AQUATIC VEGETATION MANAGEMENT PLAN FOR THE YEAR 2021
CLEAR, ROUND, AND ANNE LAKES, STEUBEN COUNTY

Robin Scribailo & Mitchell Alix

Aquatic Ecosystem Services, LLC

Biological Sciences

Purdue University North Central

Initial Invasive Survey of the Lake in 2020

- Bridget Harrison from the Conservancy contacted us in 2020 because of concerns about a band of aquatic plants seen encircling the lake.
- Samples sent to us confirmed that the vegetation was predominantly Eurasian water-milfoil.
- Based on that information we made a very late season visit to Clear Lake in October of 2020 to determine the extent of the problem. It was estimated that there were approximately 51acres of EWM on Clear Lake and 7.7 acres on Round Lake based on the average width of the band.
- A decision was made by the conservancy to fund a first year LARE Aquatic Vegetation Management Plan type study using their protocol to more accurately examine lake quality and management options.
- Conversations with LARE staff indicated that there was the possibility of funding in the next cycle as year two of an AVMP if the survey was performed according to the LARE protocol.

Outline of Presentation

- What biological attributes make a lake high-quality?
- Why are aquatic plants critical to ecosystem health?
- Why are excessive aquatic plant a problem for lakes?
- Background to the Lake and Rive Enhancement (LARE) program of DNR.
- Study Requirements of a LARE aquatic vegetation management plan (AVMP).
- Background vegetation history of Clear and Round Lakes.
- Vegetation survey results and aquatic plant community diversity in Clear and Round Lakes
- Invasive aquatic plant species distribution and implications
- Action Plan for Management in the coming year
- Question period

What biological attributes make a lake high-quality?

- Small watersheds that are not highly agricultural or industrial in origin.
- Sanitary and storm water systems that limit the flow of nutrients into the lake.
- Homeowners and other stakeholders who strive to control negative impacts from their property on the lake ecosystem.
- Relatively low productivity due to their low nutrient content.
- Tend to have sandy or marly bottoms with limited excessive accumulations of organic matter (goopy sediments).

What biological attributes make a lake high-quality?

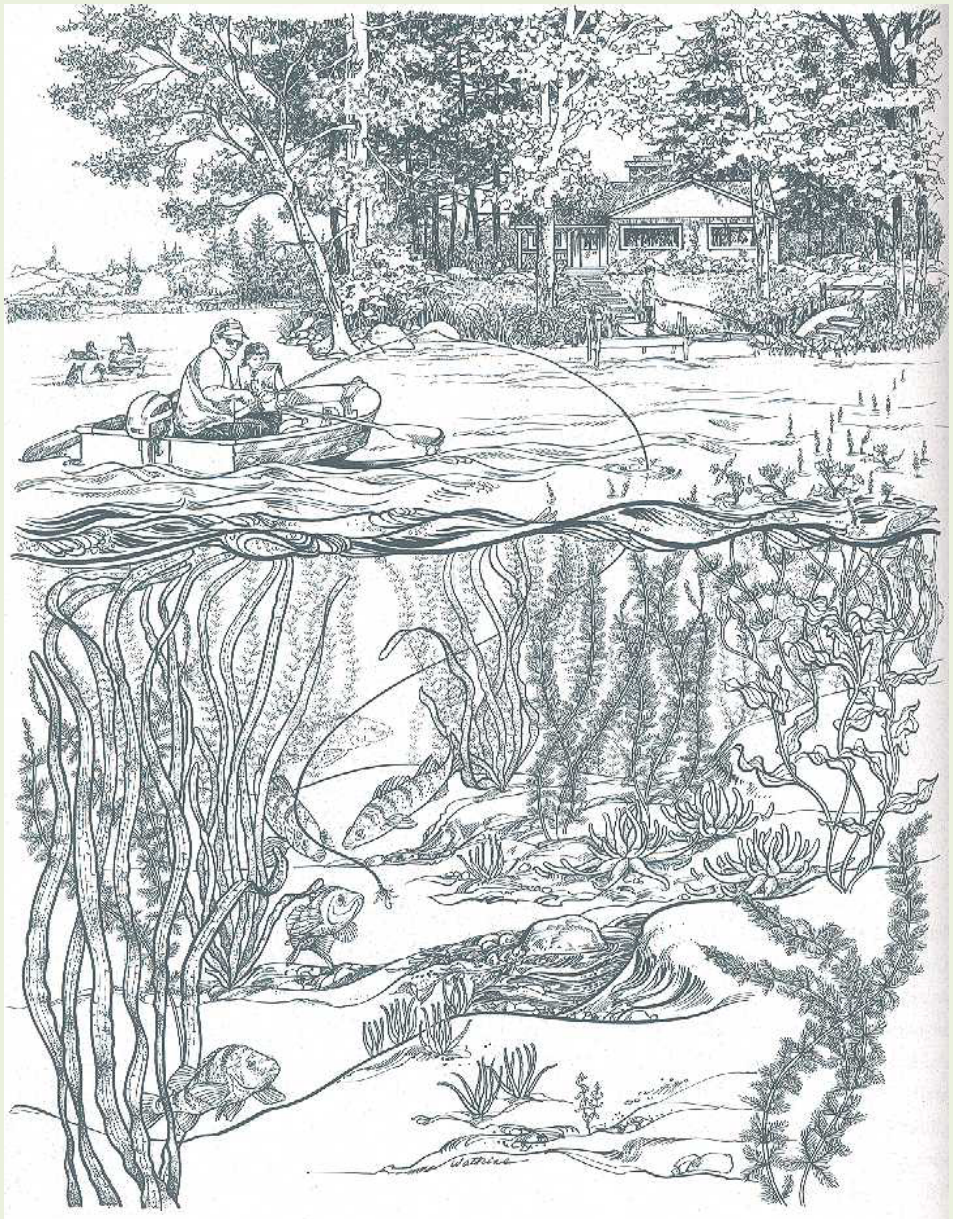
A good measure of the quality of a lake is the Carlson trophic state index (TSI) which uses algal biomass (assessed by chlorophyll-a concentration) in conjunction with total phosphorus and Secchi depth measurements to derive an index value that can define the trophic status of a lake. The average Carlson TSI for Clear Lake in data from 1989 to 2012 was 43 with a range from 34-59. This value was 40 for Round Lake with data from three surveys.

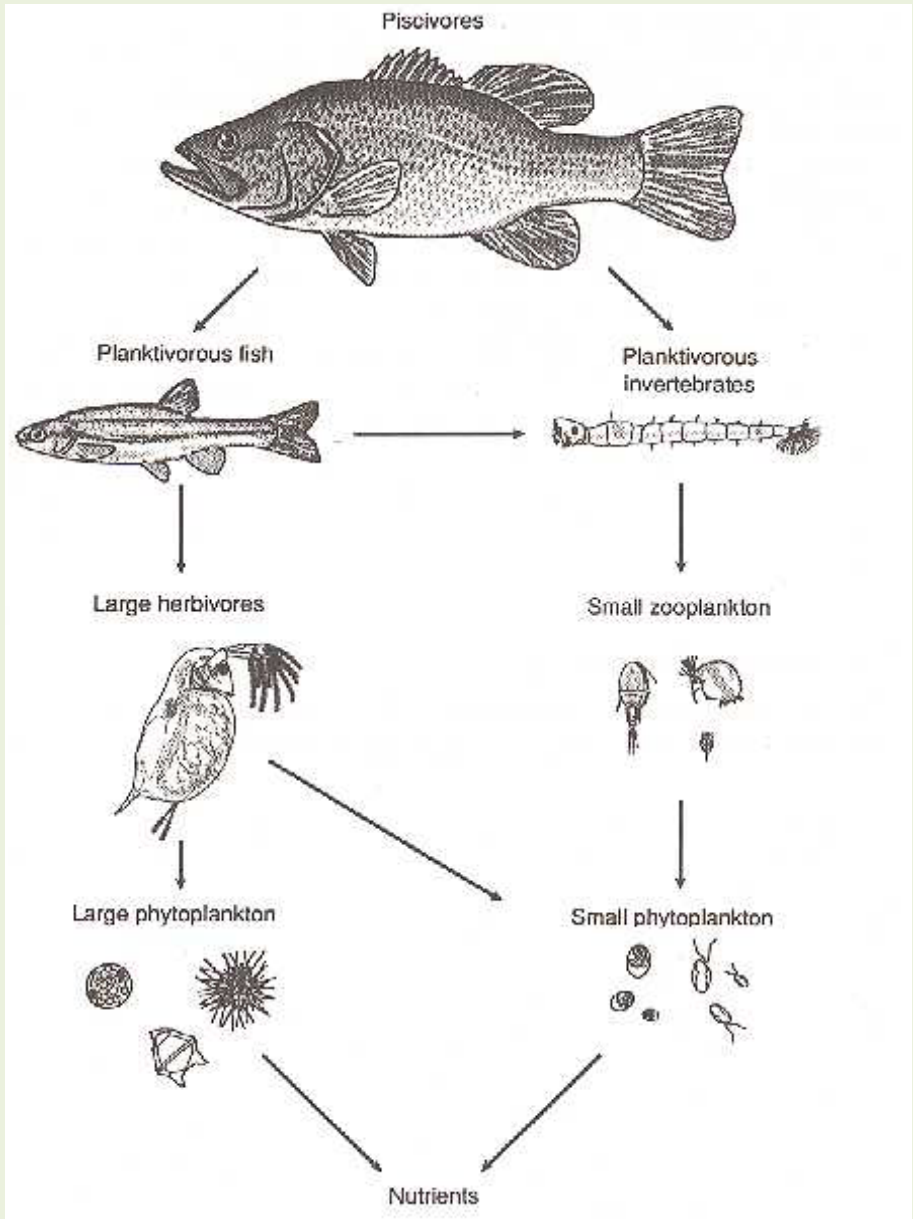
According to this index Clear and Round Lakes lie at the boundary between oligotrophic and mesotrophic lakes with a cutoff point for the oligotrophic category of 40. Of the 179 lakes randomly sampled by the Clean lakes Program for the period from 2009-2011, the Carlson TSI value of 34 for Clear Lake was one of the three lowest in the state. The average Carlson Index for Indiana Lakes from the previous study for the Northeastern region of Indiana was 54.

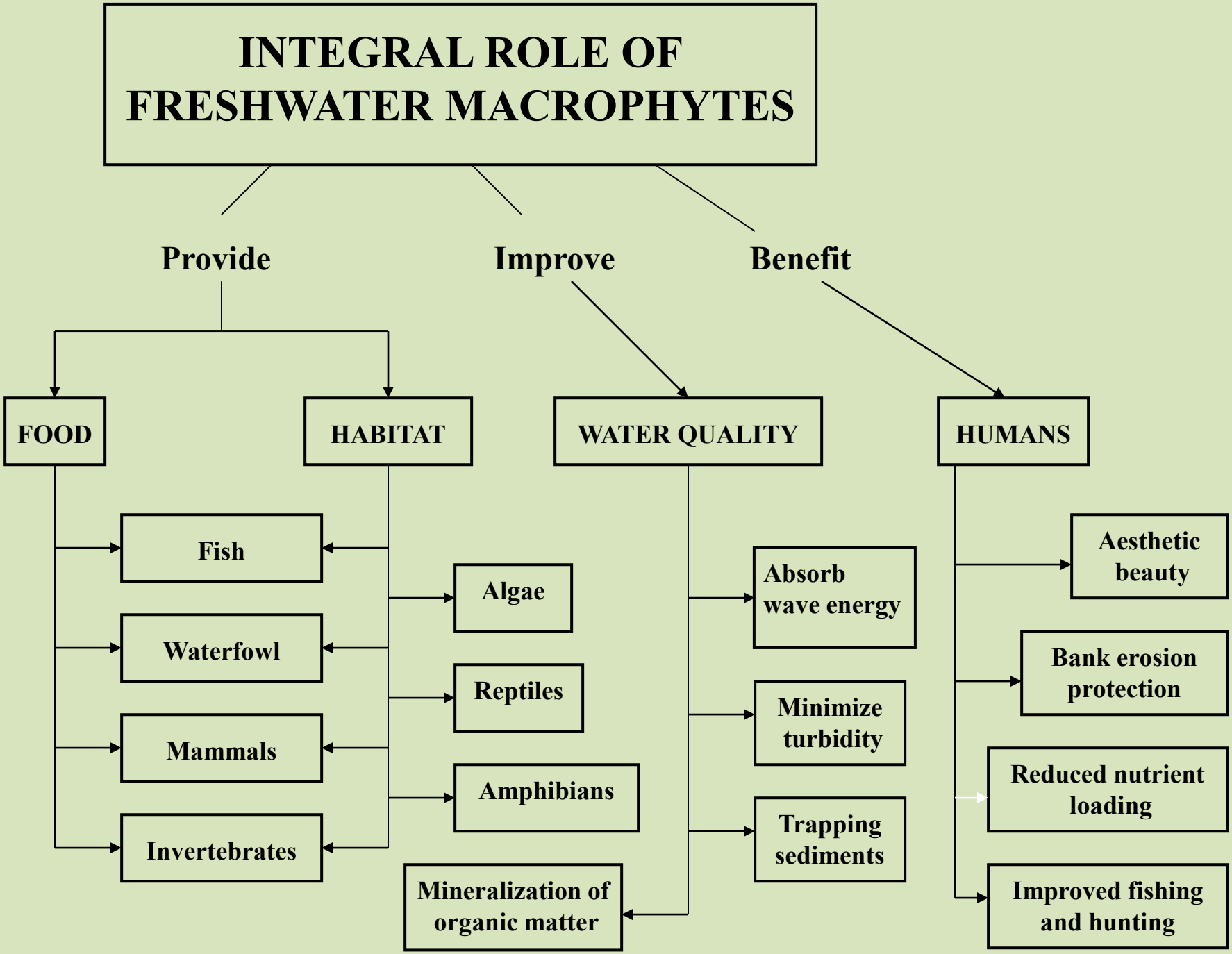
Data from 2017 for Clear Lake from the Indiana Clear Lakes Program (Indiana University) shows a secchi depth of 11.5, phosphorus of 13 and chlorophyll a of 3.22. The Carlson Index derived from these values is 35.7 which makes the lake fall into the oligotrophic status.

Why are aquatic plants critical to ecosystem health?

TROPHIC CASCADE IN LAKES



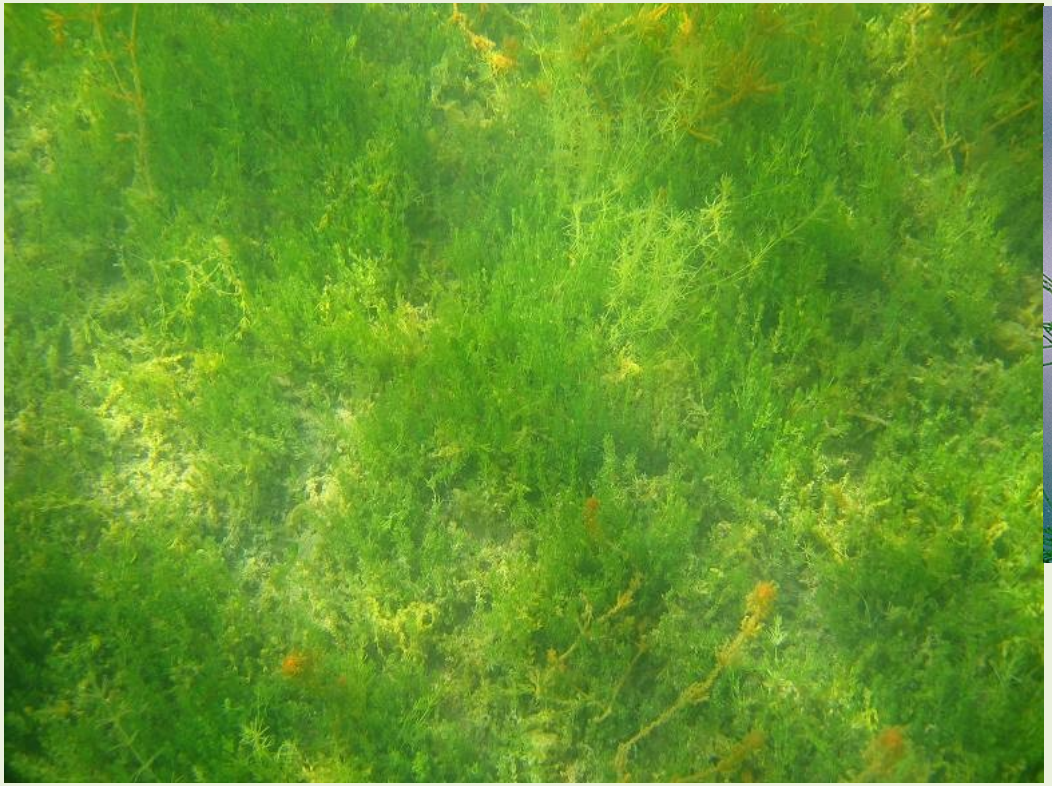



INTEGRAL ROLE OF FRESHWATER MACROPHYTES
Provide
Improve
Benefit
FOOD
HABITAT
WATER QUALITY
HUMANS
Fish
Waterfowl
Mammals
Invertebrates
Algae
Reptiles
Amphibians
Mineralization of organic matter
Absorb wave energy
Minimize turbidity
Trapping sediments
Aesthetic beauty
Bank erosion protection
Reduced nutrient loading
Improved fishing and hunting

Aquatic Vascular Plants

Aquatic Vascular Plants

Charophytes form Large Meadows on Lake Bottom



Why are excessive aquatic plants a problem for lakes?

- What is defined as excessive is greater than 30 to 40 percent of the lake bottom covered with aquatic plants.
- As growth of aquatic plants increases and these plants die in the fall month's they contribute more organic matter to the sediments which begin to accumulate as a thick layer on the bottom.
- Thicker more organic sediments allow invasive species to grow and spread more rapidly often out-competing native species.
- As aquatic plant biodiversity declines niche diversity and quality for other organisms also declines.
- Filamentous algae abundance increases with a switch from green algae to cyanobacteria (blue-green algae).
- Recreation of all types becomes increasingly impaired.

IDNR Lake Funding

- Preparation of a lake-wide, long-term integrated aquatic plant management plan provides a valuable tool for lake protection. It also is a prerequisite to eligibility for Lake and River Enhancement program funding to control exotic or nuisance species.

- Aquatic plants play an integral role in the maintenance of lake health. A rich diversity of aquatic plants is ideal. Excessive dominance of one or a few species of aquatic plants can lead to lake decline and eutrophication over time.

IDNR Lake Funding

The aquatic plant management plan for Clear, Round, and Anne Lakes Lake should meet the following goals as specified by the LARE program:

1) develop or maintain a stable, diverse aquatic plant community that supports a good balance of predator and prey fish and wildlife species, good water quality, and is resistant to minor habitat disturbances and invasive species.

2) direct efforts to preventing and/or control the negative impacts of aquatic invasive species.

3) provide reasonable public recreational access while minimizing the negative impacts on plant and wildlife resources.

IDNR LARE Requirements for a Lake Management Plan

- A. Problem Statement
- B. Management Goals
- C. Watershed and Water Body Characteristics
- D. Present Water Body Uses
- E. Characterize Aquatic Plant Community
  - Map of Exotic and Invasive Species
  - Threatened and Endangered Species Surveys
  - Description of Beneficial and Problem Plant Areas
- F. Aquatic Plant Management Alternatives
- H. Action Plan and Budget

TIER II AQUATIC PLANT METHODS

1. Quantitative sampling method by lake depth.
2. Sampling is conducted twice to ensure a representative survey of the aquatic plant community.
3. The number of points sampled by depth contour is determined by trophic status of the lake and lake size.
4. Plants are sampled at each point using a double-headed rake dragged along the bottom for a distance of 10 feet.
5. Plant abundance for each species is scored by measuring the depth of material placed on one side of the rake relative to five incremental marks on the tines.

Sampling Effort by Trophic Status

Trophic State	Maximum Depth of Sampling
Hypereutrophic	10
Eutrophic	15
Mesotrophic	20
Oligotrophic	25

Table 2.0. Protocol for the number of random samples required for the determination of aquatic vegetation abundance. The number of samples is based on lake surface area and trophic state, in which samples are distributed by depth class (modified from IDNR, unpubl. data). Highlighted values correspond to sampling regime for Hudson Lake.

		Eutrophic Contours			Mesotrophic Contours				Oligotrophic Contours				
		Number of Random Samples											
Area (Acres)	Total	0-5	5-10	10-15	0-5	5-10	10-15	15-20	0-5	5-10	10-15	15-20	20-25
<10	20	10	7	3	10	5	3	2	10	4	3	2	1
10-49	30	10	10	10	10	10	7	3	10	10	5	3	2
50-99	40	17	13	10	10	10	10	10	10	10	10	7	3
100-199	50	23	17	10	14	14	12	10	10	10	10	10	10
200-299	60	30	20	10	18	16	16	10	14	12	12	12	10
300-399	70	37	23	10	22	20	18	10	17	15	14	14	10
400-499	80	43	27	10	25	25	22	10	**19**	**18**	**17**	**16**	**10**
500-799	90	50	30	10	29	27	24	10	22	21	19	18	10
>800	100	57	33	10	33	31	26	10	25	23	22	20	10

Sampling Rake

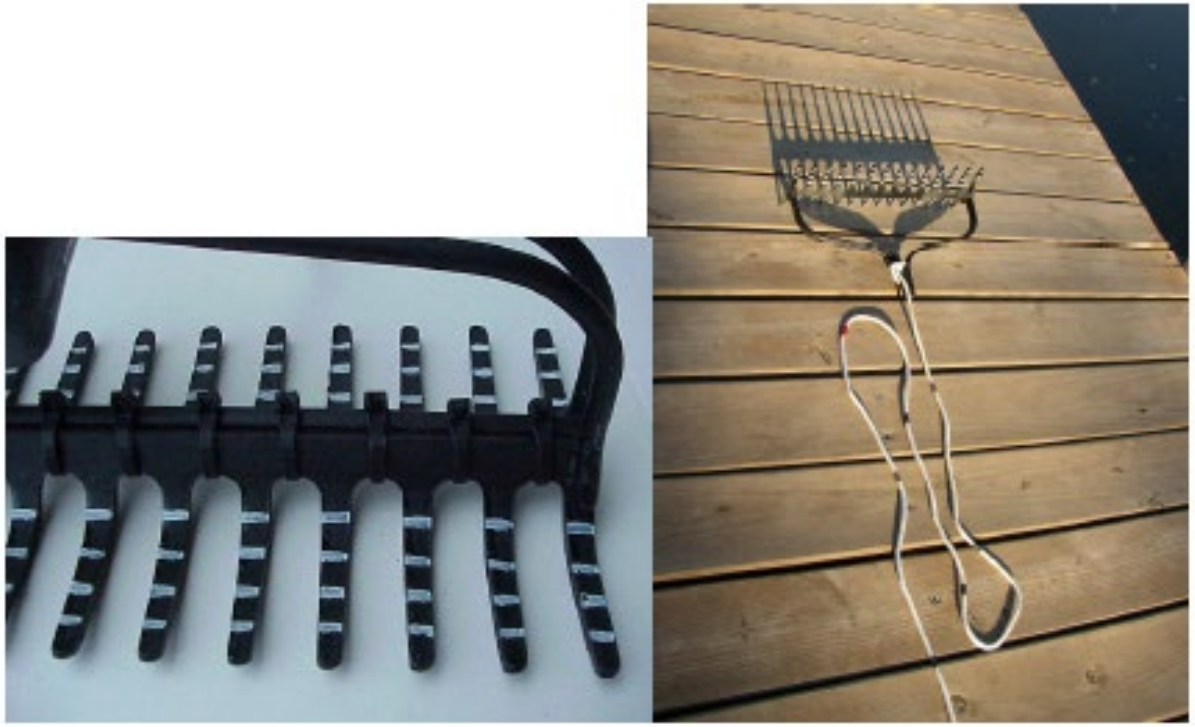


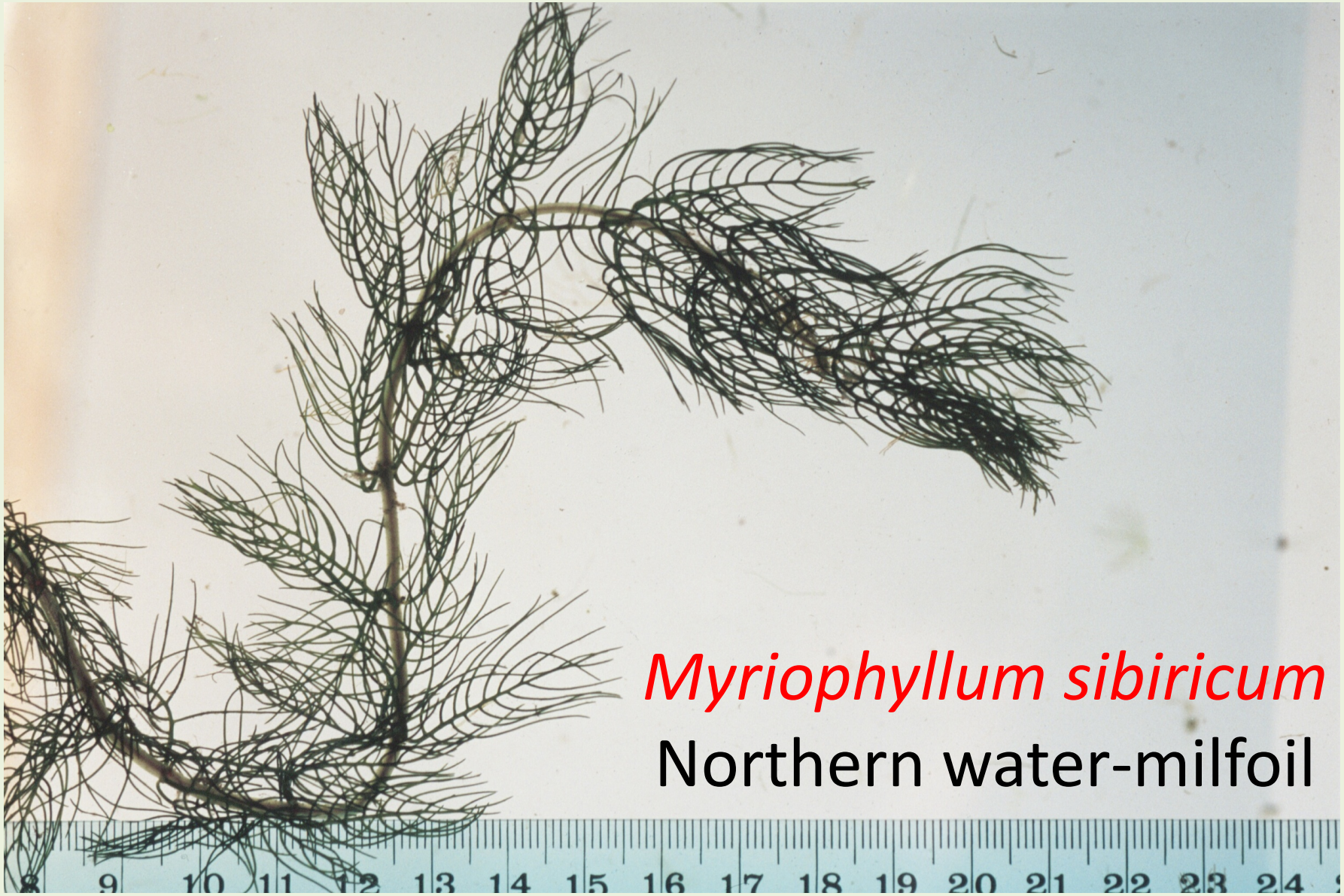
Figure 1: Double-headed rake for aquatic vegetation sampling

Vegetation Abundance Rankings

Rake teeth filled (%)	Abundance rating
100+	5
20-100	3
1-19	1
No plants retrieved	0
Ratings modified from Deppe and Lathrop (1992)	

Native Submerged Aquatic Plants of Clear and Round Lakes

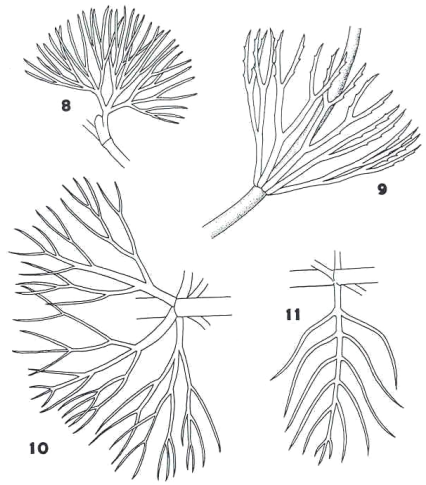
Stoneworts


Myriophyllum sibiricum
Northern water-milfoil

Variable-leaved water-milfoil

Illinois pondweed

White-stem pondweed (state-threatened)



Figs. 8–11. Dissected leaves, × 2:
8. *Ranunculus longirostris*. Dissected leaves of some other aquatic species of this genus differ slightly in shape and outline, but all are alternate, lack a central axis, and are ± palmately dissected beyond the petiole or stipular sheath at base.
9. *Ceratophyllum demersum*. Note whorled leaves (more than 2 at the node), each equally forked (dichotomous) once or twice, toothed.
10. *Megalodonta beckii*. Leaves technically opposite and immediately forking, hence appearing whorled, but not dichotomous (as in fig. 9) nor with straight central axis (as in fig. 11).
11. *Myriophyllum* sp. Leaves in whorl of 4, each leaf pectinate (with definite straight central axis and unbranched lateral segments).

Ceratophyllum demersum

Coontail

Tolypella or Chara?

Qualitative Survey of Lake Anne

Submergent

Chara haitensis	Haitian stonewort
Ceratophyllum demersum	Coontail
Elodea canadensis	Canadian water-weed
Heteranthera dubia	Water star-grass
Myriophyllum spicatum	Eurasian water-milfoil
Potamogeton amplifolius	Broad-leaved pondweed
Potamogeton crispus	Curly-leaved pondweed
Potamogeton illinoensis	Illinois pondweed
Potamogeton natans	Floating-leaved pondweed
Potamogeton praelongus	White-stem pondweed
Potamogeton zosteriformis	Flatstem pondweed
Stuckenia pectinata	Sago-pondweed
Vallisneria americana	Eel-grass

Emergent

Peltandra virginica	Arrow arum
Typha angustifolia	Narrow-leaved cat-tail
Decodon verticillatus	Swamp loosestrife
Lythrum salicaria	Purple loosestrife
Pontederia cordata	Pickerel-weed

Floating

Nuphar advena subsp. *Advena*

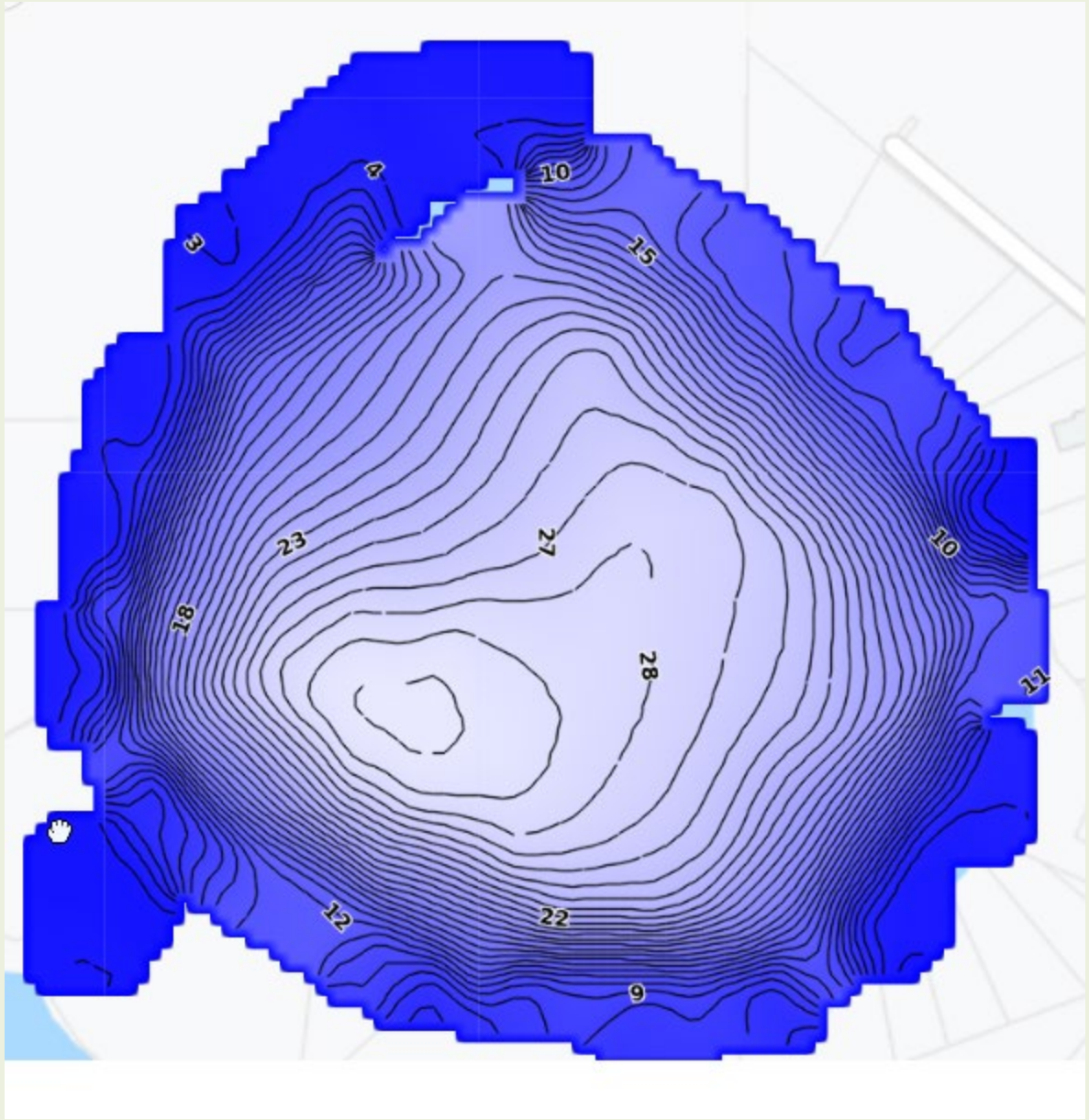
Yellow pond-lily

Nuphar variegata	Bull-head pond-lily

Nymphaea odorata subsp. *tuberosa*

White water-lily

Spirodela polyrrhiza	Greater duckweed
Wolffia columbiana	Common water-meal



Lake Anne Depth Map. 05/27/2021

Round Lake

Tier II Vegetation Survey Results Clear Lake 2021

Occurrence and Abundance of Submersed Aquatic Plants in Clear Lake.

County:	Steuben	Secchi (ft):	9,4	Mean species/site:	2.10
Date:	7/19/2021	Sites with plants:	80	SE Mean species/site:	0.16
	23.5		80		1.64
Littoral Depth (ft):		Sites with native plants:		Mean native species/site:	
Littoral Sites:	97	Number of species:	17	SE Mean natives/site:	0.13
Total Sites:	100	Number of native species:	15	Species diversity:	0.87
		Maximum species/site:	7	Native species diversity:	0.86

All Depths	Frequency of Occurrence	Rake score frequency per species				Plant Dominance
Species		**0**	**1**	**3**	**5**	
Chara spp	43.0	57.0	35.0	7.0	1.0	12.2
Eurasian water-milfoil	43.0	57.0	30.0	10.0	3.0	15.0
Coontail	32.0	68.0	30.0	1.0	1.0	7.6
Eeel grass	18.0	82.0	18.0	0.0	0.0	3.6
Illinois pondweed	18.0	82.0	18.0	0.0	0.0	3.6
Sago pondweed	11.0	89.0	10.0	1.0	0.0	2.6
common bladderwort	9.0	91.0	8.0	1.0	0.0	2.2
Slender pondweed	9.0	91.0	9.0	0.0	0.0	1.8
Canada water-weed	5.0	95.0	5.0	0.0	0.0	1.0
Nitellla spp	5.0	95.0	3.0	2.0	0.0	1.8
Richardsons pondweed	4.0	96.0	3.0	1.0	0.0	1.2
Curly-leaf pondweed	3.0	97.0	3.0	0.0	0.0	0.6
flat-stem pondweed	3.0	97.0	3.0	0.0	0.0	0.6
slender naiad	3.0	97.0	3.0	0.0	0.0	0.6
Fire's pondweed	2.0	98.0	2.0	0.0	0.0	0.4
Variable-leaved water-milfoil	1.0	99.0	1.0	0.0	0.0	0.2
water star-grass	1.0	99.0	1.0	0.0	0.0	0.2

Clear Lake Summer Tier II Species Frequency Comparison

All Depths		Frequency of Occurrence 2021	Frequency of Occurrence 2013
Species			
Chara spp		43	34
Eurasian water-milfoil		43	25
Coontail		32	35
Eel grass		18	30
Illinois pondweed		18	23
Sago pondweed		11	13
common bladderwort		9	1
Slender pondweed		9	13
Canada water-weed		5	29
Nitellla spp		5	10
Richardsons pondweed		4	18
Curly-leaf pondweed		3	1
flat-stem pondweed		3	14
slender naiad		3	18
Frie's pondweed		2	0
Variable-leaved water-milfoil		1	0
water star-grass		1	17
white-stem pondweed		1	0
northern water-milfoil		0	31
spiny naiad		0	1

Tier II Vegetation Survey Results Round Lake 2021

Occurrence and Abundance of Submersed Aquatic Plants in Round Lake

County:	Steuben	Secchi (ft):	6	Mean species/site:	1.43
Date:	7/19/2021	Sites with plants:	22	SE Mean species/site:	0.25
Littoral Depth (ft):	14.9	Sites with native plants:	13	Mean native species/site:	0.73
Littoral Sites:	26	Number of species:	11	SE Mean natives/site:	0.20
Total Sites:	30	Number of native species:	8	Species diversity:	0.84
		Maximum species/site:	5	Native species diversity:	0.86

All Depths	**Frequency of Occurrence**	**Rake score frequency per species**				**Plant Dominance**
Species		**0**	**1**	**3**	**5**	
Starry Stonewort	46.7	53.3	10.0	16.7	20.0	32.0
Eurasian water-milfoil	20.0	80.0	10.0	10.0	0.0	8.0
Illinois pondweed	16.7	83.3	16.7	0.0	0.0	3.3
Chara spp	10.0	90.0	3.3	3.3	3.3	6.0
common bladderwort	10.0	90.0	10.0	0.0	0.0	2.0
Nitella spp	10.0	90.0	3.3	6.7	0.0	4.7
Variable-leave water-milfoil	10.0	90.0	10.0	0.0	0.0	2.0
Coontail	6.7	93.3	6.7	0.0	0.0	1.3
Humped bladderwort	6.7	93.3	6.7	0.0	0.0	1.3
Curly-leaf pondweed	3.3	96.7	3.3	0.0	0.0	0.7
Canada water-weed	0.0	100.0	0.0	0.0	0.0	0.0
Large-leaf pondweed	3.3	96.7	3.3	0.0	0.0	0.7

Round Lake Tier Summer Tier II Species Frequency Comparison

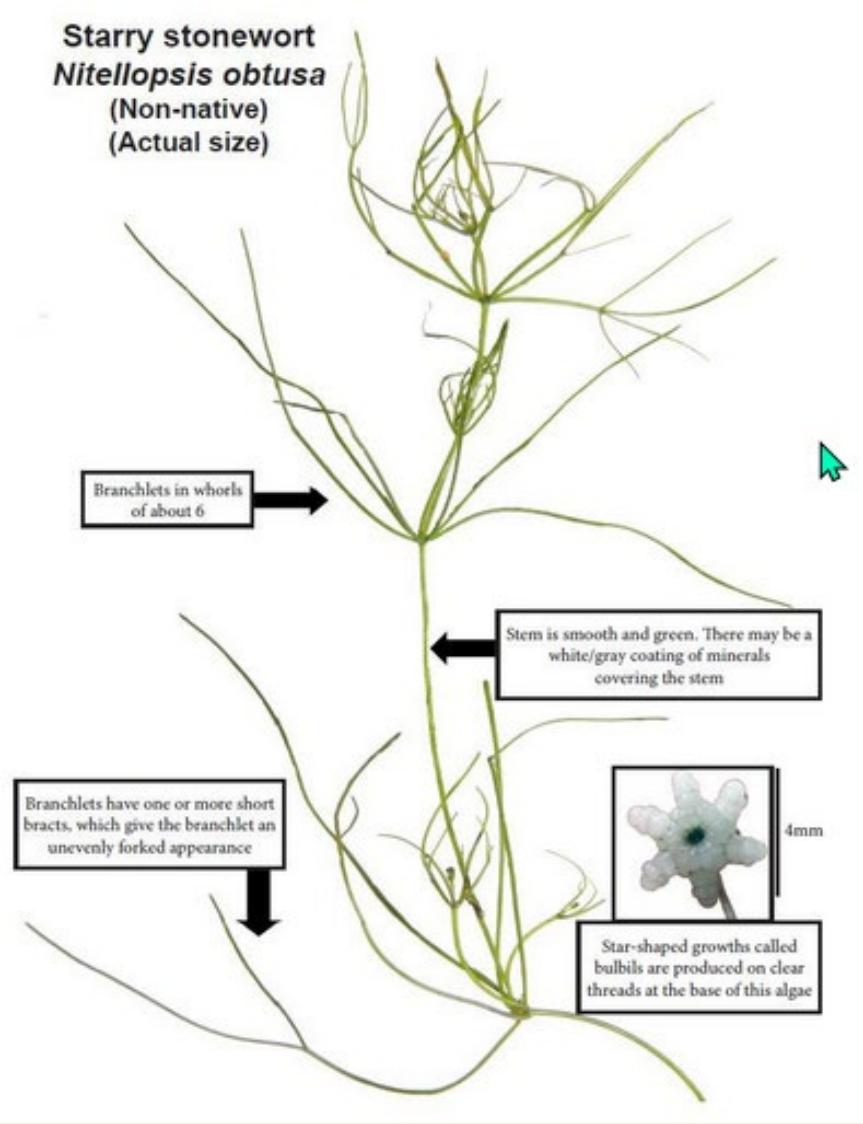
All Depths		**Frequency of Occurrence 2021**	**Frequency of Occurrence 2013**
Species			
Starry Stonewort		46.7	0
Eurasian water-milfoil		20	3.3
Illinois pondweed		16.7	20
Chara spp		10	26.7
common bladderwort		10	43.3
Nitella spp		10	13
Variable-leave water-milfoil		10	10
Coontail		6.7	20
Humped bladderwort		6.7	0
Curly-leaf pondweed		3.3	3.3
Large-leaf pondweed		3.3	3.3
Canada water-weed		0	3.3
Common naiad		0	20
eel-grass		0	6.7
Spiny naiad		0	3.3

Submerged Invasive Aquatic Plant Species

Curly-leaf pondweed (*Potamogeton crispus*)


UGA5269045

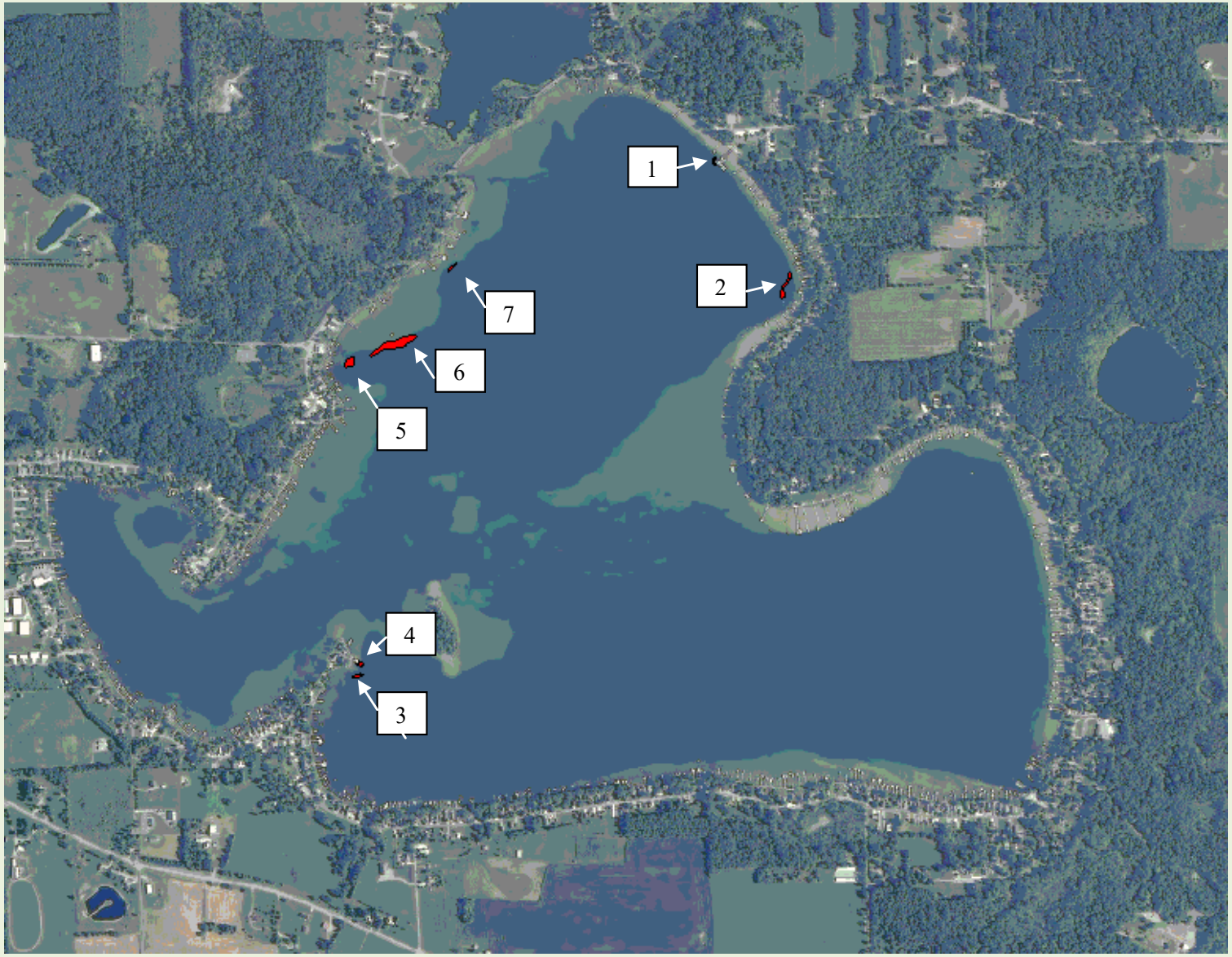
Submerged Invasive Aquatic Plant Species



LARE Mapping of Invasive Aquatic Plant Species

- Initial mapping of invasive species was carried out in a Spring survey of the lakes while the first Tier-II survey iwas being done. A combination of visual recognition, side-scan sonar, and many rake tosses are needed to establish boundaries of the plants.
- By the second summer survey it is easier to establish the limits of invasive species beds because plants have grown more and are closer to the surface. This information is used to map invasive species on the lake using the appropriate program.

Clear lake, Steuben County Eurasian water-milfoil beds May 2013



Round Lake, Steuben County Curly-leaf pondweed beds May 2013

Polygon ID	Area	Average Depth
1	0.01	10.0
2	0.23	8.0

Invasive Species Mapping Results for 2021

Round Lake Invasive Aquatic Plant Species Mapping

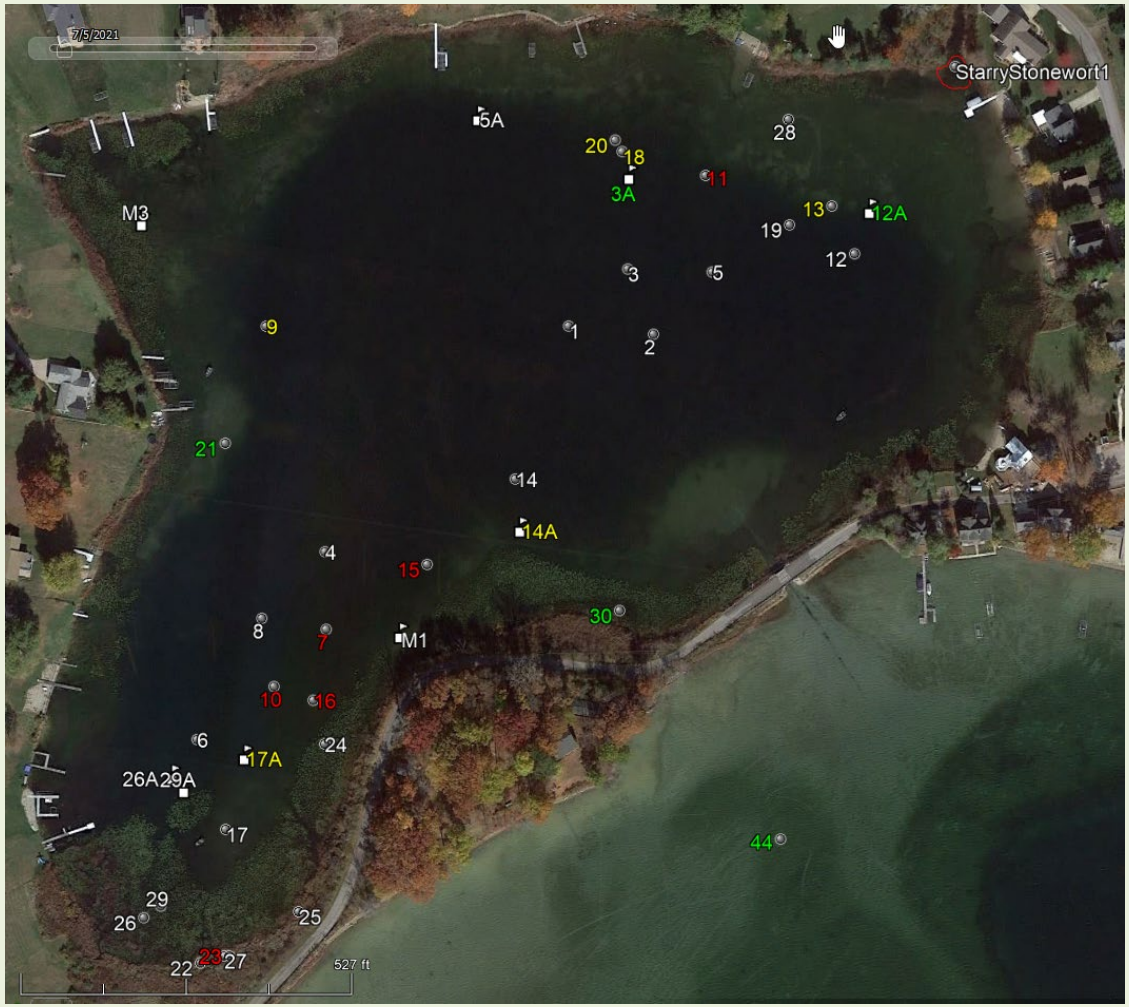


Figure 10.0. Starry Stonewort distribution in Round Lake July 19, 2021. White numbers designate sampled points, green numbers are rake scores of 1, yellow are lake scores of 3, and red are rake scores of 5. The species blankets the bottom down to a depth of about 20 feet. Given the depth profile of the lake and the lake size (12 acres) it is estimated that there is at least six acres of Starry Stonewort.

Figure 11.0 Map of EWM distribution on Round Lake based on mapping using sonar, many rake tosses to determine bed width, and Tier II sampling data. Acreages are shown in Table 2.0. White numbers are sampled points, green numbers are rake scores of 1, yellow are lake scores of 3, and red are scores of 5.

Common Name	Invasive Species	Polygon Identification	Acreage
Eurasian water-milfoil	Myriophyllum spicatum	EWM1	2.78
Eurasian water-milfoil	Myriophyllum spicatum	EWM2	0.49
Eurasian water-milfoil	Myriophyllum spicatum	EWM3	1.1
Eurasian water-milfoil	Myriophyllum spicatum	EWM4	1.6
TOTAL			6.00

Table 2. Eurasian water-milfoil beds in Round Lake, Steuben County, July 19th, 2021.

Clear Lake Invasive Aquatic Plant Species Mapping

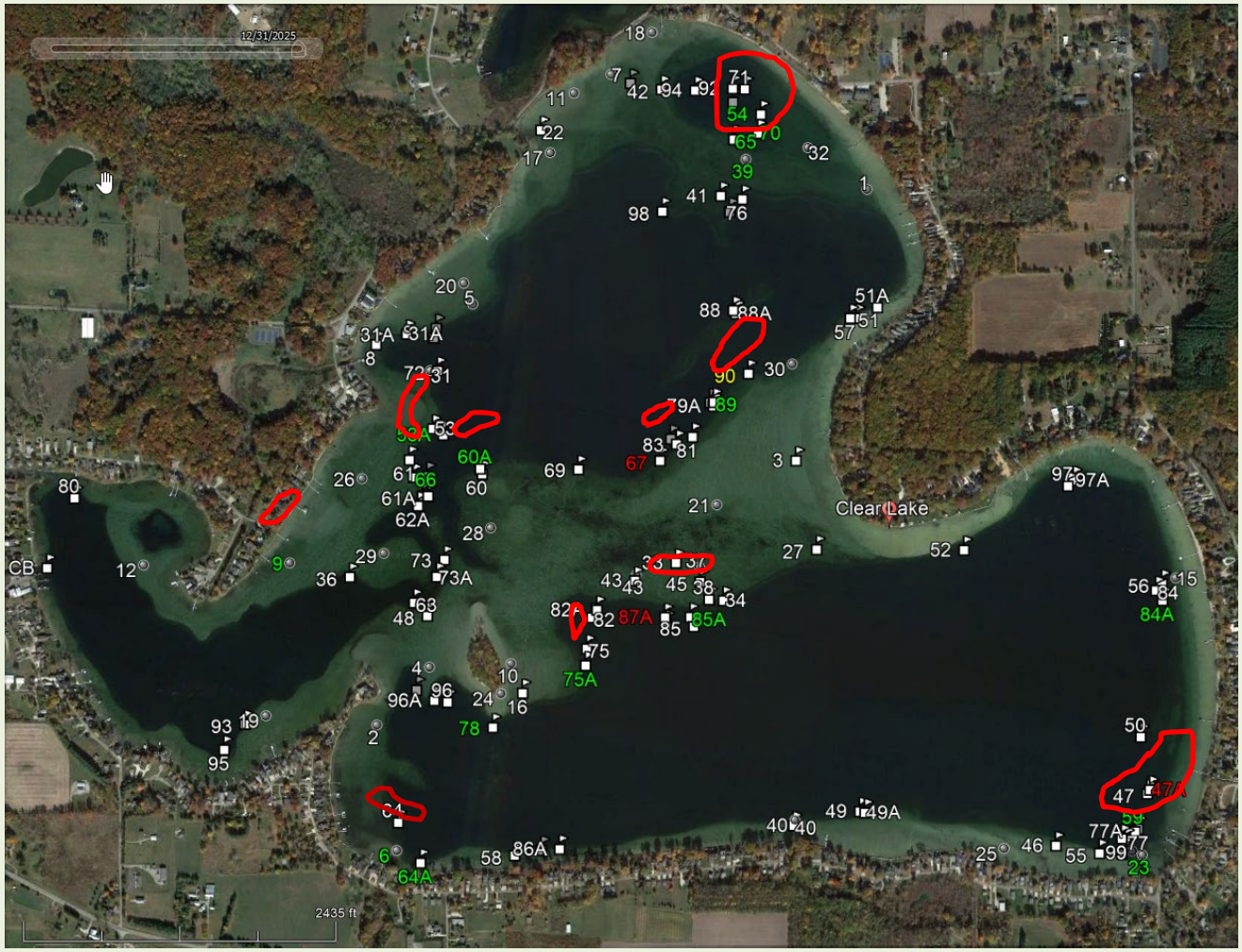


Figure 3. Map of distribution of curly-leaf pondweed on Clear Lake, Steuben County, May 26th, 2021. White numbers designate sampled points, green numbers are rake scores of 1, yellow are lake scores of 3, and red are rake scores of 5. Red polygons total 16.7 acres plus 0.5 acres on Round Lake.

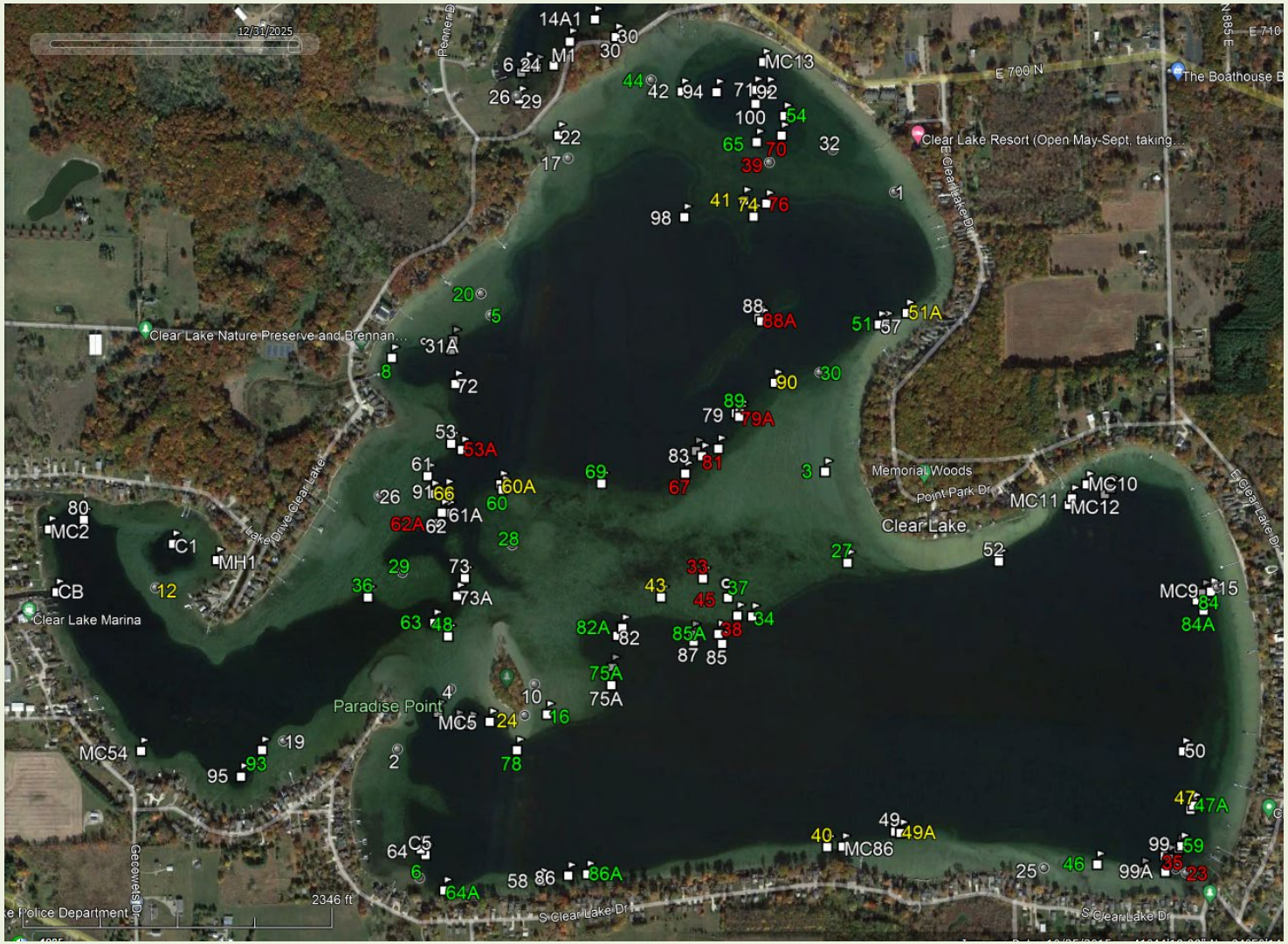


Figure 6. Map of distribution of Eurasian water-milfoil on Clear Lake, Steuben County, July19/20th, 2021. White numbers designate sampled points, green numbers are rake scores of 1, yellow are lake scores of 3, and red are rake scores of 5. Note that points with an A were moved because they were not in the correct depth category.

Fig.8. A drone photo of the EWM band present at the drop-off around Clear Lake. This photo is just east of the island. The boats provide some measure of scale.

Figure 7.0 Map of EWM distribution based on mapping using sonar, many rake tosses to determine bed width, Tier II sampling data, and drone photo and video. There are 95 acres of EWM shown.

Common Name	Invasive Species	Polygon Identification	Acreage
Eurasian water-milfoil	Myriophyllum spicatum	EWM1	5.21
Eurasian water-milfoil	Myriophyllum spicatum	EWM2	10.6
Eurasian water-milfoil	Myriophyllum spicatum	EWM3	22
Eurasian water-milfoil	Myriophyllum spicatum	EWM4	8.95
Eurasian water-milfoil	Myriophyllum spicatum	EWM5	2.26
Eurasian water-milfoil	Myriophyllum spicatum	EWM6	3.93
Eurasian water-milfoil	Myriophyllum spicatum	EWM7	7.53
Eurasian water-milfoil	Myriophyllum spicatum	EWM8	6
Eurasian water-milfoil	Microphyll spicatum	EWM9	21.7
Eurasian water-milfoil	Myriophyllum spicatum	EWM10	3.74
Eurasian water-milfoil	Myriophyllum spicatum	EWM11	3
TOTAL			**95**

Table 1. Eurasian water-milfoil beds in Clear Lake, Steuben County, July 19th, 2021.

Aquatic Plant Herbicide Application Costs

A. Treatment of Curly-Leaf pondweed control with Aquathol K
early season at $160.00 per acre for 17.2 acres would be $**2752**

B. Treatment of EWM with granular 2,4-D (Navigate) at $350.00/acre

(average 6.0 ft depth) for 104 acres would be **$36,400**

Action Plan Meeting

- Robin Scribailo of AQES, and Elizabeth Strick, Karen Horrell, and Dan Rippe of the Clear Lake Conservancy, as well as LARE staff Rod Edgell, Eric Fischer, and Linnea Petercheff attended an online meeting to discuss the results of the invasive species mapping and Tier II aquatic vegetation survey performed on the lakes on May 26th, and July 19th and 20th. Based on this data an action plan to regulate invasive aquatic plant species was discussed for submission to the LARE program for 2022.

Action Plan-Starry Stonewort

- IDNR through a grant from the Great Lakes Restoration Initiative (GLRI) has monitored and treated starry stonewort on Round Lake from 2018 -2021. It was first documented there in 2016. Treatments in 2021 were sub-contracted to Aquatic Weed Control and were performed on 7/8/21 & 8/17/21 using Cutrine Ultra .8 ppm copper @ 2.4 gallon/Ac-ft.

- A small area (0.5acres) of starry stonewort was noted in Clear lake in 2019 and has been treated twice annually since then. Treatments in 2021 were performed by Aquatic Weed Control on the same dates as above using 2.4 gallon per ac/ft Cutrine plus 1qt of Hydrothol per acre mix.

- IDNR will continue to treat Starry Stonewort with funds provided from the grant through 2022 so no action is required by the conservancy for the LARE application in 2022.


CLear Lake GLRI SSW Area
Area 1
0.5 acres, 4 ft

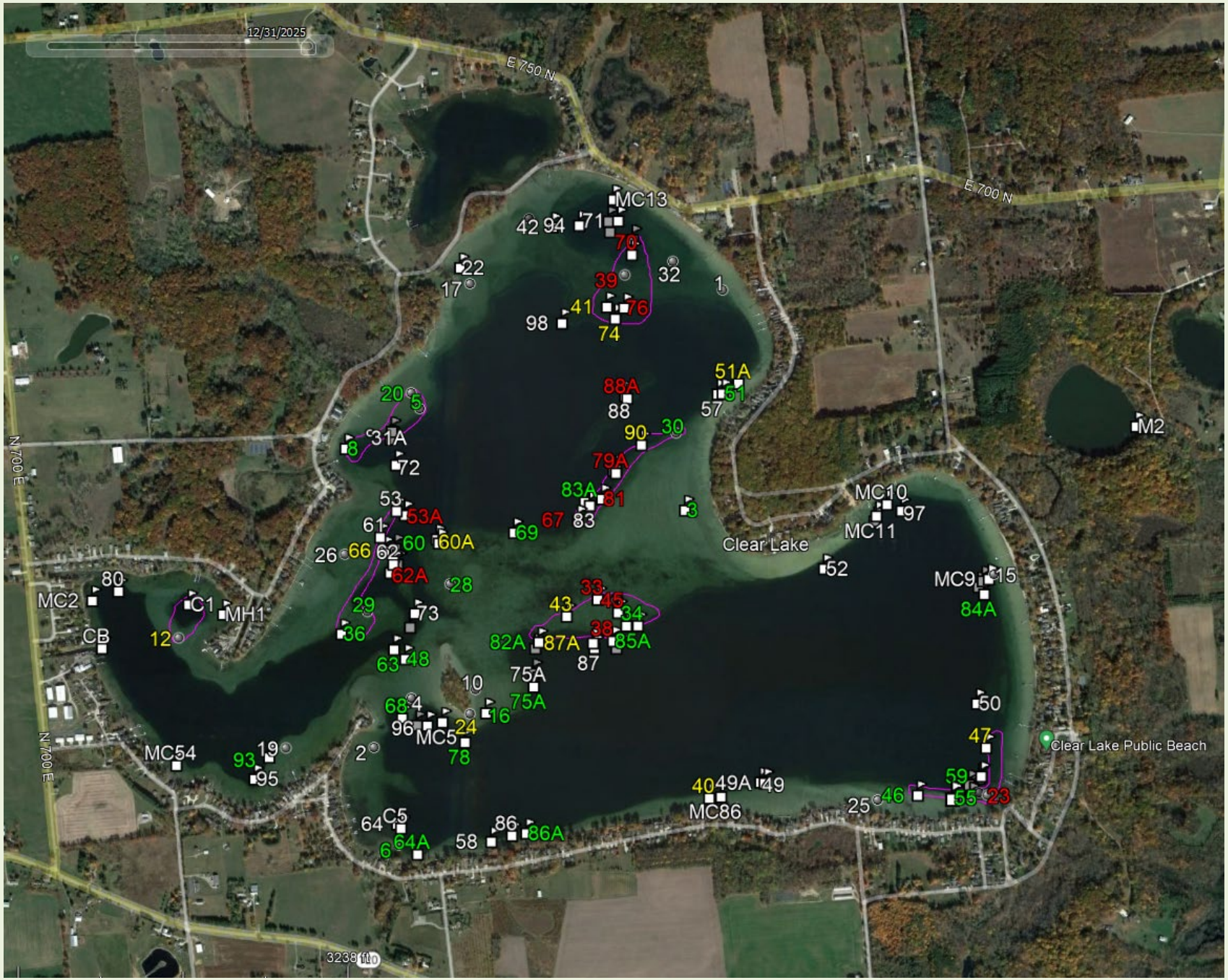

Round Lake 2017 Starry Stonewort Distribution
Red Dots indicate SSW Tier II rake scores
Dense SSW
Scattered SSW
Scattered SSW
Tier II Score 5
Tier II Score 3
Tier II Score 1
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geograph ...
esri

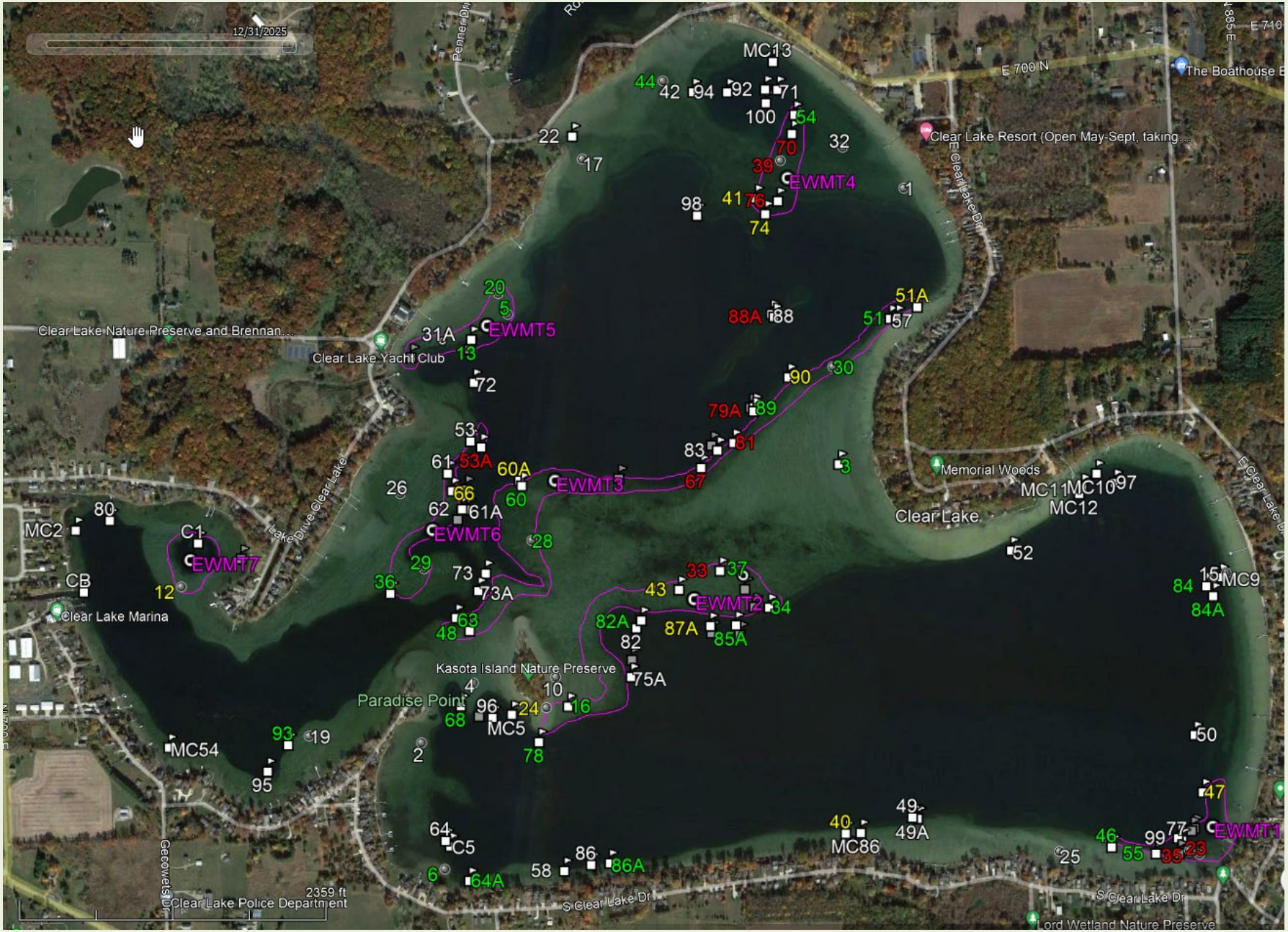
Action Plan-Curly-leaf pondweed

- Data from this study revealed the presence of approximately 16.7 acres of EWM on Clear Lake and 0.5 acres on Round Lake. Treatment of
- Treatment would be with Aquathol-K which is a granular herbicide of endothall. It is a broad-spectrum herbicide that impacts the ability of plants to produce the proteins they need.
- Since curly-leaf pondweed grows and reproduces primarily by turions (over-wintering vegetative propagules) early in Spring the herbicide is typically applied in May when water temperatures are between 50 and 60 degrees.
- Cost of treatment of 17.2 acres of curly-leaf pondweed with Aquathol-K at $350 per acre would be $6020.

Action Plan-Eurasian water-milfoil

- Data from this study revealed the presence of approximately 95 acres of EWM on Clear Lake and 9 acres on Round Lake.
- Treatment of EWM with granular 2,4-D (Navigate) at $350.00/acre (average 6.0 ft depth) for 104 acres would cost **$36,400.**
- IDNR will not fund treatment for all of the EWM because a substantial portion of the growth does not impact recreational activity. It will also not be possible to ever eradicate the species from the lakes because much of the growth is at to great a depth for effective control measures. On Round Lake there are also concerns that treatment of EWM from much of the lake would simply allow new places for Starry Stonewort to colonize.
- It was suggested to take a more targeted approach and treat areas that are currently impeding lake access and recreational activity only. Determining these locations and prioritizing these zones has been accomplished in draft form using the information available on distribution and density of EWM beds and recreational activities.


12/31/2025
E 750 N
E 700 N
N 700 E
MC13
42 94 71
70
22
17
32
1
39
41
76
98
74
51A
88A
51
88
57
20
5
90
30
31A
8
72
79A
83A
81
67
83
3
53
53A
61
69
60
60A
26
66
62
62A
28
80
MC2
C1
MH1
CB
12
29
73
36
63
48
43
33
45
34
38
82A
87A
85A
87
75A
10
68
4
75A
16
96
MC5
24
78
MC54
93
19
95
2
64
C5
6
64A
58
86
86A
40
49A
49
MC86
25
46
59
55
23
47
50
52
MC10
97
MC11
MC9
15
84A
M2
Clear Lake
Clear Lake Public Beach
323811


12/31/2025
MC13
E 700 N
The Boathouse E
Clear Lake Resort (Open May-Sept, taking...
E Clear Lake Dr
EWMT4
EWMT5
Clear Lake Nature Preserve and Brennan...
Clear Lake Yacht Club
Memorial Woods
MC11
MC10
MC12
Clear Lake
EWMT3
EWMT6
EWMT7
Lake Drive Clear Lake
MC2
C1
CB
Clear Lake Marina
EWMT2
MC9
Kasota Island Nature Preserve
Paradise Point
MC5
MC54
C5
MC86
EWMT1
Geoowetsi Dr
Clear Lake Police Department
2359 ft
S Clear Lake Dr
Lord Wetland Nature Preserve

Common Name	Invasive Species	Polygon Identification	Acreage
Eurasian water-milfoil	Myriophyllum spicatum	EWMT1	4.64
Eurasian water-milfoil	Myriophyllum spicatum	EWMT2	13.0
Eurasian water-milfoil	Myriophyllum spicatum	EWMT3	16.4
Eurasian water-milfoil	Myriophyllum spicatum	EWMT4	4.53
Eurasian water-milfoil	Myriophyllum spicatum	EWMT5	4.24
Eurasian water-milfoil	Myriophyllum spicatum	EWMT6	4.80
Eurasian water-milfoil	Myriophyllum spicatum	EWMT7	3.21
TOTAL			50.8

Budget for 2022 LARE Proposal

- Funding for Aquatic Vegetation Management Plan $5000
- Treatment of 17.2 acres of curly-leaf pondweed at $350/acre $6020
- Treatment of 56.7 acres of EWM at $350/acre $19,845
- TOTAL COST $30,865
- LARE 80% Payment $24,692
- Conservancy Cost Share $6173

Next Steps

- Final Decisions on the budget for the proposal are being discussed.
- Draft Aquatic Vegetation Management Plan (AVMP) and draft LARE funding application for 2022 due to LARE Nov. 15th
- Comments returned on AVMP by Dec. 15th
- Final LARE Funding Application due to LARE Jan. 15, 2022
- Final AVMP report due to LARE by Mar. 15th
- Funding decisions for LARE grants announced by early May
- If funding is awarded Conservancy sends out request for bids for the AVMP survey and herbicide treatment as separate bid requests.

Lake Best Management Practices

1. Reduce the frequency and amount of fertilizer, herbicide, or pesticide used for lawn care. Make sure timing of application is appropriate and not just prior to heavy rains.
2. Use only phosphorus-free fertilizer.
3. Plant buffer strips along the lake edge and shallow littoral zone to slow-down runoff and trap sediment and nutrients. Buffer strips also discourage goose activity and nesting.
4. Place rip-rap limestone in front of seawalls to dampen wave energy.
5. Keep lawn clipping, leaves, and animal waste out of the water.
6. Properly maintain septic systems. Systems should be pumped regularly and leach fields should be properly cared for.
7. Clean all plant fragments and sediment from boats, propellers, and trailers after lake use and refrain from dumping bait buckets into the lake to prevent the spread of exotic species.
8. Exercise care in filling boat motors with gas and oil to avoid spillage into the lake.
9. Use oars or paddles to push boats out into deeper water before lowering motors to avoid damage to the bottom and the creation of excess turbidity.
10. Rake floating vegetation off the shoreline to avoid excess nutrient loading to the lake.