



New York State  
Adirondack  
Park Agency

# Paradox Lake Association

P2023-0036

November 15, 2023

# Presentation Overview

- Jurisdiction
- Conclusions of Law
- Project Location
- Eurasian Watermilfoil Overview
- Management History in Paradox Lake
- ProcellaCor EC Overview
- Proposed Project
- Public Comment & Review by Others
- Staff Recommendation
- Q & A



# Jurisdiction

## 9 NYCRR Section 578.3(n)(2)(i)

- Regulated Wetland Activity
  - Application of Herbicides in Wetlands



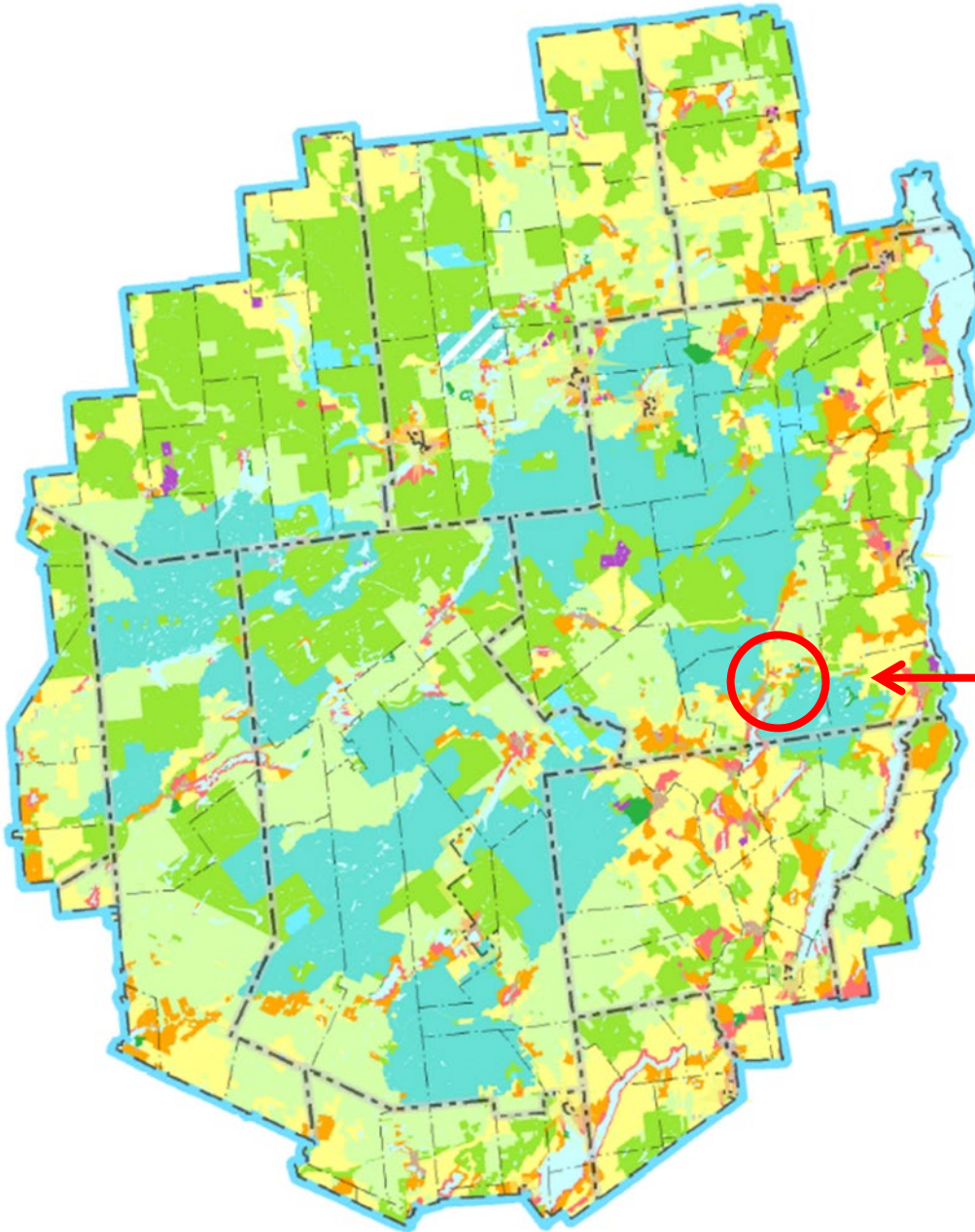
# Conclusions of Law

- a. that the project authorized as conditioned herein will be consistent with the Adirondack Park land use and development plan; and
- b. that the project authorized as conditioned herein will not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the Park, taking into account the economic and social or other benefits to be derived from the activity; and
- c. the economic, social and other benefits to be derived from the activity proposed and as conditioned herein compel a departure from the guidelines of 9 NYCRR Part 578.10(a)(1), in order to secure the natural benefits of wetlands associated with the project, consistent with the general welfare and beneficial economic, social, and agricultural development of the state



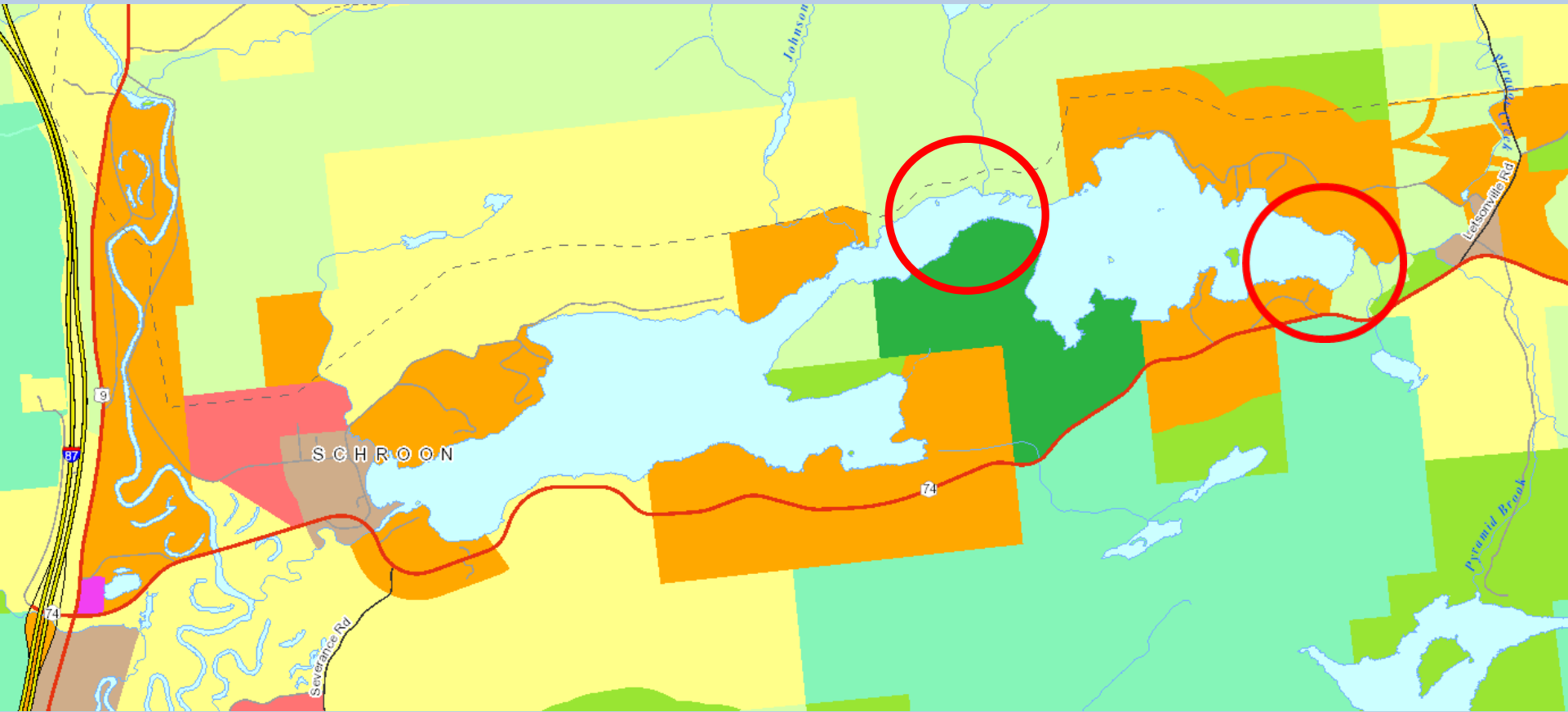
# Project Location

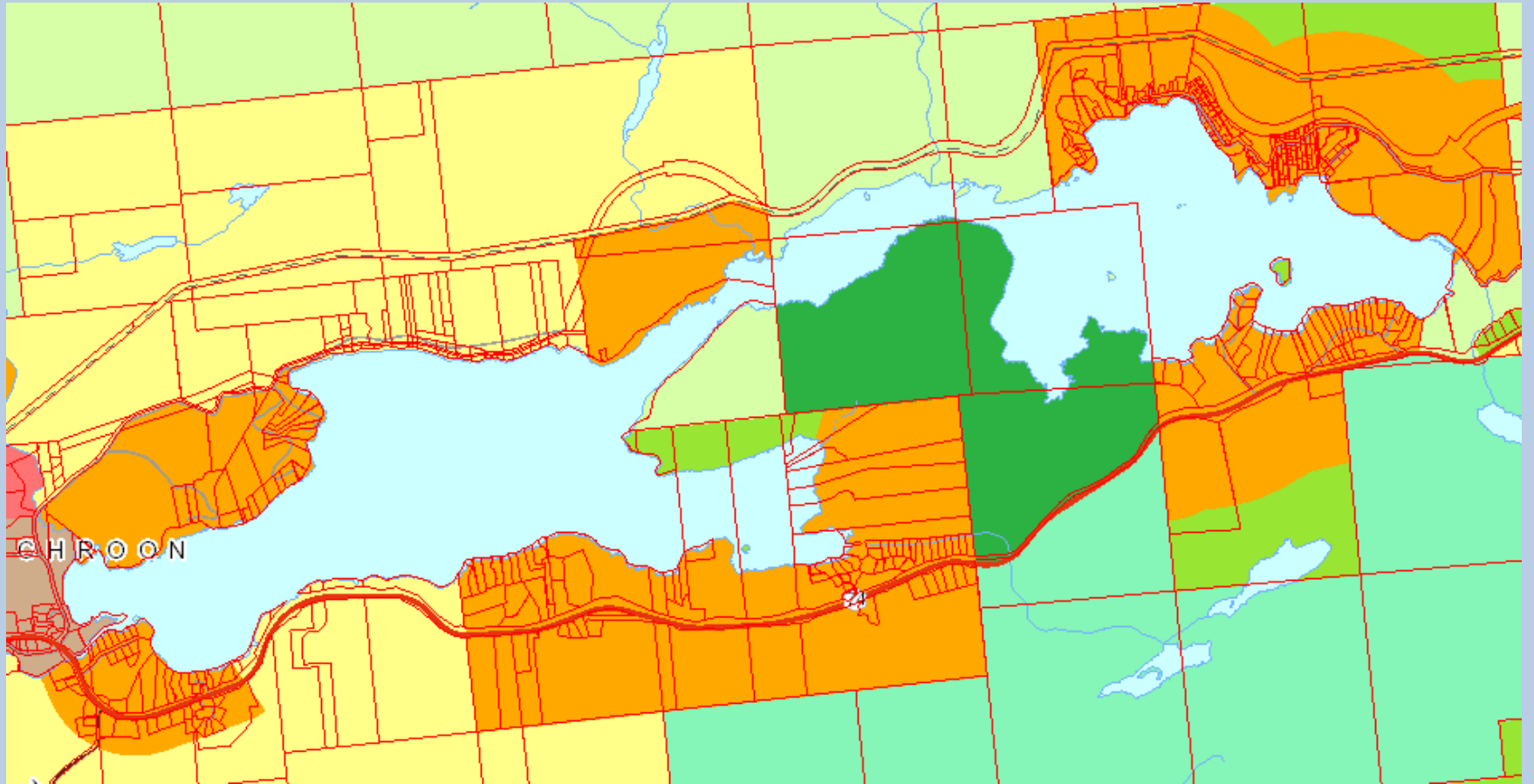




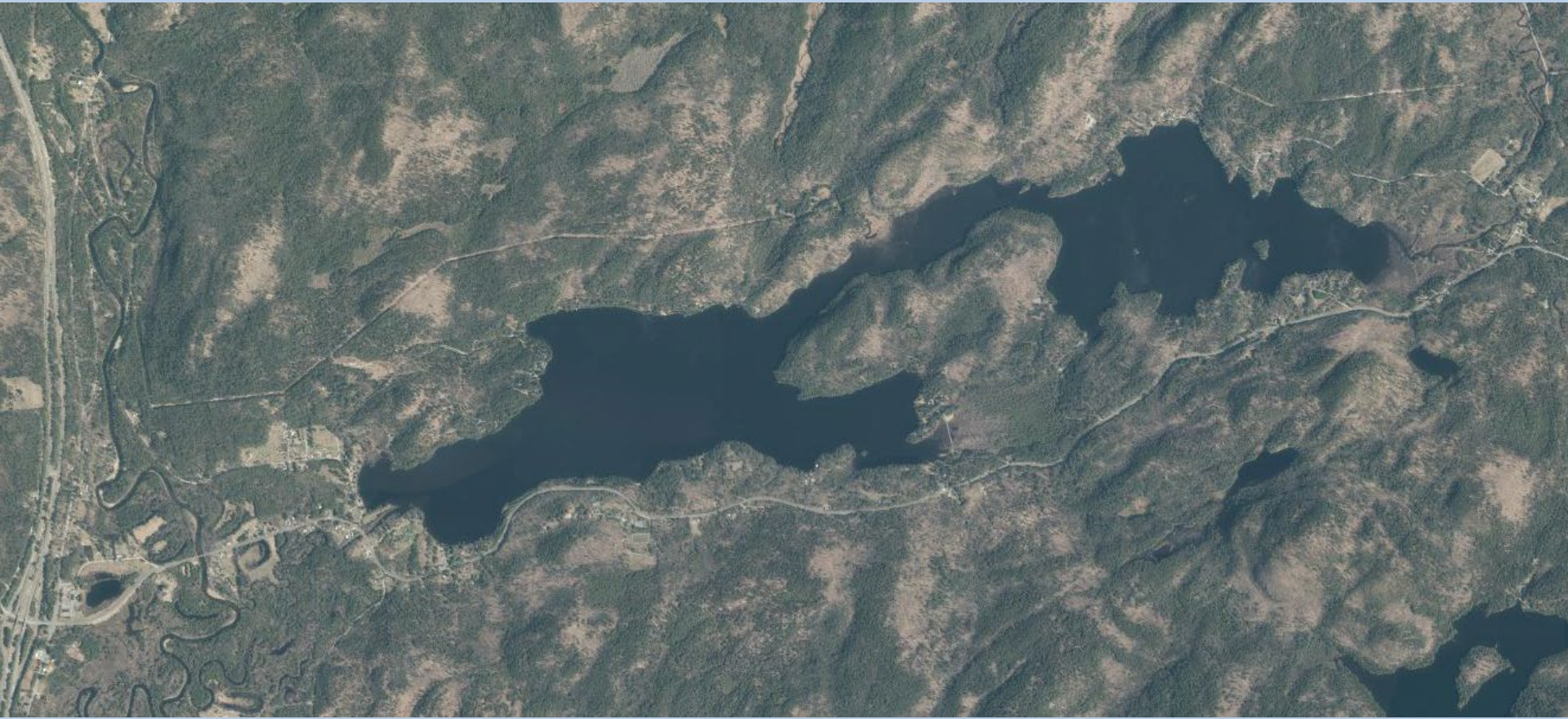
# Project Location

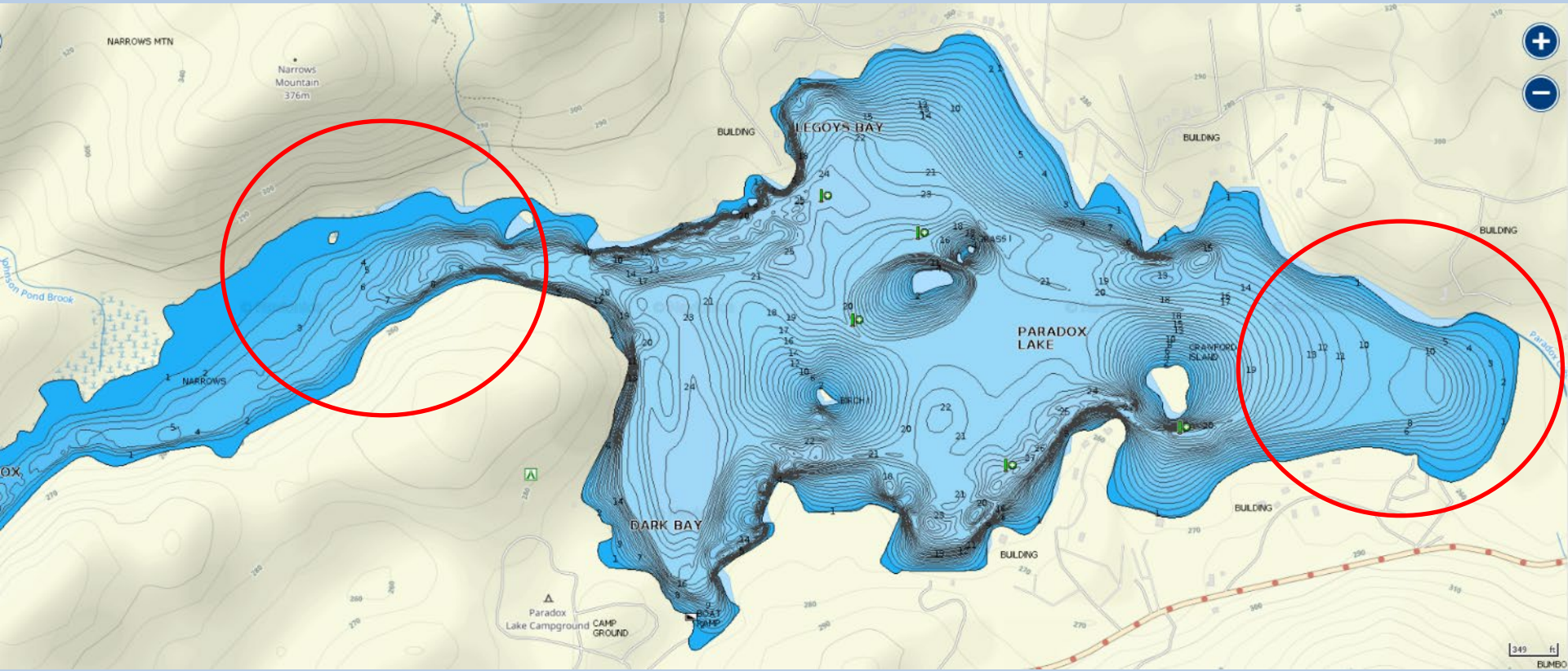
Town of Schroon,  
Essex County















RECEIVED

Date: February 27, 2023

## Aquatic Vegetation of Paradox Lake, New York

### Interim Report on Vegetation of Paradox Lake, New York

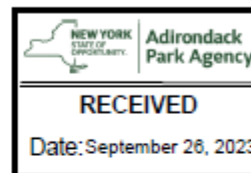
Interim Report on Vegetation of Paradox Lake, New York

Lawrence W. Eichler

Scientific Consultant

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[larryeichler678@gmail.com](mailto:larryeichler678@gmail.com)



### **Background.**

Quantitative aquatic plant surveys were undertaken for Paradox Lake, New York as part of a cooperative effort with the Paradox Lake Association. The aquatic plant survey was designed to provide data on aquatic plant distribution and develop information for a treatment program to control Eurasian watermilfoil (*Myriophyllum spicatum*). The Point-Intercept Rake Toss method presently required by NYS DEC for Tier III Lakes was employed. The assessment will generate the information necessary to: 1) review effectiveness of aquatic plant management efforts, 2) meet all permit requirements and 3) provide data for future comparisons of post-treatment conditions to prior survey information.

(518) 793-8683 (voice) (518) 636-8535 (mobile)

[larryeichler678@gmail.com](mailto:larryeichler678@gmail.com)

September 2, 2022

# **Management plan and state of the lake report for Paradox Lake, NY**

D.S. Stich and A. Tumbarello



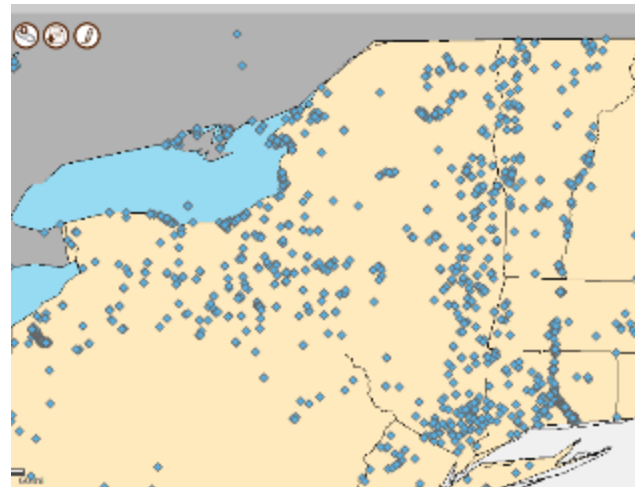
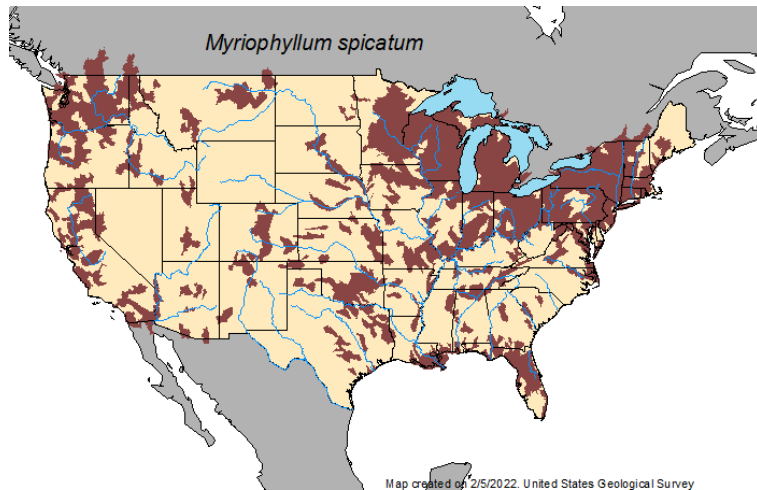
Occasional Paper No. 77  
State University of New York  
College at Oneonta, 2022

# Eurasian Watermilfoil (EWM)

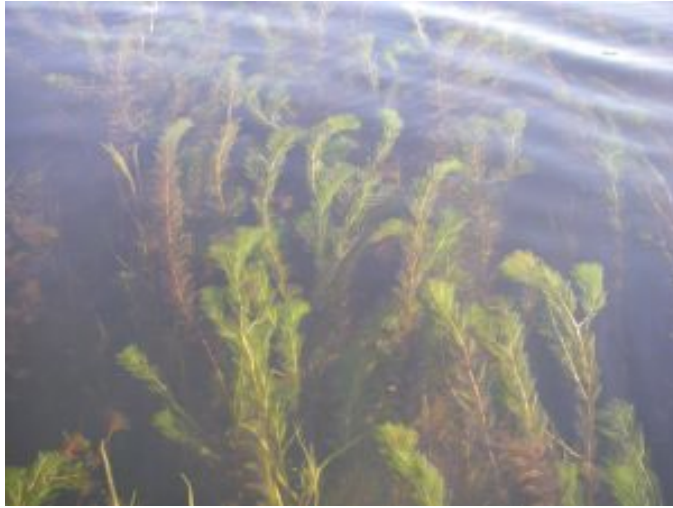


- Non native aquatic invasive plant
- Economic and environmental harm:
  - Impairs recreational use of waterways;
  - Degrades native habitat of fish and other wildlife.
- No native predators
- Can form dense beds

Once established, difficult if not impossible to eradicate.







Grows well in disturbed areas

Each plant can produce 100 seeds per season, but much more successful at vegetative reproduction via fragments and runners.

After flowering, this species can undergo auto-fragmentation; fragments are then transported via wind, waves, or human activity.

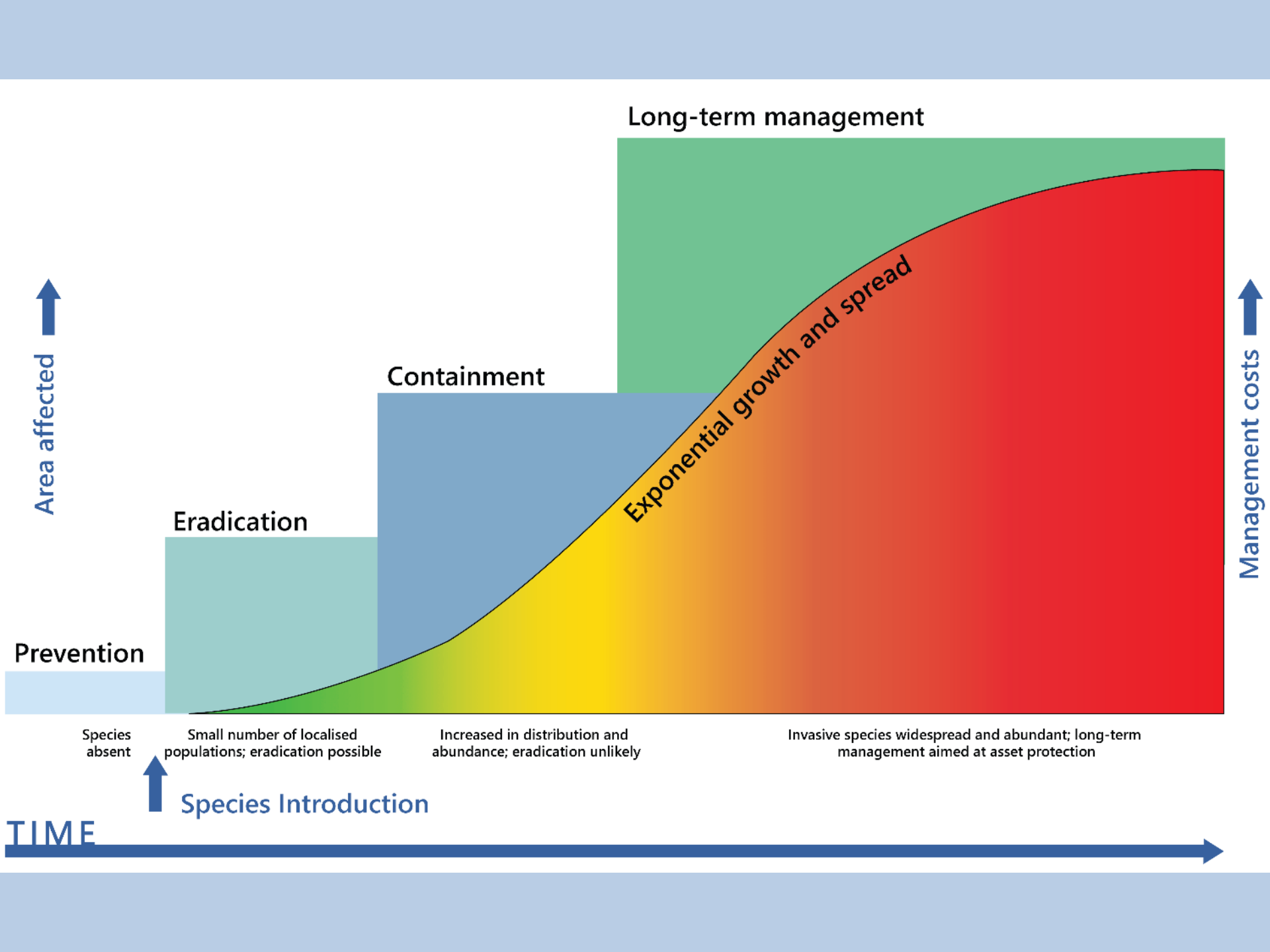






# EWM Management in Paradox Lake





- First identified September 2, 2008 near the campground boat launch
- Development of monitoring, education and eradication program
- Volunteers and contracted harvesters since 2009


P2009-0149 → APA General Permit (2008G-1) for use of Hand Harvesting (Rapid Response)

P2016-0022 → APA General Permit (2015G-2) for use of Hand Harvesting













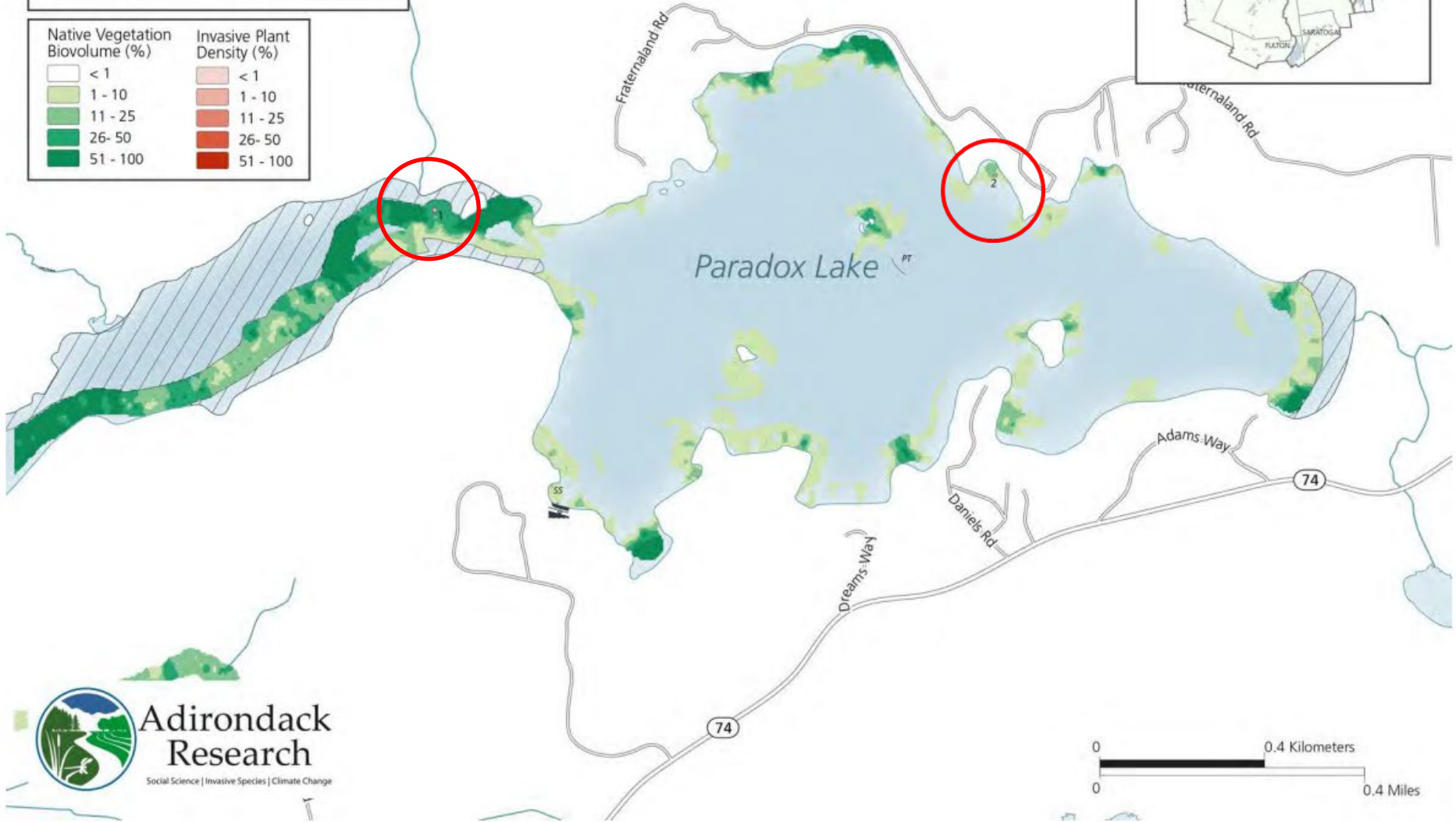
# Paradox Lake (eastern) Aquatic Plant Survey 2018

County: Essex Date Surveyed: 07/11/2018  
 Town: Schroon AIS Bed Area (acres): 0.02  
 Lake Area (acres): 931.60 AIS Observed: EWM

 Not Surveyed

 Native Beds  Invasive Beds  
 Phytoplankton Tow  Sieve Sample

Native Vegetation Biovolume (%)	Invasive Plant Density (%)
 < 1	 < 1
 1 - 10	 1 - 10
 11 - 25	 11 - 25
 26 - 50	 26 - 50
 51 - 100	 51 - 100













**Adirondack Research**  
 Social Science | Invasive Species | Climate Change

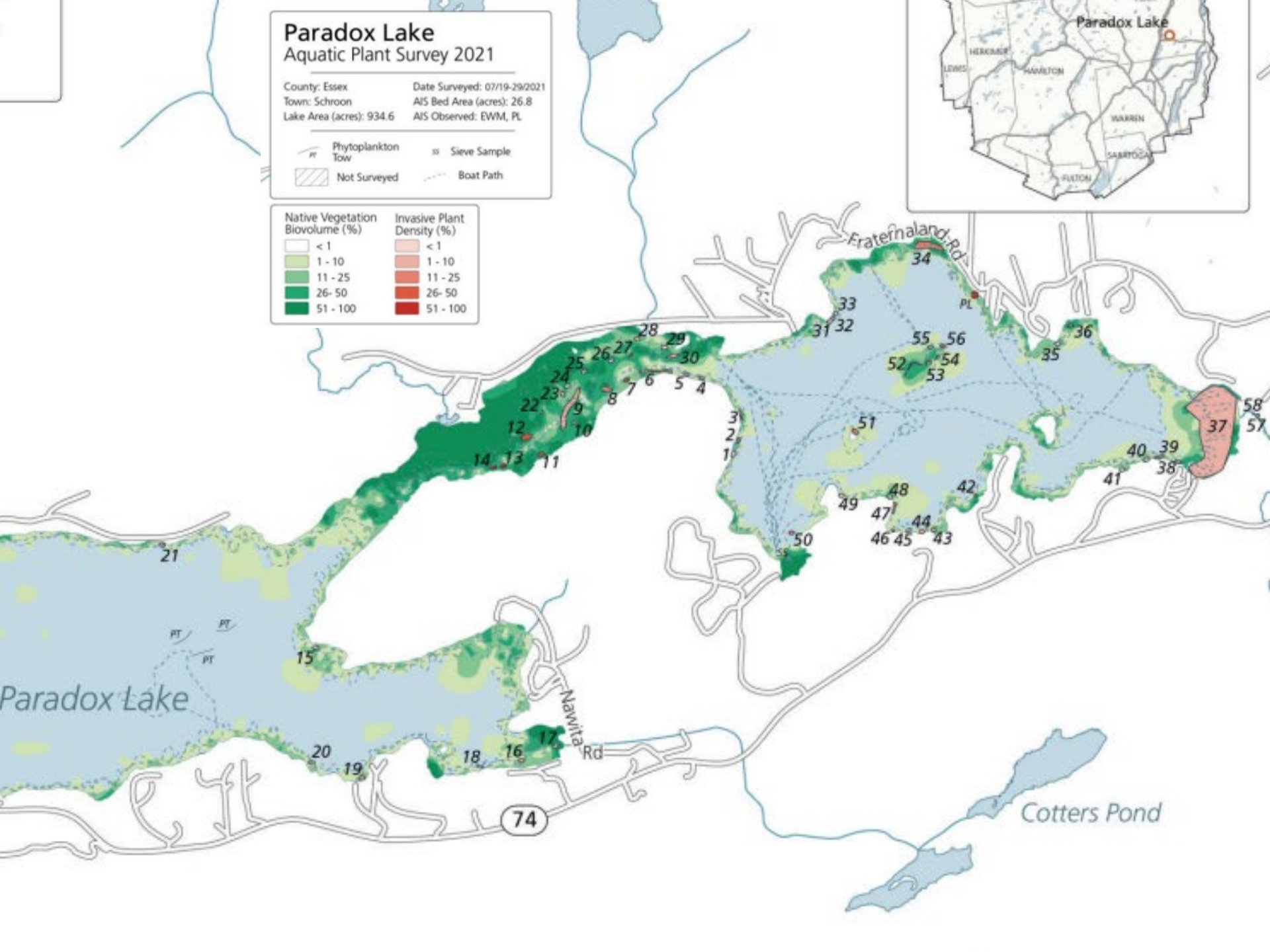


# Paradox Lake Aquatic Plant Survey 2021

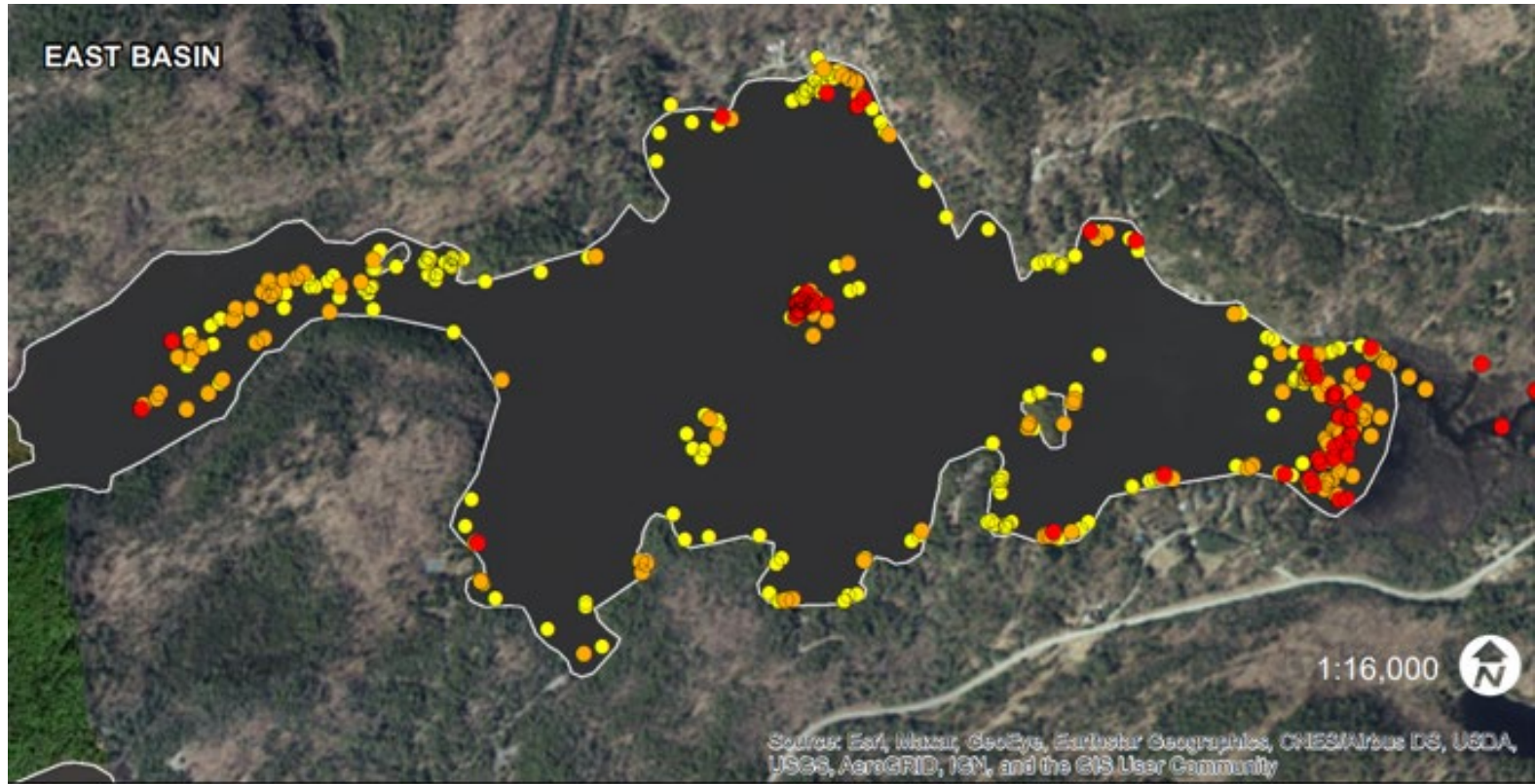
County: Essex      Date Surveyed: 07/19-29/2021  
 Town: Schroon      AIS Bed Area (acres): 26.8  
 Lake Area (acres): 934.6      AIS Observed: EWM, PL

-  Phytoplankton Tow
-  Sieve Sample
-  Not Surveyed
-  Boat Path

Native Vegetation Biovolume (%)	Invasive Plant Density (%)
 < 1	 < 1
 1 - 10	 1 - 10
 11 - 25	 11 - 25
 26 - 50	 26 - 50
 51 - 100	 51 - 100







**Paradox Lake**  
897 NYS Route 74  
Paradox, NY 12858  
[Essex County]  
43.89°, -73.691°



**EURASIAN WATER MILFOIL DENSITY  
2022 Data Collected by PLA and Aqualogic**

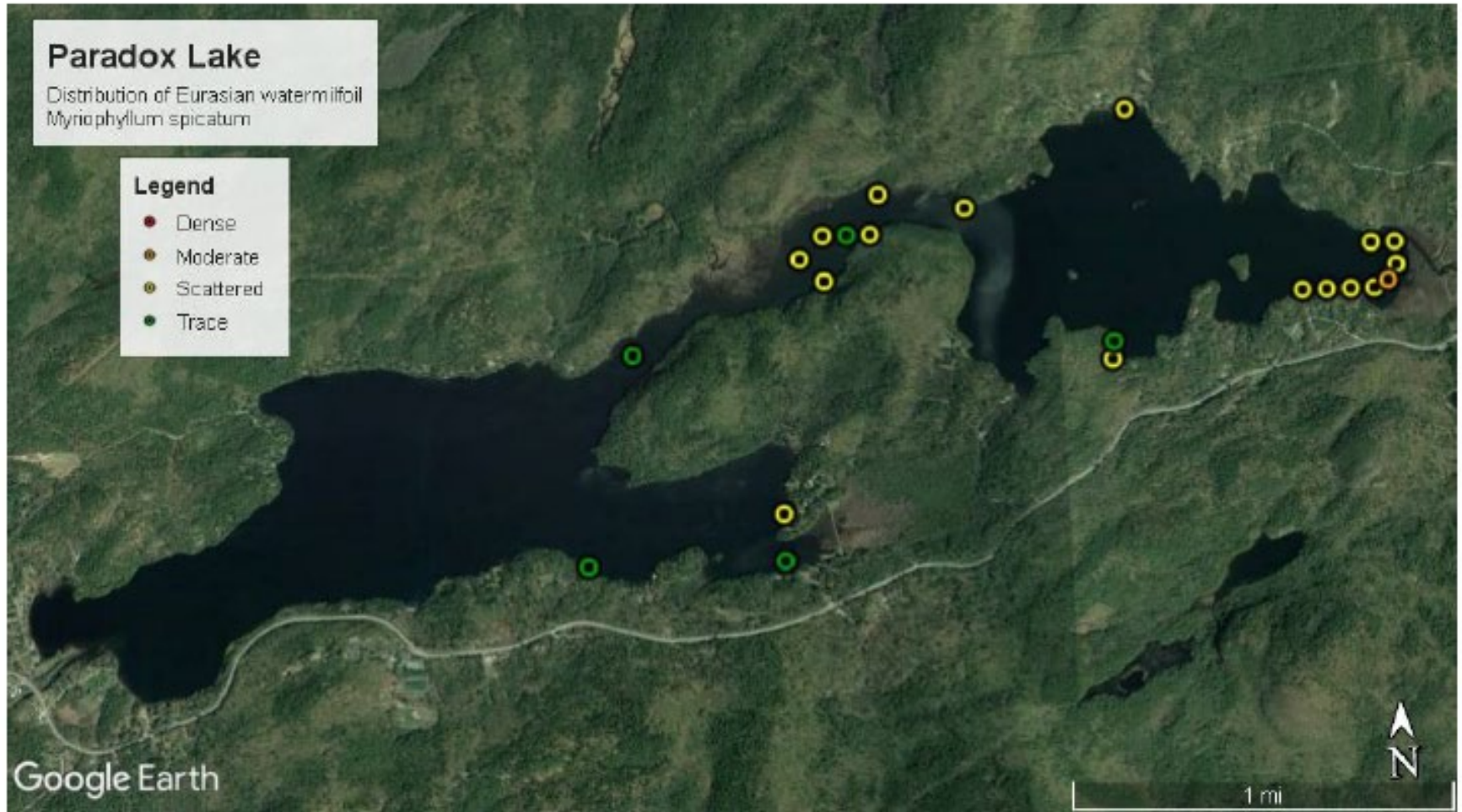
- Sparse plants
- Moderate plants
- Dense plants

Date: 11/1/2022  
File: ParadoxLk\_May-Oct2022-  
EmilfoilDensity  
Prepared by: KM  
Office: Washington, NJ

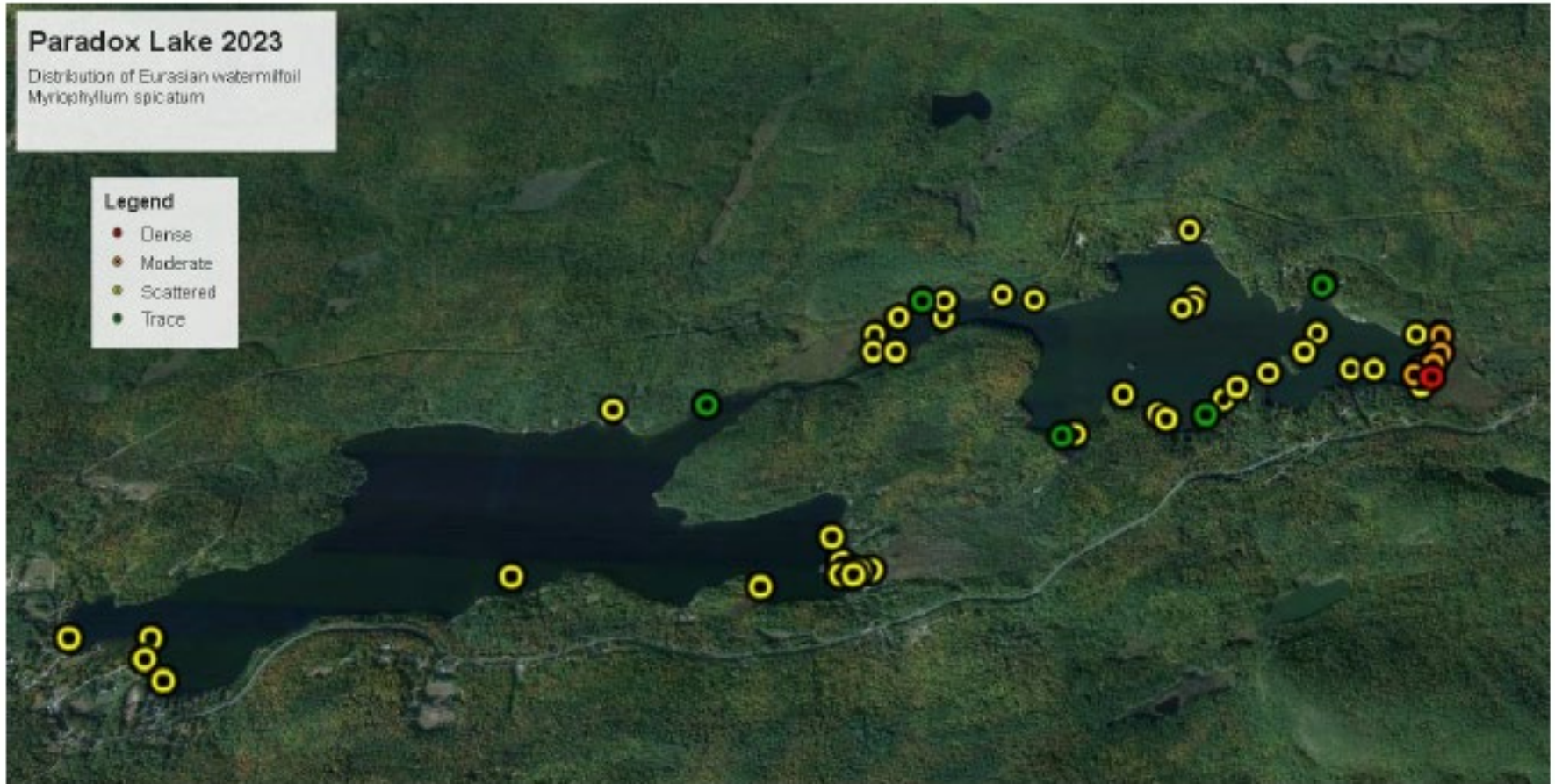


New York State  
Adirondack  
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**Figure 7. Eurasian watermilfoil in Paradox Lake in 2022.**



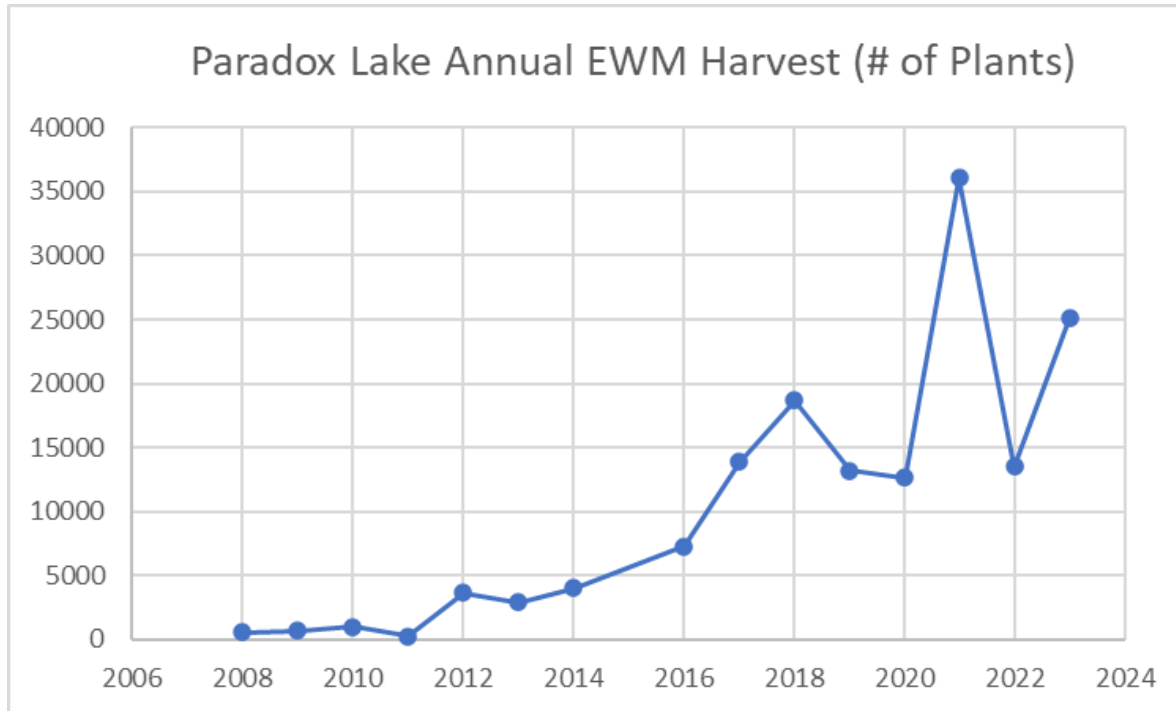
**Figure 2. Distribution of Eurasian watermilfoil (*Myriophyllum spicatum*) in Paradox Lake, NY in 2023.**

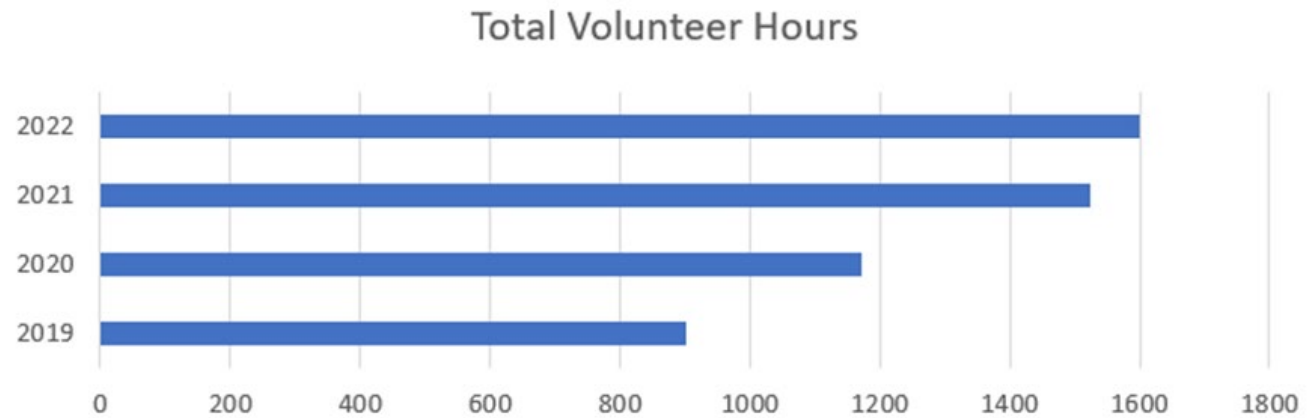
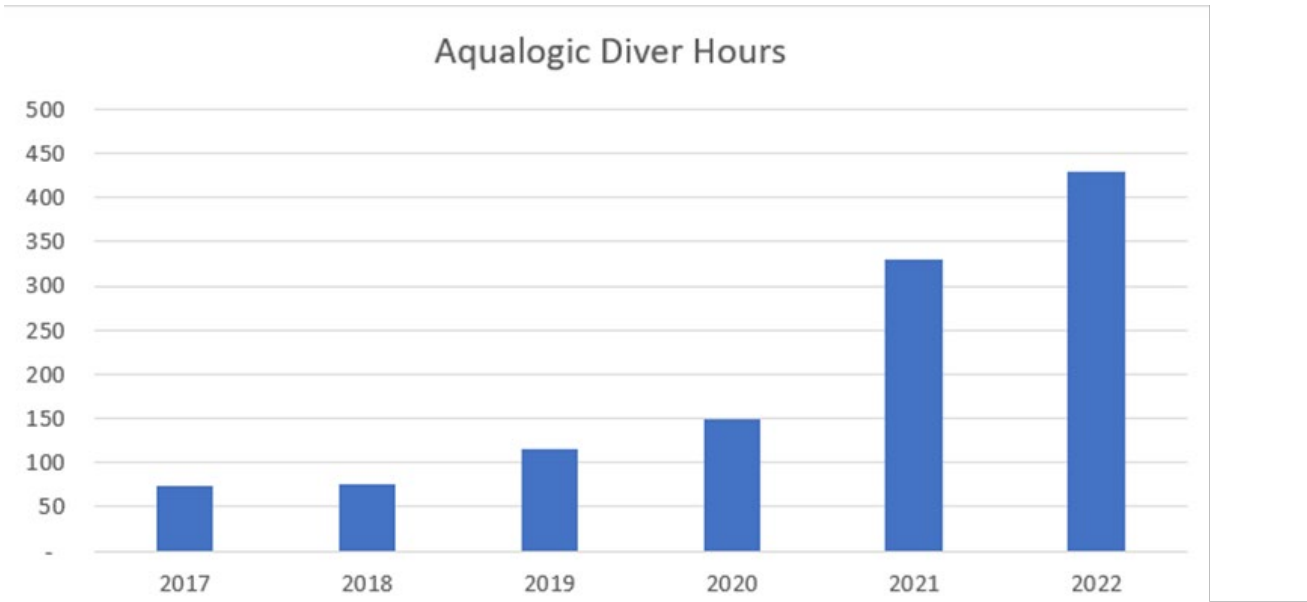


# Harvest Data

2008	2009	2010	2011	2012	2013	2014	2016	2017	2018	2019	2020	2021	2022	2023
559	705	993	271	3617	2879	4014	7255	13876	18664	13177	12628	36078	13504	25100

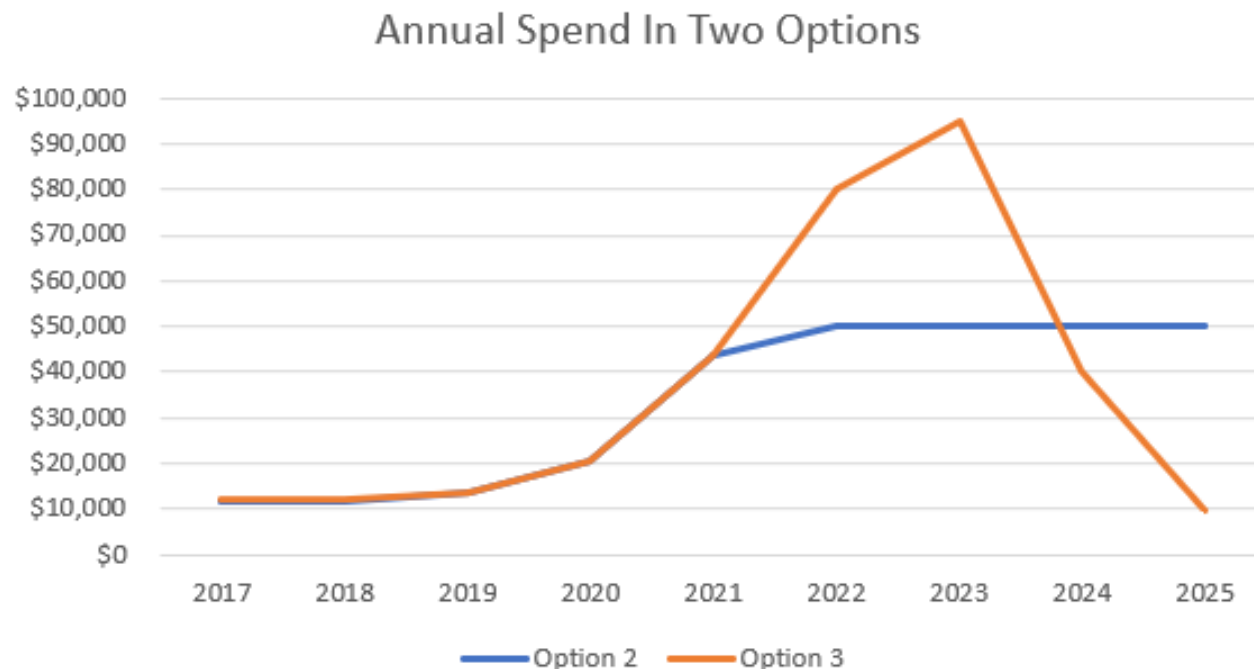
Paradox Lake Annual Eurasian Watermilfoil Harvest Data





# Options Considered by PLA

1. Reduce efforts and accept greater EWM spread and density
2. Continue current approach and hope current EWM level can be maintained without extraordinary cost increases
3. Attempt to reset EWM spread and density with intensive hand harvesting and herbicide use in areas proven to be difficult to hand harvest



# Aquatic Herbicide ProcellaCOR EC



# ProcellaCOR EC (*florpyrauxifen-benzyl*)

- **Registration approved by:**
  - **USEPA in 2018**
  - **NYSDEC in 2019 (NYSDOH, Division of Fish and Wildlife)**

*“The product application was fully reviewed regarding human health as well as ecosystem health. There were no objections to the registration of this product in New York State”*

- **Health Canada Pest Management Regulatory Agency in 2022**

*“When used according to label directions, florpyrauxifen-benzyl and its transformation products do not pose a risk to wild mammals, birds, beneficial invertebrates, earthworms, bees, aquatic invertebrates, fish, amphibians, or algae.”*





# ProcellaCOR EC

## A Selective Systemic Herbicide

- Limited non-target impacts
- Rapid plant uptake (2-6 hours)
- Low dosage (<8 parts per billion)
  - 1 ppb = 3 seconds in a century
  - = 1¢ in \$10,000,000
  - = 1 water drop in 10,000 gallon pool
- Fast degradation (Photolysis)



# Auxin Mimic

## Active Ingredient Florpyrauxifen-benzyl

Mimics plant growth hormone - causes uncontrolled rapid growth that ultimately kills the plant

- Leaves grow larger and become twisted,
- Stems lengthen,
- Leaf and shoot tissue becomes fragile
- Initial symptoms in hours to days
- Plant death and decomposition within 2-3 weeks.

Plant fragments are not viable.

Applied while plants are growing for efficient product uptake.



### Half Life of ProcellaCOR EC

<b>Aquatic</b>	<b>Aerobic</b>	<b>4 to 6 Days</b>
	<b>Anaerobic</b>	<b>2 Days</b>
<b>Sediment</b>	<b>Aerobic</b>	<b>8 Days</b>
	<b>Anaerobic</b>	<b>3 Days</b>
<b>Metabolites in Sediment</b>	<b>Aerobic</b>	<b>21.5 Days</b>
	<b>Anaerobic</b>	<b>28.9 Days</b>

### Toxicity

<b>Fish</b>	<b>Practically NonToxic (Lowest Value Assigned by EPA)</b>
<b>Invertebrates</b>	<b>Slightly Toxic (Second Lowest Value Assigned by EPA)</b>
<b>Birds, Mammals, Amphibians, Reptiles</b>	<b>Practically NonToxic (Lowest Value Assigned by EPA)</b>



# ProcellaCOR EC

**Maximum Treatment Concentration Allowed by Label for Controlling EWM is 7.72 parts per billion (ppb)**

## **NYSDEC Use Restrictions:**

- **Drinking Water: No restrictions under 50 ppb. Can and has been used in public drinking supplies**
- **Swimming / Fishing : No restrictions**
- **Irrigation & Livestock Watering: Restriction until concentration is <1 ppb**



# Overview of Regional ProCellaCor EC Treatments

	Number of Treatments	Total Treatment Area	Range of Treatment Area
<b>New York</b>	<b>NYS: ≈ 30 5 in Region 5 2 in Adirondack Park</b>	<b>NYS: Undocumented ADK's: 41 ac</b>	<b>NYS: Undocumented ADK's: 41 ac</b>
<b>Vermont</b>	<b>18 Undertaken</b>	<b>480 ac</b>	<b>4 to 70 ac</b>
<b>New Hampshire</b>	<b>43 Undertaken</b>	<b>990 ac</b>	<b>0.75 to 78</b>



# P2020-0044; Minerva Lake

## Approval May, 2020; Treatment June 5, 2020

**Table 2:** 4 Year Change in common species abundance from 2019-2022.

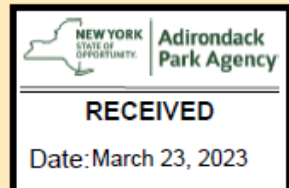
COMMON NAME	SCIENTIFIC NAME	2019	2020	2021	2022	CHANGE
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	66%	0%	0%	2%	Decrease
Common waterweed	<i>Elodea spp.</i>	60%	63%	74%	71%	Increase
Flat-stem pondweed	<i>Potamogeton zosteriformis</i>	50%	54%	59%	65%	Increase
Southern naiad	<i>Najas guadalupensis</i>	41%	60%	10%	68%	Increase
Macro-algae	<i>Chara/Nitella spp.</i>	38%	48%	23%	24%	Negligible
Thin-leaf pondweed	<i>Potamogeton pusillus</i>	44%	21%	33%	16%	Decrease
Watershield	<i>Brasenia schreberi</i>	37%	26%	20%	21%	Decrease
Bassweed/Large-leaf pondweed	<i>Potamogeton amplifolius</i>	30%	37%	52%	43%	Increase
Ribbon-leaf pondweed	<i>Potamogeton epihydrus</i>	18%	34%	28%	7%	Decrease
Northern naiad (2019) Slender naiad (2020, 2021)	<i>Najas gracillima</i>	17%	9%	2%	0%	Decrease
Slender naiad (2019) Nodding naiad (2020, 2021)	<i>Najas flexilis</i>	16%	35%	82%	43%	Increase

**P2023-0045; Lake Luzerne**  
**Approval May, 2023; Treatment May 31, 2023**



# Proposed Project

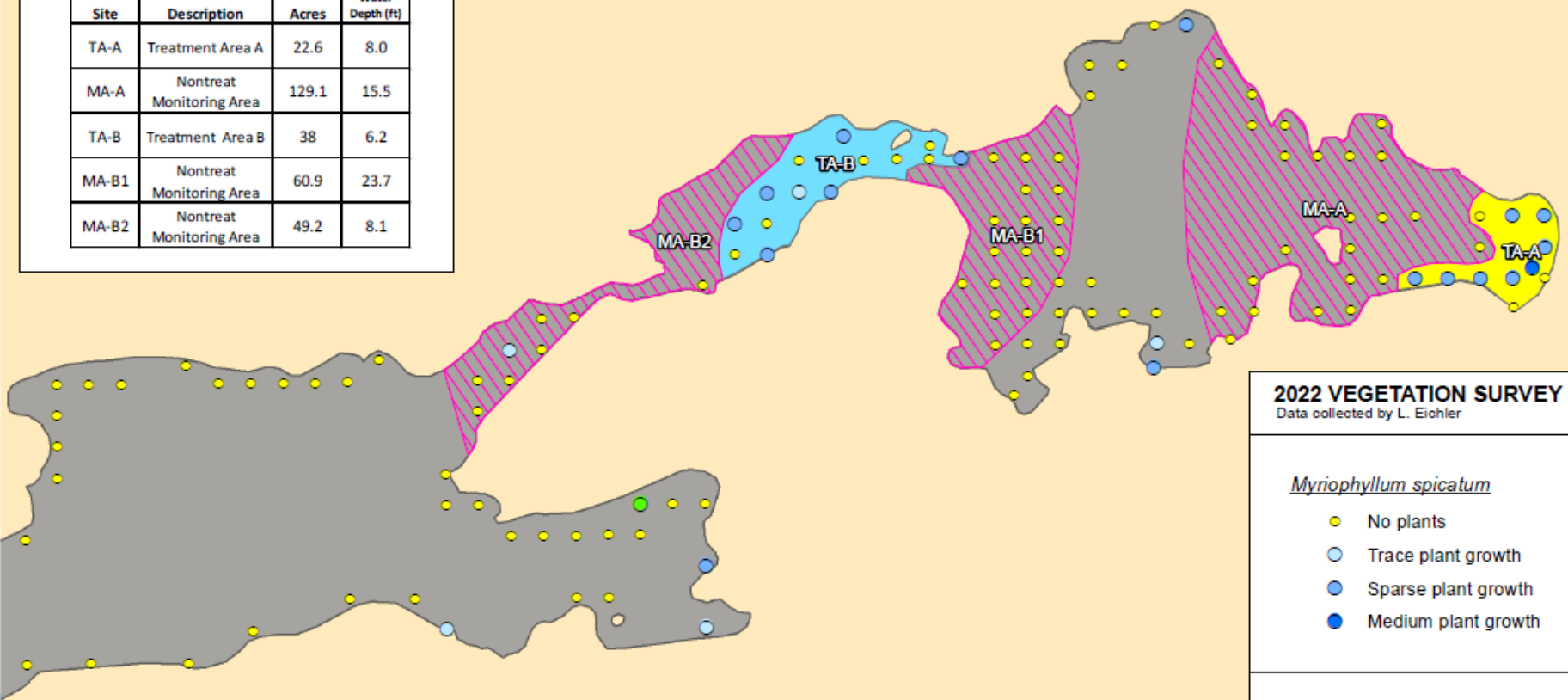




**Proposed Treatment Area**

- Treatment Area A
- Treatment Area B
- Dilution/Nontreat Plant Monitoring Areas

Site	Description	Acres	Average Water Depth (ft)
TA-A	Treatment Area A	22.6	8.0
MA-A	Nontreat Monitoring Area	129.1	15.5
TA-B	Treatment Area B	38	6.2
MA-B1	Nontreat Monitoring Area	60.9	23.7
MA-B2	Nontreat Monitoring Area	49.2	8.1



**2022 VEGETATION SURVEY**  
Data collected by L. Eichler

*Myriophyllum spicatum*

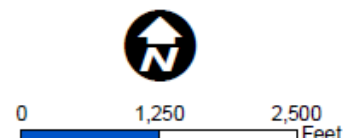
- No plants
- Trace plant growth
- Sparse plant growth
- Medium plant growth

*Myriophyllum alterniflorum*

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897 NYS Route 74  
Paradox, NY 12858  
[Essex County]  
43.89°, -73.691°



**PARADOX LAKE**



# Management Goals

*“...regain control of the spread of Eurasian watermilfoil in the eastern basin of the lake...*

*“Hand harvesting the EWM in these areas has proven to be ineffective due to the high density of EWM plants and the dense mats of native vegetation in the shallower waters which create an entangled mat of roots...*

*“...control....is expected to exceed 95% of the treatment area and last for at least two growing seasons...*

*“The primary, and long term, EWM control method will continue to be hand harvesting*



# Treatment Plan

Treat 60.6 acres within two treatment areas in Paradox Lake with ProcellaCor EC.

Narrows: 3.86 ppb; 11.7 Gallons

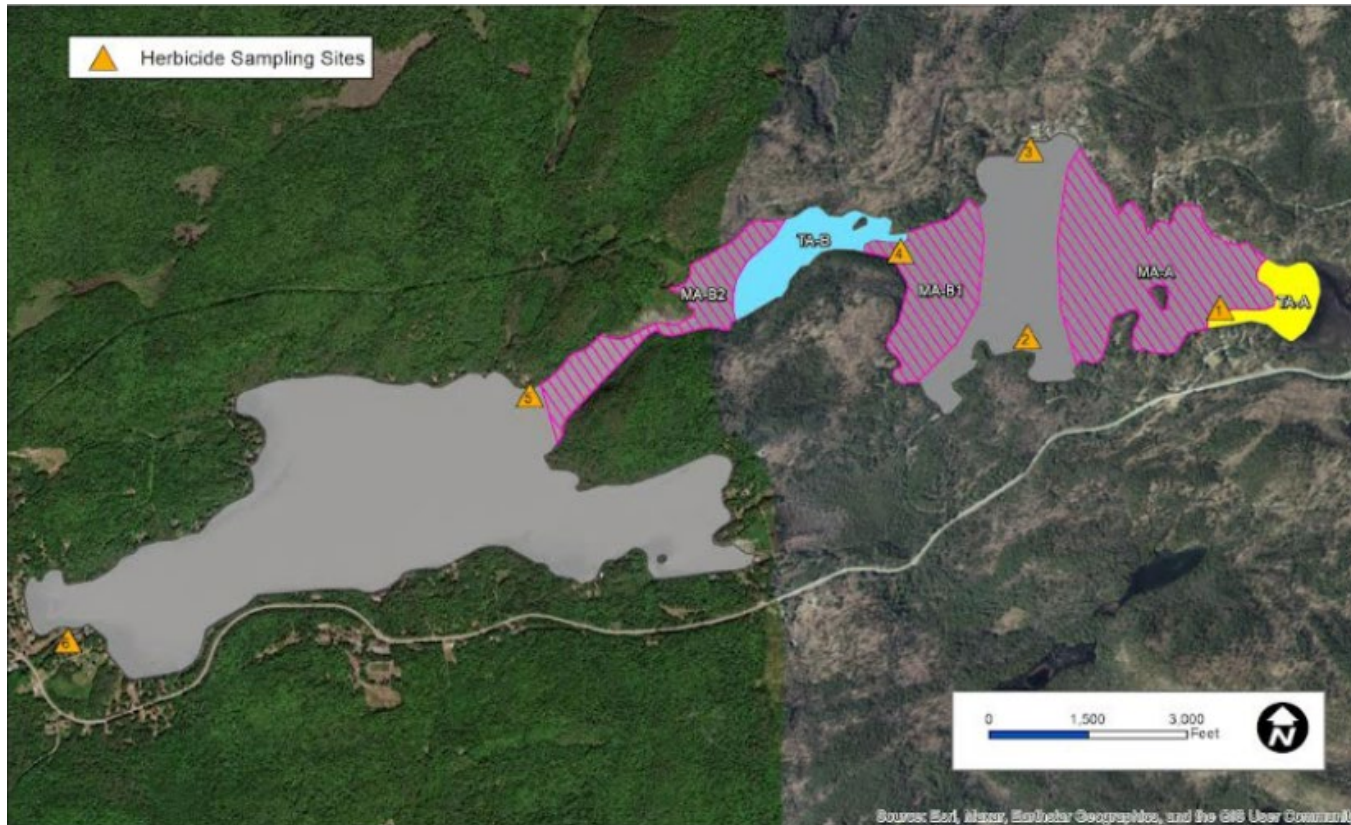
Inlet: 5.79 ppb; 13.4 Gallons

Water Quality Measurements Collected at Treatment Sites

- Secchi Depth (Measure of Photic Zone)
- Temperature



# Residual Concentration Monitoring



Post Treatment Samples collected until herbicide concentration is below 1 ppb in all samples.

Schedule:

- 1 to 3 Hours
- 10 to 12 Hours
- 24 Hours
- 3 Days
- 7 Days
- 7-14 Days thereafter



# Milfoil Species in Paradox Lake

Plant Species	Native	Protected
Eurasian watermilfoil	No	No
Little watermilfoil (Alternate flowered)	Yes	Yes (Threatened)

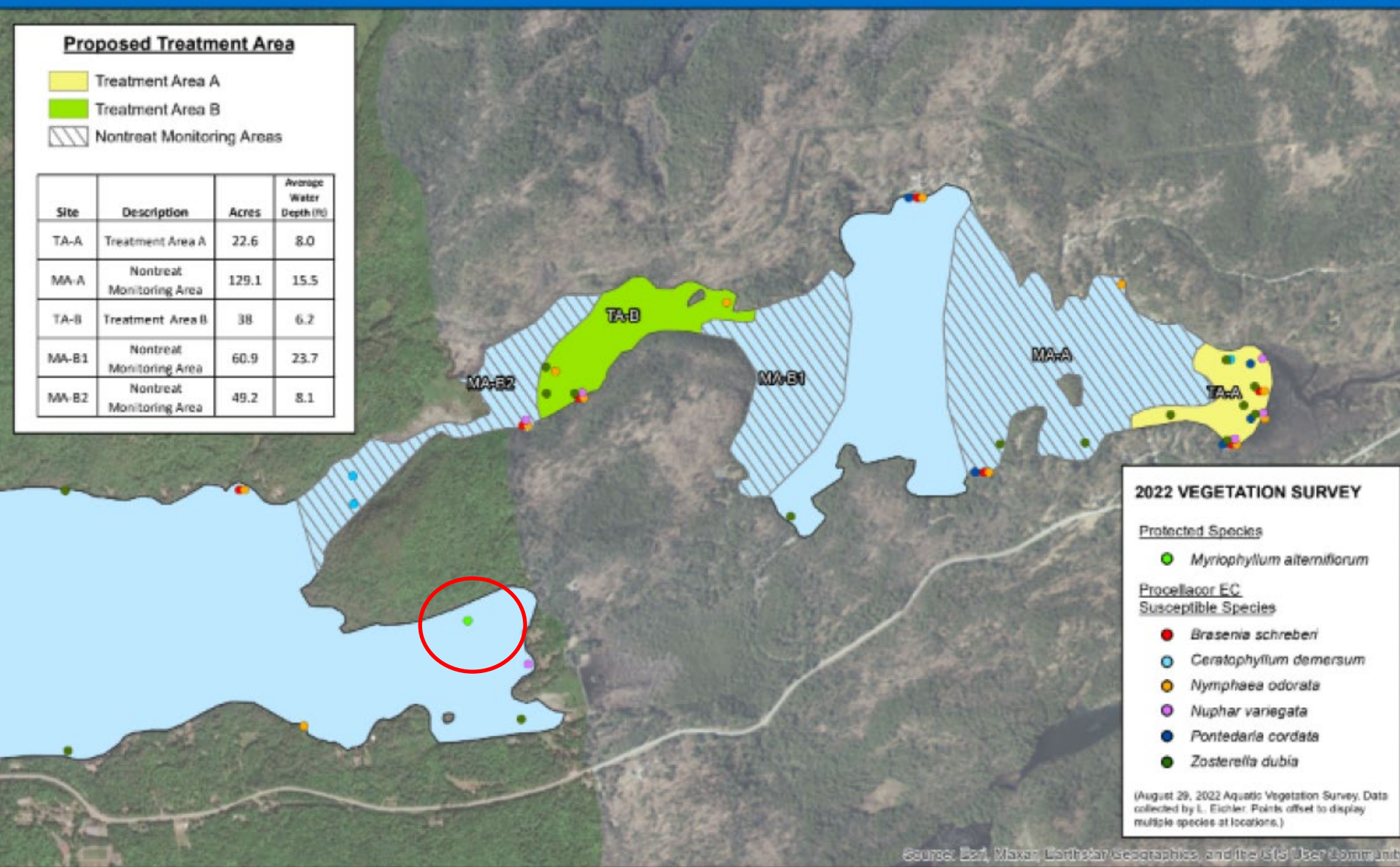
Sources: Selective Control of Invasive Watermilfoils with ProcellaCOR® Aquatic Herbicide and Response of Native Aquatic Plants. January 28, 2019 Mark Heilman, Ph.D., Jon Gosselin, SePRO Technical Specialist, Pers.Communication



**Proposed Treatment Area**

- Treatment Area A
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MA-B2	Nontreat Monitoring Area	49.2	8.1



**2022 VEGETATION SURVEY**

Protected Species

- Myriophyllum alterniflorum*

Procillacor EC Susceptible Species

- Brasenia schreberi*
- Ceratophyllum demersum*
- Nymphaea odorata*
- Nuphar variegata*
- Pontederia cordata*
- Zostera dubia*

(August 29, 2022 Aquatic Vegetation Survey. Data collected by L. Eichler. Points offset to display multiple species at locations.)

Source: Esri, Maxar, Earthstar Geographics, and the USGS Open Community

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 897 NYS Route 74  
 Paradox, NY 12858  
 [Essex County]  
 43.89°, -73.691°



**PARADOX LAKE**



# Susceptibility of Other Species in Paradox Lake

<b>Plant Species</b>	<b>Susceptibility</b>
<b>Watershield</b>	<b>Moderate - High</b>
<b>Yellow waterlily</b>	<b>Low - Moderate</b>
<b>White waterlily</b>	<b>Moderate</b>
<b>Pickerelweed</b>	<b>Low - Moderate</b>
<b>Water stargrass</b>	<b>Low - Moderate</b>
<b>Coontail</b>	<b>Low - Moderate</b>
<b>All others (N= 29)</b>	<b>Low</b>

Sources: Selective Control of Invasive Watermilfoils with ProcellaCOR® Aquatic Herbicide and Response of Native Aquatic Plants. January 28, 2019 Mark Heilman, Ph.D., Jon Gosselin, SePRO Technical Specialist, Pers.Communication



## *Potamogeton alpinus* (alpine pondweed)

- Listed as threatened in NYS
- Not observed in plant surveys
- NYSNHP location is not within the treatment area
- Like all *Potamogeton* species, is not anticipated to be impacted by ProcellaCor



Illustrator: John Myers

Copyright: Flora of North America Association



New York State  
Adirondack  
Park Agency



# Public Comment and Review by Others



# Public Comment

- Public Notice
  - All lakefront landowners mailed project notifications (176 Letters)
  - Environmental Notice Bulletin: Comment Period Ended October 26, 2023
  
- Comment Letters
  - 44 comment letters received
  - 2 comments letters addressed to DEC State Lands process
  - 2 comments received after the deadline (not in tally)
  - 3 response letters from applicant and others (not in tally)



# Public Comment – Supportive (38 Letters)

- Fighting a losing battle
- Hand harvesting not working
- Fears of losing recreational opportunities
- Current levels of spending are not sustainable
- ProcellaCor is well documented to be safe and effective for use



# Public Comment – Opposed (6 Letters)

- Protect the Adirondacks (2 Letters)
  - Paradox Lake has limited growth of EWM
    - Response: Harvest and survey data contradict this claim
- Non - Target Impacts are unknown
  - Response: Available research, data and review are very clear about non-target impacts (both unlikely impacts and anticipated impacts)

# Public Comment – Opposed

- Protect the Adirondacks (2 Letters)
  - Claim that hand harvesting is successful; simultaneous claim that there is little hand harvesting data available
    - Response: Long term records are available; indicate long term hand harvesting has not prevented increase in spread or density
  - Claim that additional treatments will be proposed
    - Response: Application clearly states hand harvesting will continue to be the primary management strategy into the future



# Public Comment – Opposed

- Adirondack Council
  - Concerns about persistence of product below the photic zone
    - Response: Additional measurements of photic zone during application; Additional residual product monitoring at or near the lakebed sediments
  - Water current concerns at the inlet
    - Response: Treatment area is within the body of the lake, not within the creek flow
  - Clarification on impacts to *P. alpinus*
    - Response: Noted. Impacts appear unlikely



# Public Comment – Opposed

- Residents (3 Letters)
  - Flow
  - Drinking water
  - Non-target impacts



# Review by Others

- NYS Department of Environmental Conservation
  - Workplan Review
  - Pesticides Permit





# Draft Permit Conditions

- Undertake project as proposed
- Adherence to Clean Drain Dry Standards for all equipment used
- Post-treatment concentration monitoring report
- Post treatment aquatic plant survey



# Conclusions of Law

- a. that the project authorized as conditioned herein will be consistent with the Adirondack Park land use and development plan; and
- b. that the project authorized as conditioned herein will not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the Park, taking into account the economic and social or other benefits to be derived from the activity; and
- c. the economic, social and other benefits to be derived from the activity proposed and as conditioned herein compel a departure from the guidelines of 9 NYCRR Part 578.10(a)(1), in order to secure the natural benefits of wetlands associated with the project, consistent with the general welfare and beneficial economic, social, and agricultural development of the state



**Staff  
Recommendation:  
Approve with  
Conditions**

