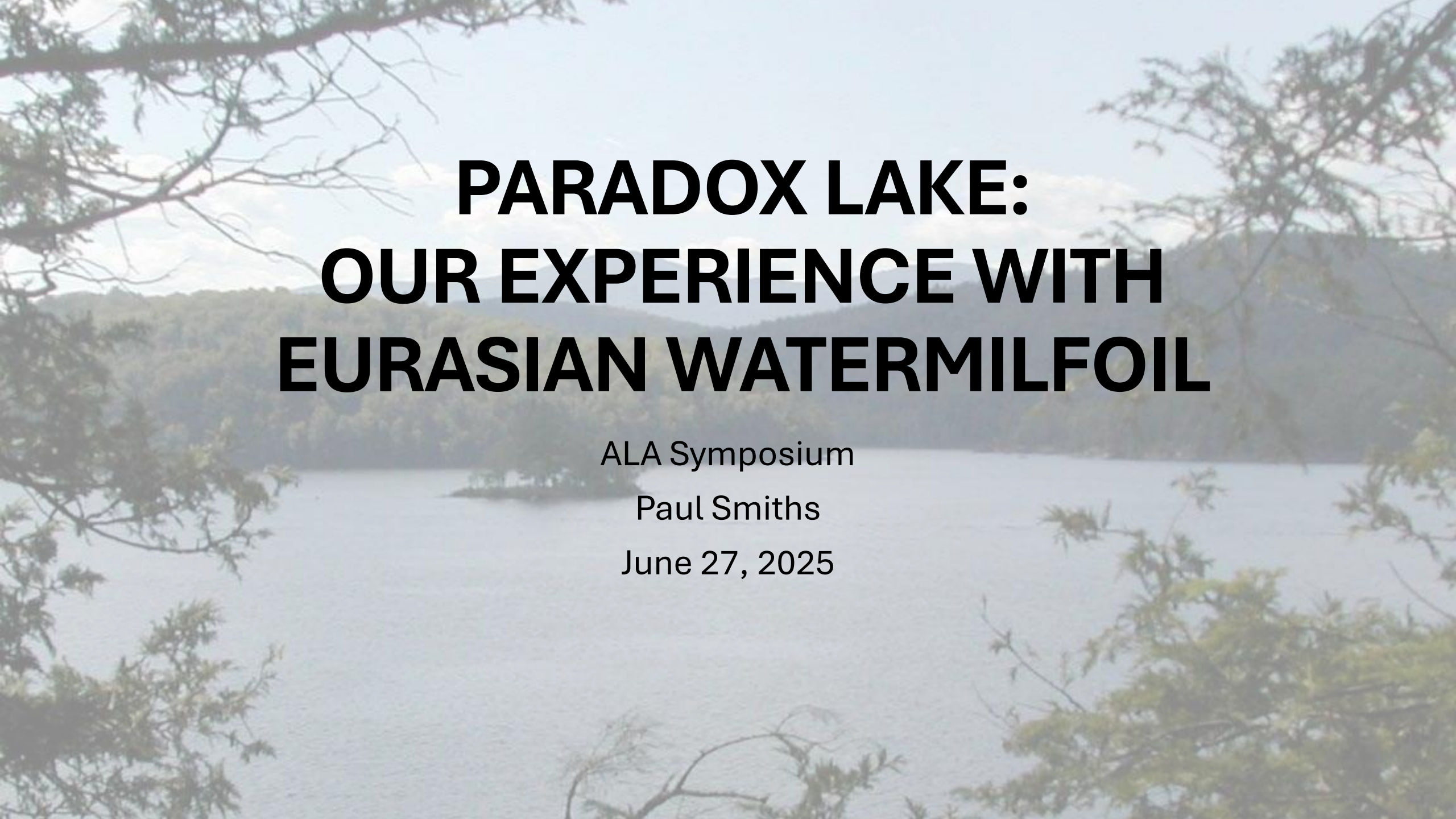


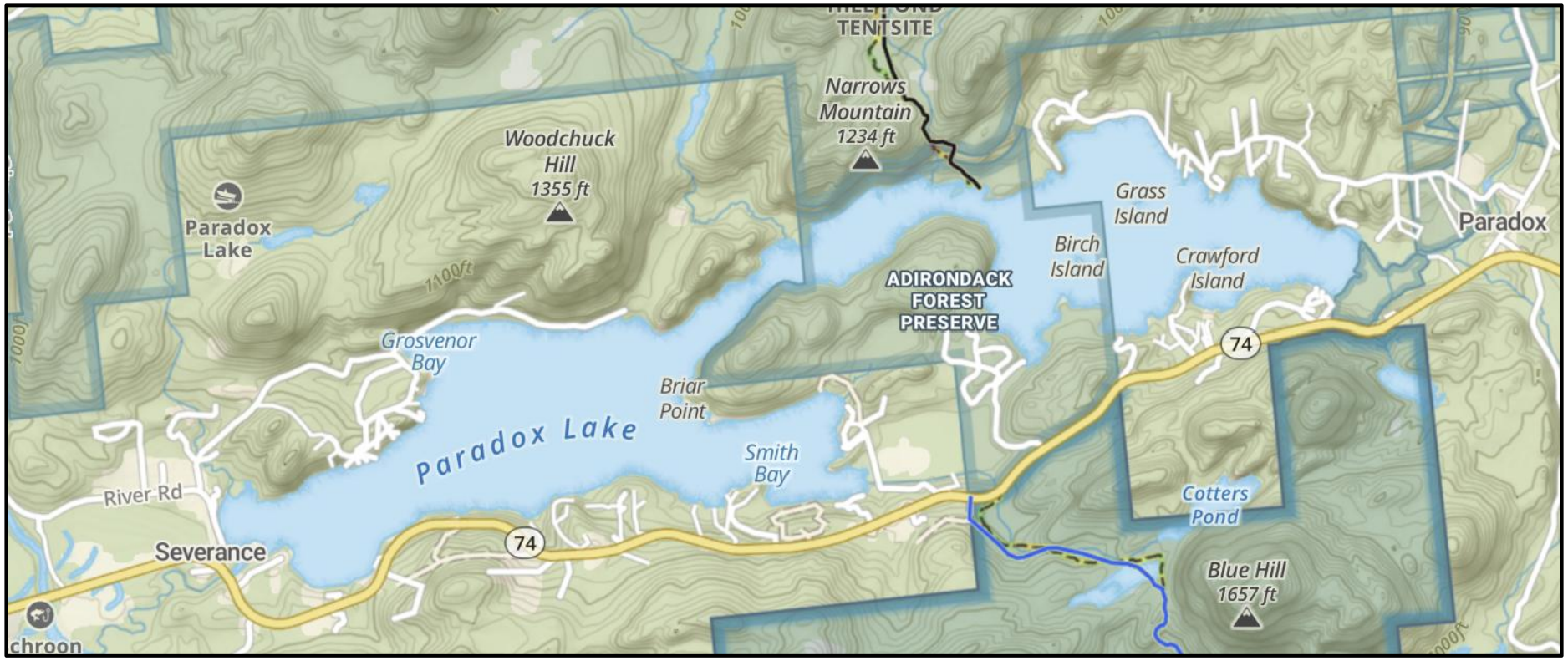
PARADOX LAKE: OUR EXPERIENCE WITH EURASIAN WATERMILFOIL

ALA Symposium

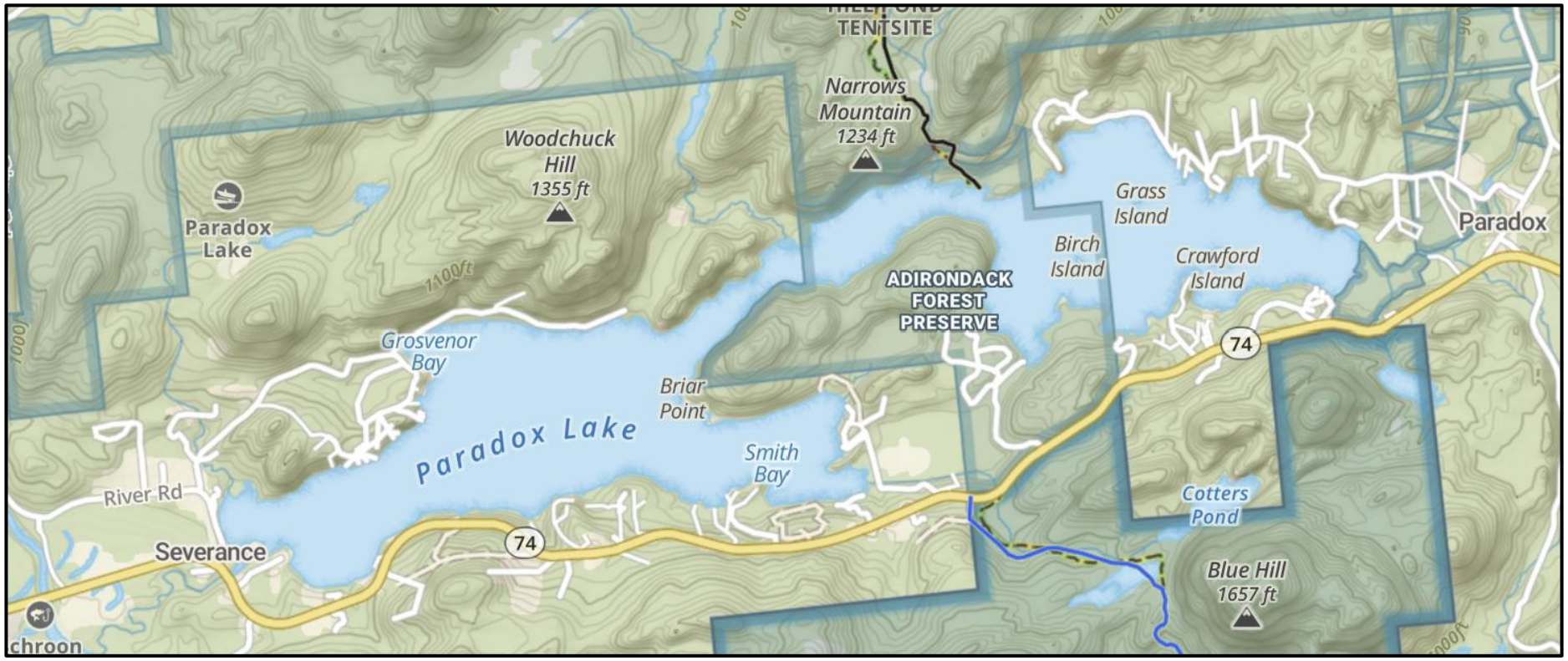
Paul Smiths

June 27, 2025

Background Information



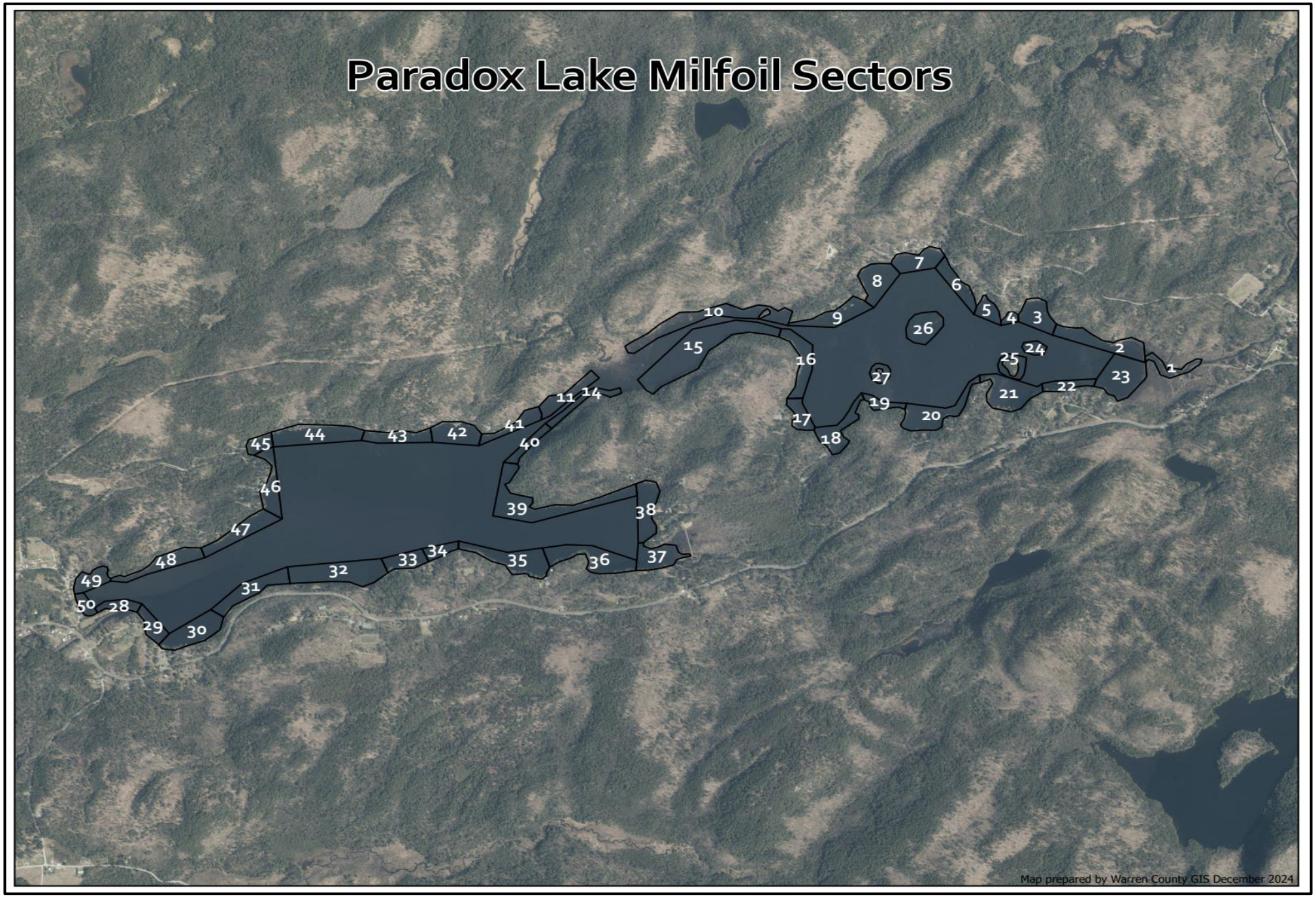
- ~ 900 acres
- ~4 miles long – ¾ mile wide
- 25 ft mean depth – 50 ft max
- Several large shallow areas
- Water flow - east to west
- Prevailing winds – west to east



- Public boat launch at NYS campground
- 18 mi from Lake Champlain boat launch
- AWI Lake Steward coverage
- AWI boat wash ~ 4 miles from boat launch
- EWM grows in depths to 15 ft

Paradox Lake Association Info

- Established in 1971 - Sole organization responsible for protecting Paradox Lake
- 200+ members - ~65% of property owners
  - No physical facilities to offer members
- ~1500 volunteer hours/yr contributed by members
- Primary funding by members
  - Some grant support
  - Limited support from town


Paradox Lake Milfoil Sectors
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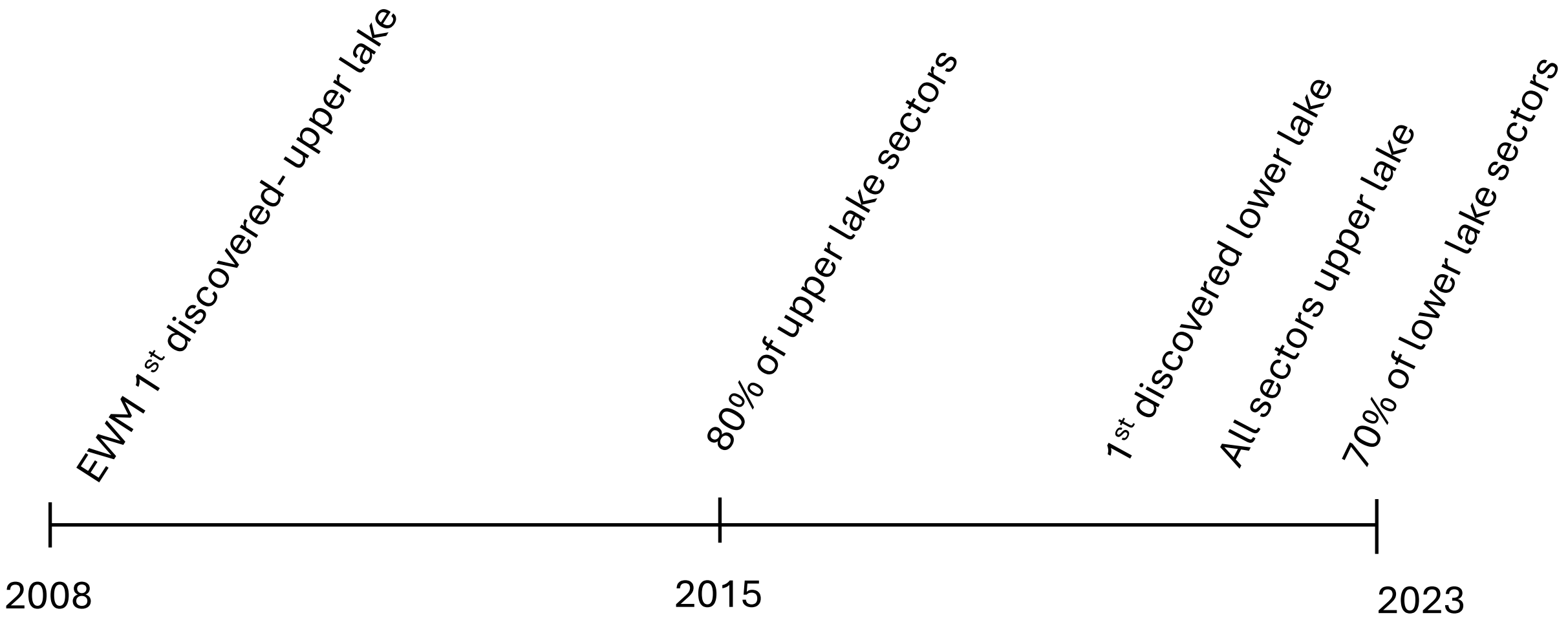
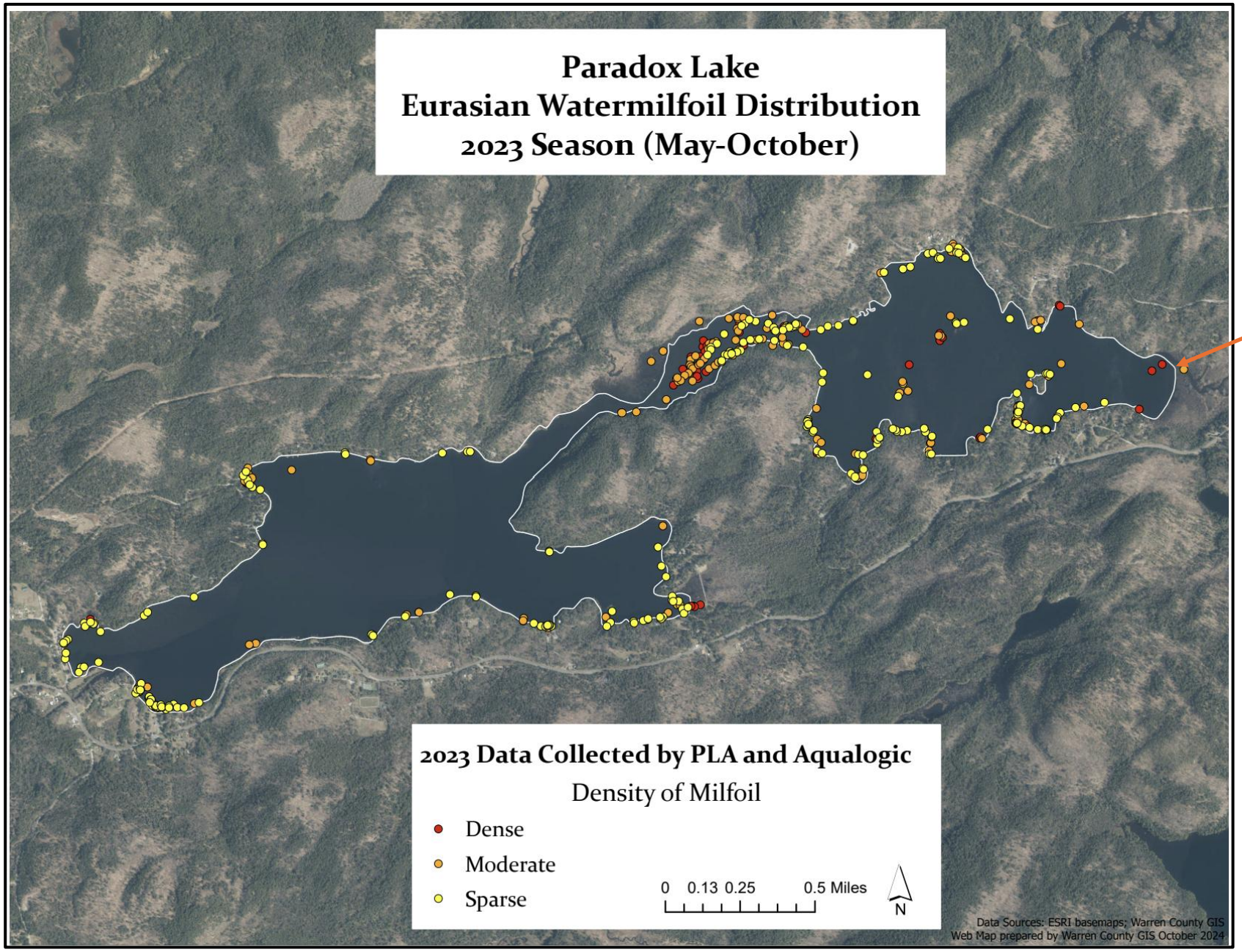
37
Map prepared by Warren County GIS December 2024

PLA Experience With EWM

Paradox Lake Milfoil History

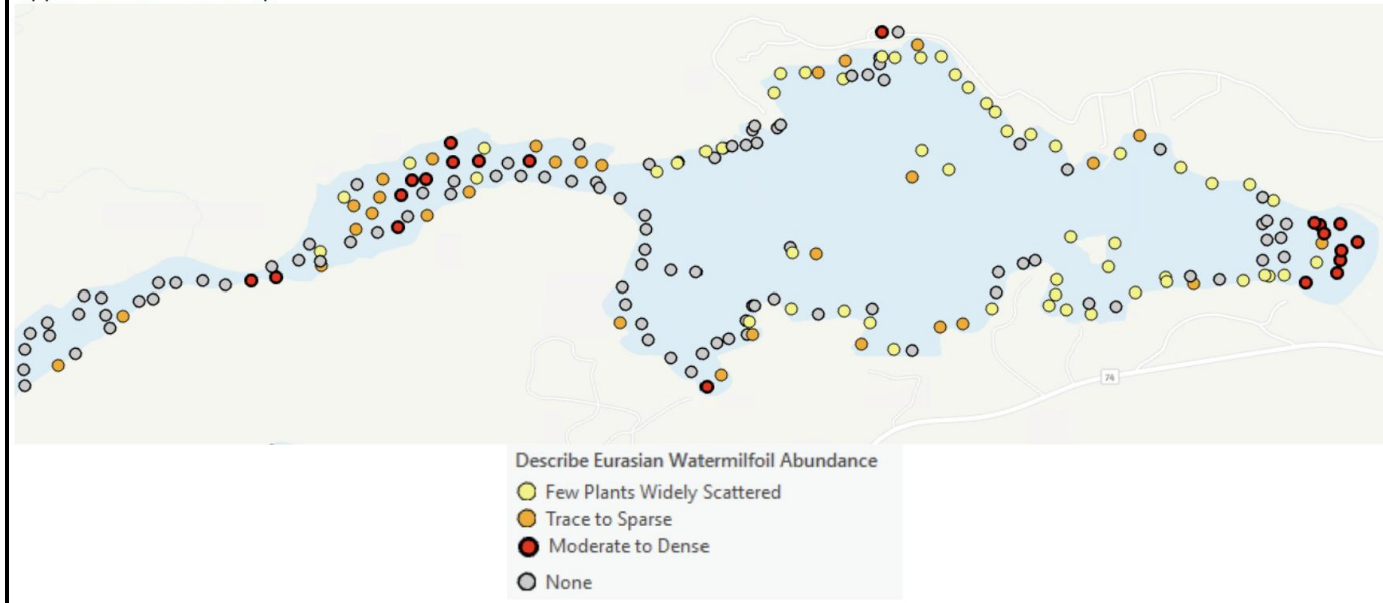


2023 APP Data

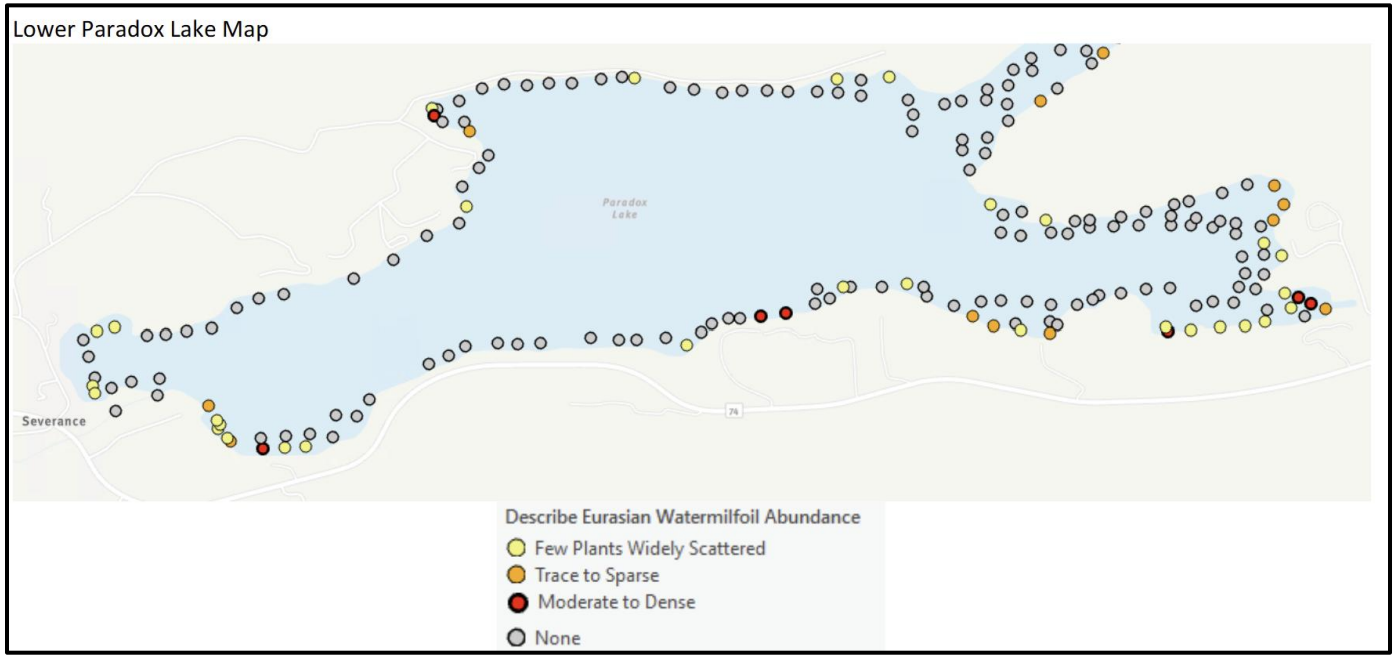


2023 APIPP LMT Data

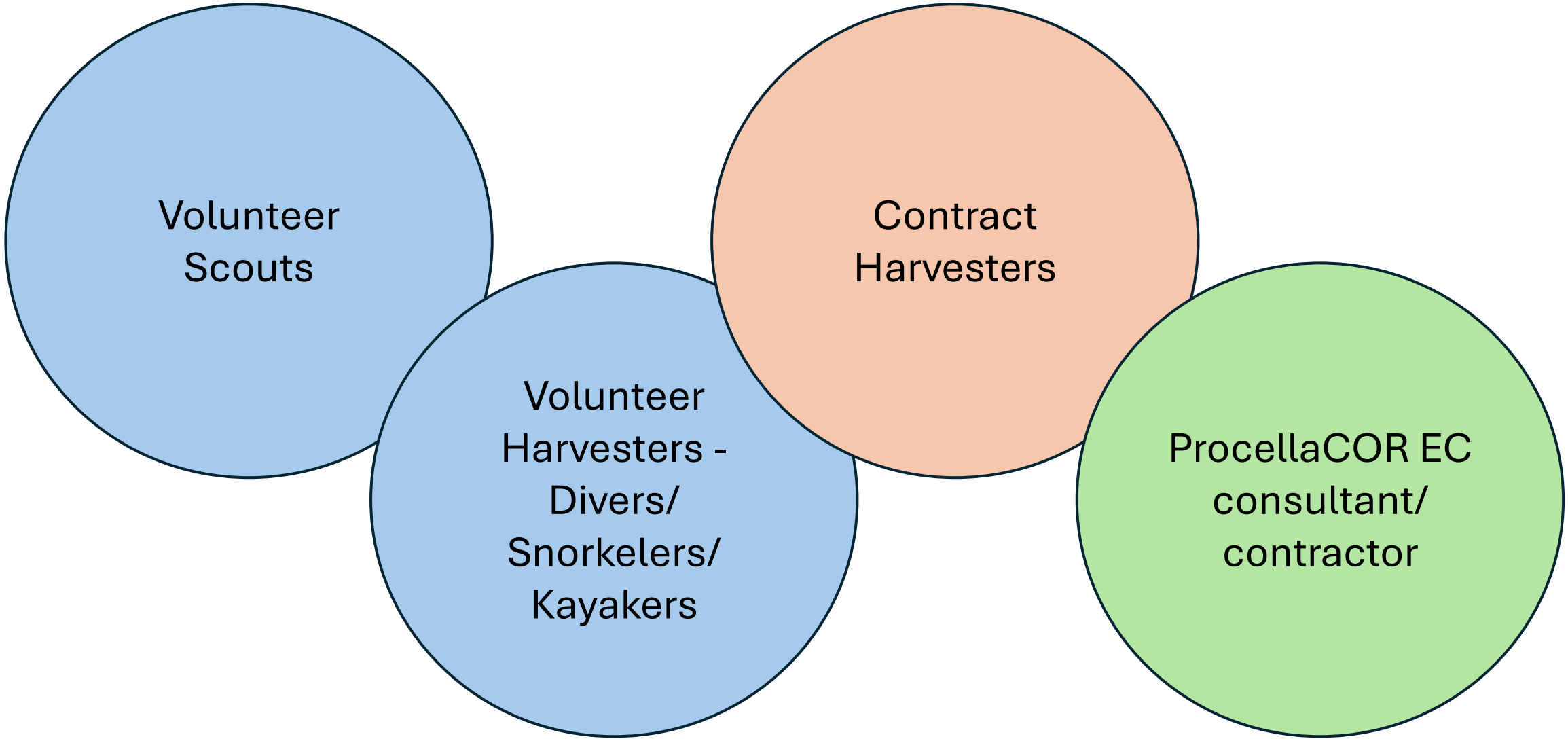
Upper Paradox Lake Map



Lower Paradox Lake Map



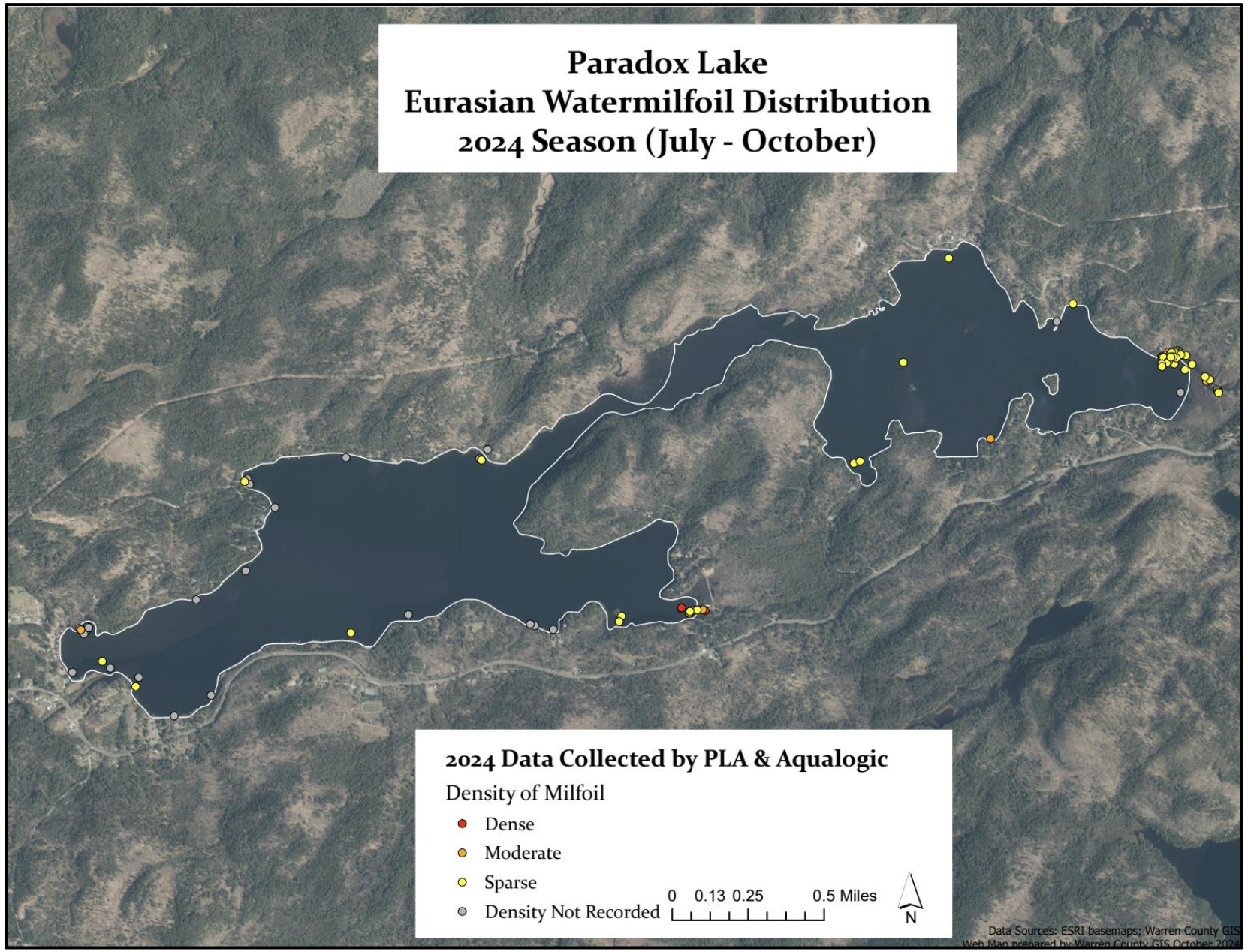
PLA Efforts To Control The EWM



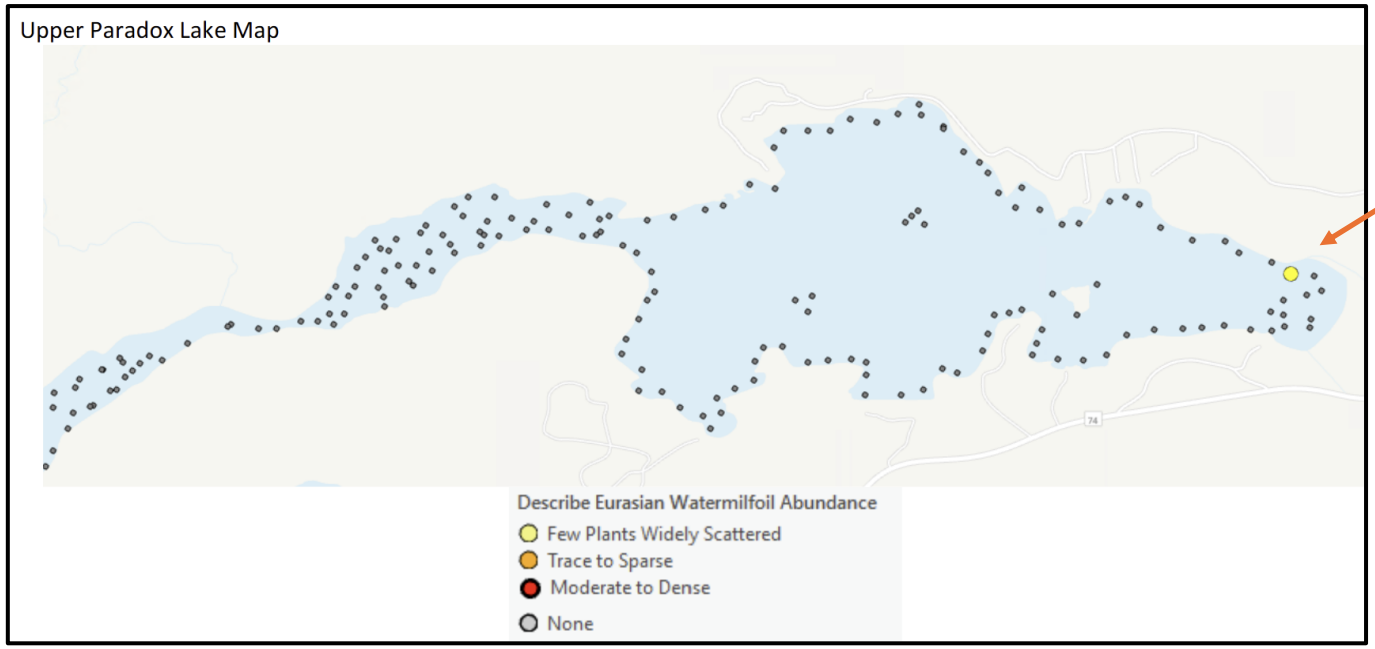
PLA Efforts To Control EWM

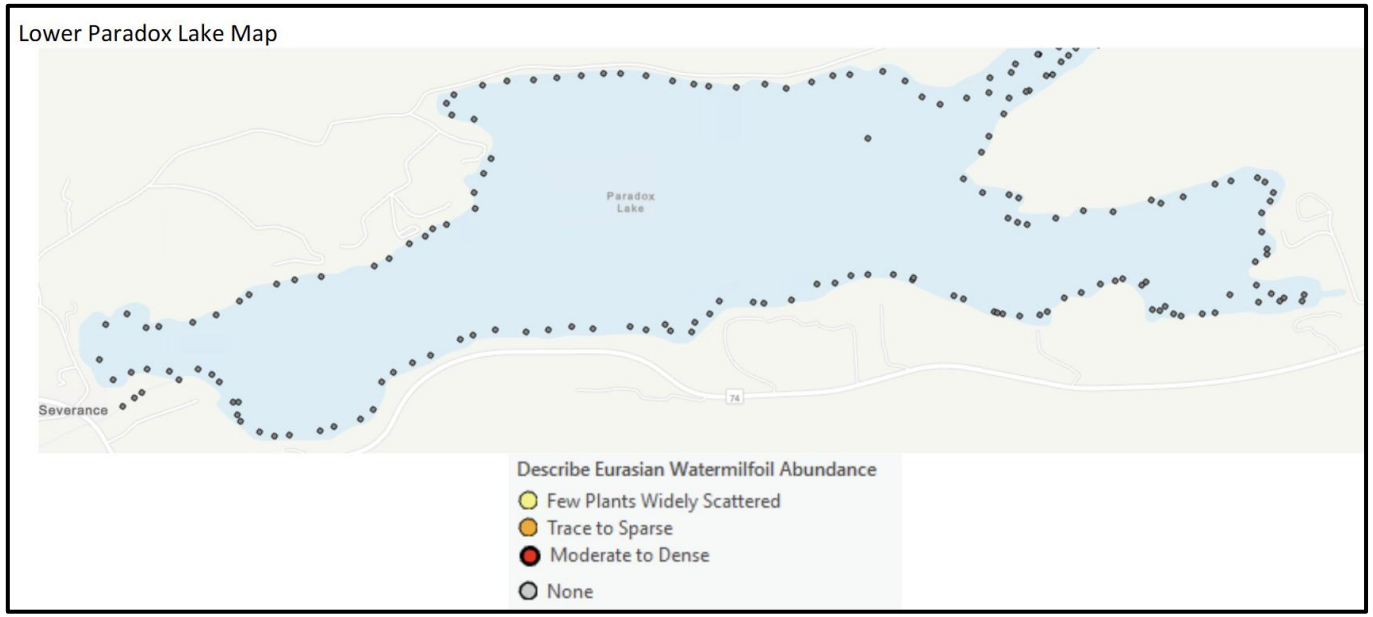
- 2008-2014
  - Lake manager plus volunteers
- 2015
  - Volunteer divers and snorkelers
- 2016-2023
  - Aqualogic as harvesting contractor plus volunteers - Increasing hours each year
- 2021
  - High level of natural fragmentation – Need a new approach
- 2022-2025
  - Overwhelm the EWM to reset the EWM population
  - Up to 70 days/yr of Aqualogic harvesting
  - ProcellaCOR EC treatment for most difficult areas (60 acres)
  - Use of APP to track location and density of EWM – GEO locating

2024 Post-Treatment App Data



2024 APIPP Post Treatment LMT Data





So What Have We Found In 2025?

- EWM as expected around Inlet creek
- Lone EWM plant near launch
- Some EWM growth in expected areas in Lower lake
- Much less than in 2023

What Did We Learn?

Be Aggressive!

- EWM is most likely more widespread than you think
  - Scouting from the surface only finds EWM within 1-2 ft of the surface
- Successfully harvesting established patches of EWM can require multiple harvests/yr
  - Different parts of the bed emerge at different times
- Natural fragmentation is constantly creating new EWM locations
  - Surface scouting will be a year or two behind
- The PLA thought we were working hard but slowly lost control

Volunteers Are Critical

- Very expensive to maintain control through contractors only
- Volunteers have a strong sense of ownership
- Volunteers have a greater familiarity with the areas they cover
- Volunteers cover more area/more frequently than contractors
  - Many more observations
  - Harvest low density/shallow growth
- Shoreline sectors with dedicated volunteer “owner’ showed little spread or increase in density over time
  - Exception would be areas that are very difficult to harvest

Data And Information Are Critical

- What have others learned before – best practices
- Hard data tells us many things
  - Nature of growth in each area/ maximum depth/etc.
  - Patterns
  - Trends
  - Where information gaps exist
  - Challenges to conventional wisdom
- Facilitates communications
  - With members/residents
  - With permitting authorities
  - With local government
  - With potential grant sources

Long Term Commercial Harvester Relationship Is Beneficial

- Familiarity with lake and EWM history
- Partner in developing detailed annual harvesting plans
- Daily two-way communications
  - Detailed harvesting directions
  - Real time feedback on what was found
- Flexibility to adapt to changes during the year

ProcellaCOR EC Is A Valuable Tool, But Not A Silver Bullet

- Some areas of the lake do not respond to hand harvesting
  - Dense natural vegetation/dense beds of EWM
  - Rocky bottoms
- Required permitting is complex and takes more than a year
- Consultant to help with the permitting process is valuable
  - Understanding of the process and terminology/requirements
  - Has contacts to monitor progress and help if delay encountered
- Permitting more difficult if NYS owns lake bottom or adjoining land

Thank You To All Our Partners!

- Aqualogic
- Ready-Scout
- Town of Schroon
- APIPP
- AWI
- APA
- NYSDEC

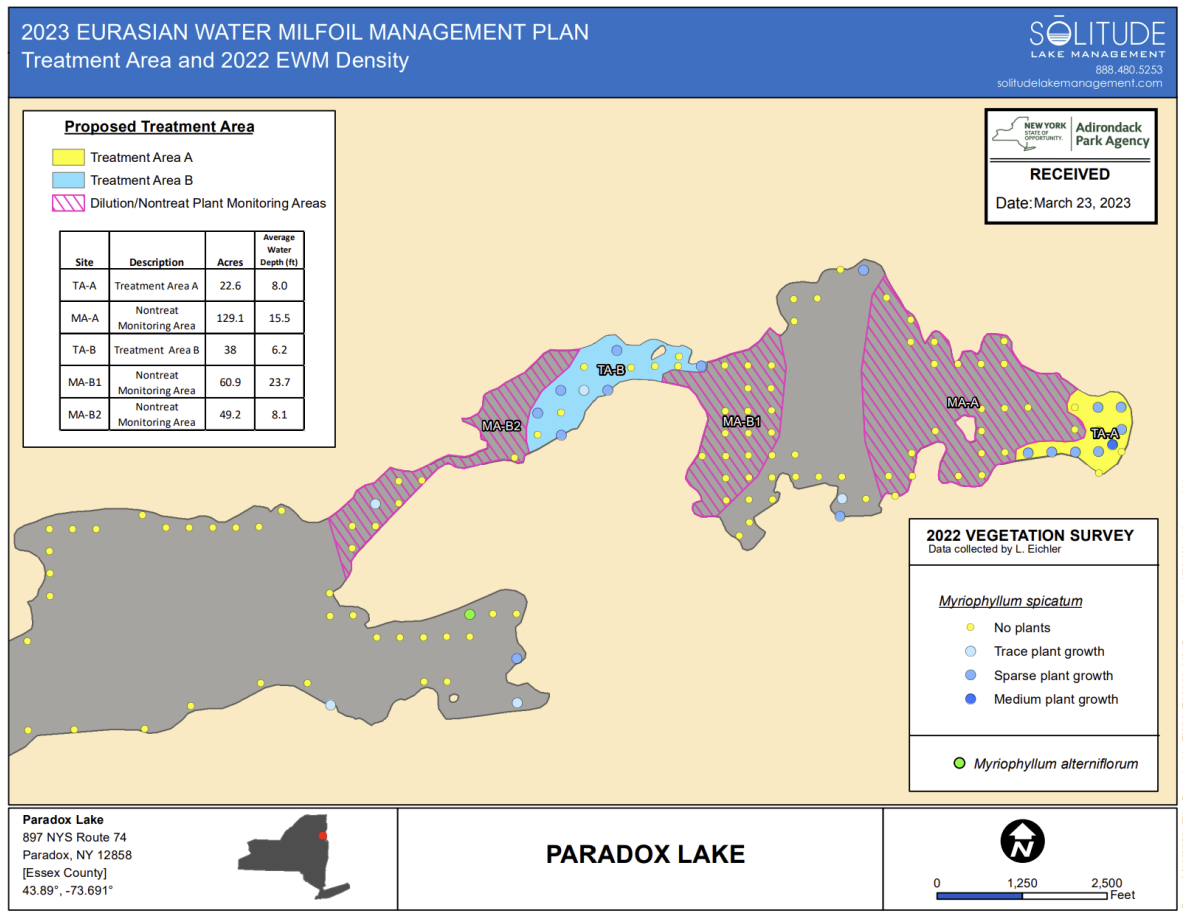
Happy To Answer Your Questions

Paradox-lake.com

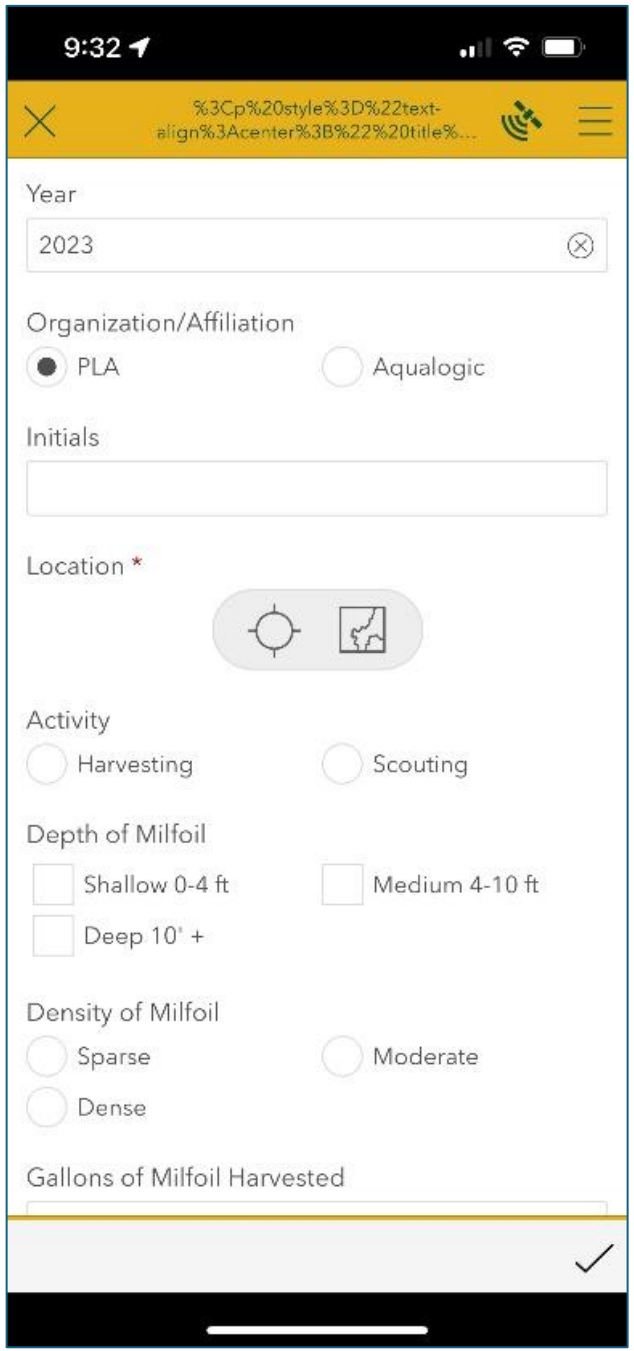
paradoxlakeassociation@gmail.com

Appendix

ProcellaCOR treatment area details



Input screen for our EWM app



This APP was developed by Warren County Soil and Water. It uses Survey123 and the results are shown on a map using FieldMaps.

Warren Co is willing to work with your county Soil and Water personnel to adapt the app to the needs of other lake associations.

Detailed sector characterization

Sector characterization

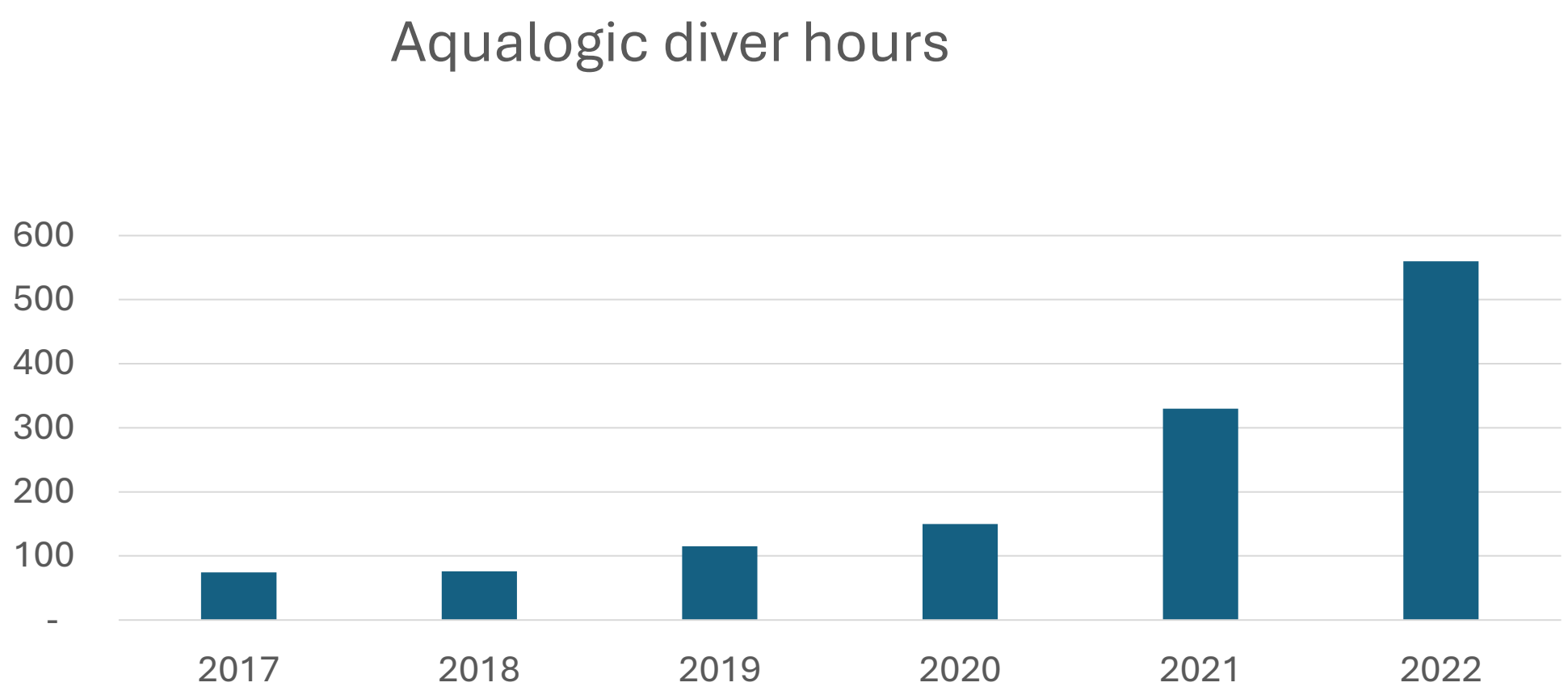
Upper Lake ZONE		Sector Name	Resource Needed	EWM and Harvesting Info: Historic nature of growth	Trend of EWM population (Worse/Better/Stable)	Difficulty to Harvest	Fragment Source or Receiver?	Level of Knowledge About Sector (Good/Need More)	Havesting intensity in past several years (High/Med/Low)	Resources Needed to Harvest	Sector Characteristics: Underwater topography	Bottom material	Native vegetation to impede harvesting
1		Inlet		In brook, single plants - some in channel, some in	Worse	Not that difficult.	Supplier	Good	Med in brook/High	Snorkeler	Shallow brook and outflow	Sand/gravel in brook, muck in	White water lily, pickerel
		dock)		Pond Weed.							pockets of more gradual depth increase	ledges	
3		Glen Reay Bay		Heavy infestation in shallows in NW/W part of the bay, growing among Lily pads. Few plants in the beach area. Nothing on Eastside. weedy area, continues into deeper water	Worse	Difficult in the dense area, Rest is not difficult	Receiver	Good Have to evaluate if this can be successfully hand harvested	Medium	Wader Cultivator Snorkeler/Diver	Rapid depth increase on east end, gradual increase on north side then drops abruptly, gradual to deep drop on west side	East and West side cliffs and rock ledge, rocky, shallow bay is soft except beach area Sandy firm, drops off fast	Yellow pond Lily, Eel grass, Pond Weed
4		Caldwell Cove		Dense in shallows, individual plants as move into deeper water. Among sticks in the shallows. Lots of harvesting in here. Some curly leaf	Better	Easy	Receiver	Good	Med/High	Cultivator Snorkeler	Very gradual depth increase. Large area of relative shallows	Soft near shore then firms up with short grasses	Mostly Eeel grass and other grasses near shore, scattered pickerel weed, pond weed in deeper
5		Sunderland cove		Single plants scattered along the shore but not too much growth. Some curly leaf	Stable	Easy	Receiver	Good	Med/High	Cultivator Snorkeler Diver	Rocky along east and west end, sany with some vegatation in bay, drops off fairly quickly	Rock, compact dirt, softer in bay	Some Pickel weed and Lily Pads
6		LeGoys Bay East		Individual plants, but more small patches in 2021. Deep along the point and tehn gets shallower as move into the cove. Light growth.	Slight increase	Not difficult	Receiver	Good	Low	Cultivator Diver	Shoreline drops off fairly quick	some rocks, mostly firm	Pond weed at depth
7		Maxwells		Plants in most dock areas, individual out deeper, small patches at east end of zone. Not that many plants. Some curly leaf pondweed.	Stable	Not difficult	Receiver	Good	High	Cultivator Snorkeler	Mostly gradual depth increase	Soft near shore, firms up at 3-4 ft. depth	A mix of Yellow pond Lily, Eel grass, Pond Weed
8		Emery		Some scattered plants in Lily Pads near small creek inlet, deeper ones near Emery's. Not many plants.	Stable	Not difficult	Receiver	Good	High	Cultivator Snorkeler Diver	Gradual increase in depth along north side of zone as it turns toward the south it becomes rocky and drops off quicker	Soft at east end of zone, firmer ground heading north, then rocky along shore with pockets of soft areas and plant growth	white lily pads near and Eel grass across intersection of zone 7&8, then pond weed as depth increases and heading further north.
9		Biscuit Rock Bay		Individual plants along shoreline in deeper water. Not many plants. New patch near Wrigley's dock in deep water	Stable	Not difficult	Receiver	Good	Low	Snorkeler Diver	Within the bay it gets shallow with a rock ledge and the west corner vegetation, The rest drops off quickly	Soft in West Corner, rock elsewhere	Yellow Pond Lily in the shallow west end
10		Trail		Individual plants on east and west end of bay in lily pads, plants found in deeper water as well - shoreline turns to rock heading west. Has been substantial amount of harvesting here	Worse	Not difficult	Receiver	Good	Low/Med	Cultivators Snorkeler Diver	Mostly gradual depth increase, except West end of zone drops off faster	Soft to firm	Yellow Pond Lily, Pickerel weed, white pond lily.
11		UL Narrows North		Lots of plants. Mixed in with the lily pads on the north side, single plants extend well into the channel	Stable (but bad)	Difficult in the lily pads because so wide spread and some of the lily pads are in deeper water. May not be able to successfully hand harvest	Supplier	Good	High by Aqualogic but low in shallows and lily pads	Cultivators Snorkeler Diver	Mostly gradual depth increase	Soft with lots of undergrowth	lots of Bladderwort, pond weed outside of of Lily Pad growth

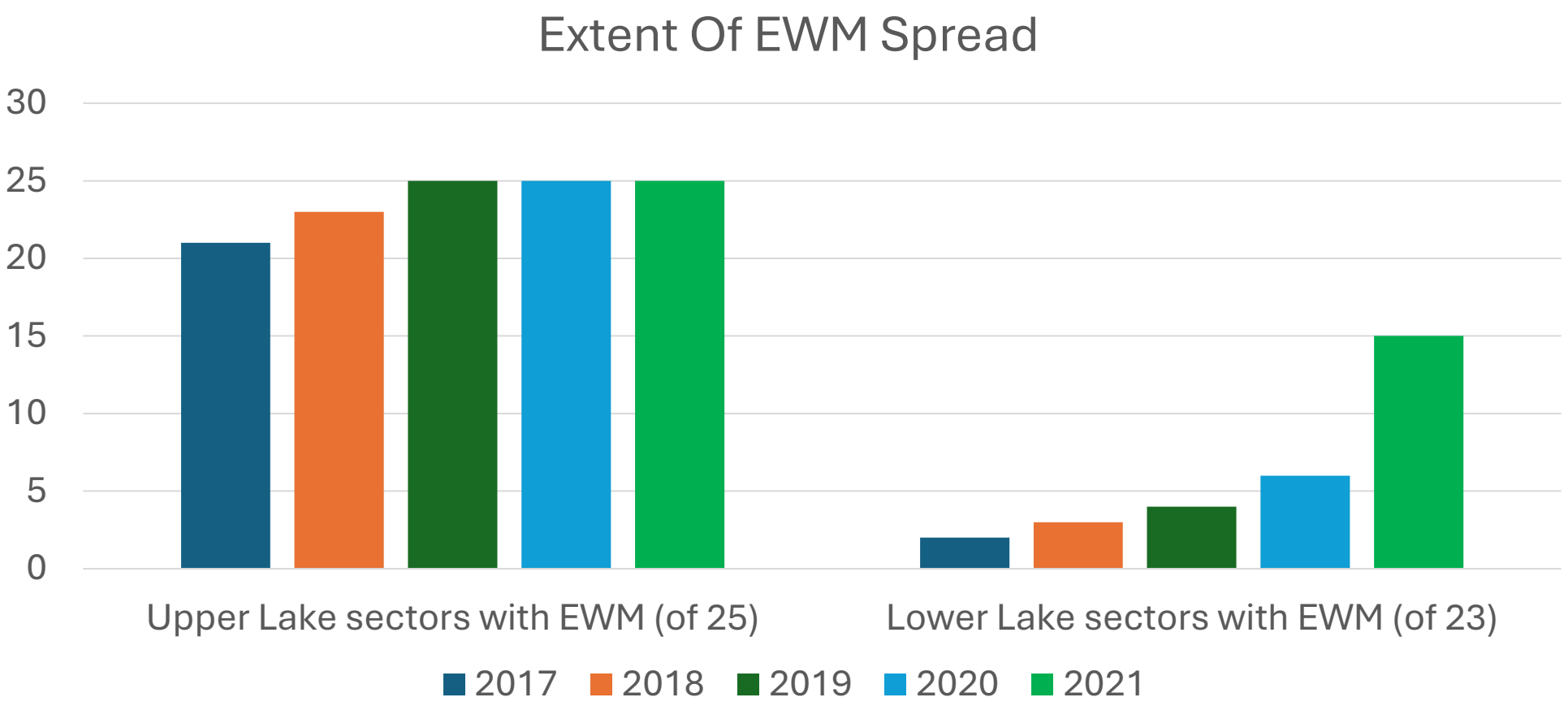
Sample Sector plan

2022 Plan

	Intense activity
	Moderate activity
	Light activity
	No activity (beyond scoutin)

Upper Lake ZONE		Sector Name	2022 Desired End State	2022 Plan Details 2022 Action Plan
1		Inlet (Inlet brook to Kuttler's dock & south to shallows)	Low/no growth observed at end of season	Harvest east of dock to brook early and mid season Harvest brook throughout season
2		Inlet Bay North + cliffs (west of Kuttler's dock)	Scattered single plants present	Scout only
3		Glen Reay Bay	Depends on ProcellaCOR decision	Decided if ProcellaCOR needed Qaulity control squares monitor growth Deep water harvested Remaining harvest plan dependent on assessment
4		Caldwell Cove	Low/no growth observed at end of season	Test systematic harvesting to clear all plants, deep water and shallows Multiple harvests Harvest curly leaf early
5		Sunderland cove	Scattered single plants present	Scouting Harvest curly leaf early
6		LeGoys Bay East	Scattered single plants present	Scouting
7		Maxwells	Scattered plants	Volunteer harvesting in shallows & around docks
8		Emery	Scattered plants	Harvest early where lily pads will grow
9		Biscuit Rock Bay	Scattered single plants present	Harvest patch identified in 2021
10		Trail	Depends on outcome of assessment for ProcellaCOR	Fully evaluate to decide if ProcellaCOR is needed APA/DEC assessment Harvest as needed to minimze fragmentation Expensive harvesting if ProcellCOR is ruled out
11		UL Narrows North	Plants among lily pads Plants in shallow open water	Full harvest of center channel - early and mid season


Aqualogic diver hours
600
500
400
300
200
100
-
2017
2018
2019
2020
2021
2022


Extent Of EWM Spread
30
25
20
15
10
5
0
Upper Lake sectors with EWM (of 25)
Lower Lake sectors with EWM (of 23)
2017
2018
2019
2020
2021

EWM harvest data

	A	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
2		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
3	**Upper Lake ZONE**	**2014 EM**	**2015 EM**	**2016 EM**	**2017 EM**	**2018 EM**	**2019 EM**	**2020 EM**	**2021 EM**	**2022 EM**	**2023 EM**
4	**1**	6	13	123	50	25	25	30	1051	2380	480
5	**2**	710	490	2176	4036	5450	4400	3803	5938	2540	835
6	**3**	5	30	24	25	110	90	199	601	125	225
7	**4**	125	105	42	45	72	55	560	1619	72	250
8	**5**	27	2	11	16	2	25	60	24	75	80
9	**6**	43	84	24	27	44	15	99	550	60	200
10	**7**	110	154	28	59	110	35	113	150	500	1370
11	**8**	0	0	0	10	4	10	20	36	80	30
12	**9**	0	0	2	0	0	2	5	116	65	50
13	**10**	193	51	36	20	30	320	63	2425	880	2750
14	**11**	343	77	60	350	1980	985	2180	860	725	1755
15	**14**	51	78	234	930	1440	1163	415	2200	770	1830
16	**15**	10	26	52	40	10	20	17	695	145	3690
17	**16**	12	12	14	10	10	18	3	51	90	210
18	**17**	45	30	25	15	10	12	35	300	90	400
19	**18**	12	6	1	0	3	4	2	88	120	335
20	**19**	0	0	0	0	0	7	11	57	5	0
21	**20**	48	20	2	4	10	4	18	101	140	280
22	**21**	32	14	19	10	10	18	19	350	450	390
23	**22**	0	0	0	0	3	4	37	335	626	50
24	**23**	1657	1005	2089	1210	4637	4060	3770	8937	1980	100
25	**24**	16	8	42	37	20	12	25	8	30	100
26	**25**	0	50	297	20	17	340	34	700	80	100
27	**26**	514	333	1925	6926	4633	1285	1017	3487	740	4460
28	**27**	47	66	17	30	30	8	0	588	110	300
29	**Lower Lake Zone**				0	0	0	0	0	0	0
30	**28**				0	0	0	4	178	25	0
31	**29**				0	0	250	64	600	170	237.5
32	**30**				0	0	0	0	21	110	25