Lake Denoon—Waukesha County, WI

Aquatic Plant Survey

August, 2024

SOLitude Lake Management
N173 W21440 Northwest Passage
Jackson, WI 53037
(262) 674-1783
www.solitudelakemanagement.com

Introduction

In August of 2024, Solitude Lake Management conducted an Aquatic Plant Survey on Lake Denoon at the request of the Lake Denoon Lake District. This survey and report, along with three others conducted earlier in , 2020 2022 and 2023, are subsequent to whole-lake treatments conducted in 2019 and 2020 using SonarOne, and a treatment with ProcellaCOR EC in 2024 (both herbicides by SePRO Corporation). A fifthsurvey was conducted in 2013 by the Southeast WI Regional Planning Commission (SEWRPC).

The following report discusses the current state of the aquatic plant population and provides a comparison with these earlier surveys.

Methodology

The protocol for this aquatic plant survey was the same as the earlier surveys. It called for the sampling of vegetation at 420 pre-determined sites within the lake. These locations were spaced apart by approximately 40 meters in north-south and east-west transects across Lake Denoon using waypoints (longitude and latitude coordinates) provided by the Wisconsin Department of Natural Resources (Figure. #1, following page).

After downloading of the waypoint coordinates onto an on -board Lowrance Hook-9 Global Positioning System (GPS, the sampling crew navigated to each of the waypoints. At each point, water depth was collected using a Lowrance Model X45 Depth Finder and recorded.

Finally, a double-sided rake head attached to a Pole (P) was lowered to the lake bottom to sample plants at depths of up to 15 feet during the 2024 survey (during earlier surveys, 10 ft.) At greater depths a rake attached to a Rope was cast out, allowed to settle on the bottom, and retrieved. Plants collected were identified to genus with species (if known). Individual plant species density (rake fullness for a single plant type) and total plant density (rake fullness for all plants) determined. This data was then recorded for each site. The rake fullness ratings are as follows:

Fullness Rating	Coverage	Description
1		Only few plants. There are not enough plants to entirely cover the length of the rake head in a single layer.
2		There are enough plants to cover the length of the rake head in a single layer, but not enough to fully cover the tines.
3		The rake is completely covered and tines are not visible.

continued on page 3

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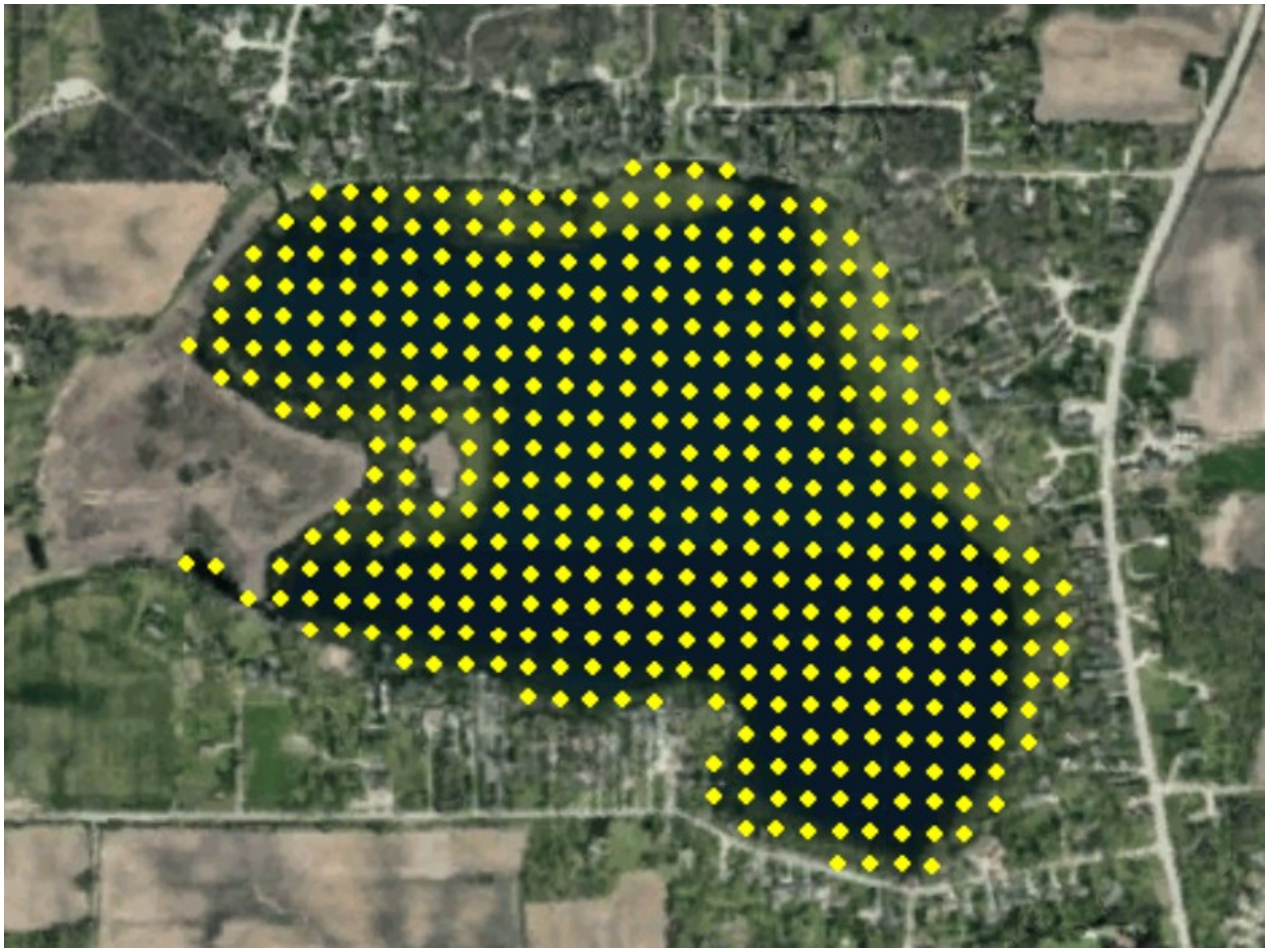
Figure 1

Lake Denoon—Waukesha County, WI

Aquatic Plant Survey Point Intercept (PI) Points



Total # PI Points: 420

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Aquatic Plant Survey Results

During the 2024 survey the number of plant species sampled by rake (19) was an increase in terms of number as compared to the number sampled in 2023 (17). For the five surveys conducted since 2013, the total number of species being sampled has ranged from a low of 13 (2020) to a high of 22 (2022). These include both native and non-native species sampled during the surveys, There are many factors which can impact the diversity of a native plant population over time, including changes in water clarity, fluctuations in water levels and/or abundance of invasive species present.

As a result of a dramatic increase in the amount of Eurasian/Hybrid water-milfoil (EWM/HWM) in 2023, the Lake Denoon Management District contracted with Solitude Lake Management in 2024 to conduct a treatment utilizing the herbicide, ProcellaCOR EC (SePRO Corporation). On June 17, 2024 a total of 26.0 acres of water were treated with a total of 640 Prescription Dose Units (PDU's) of ProcellaCOR EC (Treatment Report and Map in Appendix).

As the map found in Figure 3 (page 7) indicates, the treatment was very successful, with no EWM.HWM being collected (or observed) during the August, 2024 survey. Also, the number of native species (sampled by rake) increased by one, with the three most abundant species present in 2023-2024 being Chara, Coontail, and Eelgrass. It should be noted that water elevations had returned to "normal" in 2024, as compared to 2023 survey, which was conducted under a significantly reduced water elevation.. While this change in water elevation may not have had a direct impact upon the number of native species found, it did result in a greater number of sampling points being accessible by boat—210 points being sampled in 2024 as compared to 168 in 2023.

Starry Stonewort (*Nitella obtusa*, figure 5, page 9) was found at a total of 7 locations in 2024. Most of these were located in the southeast bay, where it had been documented earlier. Two additional locations were found during the 2023 survey. Curly-leaf pondweed, (*Potamogeton crispus*) was found at a total of 10 locations, including visual observations. Finally, while not sampled directly, Purple Loosestrife (*Lythrum salicaria)* was observed growing at numerous shoreline locations. These observations were recorded at the nearest point-intercept point during the survey. A map showing the approximate location of Purple Loosestrife has been included in this report. Other emergent species observed from a distance during the survey included Cattail and Bulrush.

A summary of all species present during the five surveys is listed both by the number of sites present (Table 1, page 4) and by Frequency of Occurrence (Table 2, page 5). This list includes both those species collected by rake, as well as those simply observed during the survey (Purple Loosestrife, Watermeal, Duckweed).

These Tables are followed by a series of maps detailing the location of all vegetation observed during the survey (figure 2, page 6), any exotic species (figures 2-5, pages 7-10), and those representing the six top native species, ranked according to abundance (# of sites present) beginning on page 11.

A discussion of the meaning of the Summary Statistics, Frequency of Occurrence, and Maximum Depth of Colonization begins on page 17, along with presentation of the data.

Table 1

List of Aquatic Plant Species Sampled - Lake Denoon, Waukesha County

2013*, 2020 & 2022-2024, Point—Intercept Surveys

# of Sites Collected by Rake (V=Visual Identification Only)

*2013 Plant Data collected by Southeast Wisconsin Regional Planning Commission staff.

Scientific name	Common Name	2024 (#)	2023 (#)	2022 (#)	2020 (#)	2023 (#)
Myriophyllum spicatum	Eurasian watermilfoil	0	63	5	0	58
Potamogeton crispus	Curlyleaf Pondweed	7	2	13	9	2
Nitella obtusa	Starry stonewort	7	3	1	0	0
Brasenia schreberi	Watershield	V	0	1	0	0
Chara, sp.	Chara	74	72	92	24	80
Ceratophyllum demersum	Coontail	66	65	62	30	154
Elodea canadensis	Elodea	3	0	1	0	5
Heteranthia dubia	Waterstargrass	6	19	4	4	11
Lemna minor	Small duckweed	V	V	V	V	0
Lemna triscula	Forked duckweed	2	0	0	0	0
Najas flexilis	Slender naiad	6	5	9	0	28
Najas guadalupensis	Southern naiad	0	0	3	0	0
Najas marina	Spiny naiad	2	1	0	0	5
Nitella sp,.	Nitella	1	0	2	0	0
Nuphar variagata	Spatterdock	5	1	4	1	7
Nymphaea odorata	White water lily	10	4	11	6	25
Polygonum amphibium	Water smartweed	0	0	0	0	1
Potamogeton amplifolius	Large-leaf pondweed	1	3	1	3	0
Potamogeton foliosus	Leafy pondweed	0	0	0	V	0
Potamogeton gramineus	Variable pondweed	4	5	1	3	32
Potamogeton illoensis	Illinois pondweed	9	6	2	0	0
Potamogeton praelongus	White-stem pondweed	1	0	0	1	32
Potamogeton pusillus	Small pondweed	0	0	3	0	0
Potamogeton richardsonii	Clasping-leaf pondweed	0	0	0	0	5
Potamogeton zosteriformes	Flat-stem pondweed	12	4	15	11	0
Stuckenia pectinata	Sago pondweed	22	5	10	69	19
Stuckenia filiformis	Fine-leaved pondweed	0	0	0	0	1
Utricularia vulgaris	Common bladderwort	0	1	2	1	0
Vallisneria americana	Eelgrass	50	49	33	23	59
Wolffia columbiana	Common watermeal	V	V	0	0	0
	Filamentous algae	7	0	8	109	0

Table 2

List of Aquatic Plant Species Sampled - Lake Denoon, Waukesha County

2013*, 2020, and 2022-2024 Point—Intercept Surveys

Frequency of Occurrence %

*2013 Plant Data collected by Southeast Wisconsin Regional Planning Commission staff.

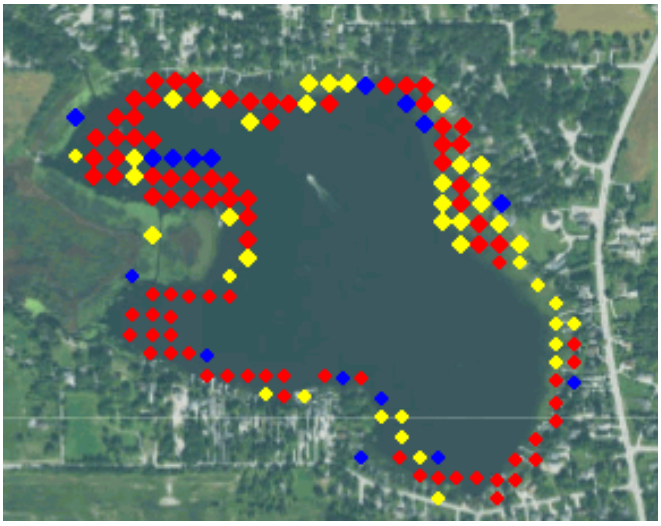
Scientific name	Common Name	2024 (%)	2023 (%)	2022 (%)	2020 (%)	2013 (%)
Myriophyllum spicatum	Eurasian watermilfoil	-	43.75	3.09	-	28.2
Potamogeton crispus	Curlyleaf Pondweed	4.12	1.39	8.02	7.62	1.0
Nitella obtusa	Starry stonewort	4.12	2.08	0.62	-	-
Brasenia schreberi	Watershield	-V	-	0.62	-	-
Ceratophyllum demersum	Coontail	37.06	45.14	38.27	25.42	74.8
Chara, sp.	Chara	44.71	50.0	56.79	20.34	38.8
Elodea canadensis	Elodea	1.76	-	0.62	-	2.4.
Heteranthia dubia	Waterstargrass	3.53	13.19	2.47	3.39	5.3**
Lemna minor	Small duckweed	V	V	V	V	-
Lemna triscula	Forked duckweed	1.18	-	-	-	-
Najas flexilis	Slender naiad	3.53	3.47	5.56	-	13.6
Najas guadalupensis	Southern naiad	-	-	1.85	-	-
Najas marina	Spiny naiad	1.18	0.69	0	-	2.4
Nitella sp,.	Nitella	0.59	-	1.23	-	-
Nuphar variagata	Spatterdock	2.94	0.69	2.47	0.85	3.4
Nymphaea odorata	White water lily	5.88	2.78	6.79	5.08	23.1
Polygonum amphibium	Water smartweed	-	-	-	-	0.04
Potamogeton amplifolius	Large-leaf pondweed	0.59	2.08	0.62	2.54	-
Potamogeton foliosus	Leafy pondweed	-	-	-	V	-
Potamogeton gramineus	Variable pondweed	2.35	3.47	0.62	2.54	15.5
Potamogeton illoensis	Illinois pondweed	5.29	4.17	1.23	-	-
Potamogeton praelongus	White-stem pondweed	0.59	-	-	0.85	15.5
Potamogeton pusillus	Small pondweed	-	-	1.85	-	-
Potamogeton richardsonii	Clasping-leaf pondweed	-	-	-	-	3.1
Potamogeton zosteriformes	Flat-stem pondweed	7.06	2.78	9.26	9.32	-
Stuckenia pectinata	Sago pondweed	12.94	3.47	6.17	58.47	9.2***
Stuckenia filiformis	Fine-leaved pondweed	-	-	-	-	0.04
Utricularia vulgaris	Common bladderwort	-	0.69	1.23	0.85	-
Vallisneria americana	Eelgrass	29.41	34.03	20.37	19.49	28.6
Wolffia columbiana	Common watermeal	V	V	V	V	
	Filamentous algae	4.12		8	88.98	

Figure 2

Lake Denoon– Waukesha County, WI

Vegetated Survey Sites

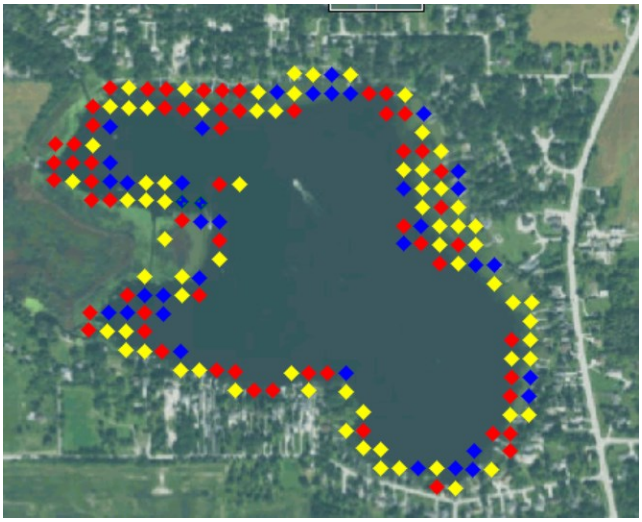
August, 2023



Total # Vegetated Sites: 144*

Max. depth at which plants found: 14 ft

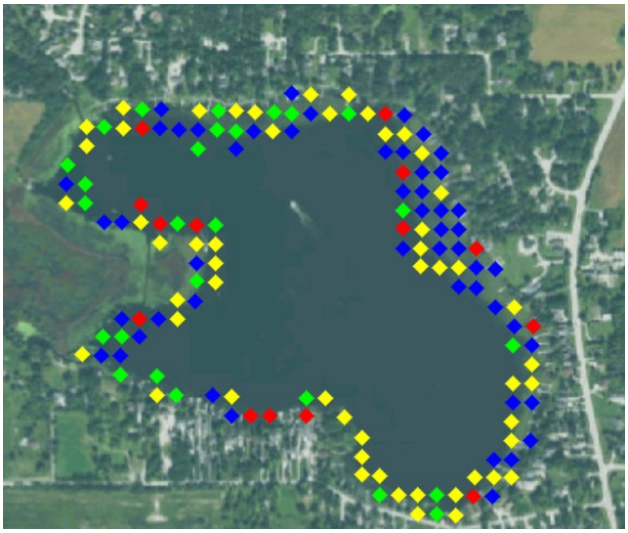
August, 2022



Total # Vegetated Sites: 162**

Max. depth at which plants found: 15 ft

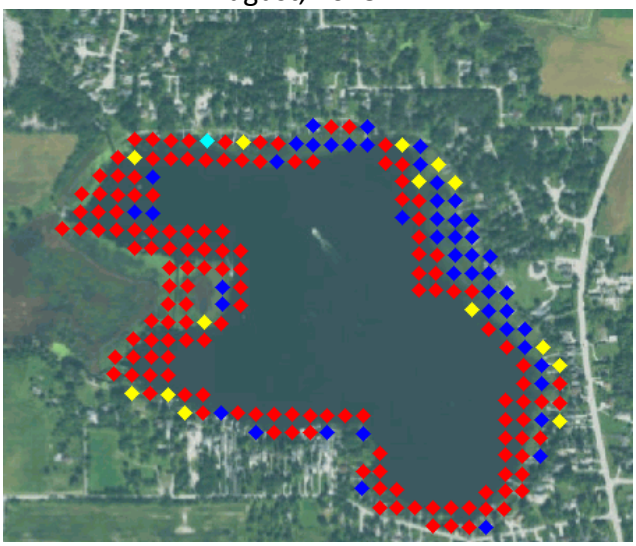
August, 2020



Total # Vegetated Sites: 118***

Max. depth at which plants found: 16 ft

August, 2013



Total # Vegetated Sites: 206

Max. depth at which plants found: 16 ft.

*Another (50) sites could not be navigated to given shallow depth and were marked as "ShallowLillies" under Comments section of Excel Workbook. ** Another (24) sites were inaccessible and were marked as "Shallow/Lillies. ***Additional (26) sites (Lime Green) contained filamentous algae alone.

Rake Fullness: 1

2

3

Algae:

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Figure 3

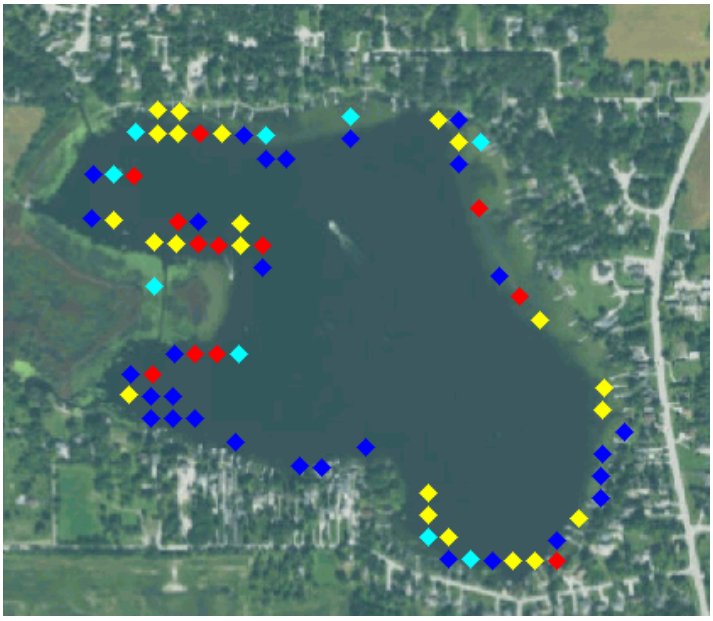
Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Eurasian Water-milfoil (*Myriophyllum specatum*)

August, 2024

# of Points Present: None

August, 2023



Points Present: 63 (72 with Visuals)

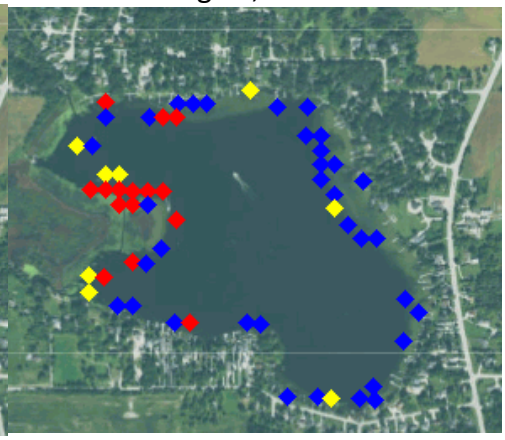
August, 2022

Points Present: 5 (9 w Visuals)

August, 2020

# of Points Present: None

August, 2013



# of Points Present: 58

Rake Fullness: 1

2

3

Visual

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Figure 4

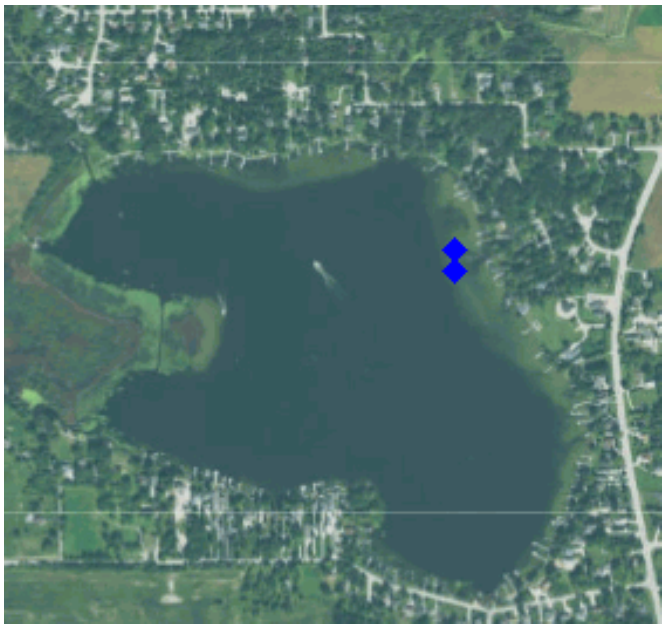
Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Curly-leaf Pondweed (*Potamogeton crispus*)

August, 2024

Points Present: 7 (10 w Visuals)

August, 2023



Points Present: 2

August, 2022

Points Present:13 (14 w Visuals)

August, 2020

Points Present: 9

August, 2013

Points Present: 2

Rake Fullness: 1

2

3

Visual

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Figure 5

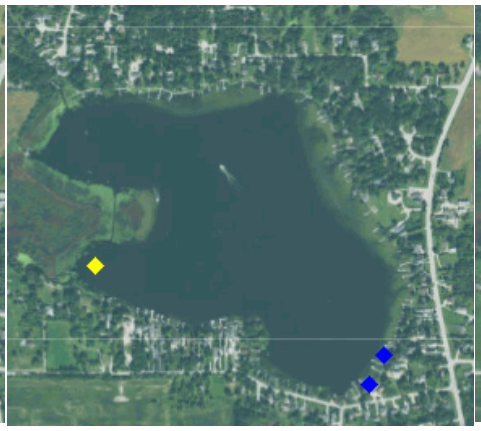
Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Starry Stonewort (*Nitella obtusa*)

August, 2024

Points Present: 7

August, 2023



Points Present: 3

August, 2022

Points Present: 1

Note: First observation made on 8/23/22.

Not recorded during 2013/2020 surveys.

Pictures from WI DNR Invasive Species Photo Gallery

Rake Fullness: 1

2

3

Visual

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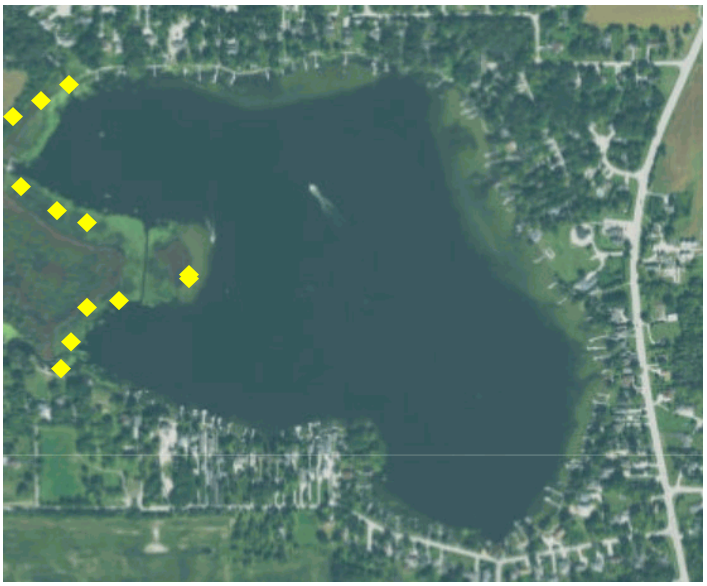
Figure 6

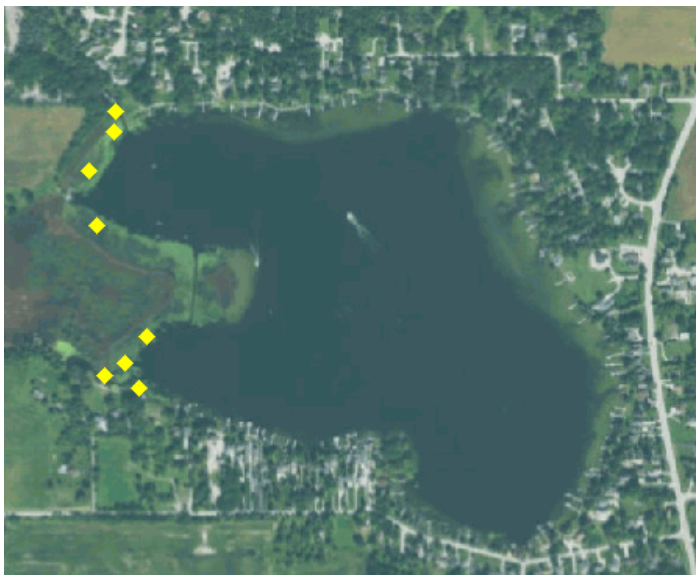
Lake Denoon—Waukesha County, WI

Approximate Location of Purple Loosestrife (*Lythrum salicaria*)*

August, 2023/2024



August, 2022



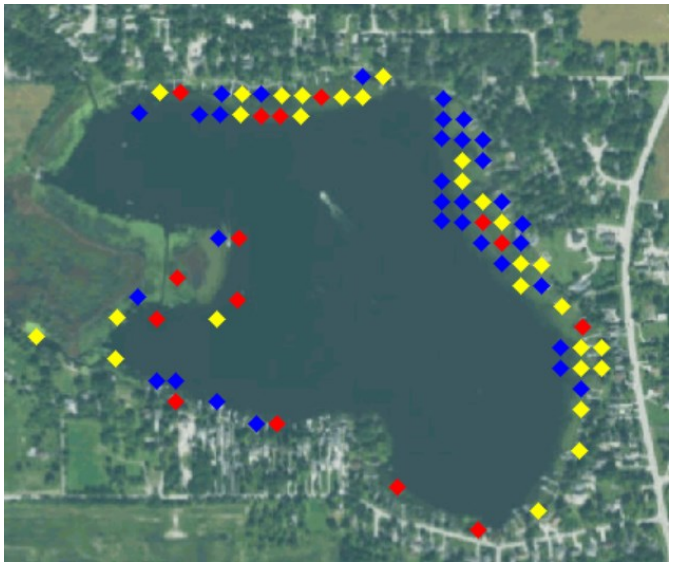
*Observations made from distance during 2022-2024 surveys

Figure 7

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Chara (*Chara sp.,)*

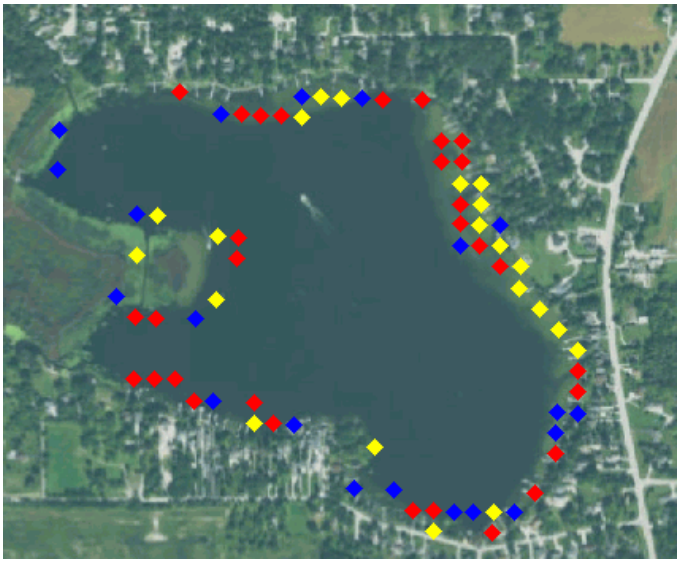
August, 2024



Points Present: 74

Rank: 1

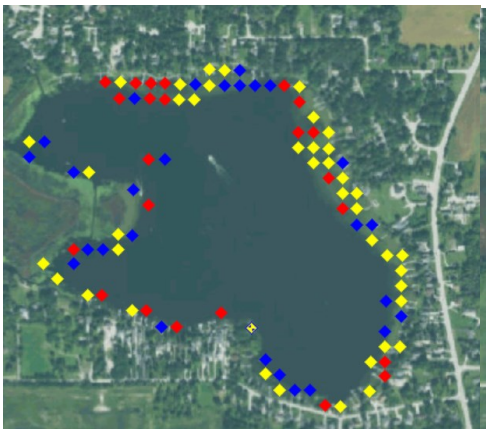
August, 2023



Points Present: 72

Rank: 1

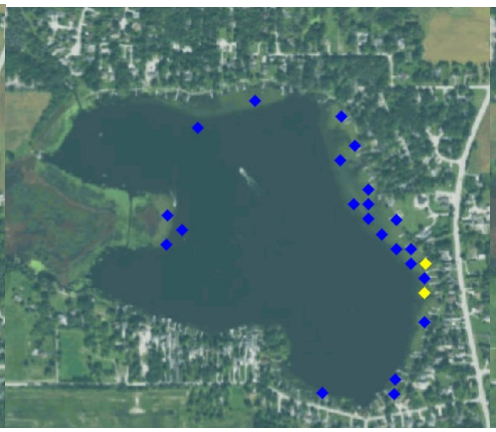
August, 2022



Points Present: 92

Rank: 1

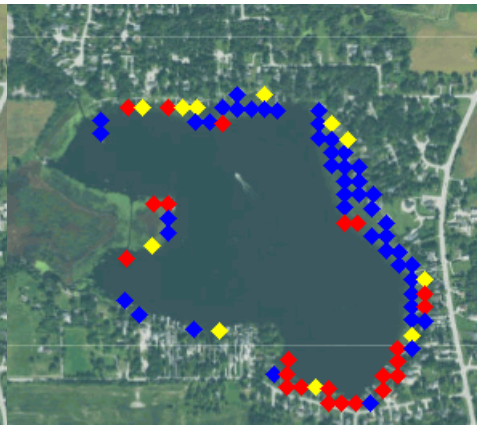
August, 2020



Points Present: 24

Rank: 5

August, 2013



Points Present: 80

Rank: 2

Rake Fullness: 1

2

3

Visual

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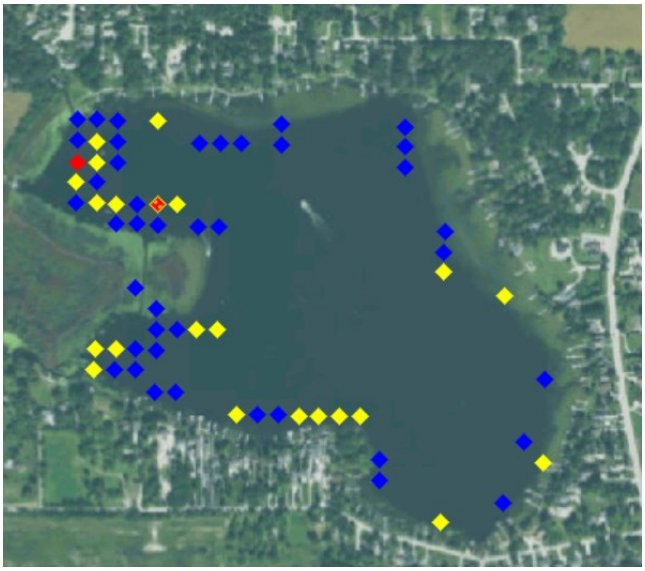
Figure 8

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Coontail (*Ceratophyllum demersum*)

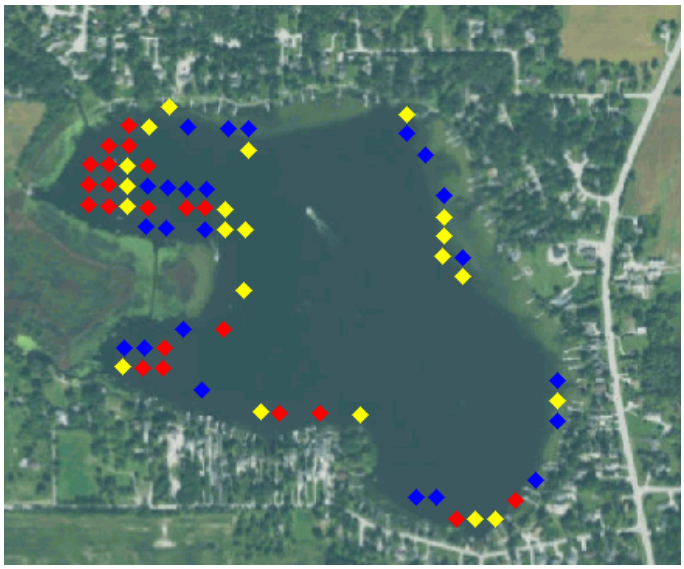
August, 2024



Points Present: 66

Rank: 2

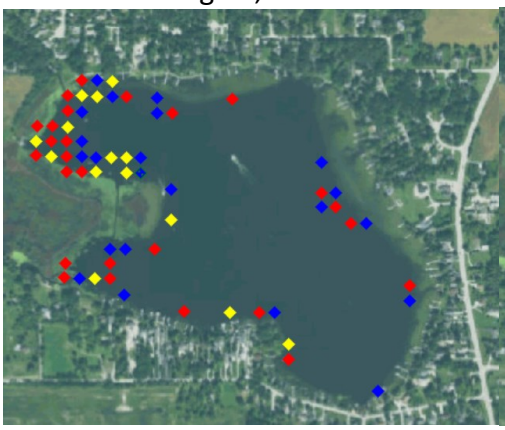
August, 2023



Points Present: 65

Rank: 2

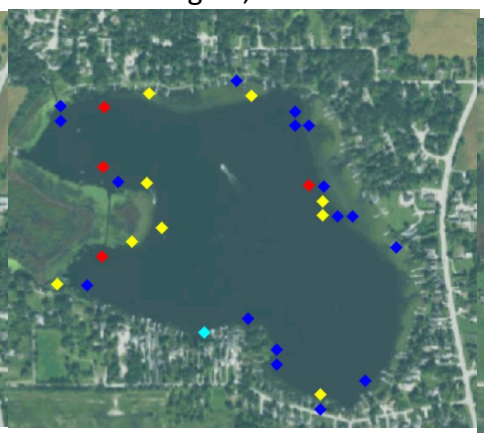
August, 2022



Points Present: 62

Rank: 2

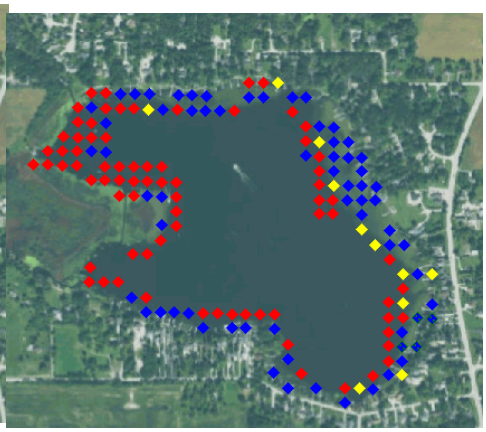
August, 2020



Points Present: 30 (31 w Visuals)

Rank: 3

August, 2013



Points Present: 152

Rank: 1

Rake Fullness: 1

2

3

Visual

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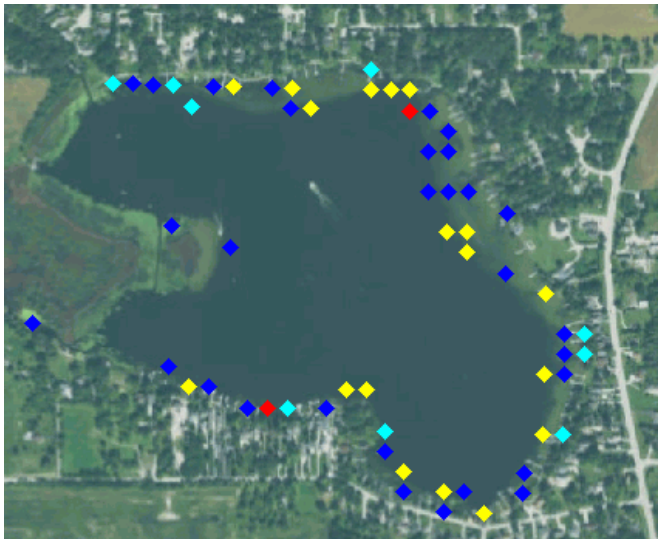
Figure 9

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Eelgrass (*Vallisneria americana)*

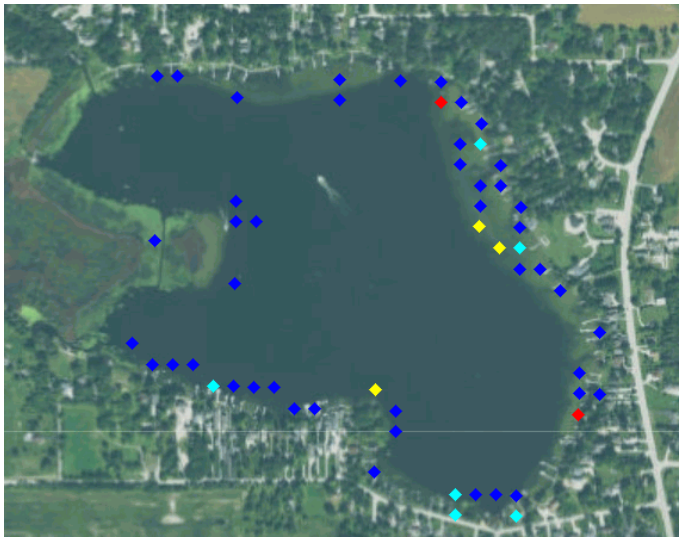
August, 2024



Points Present: 51 (60 with Visuals)

Rank: 3

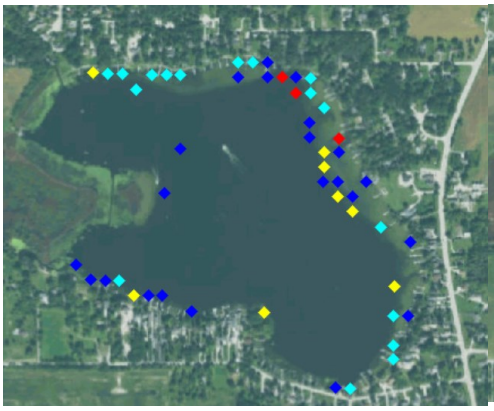
August, 2023



Points Present: 49 (55 with Visuals)

Rank: 3

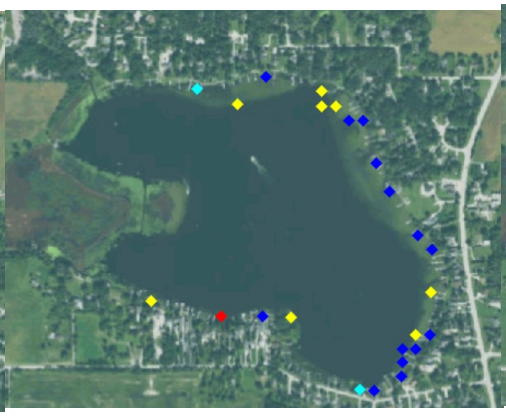
August, 2022



Points Present: 33 (50 w Visuals)

Rank: 3

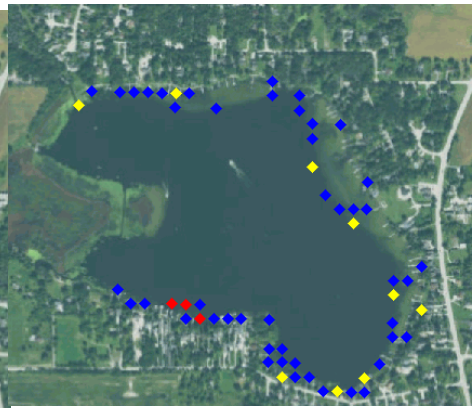
August, 2020



Points Present: 23 (25 w Visuals)

Rank: 4

August, 2013



Points Present: 59

Rank: 3

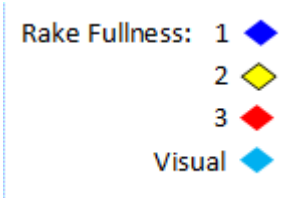


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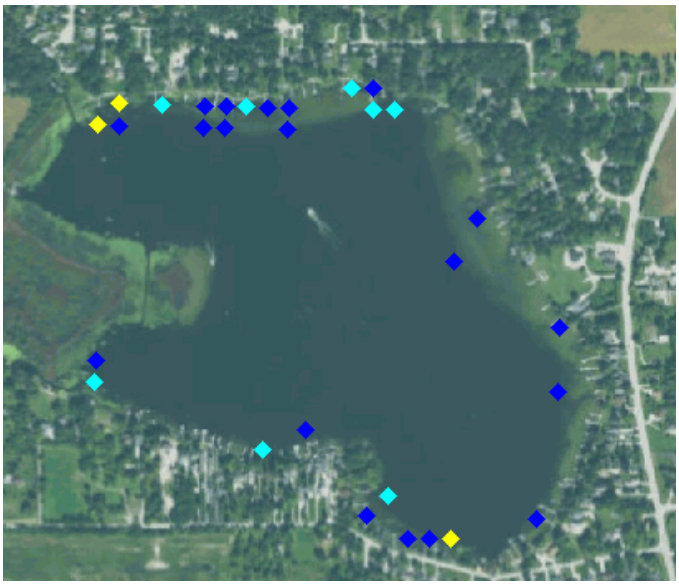
Figure 10

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Sago Pondweed (*Stuckenia pectinate)*

August, 2024



Points Present: 22 (30 w Visuals)

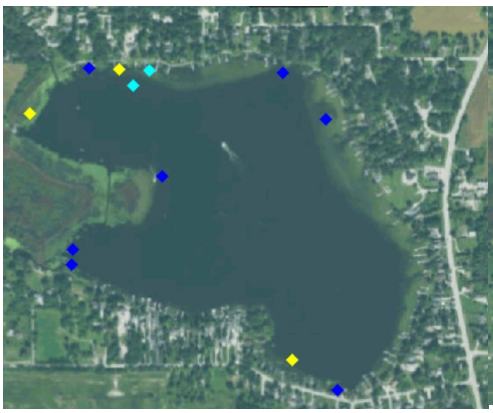
Rank: 4

August, 2023

Points Present: 5

Rank: 6

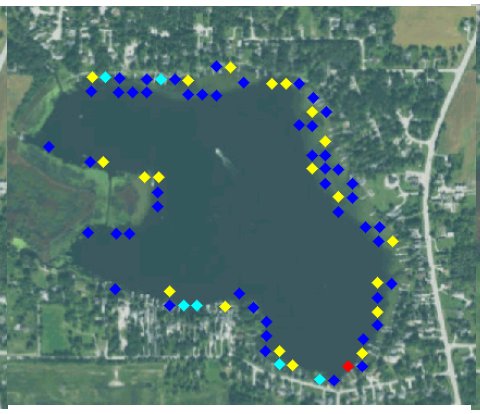
August, 2022



Points Present: 10 (12 w Visuals)

Rank: 6

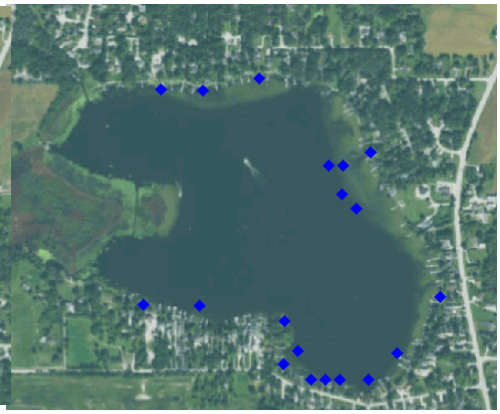
August, 2020



Points Present: 69 (75 w Visuals)

Rank: 1

August, 2013



Points Present: 19

Rank: 7

Rake Fullness: 1

2

3

Visual

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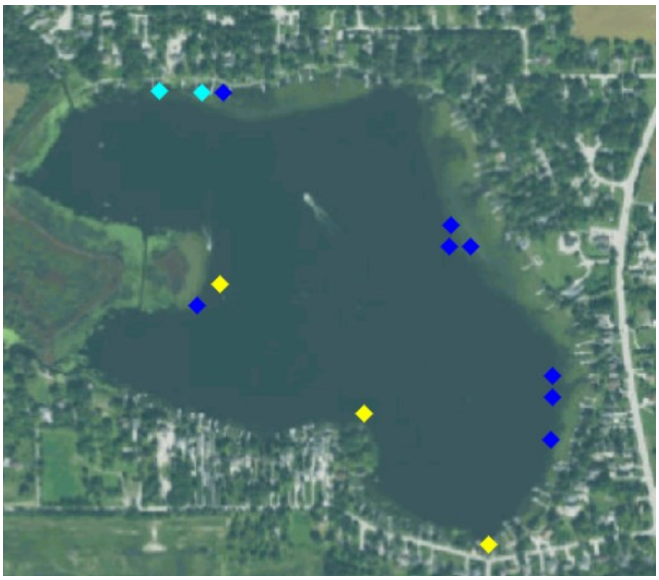
Figure 11

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Flat-stem pondweed (*Potamogeton zosteriformes*)

August, 2024



Points Present: 11 (13 with Visuals)

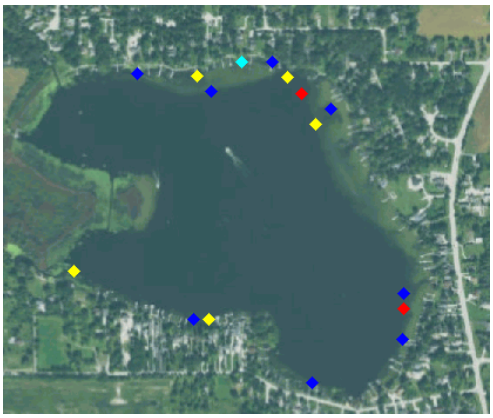
Rank: 5

August, 2023

Points Present: 4

Rank: 7

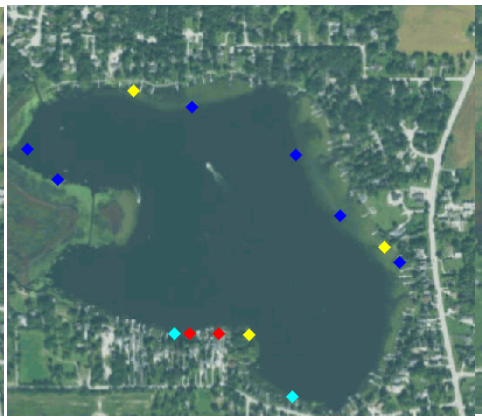
August, 2022



Points Present: 15 (16 w Visuals)

Rank: 4

August, 2020



Points Present: 11 (13 w Visuals)

Rank: 6

August, 2013

# of Points Present: 0

Rake Fullness: 1

2

3

Visual

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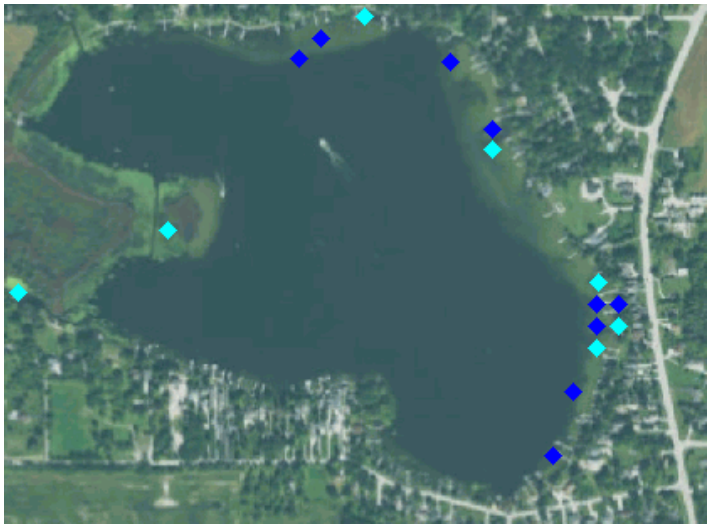
Figure 12

Lake Denoon—Waukesha County, WI

Point Intercept (PI) Points with Illinois pondweed (*Potamogeton illoensis*)

August, 2024



Points Present: 9 (16 w/ Visuals)

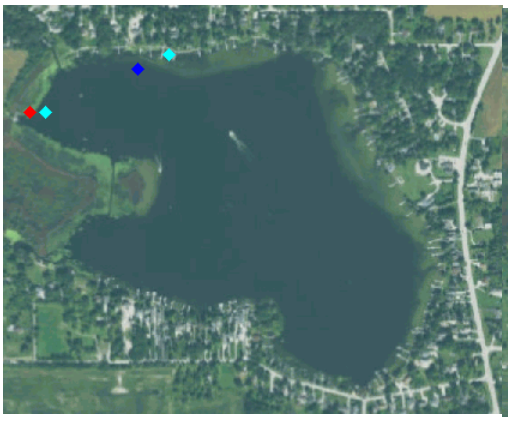
Rank: 6

August, 2023

# of Points Present: 6

Rank: 5

August, 2022



Points Present: 2 (4 w/ Visuals)

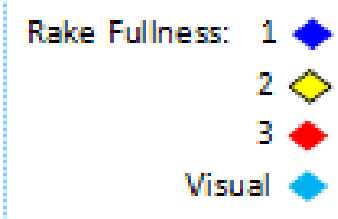
Rank: 10

August, 2020

Points Present: 0)Not Present

August, 2013

Points Present: 0)Not Present



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Aquatic Plant Survey Results, cont'd. from page 3

Table 3 (page 19) provides a Summary of Statistics for the five surveys conducted since 2013. A Floristic Quality Index for the surveys is found on Table 4 (page 21). Finally, Figures 13 & 14 (page 22-23) provides Depth/Colonization Charts.

A brief discussion of each of the Summary Statistics follows:

Total # of Sites w/ Vegetation

The number of sites having vegetation in Lake Denoon for 2024 was 170, which is significantly higher than the 144 recorded, but well within the range recorded in previous years - 118 sites in 2020 and 206 recorded in 2013. As in previous years there were many additional sites that had dense vegetation (White Lilly and/or Spatterdock) observed from a distance that could not be accessed due to limited water depth.

In addition to inaccessibility to numerous sites due to limited water depth, the maximum rooting depth in 2024 was somewhat greater kin 2024 (17 feet) than previous surveys.

Total # Sites Shallower Than Maximum Depth of Plants

The number of sites shallower than the maximum depth of plants for 2024 was 196. This is the highest recorded, with the number from earlier surveys ranging from a low of 156 sites (2023), to a previous high of 193 (2013).

This parameter can be directly attributed to an increase/decrease in water clarity, as well as a change in water levels that can limit access to many sampling points, which occurred in 2023..

Relative Frequency of Occurrence

Relative Frequency of Occurrence, presented as a percentage, is the number of sites shallower than the maximum depth that contained vegetation. In 2024, 86.73% of the sites less than 17 feet in depth had vegetation present. This compares with 92.31% in 2023, 85.26% in 2022, and 62.77% in 2020. This indicates that a significant percentage of the lake bottom contains suitable substrate and sufficient nutrients, that when combined with sunlight, will develop some form of aquatic vegetation.

Simpson Diversity Index

The Simpson Diversity Index (SDI) measures the diversity of a plant population, using the number of species surveyed and the number of species per site. The decimal scale ranges from 0 (low diversity) to 1 (high diversity). The SDI for the 2024 survey is 0.84, very similar to those in 2023 (0.83), ,2022 (0.82), 2020 (0.79), and 2013 (0.88). These indicate that the plant population has an above average level of diversity.

It should be noted that dominance by one or more species, or the presence of a significant non-native plant population can negatively impact this statistic.

Maximum Depth of Plants

Maximum depth of plants was 17 feet for the 2024 survey, which is the greatest depth recorded for the five surveys. Maximum depth of plants for earlier surveys ranged from 14-16 ft. While some exceptionally clear lakes can support plant growth in waters up to 25 feet deep, turbid waters may not support much growth beyond 6-8 feet. Thus, Lake Denoon falls in the average to slightly better-than-average in terms of maximum rooting depth of plants.

The data from the five surveys is found on Figures 13 and 14 (pages 22 and 23).

Aquatic Plant Survey Results, cont'd.

Average # of Species Per Site (Shallower than maximum depth) and Average # of Species (vegetated sites only)

The Values recorded for the four surveys are as follows:

Statistic	2024	2023	2022	2020	2013
Avg. # Species/Site (shallower than max. depth)	1.46	1.97	1.46	0.98	3.13
Avg. # Species/ Site (vegetated sites only)	1.69	2.14	1.72	1.57	3.01

The values for 2024 are significantly lower than obtained during the 2023 survey. This can be attributed in large part to the herbicide treatment conducted on June 17, 2024 that eliminated Eurasian/Hybrid water-milfoil (EWM/HWM) from the lake, which was present at 63 sites (and observed at another seven) during 2023. Interesting enough, this value is very similar to the value recorded in 2022, which was two years after the SonarOne (fluridone) treatment conducted in 2020. During the 2022 survey, EWM/HWM was present at only 5 sites.

As discussed in earlier reports, the high number recorded in 2013 (3.13) is questionable due to the way in which data was recorded into the Survey Worksheet. In 2013 plant data (Rake Fullness of 1-3) was estimated for sites too shallow to navigate, rather than simply recording these sites as too shallow. This methodology will also explain some of the differences between statistics for the four surveys pertaining to the Avg, # of Native Species/Site immediately below.

Avg. # of Native Species/Site (shallower than max. depth) and Avg. # of Native Species/ Site (vegetated sites only)

These values were as follows:

Statistic	2024	2023	2022	2020	2013
Avg. # Native Species/Site (shallower than max. depth)	1.42	1.55	1.37	0.94	2.80
Avg. # Native Species/ Site (vegetated sites only)	1.64	1.78	1.63	1.54	2.70

These statistics reflect changes in the native plant community alone, as compared to averages for the entire community, including exotics (EWM/HWM, Curly-leaf pondweed and/or Starry Stonewort). The above indicates a continued improvement in the native plant population since 2020.

Table 3

Summary Statistics for 2023, 2022, 2020 and 2013 Aquatic Plant Surveys

Lake Denoon —Waukesha County, WI

Statistic	Aug., 2024	Aug., 2023	Aug., 2022	Aug., 2020	Aug., 2013
Total number of sites visited	390	356	389	387	193
Total number of sites with vegetation	170	144	162	118	206
Total number of sites shallower than maximum depth of plants	196	156	190	188	193
Frequency of occurrence at sites shallower than maximum depth of plants	86.73	92.31	85.26	62.77	106.74
Simpson Diversity Index	0.84	0.83	0.82	0.79	0.88
Maximum depth of plants (ft)**	17.0	14	15	16.0	16.0
Number of sites sampled using rake on Rope (R)	27	37	65	33	0
Number of sites sampled using rake on Pole (P)	183	131	151	144	193
Average number of all species per site (shallower than max depth)	1.46	1.97	1.46	0.98	3.13
Average number of all species per site (veg. sites only)	1.69	2.14	1,72	1.57	3.01
Average number of native species per site (shallower than max depth)	1.42	1.55	1.37	0.94	2.8
Average number of native species per site (veg. sites only)	1.64	1.78	1.63	1.54	2.7
Species Richness	19	17	22	13	19
Species Richness (including visuals)	22	19	23	16	19

Species Richness

This Statistic indicates the number of species observed (either collected by rake or identified visually). The Species Richness for the five surveys are as follows:

Year	# Species	# Species (inc. Visuals)
2024	19	22
2023	17	19
2022	22	23
2020	13	16
2013	19	19

The increased number of species present in 2024, relative to 2023 may be attributed to a combination of factors, such as increased water clarity and the control of EWM/HWM that dominated the plant population in 2023. EWM/HWM formss a dense canopy at the lake surface, thereby out-competing many types of native vegetation by preventing sun-light from penetrating to greater depths.

Floristic Quality of Index

The Floristic Quality Index (FQI) is a measure of a plant community's closeness to an undisturbed condition. Urban lakes, or those with a high level of boat traffic have lower FQI's, meaning fewer species or lacking specific native species that are often associated with undisturbed conditions.

FQI's for any particular lake are often compared to regional or state-wide averages in order to provide perspective. FQI values representing the highest value of the lowest quartile, mean and bottom of the highest quartile of all Wisconsin lakes are 16.9, 20.9, and 27.5.

The FQI for the August 2024 survey is 23.25 (see Table 4, page 21). This lies within the range recorded earlier surveys, from a low of 20.78 in 2020 to a high of 26.15 recorded for the 2022 survey. The 2024 FQI places Lake Denoon above average for all Wisconsin Lakes in terms of disturbance.. For additional perspective, the lowest FQI measured 3.0 (most disturbed), and the highest, 44.6 (most undisturbed).

Finally, you will note from Table 4 that there is a direct correlation between the number of native species present and the Floristic Quality Index (FQI), with a higher number of native species present having a higher FQI. Another factor is the individual species present, with some having a higher Mean "C" , or coefficient of conservatism. Species with higher "C" values are associated with less disturbance, and those with lower values being tolerant of more disturbed conditions.

This concludes the presentation and discussion of the Aquatic Plant Survey Data collected from the August, 2023 and comparison with the three earlier surveys.

Table 4

Floristic Quality Index (FQI) and Summary Statistics (August, 2013, 2020 & 2022-2024)

Lake Denoon —Waukesha County, WI

Species	Common Name	C	2024	2023	2022	2020	2013
Brasenia schreberi	Watershield	6			1		
Ceratophyllum demersum	Coontail	3	1	1	1	1	1
Chara	Muskgrasses	7	1	1	1	1	1
Elodea canadensis	Common waterweed	3	1		1		
Heteranthera dubia	Water star-grass	6	1	1	1	1	1
Lemna triscula	Forked duckweed	6	1				
Najas flexilis	Slender naiad	6	1	1	1		
Najas guadalupensis	Southern naiad	8			1		
Nitella	Nitella	7	1		1		
Nuphar variegata	Spatterdock	6	1	1	1	1	1
Nymphaea odorata	White water lily	6	1	1	1	1	1
Polygonum amphibum	Water smartweed	5					1
Potamogeton amplifolius	Large-leaf pondweed	7	1	1	1	1	1
Potamogeton gramineus	Variable pondweed	7	1	1	1	1	1
Potamogeton illinoensis	Illinois pondweed	6	1	1	1		
Potamogeton praelongus	White-stem pondweed	8	1			1	1
Potamogeton pusillus	Small pondweed	7			1		
Potamogeton richardsonii	Clasping-leaf pondweed	5					1
Potamogeton zosteriformis	Flat-stem pondweed	6	1	1	1	1	1
Stuckenia filiformis	Thread-leaf pondweed	8					1
Stuckenia pectinata	Sago pondweed	3	1	1	1	1	1
Utricularia vulgaris	Common bladderwort	7		1	1	1	
Vallisneria americana	Wild celery	6	1	1	1	1	1
N			16	13	19	12	14
mean C			5.81	5.85	6	6	5.64
FQI			23.25	21.08	26.15	20.78	21.11

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

CITATION: **University of Wisconsin-Madison, 2001. Wisconsin Floristic Quality Assessment (WFQA). Retrieved October 27, 2009 from: http://www.botany.wisc.edu/WFQA.asp**

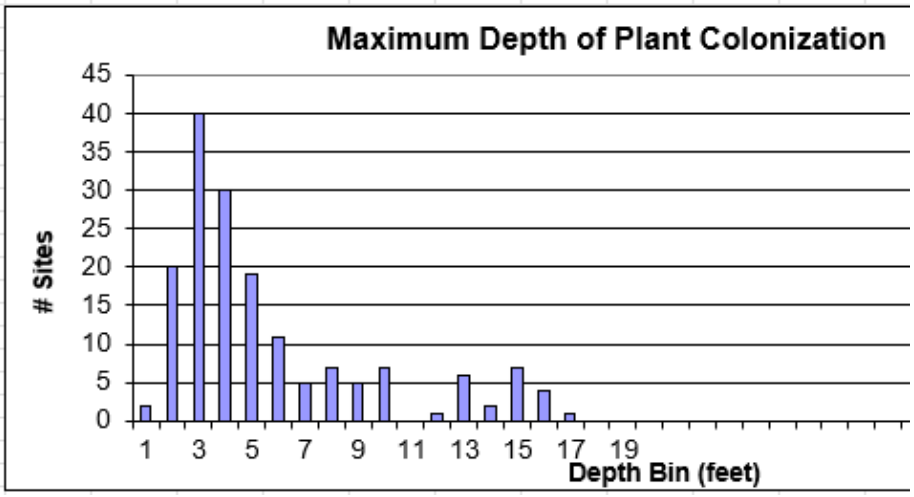
Figure 13

Depth/Colonization Chart for Lake Denoon –Waukesha County, WI

August, 2022-2024 Surveys

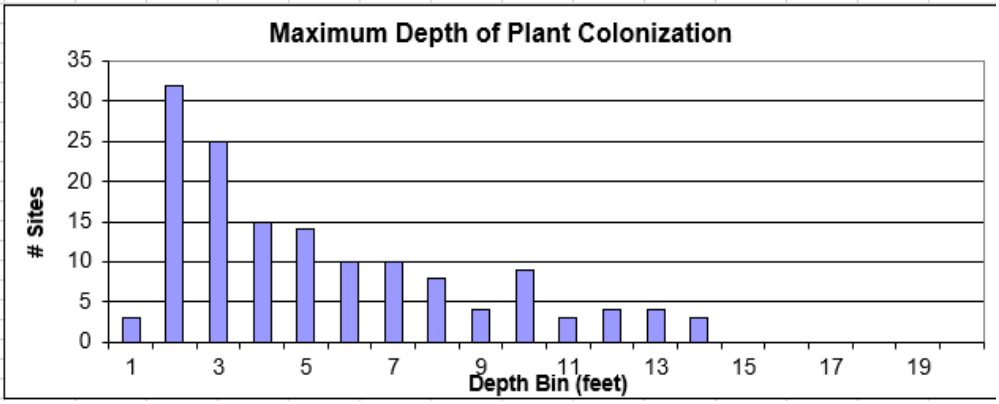
August, 2024 Survey

DEPTH BIN (I	# SITES (NO ENTRY)
1	2
2	20
3	40
4	30
5	19
6	11
7	5
8	7
9	5
10	7
11	0
12	1
13	6
14	2
15	7
16	4
17	1
18	0
19	0
20	0



August, 2023 Survey

DEPTH BIN (I	# SITES (NO ENTRY)
1	3
2	32
3	25
4	15
5	14
6	10
7	10
8	8
9	4
10	9
11	3
12	4
13	4
14	3
15	0
16	0
17	0
18	0
19	0
20	0



August, 2022 Survey

DEPTH BIN (FT)	# SITES (NO ENTRY)
1	5
2	36
3	22
4	14
5	9
6	12
7	6
8	6
9	2
10	0
11	3
12	3
13	4
14	1
15	1
16	0
17	0

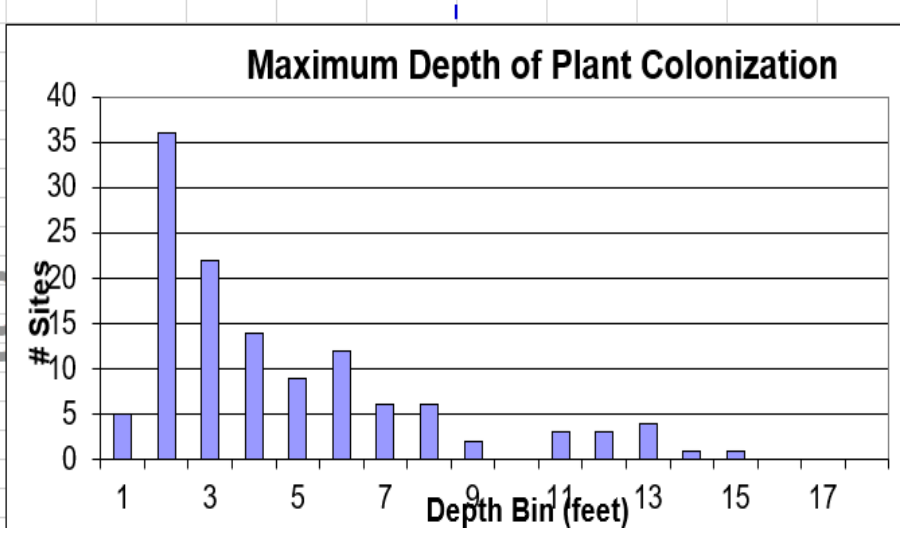


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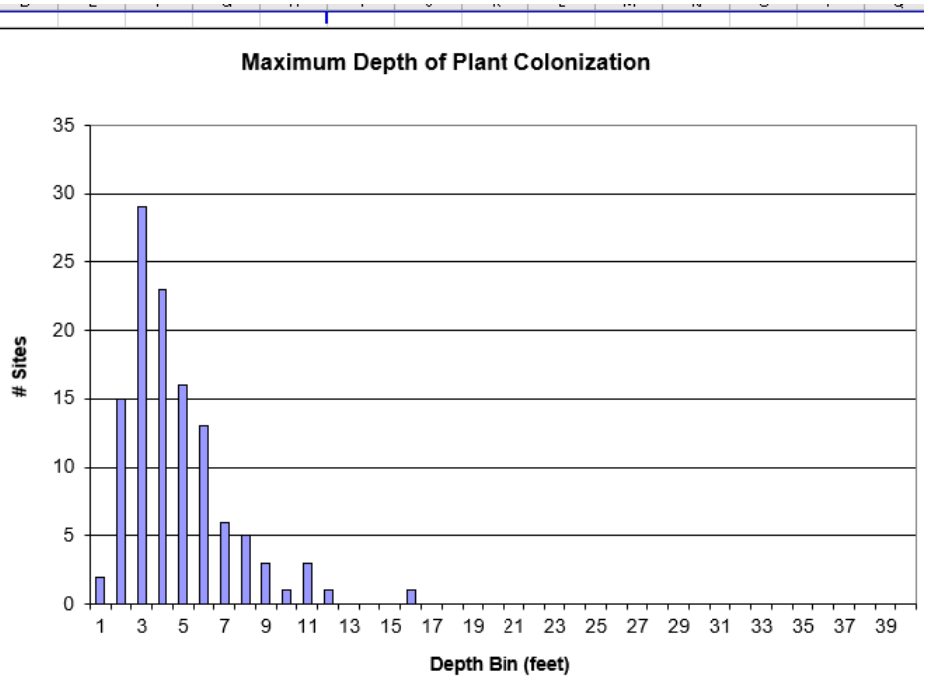
Figure 14

Depth/Colonization Chart for Lake Denoon –Waukesha County, WI

August, 2013 & August, 2020

August, 2020 Survey

DEPTH BIN (F	# SITES (NO ENTRY)
1	2
2	15
3	29
4	23
5	16
6	13
7	6
8	5
9	3
10	1
11	3
12	1
13	0
14	0
15	0
16	1
17	0
18	0
19	0
20	0



August, 2013 Survey

DEPTH B	# SITES (NO ENTRY)
1	24
2	45
3	31
4	14
5	18
6	15
7	7
8	7
9	7
10	3
11	4
12	7
13	2
14	3
15	4
16	1
17	0
18	0
19	0
20	0