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Amos Lake Aquatic Plant Survey Report 2024

SUMMER WEIDMAN, MADELINE WATTS, and GREGORY BUGBEE

Office of Aquatic Invasive Species
Department of Environmental Science and Forestry

Table of Contents

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INTRODUCTION

Since 2004, the Connecticut Agricultural Experiment Station (CAES) Office of Aquatic Invasive Species (OAIS), formerly the Invasive Aquatic Plant Program, has conducted over 400 surveys of aquatic vegetation and water chemistry in Connecticut's lakes, ponds, and rivers. To date, 264 waterbodies have been mapped, with many, such as Amos Lake, undergoing multiple resurveys to monitor changes (CAES OAIS, 2024). Among these lakes and ponds, 60% host one or more invasive, non-native plant species that can rapidly degrade aquatic ecosystems, real estate values, and recreational opportunities. The presence of invasive species is influenced by factors such as water chemistry, public boat launches, random events, and climate change (Rahel and Olden, 2008). CAES OAIS offers an online database (*portal.ct.gov/caes-oais*) where users can access digitized vegetation maps, detailed transect data, temperature and dissolved oxygen profiles, and clarity. Also included are water chemistry data such as pH, alkalinity, conductivity, total phosphorus, and total nitrogen. The database also houses a digitized herbarium with mounts of plant species from each waterbody. This resource enables citizens, government officials, and scientists to review historical data, compare it with current conditions, and make informed management decisions.

Amos Lake is a 112-acre waterbody in Preston, CT, with a state-managed public boat ramp situated along the middle of its western shoreline. During the off-season (the Sunday after Labor Day to June 15), an 8 MPH speed limit is enforced, and water-skiing is prohibited between 11 a.m. and 6 p.m. A campground with lake access is located at the southern end, while homes are scattered along much of the remaining shoreline. The lake has a maximum depth of approximately 45 feet and an average depth of about 20 feet.

Figure 1. Performing a visual aquatic plant survey in Amos Lake in 2023.

CAES has surveyed Amos Lake in 2006, 2013, 2018, 2022, and 2023. Results have shown significant ecological changes due to plant management efforts. Early surveys identified variable watermilfoil as the primary invasive species. By 2018, the invasive plant had expanded, prompting targeted herbicide treatments. ProcellaCOR® was applied in 2021 and 2022 and the variable watermilfoil could no longer be found. Elsewhere in the lake a small population of Eurasian watermilfoil was observed and was hand-pulled. The 2023 survey revealed a new invasive threat, northern hydrilla, which poses a significant risk due to its aggressive growth and potential to outcompete native species. Northern hydrilla is a biotype that was found only in the Connecticut River until 2023 when it began spreading to lakes. Native plant populations in Amos Lake have remained relatively stable over the course of the surveys with species like Robbins' pondweed very abundant. Small declines in few species, such as bladderworts, may be related to herbicide sensitivity. Blooms of the mat forming algae called lyngbya have periodically impacted recreational use. Water quality parameters such as phosphorus and clarity have fluctuated but generally reflect a balanced ecosystem. These findings underscore the importance of ongoing monitoring and adaptive management strategies to preserve the lake's ecological health.

OBJECTIVES

1. Perform a sixth aquatic vegetation survey of Amos Lake and test water to quantify water chemistry.

2. Compare 2024 with previous surveys and add vegetation maps and water chemistry information to the CAES OAIS website.

3. Update aquatic plant management options.

4. Provide a report for the Amos Lake Association.

METHODS

Aquatic Plant Surveys and Mapping

CAES OAIS conducted an aquatic vegetation survey of Amos Lake on August 22, 27, 28, and 29, 2024, using established methods consistent with previous surveys. The work was carried out from 16 and 18-foot motorized Jon boats navigating areas capable of supporting aquatic plants. Plant species were identified through visual observation or collection using a long-handled rake or grapple. Vegetated areas in deeper water were pinpointed with Lowrance® Hook 5 and HDS 5 sonar systems, supplemented by occasional grapple tosses for ground-truthing. Quantitative plant abundance data were collected by resurveying 12 transects, established in 2006, that represent the diverse habitat of the lake. Each transect included 10 sampling points located at 0, 5, 10, 20, 30, 40, 50, 60, 70, and 80 meters from shore, determined using Trimble® R1 GNSS global positioning systems with sub-meter accuracy.

Depth was measured with a rake handle, drop line, or digital depth finder, while sediment type was visually estimated. Plant abundances at each point were ranked on a scale of 1 to 5 (1 = very sparse, 5 = very abundant). When field identifications were uncertain, samples were taken to the lab for verification using Crow and Hellquist's taxonomy (2023). One specimen of each species was collected and added to the CAES OAIS aquatic plant herbarium. Digitized mounts are available online (portal.ct.gov/caes-oais). Common names of plants are used in this report, with scientific names provided in Table 2. GPS data were post-processed in Pathfinder® 5.85 (Trimble Navigation Limited, Sunnyvale, CA) and imported into ArcGIS® Pro 3.2.1 (ESRI Inc., Redlands, CA). The data were overlaid onto high-resolution aerial imagery of the continental United States provided by the USDA Farm Services Agency.

Water Analysis

Water samples were collected from a deep section of the lake (approximately 33 feet), consistent with previous survey locations. Water temperature and dissolved oxygen were measured 1.5 feet below the surface and at 3-foot intervals down to the bottom using a YSI 58® meter. Water clarity was assessed by lowering a six-inch black-and-white Secchi disk into the water and recording the depth at which it was no longer visible. Samples for pH, alkalinity, conductivity, total phosphorus, and total nitrogen were taken from 1.5 feet below the surface and 1.5 feet above the bottom.

Table 1. Species richness in Amos Lake during surveys years.

	2006	2013	2018	2022	2023	2024
Number of Total Species	21	26	21	21	29	29
Number of Native Species	19	24	19	19	27	25
Number of Invasive/Non-Native Species	2	2	2	2	2	4

Table 2. Frequency of occurrence (FOQ) of aquatic plants on transects in Amos Lake during CAES OAIS vegetation surveys.

Native Species	2006	2013	2018	2022	2023	2024
Arrowhead (*Sagittaria* species)	4%	1%	8%	3%	7%	2%
Berchtold's pondweed (*Potamogeton berchtoldii*)	—[a]	—	—	3%	3%	5%
Bur-reed (*Sparganium* species)	—	—	—	1%	0%	3%
Common bladderwort (*Utricularia vulgaris*)	3%	3%	8%	—	1%	0%
Common duckweed (*Lemna minor*)	—	—	—	—	0%	0%
Coontail (*Ceratophyllum demersum*)	1%	—	—	1%	1%	1%
Eelgrass (*Vallisneria americana*)	5%	4%	9%	10%	4%	5%
Floating-leaf pondweed (*Potamogeton natans*)	—	—	—	—	5%	—
Golden hedge-hyssop (*Gratiola aurea*)	—	0%	0%	—	0%	0%
Great duckweed (*Spirodela polyrhiza*)	—	—	—	2%	—	—
Humped bladderwort (*Utricularia gibba*)	1%	3%	13%	—	0%	0%
Large-leaf pondweed (*Potamogeton amplifolius*)	—	—	20%	9%	0%	—
Leafy pondweed (*Potamogeton foliosus*)	0%	0%	—	—	—	—
Little floating heart (*Nymphoides cordata*)	—	1%	—	0%	—	—
Pickerelweed (*Pontederia cordata*)	—	0%	3%	1%	1%	1%
Primrose-willow (*Ludwigia* species)	—	1%	—	—	—	0%
Purple bladderwort (*Utricularia purpurea*)	3%	2%	8%	—	0%	0%
Quillwort (*Isoetes* species)	1%	0%	—	—	—	—
Ribbon-leaf pondweed (*Potamogeton epihydrus*)	0%	—	—	—	0%	0%
Robbins' pondweed (*Potamogeton robbinsii*)	37%	47%	53%	49%	47%	50%
Slender naiad (*Najas flexilis*)	1%	0%	—	2%	0%	1%
Slender watermilfoil (*Myriophyllum tenellum*)	3%	1%	0%	2%	0%	0%
Small pondweed (*Potamogeton pusillus*)	—	—	0%	—	0%	—
Snailseed pondweed (*Potamogeton bicupulatus*)	1%	0%	3%	—	—	0%
Spikerush (*Eleocharis* species)	—	3%	0%	0%	0%	2%
Spotted pondweed (*Potamogeton pulcher*)	4%	7%	2%	8%	6%	7%
Swamp loosestrife (*Decodon verticillatus*)	2%	0%	1%	3%	2%	0%
Variable pondweed (*Potamogeton gramineus*)	2%	1%	2%	3%	2%	2%
Watershield (*Brasenia schreberi*)	2%	5%	5%	0%	0%	0%
Water smartweed (*Polygonum amphibium*)	—	—	—	—	1%	—
Water starwort (*Callitriche* species)	—	0%	—	—	—	—
Waterwort (*Elatine* species)	—	0%	—	—	—	—
Western waterweed (*Elodea nuttallii*)	—	—	—	—	0%	0%
White water lily (*Nymphaea odorata*)	12%	18%	33%	31%	26%	27%
Yellow water lily (*Nuphar variegata*)	0%	4%	9%	10%	8%	10%

Non-Native Species	2006	2013	2018	2022	2023	2024
Mudmat (*Glossostigma cleistanthum*)	4%	2%	3%	3%	2%	3%

Invasive Species	2006	2013	2018	2022	2023	2024
Eurasian watermilfoil (*Myriophyllum spicatum*)	—	—	—	0%	—	0%
Northern hydrilla (*Hydrilla verticillata* ssp. *lithuanica*)	—	—	—	—	0%	0%
Variable-leaf watermilfoil (*Myriophyllum heterophyllum*)	1%	1%	21%	—	—	0%

[a] "—" = Species not found in Amos Lake; 0% indicates found in the waterbody but not on any transect points

These samples were stored at 38°F until analyzed.

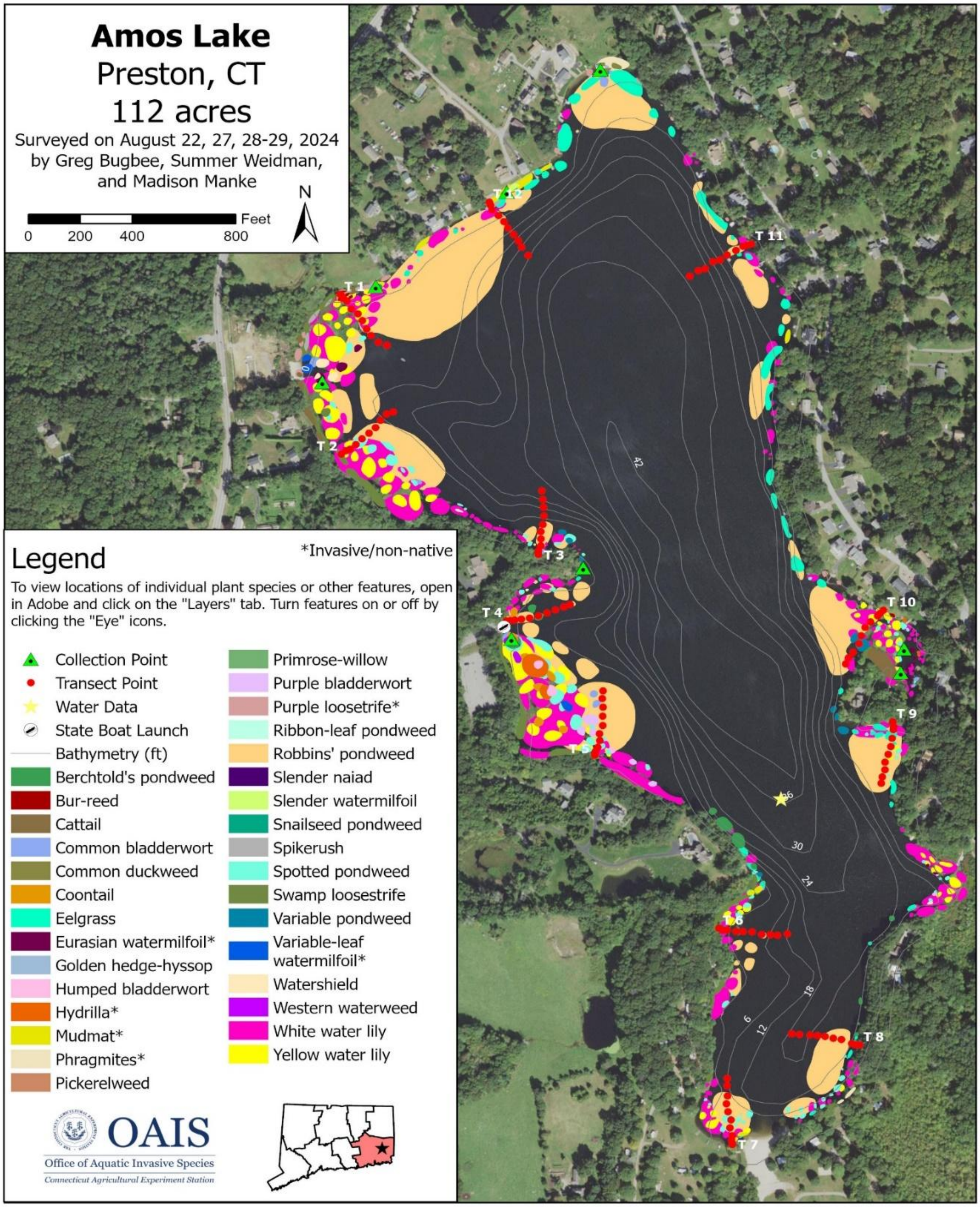

Figure 2. Map of aquatic vegetation documented in Amos Lake in 2024.

A Fisher AR20® meter was used to measure pH and conductivity. Alkalinity (expressed as mg/L $CaCO_3$) was determined by titrating with 0.016 N H_2SO_4 to a pH endpoint of 4.5. Total phosphorus was measured using the ascorbic acid method, following digestion with potassium persulfate (APHA, 1995). The phosphorus concentration, measured with a Milton Roy Spectronic 20D® spectrometer at a wavelength of 880 nm and a light path of 2 cm.

RESULTS

General Aquatic Plant Surveys and Transects

In 2024, CAES OAIS documented a diverse aquatic plant community in Amos Lake. A total of 25 native and 4 invasive non-native species were identified (Table 1). Although much of the lake is too deep for plant growth, most areas at depths less than 10 feet were densely vegetated (Figure 2).

Mudmat, a non-native species from New Zealand and Australia (Crow and Hellquist, 2023), has been present in Amos Lake since 2006. It is not considered invasive, as it has not exhibited harmful traits in Connecticut and is too small to be a nuisance. However, northern hydrilla, first identified in 2023, was again found near the boat ramp in 2024 (Figures 2 & 3). CAES OAIS surveyors manually removed the visible hydrilla during the 2023 survey. In 2024, hydrilla reappeared in the boat launch area as well as in the cove across from the boat launch and in the northern most section of the lake (Figure 3 (bottom). There were too many hydrilla plants to manually remove them all within the survey period. The hydrilla likely originated from the Connecticut River, where it was first reported in 2016. Its introduction to Amos Lake was likely due to boat launch activity.

In 2022, surveyors manually removed Eurasian watermilfoil, which had been found for the first time in a single location. It was absent in 2023 but reappeared in small shoreline patches in 2024. Similarly,

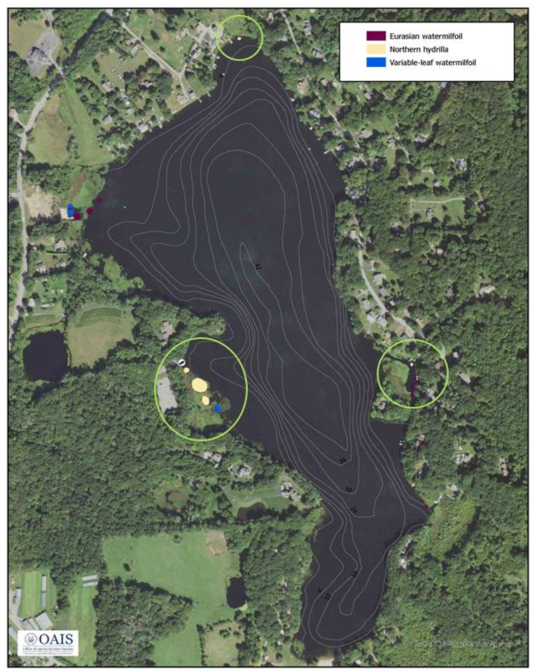

Figure 3. Herbarium mount of northern hydrilla found in Amos Lake on August 14, 2023 (top). Locations of hydrilla in 2024 (bottom).

variable-leaf watermilfoil, which had not been found since 2018 due to the ProcellaCOR® treatments in 2021 and 2022, was observed in small populations near the boat ramp and the northwestern shoreline in 2024. Phragmites and purple loosestrife, invasive wetland species, were

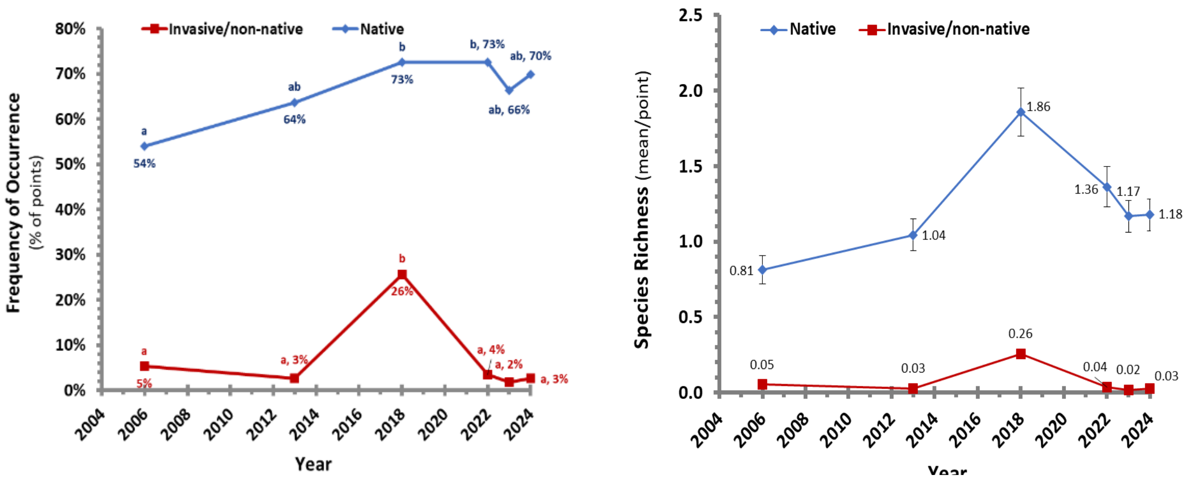

Figure 4. Frequency of occurrence (top) and species richness (bottom) of native and invasive aquatic plants on transects in Amos Lake in 2006, 2013, 2018, 2022, 2023, and 2024.

noted but excluded from the analysis as they are not true aquatic plants. Shoreline areas were dominated by waterlilies. Detailed information on native plants is beyond the scope of this report but is available on the USDA PLANTS Database website (https://plants.usda.gov/). Lyngbya, a mat forming filamentous alga, covered many vegetated areas in 2022 but was less abundant in 2023 and 2024.

Native species found in all surveys (2006 - 2024) include arrowhead, eelgrass, Robbins' pondweed, slender watermilfoil, spotted pondweed, swamp loosestrife, variable pondweed, watershield, white water lily, and yellow water lily (Table 2). No new native species were recorded in 2024 compared to 2023, when common duckweed, floating-leaf pondweed, water smartweed, and western waterweed were documented for the first time. Western waterweed, found again in 2024 near the boat ramp alongside northern hydrilla, is visually similar to hydrilla but can be distinguished by having three leaves per whorl compared to hydrilla's five or more. Snailseed pondweed, absent since 2018, reappeared in small populations along the northern shoreline. Many coves contained dense stands of emergent vegetation, particularly white and yellow waterlilies. Digitized survey maps showing individual plant layers are available on the CAES OAIS website (*portal.ct.gov/caes-oais*).

Frequency of occurrence (FOQ) on transect points from 2006 to 2024 showed a substantial increase in native species, with an increase from 51% in 2006 to 70% in 2024, variability in the data, however, suggest this is not statistically significant. There was a statistically significant increase in FOQ in native species from 54% in 2006 to 70% in 2024. The frequency of occurrence of invasive species significantly increased from 2006 to 2018 from 5% to 26%. From 2018 to 2022, invasive species FOQ significantly decreased likely due to ProcellaCOR® treatments targeting variable watermilfoil. Slight changes in FOQ occurred from 2022 to 2024—dropping from 3.3% to 1.7% in 2023, then rising to 2.7% in 2024 (Figure 4, left). Robbins' pondweed remained the most frequently found native species in 2024 with an FOQ of 50%, the highest since 2018 (53%). Other frequently observed plants included white water lily (27%), yellow water lily (10%), and spotted pondweed (7%). Notable changes from 2023 to 2024 included a decrease in arrowhead FOQ from 7% to 2% and a loss of floating-leaf pondweed, previously at 5%. There was little change in species richness from 2023 to 2024 for both native and non-native species (Figure 4, right).

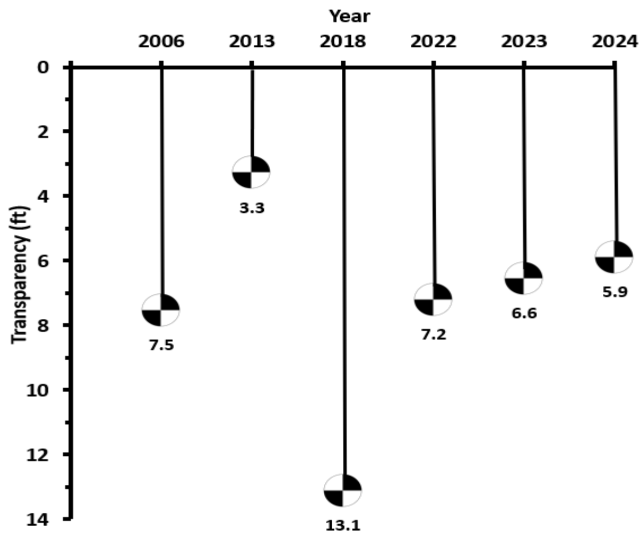

Figure 5. Transparency was measured with a Secchi disk in Amos Lake during CAES OAIS surveys.

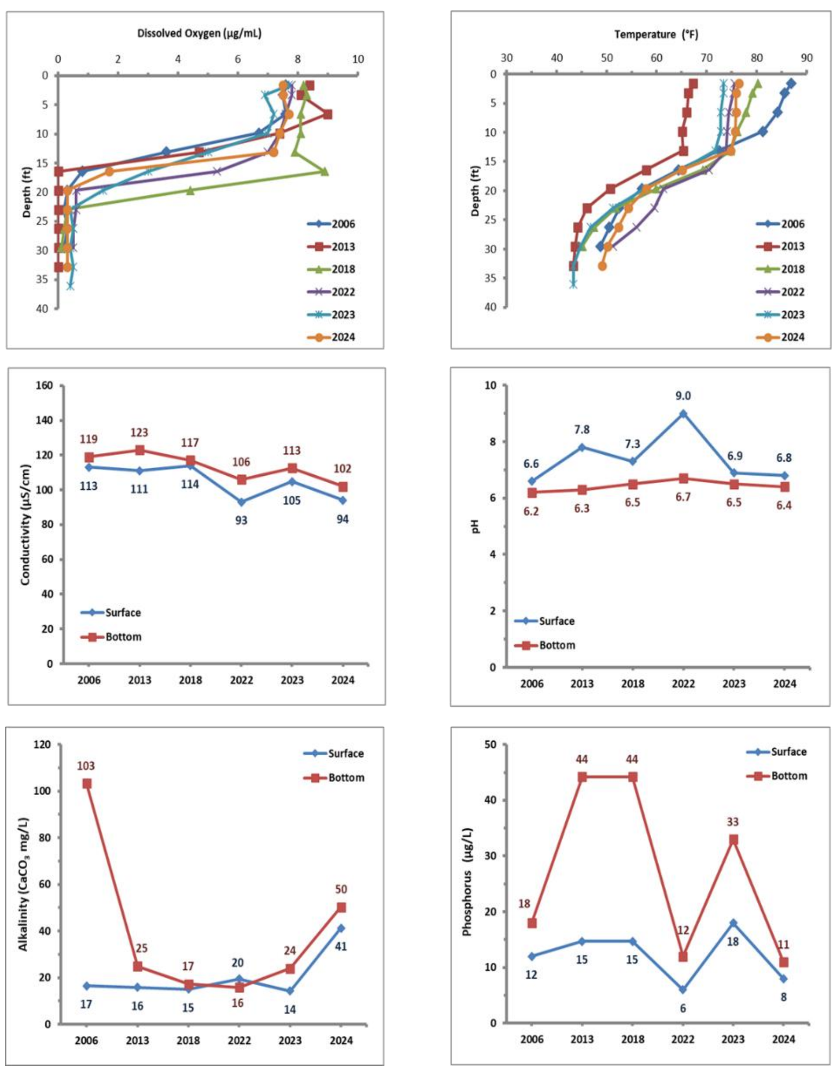

Figure 6. Water chemistry data for Amos Lake in 2006, 2013,

Water Chemistry

CAES OAIS has found that the occurrence of invasive plants in lakes is closely linked to water chemistry (June-Wells et al., 2013). For example, lakes with higher alkalinity and conductivity tend to support species such as Eurasian watermilfoil, minor naiad, and curlyleaf pondweed, while those with lower values favor fanwort and variable-leaf watermilfoil. Water clarity in Connecticut lakes varies between 1 and 33 feet, with an average of 7 feet (CAES OAIS, 2024). In Amos Lake, water clarity measured 5.9 feet in 2024, down from 6.6 feet in 2023, 7.2 feet in 2022, 13 feet in 2018, 3.3 feet in 2013, and 7.5 feet in 2006 (Figure 5). These fluctuations are likely due to natural variation and decaying vegetation from the 2021–2022 herbicide treatments, which can release tannins and encourage algal growth. In all survey years, the summer thermocline in Amos Lake formed at a depth of approximately 12 feet. Dissolved oxygen levels mirrored this pattern, with well-oxygenated water above the thermocline and a sharp drop to nearly 0 mg/L below it. Surface pH returned to near-neutral values of 6.9 in 2023 and 6.8 in 2024, following an unusually high reading of 9.0 in 2022. The elevated 2022 pH was likely caused by reduced carbonic acid from photosynthesizing algae and cyanobacteria associated with decaying plants. Bottom water pH remained stable across the years, ranging from 6.2 to 6.7, with a 2024 value of 6.4.

Surface alkalinity, which had been stable between 14 and 20 mg/L $CaCO_3$ from 2006 to 2023, increased significantly to 41 mg/L $CaCO_3$ in 2024. While this value is still low compared to the Connecticut lake range (>170 mg/L $CaCO_3$), the increase may explain the resurgence of Eurasian watermilfoil in 2024, which had not spread after its first appearance in 2022. Low alkalinity lakes are generally more susceptible to pH fluctuations caused by external factors, such as watershed activities or acid rain. Conductivity, an indicator of dissolved ions from both natural and human-made sources, remained consistent in Amos Lake, measuring 94 µS/cm at the surface and 102 µS/cm near the bottom in 2024. These values align with the typical range of 50–250 µS/cm for Connecticut waterbodies. Amos Lake's low alkalinity and conductivity make it more suitable for variable-leaf watermilfoil than Eurasian watermilfoil.

Phosphorus (P) levels in the water column, a key measure of a lake's trophic state, influence algal blooms, with higher concentrations potentially leading to nuisance or toxic growths (Frink and Norvell, 1984; Wetzel, 2001). Rooted macrophytes, however, rely on nutrients primarily from the hydrosoil (Bristow and Whitcombe, 1971). Lakes with P levels between 0 and 10 µg/L are classified as nutrient-poor (oligotrophic), while those with 15–25 µg/L are moderately fertile (mesotrophic), and those with 30–50 µg/L are fertile (eutrophic). Lakes with P concentrations exceeding 50 µg/L are considered extremely fertile (hypereutrophic). In Amos Lake, P concentrations in 2024 were 8 µg/L at the surface and 11 µg/L at the bottom, reflecting oligotrophic conditions. In contrast, 2023 measurements were higher, with surface concentrations at 18 µg/L and bottom concentrations of 23 µg/L, consistent with mesotrophic conditions. Phosphorus levels fluctuated again back down to oligotrophic conditions in 2022 (Figure 6).

Aquatic Vegetation Management

Nuisance aquatic vegetation in Amos Lake has been actively managed by The Pond and Lake Connection since 2021. On August 31, 2021, four acres were treated with ProcellaCOR EC at a rate of 3–4 PDU/acre-ft to control variable-leaf watermilfoil. A follow-up treatment to 9.5 acres was applied on June 27, 2022, at the same rate. These treatments effectively suppressed variable-leaf watermilfoil until 2024 when it reappeared in very small patches. No treatment was performed in 2024.

The U.S. Army Corps of Engineers, with support from CAES OAIS, is conducting research to identify the best methods for managing northern hydrilla. In the summer of 2024, they began testing aquatic herbicides in the Connecticut River. ProcellaCOR was shown to be effective but at rates far higher than likely to be practical for Amos Lake. To help prevent further spread of hydrilla in Amos Lake, CAES OAIS trained Amos Lake Association members in hydrilla identification and hand-pulling techniques in August 2024.

Although efforts are ongoing to develop biological controls for nuisance aquatic vegetation, progress has been limited. To date, the only biological control implemented in Connecticut is the use of sterile grass carp. These herbivorous fish consume most submersed aquatic plants, but their introduction into Connecticut lakes requires CT DEEP approval, and only sterile (triploid) grass carp are permitted. Introducing grass carp carries risks, as they can consume non-target plants critical for maintaining the fishery. Past introductions in Connecticut waterbodies, including Candlewood Lake, Taunton Lake, and Squantz Pond, have led to undesirable near-total elimination of vegetation. CAES has collaborated with USDA officials to explore new plant pathogens and insects for control, but success has been minimal.

Benthic barriers, or "bottom blankets," are another effective method for eliminating nuisance vegetation in small areas such as swim zones, dock surroundings, and pioneer infestations. CAES OAIS has tested short-term barrier placements (<30 days) in Lake Quonnipaug and Lake Beseck achieving season-long control of Eurasian watermilfoil and fanwort. While labor-intensive, benthic barriers can be relocated during the season for broader control and reused over multiple years, reducing material costs.

CONCLUSIONS

In 2024, 29 aquatic plant species were documented in Amos Lake, matching the highest number recorded in any survey year. The invasive species observed included Eurasian watermilfoil, northern hydrilla, and variable-leaf watermilfoil, with the latter showing a slight resurgence since 2018. Northern hydrilla was again found near the boat ramp and two new areas indicating spreading is occurring. Mudmat, a non-native species, has been consistently documented in all survey years but is not likely to become a problem.

The 2024 survey identified 25 native species, with Robbins' pondweed, white water lily, and yellow water lily being the most abundant. No new species were recorded in 2024, but common duckweed and western waterweed, both first documented in 2023, persisted into 2024. Lyngbya, a filamentous alga, was less prevalent in 2024 compared to previous years. Continued aquatic plant monitoring is recommended to prevent a larger resurgence of variable-leaf watermilfoil and to ensure northern hydrilla does not become problematic. Management options for future management of northern hydrilla need to be prioritized.

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APPENDIX

Hydrilla verticillata

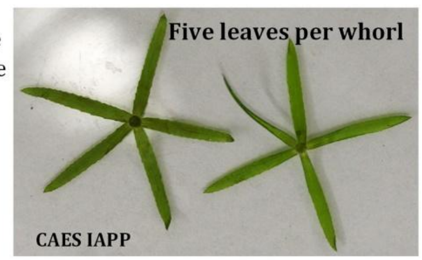
Common name:
Hydrilla

Origin:
Asia

Key features:
Plants are submersed

Stems: Slender, branched and up to 25 feet (7.5 m) long

Leaves: Whorled leaves approx. 0.7 inches (1.5 cm) long, whorls often have 5 leaves (range 4-8); leaf margins are visibly toothed

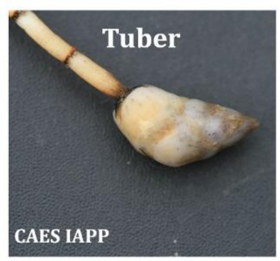


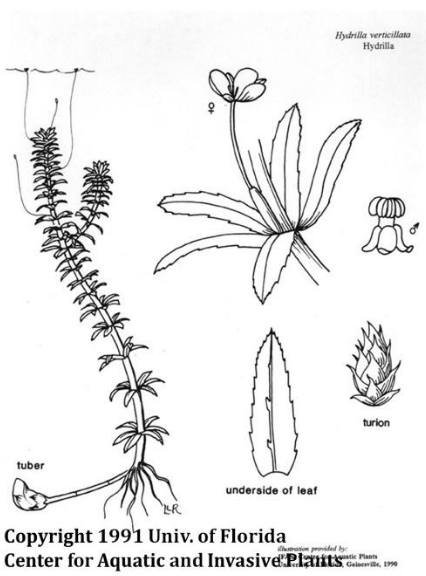
Flowers: Female flowers have three translucent petals that have reddish streaks; male flowers have three petals and can be white to red in color

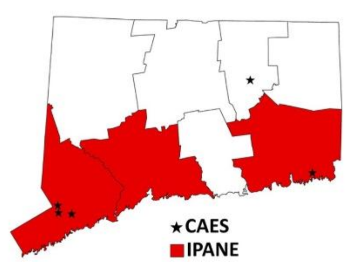
Fruits/Seeds: Small tubers (key feature) can be found in the sediment, turions form along the stem

Reproduction: Fragmentation, turions, tubers and seeds

Easily confused species:
Waterweeds (Native): *Elodea nuttallii* and *Elodea canadensis*
Brazilian waterweed: *Egeria densa*







Myriophyllum heterophyllum

Common names:
Variable-leaf watermilfoil
Variable watermilfoil
Two-leaf watermilfoil

Origin:
Southern United States

Key features:
Plants are submersed

Stems: Dark brown stems extend to the water's surface and spread to form large mats

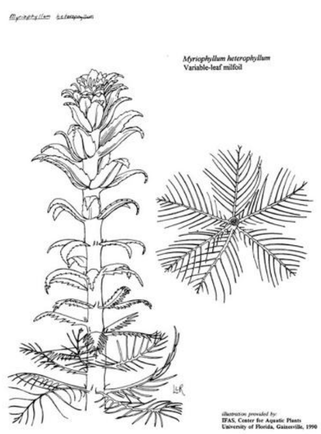
Leaves: Triangular with ≤ 11 pairs of leaflets. Leaves are dissected and whorled (4-6 leaves/whorl) resulting in a feathery appearance with leaf whorls < 1 inch apart giving it a ropy appearance

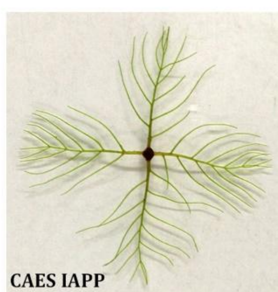
Flowers: Inflorescence spike 2-14 inches (5-35 cm) long extend beyond the water's surface with flowers in whorls of four with reddish petals

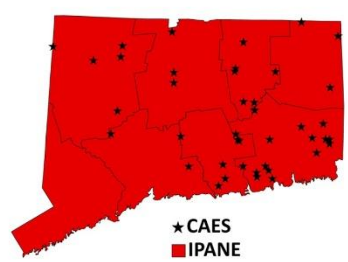
Fruits/Seeds: Fruits are almost round, with a rough surface

Reproduction: Fragmentation and seeds

Easily confused species:
Eurasian watermilfoil: *Myriophyllum spicatum*
Low watermilfoil: *Myriophyllum humile*





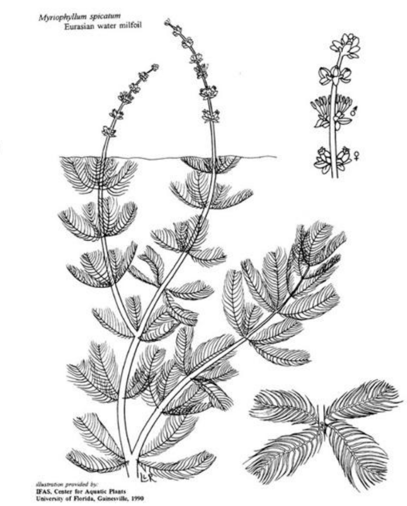


Myriophyllum spicatum

Common name:
Eurasian watermilfoil

Origin:
Europe and Asia

Key features:
Plants are submersed
Stems: Stem diameter below the inflorescence is greater with reddish stem tips
Leaves: Leaves are rectangular with ≥ 12 pairs of leaflets per leaf and are dissected giving a feathery appearance, arranged in a whorl, whorls are 1 inch (2.5 cm) apart
Flowers: Small pinkish male flowers that occur on reddish spikes, female flowers lack petals and sepals and have 4 lobed pistil
Fruits/Seeds: Fruit are round 0.08-0.12 inches (2-3 mm) and contain 4 seeds
Reproduction: Fragmentation and seeds



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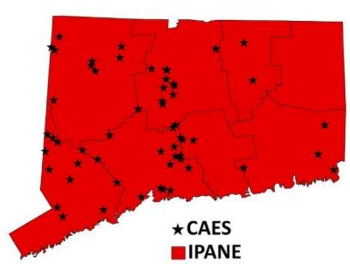
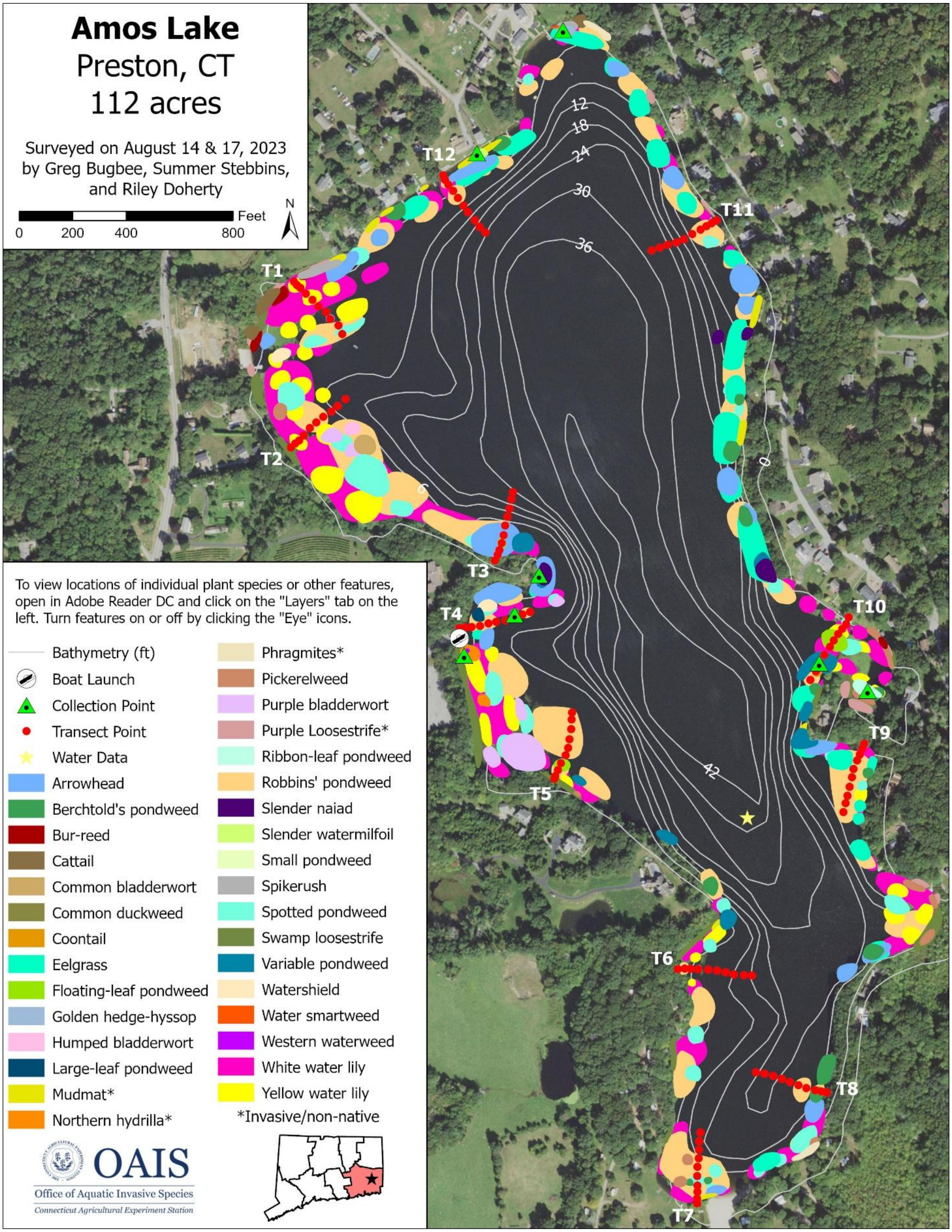
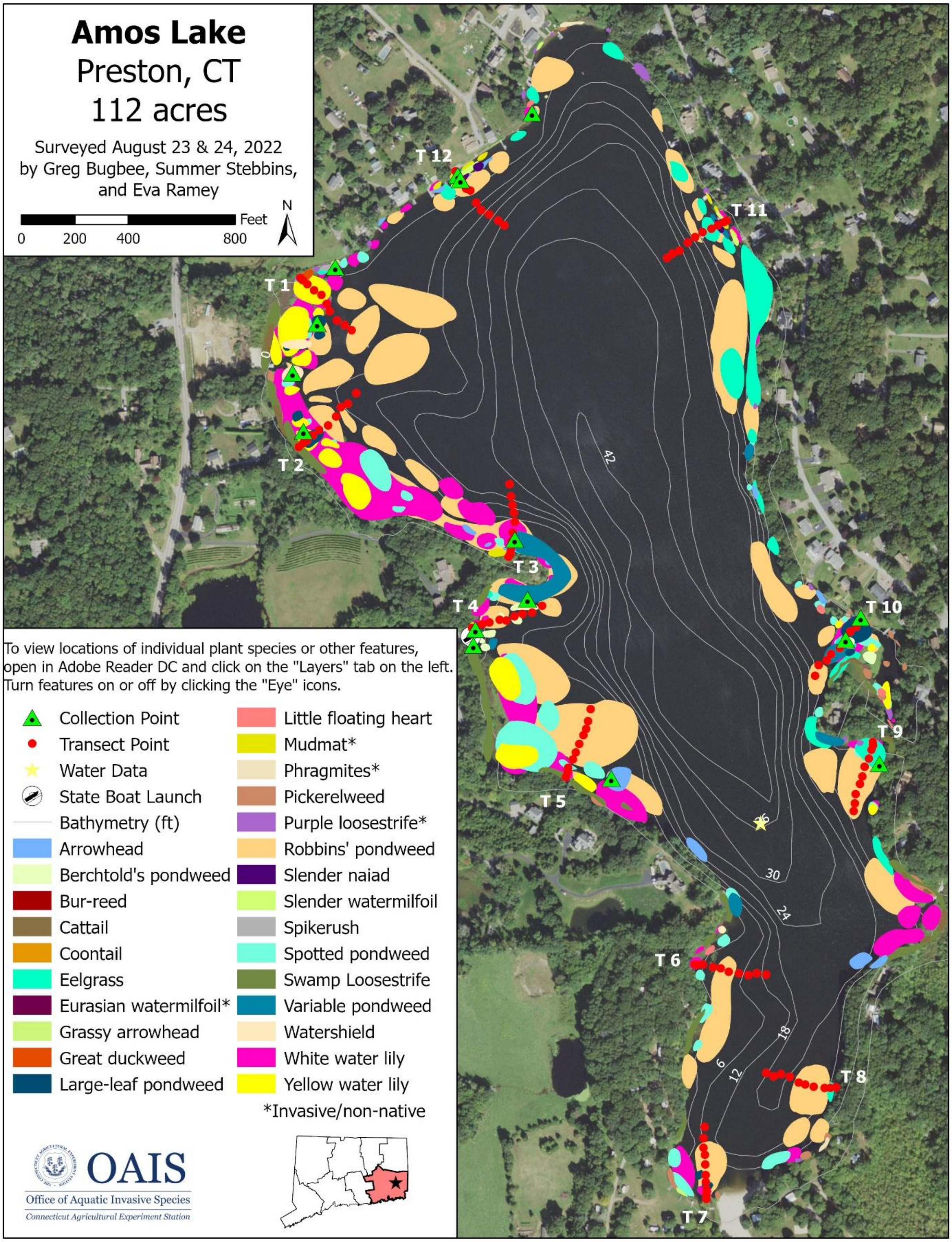
Center for Aquatic and Invasive Plants

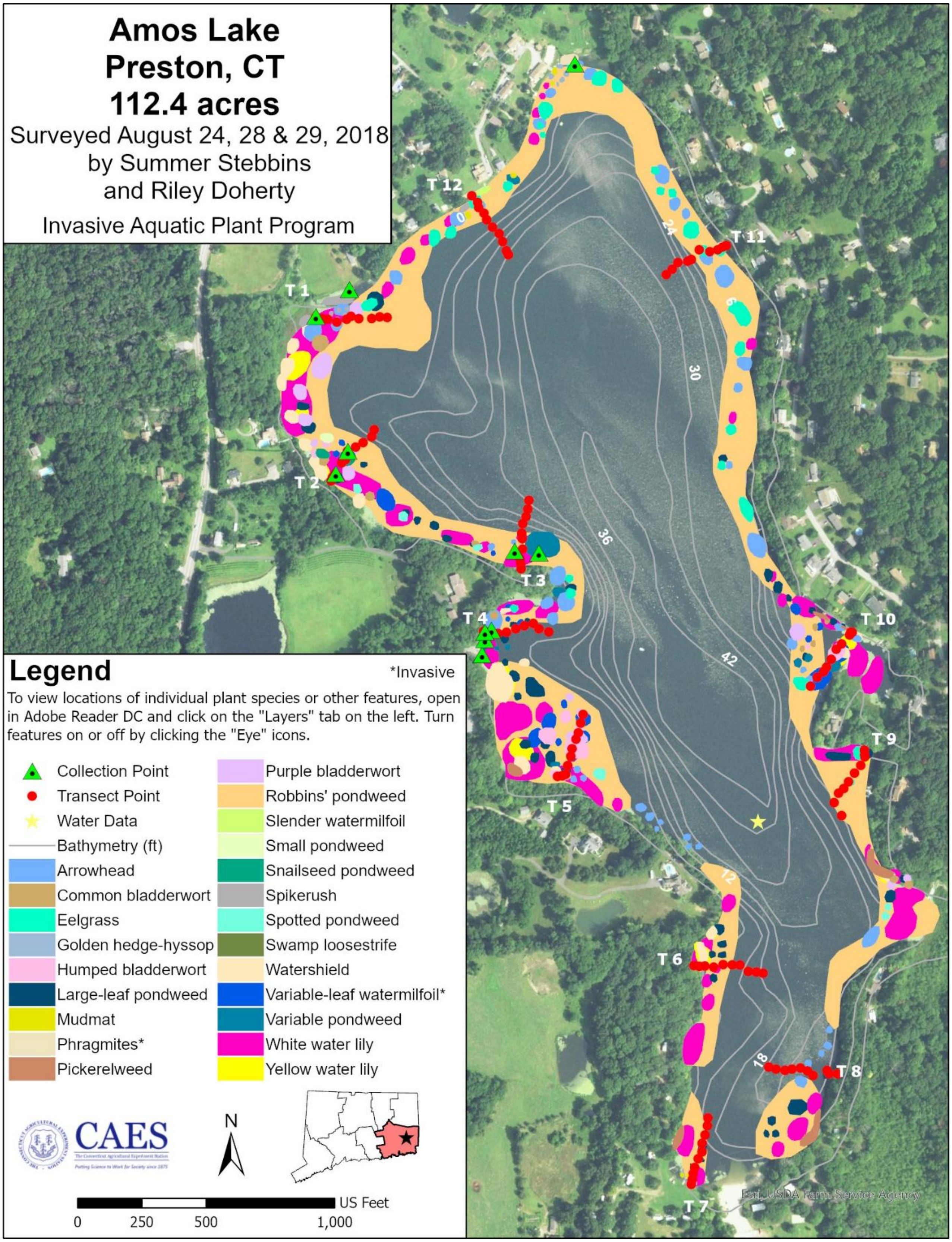
Easily confused species:
Variable-leaf watermilfoil: *Myriophyllum heterophyllum*
Low watermilfoil: *Myriophyllum humile*
Northern watermilfoil: *Myriophyllum sibiricum*
Whorled watermilfoil: *Myriophyllum verticillatum*

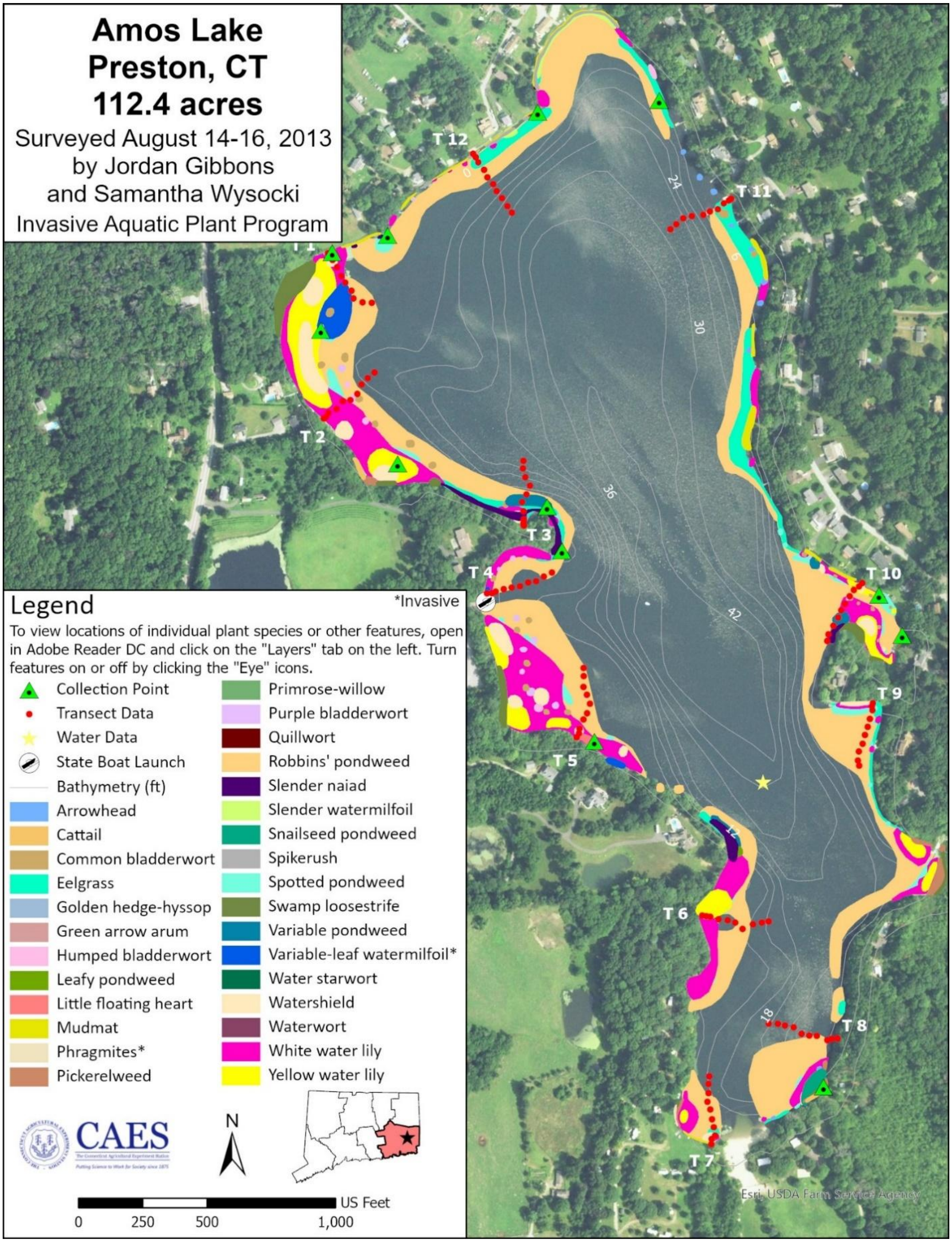


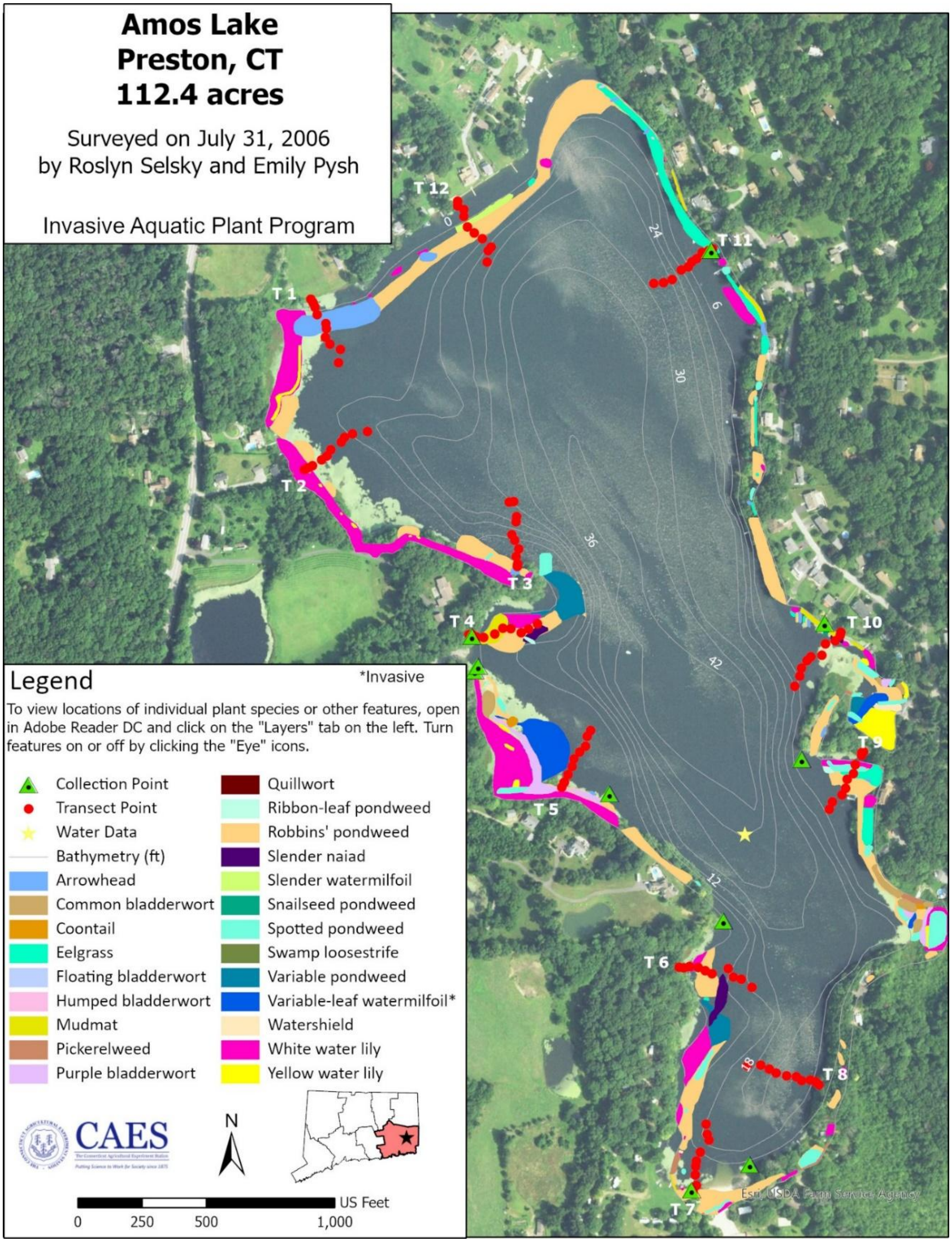
Previous Years Aquatic Plant Survey Maps




Amos Lake
Preston, CT
112 acres
Surveyed August 23 & 24, 2022
by Greg Bugbee, Summer Stebbins,
and Eva Ramey
Feet
0 200 400 800
N
To view locations of individual plant species or other features, open in Adobe Reader DC and click on the "Layers" tab on the left. Turn features on or off by clicking the "Eye" icons.
Collection Point
Transect Point
Water Data
State Boat Launch
Bathymetry (ft)
Arrowhead
Berchtold's pondweed
Bur-reed
Cattail
Coontail
Eelgrass
Eurasian watermilfoil*
Grassy arrowhead
Great duckweed
Large-leaf pondweed
Little floating heart
Mudmat*
Phragmites*
Pickerelweed
Purple loosestrife*
Robbins' pondweed
Slender naiad
Slender watermilfoil
Spikerush
Spotted pondweed
Swamp Loosestrife
Variable pondweed
Watershield
White water lily
Yellow water lily
*Invasive/non-native
OAIS
Office of Aquatic Invasive Species
Connecticut Agricultural Experiment Station
T 1
T 2
T 3
T 4
T 5
T 6
T 7
T 8
T 9
T 10
T 11
T 12
42
30
24
18
12
6
0


Amos Lake
Preston, CT
112.4 acres
Surveyed August 24, 28 & 29, 2018
by Summer Stebbins
and Riley Doherty
Invasive Aquatic Plant Program
Legend
*Invasive
To view locations of individual plant species or other features, open in Adobe Reader DC and click on the "Layers" tab on the left. Turn features on or off by clicking the "Eye" icons.
Collection Point
Transect Point
Water Data
Bathymetry (ft)
Arrowhead
Common bladderwort
Eelgrass
Golden hedge-hyssop
Humped bladderwort
Large-leaf pondweed
Mudmat
Phragmites*
Pickerelweed
Purple bladderwort
Robbins' pondweed
Slender watermilfoil
Small pondweed
Snailseed pondweed
Spikerush
Spotted pondweed
Swamp loosestrife
Watershield
Variable-leaf watermilfoil*
Variable pondweed
White water lily
Yellow water lily
CAES
N
0 250 500 1,000 US Feet
T 1
T 2
T 3
T 4
T 5
T 6
T 7
T 8
T 9
T 10
T 11
T 12
0
6
12
18
24
30
36
42
Esri, USDA Farm Service Agency


Amos Lake
Preston, CT
112.4 acres
Surveyed August 14-16, 2013
by Jordan Gibbons
and Samantha Wysocki
Invasive Aquatic Plant Program
T 1
T 2
T 3
T 4
T 5
T 6
T 7
T 8
T 9
T 10
T 11
T 12
24
30
36
42
18
Legend
*Invasive
To view locations of individual plant species or other features, open in Adobe Reader DC and click on the "Layers" tab on the left. Turn features on or off by clicking the "Eye" icons.
Collection Point
Transect Data
Water Data
State Boat Launch
Bathymetry (ft)
Arrowhead
Cattail
Common bladderwort
Eelgrass
Golden hedge-hyssop
Green arrow arum
Humped bladderwort
Leafy pondweed
Little floating heart
Mudmat
Phragmites*
Pickerelweed
Primrose-willow
Purple bladderwort
Quillwort
Robbins' pondweed
Slender naiad
Slender watermilfoil
Snailseed pondweed
Spikerush
Spotted pondweed
Swamp loosestrife
Variable pondweed
Variable-leaf watermilfoil*
Water starwort
Watershield
Waterwort
White water lily
Yellow water lily
CAES
N
US Feet
0 250 500 1,000
Esri, USDA Farm Service Agency


Amos Lake
Preston, CT
112.4 acres
Surveyed on July 31, 2006
by Roslyn Selsky and Emily Pysh
Invasive Aquatic Plant Program
Legend
*Invasive
To view locations of individual plant species or other features, open in Adobe Reader DC and click on the "Layers" tab on the left. Turn features on or off by clicking the "Eye" icons.
Collection Point
Transect Point
Water Data
Bathymetry (ft)
Arrowhead
Common bladderwort
Coontail
Eelgrass
Floating bladderwort
Humped bladderwort
Mudmat
Pickerelweed
Purple bladderwort
Quillwort
Ribbon-leaf pondweed
Robbins' pondweed
Slender naiad
Slender watermilfoil
Snailseed pondweed
Spotted pondweed
Swamp loosestrife
Variable pondweed
Variable-leaf watermilfoil*
Watershield
White water lily
Yellow water lily
CAES
N
0 250 500 1,000 US Feet
T 1
T 2
T 3
T 4
T 5
T 6
T 7
T 8
T 9
T 10
T 11
T 12
0
6
12
18
24
30
36
42
Esri, USDA Farm Service Agency

Transect Data

Appendix Amos Lake Transect Data (1 of 3)

Transect	Point	Distance from Shore (m)	Surveyor	Latitude	Longitude	Date	Depth (m)	Substrate	CerDem	EleSpp	GloCle	NajFle	NupVar	NymOdo	PonCor	PotGra	PotPul	SagSpp	SpaSpp	UtrMac	ValAme
1	1	0.5	Greg Bugbee	41.52041	-71.98042	8/21/2024	0.2	Muck	1	2	0	0	0	3	0	0	0	2	2	0	0
1	2	5	Greg Bugbee	41.52037	-71.98038	8/21/2024	0.6	Muck	0	0	0	0	2	4	0	0	0	0	2	0	0
1	3	10	Greg Bugbee	41.52034	-71.98033	8/21/2024	1.1	Muck	0	0	0	0	2	4	0	0	0	0	0	0	0
1	4	20	Greg Bugbee	41.52025	-71.98027	8/21/2024	1.6	Organic	0	0	0	0	0	5	0	0	0	0	0	0	0
1	5	30	Greg Bugbee	41.52019	-71.98018	8/21/2024	1.7	Organic	0	0	0	0	2	4	0	0	0	0	0	0	0
1	6	40	Greg Bugbee	41.52011	-71.98012	8/21/2024	1.8	Organic	0	0	0	0	2	4	0	0	0	0	0	0	0
1	7	50	Greg Bugbee	41.52002	-71.98006	8/21/2024	1.9	Organic	0	0	0	0	0	3	0	0	0	0	0	0	0
1	8	60	Greg Bugbee	41.51995	-71.97999	8/21/2024	1.6	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
1	9	70	Greg Bugbee	41.51987	-71.97989	8/21/2024	2.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
1	10	80	Greg Bugbee	41.51984	-71.97977	8/21/2024	2.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0.5	Greg Bugbee	41.51862	-71.98043	8/21/2024	1.0	Muck	0	0	0	0	0	4	0	0	0	0	0	0	0
2	2	5	Greg Bugbee	41.51866	-71.98037	8/21/2024	1.2	Muck	0	0	0	0	2	4	0	0	0	0	0	0	0
2	3	10	Greg Bugbee	41.51868	-71.98031	8/21/2024	1.5	Muck	0	0	0	0	2	4	0	0	0	0	0	0	0
2	4	20	Greg Bugbee	41.51873	-71.98022	8/21/2024	1.8	Organic	0	0	0	0	0	4	0	0	2	0	0	0	0
2	5	30	Greg Bugbee	41.51879	-71.98014	8/21/2024	1.9	Organic	0	0	0	0	2	2	0	0	2	0	0	0	0
2	6	40	Greg Bugbee	41.51885	-71.98004	8/21/2024	1.9	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
2	7	50	Greg Bugbee	41.51892	-71.97994	8/21/2024	2.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
2	8	60	Greg Bugbee	41.51900	-71.97987	8/21/2024	4.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
2	9	70	Greg Bugbee	41.51907	-71.97979	8/21/2024	4.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
2	10	80	Greg Bugbee	41.51909	-71.97969	8/21/2024	5.0	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0.5	Greg Bugbee	41.51748	-71.97767	8/21/2024	0.1	Muck	0	0	0	0	0	0	0	0	0	0	2	1	0
3	2	5	Greg Bugbee	41.51752	-71.97767	8/21/2024	0.6	Sand	0	0	0	0	0	0	0	0	0	2	0	1	0
3	3	10	Greg Bugbee	41.51758	-71.97763	8/21/2024	1.1	Sand	0	0	0	0	0	2	0	0	0	0	0	0	0
3	4	20	Greg Bugbee	41.51765	-71.97763	8/21/2024	2.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
3	5	30	Greg Bugbee	41.51774	-71.97763	8/21/2024	2.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
3	6	40	Greg Bugbee	41.51781	-71.97760	8/21/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
3	7	50	Greg Bugbee	41.51791	-71.97759	8/21/2024	6.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
3	8	60	Greg Bugbee	41.51801	-71.97759	8/21/2024	9.0	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
3	9	70	Greg Bugbee	41.51809	-71.97760	8/21/2024	9.8	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
3	10	80	Greg Bugbee	41.51819	-71.97761	8/21/2024	10.3	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0.5	Greg Bugbee	41.51674	-71.97813	8/21/2024	0.2	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	0
4	2	5	Greg Bugbee	41.51674	-71.97808	8/21/2024	1.6	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	0
4	3	10	Greg Bugbee	41.51675	-71.97801	8/21/2024	2.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	4	20	Greg Bugbee	41.51676	-71.97792	8/21/2024	2.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	5	30	Greg Bugbee	41.51677	-71.97780	8/21/2024	3.3	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	6	40	Greg Bugbee	41.51679	-71.97768	8/21/2024	3.6	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	7	50	Greg Bugbee	41.51682	-71.97756	8/21/2024	4.1	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	8	60	Greg Bugbee	41.51686	-71.97744	8/21/2024	4.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	9	70	Greg Bugbee	41.51689	-71.97732	8/21/2024	6.4	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
4	10	80	Greg Bugbee	41.51692	-71.97723	8/21/2024	5.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0.5	Greg Bugbee	41.51523	-71.97691	8/21/2024	0.2	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	0
5	2	5	Greg Bugbee	41.51527	-71.97689	8/21/2024	1.2	Organic	0	0	0	0	0	4	0	0	0	0	0	0	0
5	3	10	Greg Bugbee	41.51531	-71.97686	8/21/2024	1.8	Organic	0	0	0	0	0	3	0	0	2	0	0	0	0
5	4	20	Greg Bugbee	41.51539	-71.97683	8/21/2024	2.3	Organic	0	0	0	0	0	0	0	0	2	0	0	0	0
5	5	30	Greg Bugbee	41.51547	-71.97683	8/21/2024	2.3	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
5	6	40	Greg Bugbee	41.51556	-71.97679	8/21/2024	2.6	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
5	7	50	Greg Bugbee	41.51566	-71.97679	8/21/2024	2.3	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
5	8	60	Greg Bugbee	41.51576	-71.97678	8/21/2024	2.8	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
5	9	70	Greg Bugbee	41.51586	-71.97679	8/21/2024	3.0	Organic	0	0	0	0	0	0	0	0	0	0	0	2	0
5	10	80	Greg Bugbee	41.51594	-71.97678	8/21/2024	3.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix Amos Lake Transect Data (2 of 3)

Transect	Point	Distance from Shore (m)	Surveyor	Latitude	Longitude	Date	Depth (m)	Substrate	CerDem	EleSpp	GloCle	NajFle	NupVar	NymOdo	PonCor	PotGra	PotPul	SagSpp	SpaSpp	UtrMac	ValAme
6	1	0.5	Greg Bugbee	41.51328	-71.97518	8/21/2024	0.2	Muck	0	0	0	0	0	0	0	0	0	0	0	0	0
6	2	5	Greg Bugbee	41.51326	-71.97513	8/21/2024	1.2	Muck	0	0	0	0	0	2	0	0	0	0	0	0	0
6	3	10	Greg Bugbee	41.51325	-71.97507	8/21/2024	1.6	Muck	0	0	0	0	0	2	0	0	0	0	0	0	0
6	4	20	Greg Bugbee	41.51324	-71.97494	8/21/2024	1.6	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
6	5	30	Greg Bugbee	41.51324	-71.97484	8/21/2024	1.7	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
6	6	40	Greg Bugbee	41.51323	-71.97471	8/21/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
6	7	50	Greg Bugbee	41.51320	-71.97458	8/21/2024	5.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
6	8	60	Greg Bugbee	41.51320	-71.97446	8/21/2024	7.2	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
6	9	70	Greg Bugbee	41.51319	-71.97435	8/21/2024	8.4	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
6	10	80	Greg Bugbee	41.51321	-71.97422	8/21/2024	9.4	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0.5	Greg Bugbee	41.51085	-71.97502	8/22/2024	0.1	Gravel	0	0	2	0	0	0	0	0	0	0	0	0	0
7	2	5	Greg Bugbee	41.51090	-71.97503	8/22/2024	1.0	Gravel	0	0	2	0	0	0	0	0	0	0	0	0	0
7	3	10	Greg Bugbee	41.51095	-71.97502	8/22/2024	1.8	Organic	0	0	0	0	0	3	0	0	0	0	0	0	0
7	4	20	Greg Bugbee	41.51104	-71.97505	8/22/2024	1.9	Organic	0	0	0	0	0	0	0	0	2	0	0	0	0
7	5	30	Greg Bugbee	41.51113	-71.97504	8/22/2024	1.9	Organic	0	0	0	0	0	0	0	0	2	0	0	0	0
7	6	40	Greg Bugbee	41.51122	-71.97508	8/22/2024	2.1	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
7	7	50	Greg Bugbee	41.51131	-71.97510	8/22/2024	2.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
7	8	60	Greg Bugbee	41.51140	-71.97508	8/22/2024	3.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
7	9	70	Greg Bugbee	41.51151	-71.97509	8/22/2024	5.1	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
7	10	80	Greg Bugbee	41.51159	-71.97508	8/22/2024	5.8	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0.5	Greg Bugbee	41.51196	-71.97322	8/22/2024	0.3	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	0
8	2	5	Greg Bugbee	41.51196	-71.97329	8/22/2024	0.3	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	3
8	3	10	Greg Bugbee	41.51197	-71.97333	8/22/2024	3.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
8	4	20	Greg Bugbee	41.51202	-71.97347	8/22/2024	3.8	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
8	5	30	Greg Bugbee	41.51203	-71.97359	8/22/2024	3.4	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
8	6	40	Greg Bugbee	41.51205	-71.97370	8/22/2024	5.1	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
8	7	50	Greg Bugbee	41.51206	-71.97381	8/22/2024	8.8	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	60	Greg Bugbee	41.51207	-71.97391	8/22/2024	6.0	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
8	9	70	Greg Bugbee	41.51208	-71.97406	8/22/2024	6.1	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
8	10	80	Greg Bugbee	41.51209	-71.97417	8/22/2024	6.1	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1	0.5	Greg Bugbee	41.51557	-71.97271	8/22/2024	0.2	Gravel	0	0	0	0	0	0	0	0	0	0	0	0	2
9	2	5	Greg Bugbee	41.51551	-71.97269	8/22/2024	1.0	Sand	0	0	0	0	0	4	0	0	0	0	0	0	0
9	3	10	Greg Bugbee	41.51548	-71.97270	8/22/2024	1.7	Organic	0	0	0	0	0	4	0	0	0	0	0	0	2
9	4	20	Greg Bugbee	41.51539	-71.97272	8/22/2024	1.7	Organic	0	0	0	0	0	0	0	0	0	0	0	0	3
9	5	30	Greg Bugbee	41.51529	-71.97274	8/22/2024	1.7	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
9	6	40	Greg Bugbee	41.51521	-71.97278	8/22/2024	2.0	Organic	0	0	0	0	2	0	0	0	2	0	0	0	0
9	7	50	Greg Bugbee	41.51512	-71.97282	8/22/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
9	8	60	Greg Bugbee	41.51504	-71.97282	8/22/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
9	9	70	Greg Bugbee	41.51496	-71.97286	8/22/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
9	10	80	Greg Bugbee	41.51488	-71.97288	8/22/2024	2.5	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
10	1	0.5	Greg Bugbee	41.51682	-71.97282	8/22/2024	0.3	Muck	0	0	0	0	0	2	3	0	3	0	0	0	0
10	2	5	Greg Bugbee	41.51679	-71.97287	8/22/2024	1.5	Muck	0	0	0	0	0	5	0	0	0	0	0	0	0
10	3	10	Greg Bugbee	41.51676	-71.97291	8/22/2024	1.5	Muck	0	0	0	0	3	4	0	0	0	0	0	0	0
10	4	20	Greg Bugbee	41.51669	-71.97301	8/22/2024	1.5	Organic	0	0	0	0	3	4	0	0	0	0	0	0	0
10	5	30	Greg Bugbee	41.51663	-71.97308	8/22/2024	1.8	Organic	0	0	0	0	2	3	0	0	0	0	0	0	0
10	6	40	Greg Bugbee	41.51654	-71.97314	8/22/2024	1.6	Gravel	0	0	0	0	0	3	0	0	0	0	0	0	0
10	7	50	Greg Bugbee	41.51645	-71.97317	8/22/2024	1.6	Gravel	0	0	0	0	0	3	0	3	0	0	0	0	0
10	8	60	Greg Bugbee	41.51635	-71.97325	8/22/2024	1.2	Gravel	0	0	0	0	0	0	0	2	0	0	0	0	0
10	9	70	Greg Bugbee	41.51629	-71.97332	8/22/2024	1.2	Gravel	0	0	0	0	0	3	0	0	0	0	0	0	0
10	10	80	Greg Bugbee	41.51622	-71.97336	8/22/2024	1.9	Organic	0	0	0	0	0	3	0	0	0	0	0	0	0

Appendix Amos Lake Transect Data (3 of 3)

Transect	Point	Distance from Shore (m)	Surveyor	Latitude	Longitude	Date	Depth (m)	Substrate	CerDem	EleSpp	GloCle	NajFle	NupVar	NymOdo	PonCor	PotGra	PotPul	SagSpp	SpaSpp	UtrMac	ValAme
11	1	0.5	Greg Bugbee	41.52093	-71.97463	8/22/2024	0.2	Sand	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2	5	Greg Bugbee	41.52093	-71.97469	8/22/2024	0.2	Sand	0	0	0	0	0	0	0	0	0	0	0	0	0
11	3	10	Greg Bugbee	41.52091	-71.97475	8/22/2024	1.9	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
11	4	20	Greg Bugbee	41.52086	-71.97485	8/22/2024	2.0	Organic	0	0	0	0	0	0	0	0	0	0	0	0	3
11	5	30	Greg Bugbee	41.52082	-71.97498	8/22/2024	3.1	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
11	6	40	Greg Bugbee	41.52076	-71.97507	8/22/2024	3.1	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
11	7	50	Greg Bugbee	41.52074	-71.97518	8/22/2024	5.5	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
11	8	60	Greg Bugbee	41.52066	-71.97529	8/22/2024	7.7	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
11	9	70	Greg Bugbee	41.52064	-71.97539	8/22/2024	8.0	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
11	10	80	Greg Bugbee	41.52058	-71.97550	8/22/2024	8.3	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
12	1	0.5	Greg Bugbee	41.52143	-71.97831	8/22/2024	0.2	Gravel	0	0	2	0	0	0	0	0	0	0	0	0	0
12	2	5	Greg Bugbee	41.52140	-71.97830	8/22/2024	1.0	Sand	0	2	0	2	0	2	0	0	0	0	0	0	3
12	3	10	Greg Bugbee	41.52134	-71.97828	8/22/2024	2.0	Organic	0	0	0	0	0	2	0	0	0	0	0	0	0
12	4	20	Greg Bugbee	41.52128	-71.97819	8/22/2024	2.4	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
12	5	30	Greg Bugbee	41.52121	-71.97811	8/22/2024	3.2	Organic	0	0	0	0	0	0	0	0	0	0	0	0	0
12	6	40	Greg Bugbee	41.52114	-71.97806	8/22/2024	7.5	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
12	7	50	Greg Bugbee	41.52106	-71.97798	8/22/2024	9.0	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
12	8	60	Greg Bugbee	41.52099	-71.97791	8/22/2024	9.4	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	70	Greg Bugbee	41.52092	-71.97787	8/22/2024	9.5	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0
12	10	80	Greg Bugbee	41.52083	-71.97777	8/22/2024	10.3	Silt	0	0	0	0	0	0	0	0	0	0	0	0	0