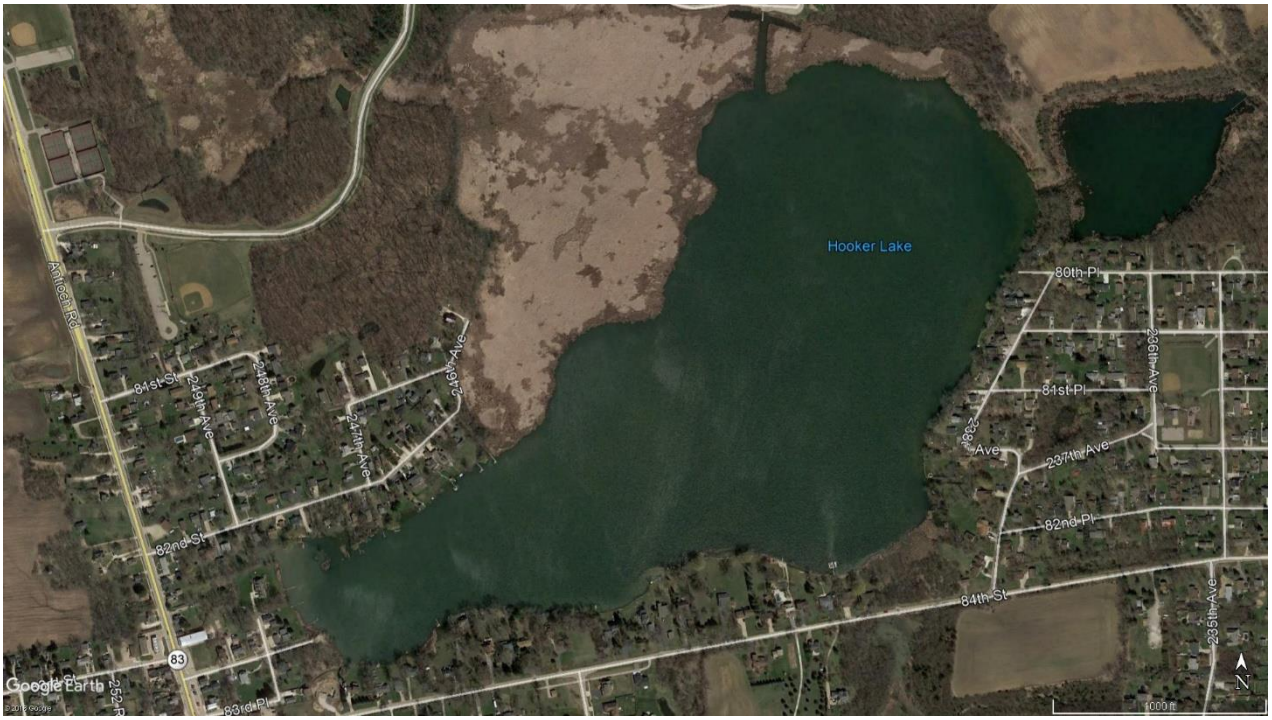
2025 Point-Intercept Survey Results

Hooker Lake



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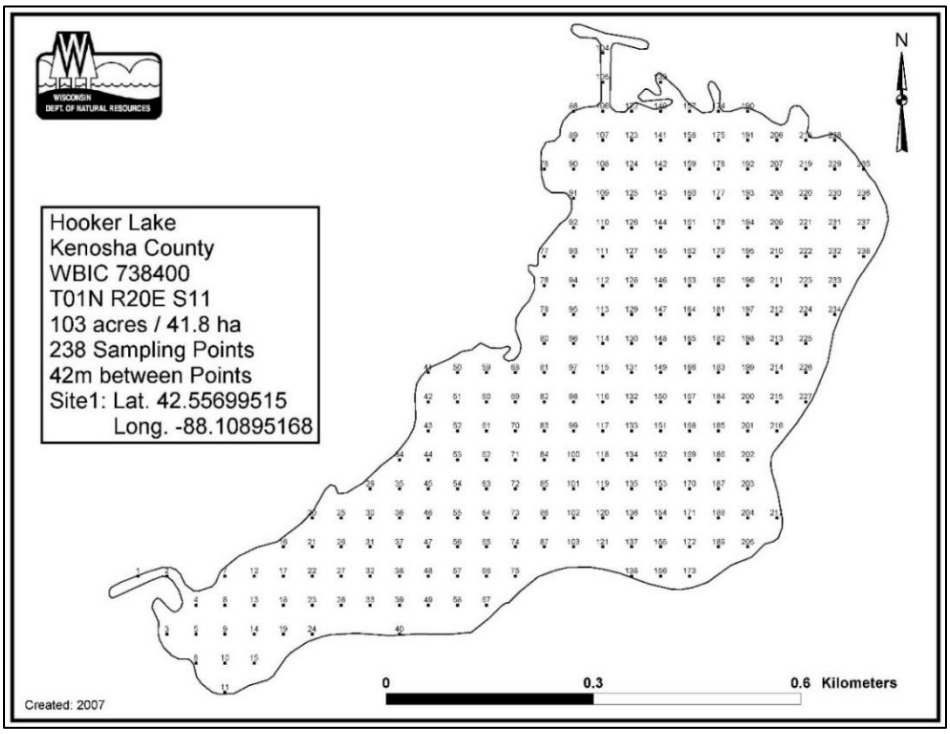
2025 Hooker Lake Plant Survey Results

The 2025 aquatic plant survey was requested by the Hooker Lake Management District as a tool to quantify the 2025 Aquathol K and ProcellaCOR EC treatment and track changes in the plant community. It was conducted using some guidelines adopted by the WDNR for point-intercept survey methods. This method utilizes a grid system that considers the size and morphology of the lake. For the survey, the 238 WDNR established points (Figure 1) were transferred to a Garmin GPSMAP64 GPS unit before field sampling. At each established point, depth and substrate data at sites less than 15' deep were taken with a 15' graduated pole while sites over 15' deep were measured with a Lowrance sonar unit. Plant data was collected with a double headed rake on a 15' pole or a double headed rake on a rope. Data collection included depth, substrate type, species present, species density, overall rake density and any visuals of species located within a 6-foot radius of the boat. For emergent species, a visual was recorded for each point closest to shore. Ultimately, data was used to calculate frequency of occurrence, relative frequency of occurrence, average rake density, total sites with vegetation, maximum depth of plants, average native species per site, average of all species per site, species richness and floristic quality (FQI). It should be noted that our data is entered into a spreadsheet which takes visual observations into account.

Background

Plants were surveyed on July 31st, 2025 using 232 of the 238 pre-determined WDNR points (Figure 1). Five of these points were located on land while one was under a dock. Seventeen different species of plants were found covering approximately 41% of the Lake. On average, there were 2.49 native plant species found at each vegetated site.

Figure 1: Overview of 2025 Plant Sampling Points on Hooker Lake



SOURCE: WDNR (2007)

Plant Species

There were seventeen different species of plants sampled during the 2025 Point-Intercept (PI) survey (Table 1). Species are listed from most to least frequent, including visual sightings. Data shown includes the overall frequency (percentage plant was found compared to all sites), relative frequency (percentage plant was found compared to vegetated sites), the average relative density rating (based on a scale of 1 for "least dense" and 3 for "most dense" at vegetated sites) and the C-Value (a numerical rating of 0-10 demonstrating a species' ability to tolerate disturbance).

The five most common aquatic species within Hooker Lake based on relative frequency are Coontail (64.21%), Muskgrass (51.58%), Sago Pondweed (34.74%), Cattails (31.58%) and Filamentous algae (27.37%). There is a fair distribution of native plants, which includes two species listed as "high value" by the WDNR.

Table 1: Hooker Lake 2025 Plant Sampling Species Summary

Common Name	Scientific Name	Total Number of sites found (includes Visuals)	% Overall Frequency of Occurance (Includes Visuals)	% Relative Frequency of Occurance (Includes Visuals)	Average Density Rating	C-value
Coontail	*Ceratophyllum demersum*	61	26.29	64.21	1.25	3
Muskgrasses	*Chara sp.*	49	21.12	51.58	1.76	7
Sago pondweed *	*Stuckenia pectinata*	33	14.22	34.74	1.00	3
Cattail	*Typha sp.*	30	12.93	31.58	V	1
Filamentous algae	*n/a*	26	11.21	27.37	1.04	n/a
Swamp loosestrife	*Decodon verticillatus*	23	9.91	24.21	V	n/a
Purple loosestrife **	*Lythrum salicaria*	16	6.90	16.84	V	Invasive
Water star-grass	*Heteranthera dubia*	13	5.60	13.68	1.18	6
White water lily	*Nymphaea odorata*	9	3.88	9.47	1.00	6
Wild celery *	*Vallisneria americana*	4	1.72	4.21	1.00	6
Curly-leaf pondweed **	*Potamogeton crispus*	3	1.29	3.16	1.00	Invasive
Small duckweed	*Lemna minor*	3	1.29	3.16	V	4
Nitella	*Nitella sp.*	3	1.29	3.16	1.00	7
Common watermeal	*Wolffia columbiana*	3	1.29	3.16	V	5
Common waterweed	*Elodea canadensis*	2	0.86	2.11	1.50	3
Spatterdock	*Nuphar variegata*	2	0.86	2.11	2.00	6
Common bladderwort	*Utricularia vulgaris*	1	0.43	1.05	V	7
Orange Jewelweed	*Impatiens capensis*	1	0.43	1.05	V	n/a

SOURCE: Lake and Pond Solutions LLC (2025)

* Species are considered "high value" plant species under Wisconsin Administrative Code NR 107
**** Denotes non-native (exotic) species**

% Overall Frequency	The percentage a plant species was found compared to all sites sampled. It is calculated by taking the number of sites a species was found and dividing by the total number of *sampled points* on the lake.
% Relative Frequency	The percentage a plant species was found compared to all sites with vegetation. It is calculated by taking the number of sites a species was found and dividing by the total number of *vegetated sites* on the lake.
Relative Average Density	The average density of each plant species comparative to the number of sites where it was found. It is calculated by dividing the sum of the site densities (for that specific plant species) by the total number of sites where it was found

Table 2: Five Most Common Species Found in Hooker Lake 2025

Species	% Relative Frequency	C-Value
Coontail	64.21	3
Muskgrasses	51.58	7
Sago pondweed *	34.74	3
Cattail	31.58	1
Filamentous algae	27.37	-
Avg. C-Value of Top 5 Species = 3.50		
Floristic Quality of Top 5 Species = 7.00		

SOURCE: Lake and Pond Solutions LLC (2025)

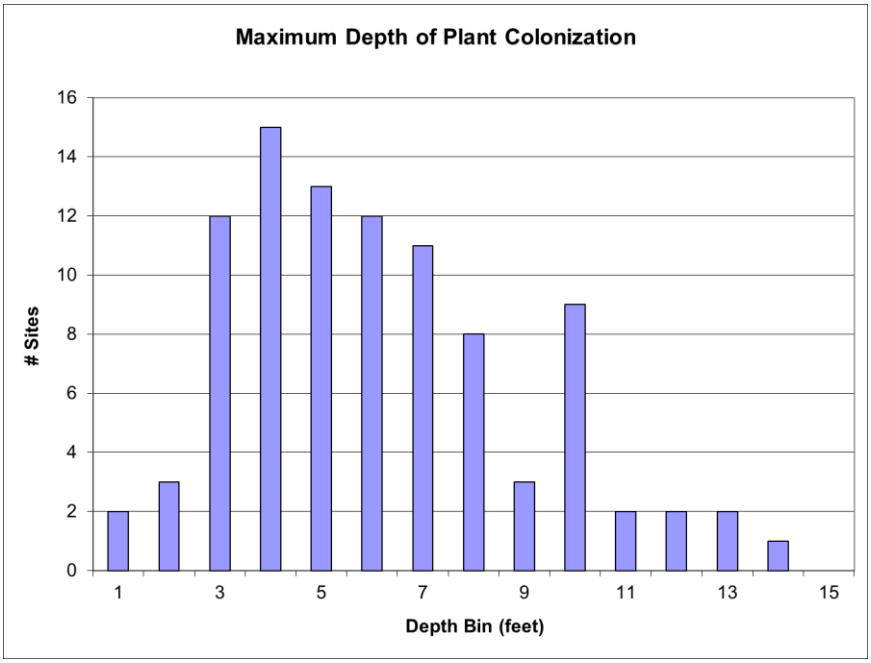
Table 3: 2019 - 2025 Hooker Lake PI Survey Statistics

Summary Statistics (Including Visuals)	2019 Survey (8-1-19)	2020 Survey (7-23-20)	2021 Survey (7-22-21)	2023 Survey (7-27-23)	2024 Survey (7-30-24)	2025 Survey (7-31-25)
Total Number of Sites with Vegetation/All Sites Sampled	87/233 (37.3%)	101/231 (43.7%)	133/234 (56.8%)	89/226 (39.4%)	89/234 (38.0%)	95/232 (40.9%)
Maximum Depth of Plants	10.5'	21.0'	18.0'	20.0'	17.0'	14.0'
Species Richness	20	22	21	20	17	17
Average Number of All Species per Vegetated Site	4.07	2.93	3.18	2.48	2.65	2.69
Average Number of Native Species per Vegetated Site	3.53	2.59	2.34	2.34	2.27	2.49
Simpson Diversity Index	0.92	0.85	0.85	0.88	0.89	0.86
Average C-Value	5.19	5.26	5.00	5.47	5.00	4.92
Floristic Quality	20.75	22.94	20.00	21.17	17.32	17.75

SOURCE: Lake and Pond Solutions LLC (2025)

Depth of plant colonization was recorded (Figure 2). The deepest sampled plant was found in 14.0 feet of water. The clear majority however was in the three to eight-foot depth range, accounting for nearly 75% of the vegetated sample sites.

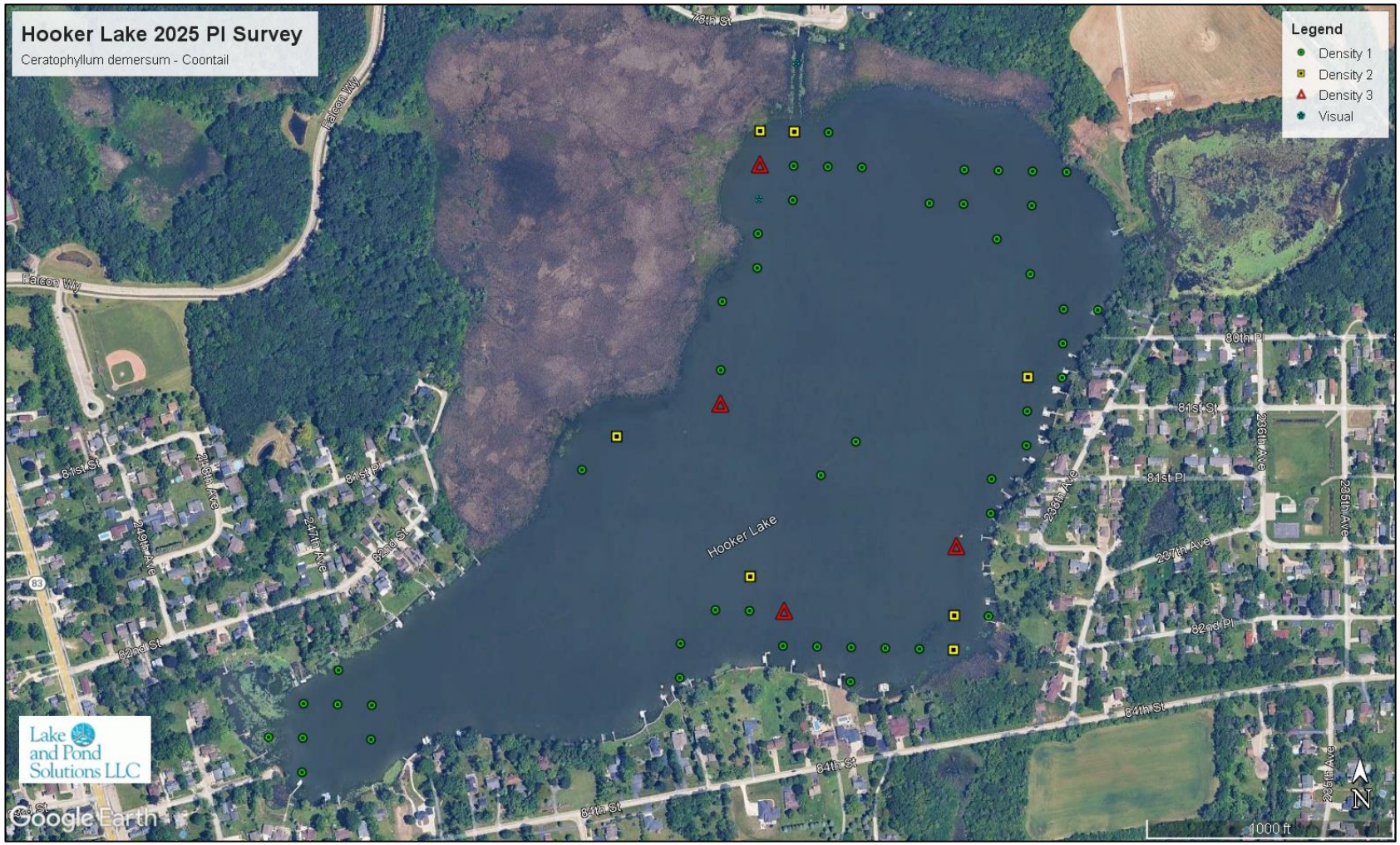
Figure 2: Hooker Lake 2025 Depth of Plant Colonization



SOURCE: Lake and Pond Solutions LLC (2024)

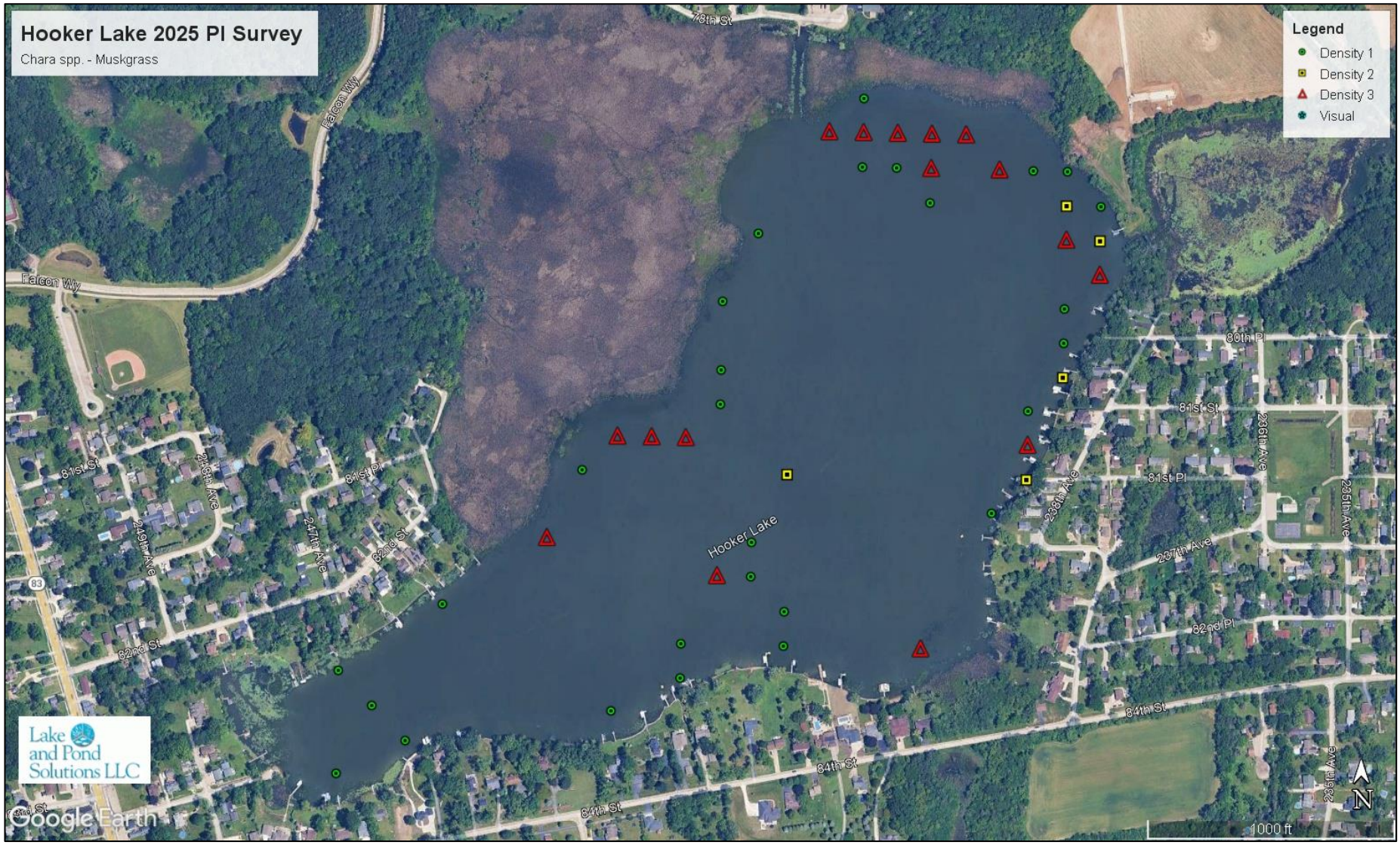
Figure 3 – Figure 11 show the distribution and densities of the top seven native species along with the two non-native species found in Hooker Lake in 2025 (arranged from most to least frequent distribution). We intentionally omitted maps for cattails (4th), filamentous algae (5th), swamp loosestrife (6th), and small duckweed (12th) since they are emergent or floating species.

Figure 3: Hooker Lake Coontail Distribution



SOURCE: Lake and Pond Solutions LLC (2025)

Figure 4: Hooker Lake Muskgrass Distribution



SOURCE: Lake and Pond Solutions LLC (2025)

Figure 5: Hooker Lake Sago Pondweed Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

Figure 6: Hooker Lake Purple Loosestrife (INVASIVE) Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

Figure 7: Hooker Lake Water Star-grass Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

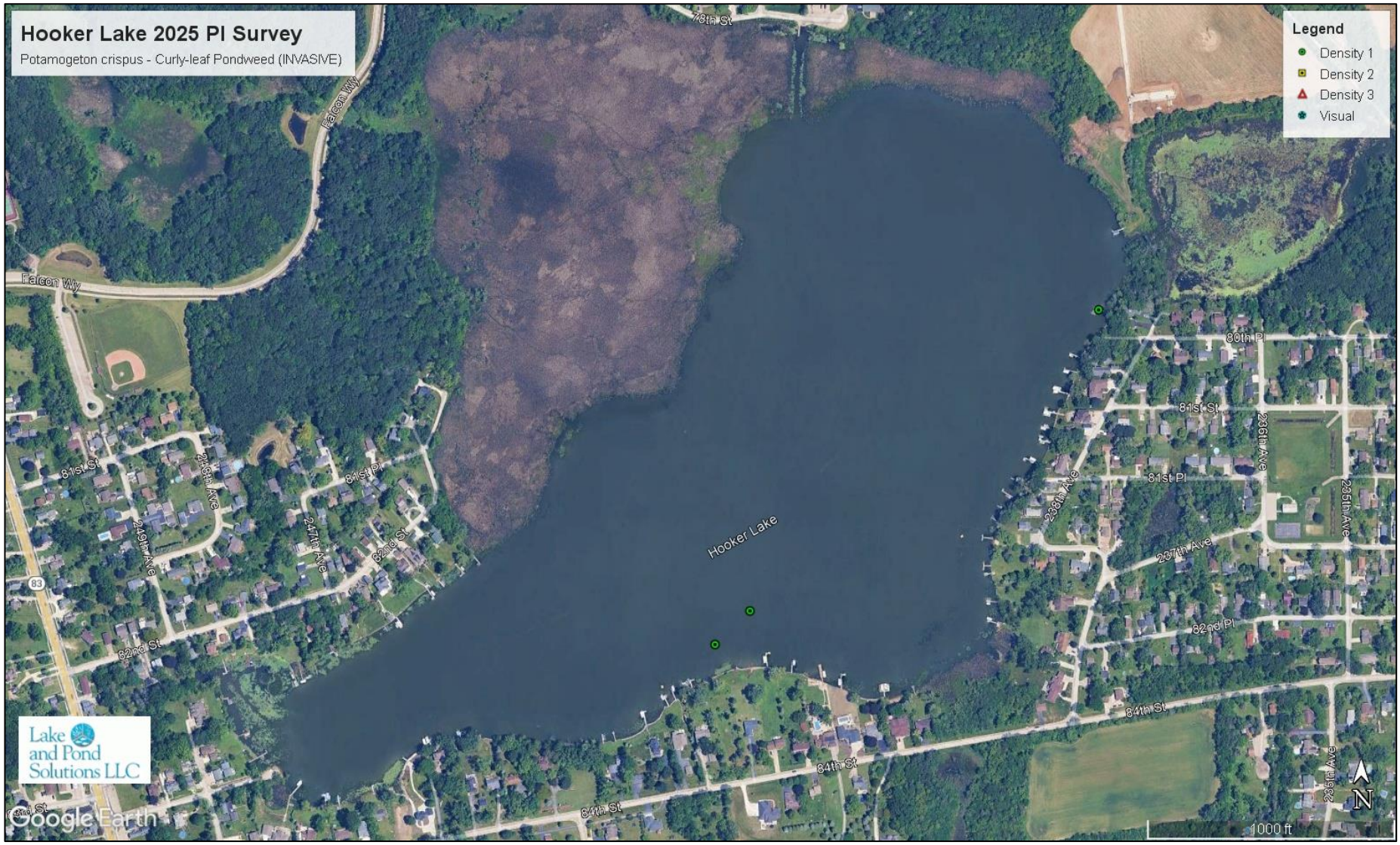
Figure 8: Hooker Lake White Water Lily Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

Figure 9: Hooker Lake Wild Celery Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

Figure 10: Hooker Lake Curly-leaf Pondweed (INVASIVE) Distribution



SOURCE: Lake and Pond Solutions LLC (2025)

Figure 11: Hooker Lake Nitella Distribution

SOURCE: Lake and Pond Solutions LLC (2025)

Floristic Quality Assessment

Floristic Quality is a rapid assessment metric designed to evaluate the closeness that the flora of an area is to that of undisturbed conditions. It can be used to:

- Identify natural areas
- Compare the quality of different sites or different locations within a single site
- Monitor long-term floristic trends and/or habitat restoration efforts

For any area (lake in this case), floristic quality (I) equals the average coefficient of conservatism (C-value) times the square root of the number of native species (√N). A C-value was assigned to 128 aquatic plants, compared to regional studies and reviewed by a number of biologists familiar with Wisconsin lake plants. They range from 0 to 10 with 10 being assigned to species most sensitive to disturbance. These final C-values were used in calculating the Floristic Quality for Hooker Lake. Table 4 summarizes the C-values compared to the Southeast Till Plain (STP) average, Wisconsin average and 75th percentile numbers. The STP average categorizes the lakes in the southeast corner of the state.

Table 5 shows each individual plant species found in the lake along with the associated C-value, average C-value throughout the lake, and overall Floristic Quality.

The floristic quality within Hooker Lake has increased slightly since the last survey but hasn't rebounded to pre-2023 levels. Changes can be related to many things including lake levels, rain, turbidity, planktonic algae, sunlight intensity, seasonality, and even treatments. It is encouraging that no EWM was observed while other species like coontail, muskgrass, and sago pondweed saw double digit increases.

Table 4: Floristic Quality Comparison

	2019	2020	2021	2023	2024	2025	STP AVERAGE	WI AVERAGE	WI 75th PERCENTILE
Avg. C-Value	5.19	5.26	5.00	5.47	5.00	4.92	5.60	6.00	6.90
# of natives (N)	16	19	16	15	12	13	14	13	20
Floristic Quality	20.75	22.94	20.00	21.17	17.32	17.75	20.9	22.2	27.5

SOURCE: Lake and Pond Solutions LLC (2025)

Table 5: Hooker Lake Overall Floristic Quality

Common Name	Scientific Name	Total Number of Sites Found (Includes Visuals)	C-Value
Coontail	*Ceratophyllum demersum*	61	3
Muskgrasses	*Chara sp.*	49	7
Sago pondweed *	*Stuckenia pectinata*	33	3
Cattail	*Typha sp.*	30	1
Filamentous algae	*n/a*	26	n/a
Swamp loosestrife	*Decodon verticillatus*	23	n/a
Purple loosestrife **	*Lythrum salicaria*	16	Invasive
Water star-grass	*Heteranthera dubia*	13	6
White water lily	*Nymphaea odorata*	9	6
Wild celery *	*Vallisneria americana*	4	6
Curly-leaf pondweed **	*Potamogeton crispus*	3	Invasive
Small duckweed	*Lemna minor*	3	4
Nitella	*Nitella sp.*	3	7
Common watermeal	*Wolffia columbiana*	3	5
Common waterweed	*Elodea canadensis*	2	3
Spatterdock	*Nuphar variegata*	2	6
Common bladderwort	*Utricularia vulgaris*	1	7
Orange Jewelweed	*Impatiens capensis*	1	n/a
AVG C-VALUE = 4.92			
FLORISTIC QUALITY = 17.75			

SOURCE: Lake and Pond Solutions LLC (2025)

Summary

The native plant community increased slightly with 15 native species present and an average of 2.49 native species per site. Although they were lower quality natives, this is the best we've seen since 2020. The largest changes were observed in filamentous algae (-26.6%), coontail (+26.0%), sago pondweed (+21.3%), muskgrass (+14.5%), and water star-grass (-13.3%).

For the third consecutive year, our late July PI survey did not reveal any sites with EWM. It is important to point out that PI surveys are not nearly as detailed as our spring meander surveys so it is possible EWM is still present in isolated locations around the lake. For instance, last year we found no EWM during the PI survey but ended up treating over 13 acres this spring. I will point out that we did observe EWM during an informal cruise around the lake last year and anticipated more growth this spring. Based on observations this year, I'm confident that you shouldn't need to plan for a whole lake EWM treatment in 2026. Instead, it would likely be similar CLP treatments and possible smaller EWM spot treatments.

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