lake Property Owners Association (RLPOA) sponsored an educational event in June, 2018 at Prop's Landing Waterfront Grille in Richardson's Bay. The event was well-attended and offered tips on identification of EWM and other common plants in Round and Little Round Lakes. Also during this event, the goals of the recently awarded Aquatic Invasive Speces Control Grant were shared with those in attendance. The strategy for using Diver Assisted Suction Harvesting was also shared and discussed at that time.

The RLPOA website is regularly updated with news and information pertaining to EWM management. Currently, the website summarizes survey results and efforts to address EWM in Hinton Bay, herbicide treatment in 2019, and notice of permit application to chemically treat 20 acres of EWM in 2020.

The RLPOA also publishes newsletters in the spring of each year and organizes an annual membership meeting in the summer. The annual membership meetings provide an opportunity for EWM infestation and treatment updates, volunteer opportunities, discussion regarding AIS, and dissemination of printed educational materials.

11.0 Watercraft Inspection

The Clean Boats Clean Waters program was a large component of AIS prevention in the last decade on Round Lake. The RLPOA has organized staff or volunteers to work at the Linden Road and Peninsula Road boat landings, 7 days a week between Memorial Day and Labor Day. In 2017, 2018 and 2019 there were 2,541 boats inspected, 5,033 people contacted, and 2,678 hours worked by watercraft inspectors[5]. During watercraft inspections, boaters are encouraged to:

- **Inspect** boat, trailer and equipment
- **Remove** all attached plants or animals
- **Drain** all water from boats, motors, livewells and other equipment
- **Never** move live fish away from a waterbody
- **Dispose** of unwanted bait in the trash
- **Buy** minnows from a Wisconsin bait dealer, and use leftover minnows only if using them on that same waterbody.

Every year, the Clean Boats Clean Waters Program promotes the **Drain Campaign**, which occurs around Memorial Day weekend. Watercraft inspectors share the message with anglers to drain livewells and ice their catch, which helps prevent the spread of invasive species. Transporting water away from a lake or stream can contribute to the spread of invasive species because some disease, animals and plants can get caught in motors, livewells and buckets. To help anglers, the DNR offers free ice packs during the campaign weekend at select boat landings.

The **Landing Blitz** is a statewide effort every fourth-of-July weekend to remind boaters to stop the spread of aquatic invasive species. Fourth-of-July is Wisconsin's busiest boating holiday.

---

[5] https://dnr.wi.gov/lakes/invasives/WatercraftSummary.aspx?location=58&show=landings, 8 May 2020.

12.0 Chemical Treatment

Eurasian watermilfoil was first documented in Round Lake in 1993 and Little Round Lake in 1998 (WDNR, 2014). The first chemical treatment of EWM in Round Lake occurred in 1994 and in Little Round Lake in 2000. Treatment dates since 2005, locations, and the size of the treatment area are summarized in Table 6 and Table 7. Maps of treatment locations 2014-2019 are in Figure 20 and Figure 21.

2014 Chemical Treatment

In Round Lake, there were 14 locations listed on herbicide treatment records totaling 7 acres. Location information was provided for 11 of those locations. Five areas were treated in Little Round Lake totaling 2.5 acres.

2015 Chemical Treatment

In Round Lake, there were 9 locations treated, all of which were in Musky and Richardson's Bays totaling 7.75 acres. In Little Round Lake, there were 3 area treated totaling 3.5 acres.

2016 Chemical Treatment

In Round Lake, there were 10 locations treated in Musky, Richardson's, Schoolhouse, and Leder Bays totaling 9.5 acres. Five areas were treated in Little Round Lake totaling 2.75 acres.

2017 Chemical Treatment

In Round Lake, there were 9 locations treated in Musky, Leder, and Hinton Bays and one area south of the peninsula totaling 5.5 acres. No chemical treatment occurred in Little Round Lake.

2018 Chemical Treatment

In Round Lake, 7 locations were treated in Musky, Leder, Richardson's, and Schoolhouse Bays and near the Marina totaling 10.95 acres. Herbicides used are listed in Table 6. No chemical treatment occurred in Little Round Lake.

2019 Chemical Treatment

In Round Lake, 7 locations were treated in Richardson's Bays totaling 18.1 acres and although herbicide was only applied at mapped locations in Figure 20, the treatment was expected to have impacts on a bay-wide scale and therefore considered a whole-bay treatment. One acre in south Musky Bay was also treated and 2.5 acres in Hinton Bay. Chemical treatment in Little Round Lake occurred at 4 locations totaling 4.75 acres.

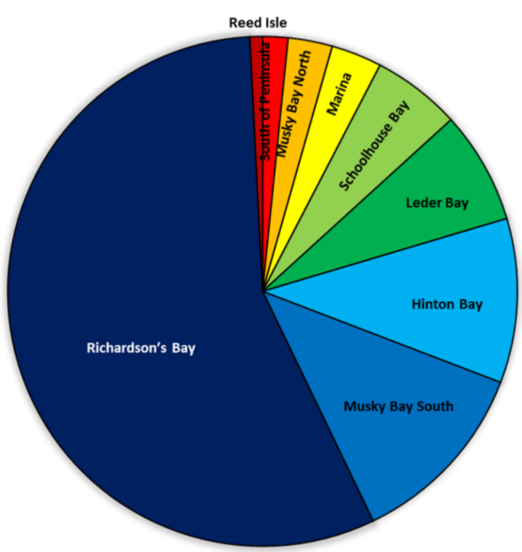


Figure 19 – Round Lake Herbicide Proportions by Location 2014-2019

Location	Acres 2014-2019	% 2014-2019
Richardson's Bay	35.1	57%
Musky Bay South	7.5	12%
Hinton Bay	6.5	11%
Leder Bay	4.45	7%
Schoolhouse Bay	3.5	6%
Marina	2	3%
Musky Bay North	1.75	3%
South of Peninsula	1	2%
Reed Isle	0.5	1%

Figure 20 – Round Lake Herbicide Chemical Treatment Locations 2014-2019

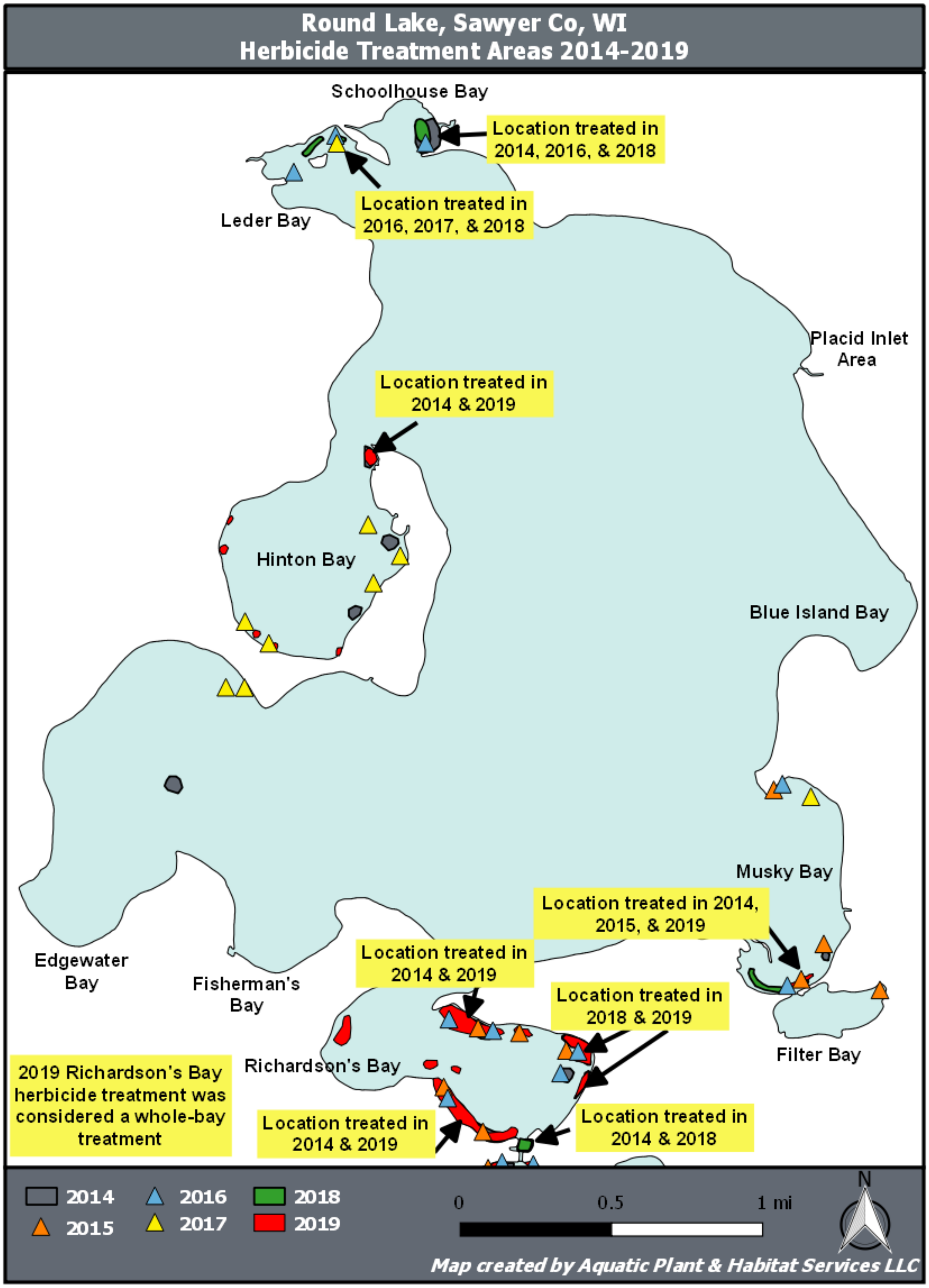


Table 6 - Round Lake EWM Treatment History 2005-2019

ROUND LAKE EWM TREATMENT HISTORY

Year	Date	Applicator	Locations	Area Treated (acres)	Total Area (acres)	Herbicide & ppm
2005	September 15	LCO Land Conservation Dept.	Schoolhouse Bay	3		-
2006	June 5	Northern Aquatic Services	Leder and Schoolhouse Bays		6	-
2007	June 4	Northern Aquatic Services	Leder, Schoolhouse , Hinton, & Musky Bays		4	-
2008	June 18	Northern Aquatic Services	Hinton and Richardson's Bays		7	-
2009	June 3 October 8	Northern Aquatic Services	10 spot treatments 8 spot treatments	5.8 9.1	14.9	Navigate
2010	June 24	Northern Aquatic Services			9.9	Navigate
2011	June 16	Bonestroo, Inc.		9.88	9.88	Sculpin G, Renovate Max G
2012	June 7	Stantec Inc.	Richardson's Bay Various spot treatments Busse	6.5 2.8 0.3	9.65	Navigate 4.5
2013	July 15-20	NEC Inc.	Leder Bay Schoolhouse Bay Richardson's Bay Musky Bay Spot treatments	9 4.5 1 1.5 3	19	Navigate 3.0-3.5 DMA 4 3.0-3.5
2014	July 24	NEC Inc.	Musky Bay Richardson's Bay Hinton Bay Reed Isle Schoolhouse Bay	1 4 1 0.5 0.5	7	Navigate 3.0 DMA 4 IVM 3.0 Sculpin G 3.0
2015	June 30	NEC Inc.	Richardson's Bay Musky Bay	5.5 2.25	7.75	Sculpin G 3.0 DMA 4 IVM 3.0
2016	June 29	NEC Inc.	Leder Bay Schoolhouse Bay Richardson's Bay Musky Bay	2.5 1 3.5 2.5	9.5	Sculpin G 3.0-4.0 DMA 4 IVM 3.0-4.0
2017	June 21	NEC Inc.	Leder Bay Hinton Bay Musky Bay South of Peninsula	0.5 3 1 1	5.5	Navigate 4.0 DMA 4 IVM 4.0
2018	June 30 July 2 July 9	NEC Inc.	Leder Bay (AA17, Z17) Musky Bay (D18) Schoolhouse Bay (F18) Marina (E18) Richardson's Bay (A18, B18)	1.45 1.5 2 1 5	10.95	Tribune 3.73 Sculpin G 3.0 DMA 4 IVM 3.0-4.0 Aquastrike 1.8/0.36
2019	June 25 July 10 August 14	NEC Inc.	Richardson's Bay (A18, B18, C18, G18, H18, J18, K18) **WHOLE BAY TREATMENT** Musky Bay (U18) Hinton Bay, 6 sites	18.1 1 2.5	21.6	Weedar 64 4.0 Navigate 4.0 Tribune 8 gallons

Figure 21 – Little Round Lake EWM Chemical Treatment Locations 2014-2019

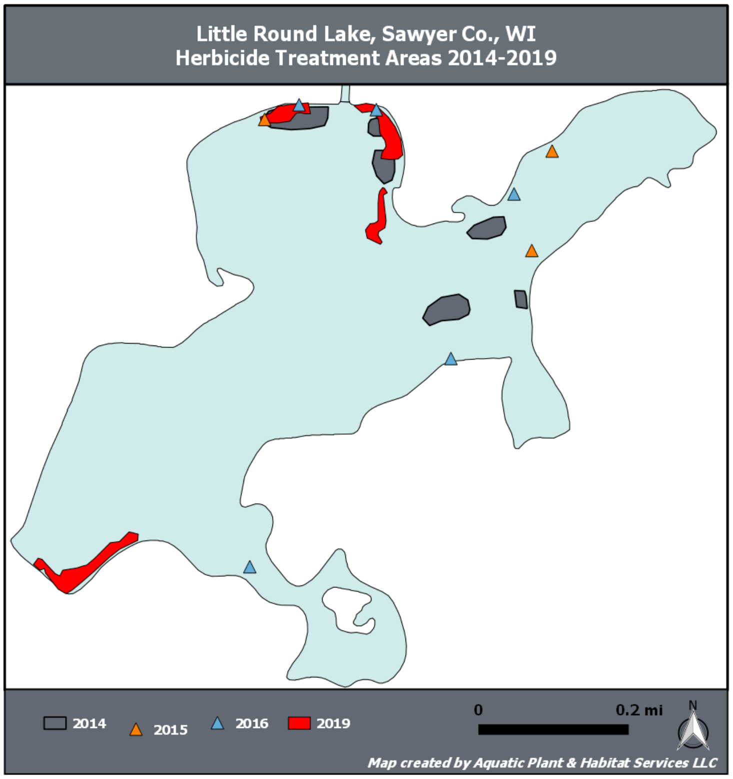


Table 7 - Little Round EWM Treatment History 2005-2019

LITTLE ROUND LAKE EWM TREATMENT HISTORY						
Year	Date	Applicator	Locations	Area Treated (acres)	Total Area (acres)	Herbicide ppm*
2005	September 22	Lac Courte Orielles	-	1.00	1.00	-
2006	May 31	Sawyer County	Keifer's Pine Grove Resort	0.30	0.30	-
2008	June 18	Northern Aquatic Services	-	4.00	4.00	-
2009	June 3	Northern Aquatic Services	3 spot treatments	2.60	2.60	Navigate
2010	June 24	Northern Aquatic Services	-	5.00	5.00	Navigate
2011	June 8	Bonestroo, Inc.		9.92	9.92	RenovateMaxG, Sculpin G
2012	June 6	Stantec, Inc.	-	1.60	1.60	RenovateMaxG 4.5
2013	August 5	NEC Inc.	NE Corner, East Side Peninsula, Southwest Point, Kiefers Resort	0.76	0.76	Navigate 3.0
2014	July 23	NEC Inc.	Center Hump, Fam. Dave's Cabin, Nor. Shore	2.5	2.5	Sculpin G 3.0, Navigate 3.0
2015	July 7	NEC Inc.	North shore, NE side, Center hump/East side	3.5	3.5	Sculpin G 3.0, DMA 4 3.0
2016	June 28	NEC Inc.	NE Shore, Soznowski, LCO SW shore, Keifers shore, east shore	2.75	2.75	Sculpin G 3.0-4.0 DMA 4 3.0-4.0
2017			NO TREATMENT			
2018			NO TREATMENT			
2019	June 26	NEC Inc.	V18 W18 X18 AA18 Z18	0.75 1 0.75 1.5 0.75	4.75	Navigate 4.0 Weedar 64 4.0,

13.0 Diver Assisted Suction Harvesting (DASH)

DASH was first used to control EWM in Round Lake in 2017 at 6 locations totaling 2 acres. One DASH boat was hired to work for 5 days. In 2018 RLPOA was awarded grant funding to continue work with DASH at 10 locations in Round Lake and 4 locations in Little Round Lake. Two DASH boats were hired to work for 10 days. DASH efforts were expected to continue into 2019 and 2020 with focused efforts in Hinton Bay. However, an EWM survey of Hinton Bay in June 2019 revealed an estimated 9.5 acres of EWM, which was more than could be effectively controlled by DASH with the resources budgeted. With this information, RLPOA officials decided to cancel DASH in 2019. Most of the areas that were treated with DASH in 2018 had increased EWM frequency in 2019 (one full year after DASH occurred). At the time of writing this management plan, there is no plan to use DASH for EWM control in 2020.

Figure 22 - Little Round Lake DASH Locations 2018

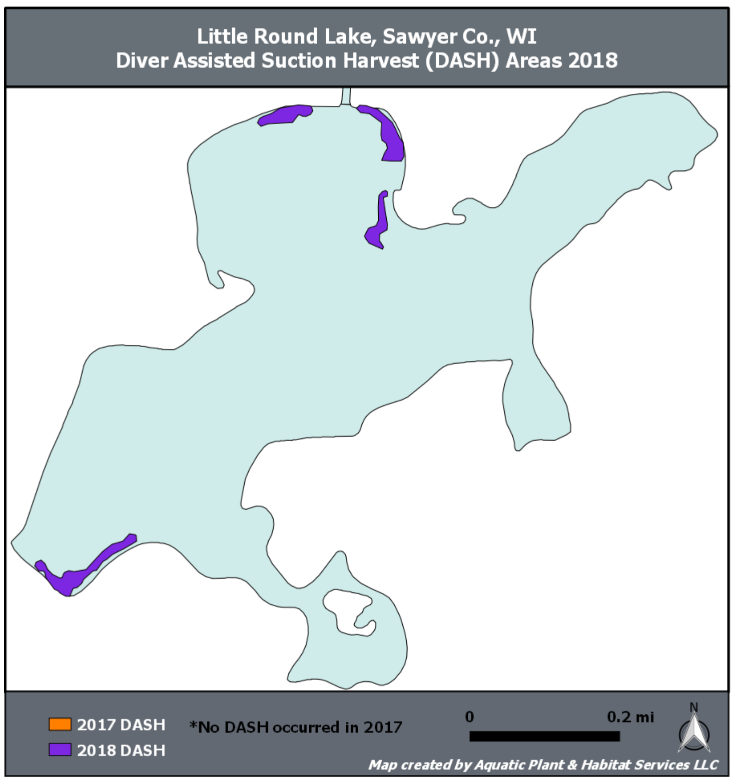
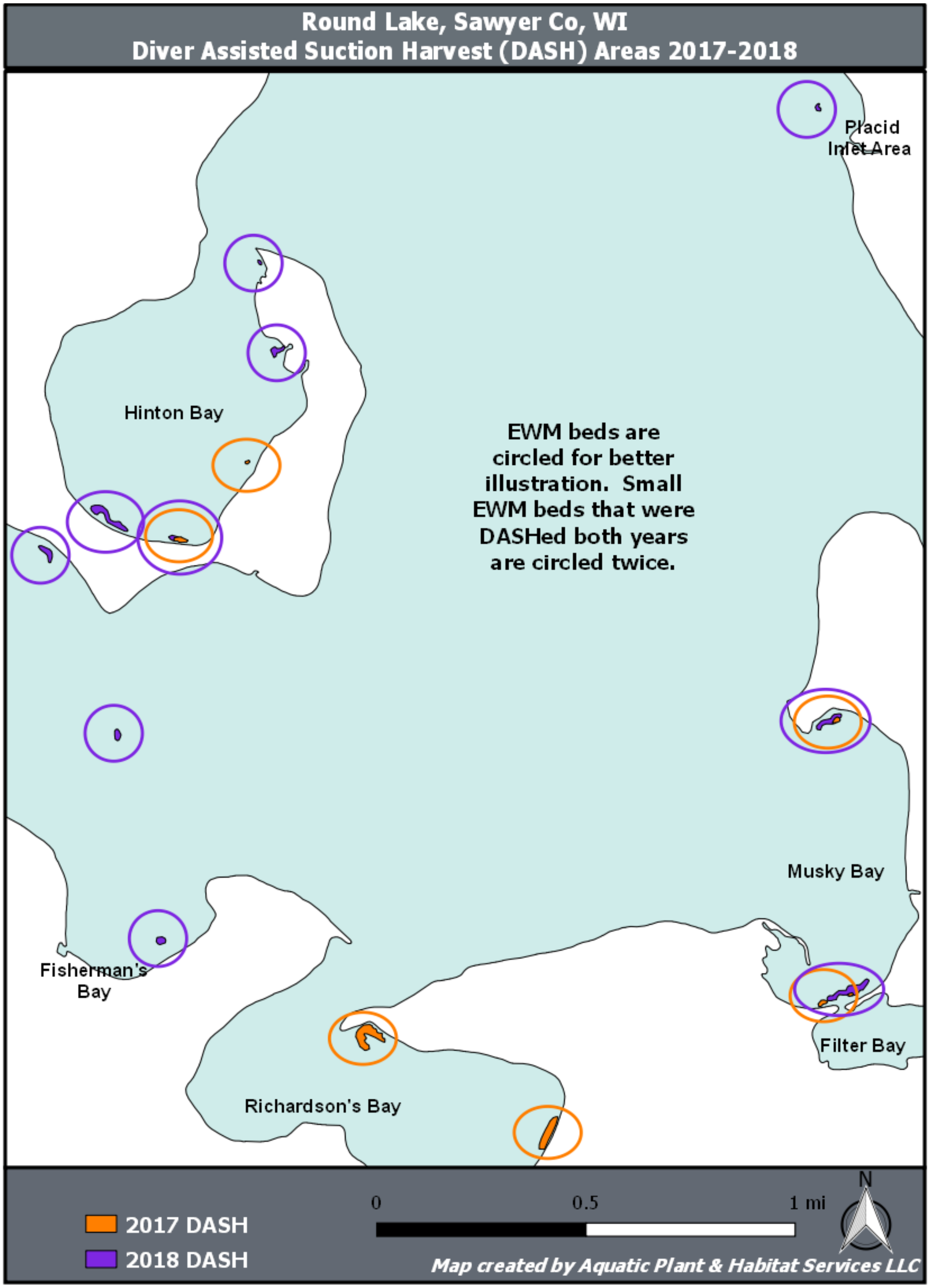


Figure 23 - Round Lake DASH Locations 2017-2018



Section 4
Plant Management Options

Aquatic plants in Wisconsin water bodies can be managed in a variety of ways. The best way to manage aquatic plants will be different for each lake and depends on the overall plant community, the species that require control, whether AIS are present, the level of human use of the system, and various other background information previously presented in this management plan.

Aquatic plant management is regulated under Wisconsin Administrative Codes, Chapters NR107 and NR109 and some management activities require a permit.

There are five broad categories for aquatic plant management:

- **No active management,** which means nothing is done to control plant growth, but a strong monitoring and education component may be included.
- **Manual & mechanical removal of plants**, which includes activities such as hand pulling, raking, and using plant harvesters.
- **Chemical treatment**, which involves the use of herbicide to kill aquatic plants.
- **Physical habitat alteration,** which means plants are reduced by altering variables that affect growth such as sediment, light availability, or depth.
- **Biological control**, which includes the use of living organisms, such as insects, to control plant growth.

The benefits and limitations of each of these broad groups is described below. A table of management options was created by the WDNR in 2008 and is also a valuable resource and can be found at the UW-Extenstion Lakes webpage at *http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/ecology/Aquatic%20Plants/Appendix-E.pdf*.

14.0 Feasibility Factors

In order for a control method to be appropriate, it must be feasible from a biological, social, and financial perspective. Biological feasibility infers the control action will not cause significant harm to other aspects of lake ecology. Socially feasible actions are those that have support from project partners and in this case include the RLPOA, LCO, Sawyer County, and WDNR. Social feasibility also infers that control actions meet regulatory requirements and will be formally permitted by regulatory agencies. Financial feasibility simply implies that any control action is affordable for RLPOA and partners providing cost share. All control actions are accompanied by risks and potential impact to non-target aspects of a lake, but the benefits must outweigh those risks and potential detriments.

15.0 No Active Management

Sometimes the best course of management is to take no immediate action. There are many benefits including the lack of disturbance to desirable native species and the lake system, there is no financial cost (possibly survey costs), there are no unintended consequences of chemical treatment, and no permit is required. Disadvantages to this approach include the potential for small EWM beds to become larger and more challenging to control later. This approach often includes a strong monitoring and educational component. Closely monitoring a bed of EWM is important to determine whether action is required in the near future. Educating lake residents and visitors can help prevent the spread of EWM to other sites in the lake. This approach is appropriate for some beds of EWM in Round and Little Round Lakes.

16.0 Manual & Mechanical Control

Mechanical control includes pulling plants by hand or by using harvesting machines or devices. Permits are required for some activities and there are a variety of options under this type of control. Mechanical control is regulated under Chapter NR 109[6].

Manual Plant Removal

Figure 24 – Manual Removal Photo

Shore land property owners are allowed to manually remove a 30-foot wide section of native aquatic plants parallel to their shoreline without a permit. This can only occur in a single area and there must be piers, boatlifts, swimrafts, or other recreational or other water use devices within that 30-foot zone. This method can only be employed where other plant control methods are not being used and cannot be used in designated sensitive areas. At the time of writing this management plan, there are no designated sensitive areas on Round or Little Round Lakes. Property owners considering this method for recreational purposes are encouraged to contact their local WDNR Lakes Coordinator if they have any questions or need clarification on native plant removal at their particular site. Additionally, there are no limits on raking loose plant material that accumulates along the shoreline. AIS can be selectively removed by manual means anywhere along shore or in open water area without a permit. Regulations require that the native plant community is not harmed during manual removal of AIS. Benefits of these techniques include little damage to the lake and plant community, the removal can be highly selective, and can be very effective in a small bed of AIS. On the other hand, this method can be very labor intensive, which could contribute to high cost if SCUBA divers are hired. Furthermore, plant fragments of EWM can root and grow elsewhere, so all of the plant must be removed. This method is only appropriate for small-scale control.

Diver Assisted Suction Harvest (DASH)

Figure 25 – DASH Photo

This form of mechanical removal involves the use of suction tubes connected to pumps mounted on a barge or pontoon. The suction tubes reach to the bottom of the lake and SCUBA divers manually uproot EWM to be sucked through the tubes, up to the barge, and strained. This technique requires good visibility for divers and is best at depths of at least 10 feet so divers can better control their buoyancy. Furthermore, uprooting EWM plants causes suspension of sediments that can quickly limit diver visibility so working at sites that will have limited sediment suspension is helpful. Sites with

[6] Chapter NR 109 *https://docs.legis.wisconsin.gov/code/admin_code/nr/100/109.pdf*.

native plants rooted in the sediment may help keep sediment suspension at a minimum. This method would work well in small infestation sites, including those in Round and Little Round Lakes. The barriers to employing this method at this time are cost and availability. There is one known company in the area that provides this service. If the RLPOA were to develop their own Diver Assisted Suction Harvester (DASH) unit, it would require certified divers to operate and conduct EWM harvesting. Although this is a possibility, initial cost estimates are currently a barrier. For example, insurance costs for two divers to be employed for one summer are estimated at $8,000. Survey results from 2019 suggest that most of the areas that were treated with DASH in 2018 had increased EWM frequency in 2019, ***one year after*** DASH occurred (Hatleli, 2019).

Mechanical Harvest

This method includes "mowing" of aquatic plants down to depths of 5 feet and then collecting the plants and removing them from the lake. This technique is most appropriate for lake systems with large-scale or whole-lake aquatic plant issues. Mechanical harvesters provide immediate results and usually cause minimal impact to lake ecology while removing some, albeit likely minimal, nutrients from the lake via plant biomass reduction. Harvesting lanes in dense plants beds can improve growth and survival of some fish species. Also, if harvesting is done early enough in the season, impacts to native plants should be minimal (Barton et. al. 2013). However, care should be taken when harvesting early in the season to minimize impacts to spawning fish. A disposal site for harvested plants is a necessary part of a harvesting plan. Hiring a mechanical harvester in northwest Wisconsin to visit the lake costs $2,200 per acre ($2,000/acre for more than 3 days). The purchase of a brand new harvester is highly variable and depends on the type of harvester purchased. Cutting harvesters begin at $100,000. A harvester that can skim and pull the plants from their roots is $76,000. The use of skimming harvesters to pull aquatic plants from the roots is not currently recommended by the WDNR due to causality of sediment suspension that can fuel algae. Furthermore, the cutting of aquatic plants 5 feet below the lake surface leaves vegetation to serve as structural habitat while pulling all aquatic plants by the roots removes structural habitat and exposes sediment for possible AIS introduction/expansion. With a cutting harvester, a shore conveyor (starting at $35,000) is needed to offload the plants into a truck or dumpster for transport to a disposal site. A Recreational Boating Facilities Grant may help pay for up to 50% of eligible costs associated with purchasing harvesting equipment. Annual costs include paying an operator, storage of the harvester, insurance, and maintenance. As an example, Blake Lake's (Polk County) 2018 harvesting budget was $27,700[7].

Figure 26 – Mechanical Harvester Photos

[7] 2018 Annual Harvesting Budget Blake Lake: $2,500 APM Coordinator, $1,500 Lakes Convention, $475 Dues, $8,500 Harvester Labor & Expenses, $4,500 Insurance, $4,525 Administration, $5,700 Lake Management Plan.

17.0 Chemical Control

Chemical control is regulated under Wisconsin Administrative Code Chapter NR 107[8]. The amount of time required to control plants depends upon the specific product, formulation (granular or liquid) and concentration used. Herbicides must be applied in accordance with label guidelines and restrictions. For EWM control, an herbicide generally known as 2,4-D is often used because it is supposed to be selective to broadleaf plants such as EWM. The benefits of using 2,4-D are its effectiveness in controlling EWM, impact to monocots and other native species are supposed to be minimal, altering concentrations and timing allow it to be more selective in killing EWM, and it is widely used. On the other hand, 2,4-D can impact native dicots (broadleaf plants such as water lilies, coontail, and bladderworts), and there is some toxicity to fish in the ester formulations (WDNR, 2012) and toxicity to larval fish in the amine formulations (Dehnert, 2020).

Although 2,4-D is intended to target dicots (broadleaf plant species), research has shown sustained reductions in monocots after treatment with 2,4-D (Nault et al. 2012, Nault et al. 2014). For example, 2,4-D was used to treat EWM in Tomahawk Lake, Bayfield County, on a whole-lake scale at low-dose concentrations of 500µg/l (0.5 parts per million). Five native monocot species showed sustained reductions in frequency after treatment. In the same study, Sandbar Lake was treated at 275µg/l (0.275 parts per million) and the impact to native plant species was reduced with this lower herbicide concentration.

Herbicide treatment history is discussed in Sub-section 12.0. Survey results from 2019 suggest that herbicide treatment of Richardson's Bay (whole-bay treatment) and Little Round Lake in June 2019 yielded statistically significant reductions in EWM at the locations treated. Specifically, Richardson's Bay harbored 18 acres of EWM in 2018 compared to zero acres in 2019, although scattered EWM plants were found along the west shore. Little Round Lake had 5.5 acres of EWM in 2018 compared to 2.6 acres in 2019. It is important to note these reductions were measured during the same year/season of treatment. An August 2019 survey of the 1-acre herbicide treatment location in south Musky Bay (X19, treated July 2019) suggest that the herbicide treatment was not successful in decreasing EWM occurrence in that location (Hatleli, 2019). Herbicide treatment of 2.5 acres total among six locations in Hinton Bay in August 2019 has not yet been assessed to gauge post-treatment efficacy. Continued analyses of future herbicide treatments are recommended using methods summarized in Appendix C.

Impacts to native aquatic plants are an important factor when deciding whether to use chemical control. If the native plants are reduced by repeated chemical control, there is more area for EWM to grow. Also, if the duration of EWM control only lasts for one or two growing seasons, one should weigh the financial costs combined with impacts to native plants versus the relatively short-lived control.

[8] Chapter NR 107 is available at *https://docs.legis.wisconsin.gov/code/admin_code/nr/100/107.pdf*.

18.0 Physical Habitat Alteration

Various physical habitat alterations exist and most are not appropriate for consideration in Round and Little Round Lakes. Many of these alterations require a Chapter 30 permit.

Bottom Barriers

Bottom barriers prevent light from reaching aquatic plants, but kill all plants, allow for gas accumulation under the barrier and subsequent dislodging, they can impact fish spawning and food sources, and an anaerobic environment below the barrier could cause nutrient release from the sediment. Bottom barriers are not recommended for EWM control in the lakes.

Figure 27 – Bottom Barrier Photo

Drawdown

This control technique involves the lowering of water levels and exposing sediments to freezing and drying, which results in plant death. A water level control device, such as a dam, is required for this method. Until 2019, a dam existed between Little Round Lake and Osprey Lake to the southeast, but it was not intended to allow significant drawdowns for this type of management. The dam was replaced by a culvert under Carlson Road in 2019. This technique is not appropriate for EWM management in the lakes because there is a lack of a water control structure.

Dredging

Dredging includes the removal of plants along with sediment and is most appropriate for systems that are extremely impacted with sediment deposition and nuisance plant growth. Round Lakes do not meet these criteria and therefore dredging is not recommended as a plant control method.

Dyes

The use of dyes is for reducing water clarity thereby reducing light availability to aquatic plants. This is only appropriate for very small water bodies with no outflow and is therefore not recommended for Round and Little Round Lakes.

Non-point Source Nutrient Control

No permit is required for this type of nutrient management, which reduces the runoff of nutrients from the watershed. As a result, fewer nutrients enter the lake and are therefore not available for plant growth. This approach is beneficial because it attempts to correct the source of a nutrient problem and not just treat the symptoms. Controlling non-point source pollution is always a good idea, even though water chemistry and clarity data suggest these lakes are not currently facing nutrient input issues.

19.0 Biological Control

Insects

Insect biocontrol options are available for EWM and purple loosestrife. Previously managed purple loosestrife on Little Round Lake was small enough that manual digging/pulling and close monitoring were, and continue to be, appropriate for control measures, so the exploration of biocontrol is not needed at this time.

EWM control using native weevils is also an option. The native weevils (*Euhrychiopsis lecontei*) lay eggs in the tips of milfoil plants. When the larvae hatch, they feed on the tips of the stem and burrow into the stem. Furthermore, adult weevils feed on leaves of milfoil plants. The weevils are native to Wisconsin and normally feed on northern water-milfoil (*Myriophyllum sibiricum*) but will swith their egg-laying and feeding patterns to EWM when present (CLMN, 2014). It is not known whether native populations of weevils exist in Round Lakes. Stocking weevils has been done on other lakes, but whether they effectively control EWM depends on the ability for the weevil to survive in the introduced lake. They require natural shorelines for overwintering and seem to survive best in shallow milfoil beds (Jester, 1999). Controlling EWM using weevils is not recommended at this time, but monitoring for native populations of weevils is an appropriate first step to determine the possibility of this biological control option.

Allelopathy

The chemical compounds released by spikerushes (*Eleocharis sp.*) appear to inhibit EWM growth (WDNR, 2014b). Needle spikerush (*E. acicularis*) and creeping spikerush (*E. palustris*) were found in both lakes. Robbins' spikerush (*E. robbinsii*) and Bald spikerush (*E. erythropoda*) were found in Little Round Lake. Although this method may seem to offer long-term and maintenance-free control, it has not proven effective in limiting EWM growth. Even so, the protection of spikerushes in both lakes is warranted in the event there is some impact on EWM growth. Furthermore, spikerushes provide valuable wildlife and fish habitat.

Native Plantings

Another form of biological control is to introduce a diverse native plant community that will compete with AIS. Native plants provide valuable food and habitat for fish and wildlife and a diverse community is more repellant to invasive species. Fortunately for Round and Little Round Lakes, a healthy and diverse aquatic plant community already exists. Protection of native plants is a large component of controlling EWM in the lakes.

Section 5 Management Strategy 2020-2024[9]

[9] The goals are numbered for reference but the numbering is not meant to infer priority.

20.0 Goal 1 – Provide educational opportunities pertaining to aquatic plants and aquatic invasive species.

A strong educational component is important, especially in preventing the introduction of new aquatic invasive species (AIS) and keeping Eurasian water-milfoil (EWM) at a minimal level.

Objective 1a: Organize two educational events that focus on AIS identification and prevention.

In 2021 and 2023, ideally in early summer, an educational event will be organized by the RLPOA that specifically focuses on identification of AIS and prevention techniques. This event could occur in conjunction with other scheduled social events or meetings sponsored by the RLPOA.

- Include funding for educational events in the AIS control grant applications planned for submission November 2020.
- Work with Sawyer County AIS Coordinator, WDNR, LCO, and/or private consultant to provide instruction on AIS identification and steps to prevent the spread of EWM in the lake. Include information about other AIS found in nearby lakes, especially curly-leaf pondweed and zebra mussels (Obj 2b.).
- Work in partnership with other organizations such as the Youth Conservation Alliance on educational projects that pertain to Round Lakes. The YCA plans to launch its first annual lake education event in June 2020 on Round Lake. The event will be targeted to youth and will take place on Round Lake and Little Round Lake.

Objective 1b: Continue to use the Round Lakes website and social media for education.

Information pertaining to invasive species, water level, and other topics are available at www.roundlakes.org. Additional educational links would complement these existing links.

- Add annual EWM survey documents to the AIS section.
- Include a link for this APMP once it is adopted by the RLPOA and approved by the DNR.
- Post information on RLPOA Facebook page to keep the public informed on current activities related to aquatic plants, AIS, how to prevent the spread of AIS, educational events, etc.

Objective 1c: Develop messaging to prevent boaters from driving through and anchoring in existing EWM beds.

RLPOA leaders and members shared observations of boaters driving through beds of EWM, thereby fragmenting and potentially spreading within Round and Little Round Lakes. Anglers have been observed deploying anchors in locations of known EWM infestation to fish for some time, raising the anchor with plants attached, boating to a new location, and deploying the anchor with plants still attached.

- Include funding request in the AIS control grant November 2020.
- Develop a message that specifically addresses the threat of spreading EWM within Round and Little Round Lakes.
- Share this message on the RLPOA website and Facebook page.
- Incorporate this message into the Watercraft Inspection program.

21.0 Goal 2 – Prevent the introduction and spread of aquatic invasive species.

Round and Little Round Lakes have low occurrence of purple loosestrife and flowering rush. The size and density of Eurasian water-milfoil beds in the lakes vary over time and is discussed in greater detail in Sub-section 8.0. Managing AIS once it is found can be time-consuming and financially expensive. Preventing the introduction of new AIS such as zebra mussels and curly-leaf pondweed and preventing the spread of existing AIS, especially EWM, is less costly in time and finances.

Objective 2a: Continue watercraft inspections.

The RLPOA has participated in the Clean Boats Clean Waters Watercraft Inspection program since 2006. Since 2017, RLPOA has aimed to staff watercraft inspectors at the Linden Road and Peninsula Road boat landing Memorial Day to Labor Day, 7 days a week, from 8:00-4:00. The continuation of this program on an annual basis is an important component of prevention.

- Continue to seek grant funds annually to hire watercraft inspectors.
- Designate a RLPOA member to work with resort owners on the lakes. Encourage resort owners to conduct watercraft inspections when guests arrive and provide educational materials such as Wild Cards or other publications that provide tips for education and prevention.
- Participate in the Drain Campaign in early summer each year (Sub-section 11.0).
- Participate in the Landing Blitz on the weekend(s) nearest Independence Day each year (Sub-section 11.0).
- Inspectors share messaging on how to prevent the spread of EWM within Round and Little Round Lakes (see Obj. 1c).

Objective 2b: Continue volunteer aquatic invasive species monitoring.

AIS monitoring involves searching the lake for aquatic invasive species like Eurasian watermilfoil, zebra mussels, rusty crayfish, and others. The frequency that volunteers perform AIS monitoring varies, but most volunteers do this a few times per year. Most volunteers conduct AIS monitoring in high-risk sites around their lakes (e.g., boat landings, areas between shore and 15 feet deep with mucky bottom, areas near existing or previously treated EWM beds, etc.) to detect early populations of AIS. Early detection of AIS is crucial for effective, inexpensive management, so these volunteers are incredibly valuable[10].

- RLPOA recruit/retain volunteers to monitor Round Lake for new locations of EWM and purple loosestrife. Purple loosestrife was found at one location along the shoreline of Little Round Lake at County Hwy B in 2014 and later removed. Although no purple loosestrife was documented in 2019, volunteers should monitor for this wetland plant along the shoreline, especially where it was previously observed.

[10] Section copied from UWEX Lakes. https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/programs/clmn/AIS.aspx. 25 April 2020.

- RLPOA will continue promoting a GPS App to lake users that will capture coordinates when the user locates new locations of EWM. The coordinates are then automatically emailed to RLPOA. Sightings of new EWM infestations will be verified and the information will be used for prioritizing areas that need to be surveyed and potentially controlled. The GPS App will be promoted at Round Lakes annual meetings and educational events listed in Goal 1a.
- Monitor for zebra mussels, which were verified in McKenzie Lakes in 2016 on the border of Washburn and Burnett Counties, which is 33 miles west of Round Lakes. Work with the Sawyer County AIS coordinator for supplies and protocols for zebra mussel monitoring.
- Monitor for curly-leaf pondweed, which was verified in several nearby lakes, the nearest of which is Spider Lake just 4 miles northeast of Round Lakes. Work with the Sawyer County AIS coordinator for supplies and protocols.

Objective 2c: Inventory boat landings.

The watercraft inspection program offers an opportunity for inventory of the boat landings. The signage may be old or damaged and needing replacement. Boat ramps and piers may need servicing or trash buckets may be missing. If the landing has a message board or kiosk, inspectors can post informational brochures about invasive species and contact numbers if a questionable plant or animal is found. Since the watercraft inspection team cannot be present for every boater, signage can offer education and information at any time.

- Know who owns the boat landing. CBCW watercraft inspectors (see Obj. 2a) should always seek permission prior to making any changes at the landing site.
- If the landing is in need of signage, inspectors can contact their local DNR service center for the appropriate sign.

22.0 Goal 3 – Control existing aquatic invasive species to minimize navigation impairment.

Purple loosestrife was observed in 2014 in Little Round Lake, but not documented during the 2019 surveys in either lake. Flowering rush was found at one location in southern Musky Bay of Round Lake in 2019. Eurasian water-milfoil continues to be the main concern in Round and Little Round Lakes. Integrated pest management (IPM) employs information about EWM's life cycle and its negative effects in combination with available control methods to determine the most economical means with minimal hazard to people, property, and environment. The RLPOA realizes that, unfortunately, complete eradication of EWM is not a realistic goal. However, prioritizing EWM control based on factors listed in Figure 28. Chemical treatment has had mixed success since EWM was discovered in Round Lake in 1993 and first treated in 1994 but has proven to be the most effective treatment in controlling the spread of EWM as well as the most economical option (the most expensive chemical treatment year for Round Lakes was $32,600 in 2019, a significant portion used to successfully treat Richardson Bay. The largest non-chemical treatment was DASH in 2018 at a cost of 41,200).

Objective 3a: Monitor for flowering rush and purple loosestrife and remove once found.

Maintaining low occurrence of flowering rush and purple loosestrife require little to moderate effort and volunteer time. Although flowering rush probably does not pose as much of a threat as purple loosestrife, monitoring is recommended because it can form dense beds that crowd out native species.

- Recruit a volunteer to monitor for flowering rush and purple loosestrife. Use resources from the UW Extension Lakes - Citizen Lake Monitoring Network – Aquatic Invasive Species program.
- If purple loosestrife is found, RLPOA volunteer pull / dig the plants, removing as much of the taproot and associated roots as possible without causing too much disturbance to the riprap shoreline. This should occur as soon as possible after the plant is found, but before flowers bloom in July, at which point viable seeds can be spread while the plant is being pulled. Carefully remove plant matter from the site using garbage bags so as not to spread seeds. Burn all purple loosestrife plants as soon as possible. Monitor the site annually for any new growth and remove.
- RLPOA volunteer monitor for flowering rush in southern Musky Bay in July and August. The plant must be flowering for accurate identification. *http://dnr.wi.gov/topic/invasives/fact/floweringrush.html*
- Remove flowering rush (only after accurate identification) by hand pulling the plant while working from the boat. If possible, pull roots up with the plant. If hand-pulling is not possible, flowering rush can be cut below the water surface, but this is not as effective and requires regular monitoring and cutting. Remove any plant parts from the water.
- Monitor the site annually for any new growth. Follow the same removal techniques if found.

Objective 3b: Control the spread of Eurasian water-milfoil to non-impairment levels using integrated pest management.

Integrated pest management (IPM) employs information about EWM's life cycle and its negative effects in combination with available control methods to determine the most economical means with minimal hazard to people, property, and environment. The RLPOA realizes that, unfortunately, complete eradication of EWM is not a realistic goal. However, preventing EWM beds from spreading to levels of impairment is a realistic goal. Impairment exists when aquatic plants prevent activities such as angling, boating, swimming, or other navigation/recreation on a lake.

- Apply for an AIS control grant to fund control activities, surveys, and monitoring efforts 2021-2023. The RLPOA must notify the WDNR of their intent to apply by September 1st 2020 and the grant application is due November 1st 2020.
- Hire consultant to complete EWM survey in late August/early September each year to determine locations, bed sizes, and densities. Methods will follow those listed in Appendix C.
- RLPOA use the criteria in Figure 28 to prioritize EWM locations that require control.
- RLPOA sponsor an annual meeting among partners (LCO, DNR, Sawyer County, herbicide applicator) January or February each year. Use survey results from previous summer to determine control measures for the following growing season.
- RLPOA work with appropriate partners to submit permit applications for control measures.
- If a DASH contractor is hired to provide EWM control services on Round Lake, the contractor will also be asked to provide a plan for capturing EWM fragments caused by the act of DASH.
- Survey and monitor untreated areas annually to track their growth or lack thereof.

Figure 28 – Eurasian Watermilfoil Control Guidance

Criteria for Prioritizing Eurasian Watermilfoil Control

SIZE	DENSITY	TRAFFIC	IMPAIRMENT	HABITAT	SURVEY DATA
•Is the bed size >0.15 acres (6,500 sq ft)?	•Is EWM the dominant species? •Is EWM rake fullness >2 on average?	•Is the EWM in an area of high boat traffic? (especially marina, restaurant, resort, thoroughfare)	•Is this area causing beneficial use impairment? (aquatic plants prevent activities such as angling, boating, swimming, or other navigation /recreation)	•Is EWM the dominant species to the detriment of native plant species? •Would the proposed treatment have limited impact on native plants.	•Has a pre-treatment survey been completed using standardized methods to document location, size, density, and height?

HOW TO USE THESE CRITERIA – Answer the 6 questions for a particular bed of EWM. If the answer is "yes" for most questions (ideally 4 or more), then that bed of EWM may be considered high priority for control actions. For beds of EWM with fewer "yes" answers, control actions can still be considered but perhaps that area is not the highest priority. This graphic is meant to help the RLPOA prioritize where control actions should take place in any given year. Areas that do not receive attention in a given year may be considered higher priority the following year.

23.0 Goal 4 – Protect native aquatic plants.

Objective 4a: Avoid impacts to native plants when controlling AIS.

Controlling AIS in lakes can cause unintended damage to the native aquatic plant community. Chemical control of EWM is likely to be the control method of greatest concern regarding impact to native plants. The removal of purple loosestrife will not cause damage to the native plant community because they are small infestations that can be managed with hand pulling and digging. EWM infestations, on the other hand, may be best controlled using chemical treatment or mechanical/manual removal depending on the bed size, bed shape, density, and location. When chemical treatment is the best option for controlling EWM at a particular site, employ the following action items:

- Follow the herbicide label guidelines for concentration. A licensed herbicide applicator is required and will understand these guidelines.
- Treat EWM during the spring, early summer, or fall when growth of native species is less active. Work closely with the WDNR on this item.
- Do not treat an area more than once per year. If the EWM was treated in spring but not significantly reduced at that site, it likely means that the spring treatment failed and the method or process for treatment should be evaluated. Repeat treatments in the same site exacerbate the threat to non-target native plants and organisms and therefore should not be considered.

Objective 4b: Minimize the manual removal of native plants for navigation and recreation.

In some instances, native aquatic plants can hinder recreational activities along shore. From a whole-lake perspective, this is not a common occurrence in Little Round Lake and even less common in Round Lake. When it does occur, it is generally in shallow bays. Property owners can remove some native plants but there are restrictions under Wisconsin Administrative Code, Chapter NR109 and more detail on this code is described in Sub-section 16.0.

- Per Chapter NR109, native plants removal is allowed without a permit but limited to a single area with a maximum width of no more than 30 feet measured along the shoreline. All installed piers, boatlifts, swim rafts, and/or other recreational devices must be located within that 30-foot area. Property owners may remove the plants manually (not mechanically or chemically). This plant management plan advocates that this should only be done at a minimal level to meet the goal of protecting native plant species.
- Add language to the RLPOA website with information about Chapter NR 109 restrictions and this goal to protect native species in Round and Little Round Lakes.

24.0 Goal 5 – Maintain desirable trophic states (high water quality) in the lakes.

Trophic state and water quality are often used interchangeably and while the two are related, they are not the same. Trophic state describes the biological condition of a lake using a scale that is based on measurable and objective criteria. Water quality is an objective descriptor of a lake's condition based on the observer's use of the lake (see SUB-SECTION 4.0 for more detail). The clear water is, in large part, a function of the low nutrient levels found in the lakes. To maintain high water clarity, nutrient input must be kept low.

Objective 5a: Monitor water quality in Round Lakes.

The Lac Courte Oreilles Land Conservation Department has conducted water quality monitoring at 3 sites in Round Lake and one site in Little Round Lake. Data suggest that the water quality of both lakes continues to be very good. Continued monitoring is needed to track water quality. Secchi depth, total phosphorus, and chlorophyll-*a* should be assessed monthly from May –September.

- Continue communications with LCO to coordinate monitoring efforts to ensure water quality monitoring is completed and to avoid duplication of efforts.
- Monitor water quality as needed and enter results in the Surface Water Integrated Monitoring System database at https://prodoasjava.dnr.wi.gov/swims/login.jsp.

Objective 5b: Continue outreach efforts to lakeside land owners to promote riparian practices that protect high water clarity.

Lake water quality/clarity can be linked to property values. Water clarity is directly impacted by surface water runoff that flows along shore land areas before entering the lake. (see SUB-SECTION 3.2 for more information). A shoreline and buffer survey of Little Round Lake in 2012 revealed approximately 75% of shore lands to be covered in natural vegetation. A shore land survey of Round Lake completed in 2016 revealed only 1% of riparian zones had more than 50% cover of impervious surfaces, which is beneficial. About one-third of riparian zones had less than 50% tree canopy and shrub/herbaceous cover and greater than 50% lawn, which is detrimental. This suggests there are areas that could be improved from a water quality protection perspective.

- Include funding for educational events in the AIS control grant applications planned for submission November 2020.
- Continue outreach and education efforts to property owners on shoreland practices that protect water quality.
- Use results from the 2016 survey to determine whether the shore lands are amenable to high water quality or whether target goals are needed for shore land improvements. WDNR, Sawyer County, and UWEX professionals can assist in this process.
- Promote the Healthy Lakes Grant Program to property owners. Schedule two information sessions with the DNR or UWEX Lakes with the aim to recruit landowners to implement Healthy Lakes practices on their property.

Implementation of the Round & Little Round Lakes Aquatic Plant Management Plan								
	Goals, Objectives, and Action Items	Entities Involved	2020	2021	2022	2023	2024	Surface Water Grant Eligible
1. Provide educational opportunities pertaining to aquatic plants and aquatic invasive species.								
1a	**Organize two events that focuses on AIS identification and prevention.**							RLPOA pays for grant application.
	Apply for Surface Water Grant due November 1.	RLPOA, RP	X					
	Work with Sawyer County, LCO, WDNR, and/or private consultant to plan events and schedule instructors.	RLPOA, RP, CO, WDNR, LCO		X		X		X
	Possibly coordinate with other organizations already pursuing educational events on Round Lakes, such as the Youth Conservation Alliance.	RLPOA	Possibly all years depending on events scheduled by other organizations.					
1b	**Continue to use the Round Lakes Website and social media for education.**							X (Activities are eligible as match in the grant if there is a volunteer webmaster.)
	Add annual EWM survey documents to the AIS section.	RLPOA	X	X	X	X	X	
	Include a link for this APMP once it is adopted by the RLPOA and approved by the DNR.	RLPOA	X					
	Post information on RLPOA Facebook page to keep the public informed on current activities related to aquatic plants, AIS, how to prevent the spread of AIS, educational events, etc.	RLPOA	X	X	X	X	X	
1c	**Develop messaging to prevent boaters from driving through and anchoring in EWM.**							RLPOA pays for grant application.
	Apply for Surface Water Grant due November 1.	RLPOA, RP	X					
	Develop a message that specifically addresses the threat of spreading EWM within Round and Little Round Lakes.	RLPOA, RP	X	X				x
	Share this message on the RLPOA website and Facebook page.	RLPOA	X	X	X	X	X	
	Incorporate this message into the Clean Boats Clean Waters Watercraft Inspection program.	RLPOA	X	X	X	X	X	

RLPOA = Round Lake Property Owners' Association. LCO – Lac Courte Oreilles Tribe. CO = Sawyer County.
RP = Resource Professional. WDNR = Wisconsin Department of Natural Resources

Evident impacts by COVID-19

Implementation of Round & Little Round Lakes Aquatic Plant Management Plan								
Goals, Objectives, and Action Items		Entities Involved	2020	2021	2022	2023	2024	Surface Water Grant Eligible
2. Prevent the introduction and spread of aquatic invasive species.								
2a	**Continue watercraft inspections.**							
	Apply for grants to fund this activity.	RLPOA		X	X	X	X	
	Work with resort owners on the lakes to conduct watercraft inspections when guests arrive and provide educational materials.	RLPOA	X	X	X	X	X	X
	Participate in the Drain Campaign in early summer each year (Section 9.0).	RLPOA	X	X	X	X	X	X
	Participate in the Landing Blitz on the weekend(s) nearest Independence Day each year	RLPOA	X	X	X	X	X	X
	Inspectors share messaging on how to prevent the spread of EWM within Round and Little Round Lakes	RLPOA	X	X	X	X	X	X
2b	**Continue volunteer aquatic invasive species monitoring.**							
	Organize volunteers to monitor Round Lake for new locations of EWM and purple loosestrife.	RLPOA	X	X	X	X	X	
	Monitor for zebra mussels. Work with the Sawyer County AIS coordinator for supplies and protocols for zebra mussel monitoring.	RLPOA, CO	X	X	X	X	X	Activities are eligible to be used as grant match.
	Monitor for curly-leaf pondweed. Work with the Sawyer County AIS coordinator for supplies and protocols.	RLPOA, CO	X	X	X	X	X	
3c	**Inventory boat landings.**							
	Know who owns the boat landing. If the landing is in need of signage, inspectors can contact their local DNR service center for the appropriate sign.	RLPOA	X	X	X	X	X	

Evident impacts by COVID-19

RLPOA = Round Lake Property Owners' Association. LCO – Lac Courte Oreilles Tribe. CO = Sawyer County.
RP = Resource Professional. WDNR = Wisconsin Department of Natural Resources

Implementation of Round & Little Round Lakes Aquatic Plant Management Plan								
Goals, Objectives, and Action Items		Entities Involved	2020	2021	2022	2023	2024	Surface Water Grant Eligible
3. Control existing aquatic invasive species to minimize navigation impairment.								
3a	**Monitor for flowering rush and purple loosestrife and remove.**							
	Recruit a volunteer to monitor for flowering rush and purple loosestrife and remove if found.	RLPOA	X	X	X	X	X	
3b	**Control the spread of Eurasian water-milfoil to non-impairment levels using integrated pest management.**							RLPOA pays for grant application.
	Apply for an AIS control grant due November 2020. Notify WDNR of intent to apply by September 2020.	RLPOA	X					
	Hire consultant to complete EWM survey in late August/early September each year to determine locations, bed sizes, and densities.	RLPOA, RP	X	X	X	X	X	X
	RLPOA use the criteria in Figure 26 to prioritize EWM locations for control.	RLPOA	X	X	X	X	X	
	RLPOA sponsor an annual meeting among partners January or February each year to plan control for the following growing season.	RLPOA, LCO, CO, WDNR, RP		X	X	X	X	X
	RLPOA work with appropriate partners to submit permit applications for control measures.	RLPOA, WDNR, RP		X	X	X	X	X
	Survey and monitor untreated areas annually.	RLPOA, RP	X	X	X	X	X	X

RLPOA = Round Lake Property Owners' Association. LCO – Lac Courte Oreilles Tribe. CO = Sawyer County. RP = Resource Professional. WDNR = Wisconsin Department of Natural Resources

Implementation of Round & Little Round Lakes Aquatic Plant Management Plan								
Goals, Objectives, and Action Items		Entities Involved	2020	2021	2022	2023	2024	Surface Water Grant Eligible
4. – Protect native aquatic plants.								
4a	**Avoid impacts to native plants when controlling AIS.**							NA
	Follow the herbicide label guidelines for concentration.	RLPOA, RP	X	X	X	X	X	
	Treat EWM during the spring, early summer, or fall when growth of native species is less active.	RLPOA, RP, WDNR	X	X	X	X	X	NA
	Do not treat an area more than once per year. If the EWM was treated in spring but not significantly reduced at that site, it likely means that the spring treatment failed and the method or process for treatment should be evaluated. Repeat treatments in the same site exacerbate the threat to non-target native plants and organisms and therefore should not be considered.	RLPOA, RP, WDNR	X	X	X	X	X	NA
4b	**Minimize the manual removal of native plants for navigation and recreation.**							NA
	Property owners may remove the plants manually (not mechanically or chemically) at a minimal level to meet the goal of protecting native plant species.	Riparians	As needed					
	Add language to the RLPOA website with information about Chapter NR 109 restrictions and this goal to protect native species in Round and Little Round Lakes	RLPOA	X					X (Activities are eligible as match in the grant if there is a volunteer webmaster.)

RLPOA = Round Lake Property Owners' Association. LCO – Lac Courte Oreilles Tribe. CO = Sawyer County. RP = Resource Professional. WDNR = Wisconsin Department of Natural Resources

Implementation of Round & Little Round Lakes Aquatic Plant Management Plan								
Goals, Objectives, and Action Items		Entities Involved	2020	2021	2022	2023	2024	Surface Water Grant Eligible
5. – Maintain desirable trophic states (high water quality) in the lakes.								
5a	**Monitor water quality in Round Lakes.**							Activities may be eligible for match in a grant application. NA
	Continue communications with LCO to coordinate monitoring efforts to ensure water quality monitoring is completed and to avoid duplication of efforts.	RLPOA, LCO	X	X	X	X	X	
	Monitor water quality as needed and enter results in the Surface Water Integrated Monitoring System database.	RLPOA, LCO	X	X	X	X	X	
5b	**Continue outreach efforts to lakeside land owners to promote riparian practices that protect high water clarity.**							RLPOA pays for grant application.
	Apply for an AIS control grant due November 2020. Notify WDNR of intent to apply by September 2020	RLPOA	X					
	Continue outreach and education efforts to property owners on shoreland practices that protect water quality.	RLPOA	X	X	X	X	X	X
	Use results from the 2016 survey to determine where shore land improvements could occur.	RLPOA, WDNR, CO	X					X
	Promote the Healthy Lakes Grant Program to property owners. Schedule two information sessions with the DNR or UWEX Lakes with the aim to recruit landowners to participate in the Healthy Lakes program and implement practices on their properties that protect water quality.	RLPOA, WDNR, UWEX		X		X		X Healthy Lakes Grants for shovel-ready sites

RLPOA = Round Lake Property Owners' Association. LCO – Lac Courte Oreilles Tribe. CO = Sawyer County. RP = Resource Professional. WDNR = Wisconsin Department of Natural Resources

25.0 References

APHS. 2014. Aquatic Plant and Habitat Services LLC Aquatic Plant Survey Report for Round and Little Round Lakes, Sawyer County, Wisconsin.

Carlson, R.E. and J. Simpson. 1996. *A Coordinator's Guide to Volunteer Lake Monitoring Methods*. North American Lake Management Society. 96 pp.

CLMN. 2014. Citizen Lake Monitoring Network. Native Water-milfoil Weavil Monitoring Protocol. 19 Oct. 2014. *http://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/programs/CLMN/publications/Ch12-NativeWeevil.pdf*

Czarapata, E.J. 2005. Invasive Plants of the Upper Midwest. An Illustrated Guide to Their Identification and Control. University of Wisconsin Press. Madison, Wisconsin.

Dehnert, G.K. Impacts of 2,4-D on early developmental life stages of freshwater fish. 2020 Wisconsin Lakes Convention online presentation. 5 June 2020. *https://www.uwsp.edu/cnr-ap/UWEXLakes/Documents/programs/convention/2020/Fri-session7/Dehnert_LakeandRiverScience_2020.pdf*

Galli, J. 1988. A Limnological Study of an Urban Stormwater Management Pond and Stream Ecosystem. M.S. Thesis. George Mason University.

Glomski, L.M. and M.D. Netherland. 2008. Effect of Water Temperature on 2,4-D Ester and Carfentrazone-ethyl Applications for Control of Variable-leaf Milfoil. Journal of Aquatic Plant Management. 46: 119-121.

Graczyk, D.J., R.J. Hunt, S.R. Greb, C.A. Buchwald and J.T. Krohelski. Hydrology, Nutrient Concentrations, and Nutrient Yields in Nearshore Areas of Four Lakes in Northern Wisconsin, 1999-2001. US Geological Survey Water Resources Investigations Report 03-4144. 73pp.

Harmony Environmental. 2009. Aquatic Plant Management Plan, Round Lake and Little Round Lake, Sawyer County, Wisconsin.

Hatleli, S.M. 2016. Shoreland Survey Report for Round Lake, 2016. Sawyer County, WI. 19pp.

Hatleli, S.M. 2019. 2019 Eurasian Watermilfoil Surveys, Round & Little Round Lakes, Sawyer County, WI. 24pp.

Hauxwell, J., S. Knight, K. Wagner, A. Mikulyuk, M. Nault, M. Porzky and S. Chase. 2010. Recommended baseline monitoring of aquatic plants in Wisconsin: sampling design, field and laboratory procedures, data entry and analysis, and applications. Wisconsin Department of Natural Resources Bureau of Science Services, PUB-SS-1068 2010. Madison, Wisconsin. 46pp.

Jeffrey, D. 1985. Phosphorus Export from a Low Density Residential Watershed and an Adjacent Forested Watershed. Proceedings of the 5th Annual Conference, North American Lake Management Society, Lake Geneva, Wisconsin. Pp. 401-407.

Jester, L.L., M.A. Bozek, and D.R. Helsel. 1999. Wisconsin Milfoil Weevil Project. Wisconsin Cooperative Fishery Research Unit.

Nault, M., A. Mikulyuk, J. Hauxwell, J. Skogerboe, T. Asplund, M. Barton, K. Wagner, T. Hoyman, and E. Heath. 2012. Herbicide Treatments in Wisconsin Lakes. Lakeline, Spring 2012.

Michelle E. Nault , M.D. Netherland , A. Mikulyuk , J.G. Skogerboe , T. Asplund , J. Hauxwell and P. Toshner. 2014. Efficacy, selectivity, and herbicide concentrations following a whole-lake 2,4-D application targeting Eurasian watermilfoil in two adjacent northern Wisconsin lakes. Lake and Reservoir Management. 30:1, 1-10.

Neuswanger D., 2013. Fishing Regulation Proposal Form A-Special Regulations. 5 October 2014. *http://www.roundlakes.org.*

Nichols, S.A. 1999. Floristic Quality Assessment of Wisconsin Lake Plant Communities with Example Applications. Journal of Lake and Reservoir Management. 15(2):133-141.

Panuska, J. and R. Lillie. 1995. Phosphorus Loading from Wisconsin Watersheds: Recommended Phosphorus Export Coefficients for Agriculture and Forested Watersheds. Research Management Findings, #38. Bureau of Research, WDNR, 8pp.

Shaw, B., C. Mechenich, L. Klessig. 2004. Understanding Lake Data. UW-Extension Publication G3582.

Skawinski, P.M. 2010. Aquatic Plants of Wisconsin: A photographic field guide to submerged and floating-leaf aquatic plants.

Surface Water Data Viewer (SWDV). 2013. Wisconsin Department of Natural Resources. Dec. 2013. *http://dnrmaps.wi.gov/imf/imf.jsp?site=SurfaceWaterViewer.*

Wolter, M. 2013. Spring Fisheries Survey Summary, Round Lake and Little Round Lake, Sawyer County, 2013. http://dnr.wi.gov/topic/Fishing/documents/north/SawyerRound2013SN1SE2.pdf.

Wolter, M. and D. Neuswanger. 2019. Spring Fisheries Survey Summary. Round Lake, Sawyer County, 2019. 6pp.

WDNR. 2014. Wisconsin Department of Natural Resources. 3 Sept. 2014 *http://dnr.wi.gov/lakes/lakepages/.*

WDNR. 2014a. Wisconsin Department of Natural Resources Eurasian water-milfoil (*Myriophyllum spicatum*). 1 Oct. 2014. *http://dnr.wi.gov/topic/invasives/fact/eurasianwatermilfoil.html*

WDNR. 2014b. Aquatic Plant Management in Wisconsin. 13 May 2020. *https://www.uwsp.edu/cnr-ap/UWEXLakes/Pages/ecology/aquaticplants/default.aspx*

Wolter, M. & D. Neuswanger. 2017. Fishery Management Plan, Round Lake, Sawyer County, Wisconsin, December 4, 2017. 28pp.

Appendix

26.0 Appendix A – Sawyer County Water Level Records

Tiger Cat (#57.30)
Owner – Sawyer County
Stream – North Fork Chief River
Head – 14

In 1937 Sawyer County requested permission to divert surplus water from the north fork of the Chippewa River to Round Lake to restore normal water elevations. Water levels in Round Lake had dropped to as much as 10 feet below previous levels. Round Lake was considered a premiere lake, vital to tourism and the tax base, and the restoration of normal water levels was a high priority. The Tiger Cat dam was designed to create a flowage and raise water levels enabling water to reach Round Lake by diversion canals linking small lakes. Canal No. 1 joined the Tiger Cat Flowage to Burns Lake, Canal No. 2 joined Burns to Placid Lake; Canal No. 3 conducted the water from Placid to a natural depression or slough; and Canal No. 4 connected the slough with Round Lake and included a control dam to regulate the amount of water into Round Lake.

Initial normal elevation of the pond created by the Tiger Cat Dam was 90.0 feet. In 1949 application was made to raise the level to 90.5 to provide better navigation between the various lakes in the Tiger Cat system. During the subsequent hearing, concerns were raised by individuals on Round Lake and Lac Courte Oreilles. Further study of how water levels between the three systems was requested. The hearing was held open to allow an experimental level of 90.5 to determine effects on other lakes. In June 1950 the Public Service Commission concluded their findings and granted the 90.5 level provided: diversion from Tiger Cat to Round Lake requires permission from the PSC; the diversion control structure at Lake Placid must be locked; and the partially constructed channel from Little Round to Squaw Lake be kept blocked at the elevation of natural ground level to allow excess water to flow towards Squaw Lake by natural ground contour.

In 1983 Sawyer County requested permission to raise the authorized level to 91.34 feet (approximately 10 inches) to again improve navigation. Following a hearing the request was approved in 1984 and the following levels were set: Maximum 91.34 feet (1.34 on the gauge); Normal 91.09 (1.09 on the gauge) and 90.84 feet (.84 on the gauge).

27.0 Appendix B

Figure 29 – Round Lake Aquatic Plant Survey Grid

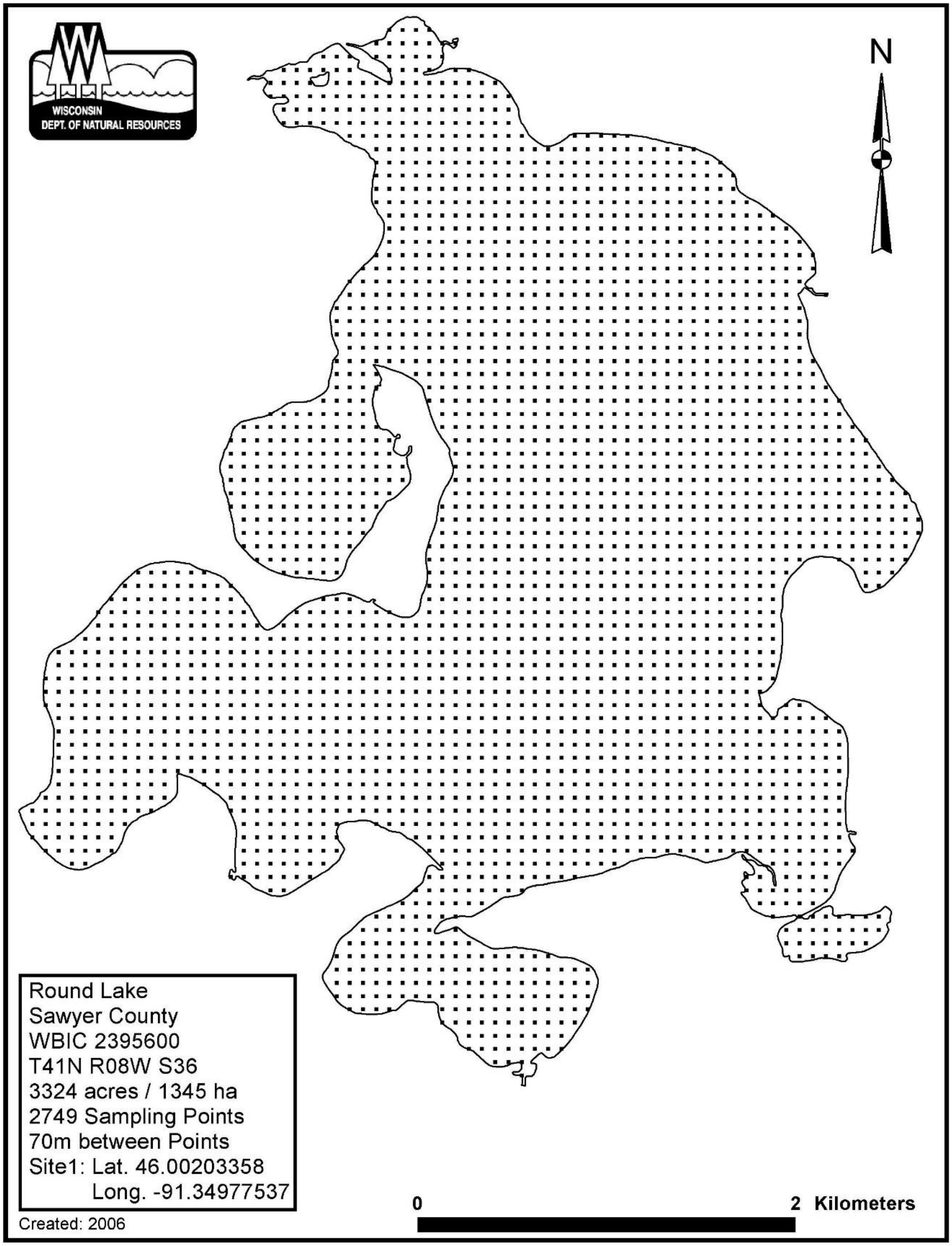
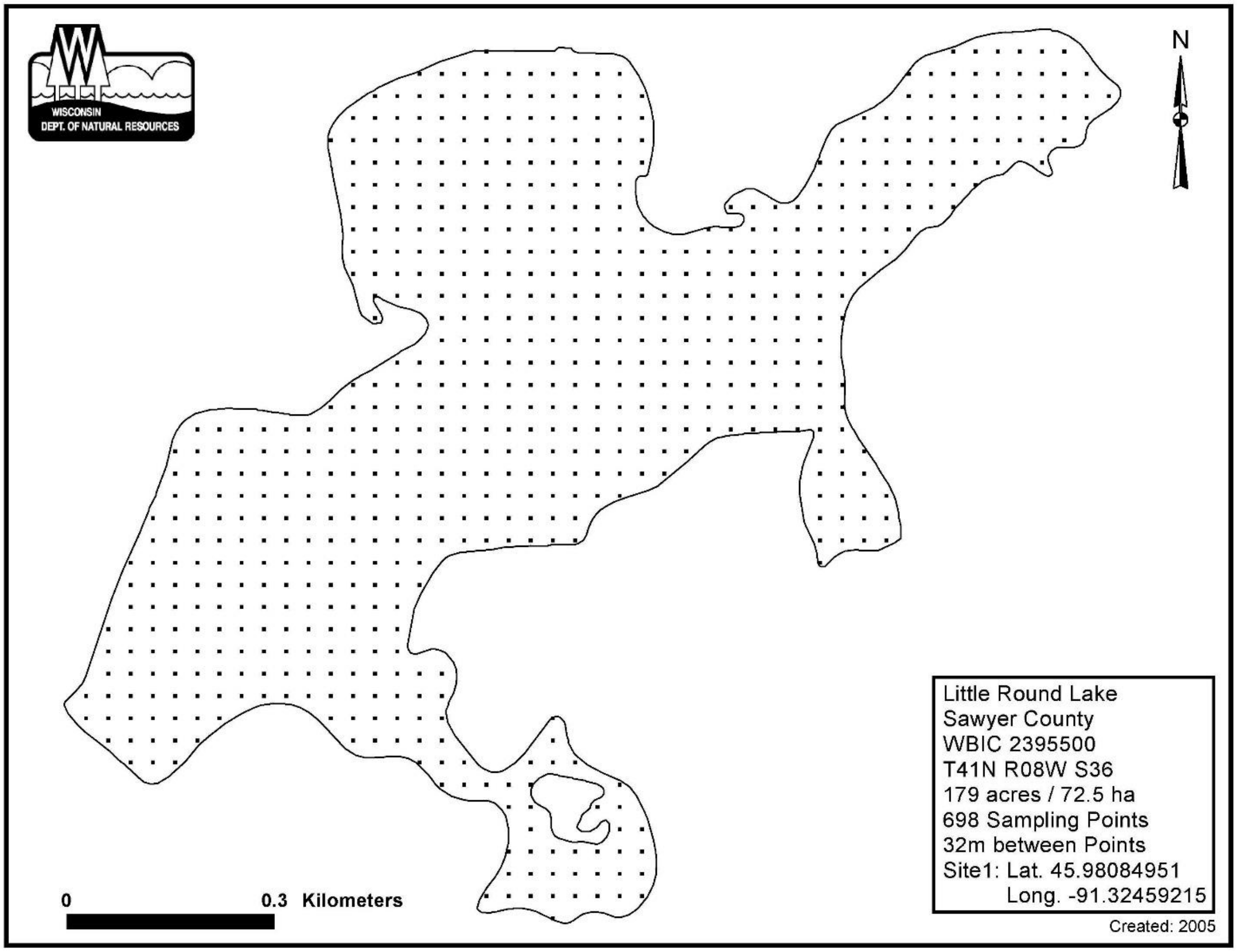


Figure 30 – Little Round Aquatic Plant Survey Grid



28.0 Appendix C - EWM Control Evaluation Protocol

Small Scale Treatment

Field methods will follow the Draft Aquatic Plant Treatment Evaluation Protocol document from Wisconsin Department of Natural Resources[11]. Beds of EWM will be surveyed to gauge post-treatment efficacy or provide pre-treatment survey information for possible treatment the following year. Survey locations will be decided through communications between RLPOA and field technicians conducting the survey (likely a hired consultant). The perimeter of dense stands of EWM will be mapped while navigating in a boat along the bed perimeter. Each EWM bed will be assigned a letter identifier followed by the year (e.g., A19). Locations of sparse EWM (i.e., no more abundant than native species and spread out) will be noted when found but not mapped as an EWM bed. EWM survey points will be sampled using a 20-meter grid (i.e., sample points will be 20 meters apart) and rake fullness recorded (Figure 10). A double-sided rake head on a telescopic pole will be used to sample each point for EWM, depth, and dominant sediment type (muck, rock, or sand). The rake fullness rating for total coverage of plants on the rake and a separate rake fullness rating for each species present were recorded. EWM found within 6 feet of the sample point but not found on the rake will be counted as visual observations. Outcomes of these surveys will provide mapped locations, acreage estimates, average depth of EWM beds, EWM height (at, near, or below the surface), EWM density, and locations of scattered/sparse EWM when they are found.

Large Scale Treatment

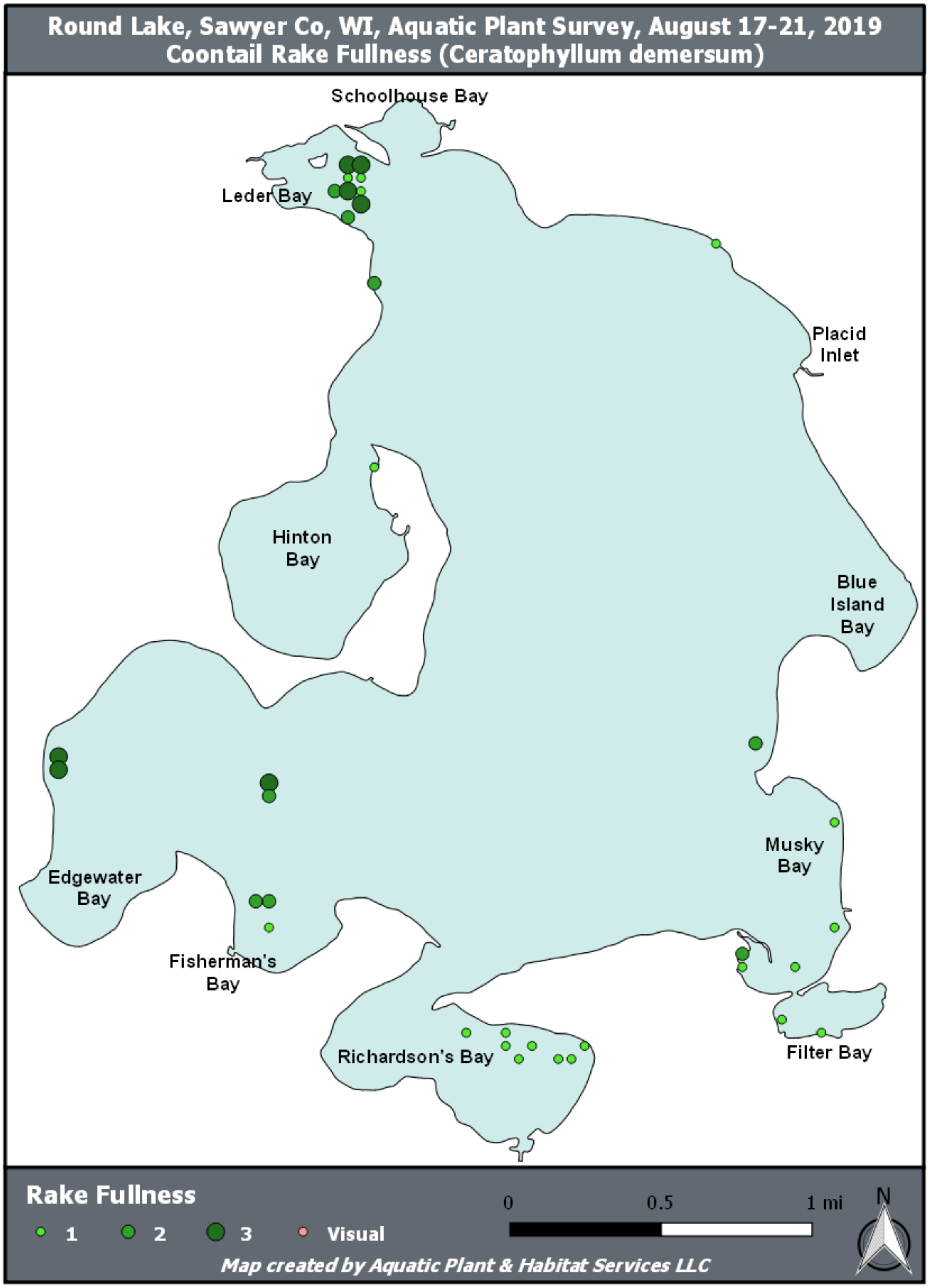
The larger the treatment areas become, the more likely it is that this information will be requested by WDNR before and after treatment. In the case of whole-bay herbicide treatments as was done in Richardson's Bay in 2019, a whole-bay plant survey will be conducted using a survey grid that will yield adequate data for statistical comparisons between pre-treatment and post-treatment conditions. Whole-bay plant surveys will sample for native aquatic plant species as well as EWM and should be conducted in July or August (preferably August). A post-treatment survey is essential the same year that treatment occurred and strongly recommended for another two years after treatment in order to better understand the longer term efficacy of herbicide treatment and impacts to native species.

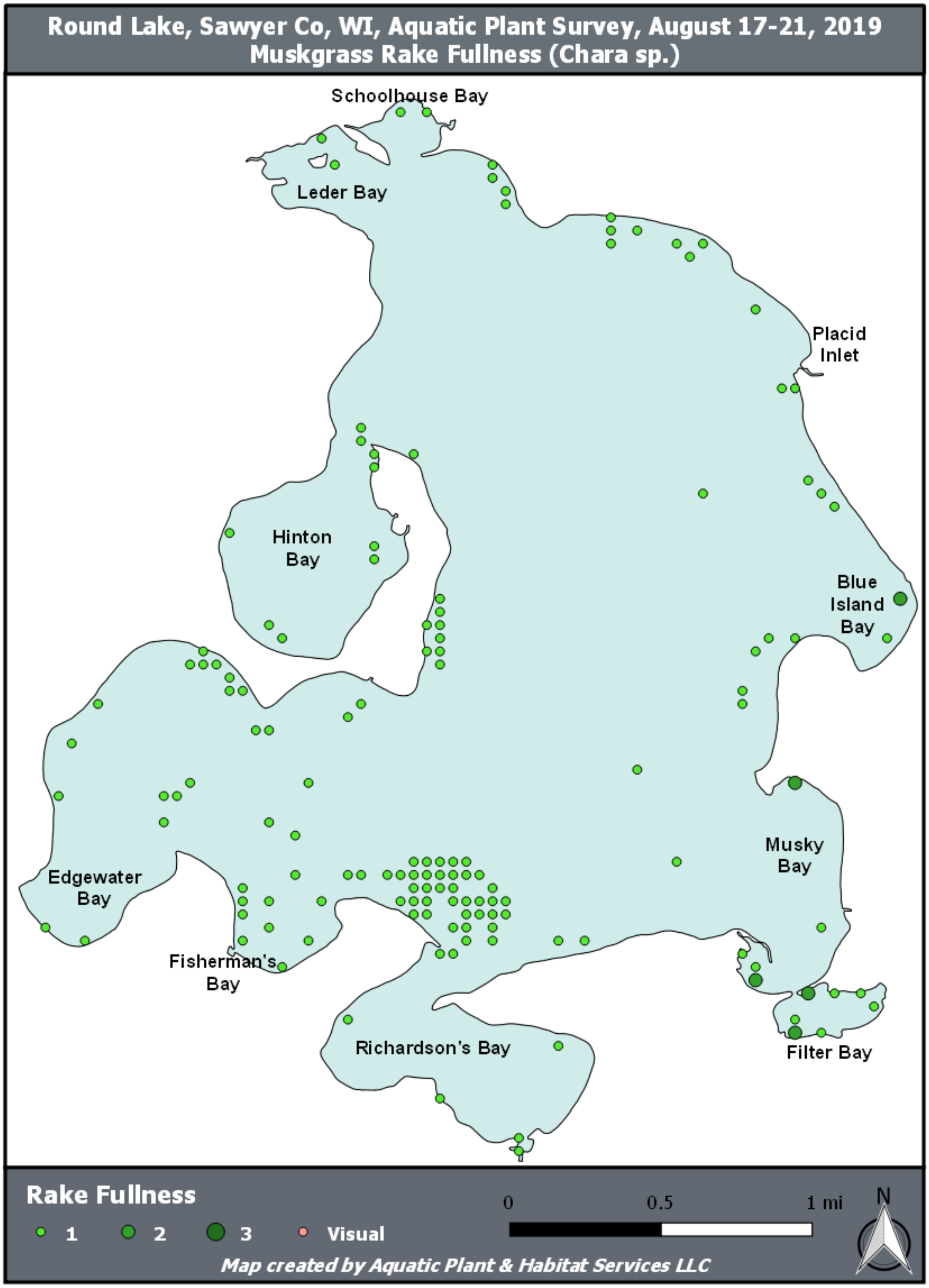
New Management Techniques

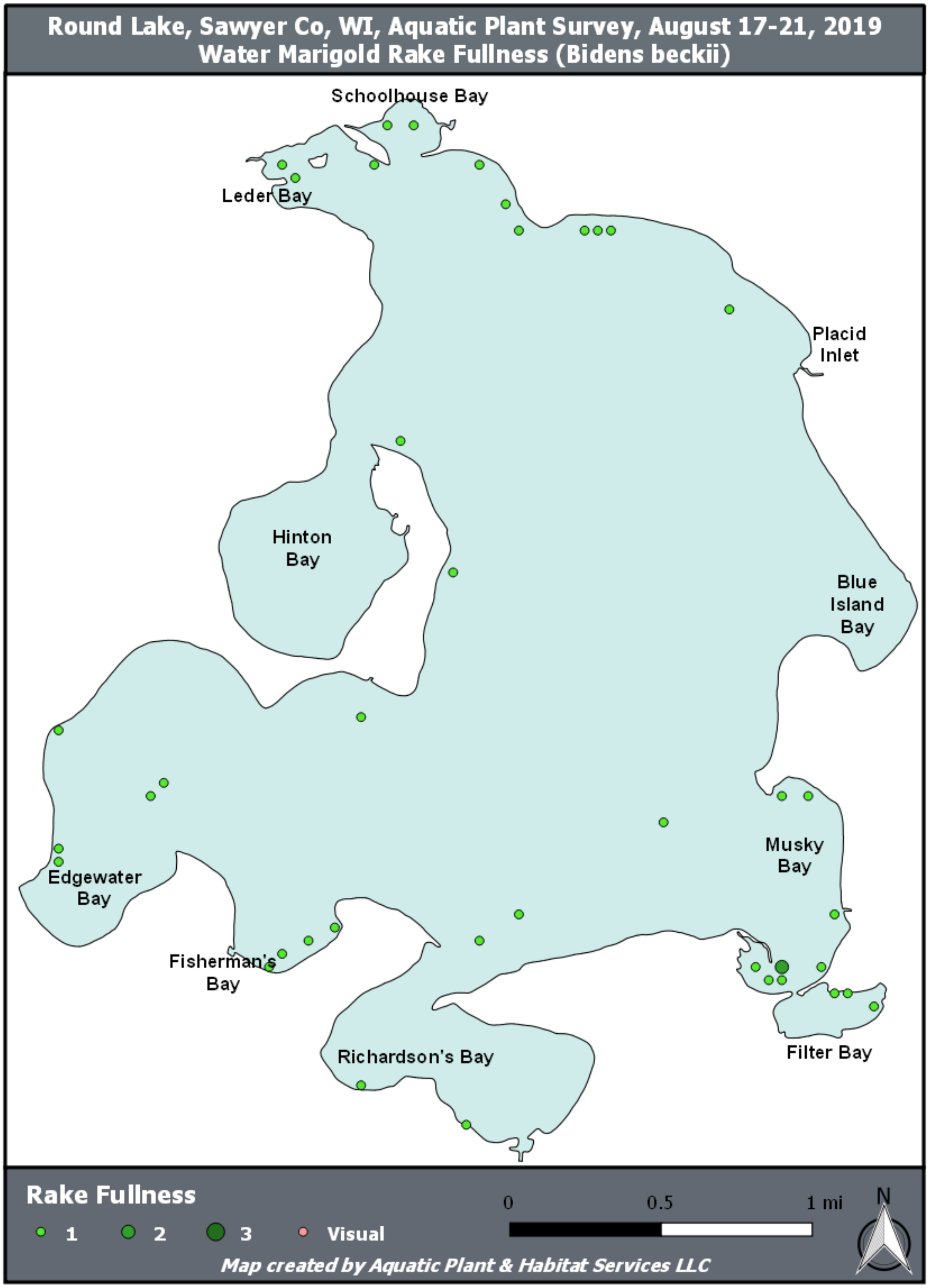
If a new management technique is being considered, a modified version of these methods may be necessary. If a new herbicide is being proposed, for example, the RLPOA will communicate closely with the WDNR and survey technicians (likely a hired consultant) to determine appropriate survey requirements.

[11] Updated October 1, 2016. https://dnr.wi.gov/lakes/plants/research/.

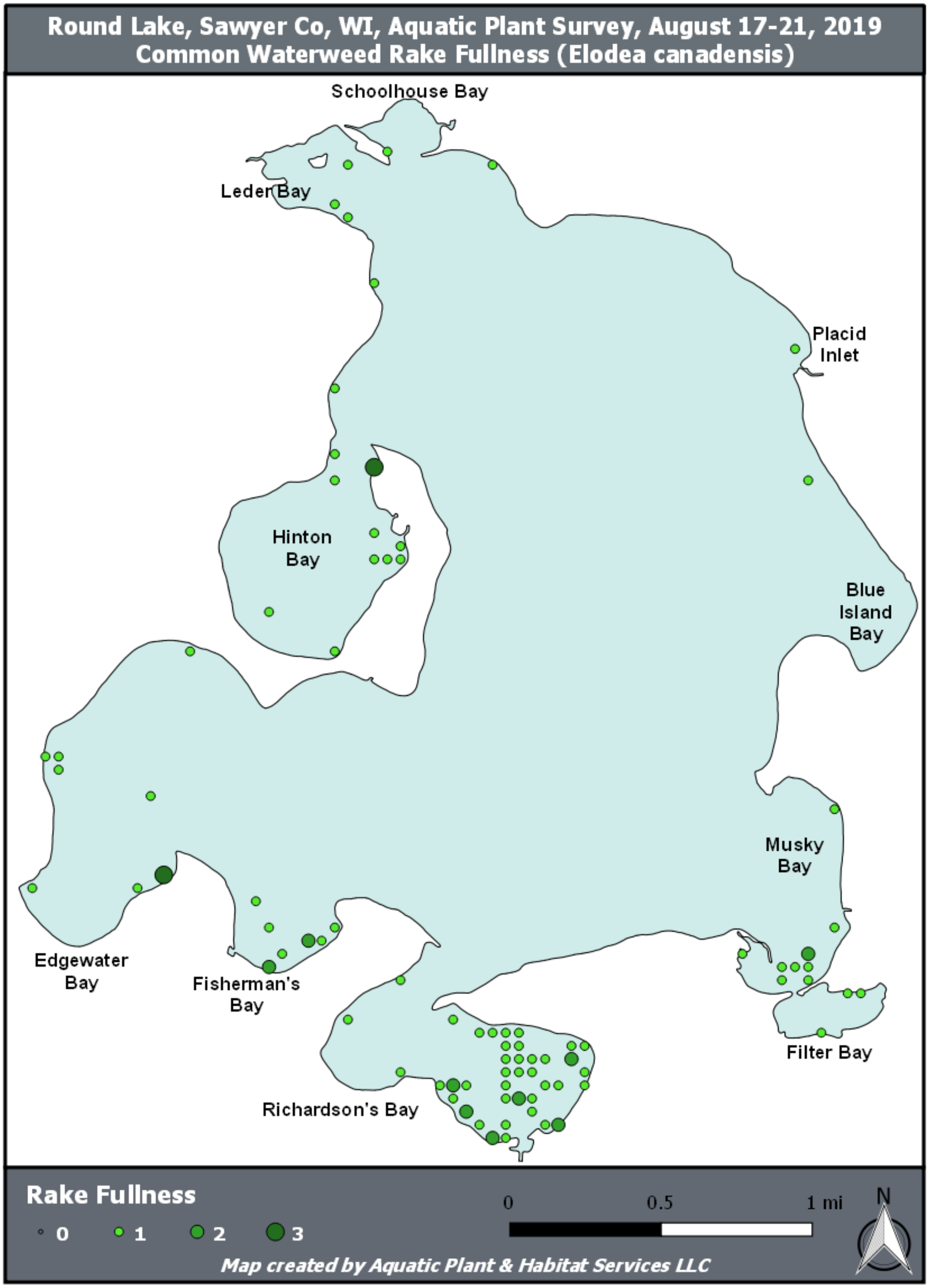
30.0 Appendix D – Round Lake Aquatic Plant Maps

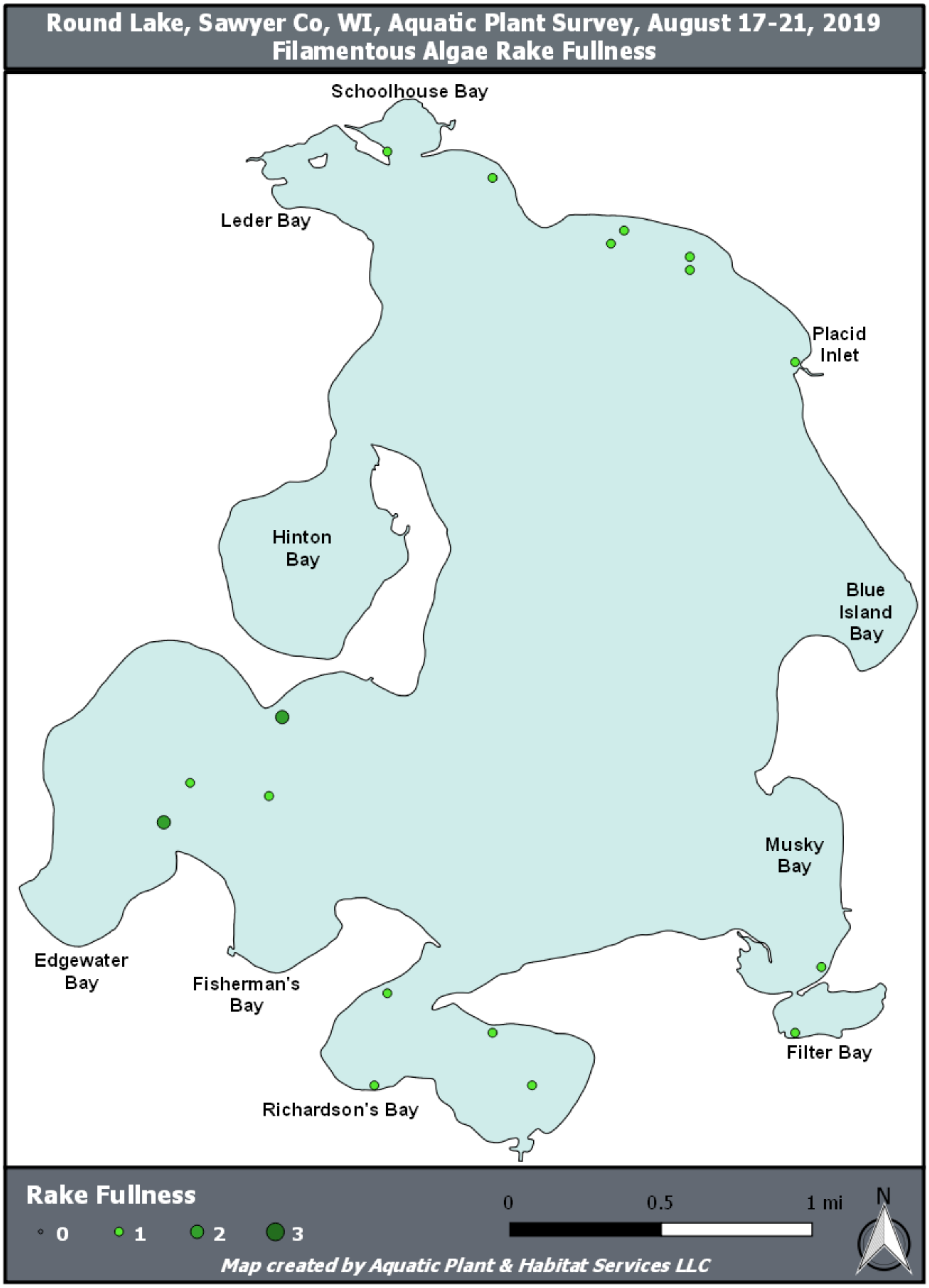

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Coontail Rake Fullness (Ceratophyllum demersum)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Edgewater Bay
Musky Bay
Fisherman's Bay
Richardson's Bay
Filter Bay
Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Muskgrass Rake Fullness (Chara sp.)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Richardson's Bay
Filter Bay
Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

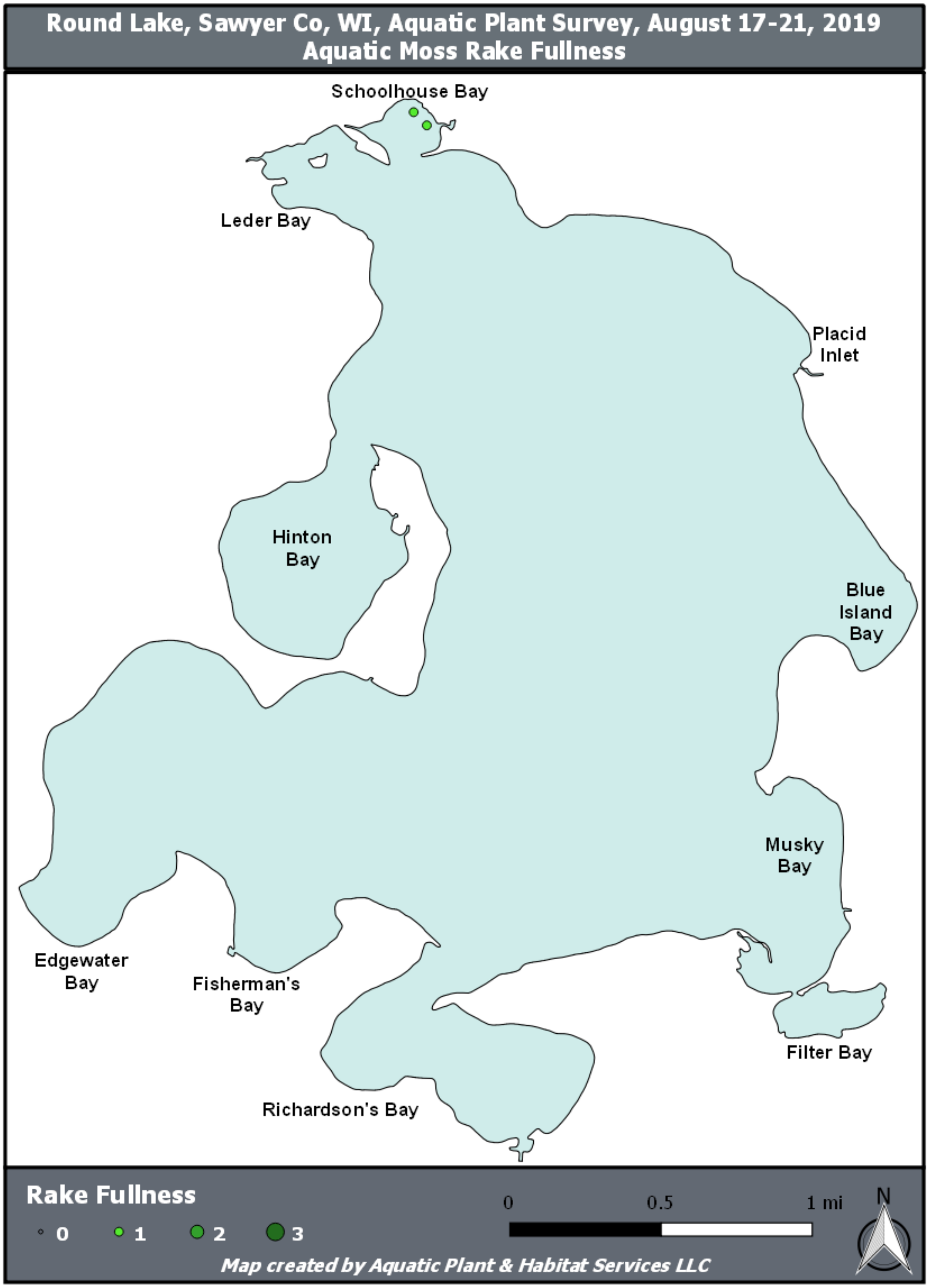

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Water Marigold Rake Fullness (Bidens beckii)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Edgewater Bay
Musky Bay
Fisherman's Bay
Richardson's Bay
Filter Bay
Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Needle spikerush Rake Fullness (Eleocharis acicularis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Edgewater Bay
Fisherman's Bay
Musky Bay
Richardson's Bay
Filter Bay
Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Common Waterweed Rake Fullness (Elodea canadensis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

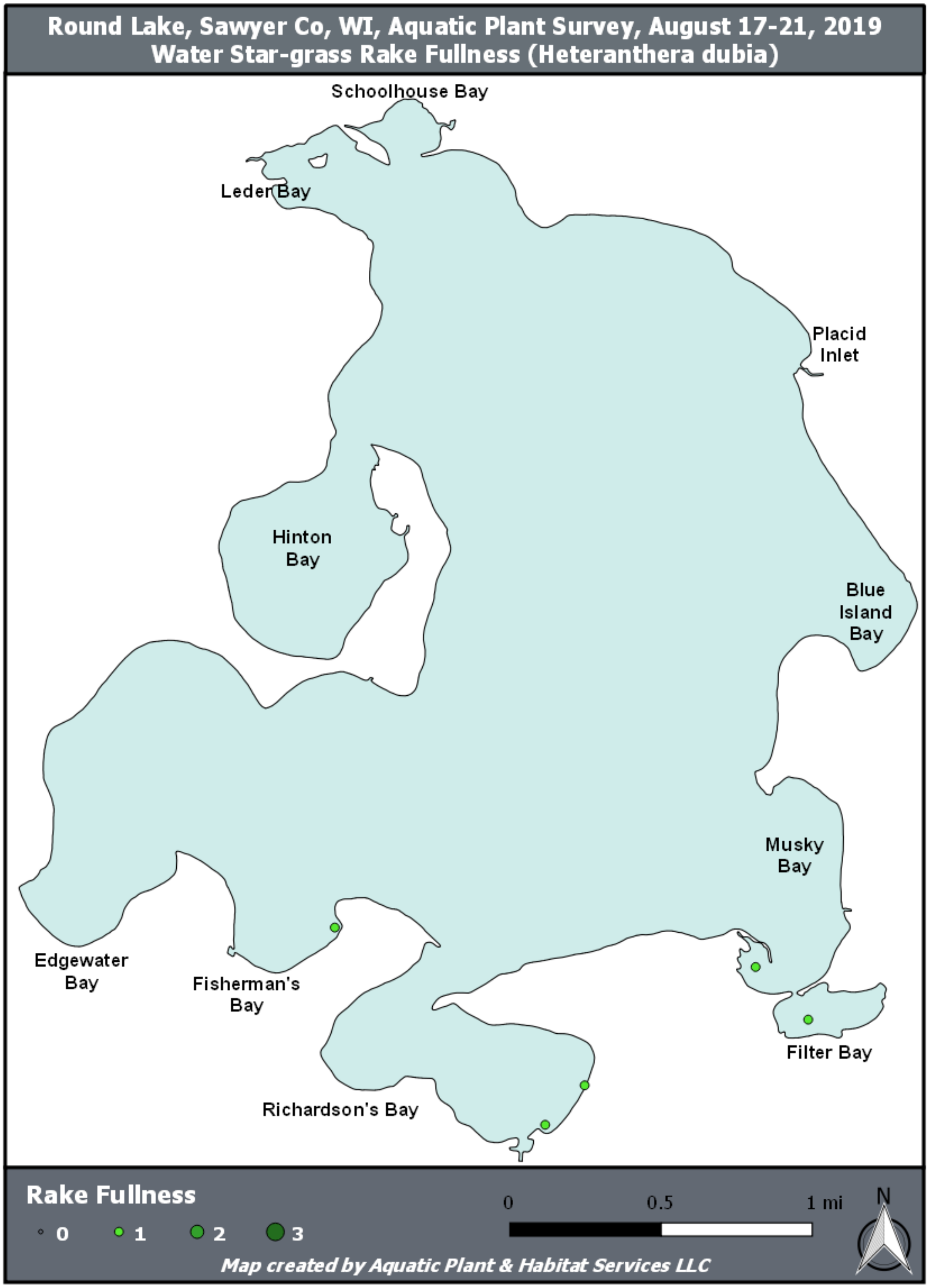


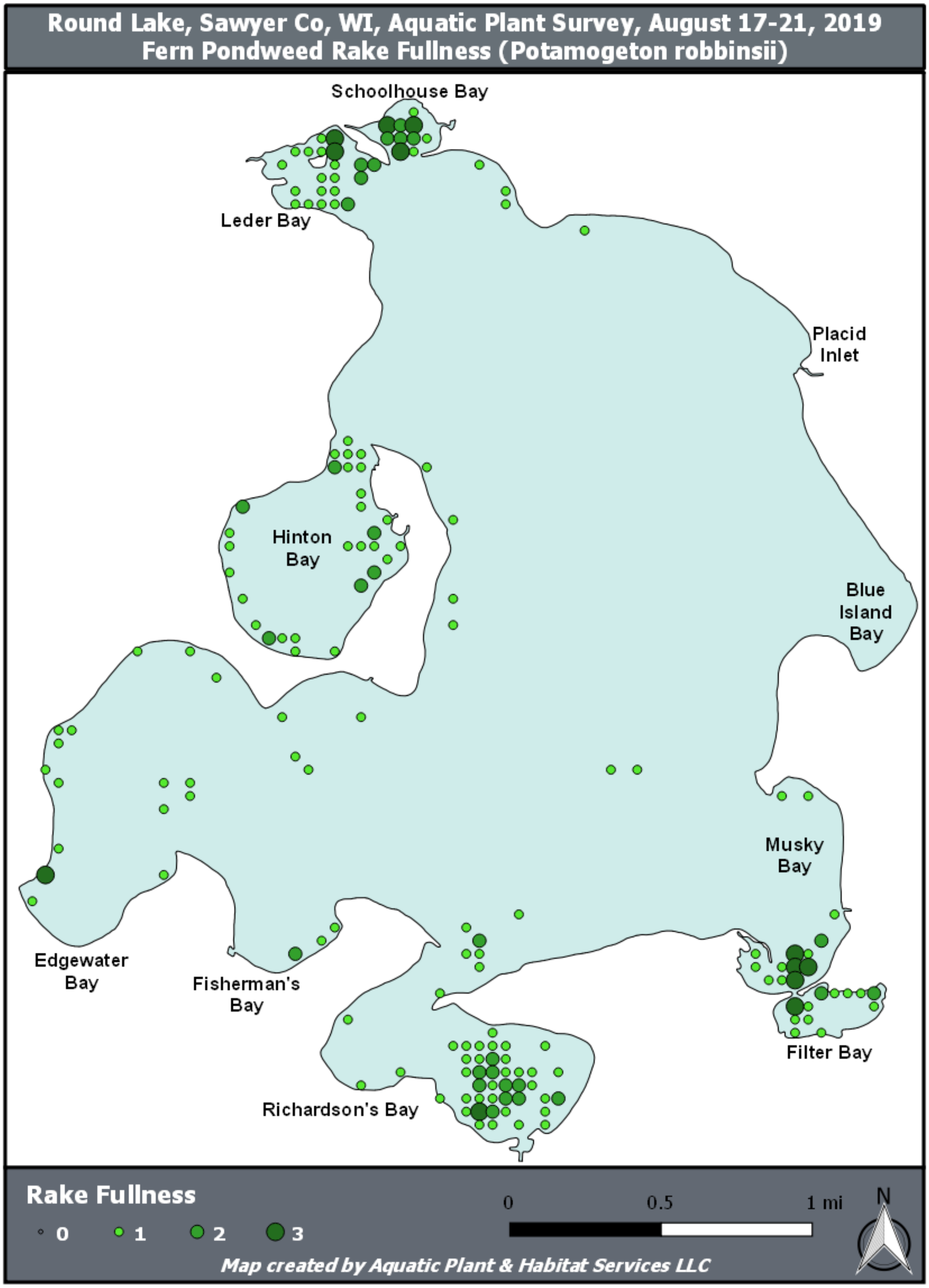
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Filamentous Algae Rake Fullness
Schoolhouse Bay
Leder Bay
Placid
Inlet
Hinton
Bay
Blue
Island
Bay
Musky
Bay
Edgewater
Bay
Fisherman's
Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

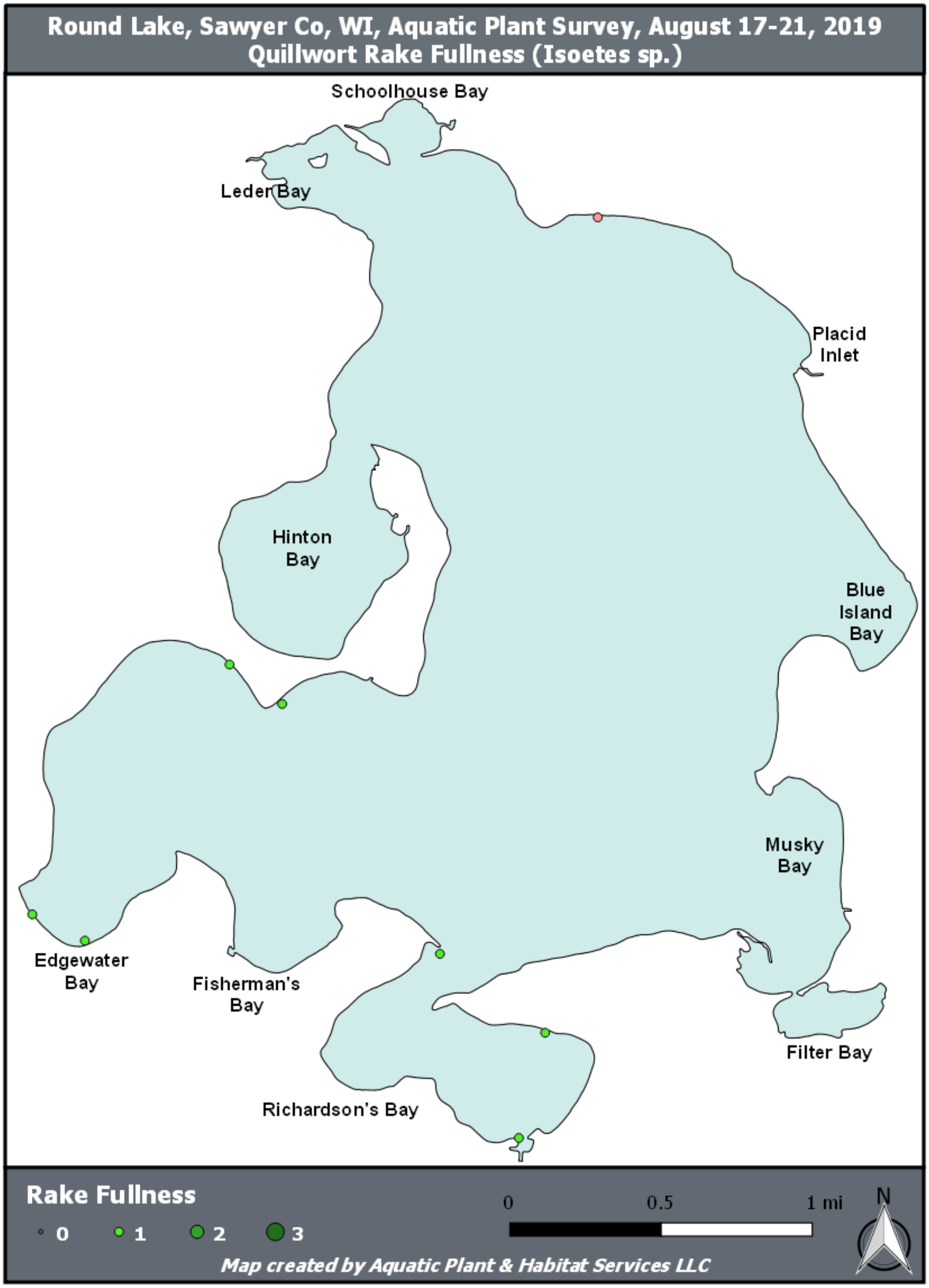


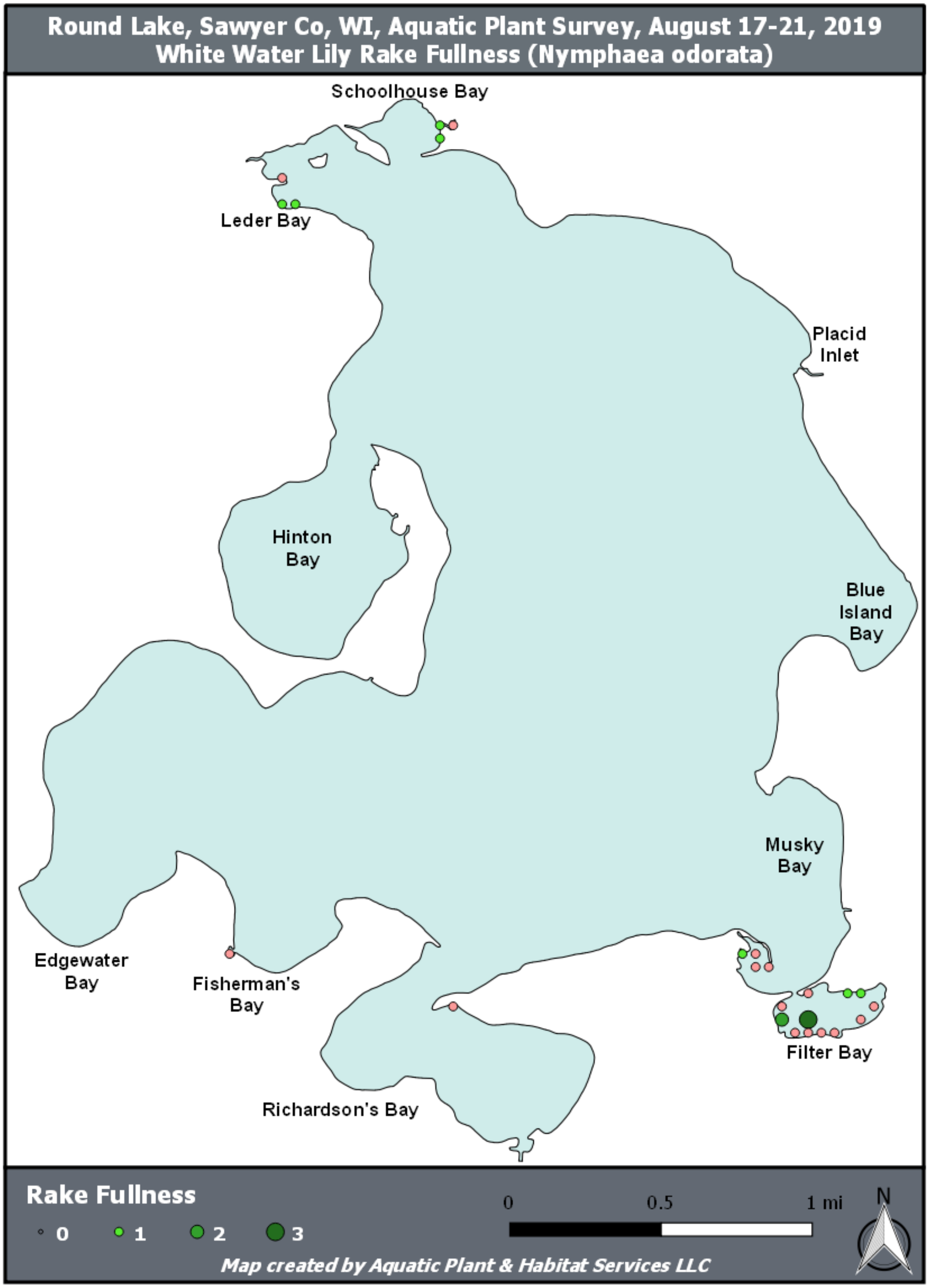
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Aquatic Moss Rake Fullness
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

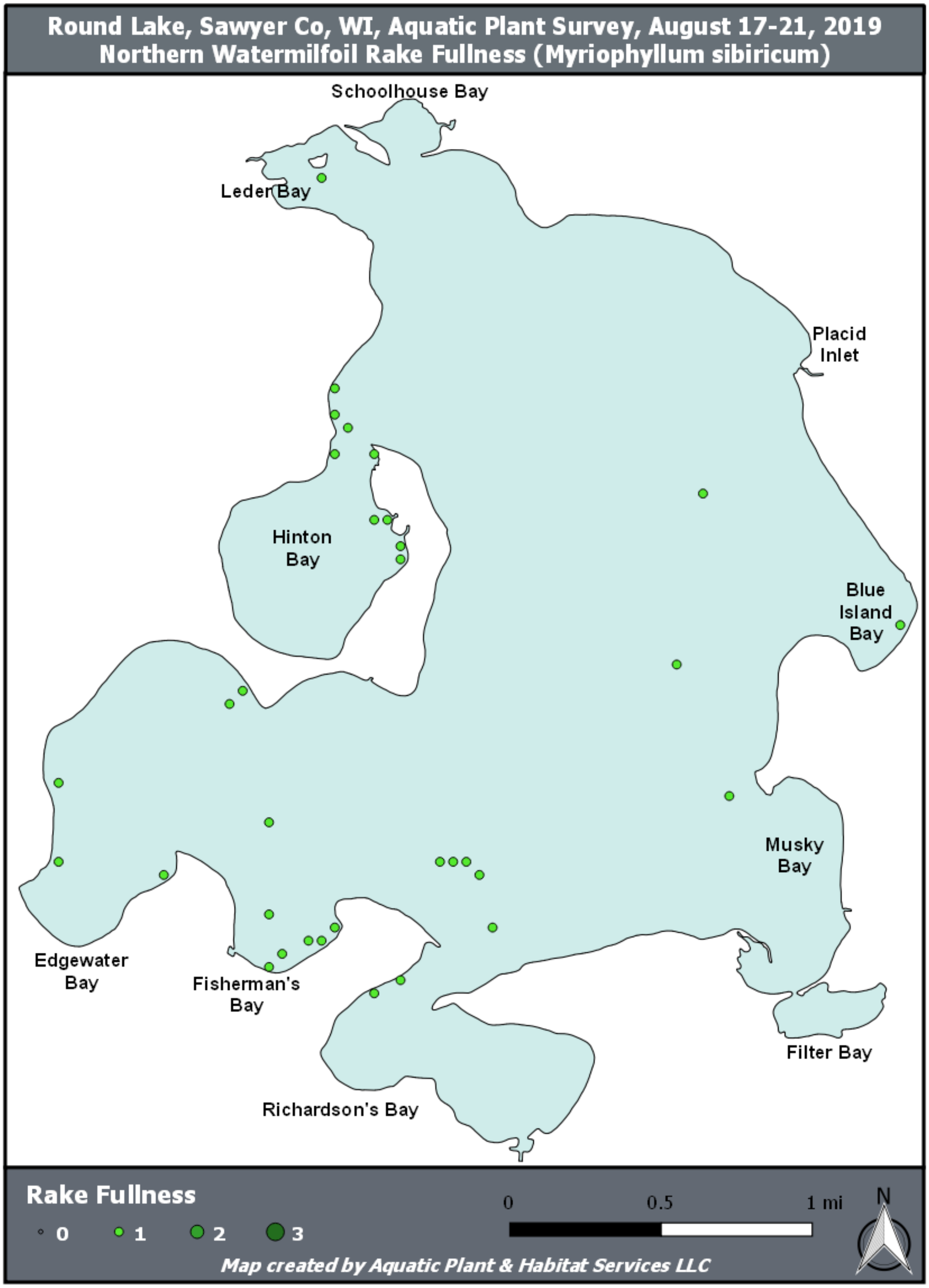

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Creeping spikerush Rake Fullness (Eleocharis palustris)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Richardson's Bay
Filter Bay
Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Water Star-grass Rake Fullness (Heteranthera dubia)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

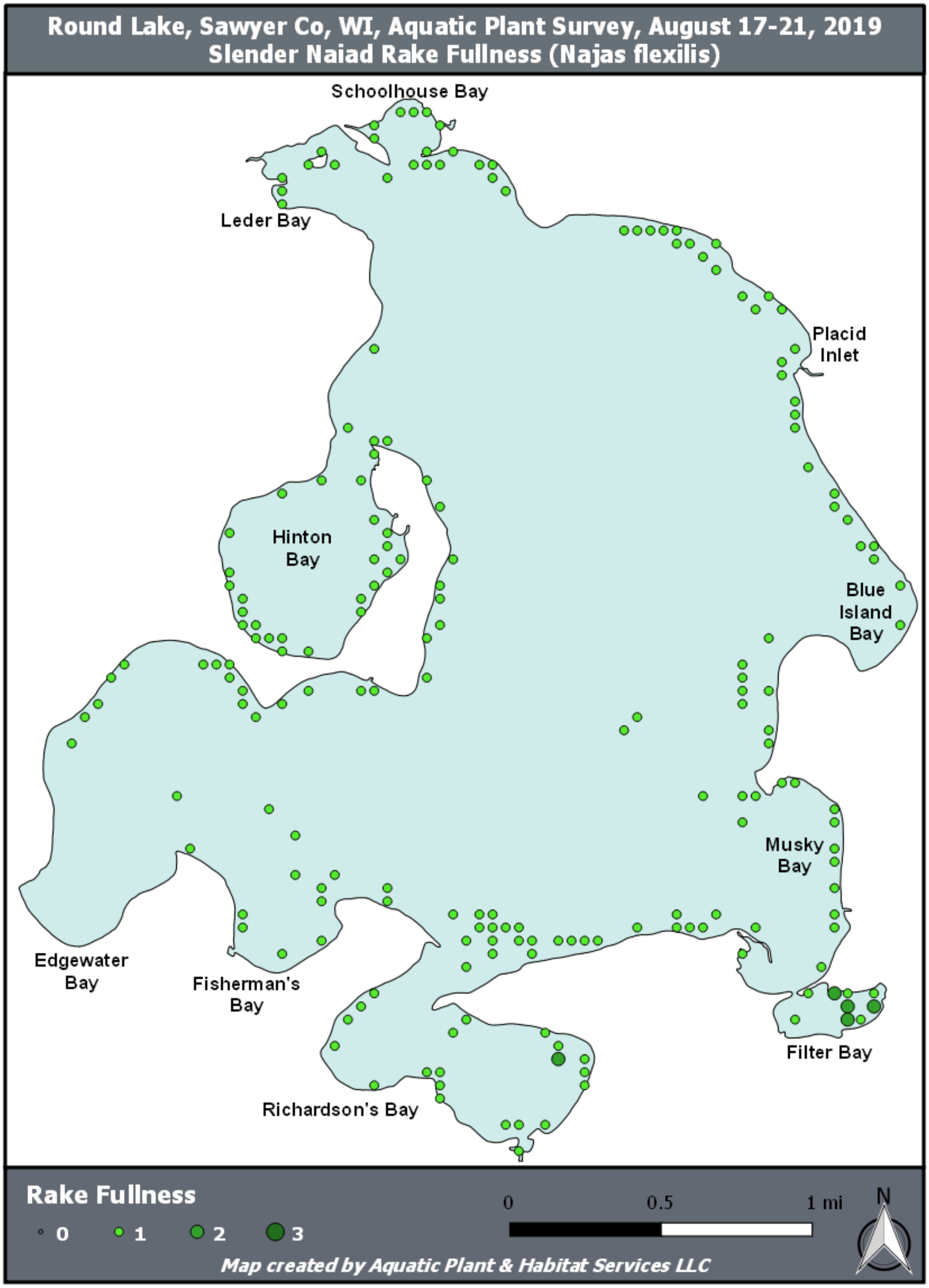

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Fern Pondweed Rake Fullness (Potamogeton robbinsii)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

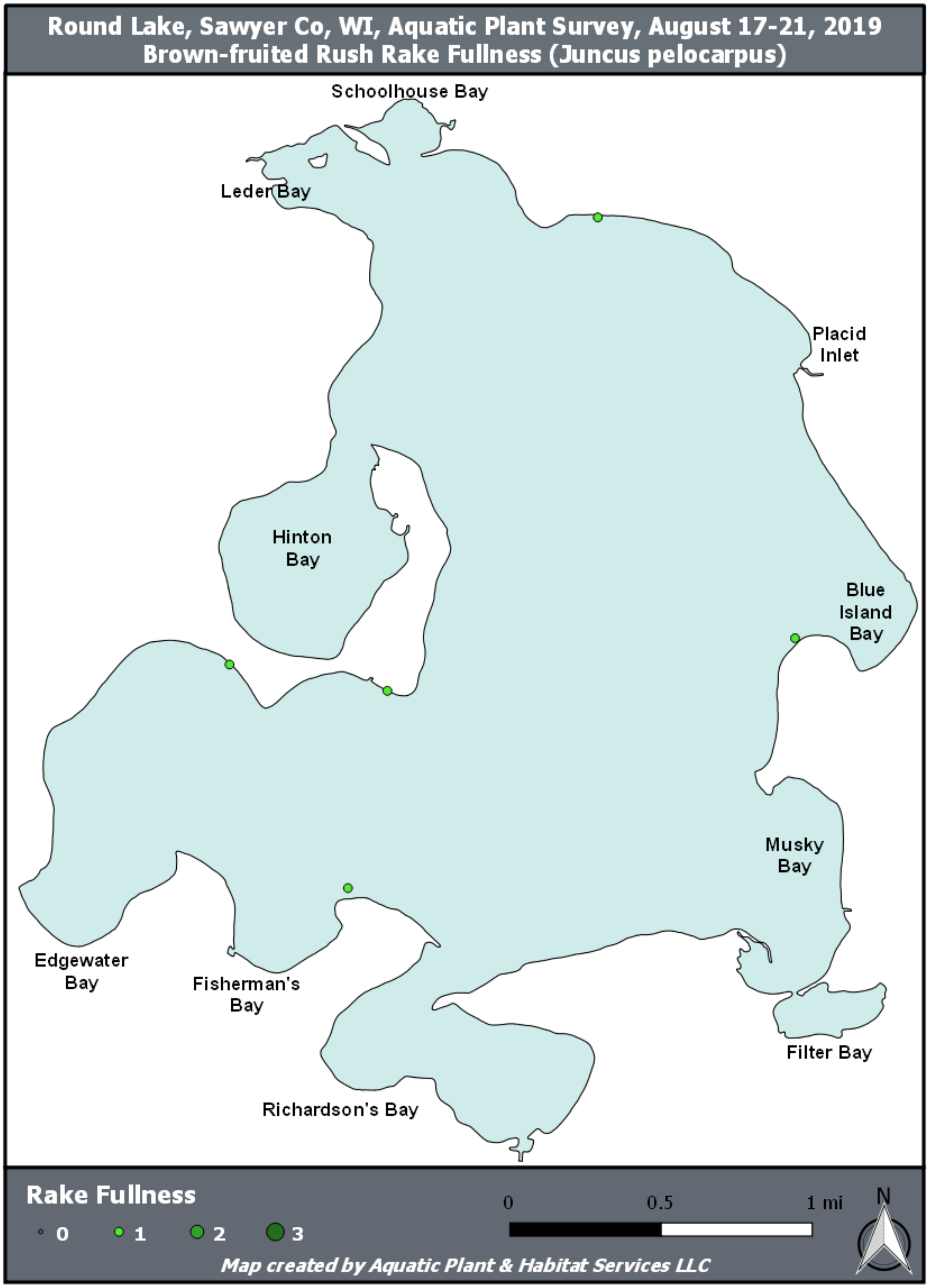

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Quillwort Rake Fullness (Isoetes sp.)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

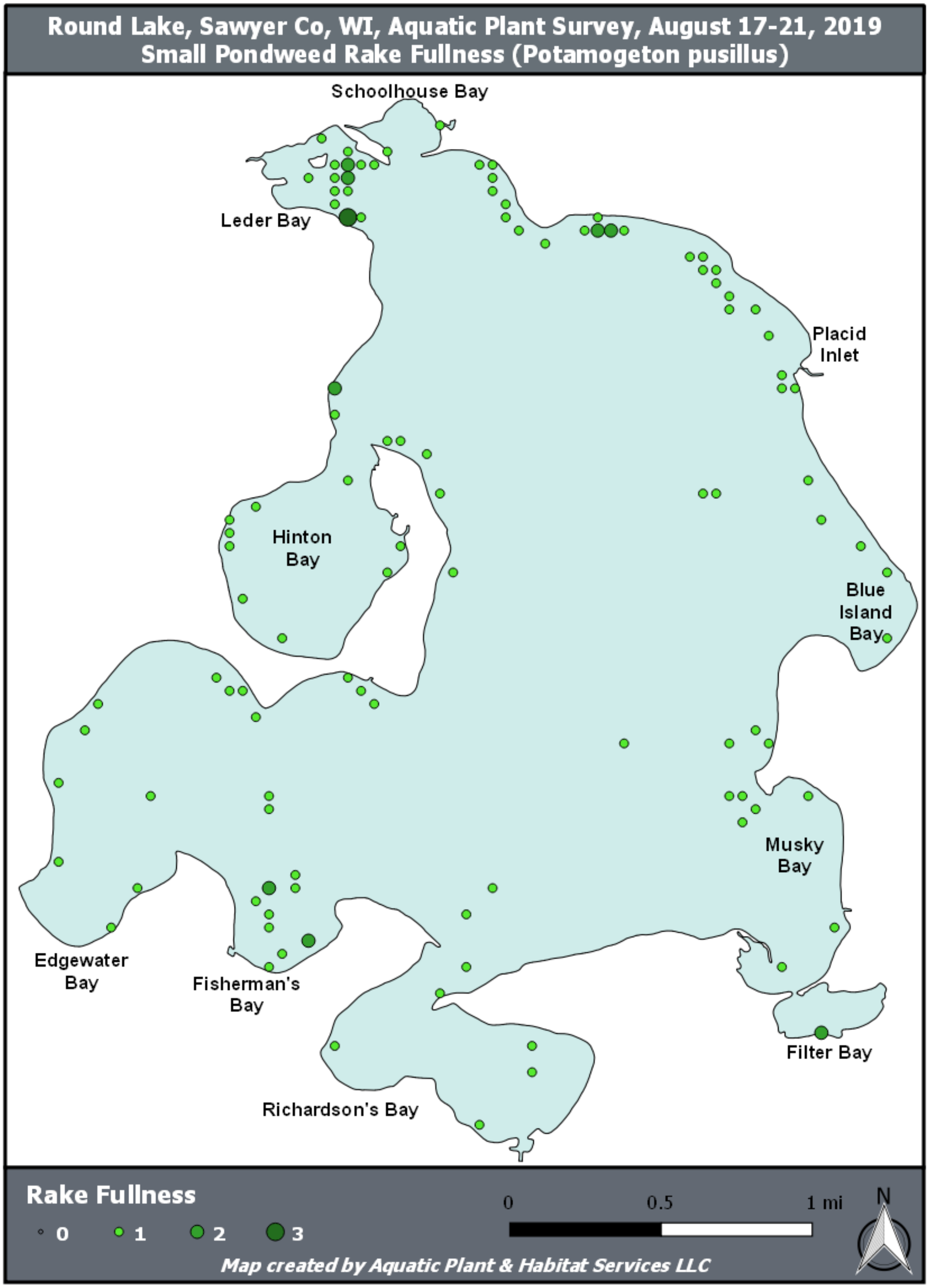

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
White Water Lily Rake Fullness (Nymphaea odorata)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

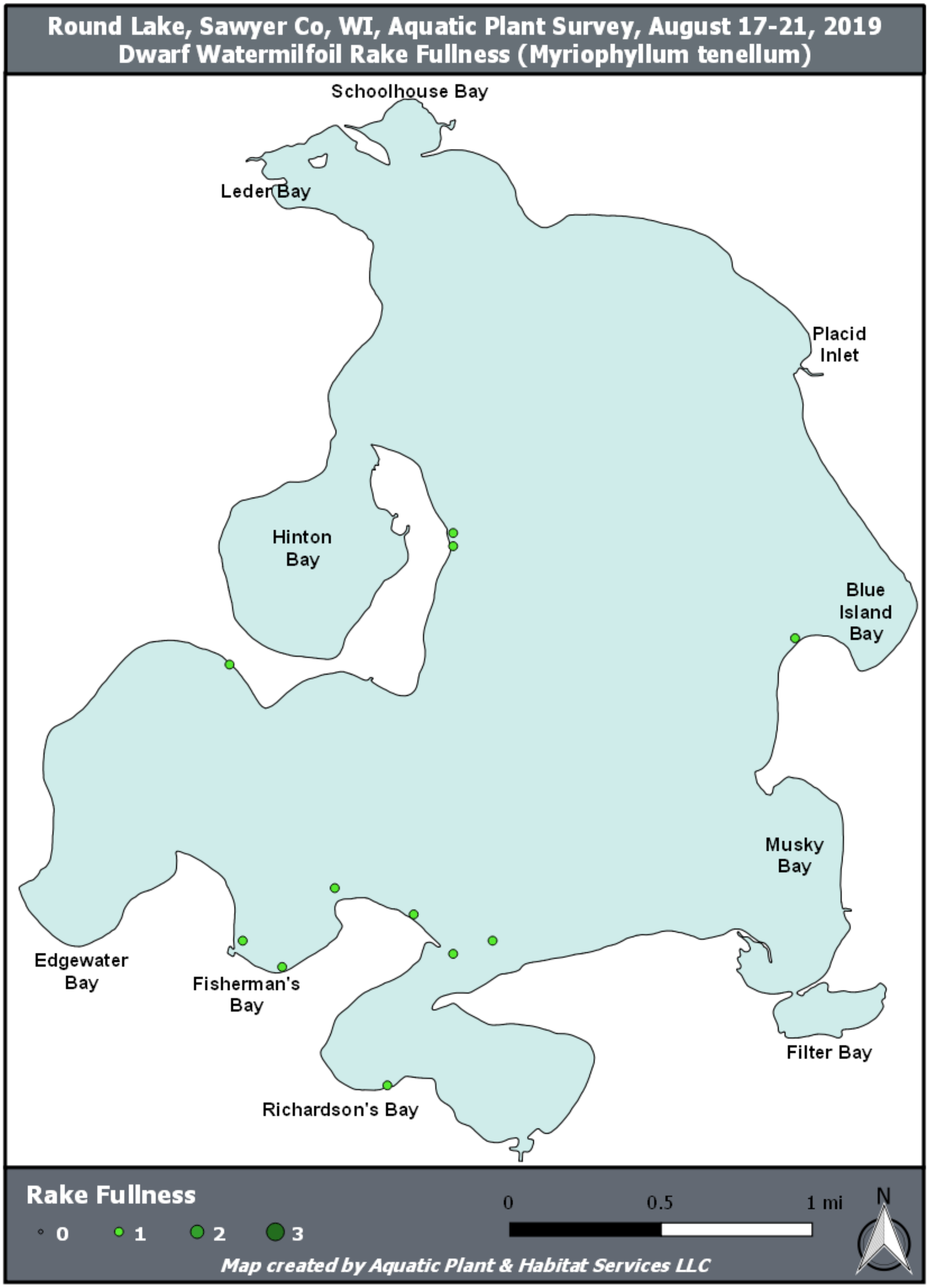


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Northern Watermilfoil Rake Fullness (Myriophyllum sibiricum)
Schoolhouse Bay
Leder Bay
Placid
Inlet
Hinton
Bay
Blue
Island
Bay
Musky
Bay
Edgewater
Bay
Fisherman's
Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

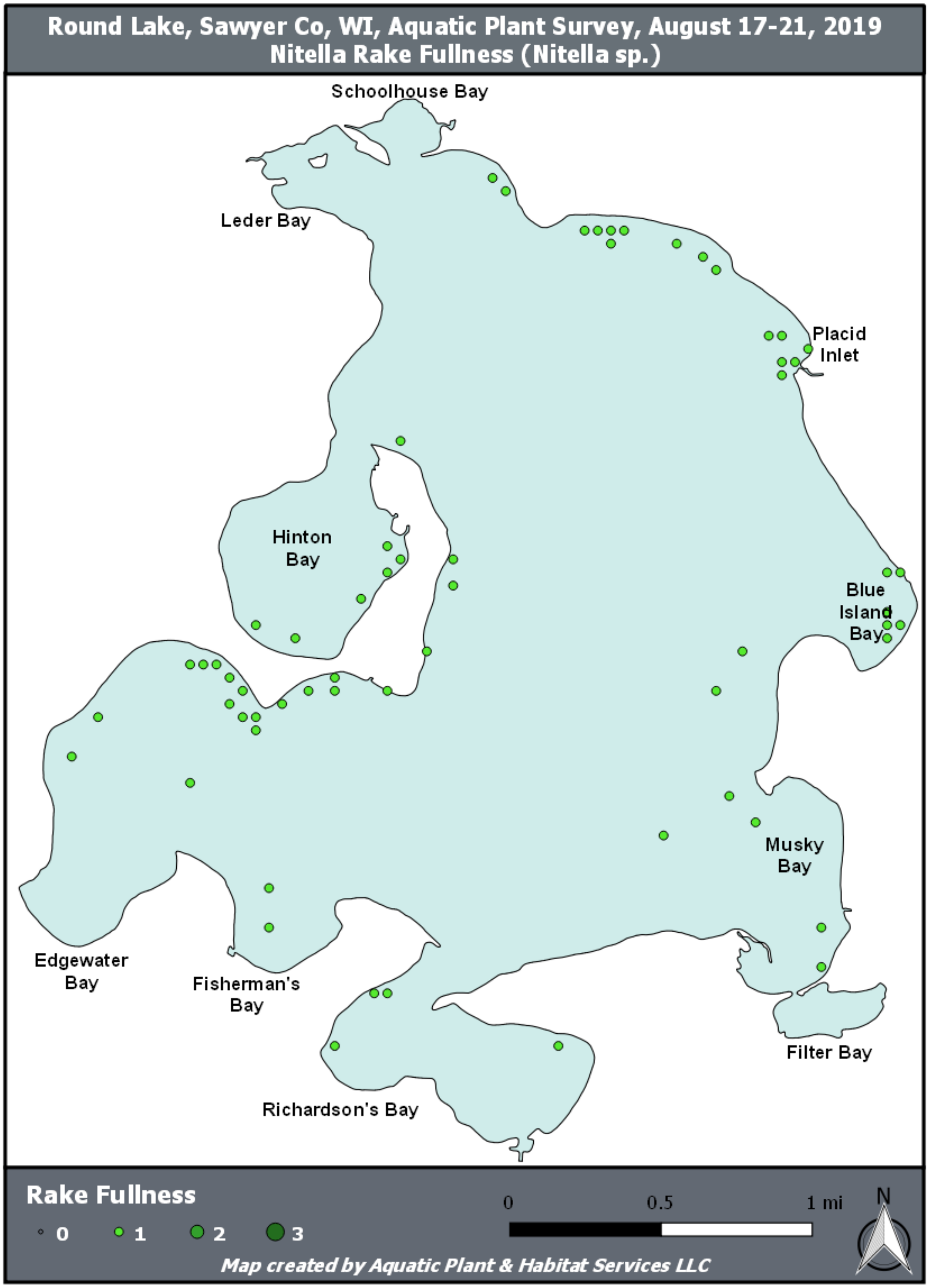

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Slender Naiad Rake Fullness (Najas flexilis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

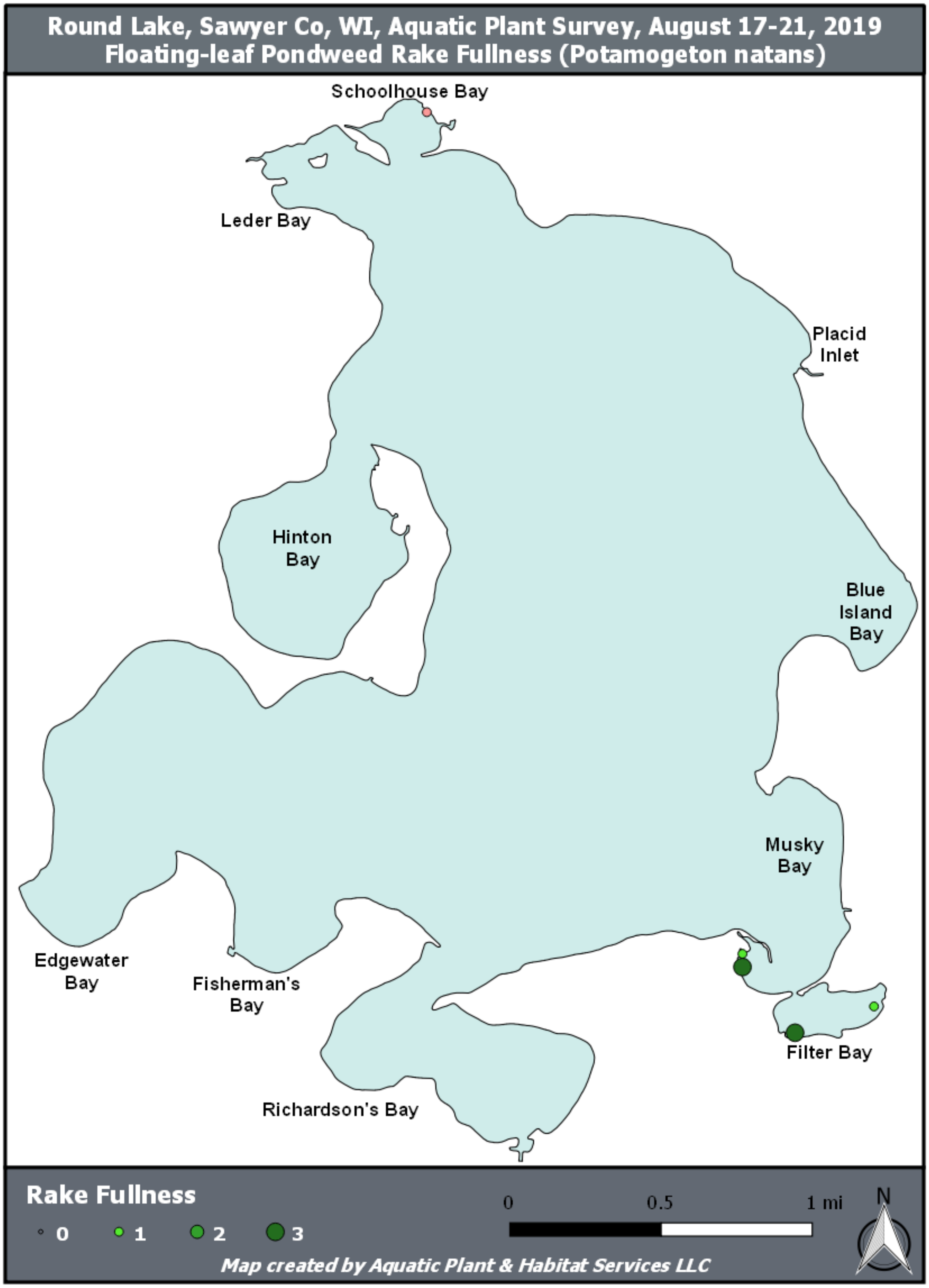

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Brown-fruited Rush Rake Fullness (Juncus pelocarpus)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

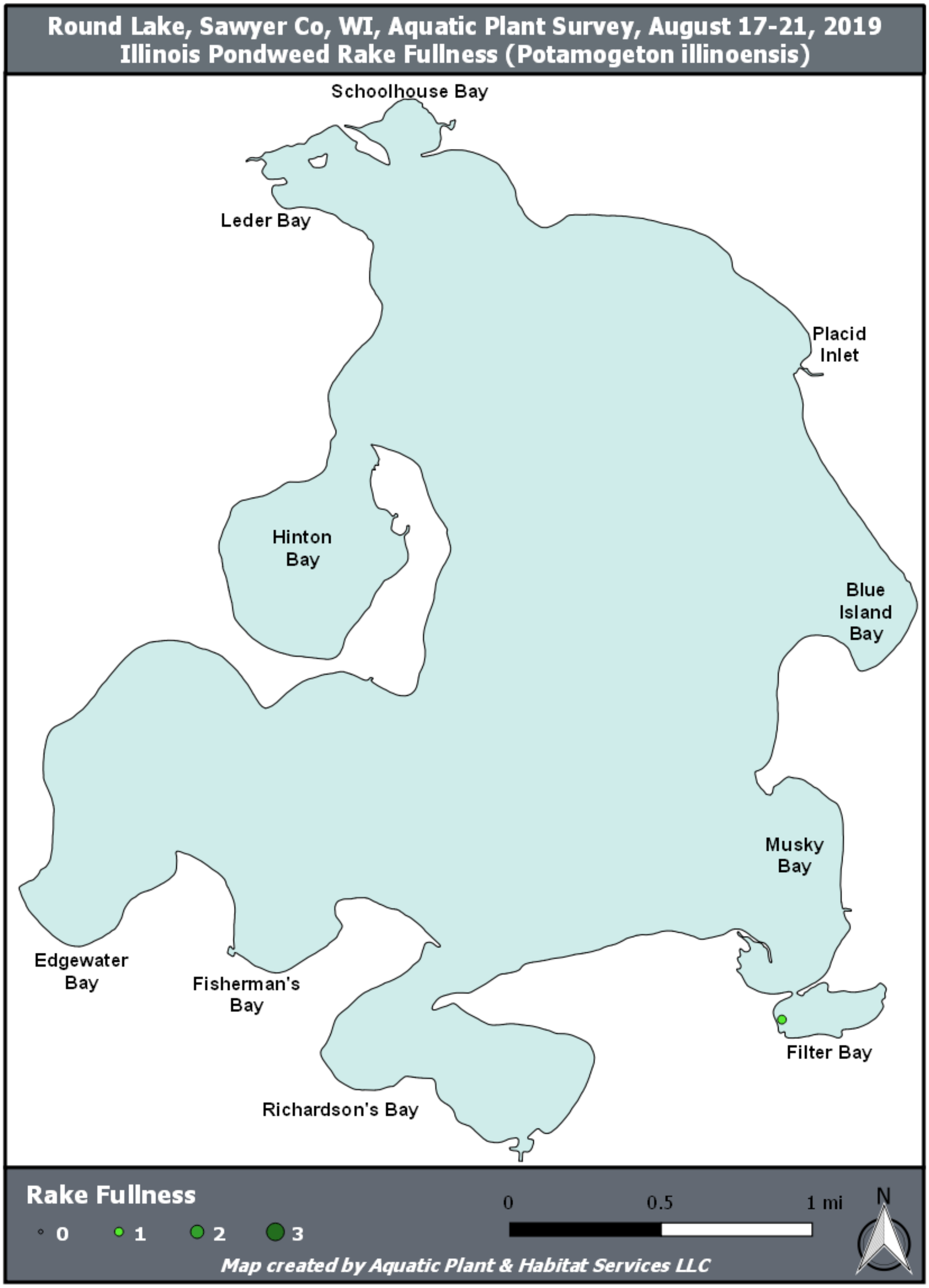

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Small Pondweed Rake Fullness (Potamogeton pusillus)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

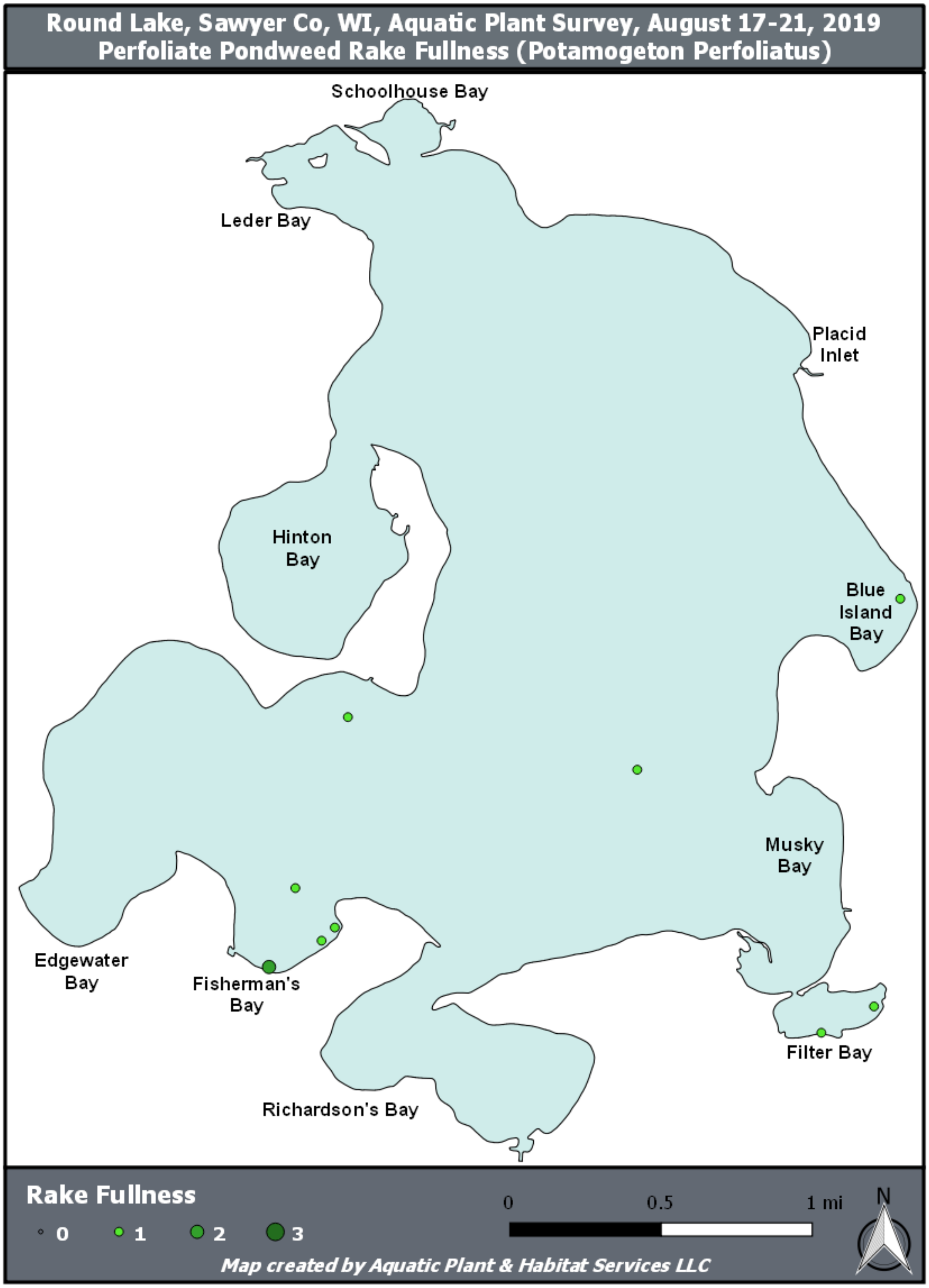


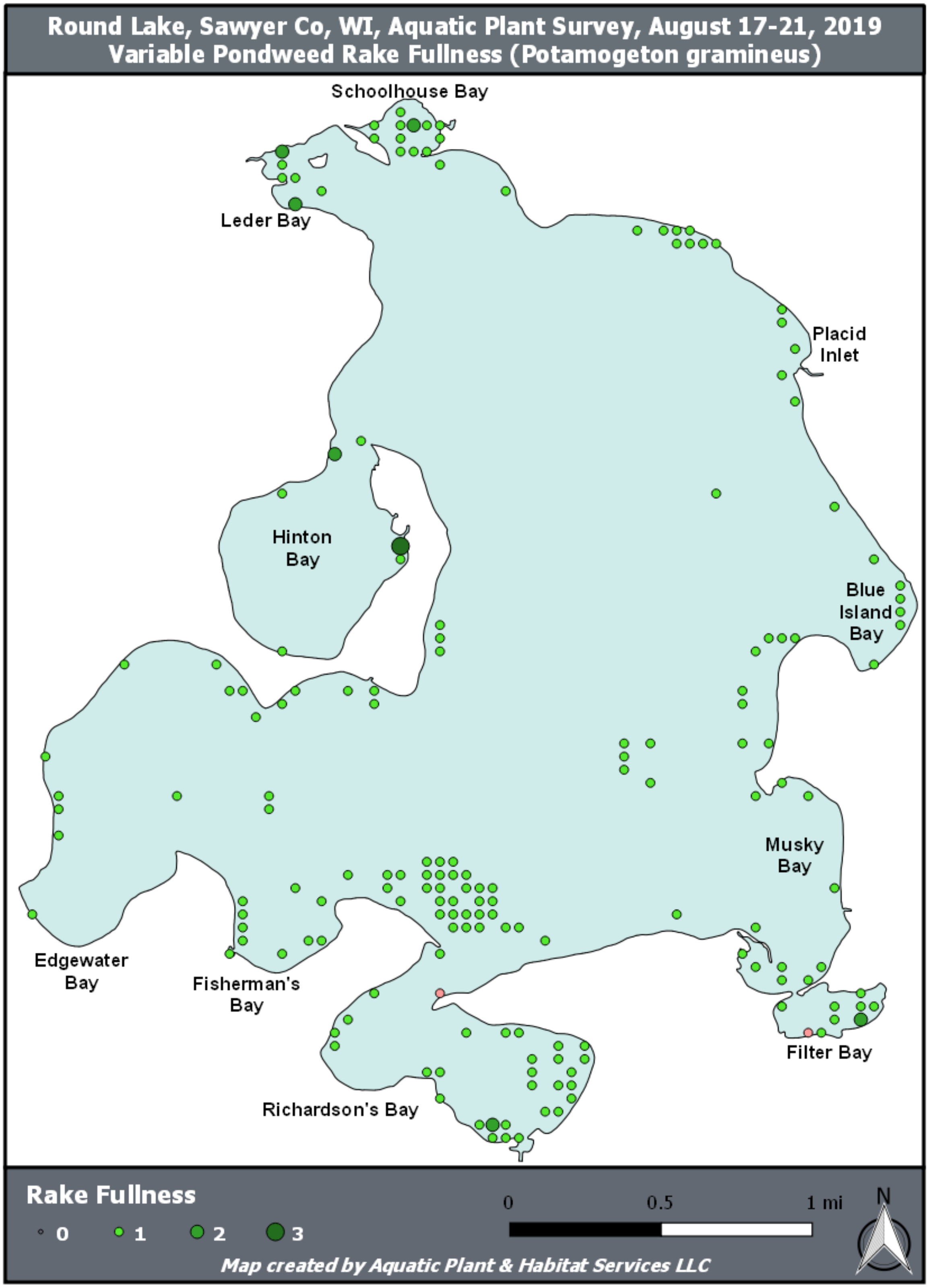
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Dwarf Watermilfoil Rake Fullness (Myriophyllum tenellum)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

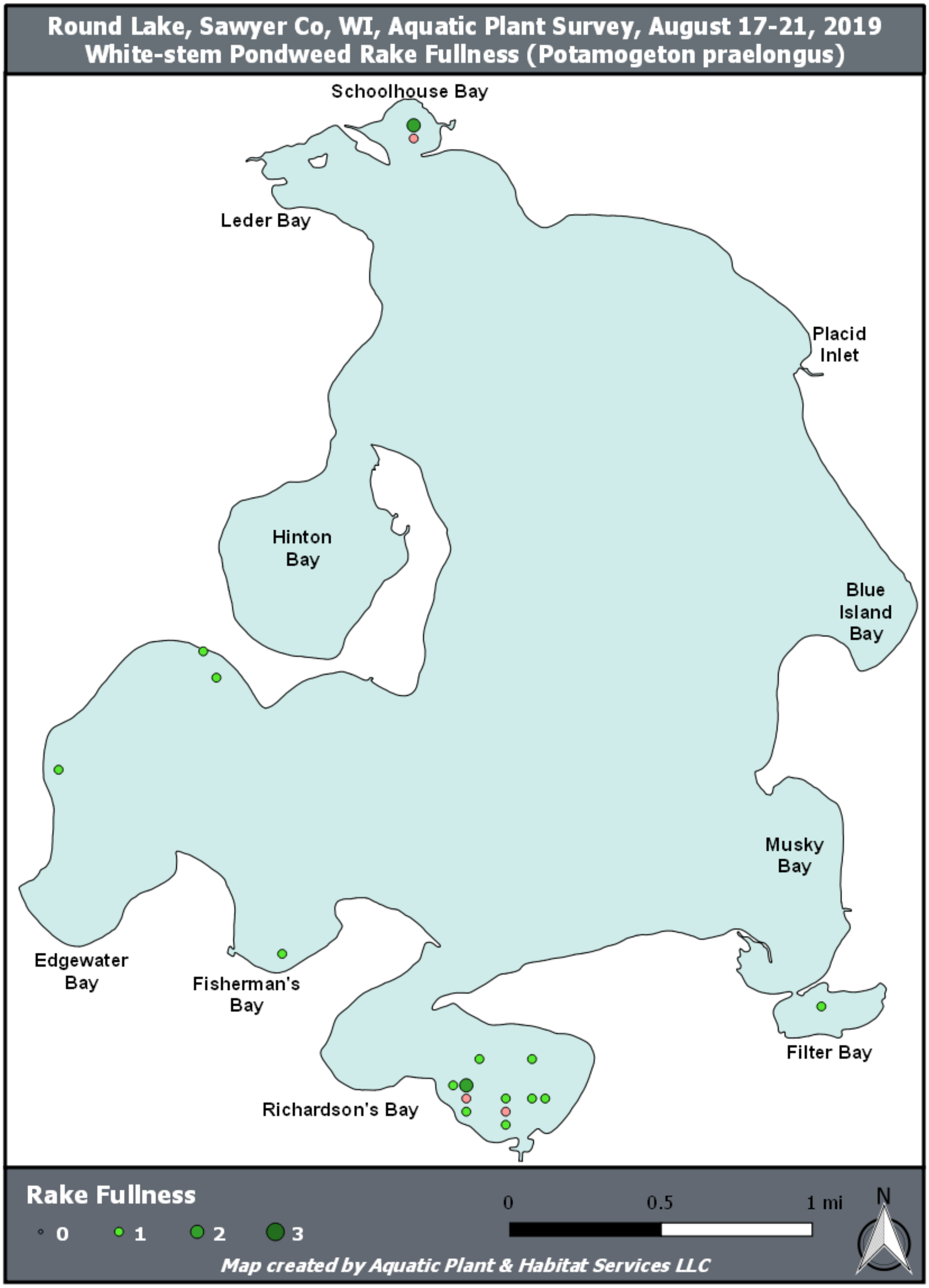

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Nitella Rake Fullness (Nitella sp.)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

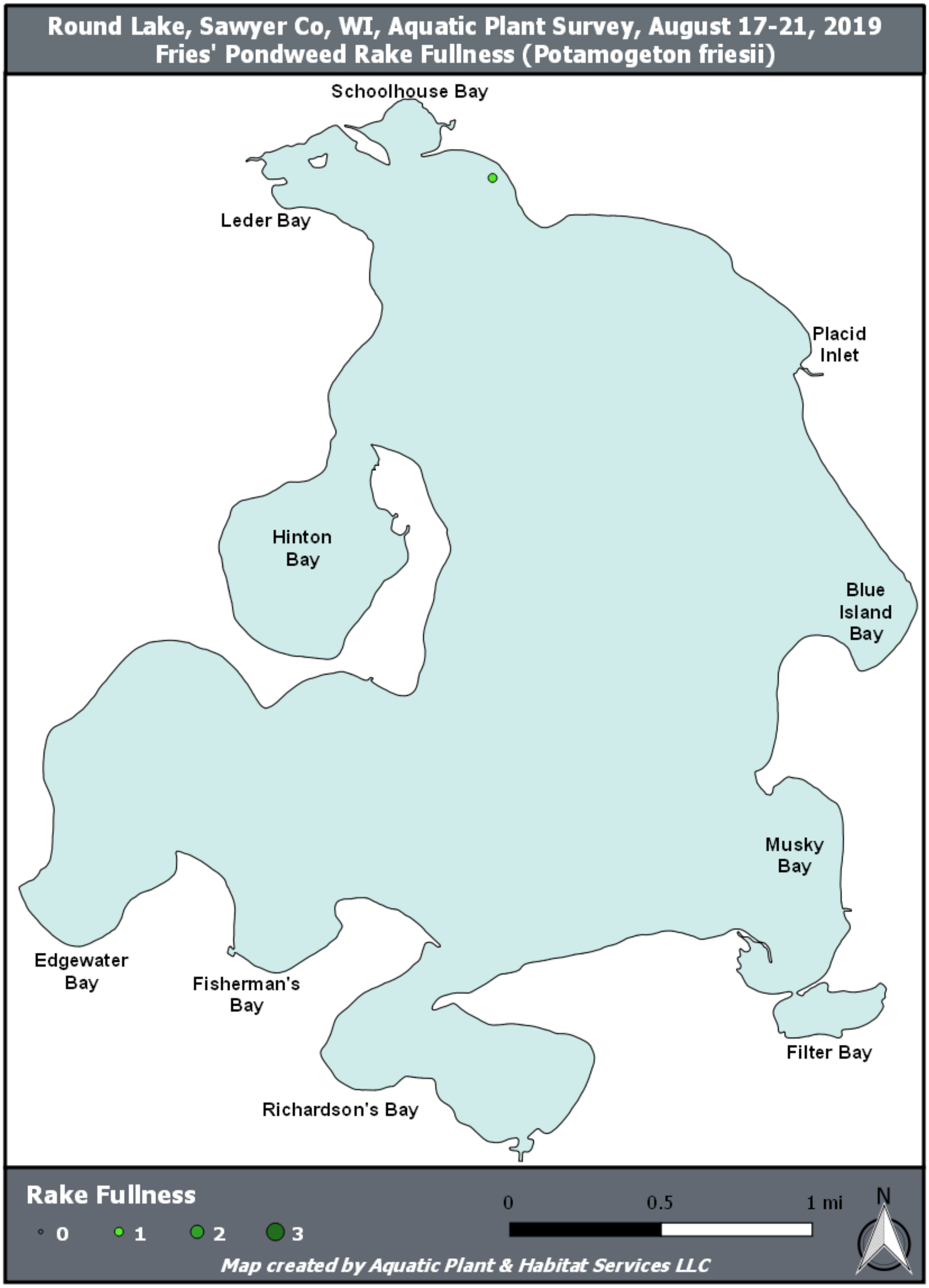

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Floating-leaf Pondweed Rake Fullness (Potamogeton natans)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

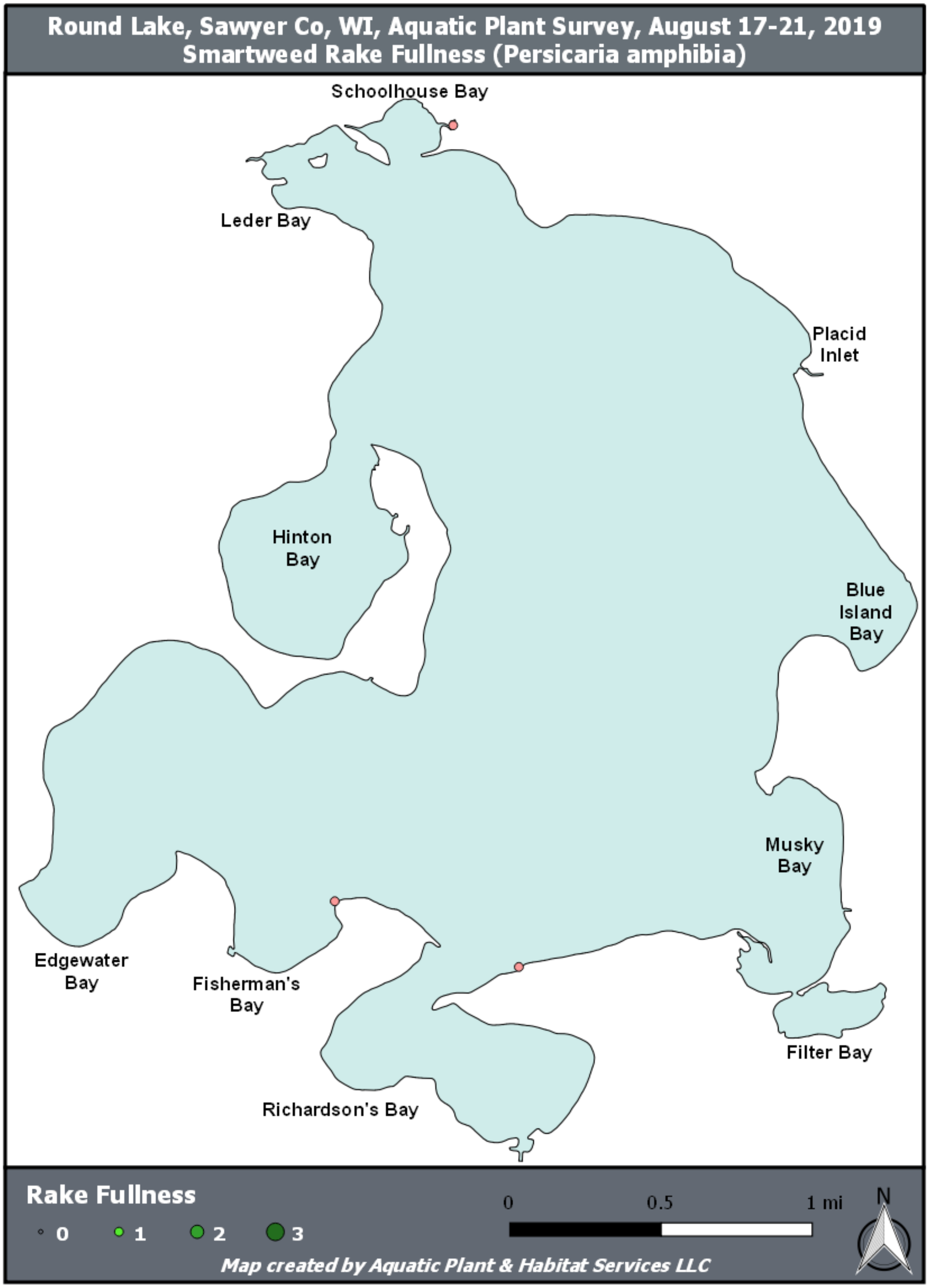

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Illinois Pondweed Rake Fullness (Potamogeton illinoensis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

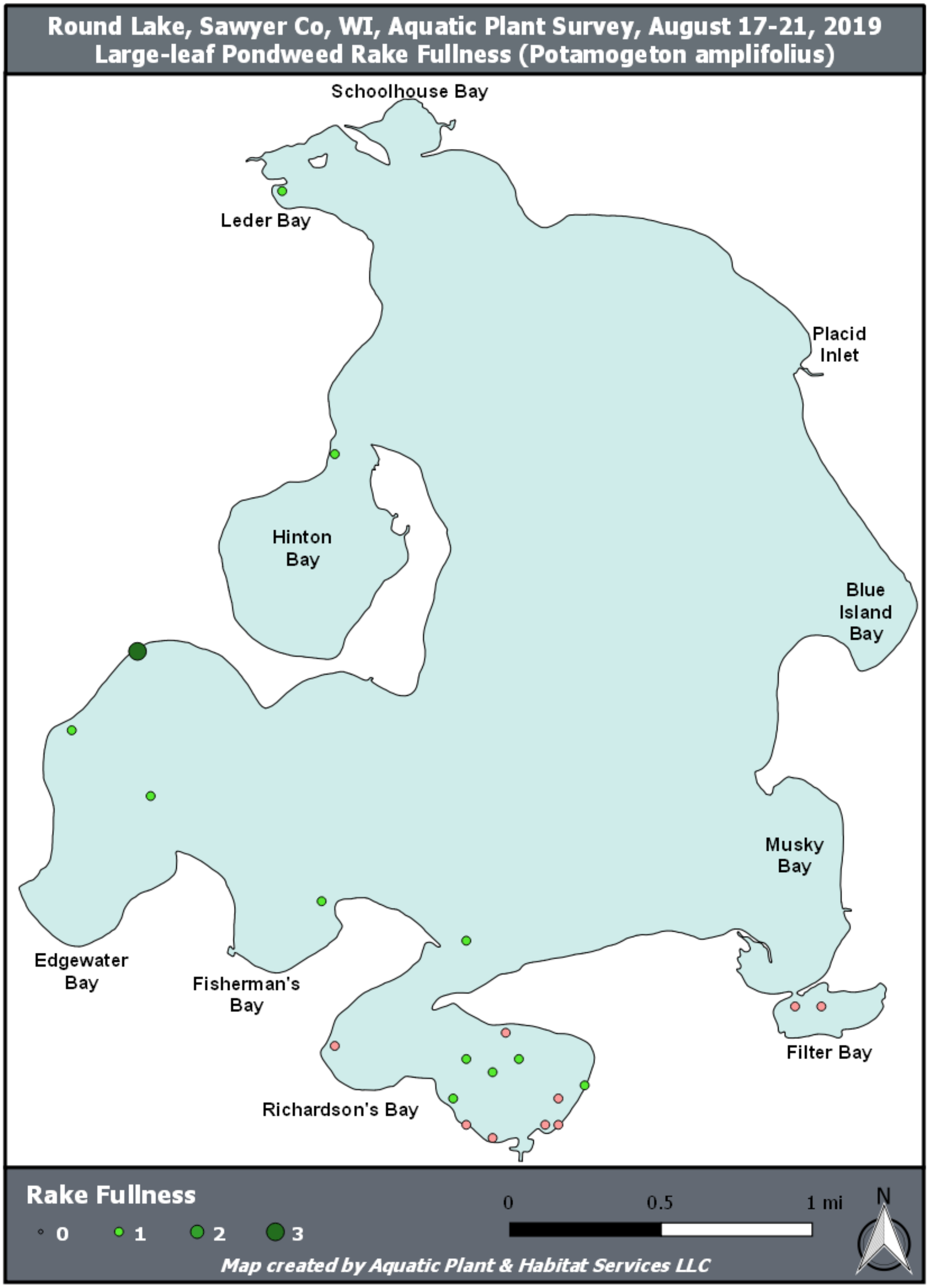

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Perfoliate Pondweed Rake Fullness (Potamogeton Perfoliatus)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Variable Pondweed Rake Fullness (Potamogeton gramineus)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

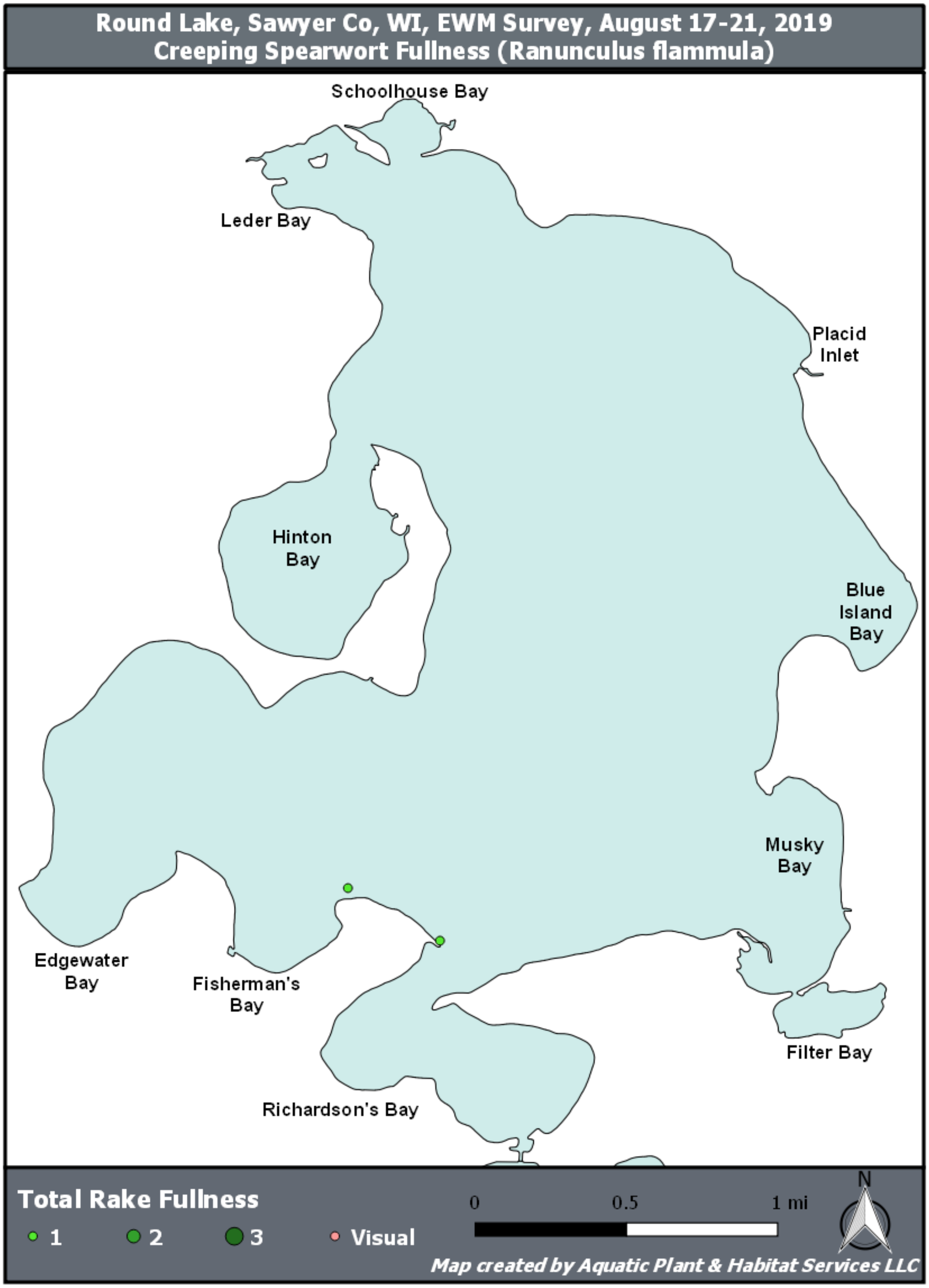

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
White-stem Pondweed Rake Fullness (Potamogeton praelongus)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Fries' Pondweed Rake Fullness (Potamogeton friesii)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

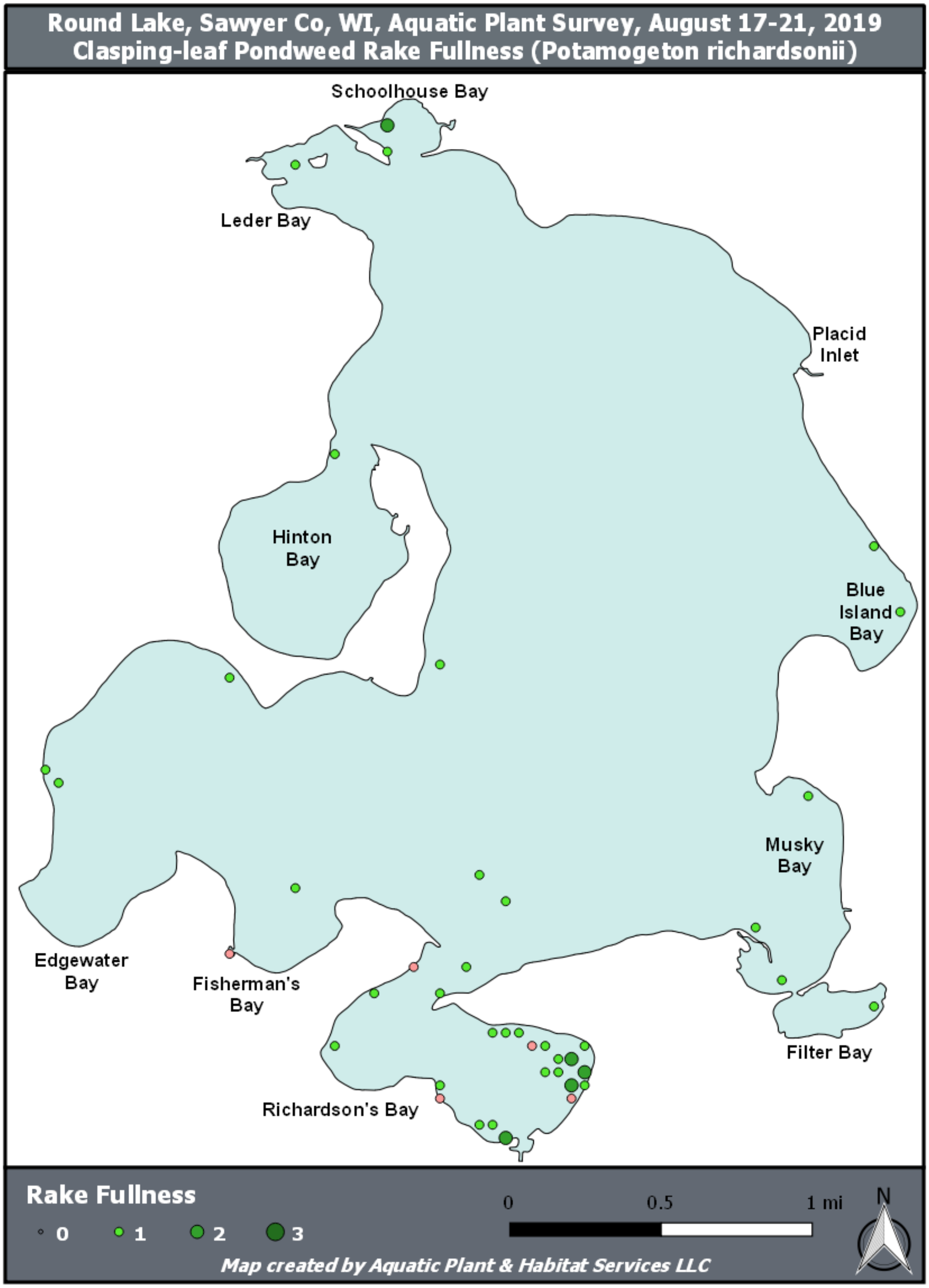

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Smartweed Rake Fullness (Persicaria amphibia)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

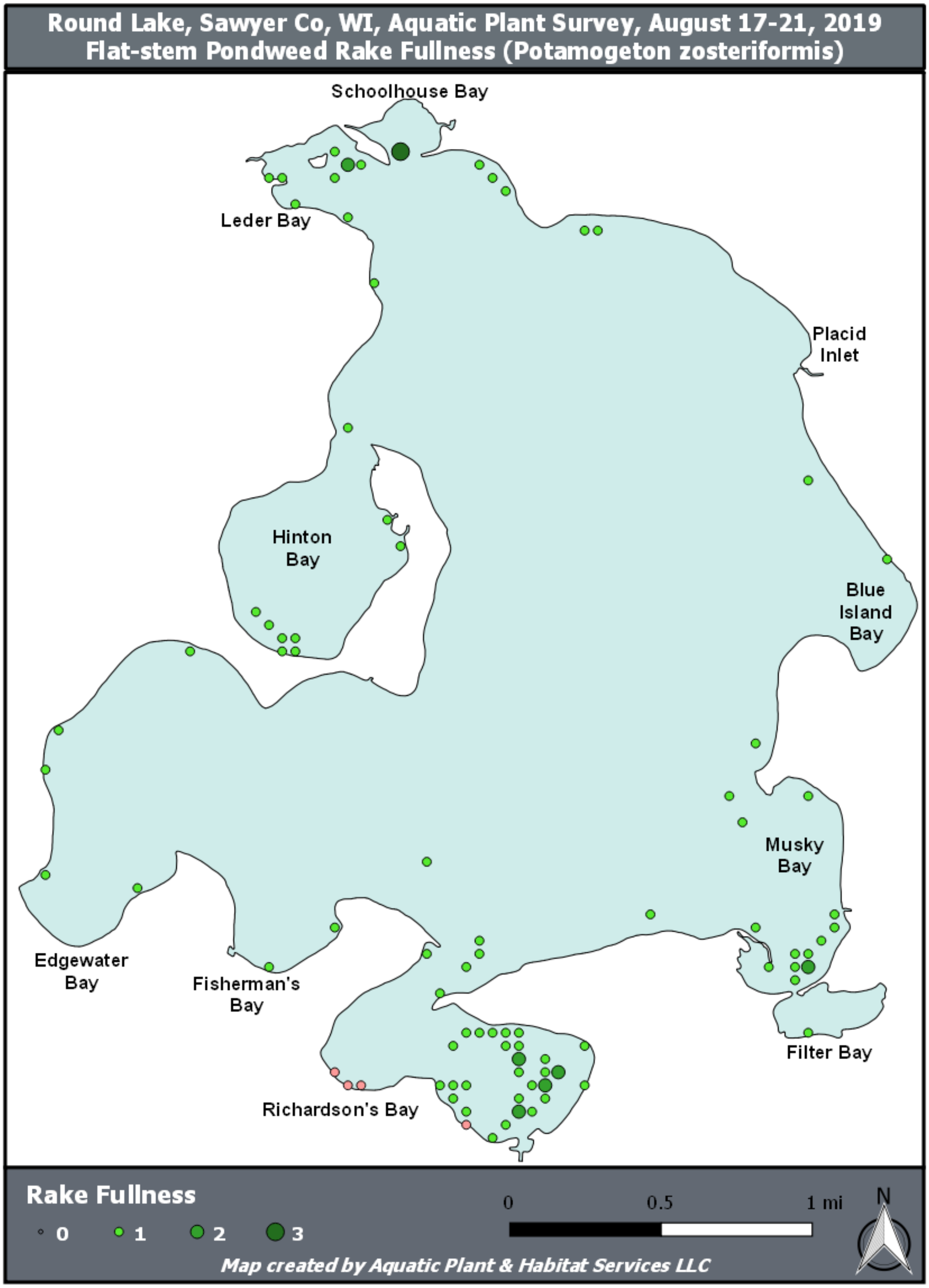


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Large-leaf Pondweed Rake Fullness (Potamogeton amplifolius)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

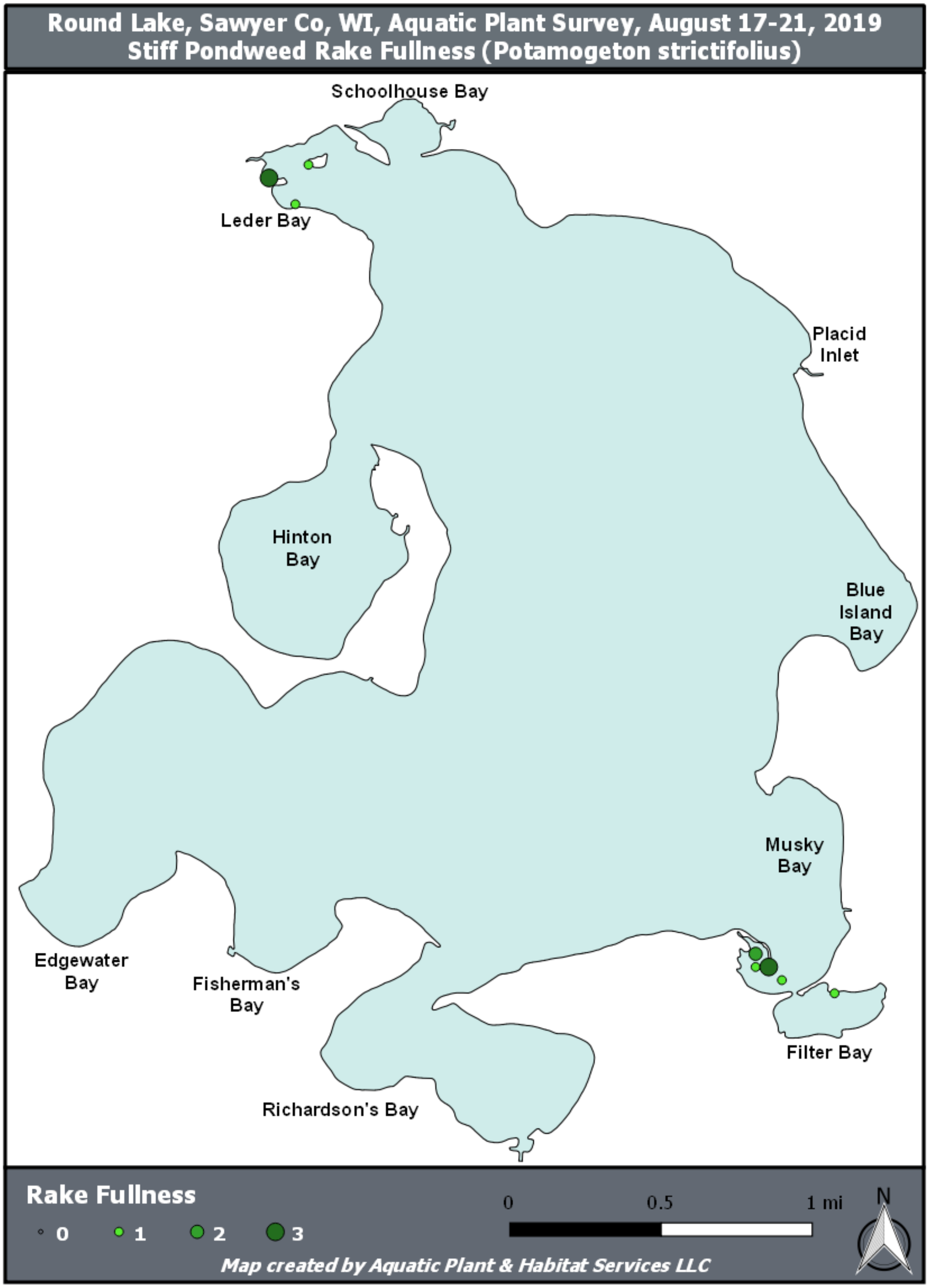


Round Lake, Sawyer Co, WI, EWM Survey, August 17-21, 2019
Creeping Spearwort Fullness (Ranunculus flammula)
Schoolhouse Bay
Leder Bay
Placid
Inlet
Hinton
Bay
Blue
Island
Bay
Musky
Bay
Edgewater
Bay
Fisherman's
Bay
Filter Bay
Richardson's Bay
Total Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

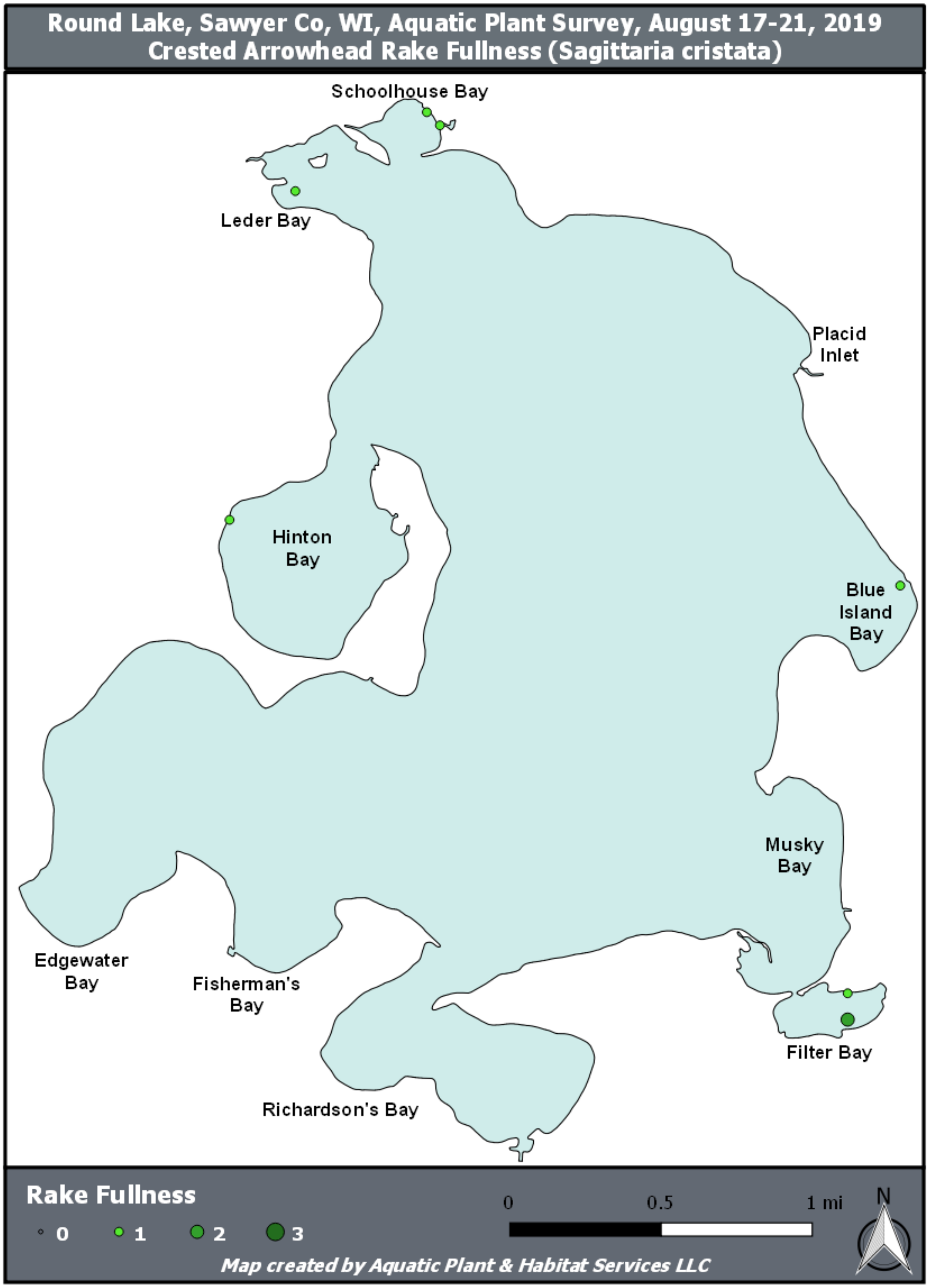

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Clasping-leaf Pondweed Rake Fullness (Potamogeton richardsonii)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC



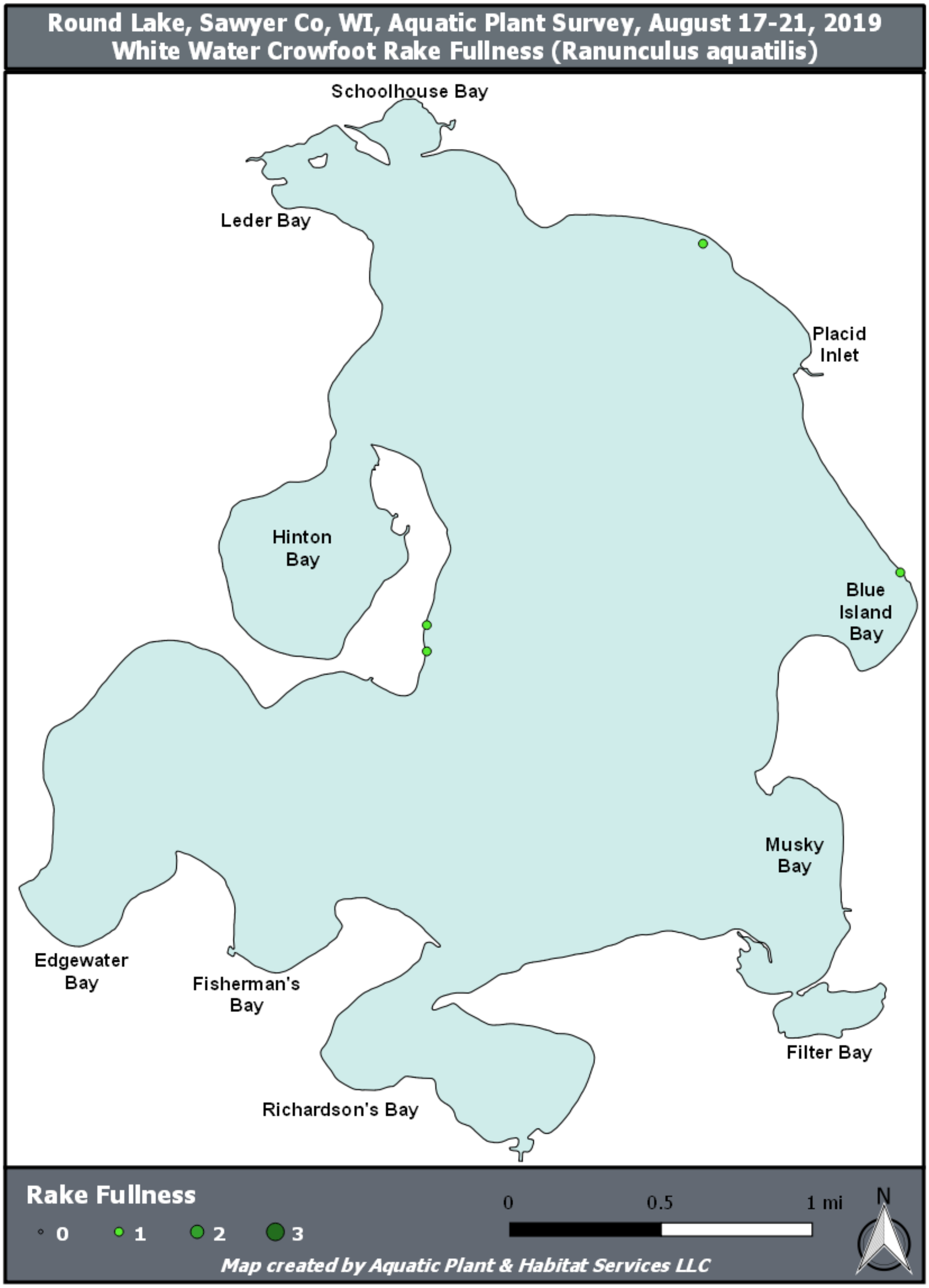
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Flat-stem Pondweed Rake Fullness (Potamogeton zosteriformis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

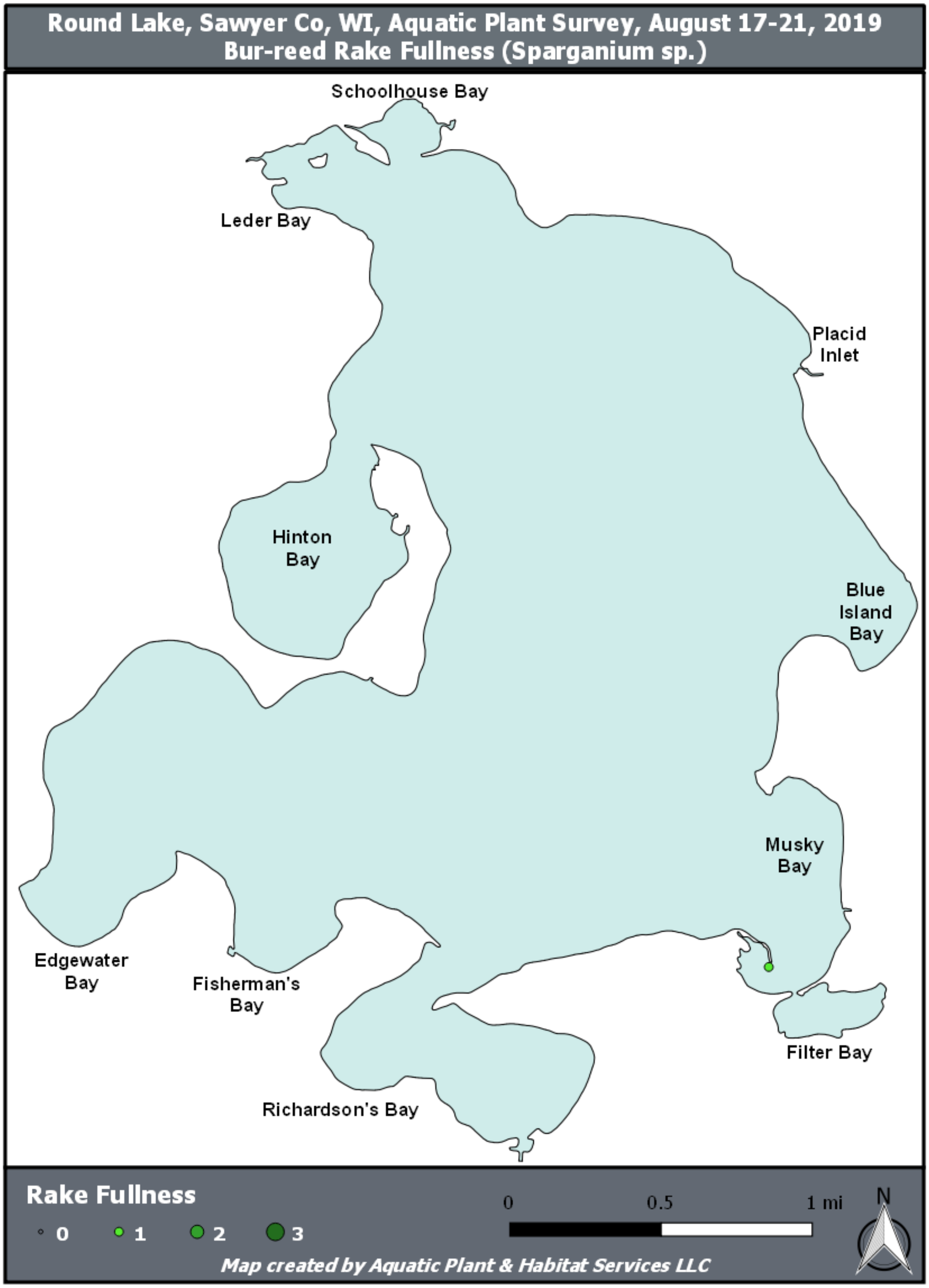


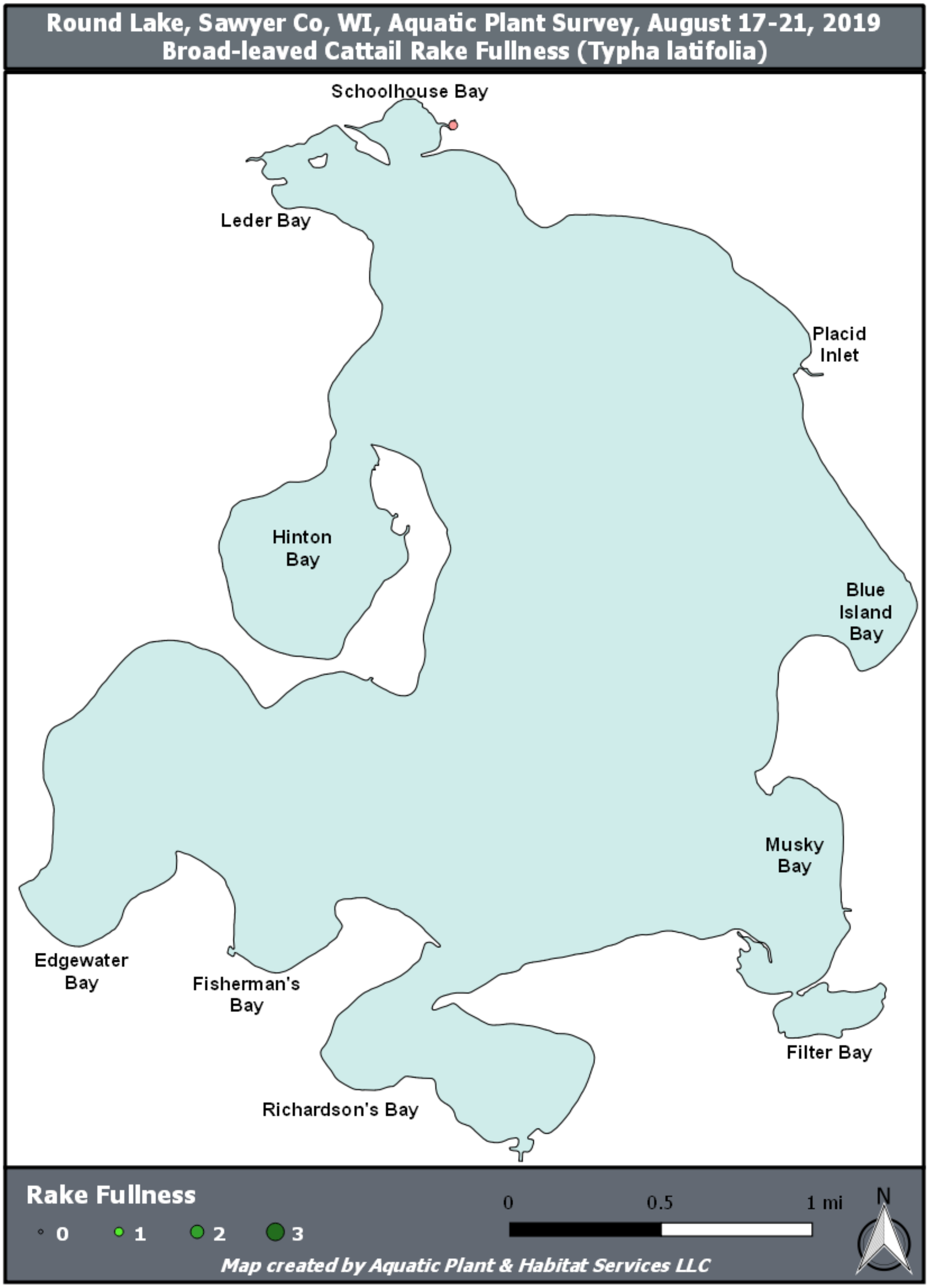
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Stiff Pondweed Rake Fullness (Potamogeton strictifolius)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

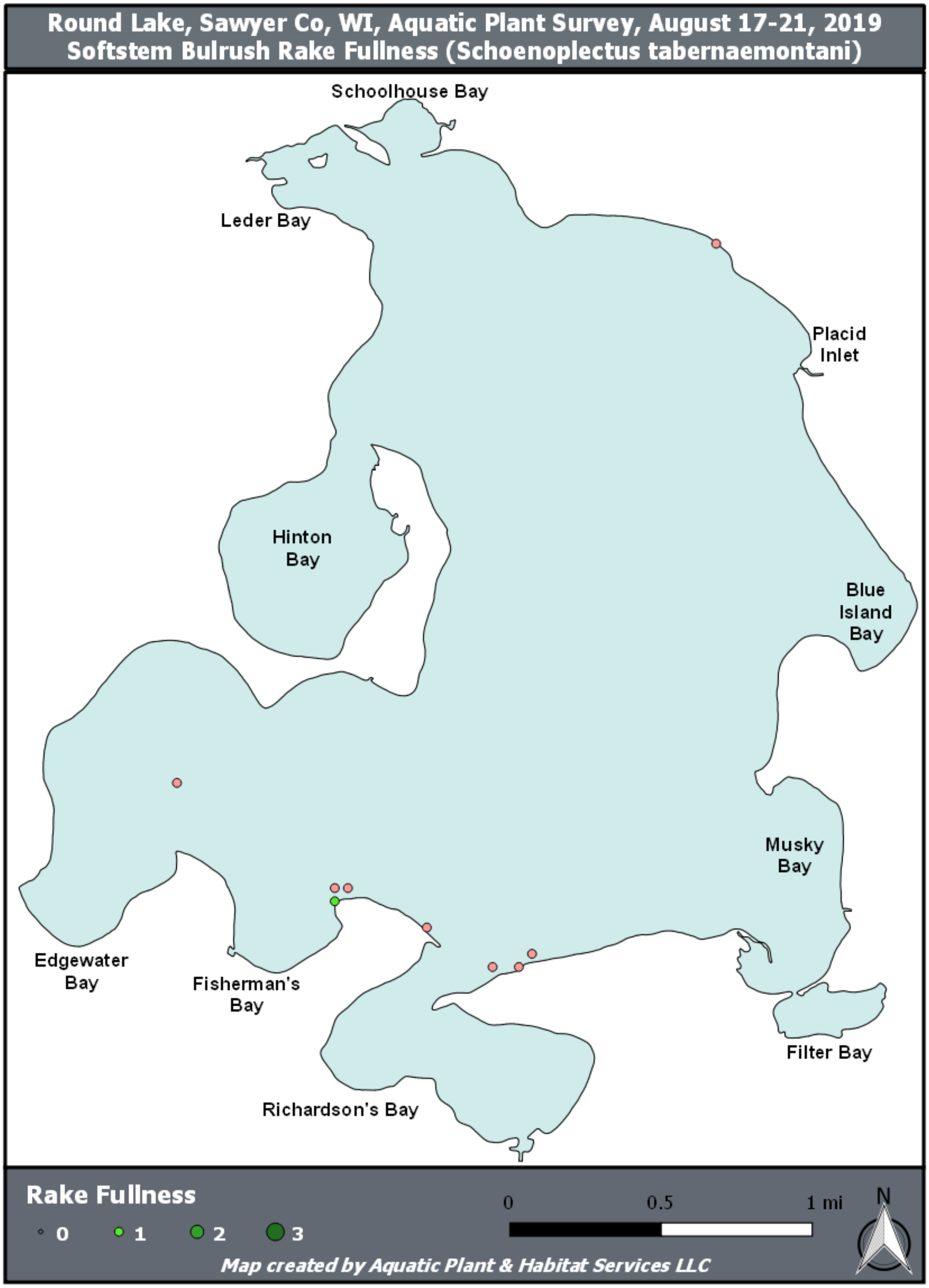


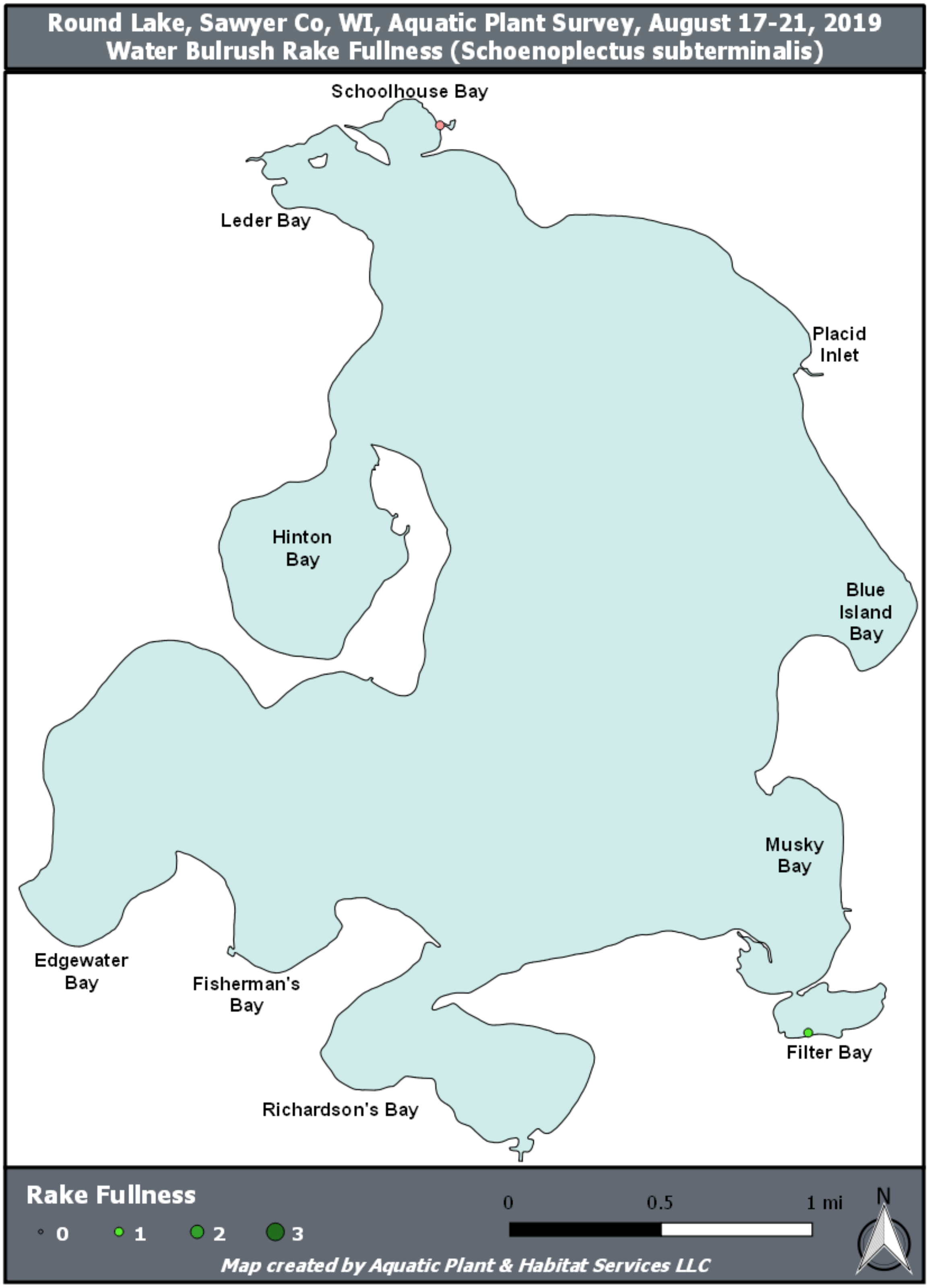
Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Crested Arrowhead Rake Fullness (Sagittaria cristata)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

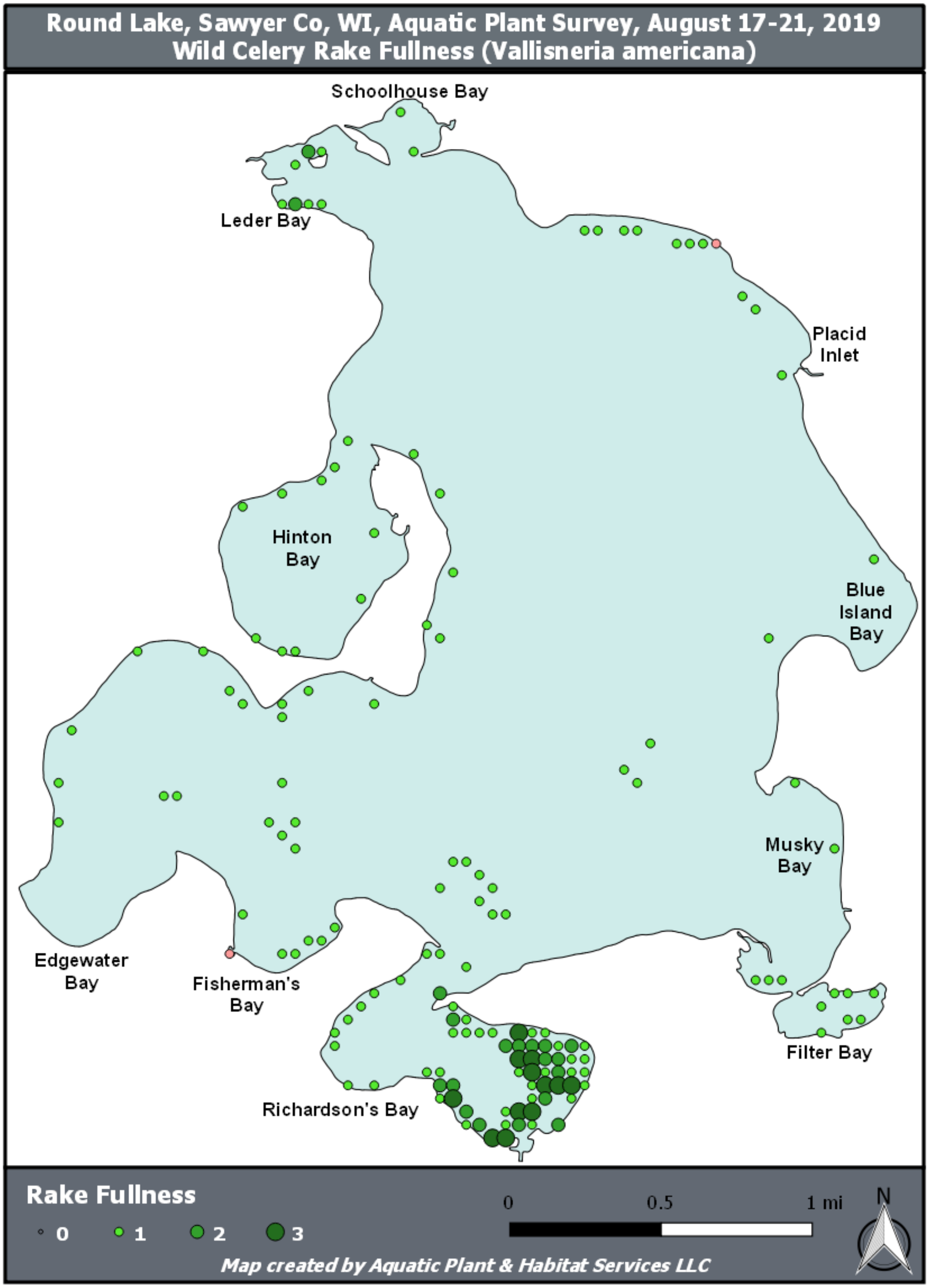

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
White Water Crowfoot Rake Fullness (Ranunculus aquatilis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

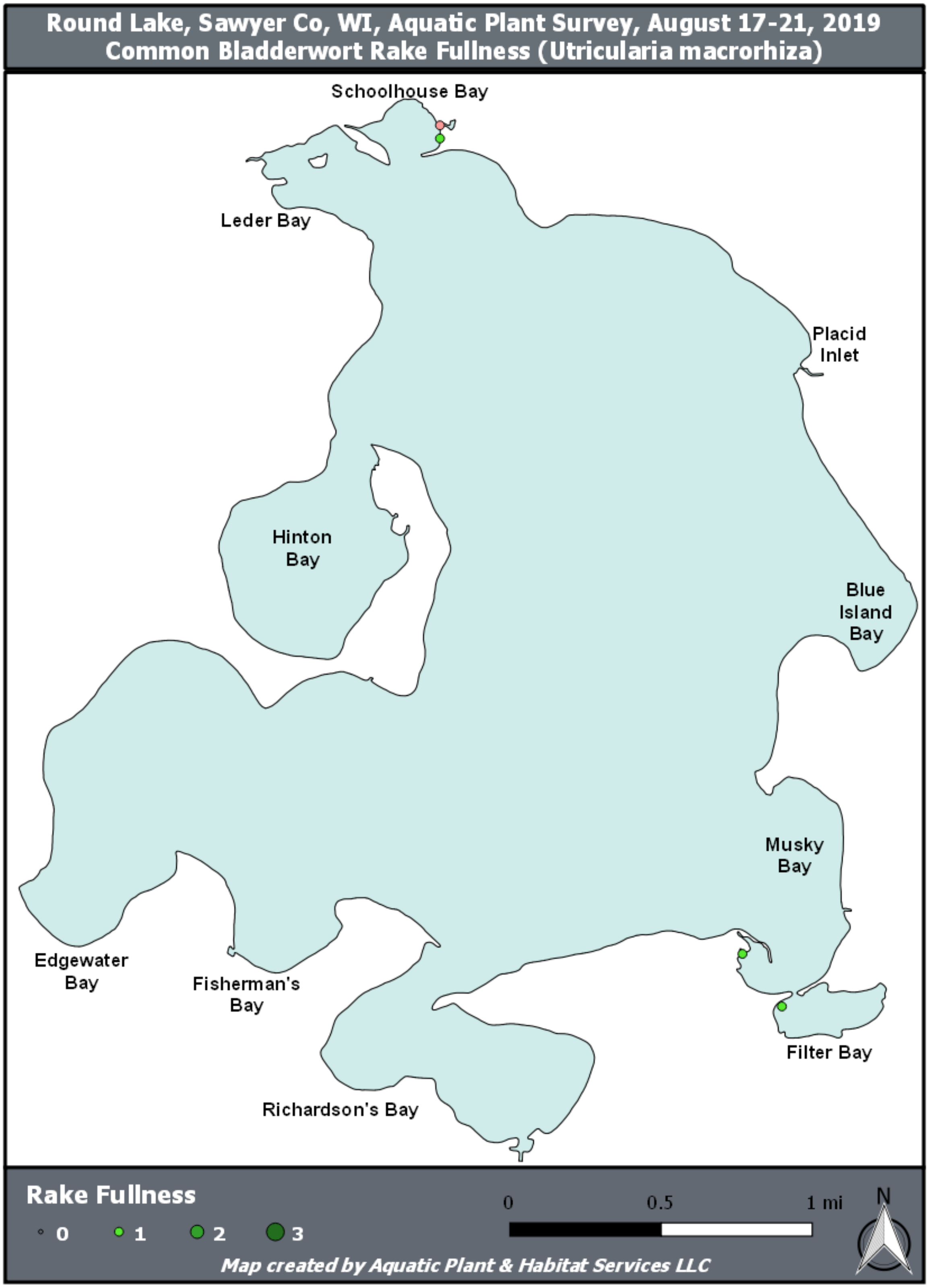

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Bur-reed Rake Fullness (Sparganium sp.)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

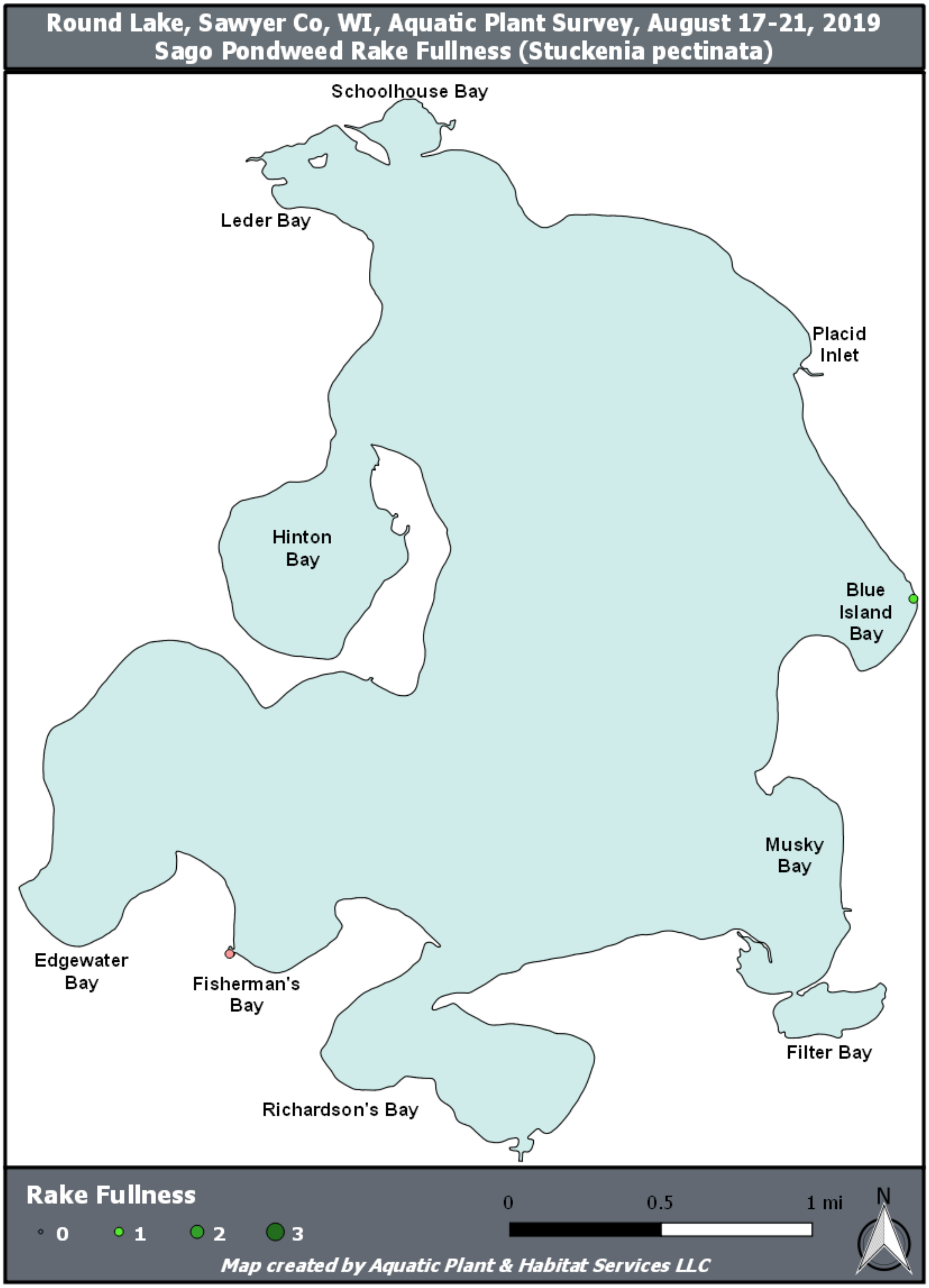

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Broad-leaved Cattail Rake Fullness (Typha latifolia)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

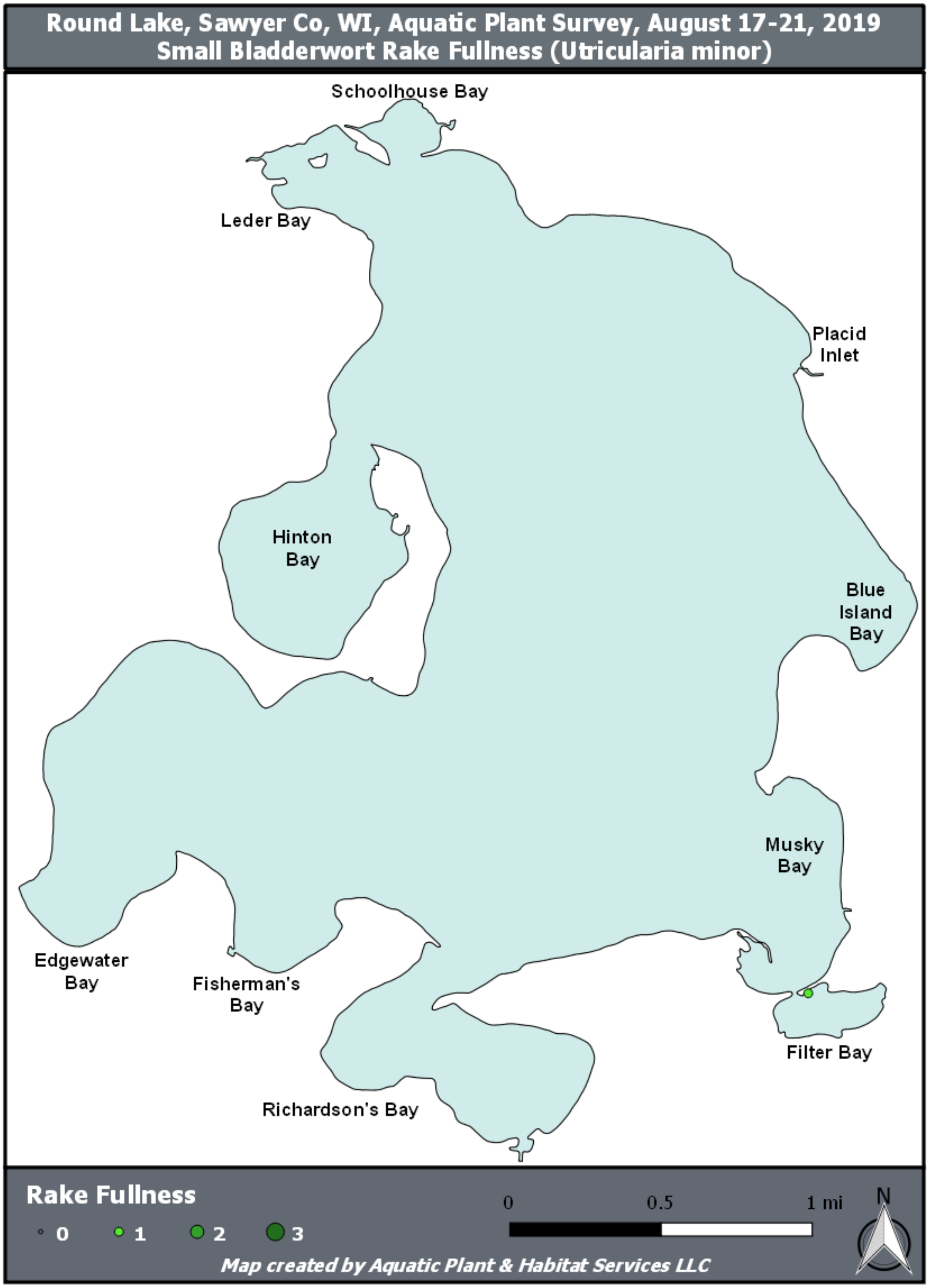

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Softstem Bulrush Rake Fullness (Schoenoplectus tabernaemontani)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

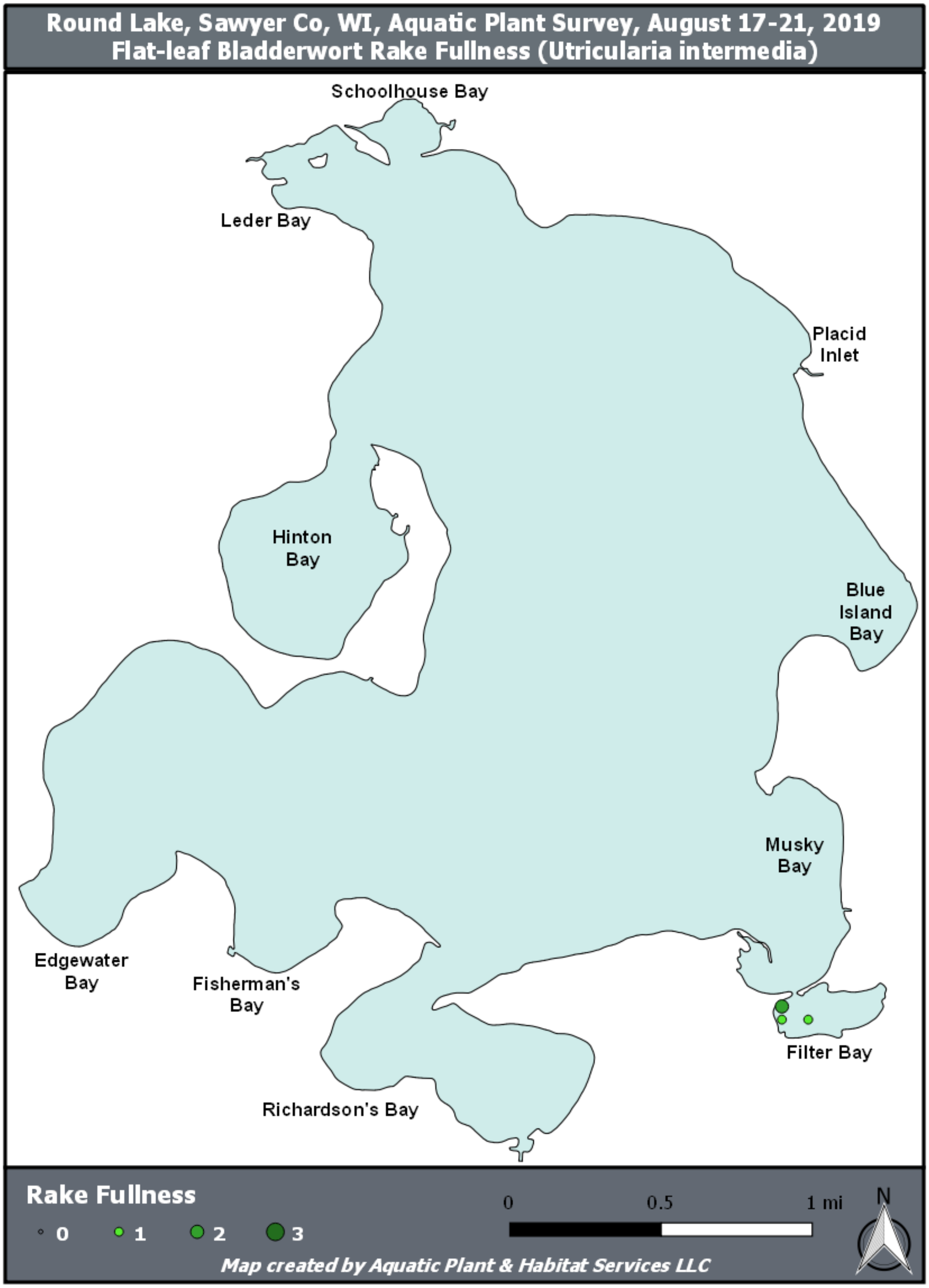

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Water Bulrush Rake Fullness (Schoenoplectus subterminalis)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

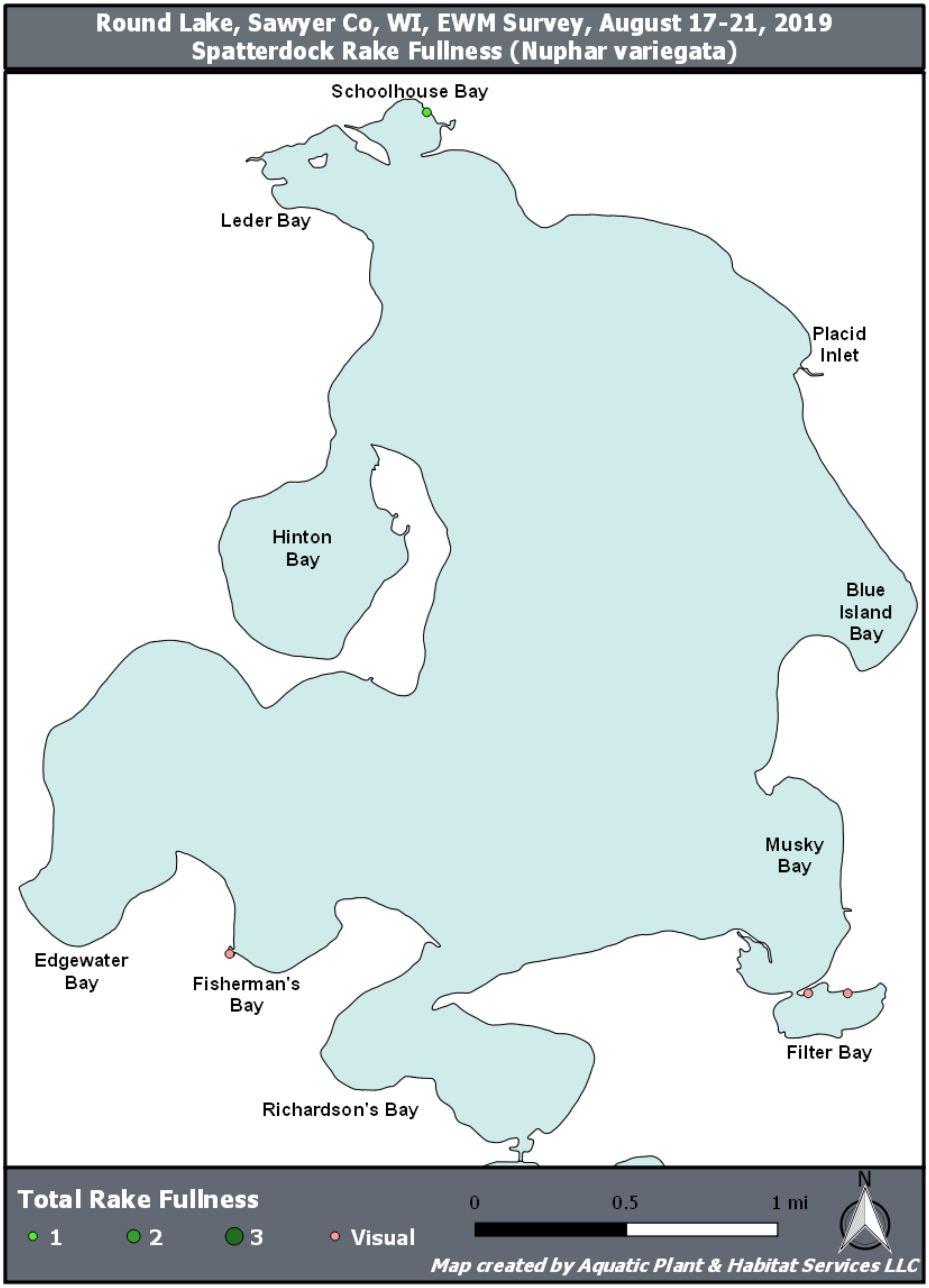

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Wild Celery Rake Fullness (Vallisneria americana)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Common Bladderwort Rake Fullness (Utricularia macrorhiza)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

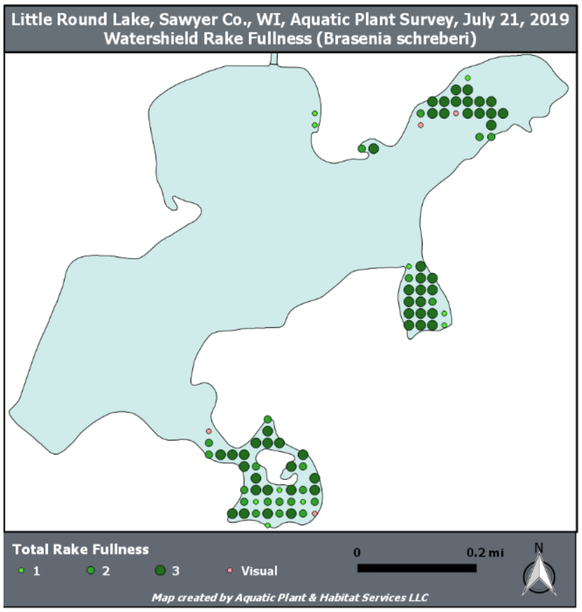

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Sago Pondweed Rake Fullness (Stuckenia pectinata)
Schoolhouse Bay
Leder Bay
Placid
Inlet
Hinton
Bay
Blue
Island
Bay
Musky
Bay
Edgewater
Bay
Fisherman's
Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

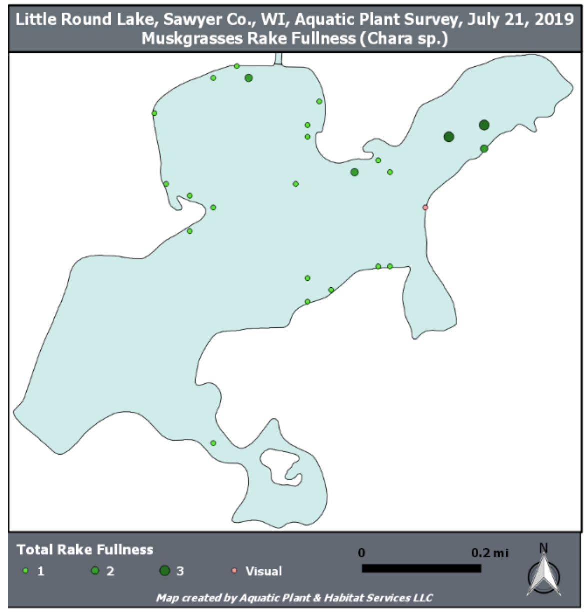

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Small Bladderwort Rake Fullness (Utricularia minor)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

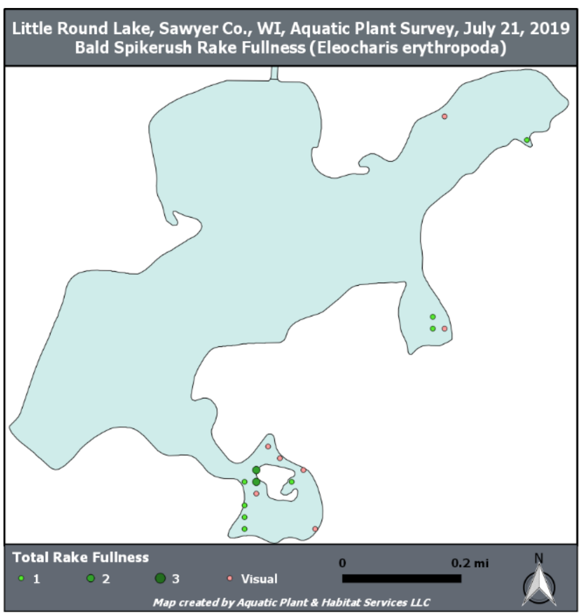

Round Lake, Sawyer Co, WI, Aquatic Plant Survey, August 17-21, 2019
Flat-leaf Bladderwort Rake Fullness (Utricularia intermedia)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Rake Fullness
0
1
2
3
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

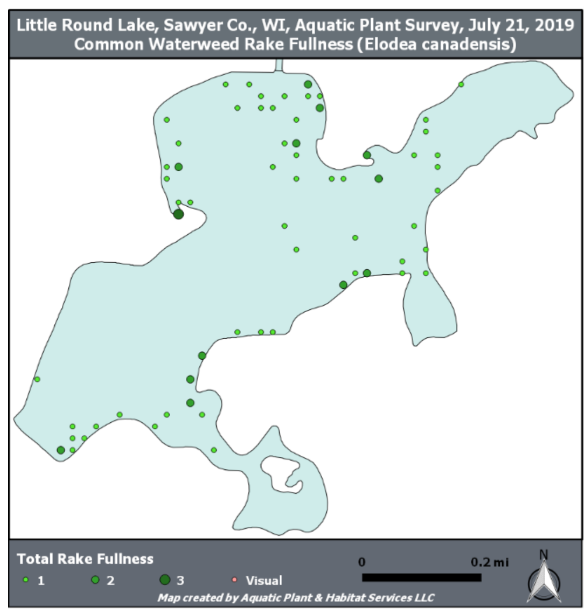

Round Lake, Sawyer Co, WI, EWM Survey, August 17-21, 2019
Spatterdock Rake Fullness (Nuphar variegata)
Schoolhouse Bay
Leder Bay
Placid Inlet
Hinton Bay
Blue Island Bay
Musky Bay
Edgewater Bay
Fisherman's Bay
Filter Bay
Richardson's Bay
Total Rake Fullness
1
2
3
Visual
0
0.5
1 mi
N
Map created by Aquatic Plant & Habitat Services LLC

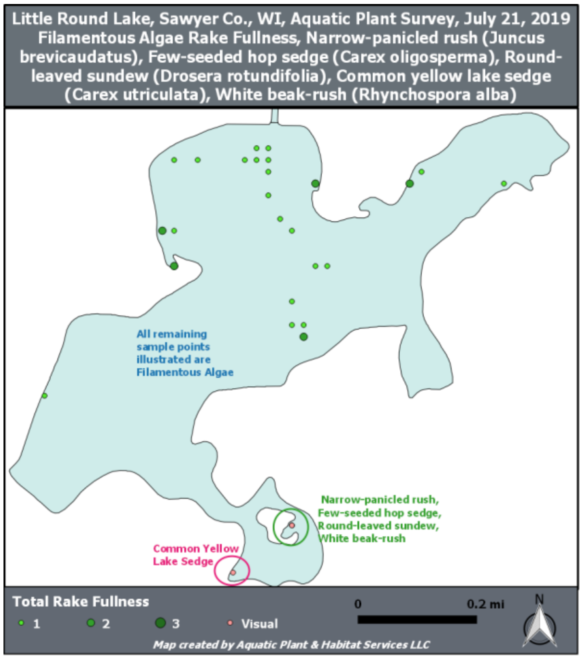
31.0 Appendix D – Little Round Lake Aquatic Plant Maps

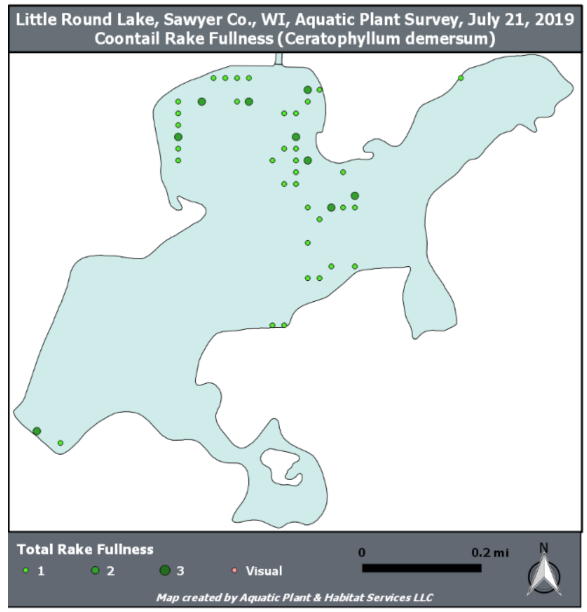


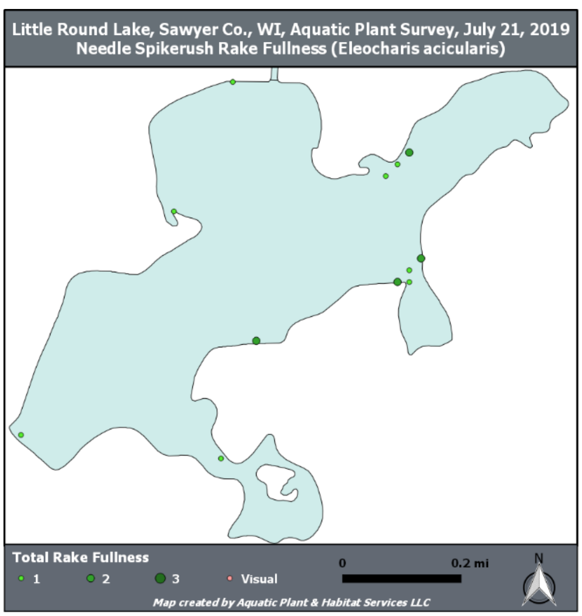


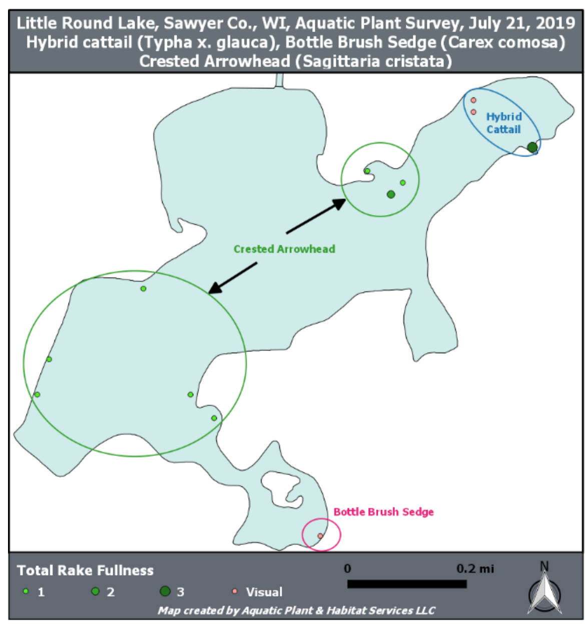


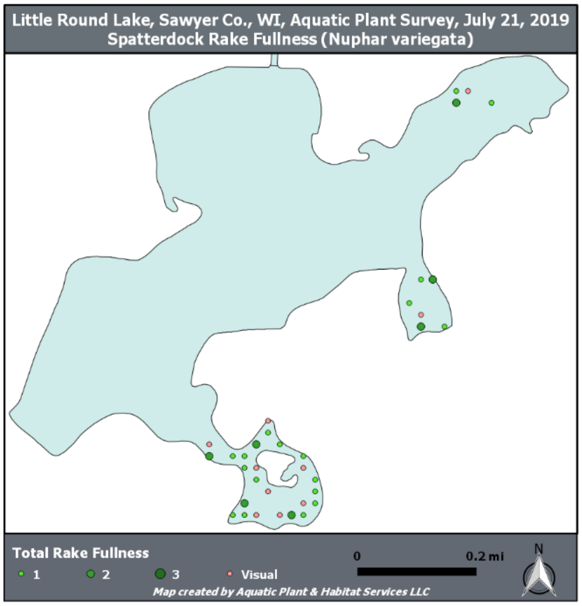


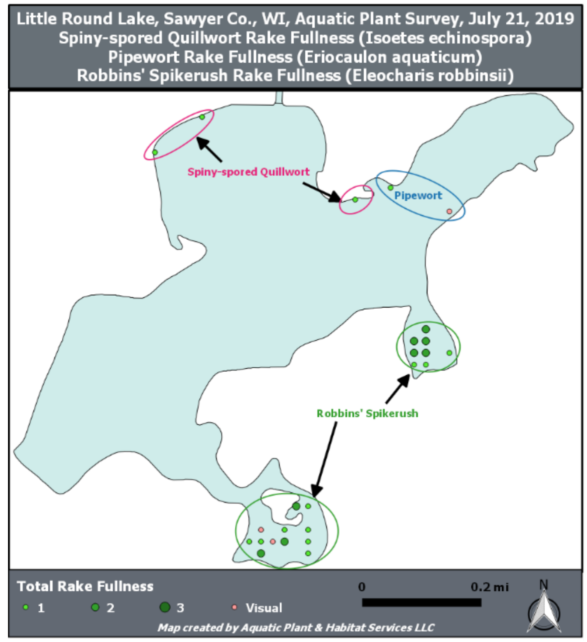

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Filamentous Algae Rake Fullness, Narrow-panicled rush (Juncus brevicaudatus), Few-seeded hop sedge (Carex oligosperma), Round-leaved sundew (Drosera rotundifolia), Common yellow lake sedge (Carex utriculata), White beak-rush (Rhynchospora alba)
All remaining sample points illustrated are Filamentous Algae
Narrow-panicled rush, Few-seeded hop sedge, Round-leaved sundew, White beak-rush
Common Yellow Lake Sedge
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

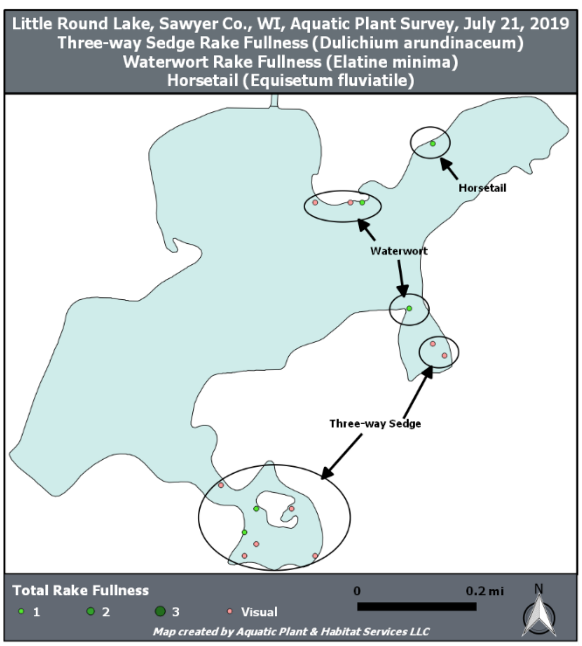

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Coontail Rake Fullness (Ceratophyllum demersum)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

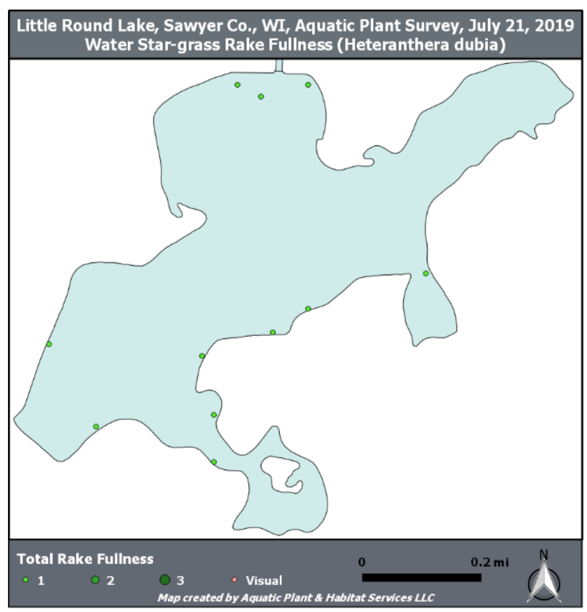

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Needle Spikerush Rake Fullness (Eleocharis acicularis)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

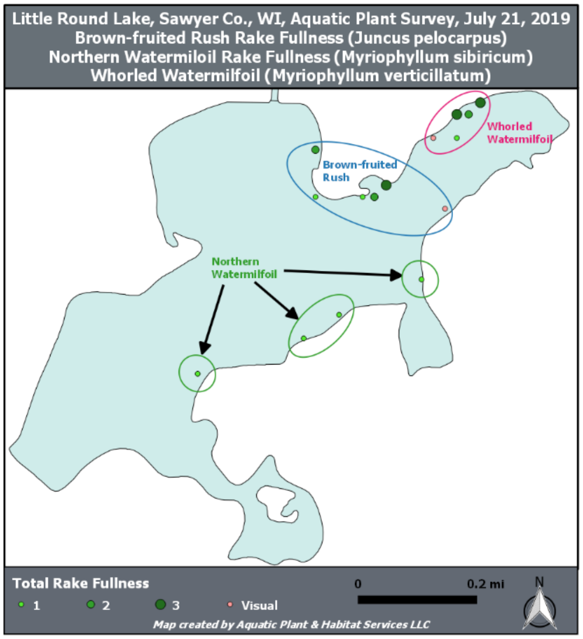

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Hybrid cattail (Typha x. glauca), Bottle Brush Sedge (Carex comosa)
Crested Arrowhead (Sagittaria cristata)
Hybrid Cattail
Crested Arrowhead
Bottle Brush Sedge
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

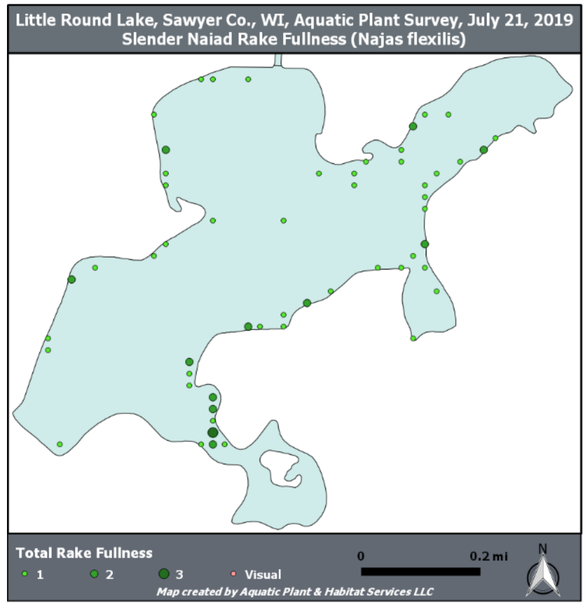

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Spatterdock Rake Fullness (Nuphar variegata)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

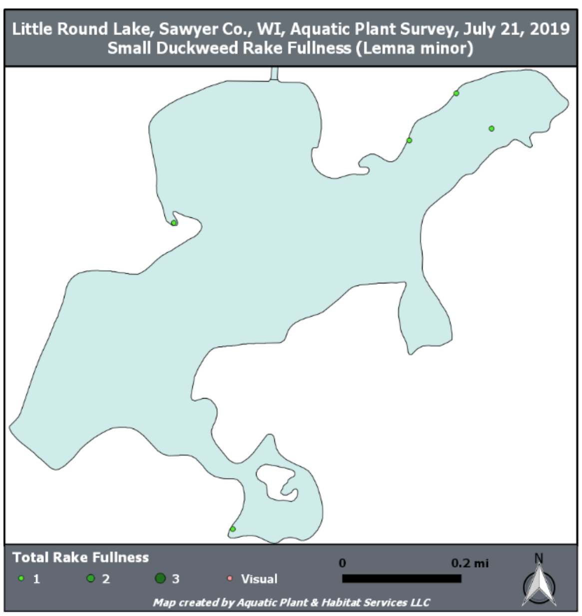

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Spiny-spored Quillwort Rake Fullness (Isoetes echinospora)
Pipewort Rake Fullness (Eriocaulon aquaticum)
Robbins' Spikerush Rake Fullness (Eleocharis robbinsii)
Spiny-spored Quillwort
Pipewort
Robbins' Spikerush
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

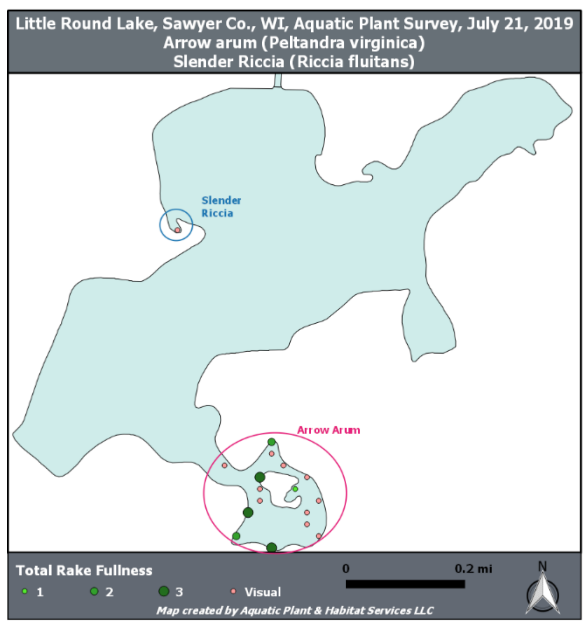

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Three-way Sedge Rake Fullness (Dulichium arundinaceum)
Waterwort Rake Fullness (Elatine minima)
Horsetail (Equisetum fluviatile)
Horsetail
Waterwort
Three-way Sedge
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

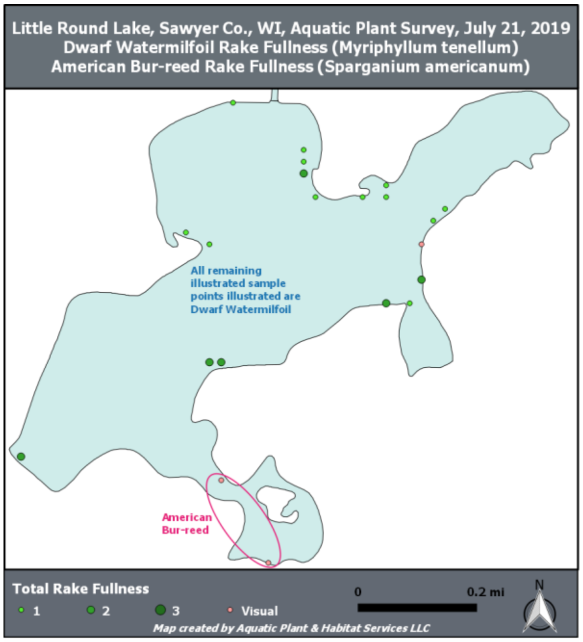

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Water Star-grass Rake Fullness (Heteranthera dubia)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

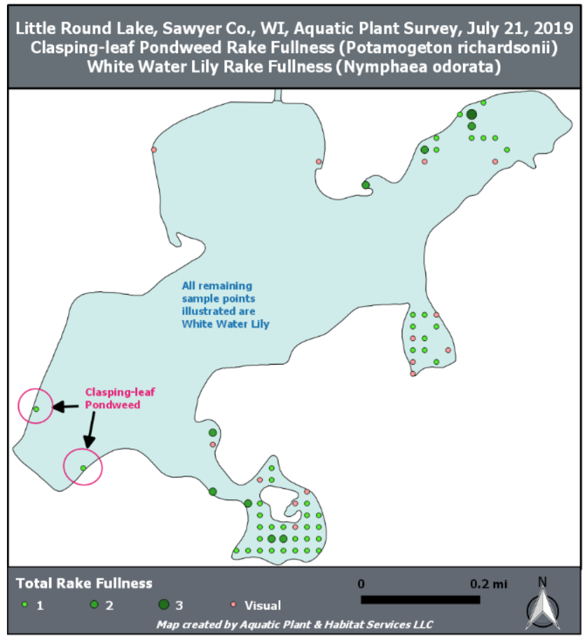

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Brown-fruited Rush Rake Fullness (Juncus pelocarpus)
Northern Watermiloil Rake Fullness (Myriophyllum sibiricum)
Whorled Watermilfoil (Myriophyllum verticillatum)
Whorled Watermilfoil
Brown-fruited Rush
Northern Watermilfoil
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

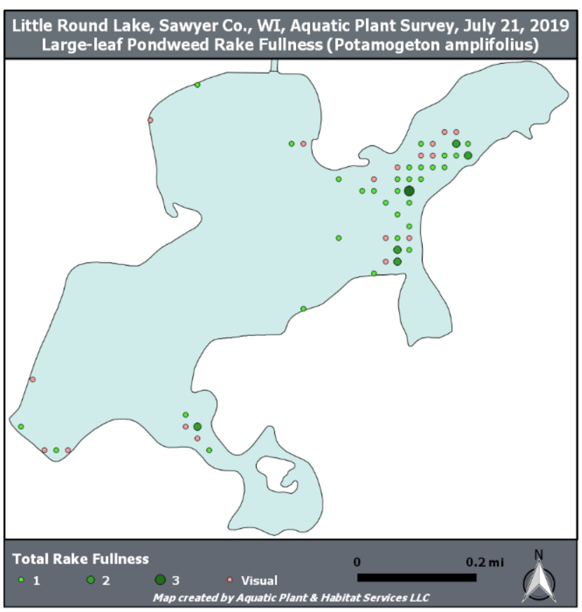

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Slender Naiad Rake Fullness (Najas flexilis)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

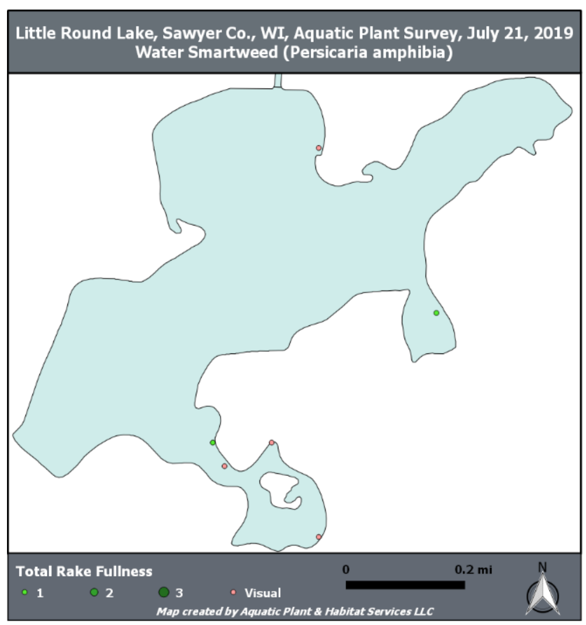

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Small Duckweed Rake Fullness (Lemna minor)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

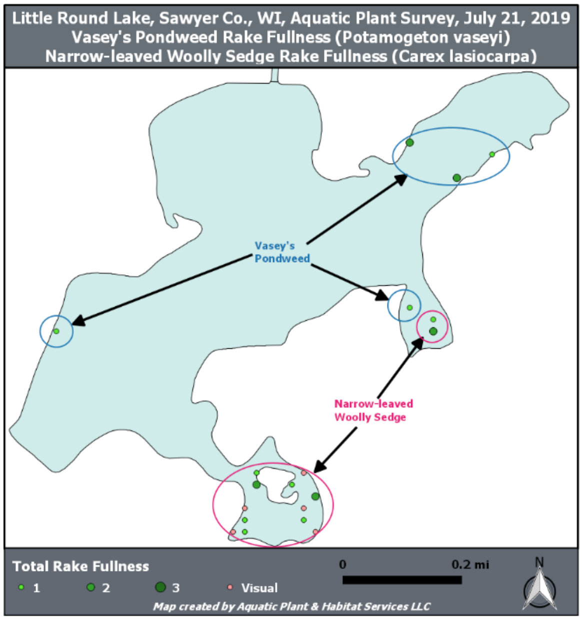

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Arrow arum (Peltandra virginica)
Slender Riccia (Riccia fluitans)
Slender Riccia
Arrow Arum
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

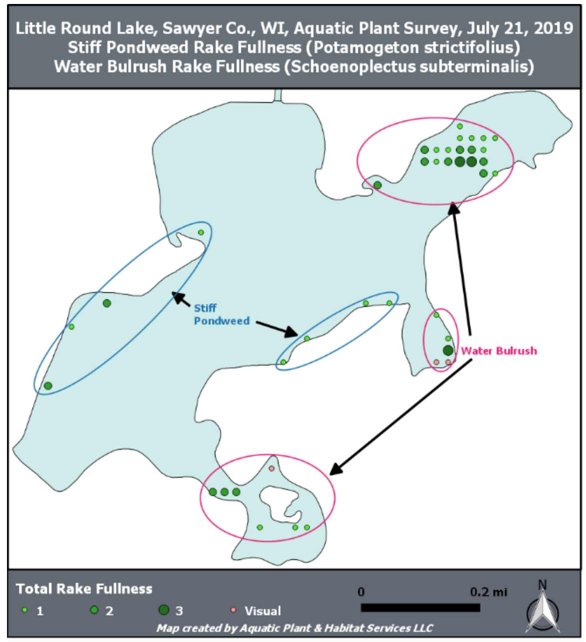

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Dwarf Watermilfoil Rake Fullness (Myriphyllum tenellum)
American Bur-reed Rake Fullness (Sparganium americanum)
All remaining illustrated sample points illustrated are Dwarf Watermilfoil
American Bur-reed
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

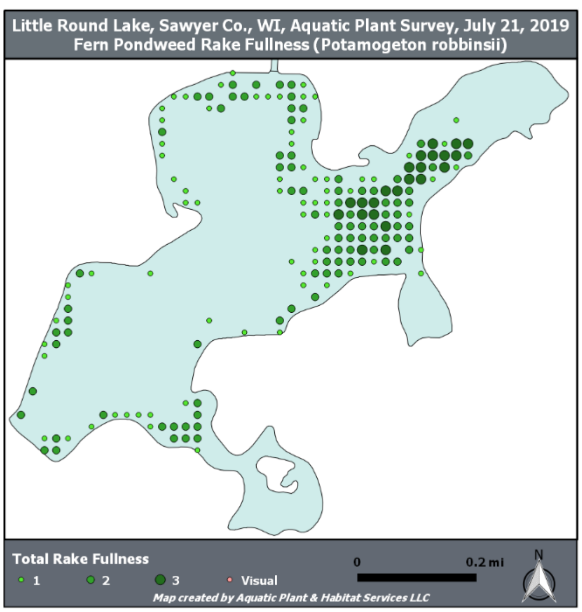

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Clasping-leaf Pondweed Rake Fullness (Potamogeton richardsonii)
White Water Lily Rake Fullness (Nymphaea odorata)
All remaining sample points illustrated are White Water Lily
Clasping-leaf Pondweed
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

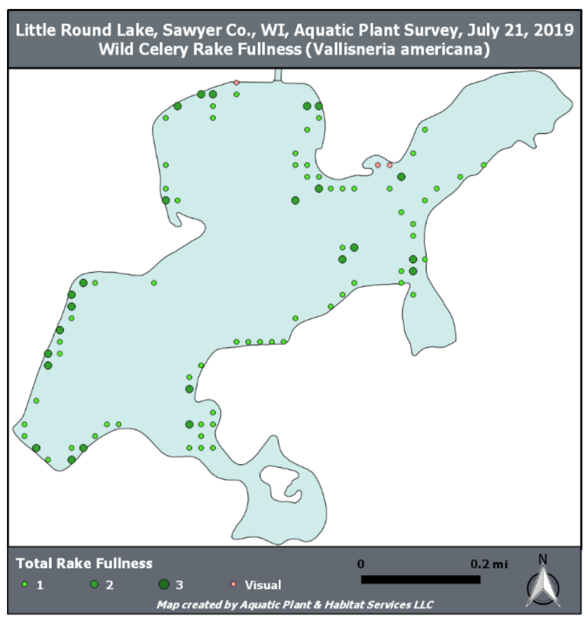

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Large-leaf Pondweed Rake Fullness (Potamogeton amplifolius)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

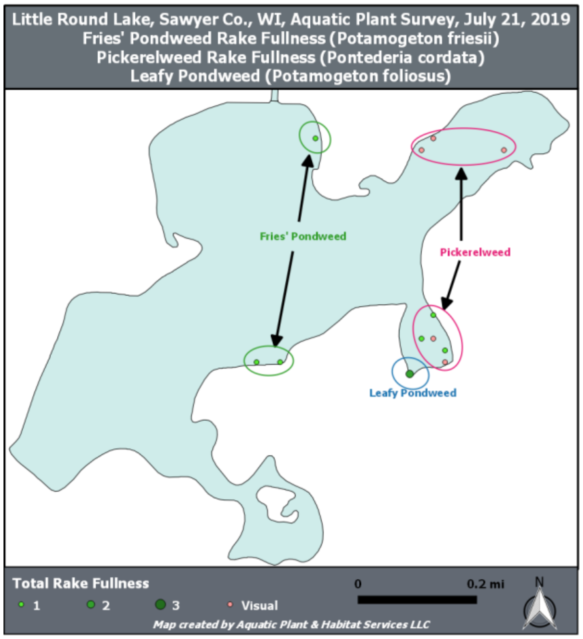

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Water Smartweed (Persicaria amphibia)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

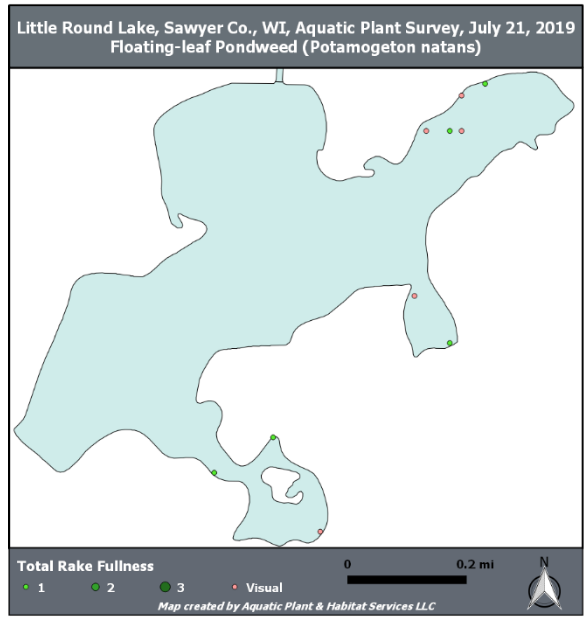

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Vasey's Pondweed Rake Fullness (Potamogeton vaseyi)
Narrow-leaved Woolly Sedge Rake Fullness (Carex lasiocarpa)
Vasey's Pondweed
Narrow-leaved Woolly Sedge
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

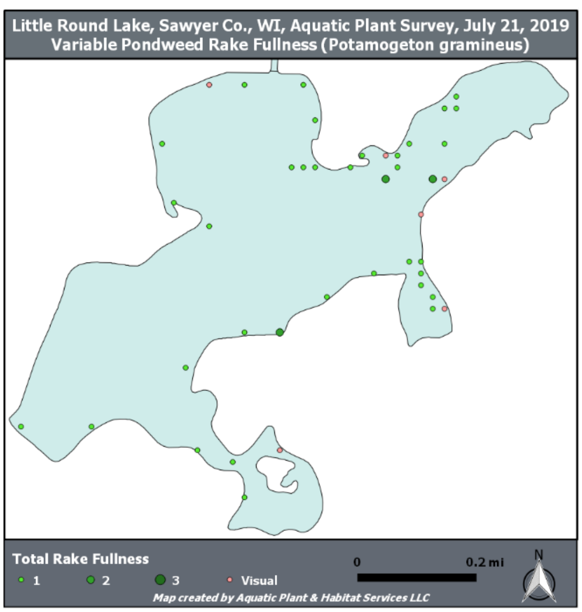

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Stiff Pondweed Rake Fullness (Potamogeton strictifolius)
Water Bulrush Rake Fullness (Schoenoplectus subterminalis)
Stiff Pondweed
Water Bulrush
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

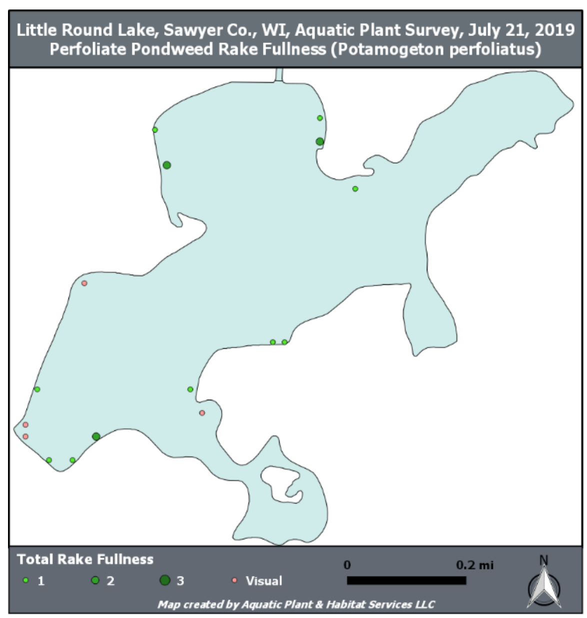

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Fern Pondweed Rake Fullness (Potamogeton robbinsii)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

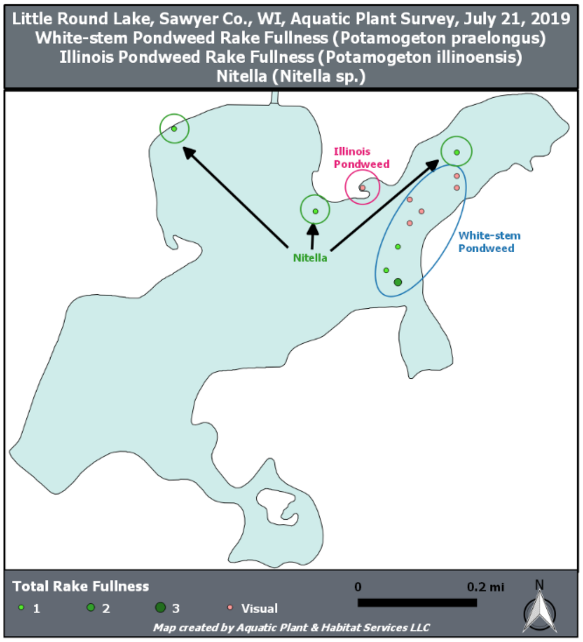

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Wild Celery Rake Fullness (Vallisneria americana)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

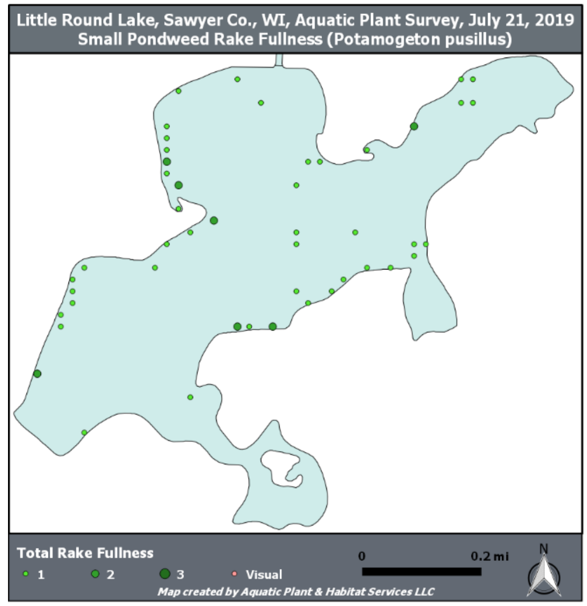

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Fries' Pondweed Rake Fullness (Potamogeton friesii)
Pickerelweed Rake Fullness (Pontederia cordata)
Leafy Pondweed (Potamogeton foliosus)
Fries' Pondweed
Pickerelweed
Leafy Pondweed
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

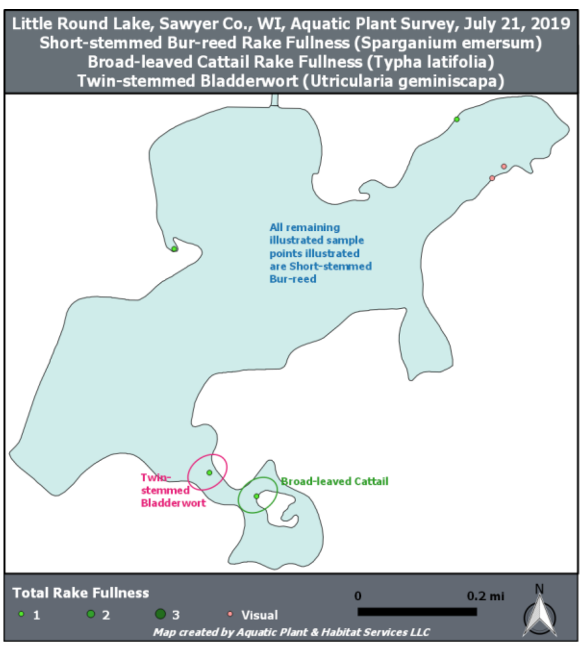

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Floating-leaf Pondweed (Potamogeton natans)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

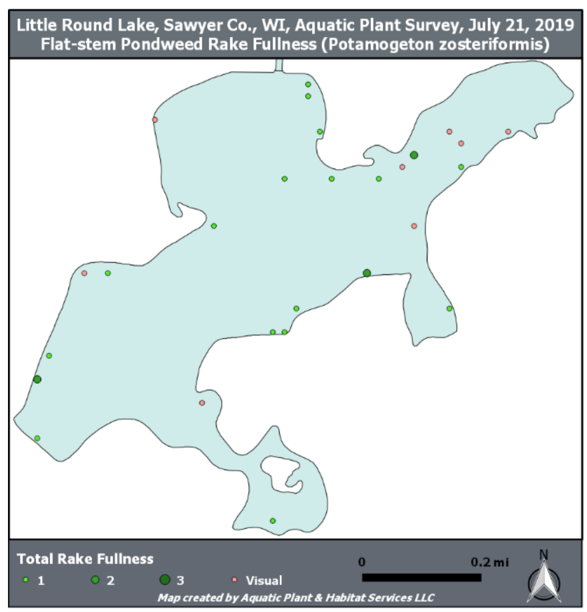

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Variable Pondweed Rake Fullness (Potamogeton gramineus)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

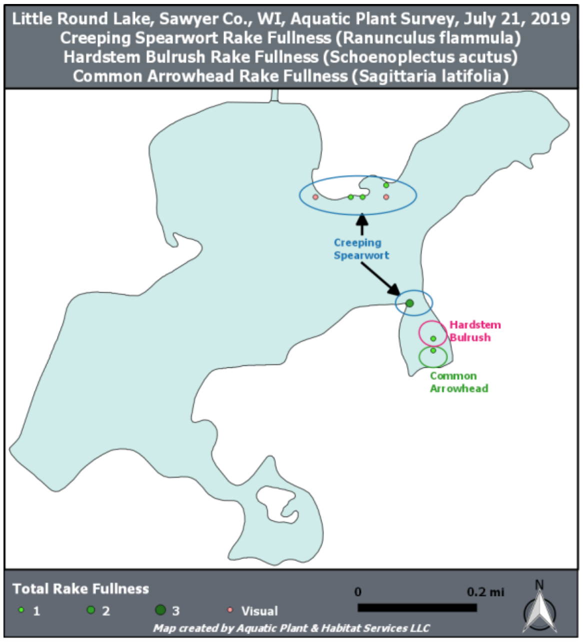

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Perfoliate Pondweed Rake Fullness (Potamogeton perfoliatus)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

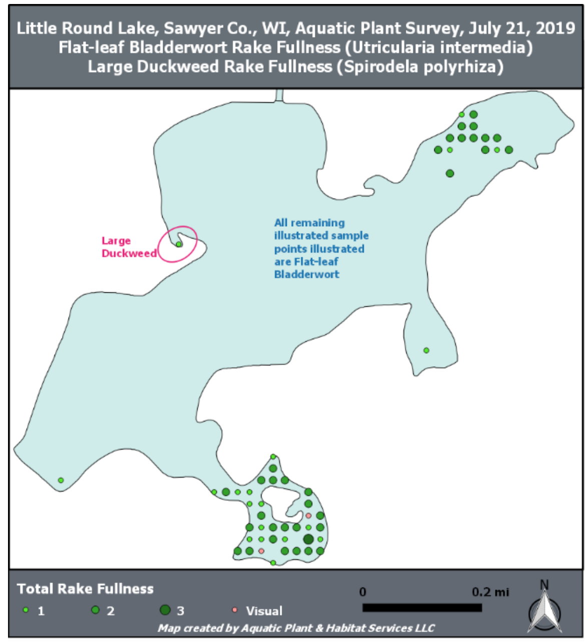

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
White-stem Pondweed Rake Fullness (Potamogeton praelongus)
Illinois Pondweed Rake Fullness (Potamogeton illinoensis)
Nitella (Nitella sp.)
Illinois Pondweed
White-stem Pondweed
Nitella
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

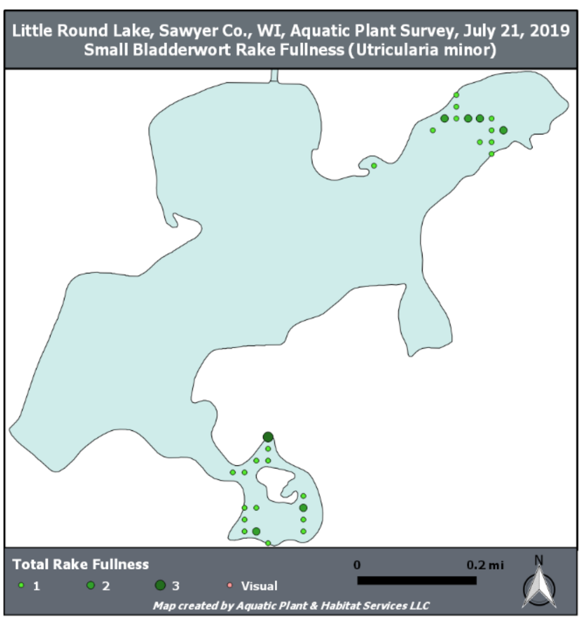

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Small Pondweed Rake Fullness (Potamogeton pusillus)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

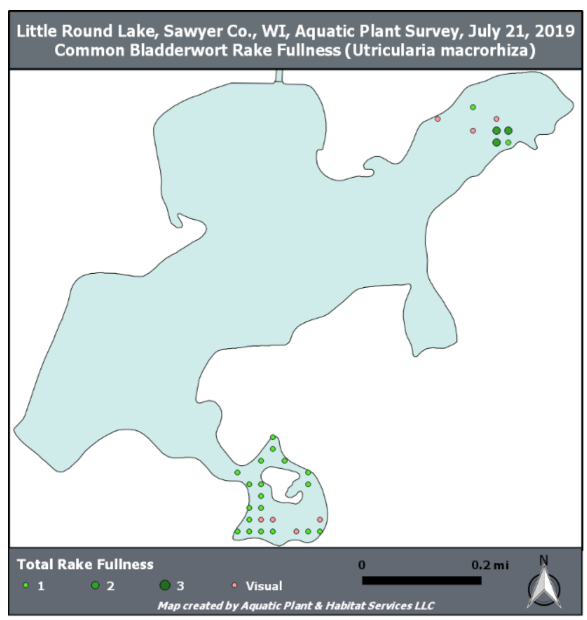

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Short-stemmed Bur-reed Rake Fullness (Sparganium emersum)
Broad-leaved Cattail Rake Fullness (Typha latifolia)
Twin-stemmed Bladderwort (Utricularia geminiscapa)
All remaining illustrated sample points illustrated are Short-stemmed Bur-reed
Twin-stemmed Bladderwort
Broad-leaved Cattail
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

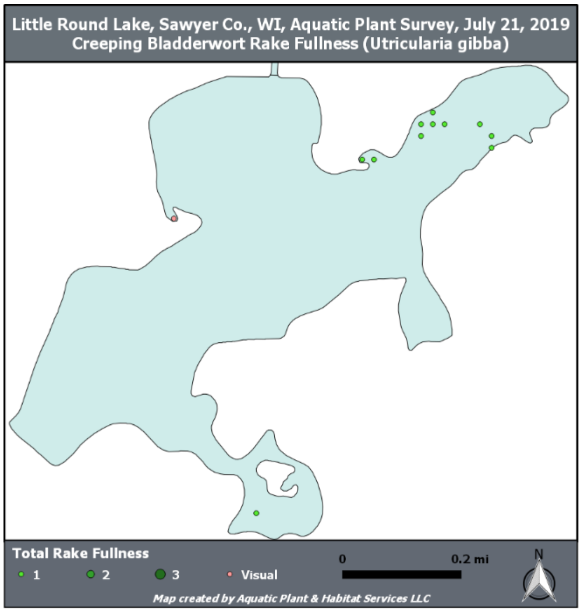

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Flat-stem Pondweed Rake Fullness (Potamogeton zosteriformis)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

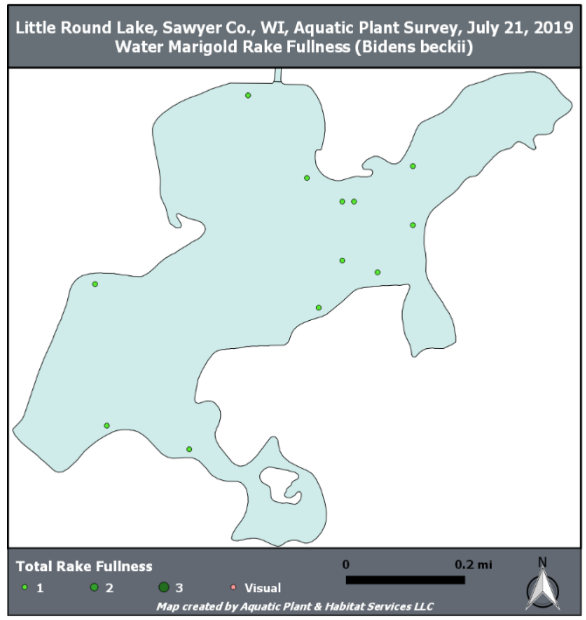

Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Creeping Spearwort Rake Fullness (Ranunculus flammula)
Hardstem Bulrush Rake Fullness (Schoenoplectus acutus)
Common Arrowhead Rake Fullness (Sagittaria latifolia)
Creeping Spearwort
Hardstem Bulrush
Common Arrowhead
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Flat-leaf Bladderwort Rake Fullness (Utricularia intermedia)
Large Duckweed Rake Fullness (Spirodela polyrhiza)
Large Duckweed
All remaining illustrated sample points illustrated are Flat-leaf Bladderwort
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Small Bladderwort Rake Fullness (Utricularia minor)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Common Bladderwort Rake Fullness (Utricularia macrorhiza)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Creeping Bladderwort Rake Fullness (Utricularia gibba)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC


Little Round Lake, Sawyer Co., WI, Aquatic Plant Survey, July 21, 2019
Water Marigold Rake Fullness (Bidens beckii)
Total Rake Fullness
1
2
3
Visual
0
0.2 mi
N
Map created by Aquatic Plant & Habitat Services LLC

32.0 Appendix E – APMP Approval Email

Round and Little Round Lakes Aquatic Plant Management Plan Review for Grant Eligibility
2 messages

Van Egeren, Scott J - DNR <Scott.VanEgeren@wisconsin.gov> Wed, Oct 28, 2020 at 8:53 AM
To: Jim Nancekivell <jim.nancekivell@gmail.com>, David Rutt <drutt@fawbushs.com>, Sara Hatleli <sarahatleli97@gmail.com>
Cc: "Mesalk, Tyler J - DNR" <tyler.mesalk@wisconsin.gov>, "Wolter, Max H - DNR" <Max.Wolter@wisconsin.gov>, Dan Tyrolt <Dan.Tyrolt@lco-nsn.gov>, Tom Connell <tconnell1000@gmail.com>

Hello David, Jim, and Sara,

I have reviewed the final draft of the Round and Little Round Lakes Aquatic Plant Management Plan (2020-2024) and determined that the education, monitoring, and management activities identified in the Implementation Plan are eligible for Surface Water Grants funding subject to the eligibility and application requirements of the Surface Water Grants program and specifically to the comments below.

I would note that under Management Goal 3, in the Management Strategy, that the approval of a specific AIS control proposal for grant eligibility will depend on DNR review of and discussions with RLPOA about the annual control strategy. DNR and RLPOA should consider the likelihood of effective management, the need for management, and also any unintended, non-target impacts. Your criteria for prioritizing EWM areas for control (Figure 28) and an annual meeting to discuss the control strategy for the coming year will facilitate DNR decisions on annual EWM control plans, however DNR cannot guarantee that a treatment proposal will always be approved for grant funding and/or permitted.

Please note that small-scale "spot" treatments with a slow-acting systemic herbicide (i.e. – 2,4-D) that will not result in sufficient concentration-exposure time to control the target species are not eligible activities for grant funding. Given our recent pre-application discussions I believe this email makes the activities in your current grant proposals eligible for Surface Water Grant funding for the 2021 grant cycle.

DNR comments on previous versions of the plan have been addressed as best as possible and I do not have further editorial comments on this draft.

Please let me know if you have questions about this or your pending grant applications. I will remind you that since November 1 falls on a weekend this year the final applications are due by the end of Monday, November 2.

Thank you all for your continuing efforts to protect and restore Round and Little Round Lakes!

Sincerely,

Scott Van Egeren