

Town of Winchester

Aquatic Plant Point Intercept Report: Rainbow and Tamarack Lake

July and August 2024

Prepared By: North Lakeland Discovery Center



SPECIES OF FISH			
	Abundant	Common	Present
Muskie	X		
N. Pike	X		
Walleye	X		
L. M. Bass	X		
S. M. Bass	X		
Panfish	X		
Trout			
Cisco	X		

WATER AREA	807.73
UNDER 3 FT.	5
OVER 20 FT.	45
MAX. DEPTH	53
TOTAL ALK.	37
VOLUME	14,258.28 A
MAIN SHORELINE	6.98
ISLAND SHORELINE	1.05

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INTRODUCTION

The following report provides the results and analysis of the aquatic vegetation found in Rainbow Lake and Tamarack Lake through point-intercept surveys conducted by the North Lakeland Discovery Center (NLDC) in Manitowish Waters. These surveys were funded by the Town of Winchester, in partnership with the Town of Winchester Lakes Committee, as well as through a WDNR surface water grant¹. The point-intercept surveys were conducted in July and August of 2024 during peak aquatic vegetation growth. The purpose of the aquatic plant point-intercept survey is to provide data regarding the species present, abundance, and species richness on each lake.

Aquatic plants are vital to the well-being of a lake ecosystem. They provide functions and services to ecosystems such as breeding habitat for a multitude of aquatic life, water purification, oxygen production, and soil stabilization. Additionally, they provide food and shelter for a variety of animals including moose, deer, waterfowl, fish, turtles, frog tadpoles, zooplankton, and macroinvertebrates. Despite their many contributions to lake health and the inhabitants, some people view plants as a nuisance. Although there are aquatic invasive species which can cause damage, most aquatic plants are essential for maintaining a healthy ecosystem (Skawinski 2022).

Aquatic invasive species are organisms that have established populations outside of their native range unassisted or by means of human introduction. In Northern Wisconsin, species such as curly-leaf pondweed (*Potamogeton crispus*) and Eurasian watermilfoil (*Myriophyllum*

¹ WDNR Grant # AEPP77224

spicatum) are present in the area lakes. These species have the potential to spread and impact recreation. However, Scientific literature suggests that invasive species, specifically Eurasian watermilfoil, only in some cases reach nuisance levels while many other populations will often stagnate or decline on unmanaged lakes (Nichols 1999, Kujawa et al. 2017). Point-intercept surveys are an effective way to detect aquatic invasive species and to provide data regarding the overall species presence, abundance and richness on each lake. At Rainbow Lake, 39 different species of aquatic plants and algae were found (Table 1). At Tamarack Lake, 30 different species of plants and algae were recorded (Table 2). The following report provides information on the point-intercept methods, vegetation found, and a summary of the results found.

METHODS

The point-intercept method used on Rainbow Lake and Tamarack Lake was developed by the Wisconsin Department of Natural Resources (WDNR) named as the “Recommended Baseline Monitoring of Aquatic Plants in Wisconsin: Sampling Design, Field and Laboratory Procedures, Data Entry and Analysis, and Applications” document. The point-intercept survey was conducted using a geo-referenced sampling grid, developed by the WDNR, input into GPS devices. Using a canoe or small boat and a GPS, each point was sampled. At each site, the plant community is surveyed with a pole rake sampler to determine species presence and rake fullness rating. The rake is dropped until it touches the lake bottom, spun around 3 times then is pulled up and given a rake fullness rating. This rating is an estimate of the total coverage of plants on the rake from 1-3. One is a few total plants, two is moderate total plants, and three is abundant total plants. When no plants were on the rake, the rake fullness rating was recorded as zero. Each

aquatic plant species on the rake was identified and given a rake fullness rating based on its prevalence on the rake. The overall rake fullness and individual plant rake fullness were both recorded on the data sheet.

Aquatic plant species that were not pulled up on the rake but were visible within six feet of the point were recorded as visual sightings (V) on the data sheet. Boat observations (BO) were species observed that were not raked or visually recorded within six feet of a point. The depth at each point was determined by a depth finder or by foot markings on the rake or rope and recorded on the data sheet. The sediment type (mucky, sandy, or rocky) of the lake bottom was determined by the feel of the rake or when sediment was pulled up and was recorded. The three rakes used were a 7-foot pole rake, an extendable 8-foot pole rake, and a 25-foot rope rake. The pole rakes were used at depths of about 12 feet or less and the rope rake was used at depths that were unable to be reached by the pole rake. During this survey, a depth finder was equipped to the boat to speed up the process in determining the depths of sites that were greater than maximum depth of plants.

Sites that were inaccessible due to various reasons were recorded in categories labeled unnavigable, terrestrial, shallow, rocks, dock, swim area, temporary obstacle, or no information. Visual observations of species within the six feet range were recorded (Hauxwell et al., 2010). Samples that were unidentifiable in the field were bagged and identified later using a microscope. Species that were found to be state endangered, threatened, or of special concern were collected and pressed to create an herbarium collection. Species of special concern are those that are becoming less common throughout its range and may soon become a threatened species. Threatened species are protected by law and are at risk of becoming endangered.

The WDNR provides an Excel spreadsheet called “The Aquatic Plant Survey Data Workbook” with formulas to generate statistics about the species found. All data collected from the survey on the field sheet is entered into the entry sheet on the Excel spreadsheet. Any boat surveys are input into the boat survey tab on the Excel sheet. Once all data is entered, the statistics are automatically generated. The statistics worksheet is broken down into individual species statistics and summary statistics. Individual species statistics include the frequency of occurrence of plants, relative frequency, number of sites with vegetation, average rake fullness, and number of visual sightings. The summary statistics include the total number of sites visited, total number of sites with vegetation, sites shallower than the maximum depth of plants, frequency of occurrence, Simpson’s Diversity Index, maximum depth of plants, sites sampled using pole or rope rake, average number of species per site, and species richness, including visuals. A maximum depth of plant colonization graph is automatically generated from the maximum depth data (Hauxwell et al., 2010).

The Simpson’s Diversity Index is an estimator of community diversity. It is based on the relative frequency of plants on the lake, and it is not impacted by the visual plant data. The Simpson’s Diversity Index is based on a scale of 0-1. The closer to 1, the more diverse the plant community (Hauxwell et al., 2010).

Finally, the worksheet calculates the Floristic Quality Index (FQI). The FQI metric is used to evaluate sampled plant communities’ closeness to an undisturbed plant community. In Wisconsin, there is a demand by the WDNR, local governments, and lakeshore riparian for considering the quality of lake plant communities. It becomes important in a variety of planning, zoning, sensitive area designation, and aquatic plant management decisions. Floristic quality

provides a standardized analysis technique, which aids in the development of regional and temporal trends of plant community “health”. The floristic quality (I) = the average coefficient of conservatism (C) multiplied by the square root of the number of species in the lake (\sqrt{N}). All native species are included in the number of species. Conservatism (C) is the likelihood of a plant occurring in a landscape that is not relatively impacted by settlement. The collection of values ranges from 0-10, 10 being the species that are most sensitive to disturbance. Plants are assigned a C value based on substrate preference, tolerance to turbidity, rooting strength, reproductive means, and water drawdown tolerance (Nichols 1999).

To understand the results, the I , C , and N are compared to state and regional values. Statewide, the median number of species per lake is 13, with ranges from 1-44 species. The C value had a median of six, with ranges from 2-9.5. Finally, the I value had a median value of 22.2, with ranges from 3-44.6. As C values can vary region to region, the state is broken into eight different ecoregions. The three lakes surveyed are all in the Northern Lakes and Forests Ecoregion. The median number of species in this ecoregion is 13. The median C value is 6.7 and the median I is 24.3 (Nichols 1999). Rainbow and Tamarack’s statistics will be compared to these values in the following sections of the report.

RESULTS

Rainbow

A total of 359 points were sampled on Rainbow, with vegetation present at 201 of those sites. Plants were found at depths up to 15 feet, while the overall maximum depth recorded was 37 feet. The frequency of occurrence of plants at sites shallower than maximum depth of plants

was 84.45% of sites, with an average of 2.58 species per site. Across all vegetated sites, the average number of species was 3.07 per site. The average rake fullness rating was 2.38, indicating moderate plant density, with distribution shown in Map 1. In total, 32 plant species were collected using the rake method, and 39 species were documented when including visual sightings. The high Simpson Diversity Index of 0.94 reflects a well-balanced and diverse aquatic plant community in Rainbow.

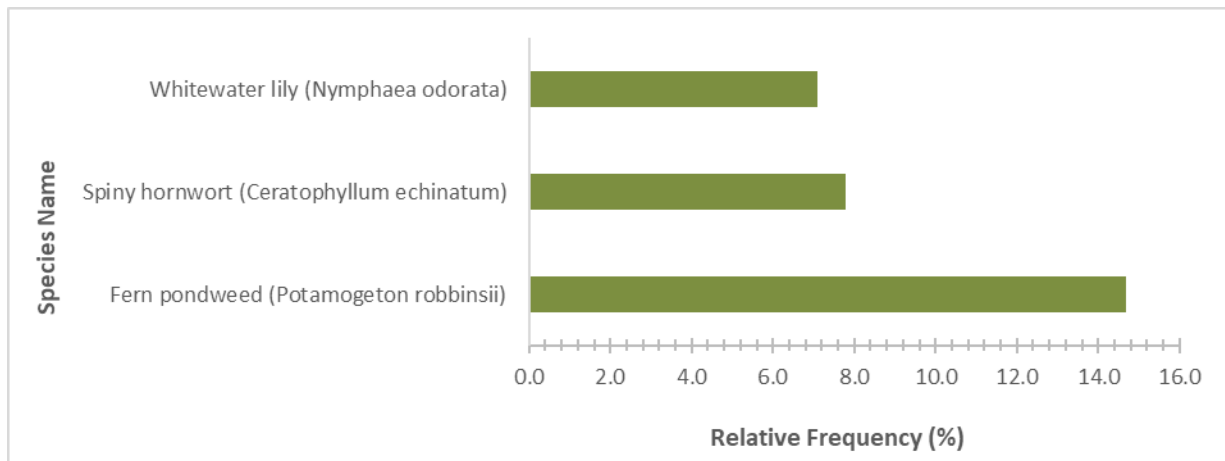


Figure 1: Rainbow Lake 2024 relative frequency (%) of occurrence of aquatic plant species collected in rake during the 2024 point-intercept survey.

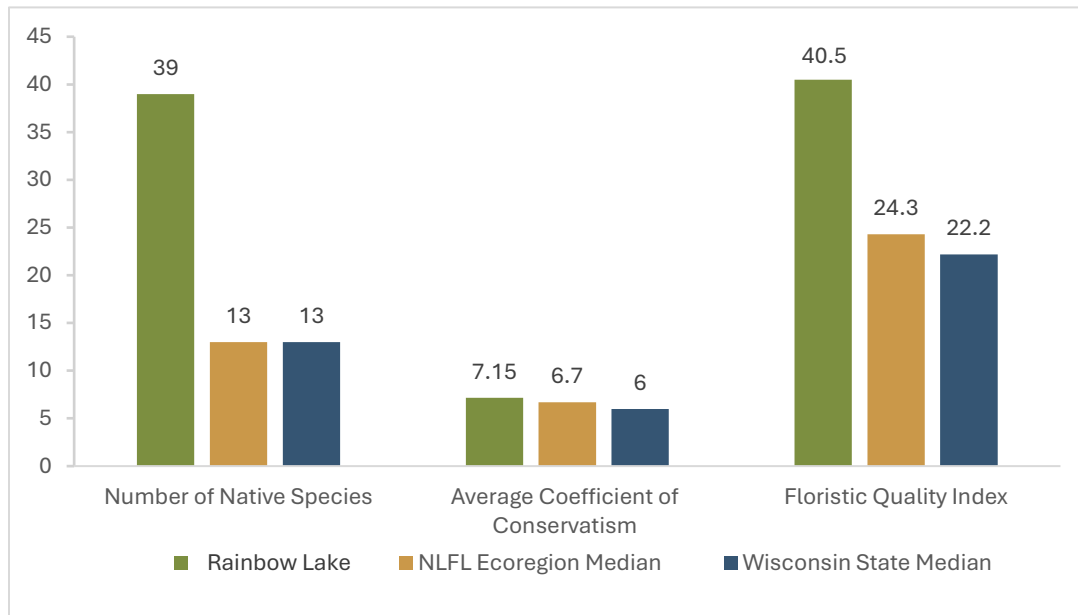


Figure 2: Floristic Quality Assessment of Rainbow Lake using data from 2024-point intercept survey. Analysis follows Nichols (1999).

The three most relatively frequent plants on Rainbow Lake are fern pondweed (*Potamogeton robbinsii*), spiny hornwort (*Ceratophyllum echinatum*), and white water lily (*Nymphaea odorata*). Fern Pondweed had a relative frequency of 45.27% and its distribution is shown on Map 2.. Spiny Hornwort had a relative frequency of 23.88% and its distribution is shown on Map 3. White water lily had a relative frequency of 21.89% and its distribution is shown on Map 4.

Fern pondweed (*Potamogeton robbinsii*) is a submerged aquatic plant found in most lakes with sandy or silty substrates. It is one of the most common aquatic plants found throughout the northern part of the state. Its stiff, dark green-brown leaves are arranged closely alternating along the stem, giving it a fern-like appearance. Fern pondweed has adenate stipules, meaning that the leaf clasps the stem for a small portion before sticking out to the side. This identification characteristic is most visible when peeling back a leaf from the stem and is useful in

distinguishing it from similar species since few other pondweeds have adenate stipules. Unlike many pondweeds, it never produces floating leaves. This species is sensitive to water quality degradation, thriving in unpolluted, low-nutrient environments, and serves as an indicator of healthy aquatic habitats (Skawinski 2022).

Spiny hornwort (*Ceratophyllum echinatum*) is a submergent species that has whorled and delicate leaves that can branch three to four times with small bristles on the margins. The leaves are light green to brown in color. The tip of the plant can be very bushy, and flowers are small and located on the leaf axils. Fruits are 2-2.5 cm long with spines but are rarely produced. This species looks most like coontail (*Ceratophyllum demersum*), a common native submergent plant. Spiny hornworts are often found in lakes and streams, preferring soft water, and are often adjacent to bogs. This is an uncommon species throughout the state (Skawinski 2022).

White water lily (*Nymphaea odorata*) is a common floating aquatic plant that is often found in soft and mucky sediment. The plant has large, green-purple leaves with a narrow notch from the edge of the plant to near center and has between six and twenty-seven veins from the petiole outward. White water lilies can be up to 30 cm in diameter and grow in water up to 2.5 meters deep, where the stem is red in color. White flowers with a yellow center commonly form in the summer. Each flower is floating and up to 19 cm wide with up to 43 petals. White water lilies do not have a preference in water type and are found growing in many lakes (Skawinski 2022).

Table 1. Rainbow Lake aquatic species list recorded in the 2024 survey.

Growth	Species	Common Name	Presence
Submergent	<i>Bidens beckii</i>	Water marigold	X
Floating	<i>Brasenia schreberi</i>	Watershield	X
Submergent	<i>Ceratophyllum demersum</i>	Coontail	V
Submergent	<i>Ceratophyllum echinatum</i>	Spiny hornwort	X
Submergent	<i>Chara sp.</i>	Muskgrasses	X
Submergent	<i>Chara braunii</i>	Muskgrasses	X
Submergent	<i>Chara globularis</i>	Muskgrasses	X
Submergent	<i>Elodea canadensis</i>	Common waterweed	X
Submergent	<i>Heteranthera dubia</i>	Water star-grass	X
Submergent	<i>Isoetes sp.</i>	Quillwort	X
Floating	<i>Lemna minor</i>	Small duckweed	V
Submergent	<i>Myriophyllum sibiricum</i>	Northern water-milfoil	X
Submergent	<i>Myriophyllum verticillatum</i>	Whorled water-milfoil	V
Submergent	<i>Najas flexilis</i>	Slender naiad	X
Submergent	<i>Nitella sp.</i>	Stonewort sp.	X
Floating	<i>Nuphar variegata</i>	Spatterdock	X
Floating	<i>Nymphaea odorata</i>	White water lily	X
Floating	<i>Persicaria amphibia</i>	Water smartweed	V
Emergent	<i>Pontederia cordata</i>	Pickerelweed	X
Submergent	<i>Potamogeton amplifolius</i>	Large-leaf pondweed	X
Submergent	<i>Potamogeton diversifolius</i>	Water-thread pondweed	V
Submergent	<i>Potamogeton epihydrus</i>	Ribbon-leaf pondweed	X
Submergent	<i>Potamogeton gramineus</i>	Variable pondweed	X
Submergent	<i>Potamogeton natans</i>	Floating-leaf pondweed	X
Submergent	<i>Potamogeton praelongus</i>	White-stem pondweed	X
Submergent	<i>Potamogeton pusillus</i>	Small pondweed	X
Submergent	<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed	X
Submergent	<i>Potamogeton robbinsii</i>	Fern pondweed	X
Submergent	<i>Potamogeton spirillus</i>	Spiral-fruited pondweed	V
Submergent	<i>Potamogeton vaseyi</i>	Vasey's pondweed	X
Submergent	<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	X
Emergent	<i>Schoenoplectus acutus</i>	Hardstem bullrush	X

Growth	Species	Common Name	Presence
Emergent	<i>Schoenoplectus subterminalis</i>	Water bulrush	X
Emergent	<i>Sparganium fluctuans</i>	Floating-leaf bur-reed	X
Emergent	<i>Sparganium sp.</i>	Bur-reed	V
Floating	<i>Spirodela polyrhiza</i>	Large duckweed	X
Submergent	<i>Utricularia gibba</i>	Creeping bladderwort	X
Submergent	<i>Utricularia intermedia</i>	Flat-leaf bladderwort	X
Submergent	<i>Utricularia minor</i>	Small bladderwort	X
Submergent	<i>Utricularia machrorhyza</i>	Common bladderwort	X
Submergent	<i>Vallisneria americana</i>	Water celery	X
Emergent	<i>Zizania palustris</i>	Northern wild rice	X

X = LOCATED ON RAKE DURING POINT INTERCEPT SURVEY

V = VISUAL; SEEN DURING SURVEY, BUT NEVER PICKED UP ON RAKE

BO = BOAT OBSERVATIONS; LOCALIZED OCCURANCES OF SPECIES OUTSIDE THE POINT-INTERCEPT GRID OR IN BETWEEN SAMPLING SITES.

Tamarack

A total of 187 points were sampled on Tamarack, with vegetation observed at 152 of those sites. Aquatic plants were found at depths up to 14 feet, while the overall maximum depth recorded was 30 feet. Within the sites shallower than the maximum depth of plants, the frequency of plant occurrence was 91.57%, though the average number of species per site in this zone was 0.19. Across all vegetated sites, the average species count was 2.40. The average rake fullness rating was 2.77, suggesting relatively dense vegetation, with its spatial distribution illustrated in Map 5. A total of 25 species were collected using the rake method, with 30 species documented overall when including visual sightings. The Simpson Diversity Index for Tamarack was 0.87, indicating slightly above average species diversity within the aquatic plant community.

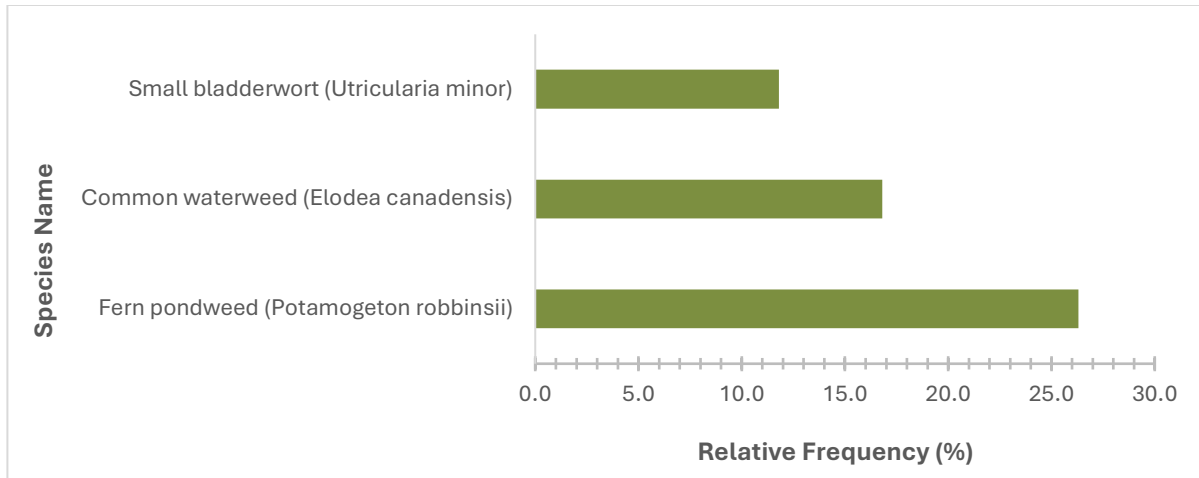


Figure 3: Tamarack Lake 2024 relative frequency (%) of occurrence of aquatic plant species collected in rake during the 2024 point-intercept survey.

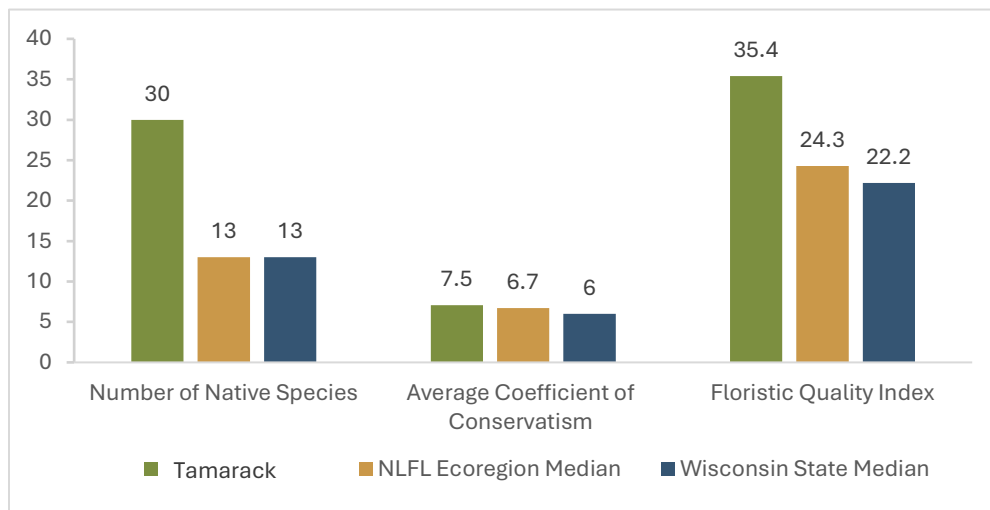


Figure 4: Floristic Quality Assessment of Tamarack Lake using data from 2024-point intercept survey. Analysis follows Nichols (1999).

The three most relatively frequent plants on Tamarack were fern pondweed (*Potamogeton robbinsii*), common waterweed (*Elodea canadensis*), and small bladderwort (*Utricularia minor*).

Fern pondweed had a relative frequency of 69.08% and its distribution is shown on Map 6.

Common waterweed had a relative frequency of 44.08% and its distribution is shown on Map 7.

Small bladderwort had a relative frequency of 30.92% and its distribution is shown on Map 8.

Fern pondweed (*Potamogeton robbinsii*) is a submerged aquatic plant found in most lakes with sandy or silty substrates. It is one of the most common aquatic plants found throughout the northern part of the state. Its stiff, dark green-brown leaves are arranged closely alternating along the stem, giving it a fern-like appearance. Fern pondweed has adenate stipules, meaning that the leaf clasps the stem for a small portion before sticking out to the side. This identification characteristic is most visible when peeling back a leaf from the stem and is useful in distinguishing it from similar species since few other pondweeds have adenate stipules. Unlike many pondweeds, it never produces floating leaves. This species is sensitive to water quality degradation, thriving in unpolluted, low-nutrient environments, and serves as an indicator of healthy aquatic habitats (Skawinski 2022).

Common waterweed (*Elodea canadensis*) is a submergent species that has flat, lance shaped leaves that are pointed, with no leaf stalk. The leaves whorl in sets of three. It is often bushier near the top of each branch. Tiny white or pink 3 petaled flowers are produced on a long, thread-like stalk that reaches the water's surface. This species prefers soft substrates and is found in mucky shallow or deep clear water (Skawinski 2022).

Small bladderwort (*Utricularia minor*) stands out as a unique aquatic plant. Often present in lakes that have very soft waters and low nutrients. This plant is adapted to being carnivorous and has small traps along the axils of its leaflets that capture micro invertebrates. Small bladderwort is a free-floating plant that often tangles itself throughout the underside of water lilies. Its thread like stem has finely divided feather-like leaves that hold numerous small

bladders. Small bladderwort may often look like and grow alongside its closest relative, the common bladderwort. The size discrepancy and small bladderwort having less divisions in the leaf are the best ways to separate the two species (Skawinski 2022).

Table 2: Tamarack Lake aquatic species list recorded in the 2024 survey.

Growth	Species	Common Name	Presence
Submergent	<i>Bidens beckii</i>	Water marigold	X
Floating	<i>Brasenia schreberi</i>	Watershield	V
Submergent	<i>Ceratophyllum demersum</i>	Coontail	V
Submergent	<i>Ceratophyllum echinatum</i>	Spiny hornwort	X
Submergent	<i>Chara</i>	Muskgrasses	X
Emergent	<i>Dulichium arundinaceum</i>	Three-way sedge	X
Submergent	<i>Elodea canadensis</i>	Common waterweed	X
Submergent	<i>Isoetes sp.</i>	Quillwort	V
Floating	<i>Lemna minor</i>	Small duckweed	V
Floating	<i>Lemna triscula</i>	Forked duckweed	V
Submergent	<i>Myriophyllum sibiricum</i>	Northern water-milfoil	X
Submergent	<i>Nitella sp.</i>	Stonewort sp.	X
Floating	<i>Nuphar variegata</i>	Spatterdock	X
Floating	<i>Nymphaea odorata</i>	White water lily	X
Floating	<i>Persicaria amphibia</i>	Water smartweed	V
Emergent	<i>Pontederia cordata</i>	Pickerelweed	X
Submergent	<i>Potamogeton amplifolius</i>	Large-leaf pondweed	X
Submergent	<i>Potamogeton epihydrus</i>	Ribbon-leaf pondweed	X
Submergent	<i>Potamogeton friesii</i>	Fries' pondweed	V
Submergent	<i>Potamogeton gramineus</i>	Variable pondweed	X
Submergent	<i>Potamogeton obtusifolius</i>	Blunt-leaf pondweed	X
Submergent	<i>Potamogeton pusillus</i>	Small pondweed	X
Submergent	<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed	X
Submergent	<i>Potamogeton robbinsii</i>	Fern pondweed	X
Submergent	<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	X
Floating	<i>Spirodela polyrhiza</i>	Large duckweed	V
Submergent	<i>Utricularia gibba</i>	Creeping bladderwort	X
Submergent	<i>Utricularia minor</i>	Small bladderwort	X
Submergent	<i>Utricularia vulgaris</i>	Common bladderwort	X
Submergent	<i>Vallisneria americana</i>	Water celery	X

X = LOCATED ON RAKE DURING POINT INTERCEPT SURVEY

V = VISUAL; SEEN DURING SURVEY, BUT NEVER PICKED UP ON RAKE

BO = BOAT OBSERVATIONS; LOCALIZED OCCURANCES OF SPECIES OUTSIDE THE POINT-INTERCEPT GRID OR IN BETWEEN SAMPLING SITES.

CONCLUSION

The aquatic vegetation surveys conducted on Rainbow Lake and Tamarack Lake in the summer of 2024 provide a comprehensive understanding of the plant communities inhabiting these water bodies. Both lakes exhibited strong species richness and diversity, with Rainbow Lake supporting 39 documented species and Tamarack Lake supporting 30. These figures surpass the regional and statewide medians, reflecting the ecological quality and relative health of both aquatic systems.

Analysis of the data collected from the plant point-intercept survey conducted on Rainbow Lake indicates that it contains a relatively healthy plant community, and no aquatic invasive species were detected. Rainbow Lake's floristic quality index value of 40.5 is higher than the state and regional means. Rainbow Lake also has a conservatism value of 7.15 out of 10. These values indicate a high florist integrity and a lower sensitivity to changes in the proportion and distribution of vegetation. Tamarack Lake's floristic quality index value of 35.4 is higher than the state and regional means. Tamarack Lake also has a conservatism value of 7.5 out of 10. These values indicate a higher florist integrity and a lower sensitivity to changes in the proportion and distribution of vegetation. It is important to note that the FQI can be impacted by both the size and the heterogeneity of the lake (Bernthal 2003).

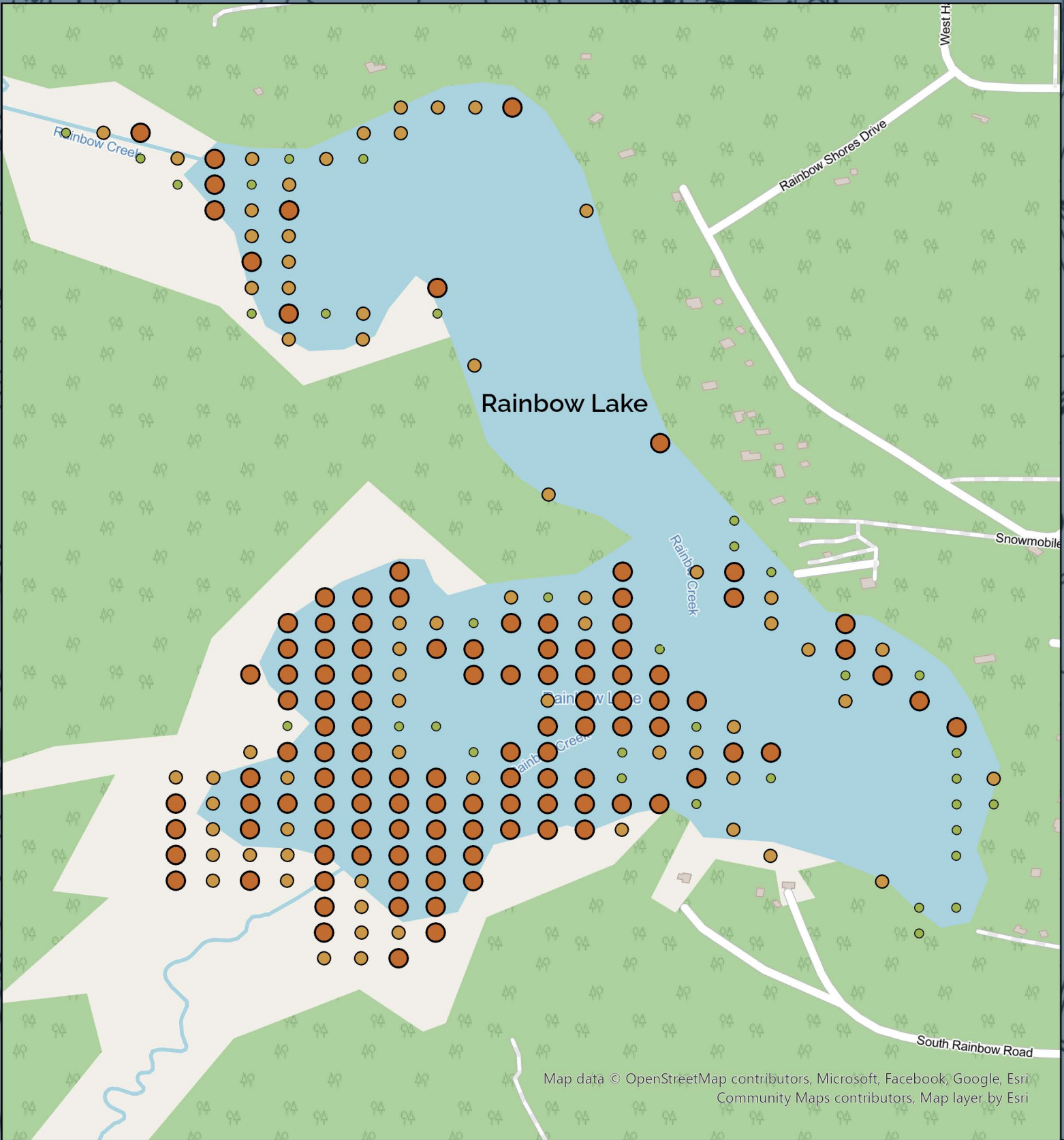
Lastly, Rainbow Lake has a Simpson's diversity index of 0.94 and Tamarack has an index value of 0.87. The closer the diversity index is to 1, the more species diversity and even distribution of aquatic plants. A Simpson's diversity index of 0.66 or greater concludes that the aquatic plant community of Rainbow Lake and Tamarack Lake is above average species richness

and evenness. Both lakes are classified as mesotrophic, having a weighted average trophic state index that is higher than the median value for lakes in the Northern Lakes and Forests ecoregion. In both lakes, fern pondweed emerged as the most relatively frequent species, accompanied by other important natives such as white water lily and common waterweed. The presence of sensitive native species, such as fern pondweed and spiny hornwort, along with the absence of dominant invasive species, indicates that both lakes maintain relatively undisturbed aquatic environments. The floristic quality metrics generated from this survey will serve as valuable baselines for future monitoring and inform ongoing aquatic management decisions.

Ultimately, these surveys not only fulfill their role in documenting species presence and abundance but also support the Town of Winchester's broader goals of preserving water quality, biodiversity, and ecological integrity. Continued monitoring using standardized point-intercept methods will be essential to track changes, detect invasive species early, and guide effective lake stewardship moving forward.

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Rainbow Lake

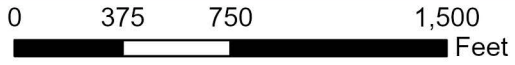
Town of Winchester
Vilas County, Wisconsin

Total Rake Fullness

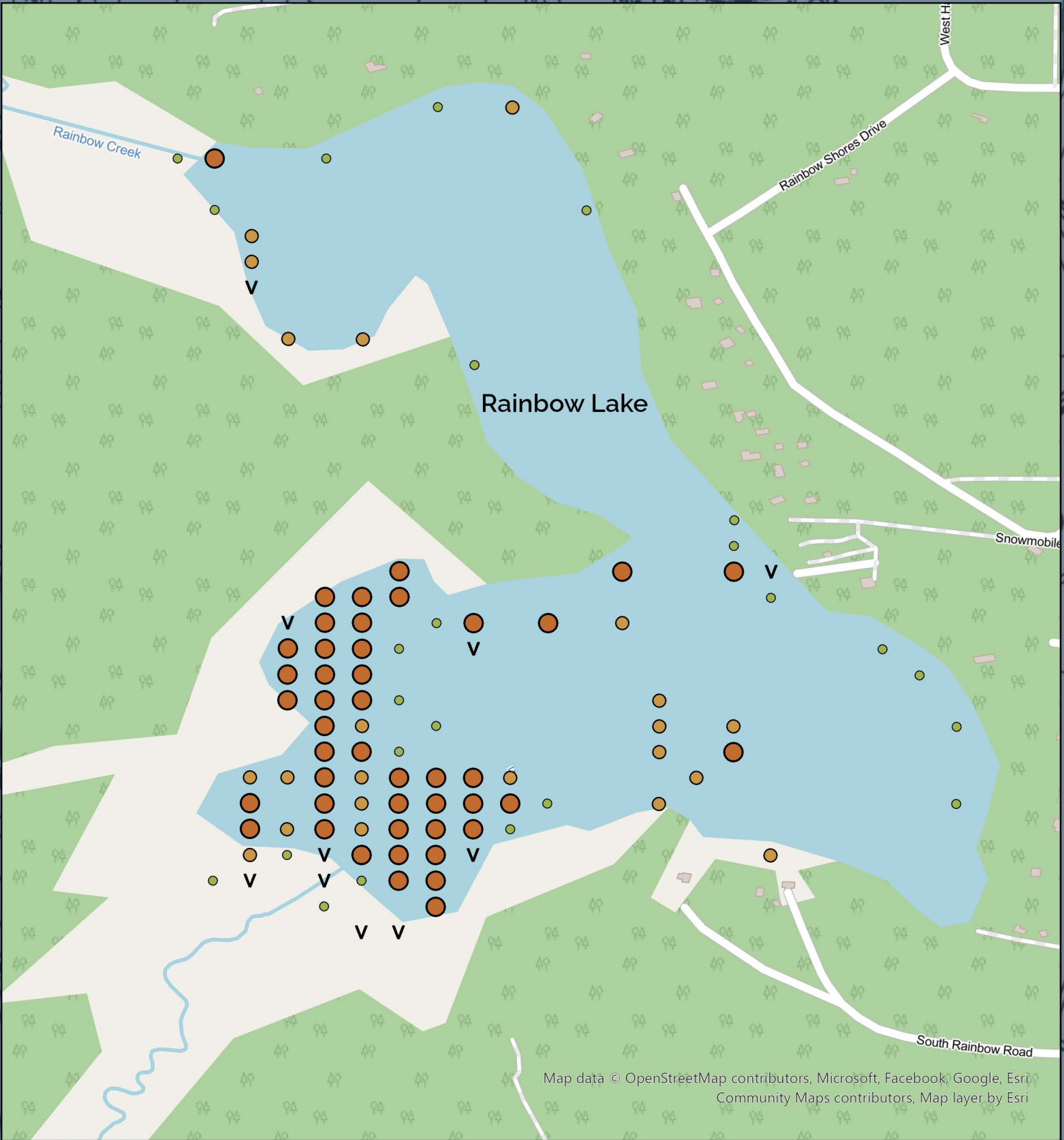
07/18/24 - 07/31/24

Legend
Total Rake Fullness

- 1
- 2
- 3



14006 Discovery Lane
Manitowish Waters, WI
www.discoverycenter.net



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Rainbow Lake

Town of Winchester
Vilas County, Wisconsin

Distribution of Plant Species
Fern Pondweed
(*Potamogeton robbinsii*)

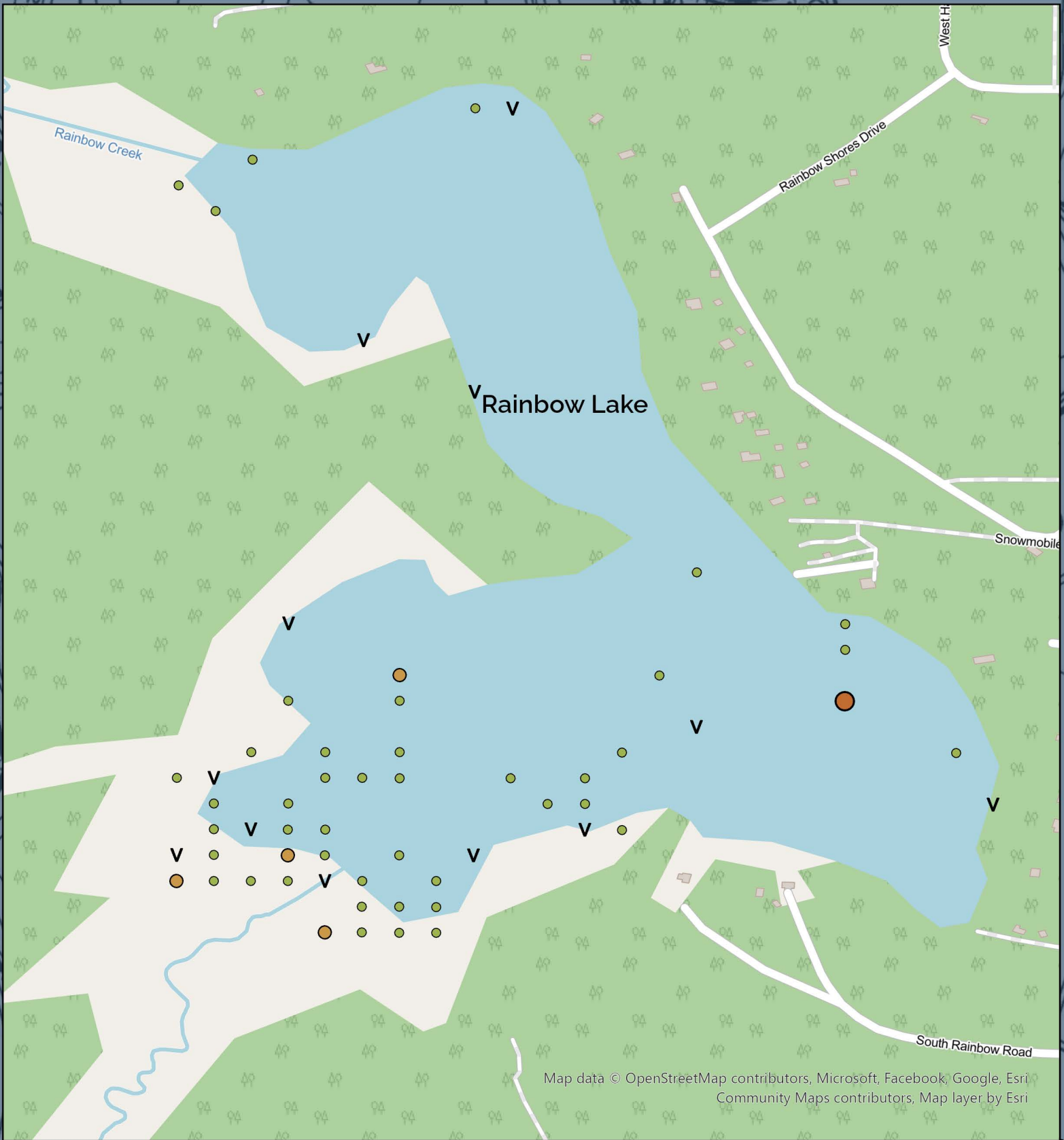
07/18/24 - 07/31/24

Legend
Total Rake Fullness

- - 1
- - 2
- - 3
- V** - Visual from boat



14006 Discovery Lane
Manitowish Waters, WI
www.discoverycenter.net



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Rainbow Lake

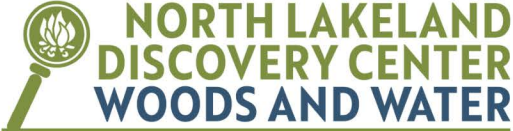
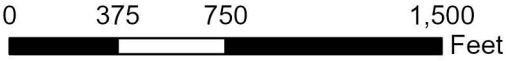
Town of Winchester
Vilas County, Wisconsin

Distribution of Plant Species
Spiny Hornwort
(*Ceratophyllum echinatum*)

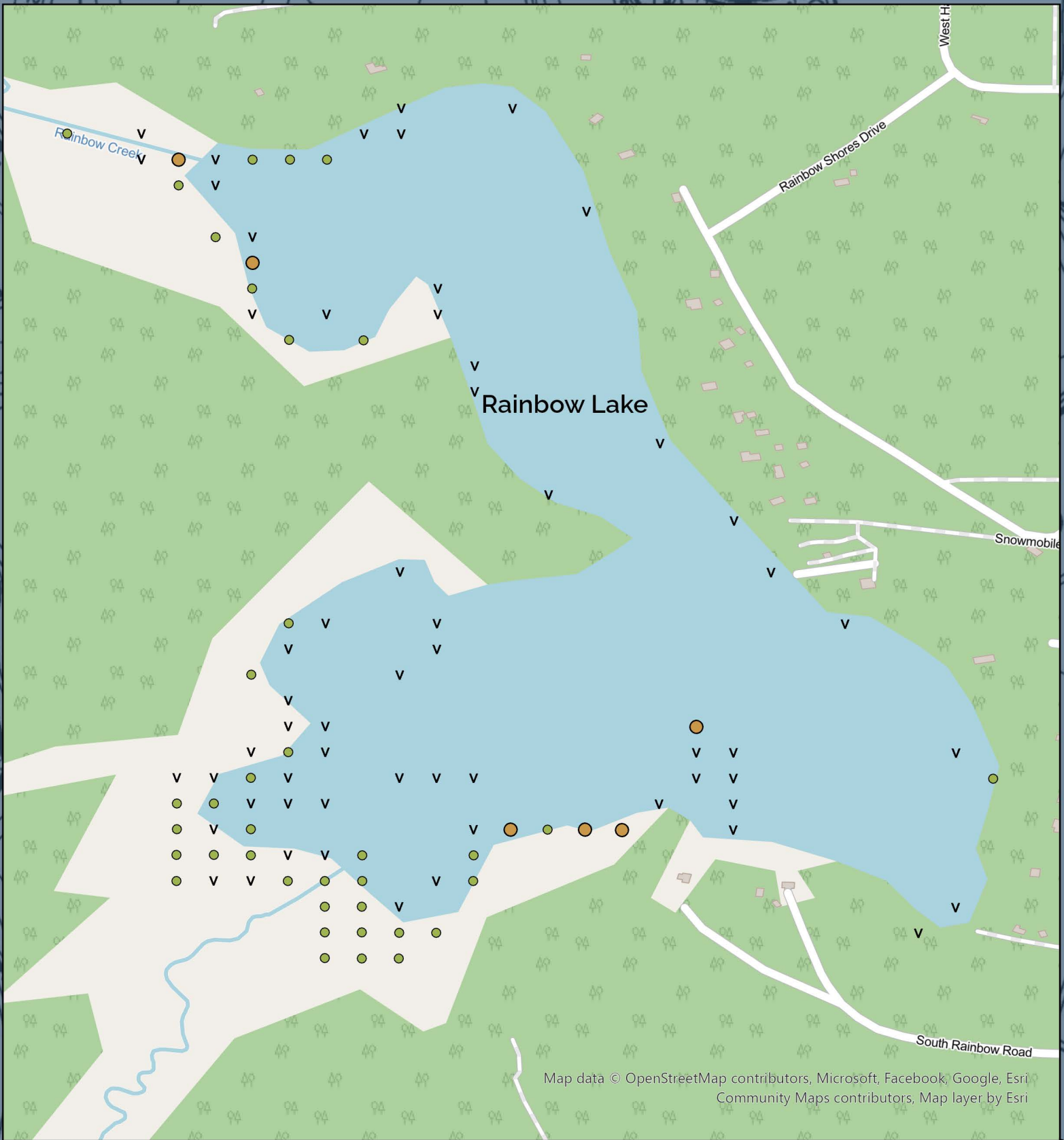
07/18/24 - 07/31/24

Legend
Total Rake Fullness

- - 1
- - 2
- - 3
- V** - Visual from boat



14006 Discovery Lane
Manitowish Waters, WI
www.discoverycenter.net



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Community Maps contributors, Map layer by Esri

Rainbow Lake

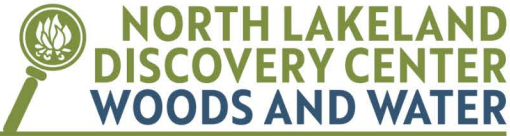
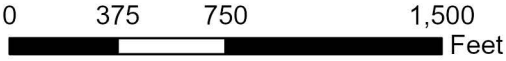
Town of Winchester
Vilas County, Wisconsin

Distribution of Plant Species
White Water Lily
(*Nymphaea odorata*)

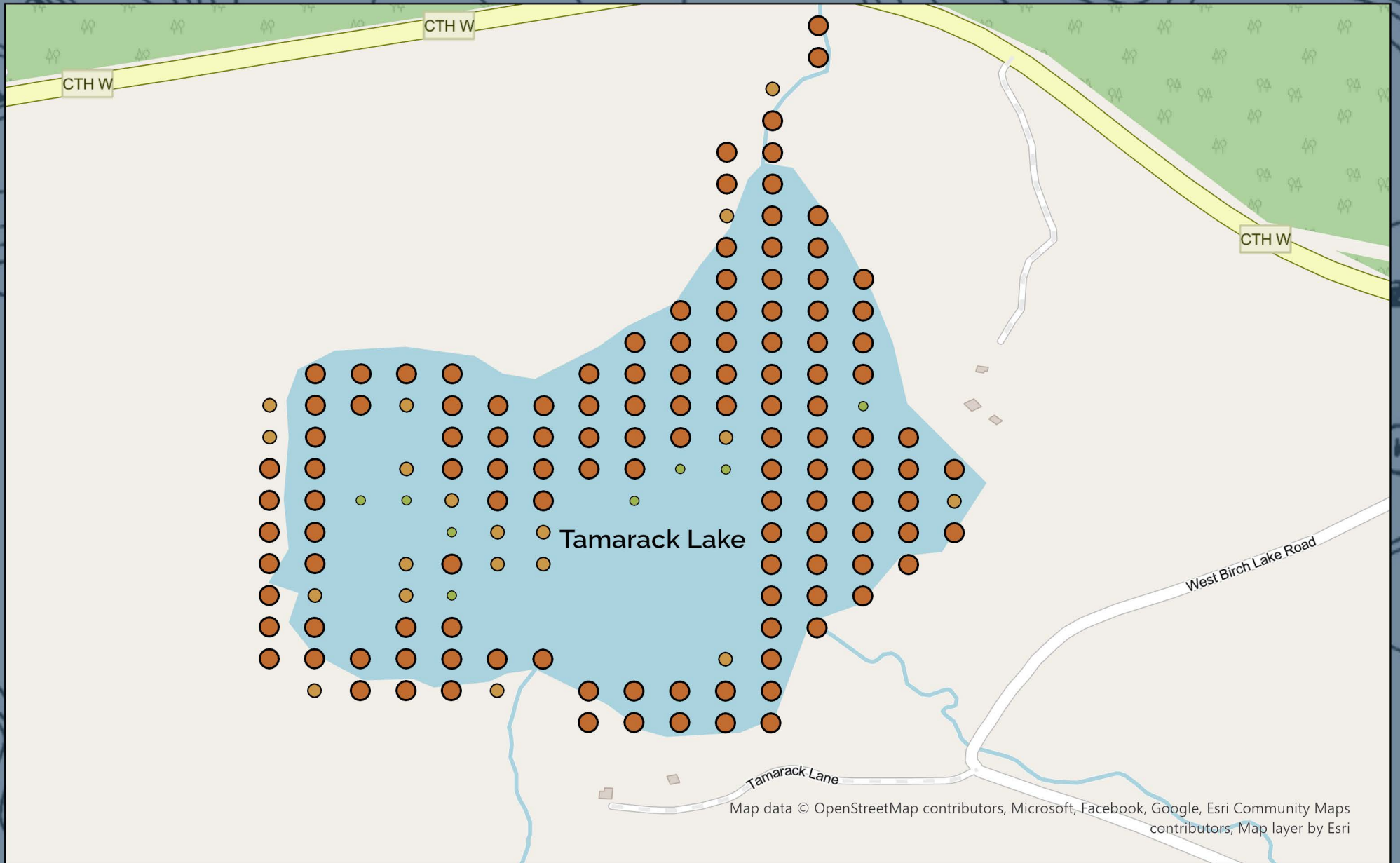
07/18/24 - 07/31/24

Legend
Total Rake Fullness

- - 1
- - 2
- - 3
- V - Visual from boat



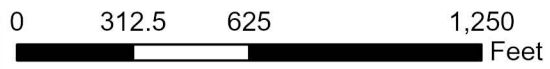
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Manitowish Waters, WI
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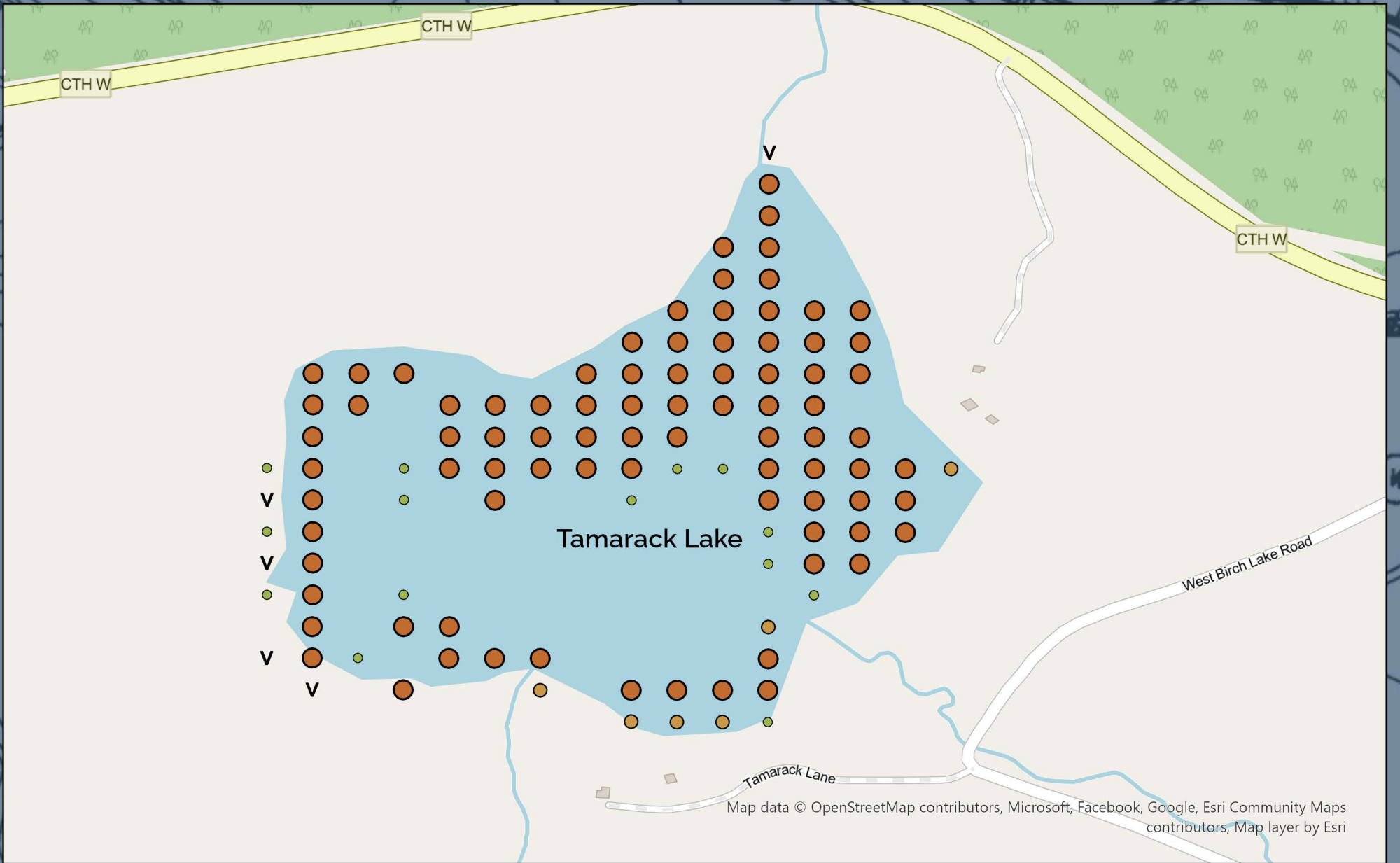
Tamarack Lake
 Town of Winchester
 Vilas County, Wisconsin
Total Rake Fullness
 07/16/24 - 07/17/24

Legend
 Total Rake Fullness

- - 1
- - 2
- - 3



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 Manitowish Waters, WI
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Tamarack Lake
 Town of Winchester
 Vilas County, Wisconsin
Distribution of Plant Species
Fern Pondweed
 (*Potamogeton robbinsii*)
 07/16/24 - 07/17/24

Legend
Total Rake Fullness

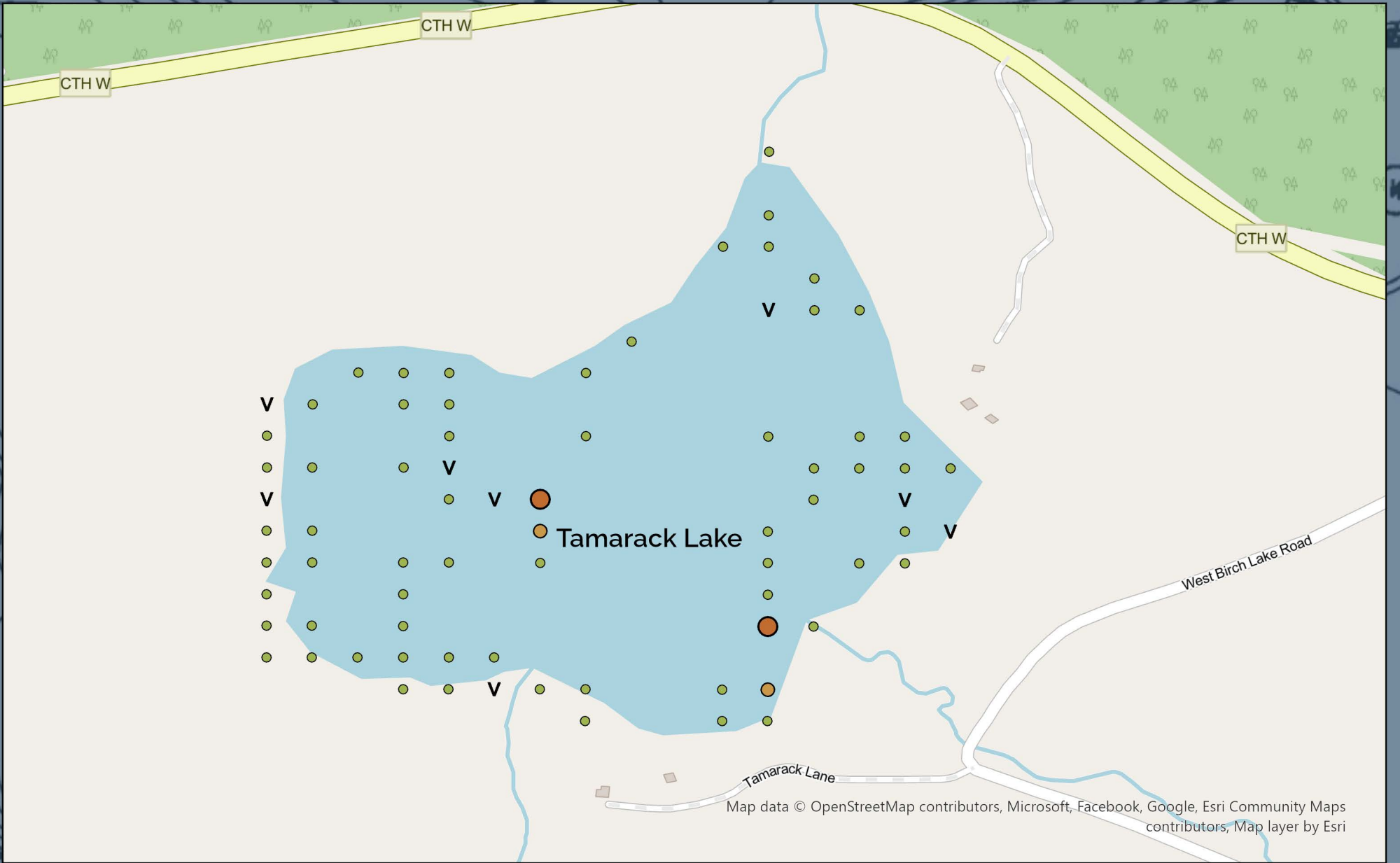
- - 1
- - 2
- - 3
- V - Visual from boat

0 312.5 625 1,250 Feet

Compass rose showing North (N), South (S), East (E), and West (W).

**NORTH LAKELAND
 DISCOVERY CENTER
 WOODS AND WATER**

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 Manitowish Waters, WI
www.discoverycenter.net

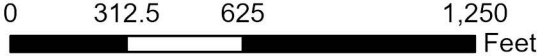


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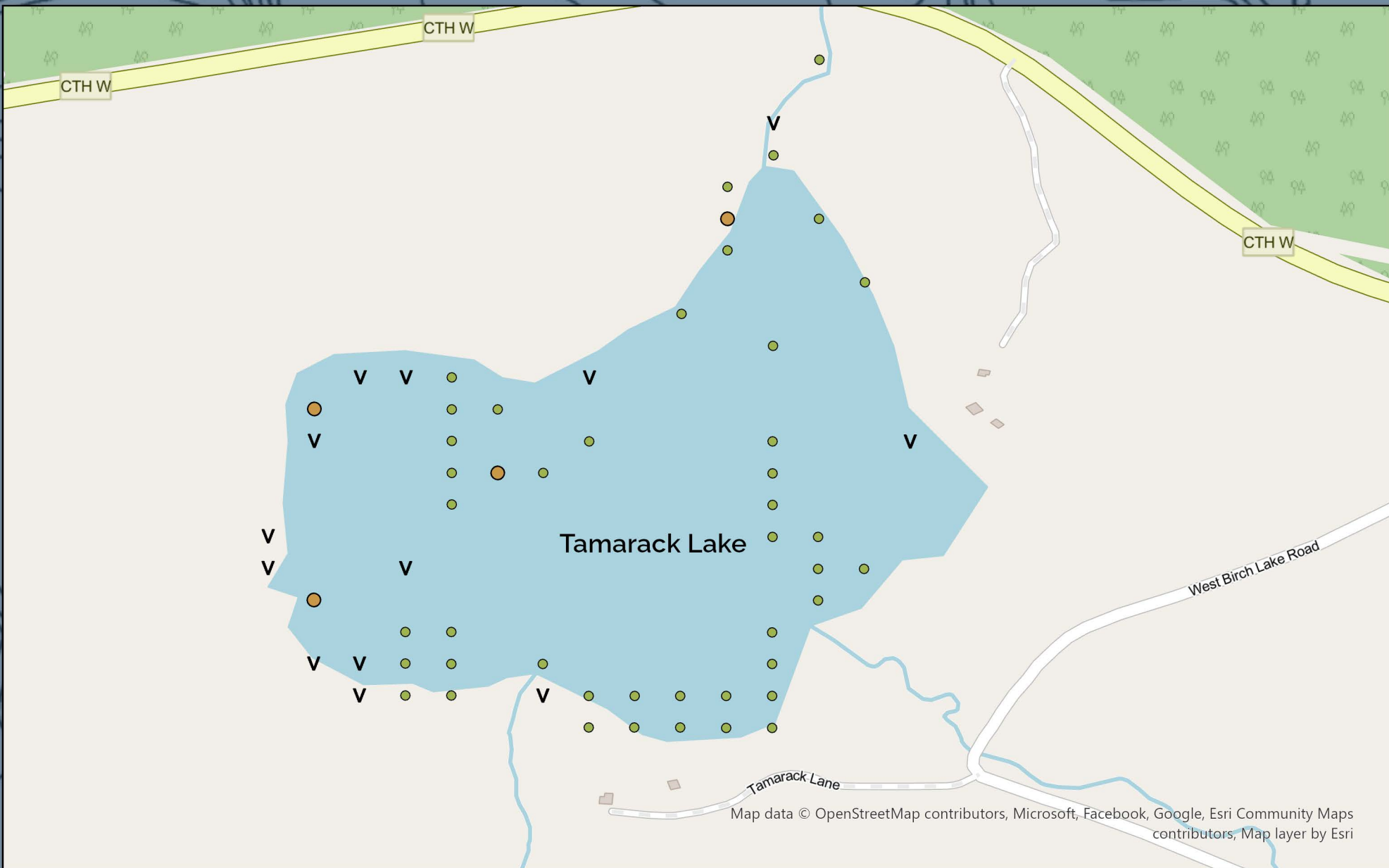
Tamarack Lake
 Town of Winchester
 Vilas County, Wisconsin
Distribution of Plant Species
Common Waterweed
(Elodea canadensis)
 07/16/24 - 07/17/24

Legend
Total Rake Fullness

- - 1
- - 2
- - 3
- V - Visual from boat



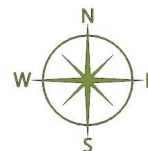
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Tamarack Lake
 Town of Winchester
 Vilas County, Wisconsin
Distribution of Plant Species
Small Bladderwort
(Utricularia minor)
 07/16/24 - 07/17/24

Legend
Total Rake Fullness

- - 1
- - 2
- - 3
- V - Visual from boat



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