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2024 Eagle Lake AIS Survey

Aquatic Invasive Species Surveys
Survey Team Report

ADIRONDACK RESEARCH



2024 Eagle Lake Aquatic Invasive Species Survey

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Cover image: Eagle Lake by Justin Wolford, 2024

Executive Summary

The purpose of this effort was to perform a point intercept survey in preparation for submitting a permit to the DEC for management of Eurasian watermilfoil (*Myriophyllum spicatum*) using the herbicide ProcellaCOR EC.

We surveyed 123 stations (sample points). Our survey design and methodologies followed the APA requirements for permit submission.

Our team documented aquatic plant species occurrence, species cover class, overall plant cover class, depth, and species richness at each of the 123 stations.

Eurasian watermilfoil was documented at a total of 39 of the 123 stations (55.8%). Twenty-three other native species were documented.



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Overview

We performed an aquatic invasive species (AIS) and native aquatic plant species survey for Eagle Lake in Essex County on the dates of July 31st and August 1st, 2024. This survey was completed in preparation for The Eagle Lake Property Owners Inc. applying to the DEC for a permit to use the herbicide ProcellaCOR EC for the control of an aquatic pest (AQV).

The Eagle Lake Association is planning to apply for a permit to use ProcellaCOR EC in 2025 to manage Eurasian watermilfoil (*Myriophyllum spicatum*). We conducted the surveys and created maps and data tables of the survey results for this permit.

For more information on our qualifications and services, our Qualifications Packet can be accessed via this link: <https://www.dropbox.com/s/2jc37h56z4jkb6i/Lake%20Surveys.pdf?dl=0>
You can also learn more about Adirondack Research at www.adkres.org.

Adirondack Research was able to complete the following tasks as part of this project:

- Survey 123 stations in the entirety of the 410-acre waterbody over a 2-day period with two crew members using a motorboat.
- Survey and identify all native plant species at point intercept survey stations within a survey design to meet DEC requirements for applying for the use of the herbicide ProcellaCOR EC.
- Draft maps showing survey locations, overall plant abundance, depth, species richness, and abundance for each of the 24 species recorded in GIS.
- Create tables displaying station number, GPS coordinates, depth, species richness, and abundance of the target species; abundance of each species at all stations; the total count of station numbers each species is found, including overall percentages; and susceptibility of each species to herbicide ProcellaCOR EC.
- Produced this report of the described survey effort.

Methods

Below is a description of the survey methods used while surveying the lake. We've included a brief description of the equipment used, our pre- and post-cleaning procedure for all of our equipment, and a description of our survey techniques.

Equipment

Equipment used while completing the Aquatic Invasive Species (AIS) survey of the lake consisted of double-sided rakes for collecting plant samples from under the water, an iPad 4 mini for data collection, and a Lowrance HDS 7 GPS and sonar unit. All data and observations were recorded using ESRI's Field Maps application. Surveys were conducted via motorboat.

Cleaning

As our team is frequently moving from one water body to another, specific precautionary measures were taken to ensure that all equipment used was decontaminated and free of AIS. To ensure that all equipment was free of AIS, we thoroughly washed and decontaminated all of our equipment at one of the Adirondack AIS Prevention Program's free boat wash and decontamination stations. High pressure hot water was used at these sites to ensure that no AIS spread via equipment.

Sampling Techniques

The littoral zone typically encompasses the area from shoreline to a depth of about 15 feet. We utilized publicly available bathymetric to determine the survey extent. We then evenly distributed 123 points around the lake for sampling.

The team surveyed the area by navigating to each survey point, tossing the rake and by performing visual surveys where possible. All plants retrieved by rake toss or seen by visual inspection were identified to the best of our abilities (usually to the species level, but sometimes to genus). Both native and invasive plants found were identified using the "Maine Field Guide to Invasive Aquatic Plants and their common native look-alikes" by Lake Stewards of Maine.

Based upon how much plant material was observed on the rake toss, we assigned a percent cover for the entire rake and for each species on the rake. Plants that were observed visually and not collected on a rake toss were estimated based on their appearance from the water surface. Based on plant abundance, we used the following density classes:

Density Class	Class Description		Coverage Class (plant density)
T	Trace	1-2 stems	Less than 5%
S	Sparse	3-10 stems	5 - 25%
M	Moderate	Rakeful; no empty tines	26 - 50%
D	Dense	Rakeful; no visible tines	51 - 75%
HD	High Density	Difficult to bring on boat	76 - 100%

Table 1: Density class descriptions. Note we collect two density classes between 51-100% (51-75% and 75-100%) while some studies combine the two. Colors in the density class correspond to their relative abundance markers on maps.

Results

The team surveyed 123 sites on July 31st, and August 1st, 2024: detecting one invasive species (Eurasian watermilfoil). The team also detected 24 native species. Table 2 provides a summary of all aquatic vegetation detected in Eagle Lake, in addition to their count and frequency of occurrence relative to the 123 points surveyed, invasive species are dictated in red. Full descriptions for each of these species, and impacts on their environment are attached in the appendix.

Table 2. Summary of Aquatic Vegetation Occurrences and Frequency for Eagle Lake 2024. Coverage class was recorded for each of these and are displayed in Table 4.

Common Name	Scientific Name	Frequency	% Occurrence
American eelgrass	<i>Vallisneria americana</i>	4	3.3
Beck's water-marigold	<i>Bidens beckii</i>	1	0.8
Clasping leaf pondweed	<i>Potamogeton perfoliatus</i>	9	7.3
Common naiad	<i>Najas flexilis</i>	19	15.4
Coontail	<i>Ceratophyllum demersum</i>	1	0.8
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	39	31.7
Floating-leaf pondweed	<i>Potamogeton natans</i>	1	0.8
Fragrant water lily	<i>Nymphaea odorata</i>	5	4.1
Horsetail	<i>Equisetum fluviatile</i>	1	0.8
Large-leaved pondweed	<i>Potamogeton amplifolius</i>	1	0.8
Low watermilfoil	<i>Myriophyllum humile</i>	1	0.8
Muskgrass	<i>Chara sp.</i>	11	8.9
Northern watermilfoil	<i>Myriophyllum sibiricum</i>	1	0.8
Nuttalls waterweed	<i>Elodea nuttallii</i>	1	0.8
Pickrelweed	<i>Pontederia cordata</i>	1	0.8
Quillwort	<i>Isoetes spp.</i>	10	8.1
Ribbon-leaf pondweed	<i>Potamogeton epihydrus</i>	10	8.1
Robbins pondweed	<i>Potamogeton robbinsii</i>	14	11.4
Small pondweed	<i>Potamogeton pusillus</i>	7	5.7
Stonewort	<i>Nitella sp.</i>	6	4.9
Water weed	<i>Elodea sp.</i>	9	7.3
Watershield	<i>Brasenia schreberi</i>	5	4.1
White stem pondweed	<i>Potamogeton praelongus</i>	11	8.9
Whorled watermilfoil	<i>Myriophyllum verticillatum</i>	1	0.8

Below are the results for each species' density class distributions for Eagle Lake.

American eelgrass (*Vallisneria americana*)

This plant was found at a total of 4 sample points resulting in 3.3% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=4, 100.0%)

Becks water marigold (*Bidens beckii*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Casping leaf pondweed (*Potamogeton perfoliatus*)

This plant was found at a total of 9 sample points resulting in 7.3% of occurrences. It was found growing in three stages of cover class, appearing at sparse levels, (n=5, 55.6%), trace levels (n=3, 33.3%), and moderate levels (n=1, 11.1%).

Common naiad (*Najas flexilis*)

This plant was found at a total of 19 sample points resulting in 15.4% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=14, 73.7%), and sparse levels (n=5, 26.3%).

Coontail (*Ceratophyllum demersum*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Eurasian watermilfoil (*Myriophyllum spicatum*)

This plant was found at a total of 39 sample points resulting in 31.7% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=27, 69.2%), and sparse levels (n=12, 30.8%).

Floating-leaf pondweed (*Potamogeton natans*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Fragrant waterlily (*Nymphaea odorata*)

This plant was found at a total of 5 sample points resulting in 4.1% of occurrences. It was found growing in two stages of cover class, appearing at sparse levels, (n=4, 80.0%), and trace levels (n=1, 20.0%).

Horsetail (*Equisetum fluviatile*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Large-leaved pondweed (*Potamogeton amplifolius*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Low watermilfoil (*Myriophyllum humile*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Muskgrass (*Chara sp.*)

This plant was found at a total of 11 sample points resulting in 8.9% of occurrences. It was found growing in three stages of cover class, appearing at trace levels, (n=8, 72.7%), sparse levels (n=2, 18.1%), and moderate levels (n=1, 9.2%).

Northern watermilfoil (*Myriophyllum sibiricum*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at sparse level, (n=1, 100.0%).

Nuttalls waterweed (*Elodea nuttallii*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Pickereckweed (*Pontederia cordata*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Quillwort (*Isoetes spp.*)

This plant was found at a total of 10 sample points resulting in 8.1% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=9, 90.0%), and sparse levels (n=1, 10.0%).

Ribbon-leaf pondweed (*Potamogeton epihydrus*)

This plant was found at a total of 10 sample points resulting in 8.1% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=7, 70.0%), and sparse levels (n=3, 30.0%).

Robbins Pondweed (*Potamogeton robbinsii*)

This plant was found at a total of 14 sample points resulting in 11.4% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=10, 71.4%), and sparse levels (n=4, 28.6%).

Small pondweed (*Potamogeton pusillus*)

This plant was found at a total of 7 sample points resulting in 5.7% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=6, 85.7%), and sparse levels (n=1, 14.3%).

Stonewort (*Nitella sp.*)

This plant was found at a total of 6 sample points resulting in 4.9% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=4, 66.6%), and sparse levels (n=2, 33.3%).

Water weed (*Elodea sp.*)

This plant was found at a total of 9 sample points resulting in 7.3% of occurrences. It was found growing in two stages of cover class, appearing at trace levels, (n=8, 88.8%), and sparse levels (n=1, 11.2%).

Watershield (*Brasenia schreberi*)

This plant was found at a total of 5 sample points resulting in 4.1% of occurrences. It was found growing in three stages of cover class, appearing at sparse levels, (n=3, 60.0%), trace levels (n=1, 20.0%), and moderate levels (n=1, 20.0%).

White stem pondweed (*Potamogeton praelongus*)

This plant was found at a total of 11 sample points resulting in 8.9% of occurrences. It was found growing in two stages of cover class, appearing at sparse levels, (n=6, 54.5%), and trace levels (n=5, 45.5%).

Whorled watermilfoil (*Myriophyllum verticillatum*)

This plant was found at a total of 1 sample point resulting in 0.8% of occurrences. It was found growing in one stage of cover class, appearing at trace level, (n=1, 100.0%).

Table 3: Station number, and depth that Eurasian watermilfoil was recorded, along with its abundance and the total species richness at that point.

Station	Depth	Latitude	Longitude	Density
1	9.5	43.87694	-73.593841	Less than 5%
2	1.8	43.8738	-73.604873	Less than 5%
3	1.8	43.87339	-73.604722	Less than 5%
4	2	43.87319	-73.60423	Less than 5%
6	3.8	43.874	-73.603366	Less than 5%
8	6.2	43.87405	-73.603003	Less than 5%
9	4.3	43.87343	-73.602768	5-25%
11	8.8	43.87368	-73.601835	Less than 5%
19	8.3	43.87276	-73.598984	Less than 5%
20	8.3	43.8734	-73.597033	Less than 5%
23	12	43.87336	-73.594226	Less than 5%
24	4.6	43.87304	-73.593367	Less than 5%
25	4.6	43.8733	-73.593079	Less than 5%
26	10.2	43.87387	-73.5934	Less than 5%
30	9.4	43.87676	-73.592246	Less than 5%
31	10.3	43.87734	-73.592824	5-25%
33	8.8	43.87769	-73.593205	5-25%
34	7.5	43.878	-73.592386	5-25%
45	7.7	43.87952	-73.588039	Less than 5%
55	18.6	43.88242	-73.577714	5-25%
57	36.5	43.88276	-73.576283	5-25%
68	10.4	43.88173	-73.566768	5-25%
72	4.4	43.88162	-73.563451	5-25%
76	9.9	43.88206	-73.565876	Less than 5%
77	8.2	43.88282	-73.566251	Less than 5%
84	7.5	43.88697	-73.56746	Less than 5%
89	5.7	43.88544	-73.57403	Less than 5%
91	15	43.88604	-73.577589	5-25%
94	10.6	43.8847	-73.581065	5-25%
95	14	43.88462	-73.581725	Less than 5%
96	14.3	43.88464	-73.582838	Less than 5%
99	11.2	43.88383	-73.58596	Less than 5%
100	8.4	43.88382	-73.587415	Less than 5%
104	16.5	43.8835	-73.591032	5-25%
105	10.8	43.88327	-73.591786	5-25%
108	20.1	43.88113	-73.593469	Less than 5%
109	12	43.87992	-73.594891	Less than 5%
110	6	43.87885	-73.595017	Less than 5%
115	4.1	43.87691	-73.594271	Less than 5%

Table 4. Abundance of Species by Site – Eagle Lake 2024

Station	Depth	American eelgrass	Beck's water-marigold	Clasping leaf pondweed	Common naiad	Coontail	Eurasian watermilfoil	Floating-leaf pondweed	Fragrant water lily	Horsetail	Large-leaved pondweed	Low watermilfoil	Muskgrass	Northern watermilfoil	Nuttalls waterweed	Pickersweed	Quillwort	Ribbon-leaf pondweed	Robbins pondweed	Small pondweed	Stonewort	Water weed	Watershield	White stem pondweed	Whorled watermilfoil	Species Richness	Total Rake Density
1	9.5						T										T					T		T		4	5-25%
2	12.5	T					T		S									T				T		T		5	5-25%
3	8.4						T																T			2	Less than 5%
4	12.3						T										T					T				3	Less than 5%
5	13																									0	None
6	18						T		S																	2	Less than 5%
7	16.5																T		T							2	Less than 5%
8	10.8						T										T		T		T		T			5	5-25%
9	4.8						S												T	T						3	26-50%
10	41.9																			T						1	Less than 5%
11	20.1						T															T		S		3	5-25%
12	12												T											S		2	5-25%
13	8.8																		T					S		2	5-25%
14	6																			T				S		2	5-25%
15	6.5											S									S					2	5-25%
16	2																		T			T		T		3	Less than 5%
17	2.2																		T							1	Less than 5%
18	5.2																	T	T					S		3	5-25%
19	4.1						T																	S	T	3	5-25%
20	25.6						T																			1	Less than 5%
21	11.5																									0	None
22	21.3																									0	None
23	19.6						T												T							2	Less than 5%
24	9.3	T			T		T										T						T			5	5-25%
25	19.5				T		T	T																		3	5-25%
26	15		M				T											T								3	5-25%
27	20.8																									0	None
28	19.7																									0	None
29	8.3				T															S						2	5-25%
30	9.3						T															T				2	Less than 5%
31	6.7						S																			1	Less than 5%
32	9.4																									0	None
33	8.7	T					S																			2	5-25%
34	6.8						S											T								2	5-25%
35	8.3																									0	None
36	1.8																									0	None
37	8.3																									0	None
38	19.9				S																					1	5-25%
39	16.5																		S							1	5-25%
40	12				T																					1	Less than 5%
41	4.6																	T								1	Less than 5%
42	4.6				T	T					T															3	Less than 5%
43	10.2				S																					1	5-25%
44	21.5								S								S									2	5-25%
45	19.3						T																S			2	Less than 5%

Table 4 continued

Station	Depth	American eelgrass	Beck's water-marigold	Clasping leaf pondweed	Common naiad	Coontail	Eurasian watermilfoil	Floating-leaf pondweed	Fragrant water lily	Horsetail	Large-leaved pondweed	Low watermilfoil	Muskgrass	Northern watermilfoil	Nuttalls waterweed	Pickrelweed	Quillwort	Ribbon-leaf pondweed	Robbins pondweed	Small pondweed	Stonewort	Water weed	Watershield	White stem pondweed	Whorled watermilfoil	Species Richness	Total Rake Density
46	13.5				S																					1	5-25%
47	1.8																									0	None
48	9.4																					T				1	Less than 5%
49	10.3																T									1	Less than 5%
50	21.1										T															1	Less than 5%
51	8.8																									0	None
52	7.5																									0	None
53	15.2				T																					1	Less than 5%
54	16.2																									0	None
55	10.2						S																			1	5-25%
56	7.3																									0	None
57	8.3						S																			1	5-25%
58	2																									0	None
59	9.6																									0	None
60	8.7																									0	None
61	9.2																									0	None
62	6.6																									0	None
63	2																									0	None
64	7.7																	T								1	Less than 5%
65	8.1									T													S			2	Less than 5%
66	16.3																									0	None
67	7.7			S									T					T								3	5-25%
68	1.8			S			S															T				3	26-50%
69	3.7			T									S													2	5-25%
70	6.5														S			S	S							3	5-25%
71	9.9			T								T														2	Less than 5%
72	8	T		S	T		S												S	T						6	5-25%
73	14																T				T					2	Less than 5%
74	33.6				T																					1	Less than 5%
75	18.6			S									T													2	5-25%
76	37.3			S				T																		2	5-25%
77	36.5						T						T					S	S							4	5-25%
78	28.8																		T							1	Less than 5%
79	5.5																									0	Less than 5%
80	3.8																					T				1	Less than 5%
81	15.5																T									1	Less than 5%
82	6.2												T													1	Less than 5%
83	10.2												T													1	Less than 5%
84	25.6			T	T		T																			3	Less than 5%
85	14.6																									0	None
86	18.6																									0	None
87	16.6																					T				1	Less than 5%
88	10.2				T																					1	Less than 5%
89	10.4						T															S				2	Less than 5%
90	8.7																									0	None

Table 4 continued

Station	Depth	American eelgrass	Beck's water-marigold	Clasping leaf pondweed	Common naiad	Coontail	Eurasian watermilfoil	Floating-leaf pondweed	Fragrant water lily	Horsetail	Large-leaved pondweed	Low watermilfoil	Muskgrass	Northern watermilfoil	Nuttalls waterweed	Pickeralweed	Quillwort	Ribbon-leaf pondweed	Robbins pondweed	Small pondweed	Stonewort	Water weed	Watershield	White stem pondweed	Whorled watermilfoil	Species Richness	Total Rake Density
91	3						S											S								2	5-25%
92	8.5																									0	None
93	7.7				T																					1	Less than 5%
94	4.4						S																			1	5-25%
95	4.5						T																			1	Less than 5%
96	5.5						T																			1	Less than 5%
97	9.6																									0	None
98	9.9		T		S																					2	5-25%
99	8.2						T																			1	Less than 5%
100	12.5						T															T				2	Less than 5%
101	9																				S					1	5-25%
102	6.2													S												1	Less than 5%
103	14.5																									0	None
104	3						S						T													2	Less than 5%
105	7.8						S									T										2	Less than 5%
106	4.5				S																					1	Less than 5%
107	7.5																									0	None
108	11						T																			1	Less than 5%
109	11.3						T																S			2	5-25%
110	16				T		T										T									3	Less than 5%
111	10.3																			T						1	Less than 5%
112	5.7				T																		M			2	5-25%
113	4.3				T												T									2	Less than 5%
114	9.4												M							T						2	26-50%
115	15						T		S																	2	5-25%
116	8.9																									0	None
117	11.4									T																1	Less than 5%
118	10.6																									0	None
119	14																									0	None
120	14.3																									0	None
121	16.5																									0	None
122	14																									0	None
123	11.2																									0	None

Photos:



Caption: Clasp leaf pondweed
(*Potamogeton perfoliatus*)



Caption: Robbin's pondweed
(*Potamogeton robbinsii*)



Caption: Eurasian watermilfoil
(*Myriophyllum spicatum*)



Caption: Common naiad (*Najas flexilis*.)



Caption: American eelgrass
(*Vallisneria spiralis*)



Caption: Small pondweed
(*Potamogeton pusillus*)



Caption: Quillwort (*Isoetes* spp.)



Caption: Muskgrass (*Chara* sp.)



Caption: Ribbon leaf pondweed
(*Potamogeton epihydrus*)



Caption: Water weed (*Elodea* sp.)



Caption: Watershield (*Brasenia schreberi*)



Caption: Horsetail (*Equisetum fluviatile*)



Caption: Beck's water-marigold (*Bidens beckii*)



Caption: Stonewort (*Nitella* sp.)



Caption: Northern watermilfoil (*Myriophyllum sibiricum*)



Caption: Pickerelweed (*Pontederia cordata*)



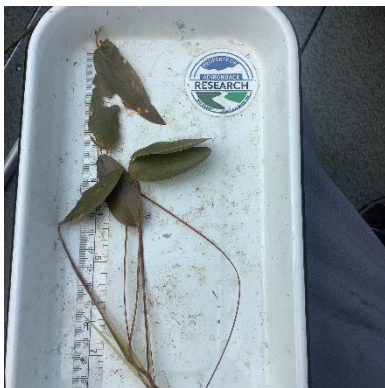
Caption: Coontail (*Ceratophyllum demersum*)



Caption: Fragrant waterlily (*Nymphaea odorata*)



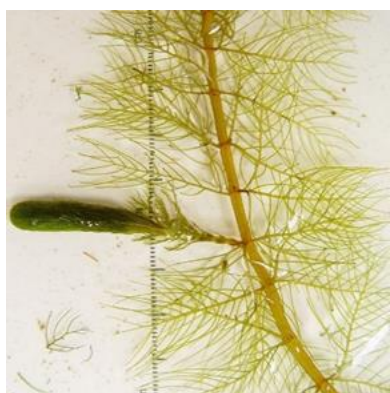
Caption: Large leaf pondweed
(*Potamogeton amplifolius*)



Caption: Floating leaf pondweed
(*Potamogeton natans*)



Caption: White stem pondweed
(*Potamogeton praelongus*)



Caption: Whorled watermilfoil
(*Myriophyllum verticillatum*)



Caption: Nuttall's water weed (*Elodea nuttallii*)



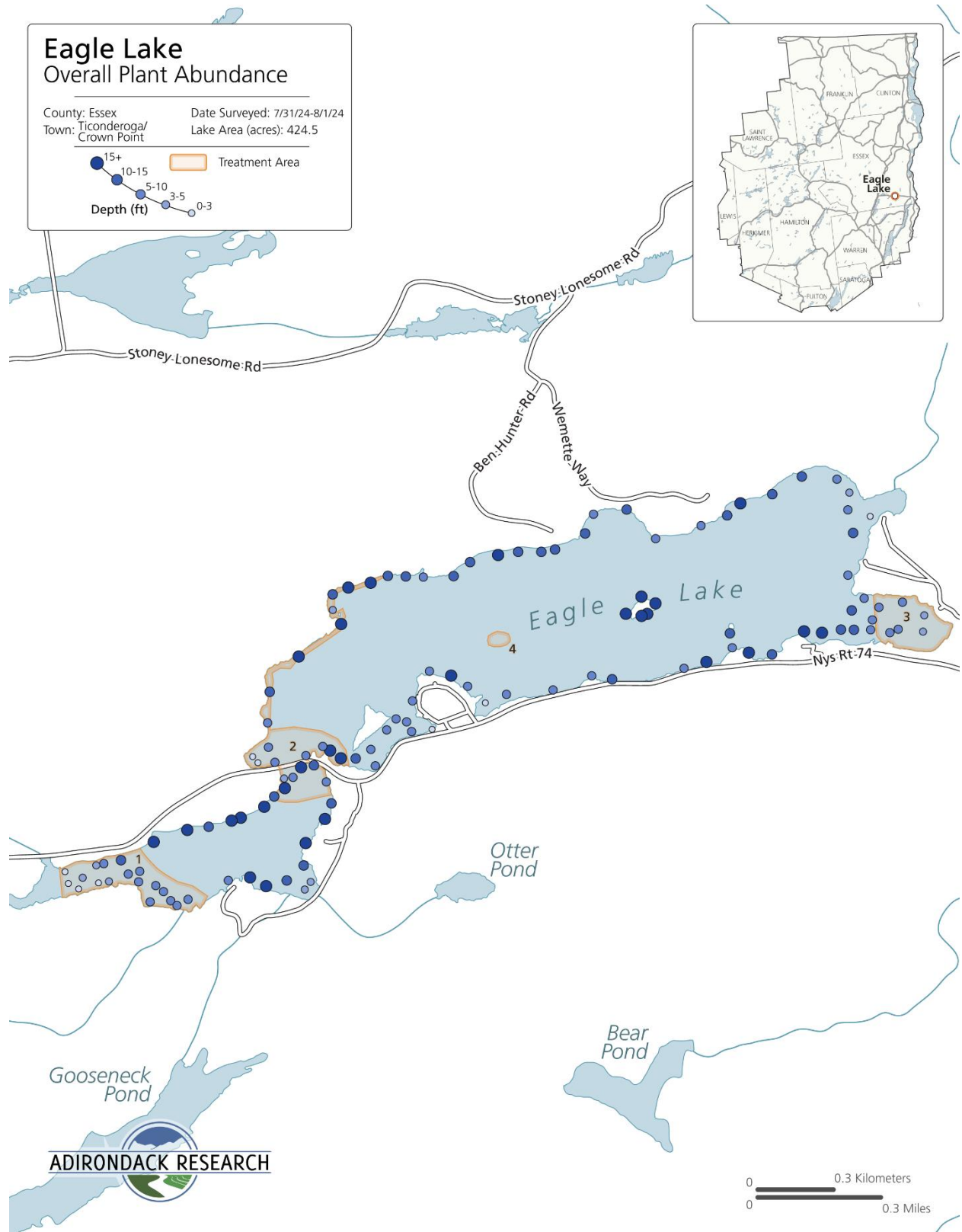
Caption: Low watermilfoil
(*Myriophyllum humile*)

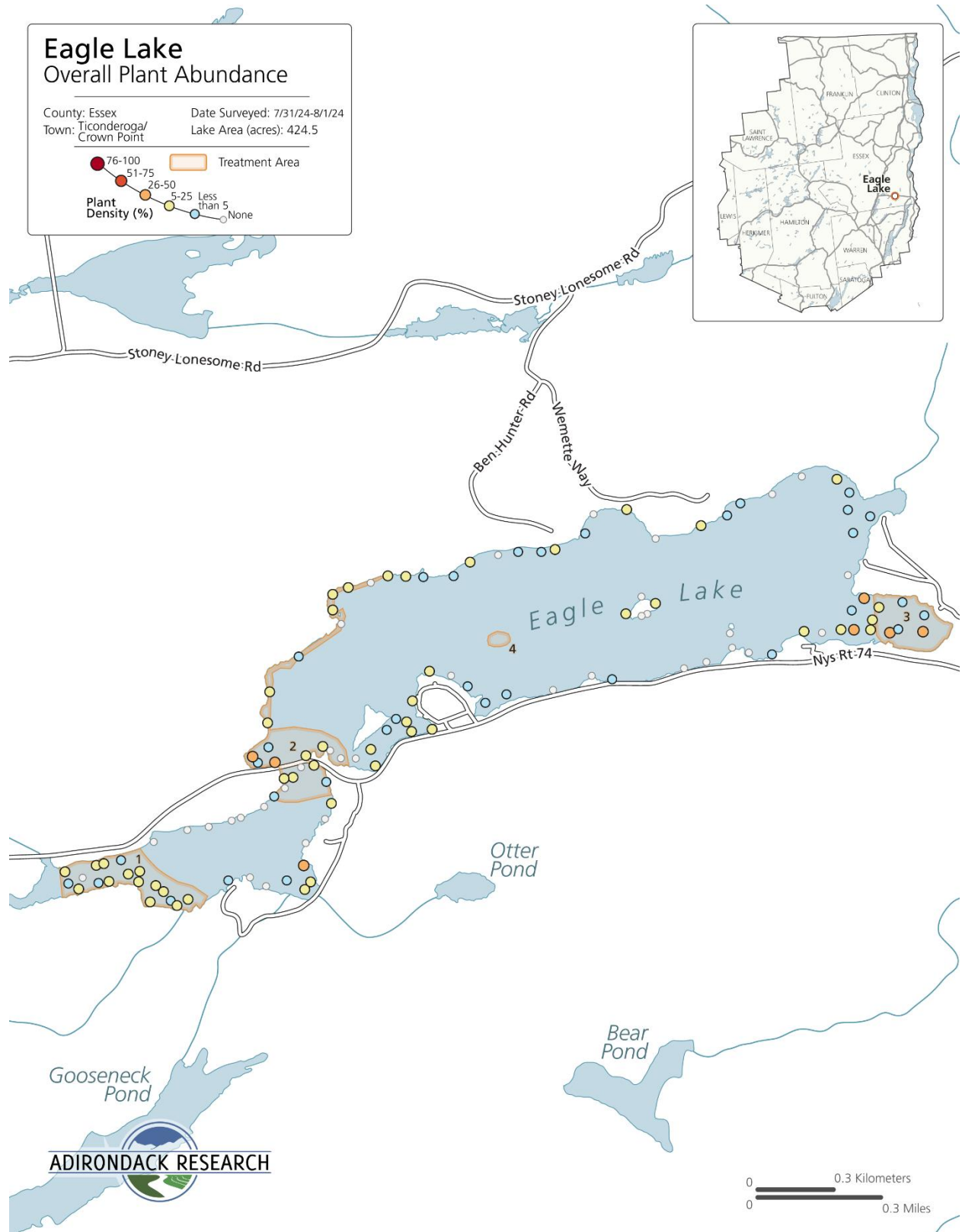
Note: We lost an iPad due to water damage during our 2024 field season. This iPad had the photos for the native milfoils, and other native species documented by Adirondack Research during our Eagle Lake Survey. While most of the pictures are from our survey on Eagle Lake, some photos are from other Adirondack Research surveys this year and 3 others are from identification resources on the internet.

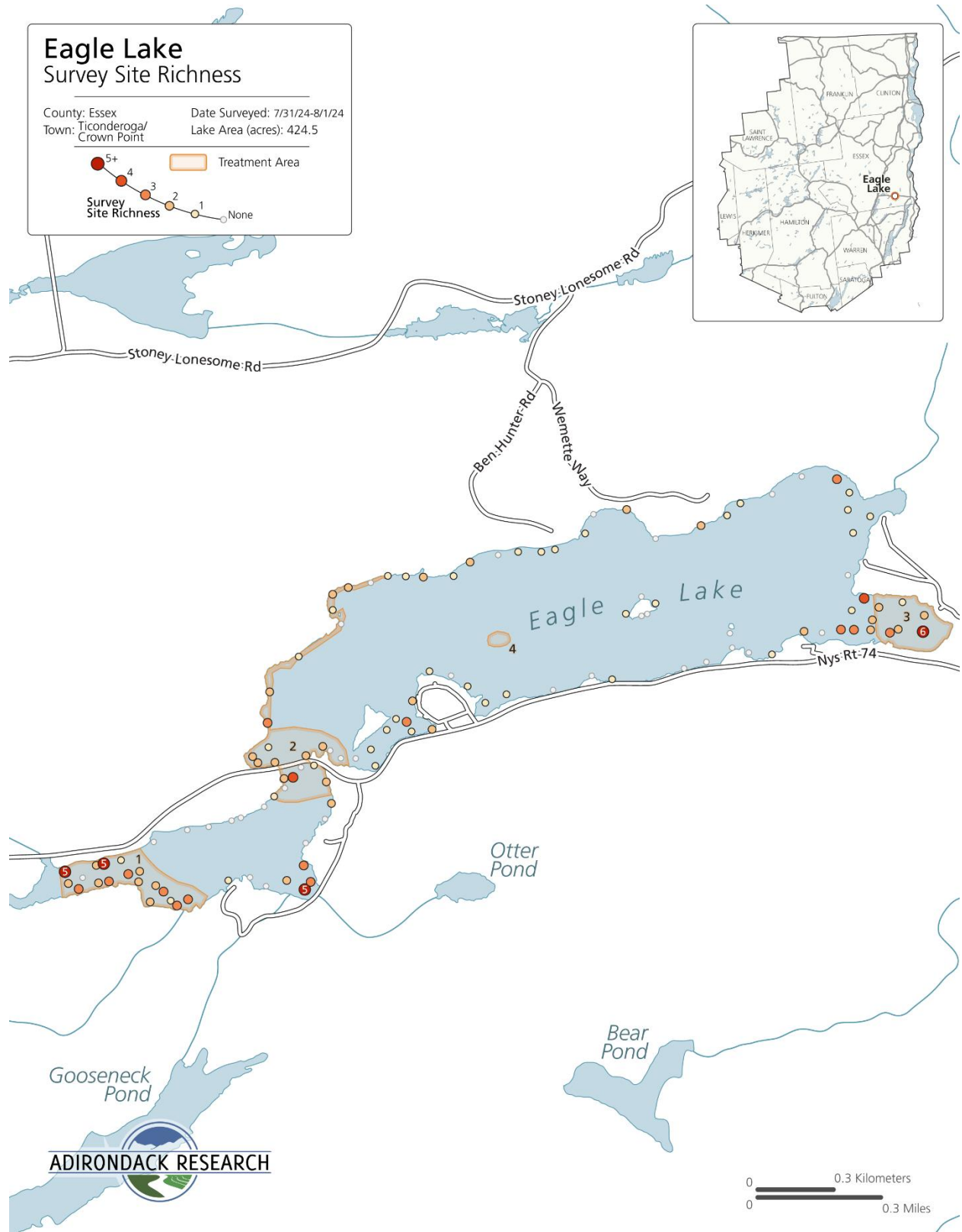
Maps

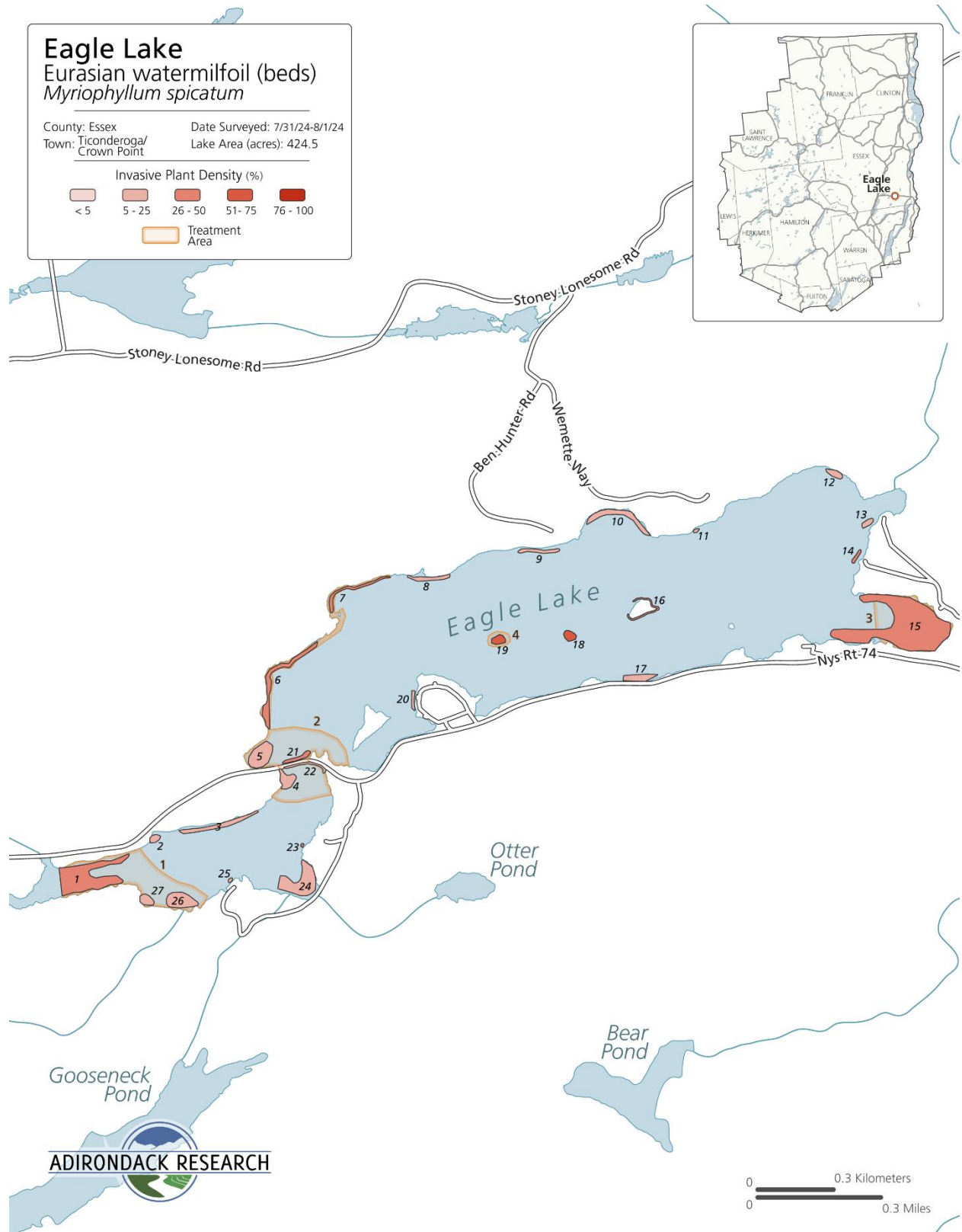
The following maps show the survey stations, overall plant abundance, Eurasian watermilfoil beds, as well as the plant density classes for each species across all survey points.

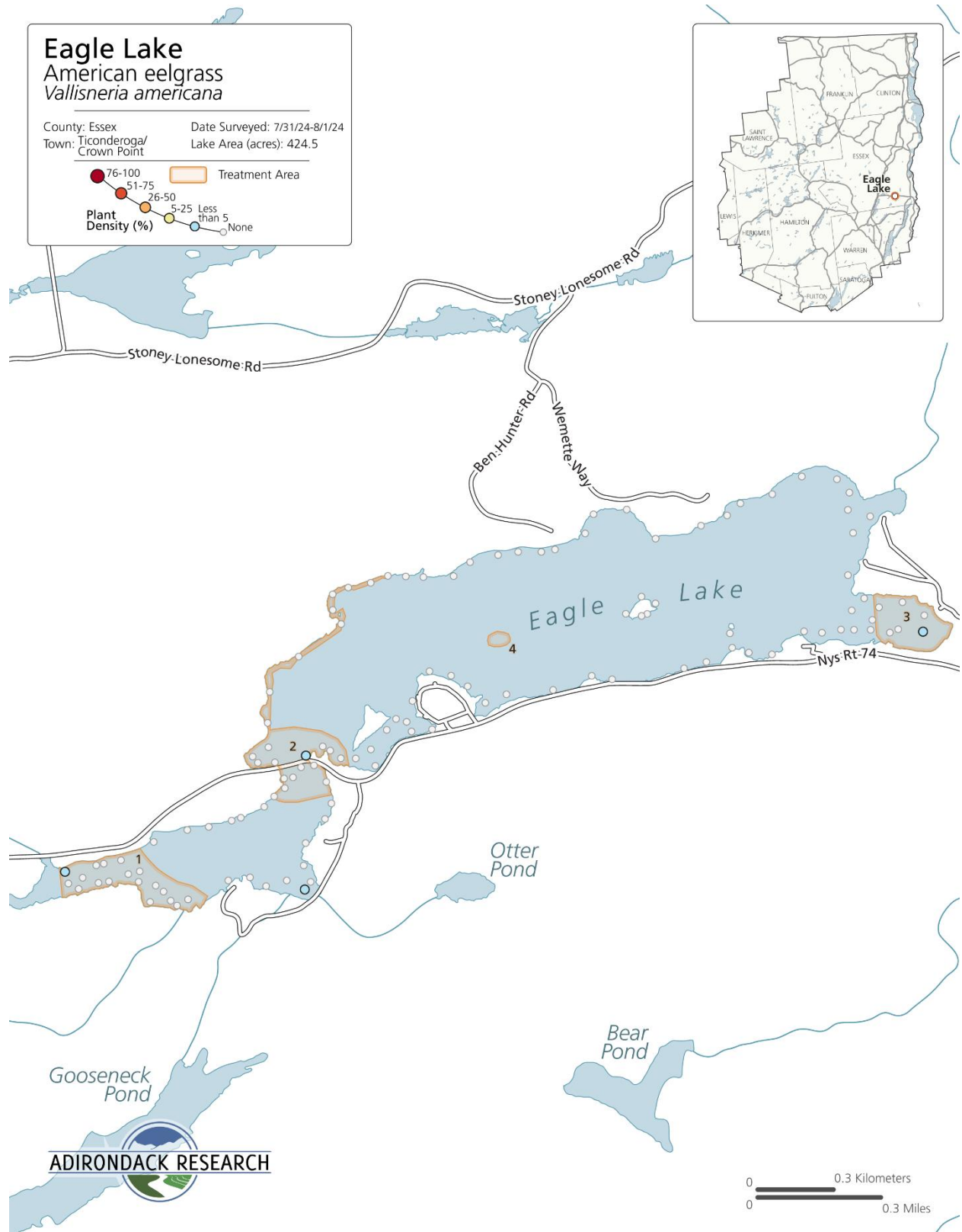


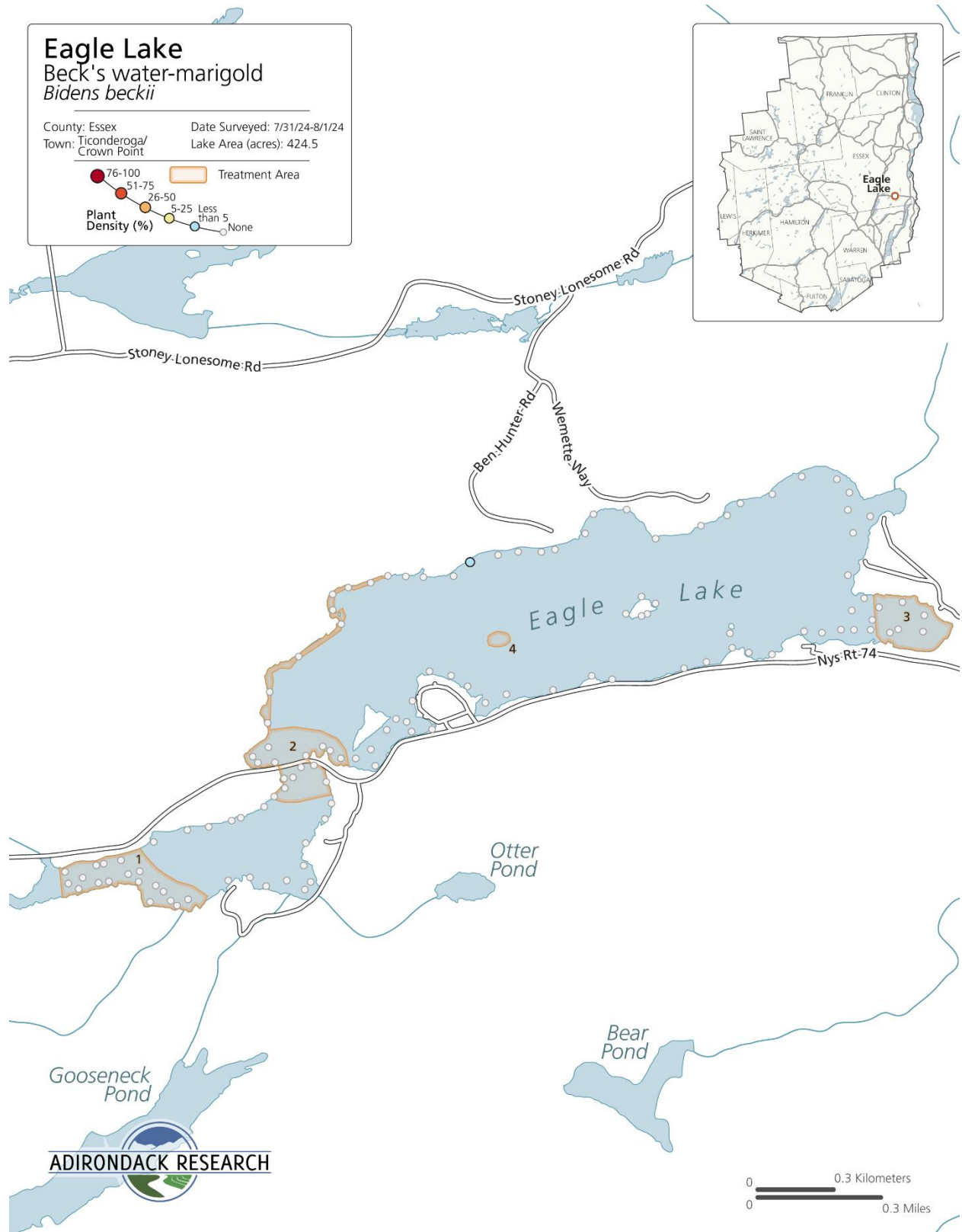


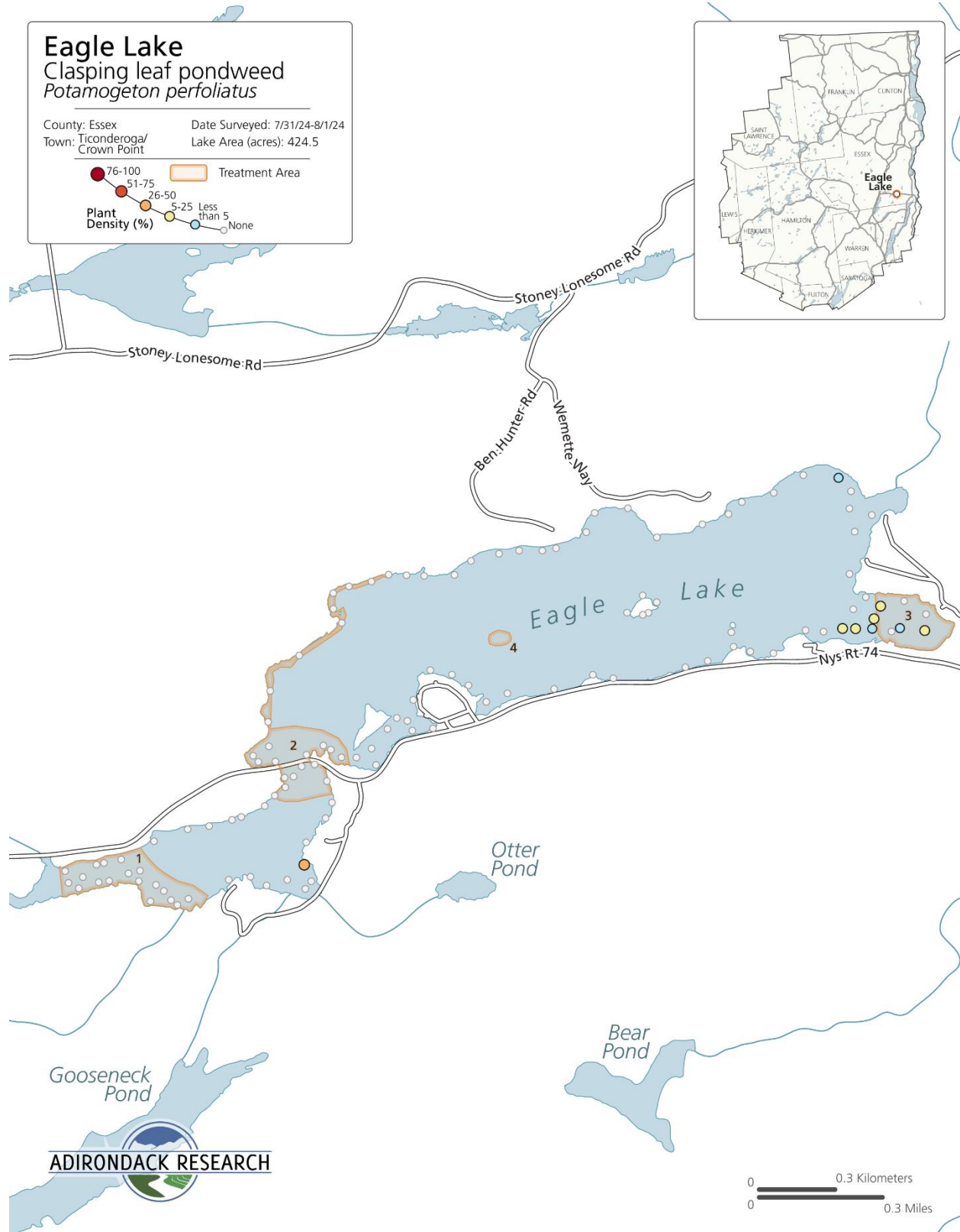








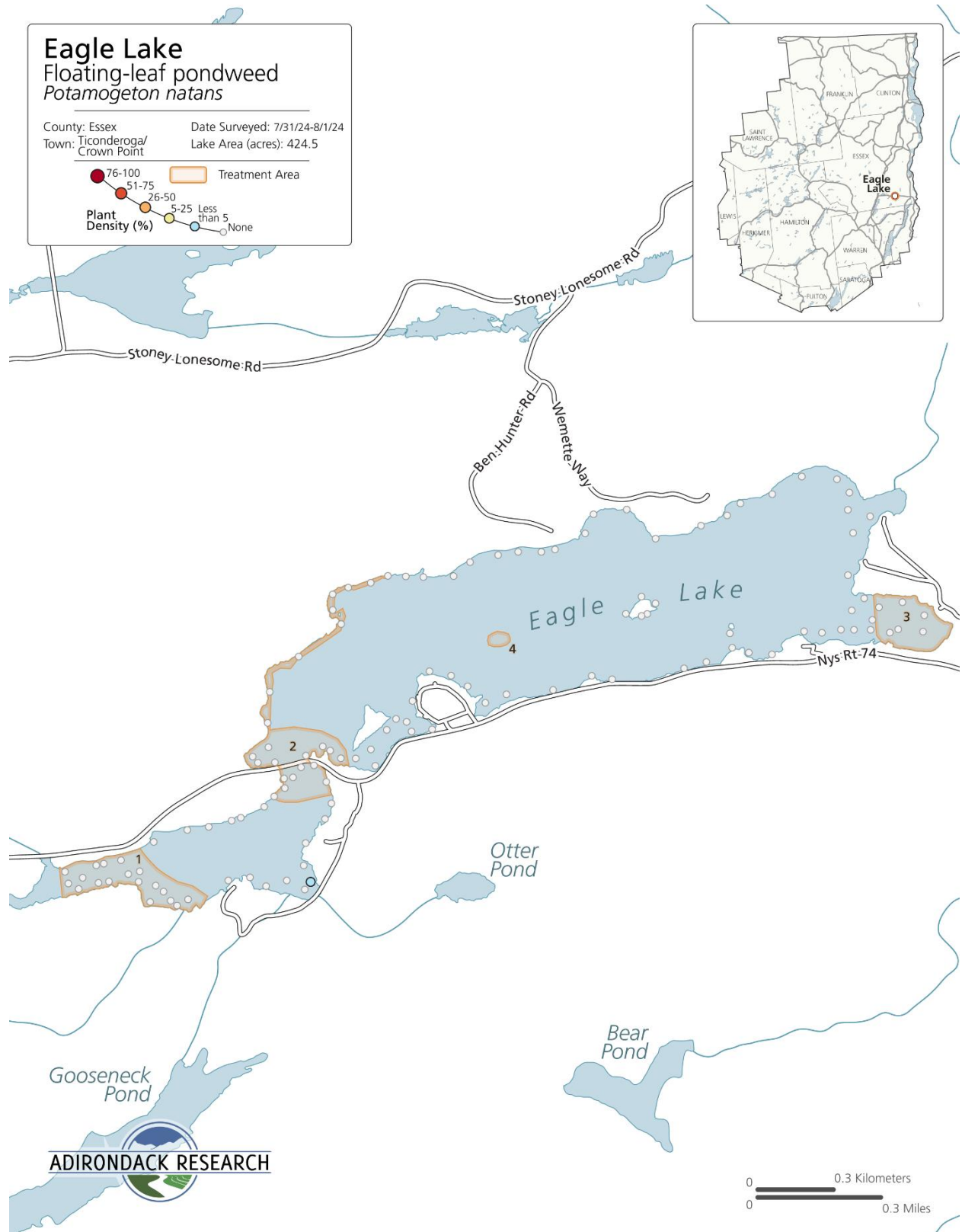






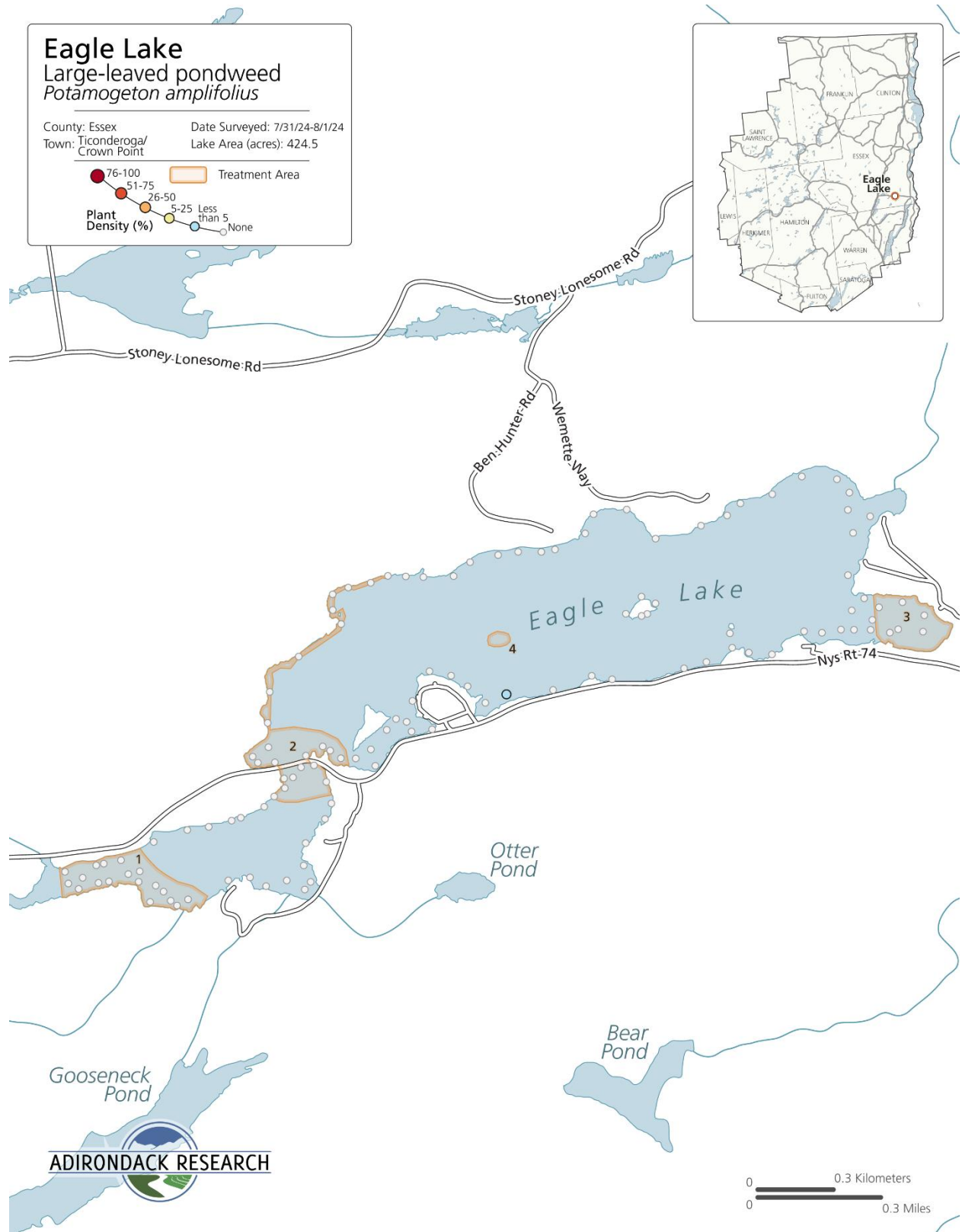


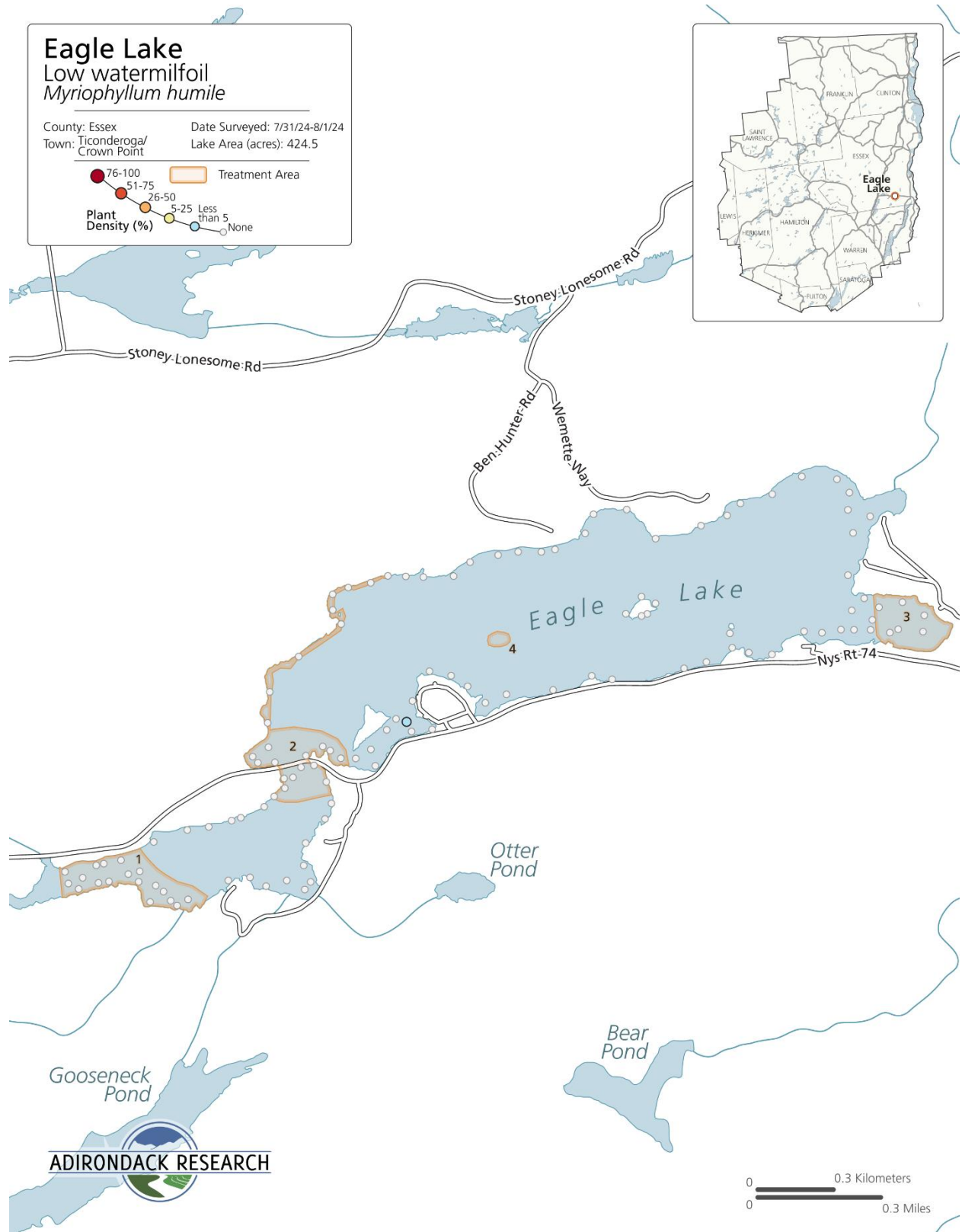


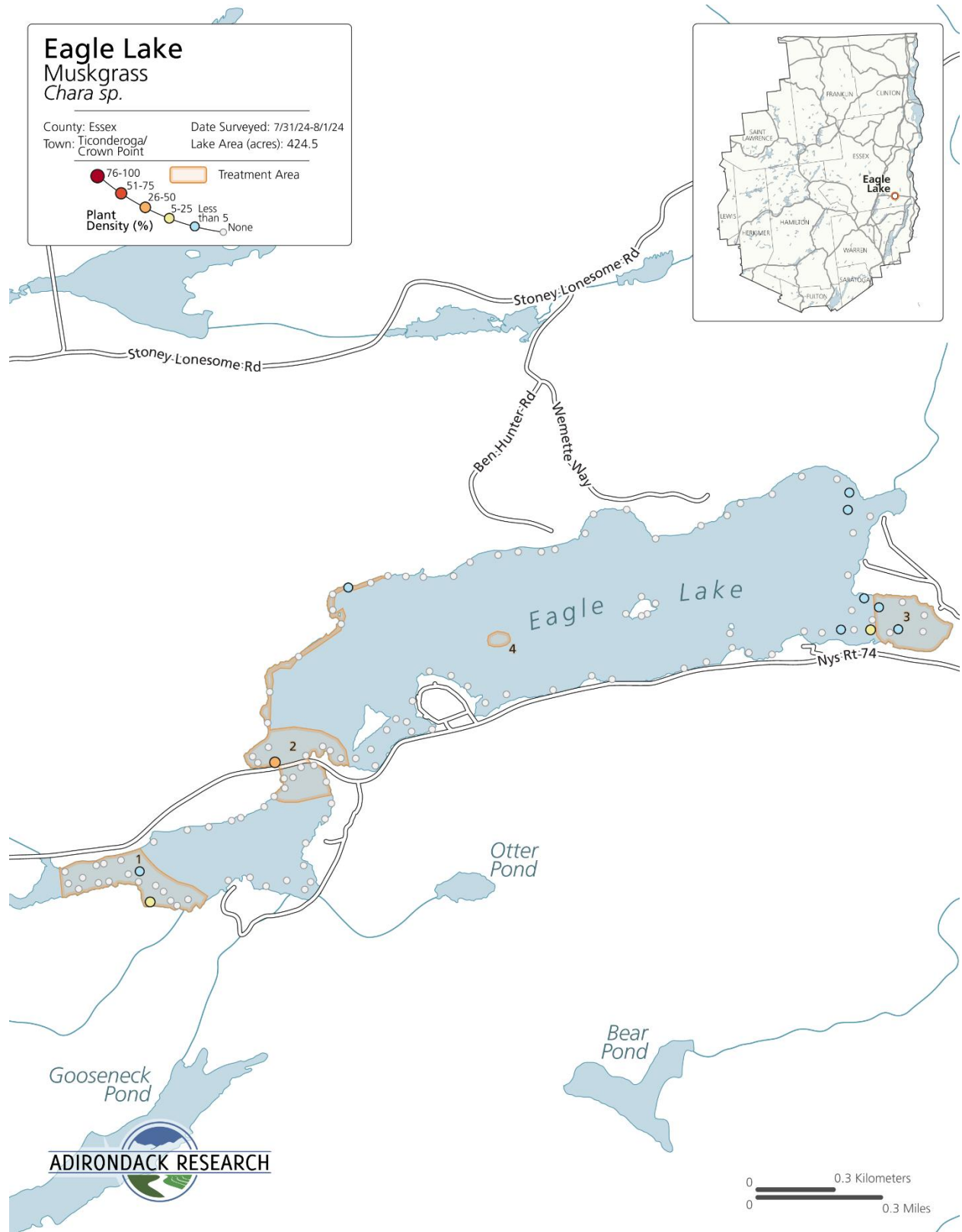


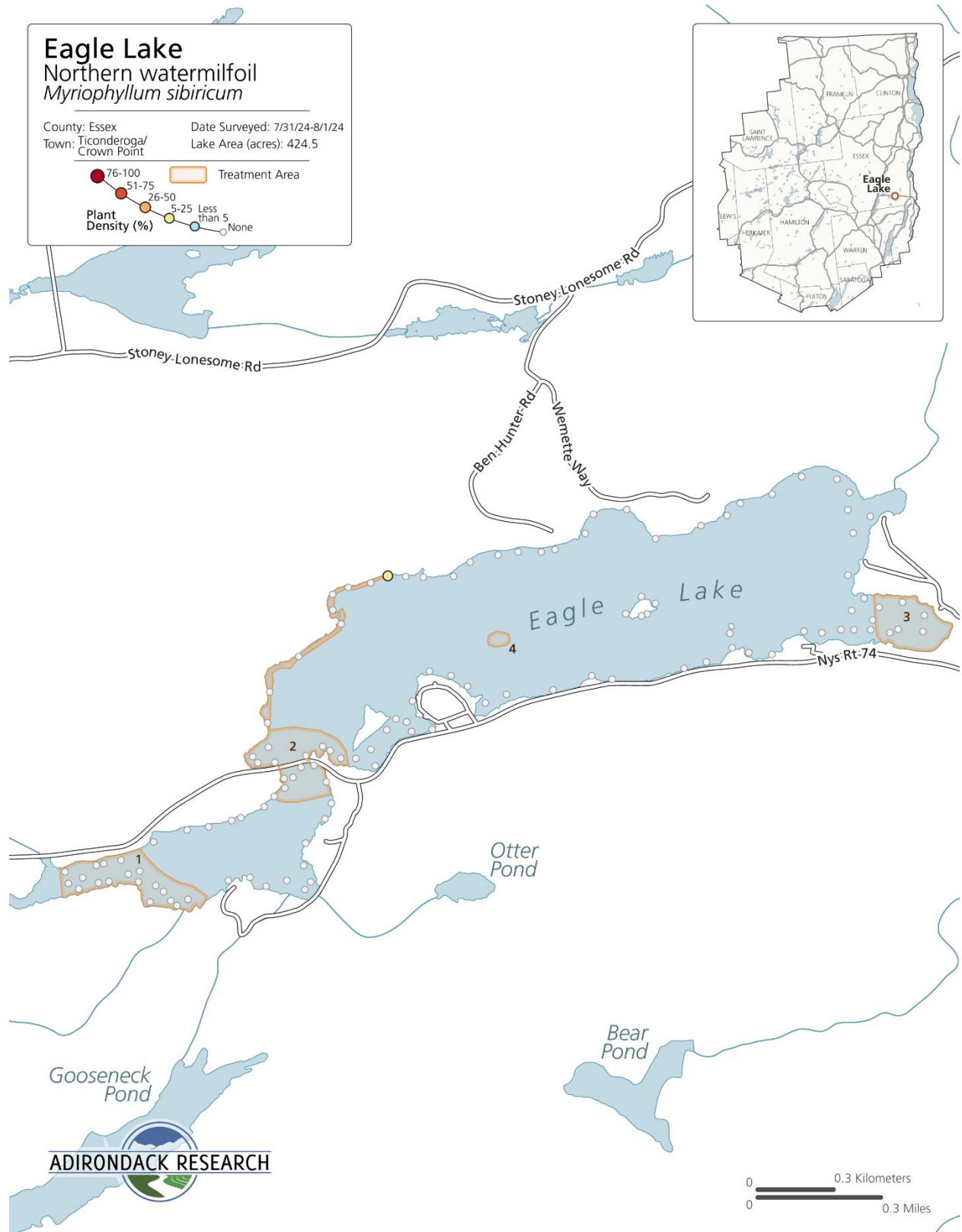




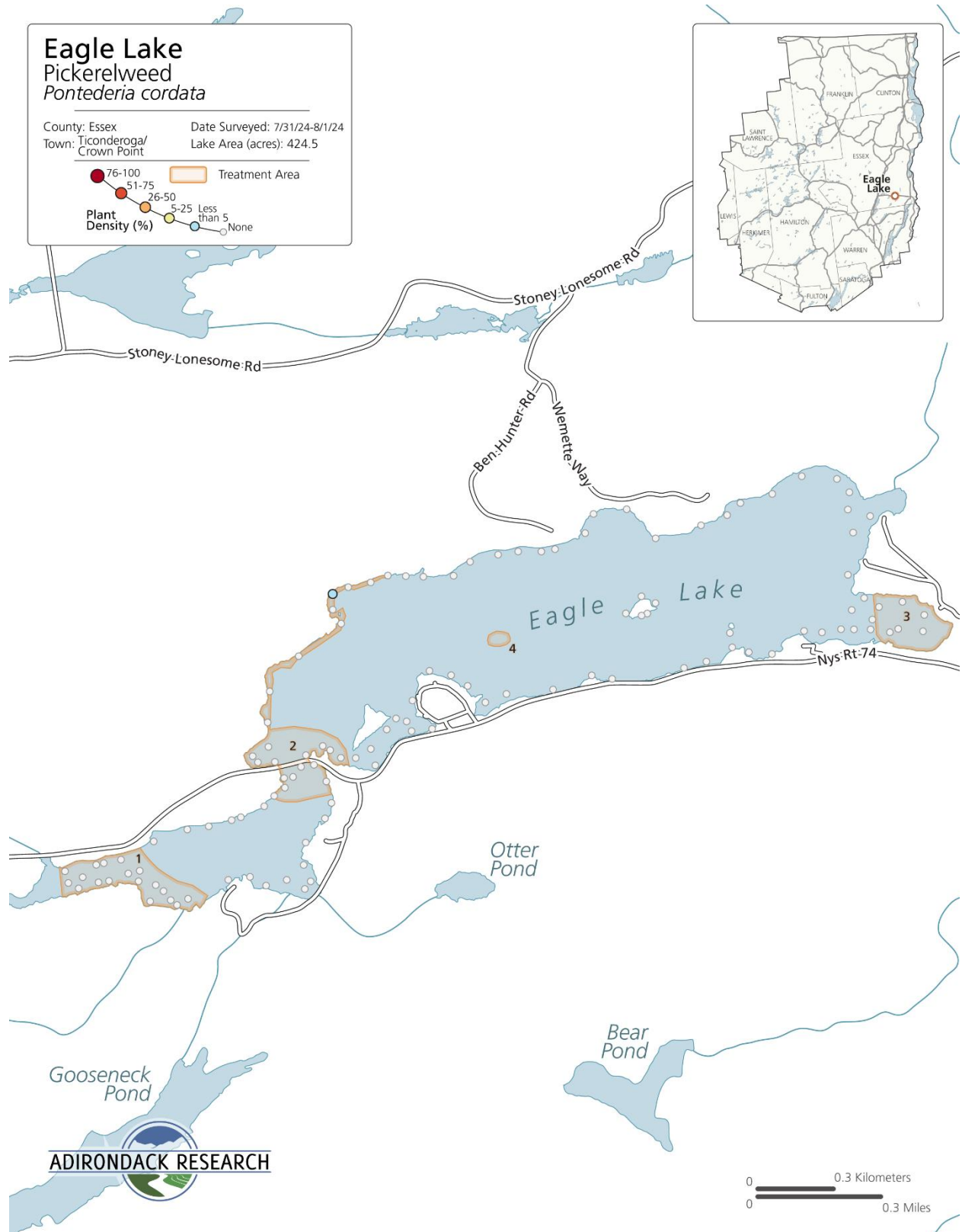






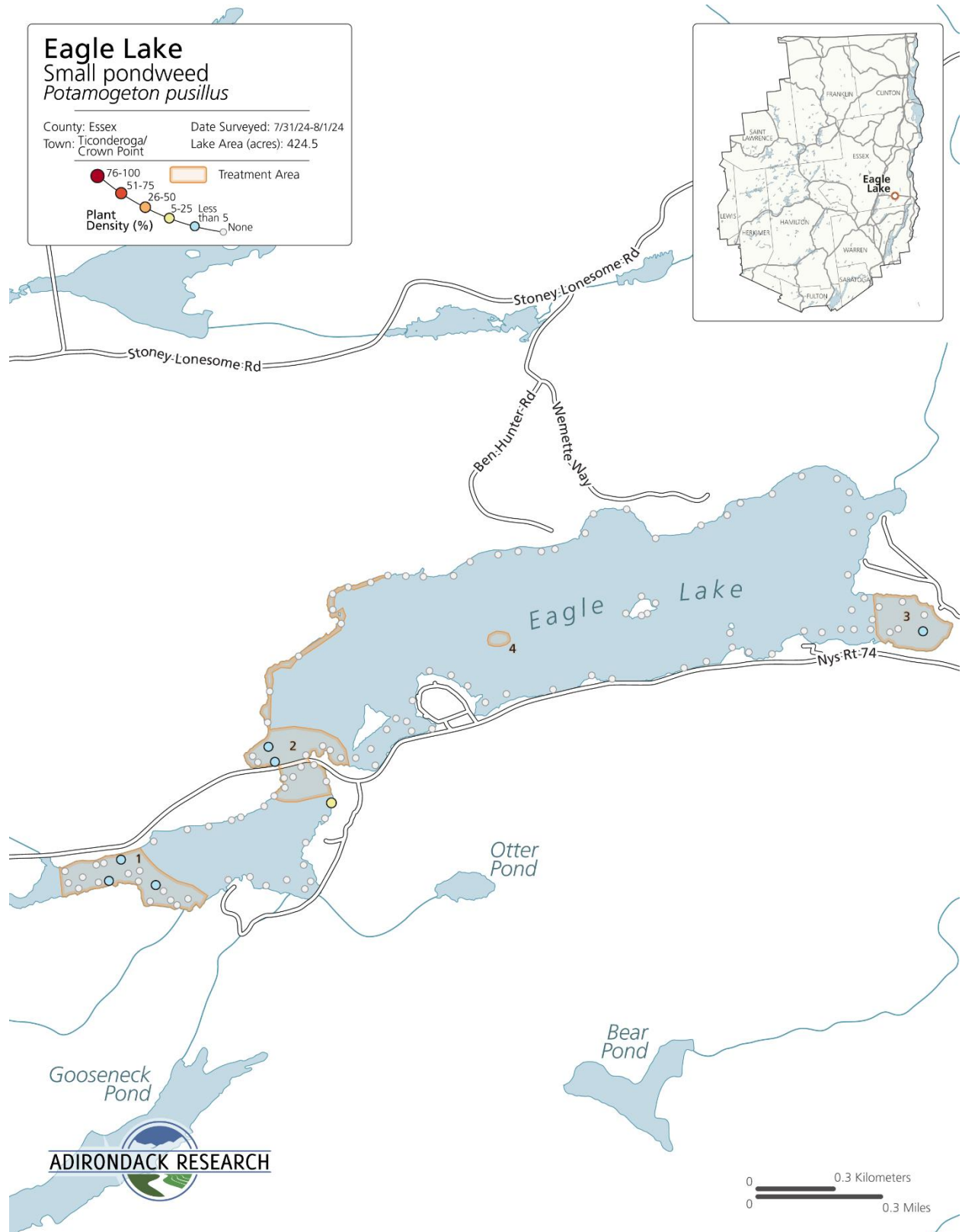








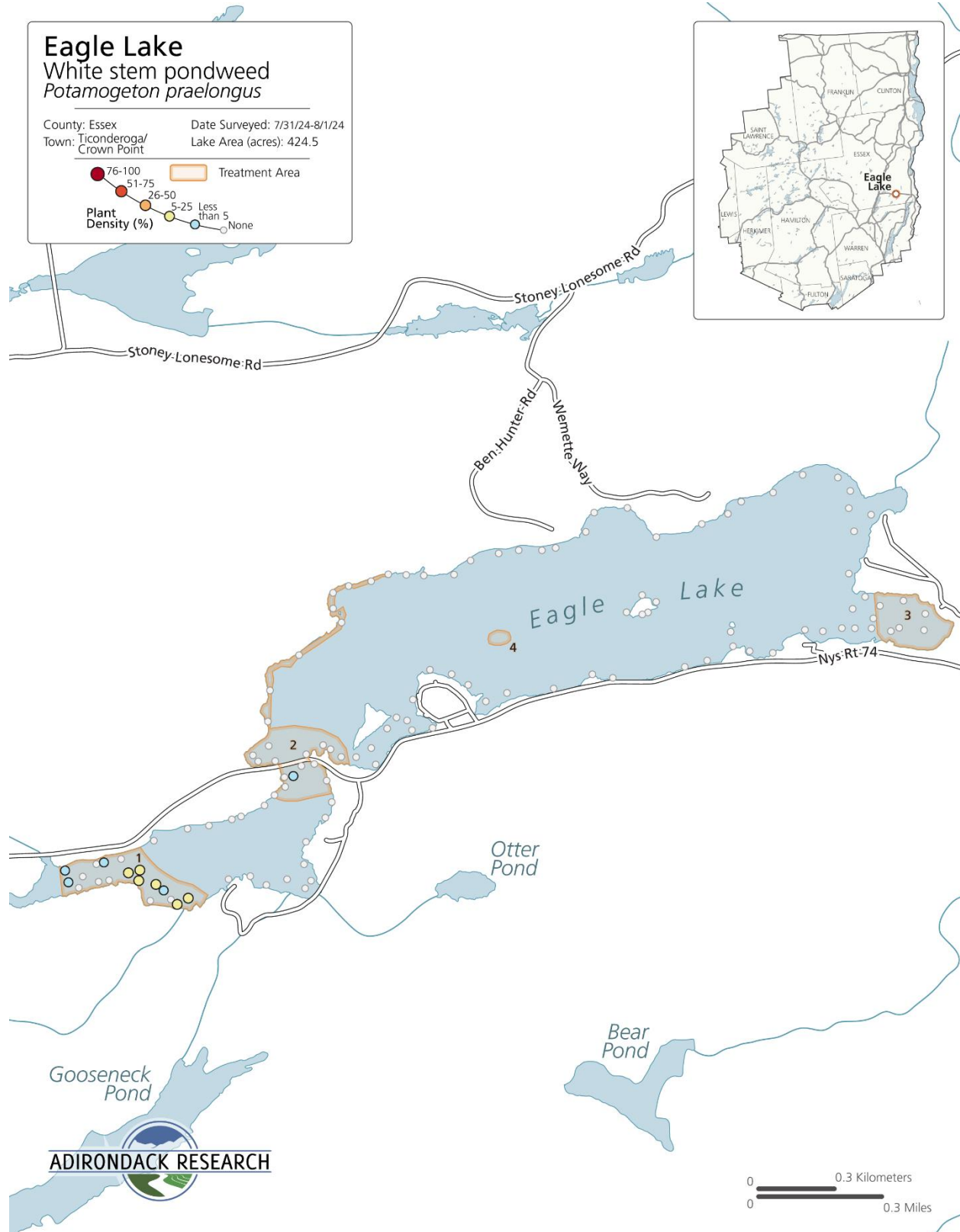














Plant Descriptions and ProcellaCOR EC sensitivity

Table 5. ProcellaCOR sensitivity for all species detected in Eagle Lake. Species with unavailable or unknown responses to ProcellaCOR are marked N/A

Common Name	Scientific Name	ProcellaCOR Sensitivity	Source
American eelgrass	<i>Vallisneria americana</i>	Low	1.0
Beck's water-marigold	<i>Bidens beckii</i>	Low	1.0
Clasping leaf pondweed	<i>Potamogeton perfoliatus</i>	Low	1.0
Common naiad	<i>Najas flexilis</i>	Low	1.0
Coontail	<i>Ceratophyllum demersum</i>	Low-moderate	1.0
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	High	1.0
Floating-leaf pondweed	<i>Potamogeton natans</i>	Low	1.0
Fragrant water lily	<i>Nymphaea odorata</i>	Moderate	1.0
Horsetail	<i>Equisetum fluviatile</i>	Low	1.0
Large-leaved pondweed	<i>Potamogeton amplifolius</i>	Low	1.0
Low watermilfoil	<i>Myriophyllum humile</i>	High	1.0
Muskgrass	<i>Chara sp.</i>	Low	1.0
Northern watermilfoil	<i>Myriophyllum sibiricum</i>	High	1.0
Nuttalls waterweed	<i>Elodea nuttallii</i>	Low	1.0
Pickerelweed	<i>Pontederia cordata</i>	Moderate	1.0
Quillwort	<i>Isoetes spp.</i>	N/A	
Ribbon-leaf pondweed	<i>Potamogeton epihydrus</i>	Low	1.0
Robbins pondweed	<i>Potamogeton robbinsii</i>	Low	1.0
Small pondweed	<i>Potamogeton pusillus</i>	Low	1.0
Stonewort	<i>Nitella sp.</i>	Low	2.0
Water weed	<i>Elodea sp.</i>	Low	1.0
Watershield	<i>Brasenia schreberi</i>	Moderate-high	1.0
White stem pondweed	<i>Potamogeton praelongus</i>	Low	1.0
Whorled watermilfoil	<i>Myriophyllum verticillatum</i>	High	1.0

Sources:

Source 1: Heilman, M. (2019). "Selective Control of Invasive Watermilfoils with ProcellaCOR® Aquatic Herbicide and Response of Native Aquatic Plants." SePRO <https://lgpc.ny.gov/system/files/documents/2022/03/technical-summary-procellacor-selective-control-of-invasive-watermilfoils-plus-appendix-28jan2019.pdf>

Source 2: Vermont Department of Environmental Conservation(2022), "ProcellaCOR EC Aquatic Macrophyte Species Frequency of Occurrence Pre-and Post-Treatment Statistical Analysis." <https://dec.vermont.gov/sites/dec/files/wsm/lakes/ANC/docs/Procellacor%20Aquatic%20Macrophyte%20Species%20Frequency%20of%20Occurrence%20Pre-and%20Post-Treatment%20Statistical%20Analysis%204-12-22.pdf>

American eelgrass (*Vallisneria americana*)

Vallisneria americana, commonly known as American eelgrass, is a submerged, flowering seagrass that thrives in soft, sandy sediment in shallow bays and inlets. This grass-like plant has narrow, dark green, ribbon-shaped leaves with rounded tips, typically reaching 20 to 50 cm in length. These leaves extend from rhizomes that anchor the plant securely in the sediment. Eelgrass forms dense underwater meadows, which support diverse flora and fauna and serve as nurseries for fish and shellfish. Additionally, eelgrass provides structural stability to silty sands, helping to prevent erosion. Research has shown that eelgrass exhibits a low sensitivity to ProcettaCOR treatments, with little to no adverse impact on plant health following application.

Beck's Water-Marigold (*Bidens beckii*)

Beck's water-marigold is a submerged aquatic plant found in lakes and slow-moving waters, distinguished by its bright yellow, daisy-like flowers that bloom above the water's surface. Its finely divided submerged leaves form a feathery appearance, providing shelter for aquatic organisms. It thrives in nutrient-rich environments and contributes to the ecosystem by stabilizing sediment and enhancing water quality.

Clasping Leaf Pondweed (*Potamogeton perfoliatus*)

Clasping leaf pondweed is a submerged plant that grows in freshwater lakes and slow-moving streams. Its broad, wavy, translucent leaves wrap around the stem in a clasping manner. The plant can form dense underwater mats, providing habitat and food for fish and aquatic invertebrates. It plays a vital role in sediment stabilization and nutrient cycling within freshwater ecosystems.

Common Naiad (*Najas flexilis*)

Common naiad is a slender, branching aquatic plant commonly found in lakes, ponds, and slow rivers. Its thin, ribbon-like leaves are finely toothed, and the plant can grow up to 1 meter in length. Common naiad is an important food source for waterfowl and supports fish habitat by providing cover. It thrives in a wide range of water conditions, from fresh to slightly brackish waters.

Coontail (*Ceratophyllum demersum*)

Coontail is a submerged, free-floating aquatic plant that thrives in still or slow-moving freshwater bodies. Its dark green, forked, feathery leaves resemble the tail of a raccoon, hence its name. Coontail can grow up to several meters long, forming dense underwater beds that provide shelter for fish and other aquatic organisms. It is highly effective at absorbing nutrients, making it a useful species for improving water quality.

Eurasian Watermilfoil (*Myriophyllum spicatum*)

Eurasian watermilfoil is an invasive, submerged aquatic plant that can dominate freshwater ecosystems. Its feather-like leaves are arranged in whorls around a reddish stem, growing rapidly in dense mats. Eurasian watermilfoil outcompetes native plants, reducing biodiversity.

and altering habitat structures. Mechanical and chemical control methods, such as the use of ProcellaCOR, are often employed to manage its spread.

Floating-Leaf Pondweed (*Potamogeton natans*)

Floating-leaf pondweed is a perennial aquatic plant with oval, floating leaves and long, slender stems. Its floating leaves are leathery and dark green, while its submerged leaves are thin and translucent. It inhabits slow-moving streams, ponds, and lakes. This species plays a crucial role in providing habitat and food for fish, amphibians, and aquatic invertebrates.

Fragrant Water Lily (*Nymphaea odorata*)

Fragrant water lily is a floating aquatic plant with large, round leaves and striking white or pink flowers that float on the water's surface. Known for its sweet fragrance, the flowers bloom in the summer, attracting pollinators. The plant provides critical habitat and shade for aquatic organisms, helping to regulate water temperature and prevent algal blooms.

Horsetail (*Equisetum* spp.)

Horsetail is a perennial plant with jointed, hollow stems and a brush-like appearance, typically found in wet environments like marshes, riverbanks, and wetlands. It grows in dense clumps and lacks true leaves. Horsetail is a resilient plant known for its high silica content, which contributes to soil stabilization along waterways. It is also a valuable species for preventing erosion.

Large-Leaved Pondweed (*Potamogeton amplifolius*)

Large-leaved pondweed is a submerged aquatic plant found in lakes and ponds. Its broad, elliptical submerged leaves are one of the largest in the pondweed family, providing significant habitat for fish and aquatic invertebrates. This plant contributes to nutrient cycling in freshwater ecosystems and aids in the stabilization of sediment.

Low Watermilfoil (*Myriophyllum humile*)

Low watermilfoil is a native aquatic plant characterized by its finely divided, feathery underwater leaves and reddish stem. It typically inhabits shallow, slow-moving waters, forming low-growing underwater mats that provide shelter for small fish and invertebrates. Unlike its invasive relatives, low watermilfoil does not tend to dominate ecosystems.

Muskgrass (*Chara* spp.)

Muskgrass is a type of submerged macroalga with a gritty texture and musky odor, often found in lakes and ponds. It forms dense, carpet-like mats on the lakebed, stabilizing sediment and preventing erosion. Muskgrass provides food for waterfowl and habitat for small fish and invertebrates. It also plays a role in maintaining water clarity by absorbing excess nutrients.

Northern Watermilfoil (*Myriophyllum sibiricum*)

Northern watermilfoil is a native species of watermilfoil, characterized by its feather-like leaves arranged in whorls along the stem. It thrives in lakes, ponds, and slow-moving streams, forming

underwater meadows that offer habitat and protection for aquatic organisms. This species is less aggressive than its invasive counterparts and plays a supportive role in maintaining aquatic biodiversity.

Nuttall's Waterweed (*Elodea nuttallii*)

Nuttall's waterweed is a submerged aquatic plant that grows in freshwater bodies such as lakes and slow-moving rivers. Its thin, elongated leaves are arranged in whorls around a slender stem. The plant is a vital part of freshwater ecosystems, providing food for waterfowl and habitat for aquatic organisms. It can tolerate a wide range of water conditions and is often used in aquariums.

Pickerelweed (*Pontederia cordata*)

Pickerelweed is an emergent aquatic plant found in shallow waters such as marshes, ponds, and lakeshores. It has heart-shaped leaves and produces spikes of vibrant purple-blue flowers that attract pollinators. The plant's dense root system helps to stabilize shorelines and prevent erosion. It also provides food and shelter for wildlife, including fish and amphibians.

Quillwort (*Isoetes spp.*)

Quillwort is a small, grass-like aquatic plant that grows in the sediments of shallow lakes, ponds, and streams. Its long, narrow leaves resemble quills and are typically arranged in a rosette. Quillwort helps stabilize sediments and provides habitat for small aquatic organisms. It is often found in clear, nutrient-poor waters and is sensitive to environmental changes.

Ribbon-Leaf Pondweed (*Potamogeton epihydrus*)

Ribbon-leaf pondweed is a submerged plant with long, ribbon-like leaves that grow from the base of the plant in whorls. Its narrow, flexible leaves are well-adapted to flowing water in streams and rivers. This species provides important habitat for fish and other aquatic animals, while its root systems help to stabilize sediment and improve water clarity.

Robbins Pondweed (*Potamogeton robbinsii*)

Robbins pondweed is a submerged aquatic plant found in cool, clear lakes and streams. It is characterized by its dark green, ribbon-like leaves that grow in dense clusters. The plant forms thick underwater mats that offer shelter for fish and other wildlife. Robbins pondweed is highly effective at stabilizing sediment and improving water quality.

Small Pondweed (*Potamogeton pusillus*)

Small pondweed is a delicate, submerged aquatic plant with fine, thread-like leaves. It typically grows in shallow, calm waters, forming sparse underwater beds. Despite its small size, it provides habitat for small aquatic animals and contributes to the stabilization of sediment in freshwater ecosystems.

Stonewort (*Chara spp.*)

Stonewort is a type of green algae that forms dense, carpet-like mats on the bottom of lakes and ponds. It has a rough, calcified texture and plays an important role in maintaining water clarity by absorbing nutrients. Stonewort helps to stabilize sediments and provides habitat for a variety of small aquatic organisms.

Waterweed (*Elodea canadensis*)

Waterweed is a common submerged aquatic plant found in lakes, ponds, and slow-moving rivers. Its dark green, serrated leaves grow in whorls around slender stems. Waterweed is an important part of freshwater ecosystems, providing habitat and food for fish and invertebrates. It also plays a role in improving water quality by absorbing excess nutrients.

Watershield (*Brasenia schreberi*)

Watershield is a floating aquatic plant with oval, shield-like leaves that float on the water's surface. The leaves are coated with a gelatinous slime, which helps protect them from herbivores. Watershield produces small, purple flowers and plays a key role in providing habitat for aquatic life and improving water quality by reducing algal growth.

White Stem Pondweed (*Potamogeton praelongus*)

White stem pondweed is a submerged plant characterized by its long, white stems and narrow, ribbon-like leaves. It grows in freshwater lakes and slow-moving rivers, forming dense underwater mats. This species provides habitat for fish and other aquatic organisms, while its extensive root system helps to stabilize sediment.

Whorled Watermilfoil (*Myriophyllum verticillatum*)

Whorled watermilfoil is a submerged aquatic plant with feathery, finely divided leaves arranged in whorls along the stem. It inhabits lakes, ponds, and slow-moving streams, forming thick underwater beds. This species is a valuable component of freshwater ecosystems, offering habitat for fish and invertebrates and helping to stabilize sediments.



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