ROGERS LAKE

AQUATIC PLANT WORKSHOP

2025

GREGORY J. BUGBEE AND SUMMER E. WEIDMAN

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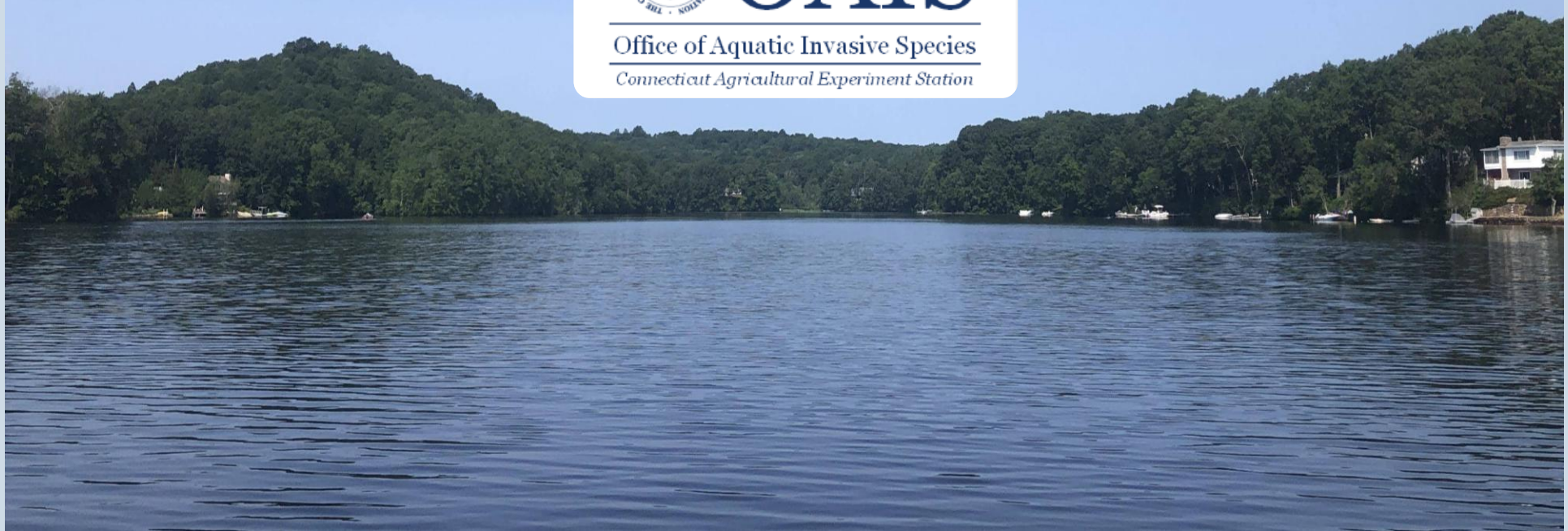
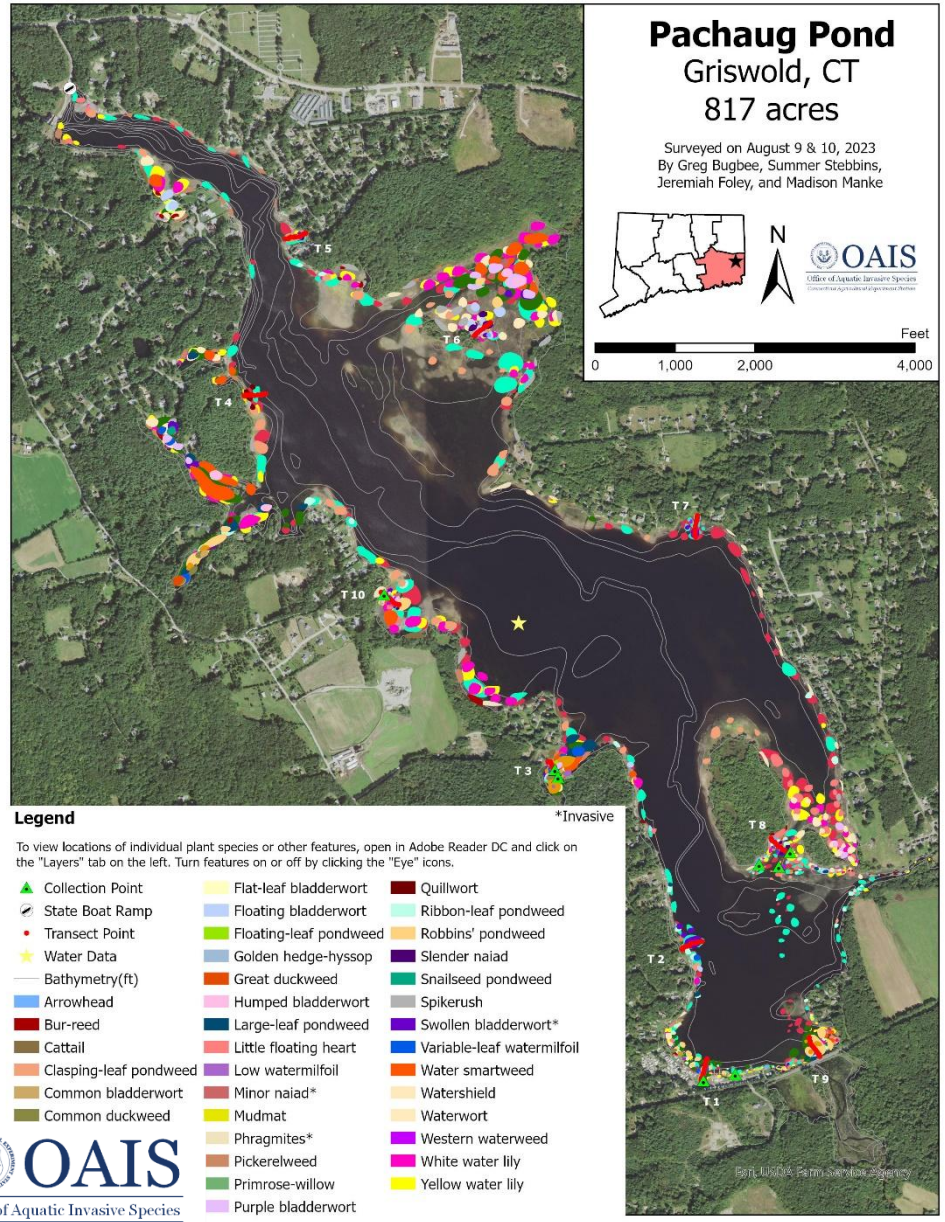


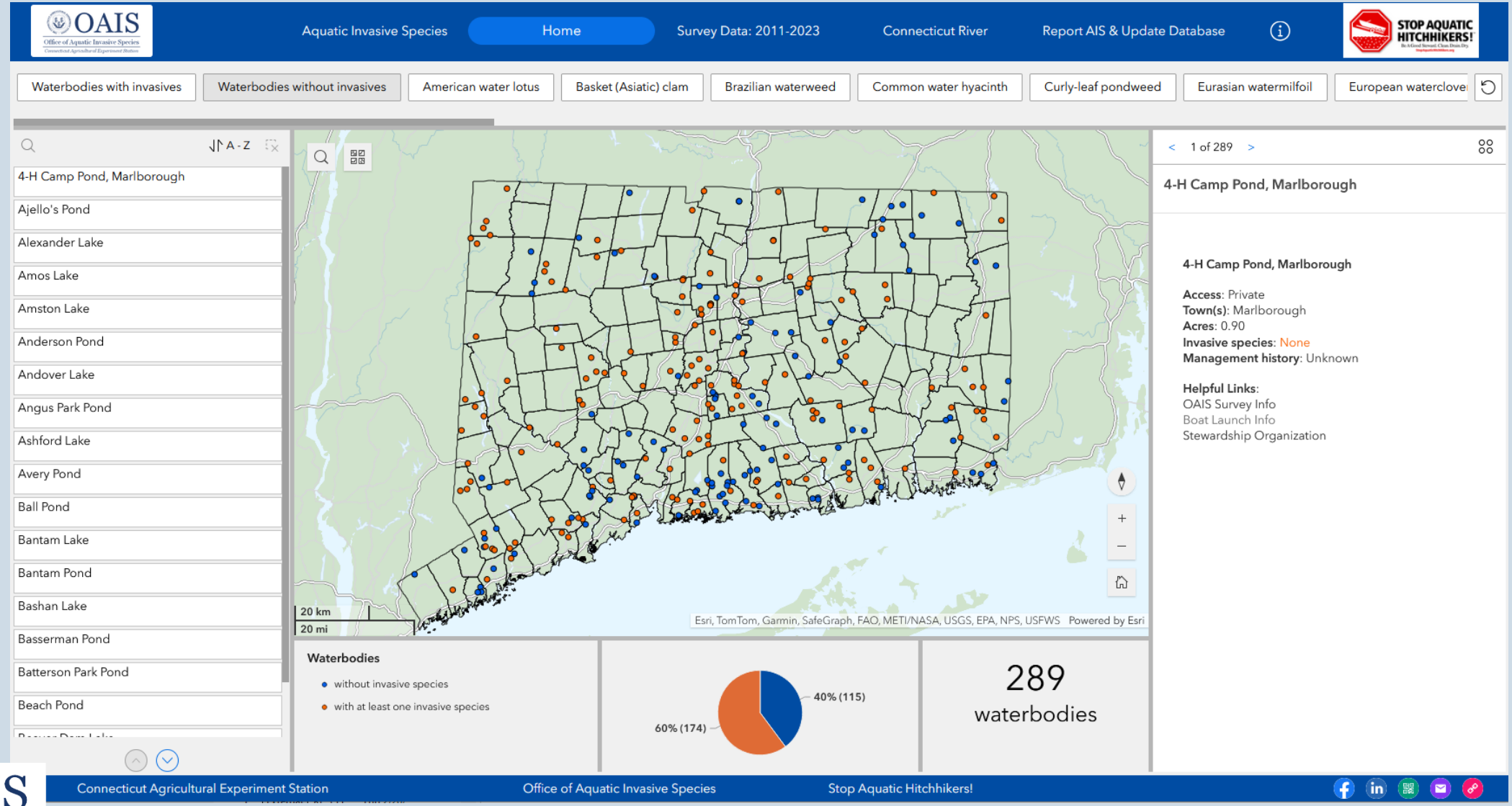
AIS Research



portal.ct.gov/caes-oais

https://tinyurl.com/OAISWebApp

New CT AIS Web App



Invasive Aquatic Plants

Ecosystem Impacts

- Displace native species
- Alter native ecosystems

Economic Impacts

- Reduce recreation
- Lower property values and tax revenue
- Interfere with navigation
- Economic damages and management costs of >$3 billion per year

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Native Aquatic Plants Are Important

- Food and habitat for wildlife
- Improve water clarity
  - Stabilize sediments
  - Remove nutrients - reduce algal blooms
- Help resist invasion
- 20 - 40% coverage of the littoral zone is optimal

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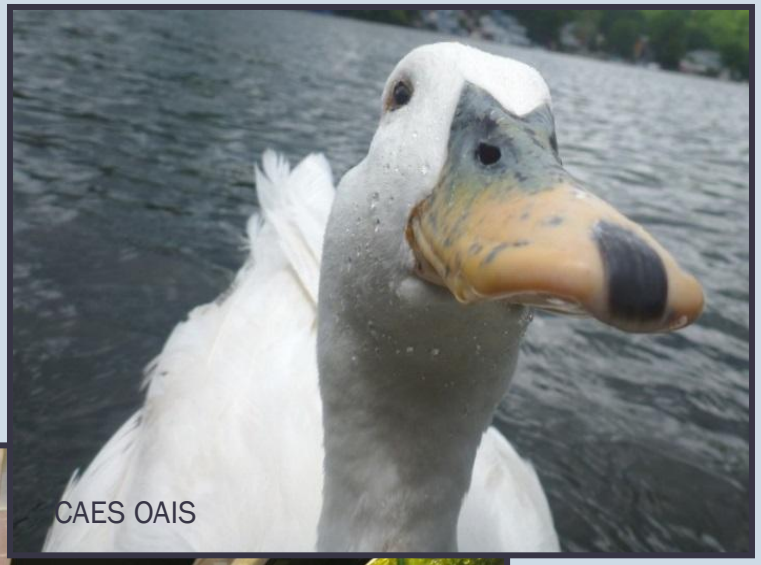
Introduction and Dispersal



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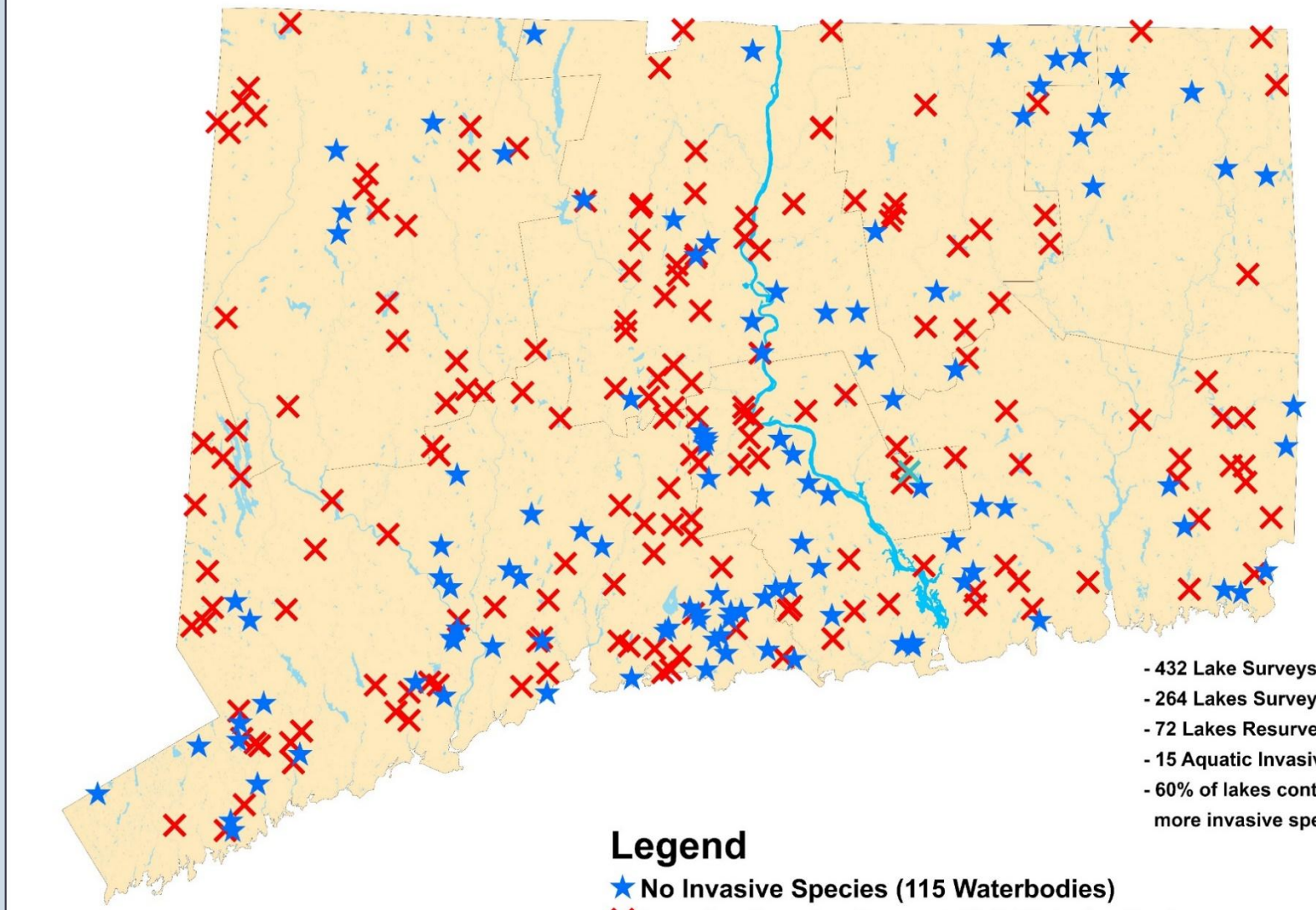
Locations of Invasive Aquatic Plants 2004-2024



- 432 Lake Surveys Performed
- 264 Lakes Surveyed
- 72 Lakes Resurveyed
- 15 Aquatic Invasive Plant Species
- 60% of lakes contained one or more invasive species

Legend

- ★ No Invasive Species (115 Waterbodies)
- ✕ Invasive Species Present (174 Waterbodies)
- Waterbodies
- Counties

N

0 5 10 20 Miles

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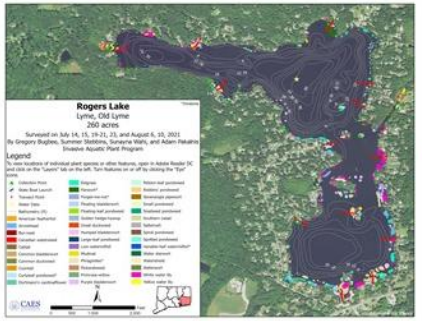
Explore CT AIS Data
Aquatic Plant Survey Results
Management and Prevention
Connecticut River Project
Herbarium
Publications
Resources
Contact Us

Search The Connecticut Agricultural Experiment Station

by Keyword

Rogers Lake, Lyme & Old Lyme

CAES IAPP Survey Results

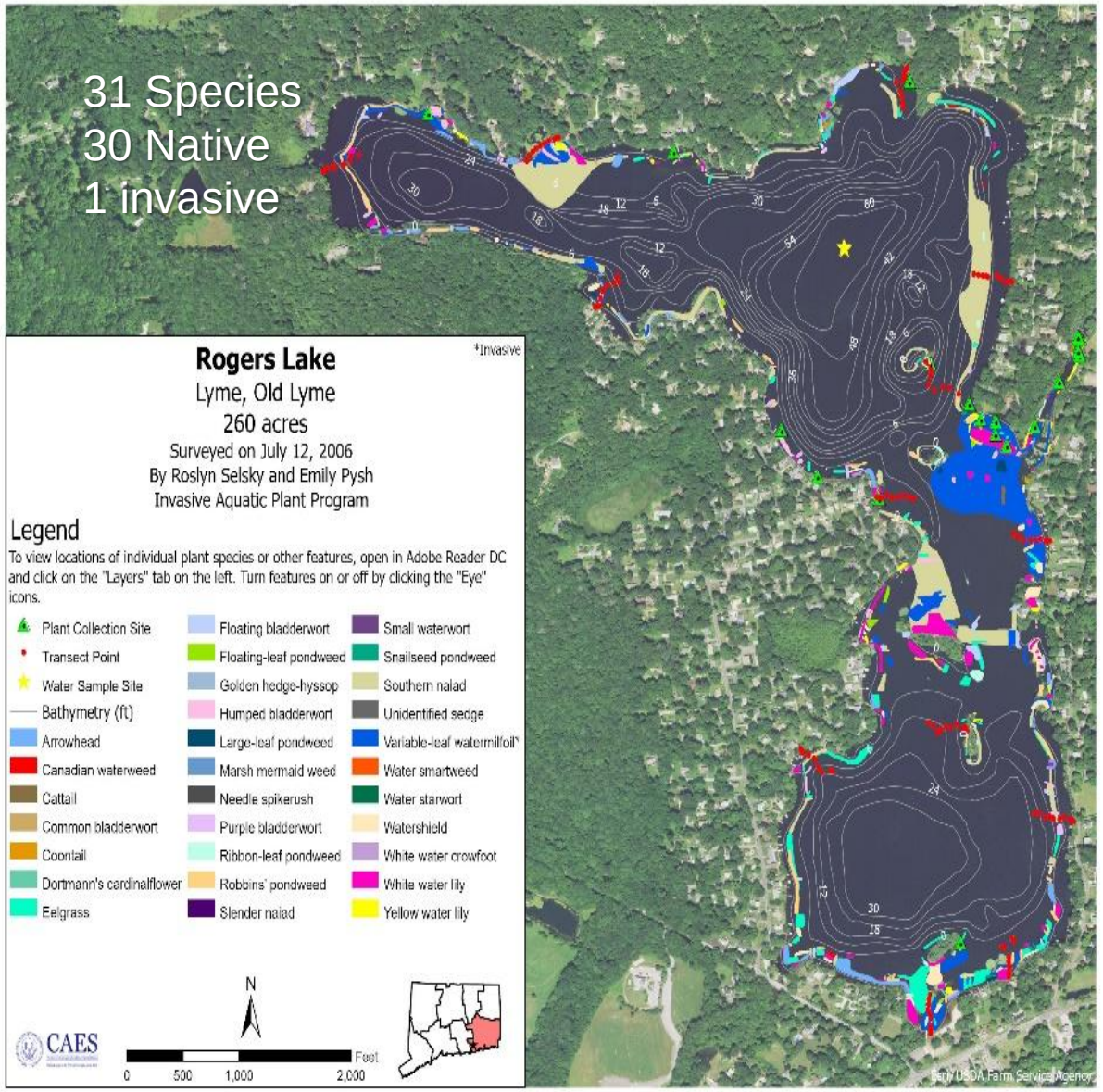


2021 Aquatic Plant Survey Map of Rogers Lake

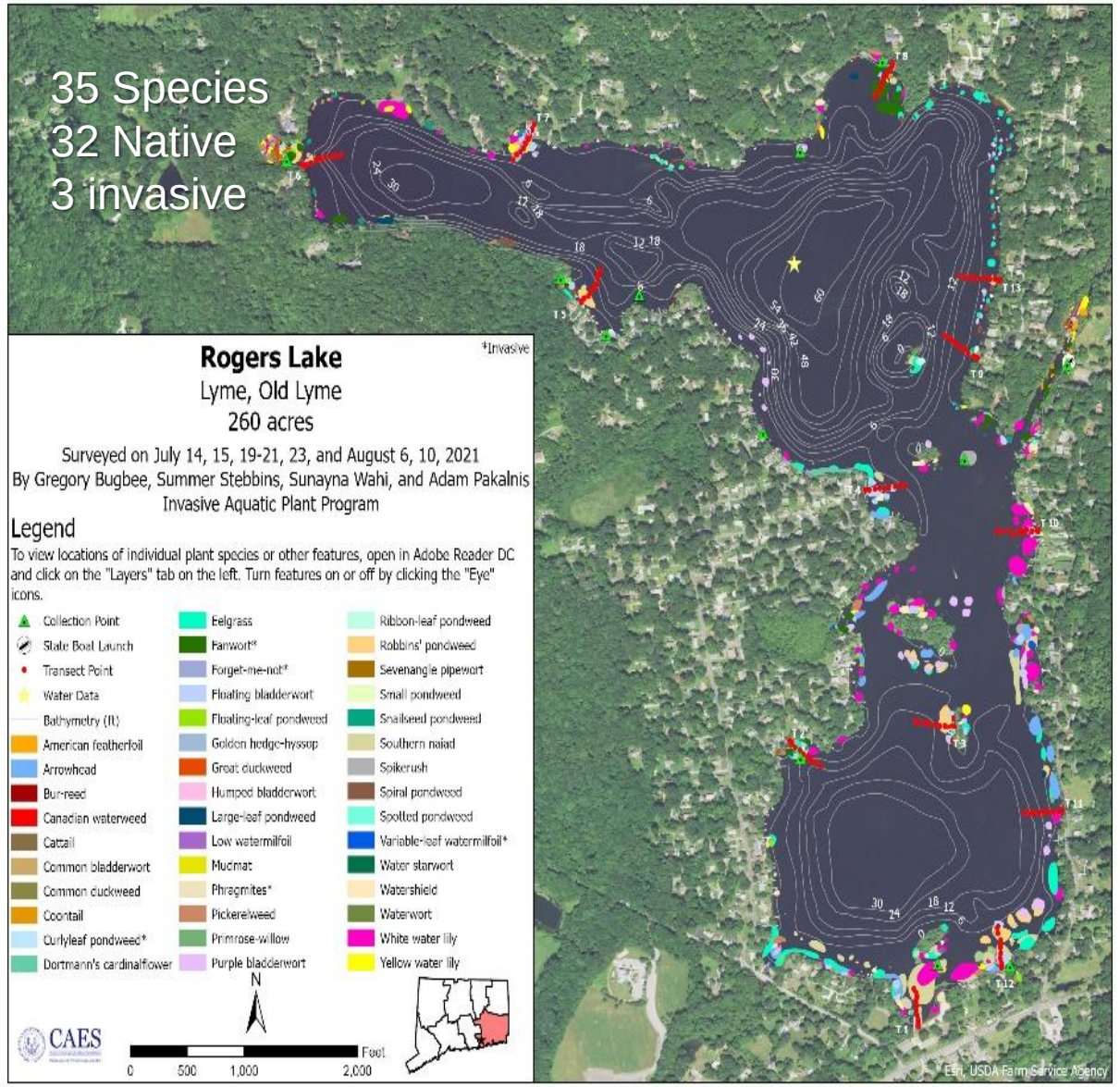
2021

2006

2006

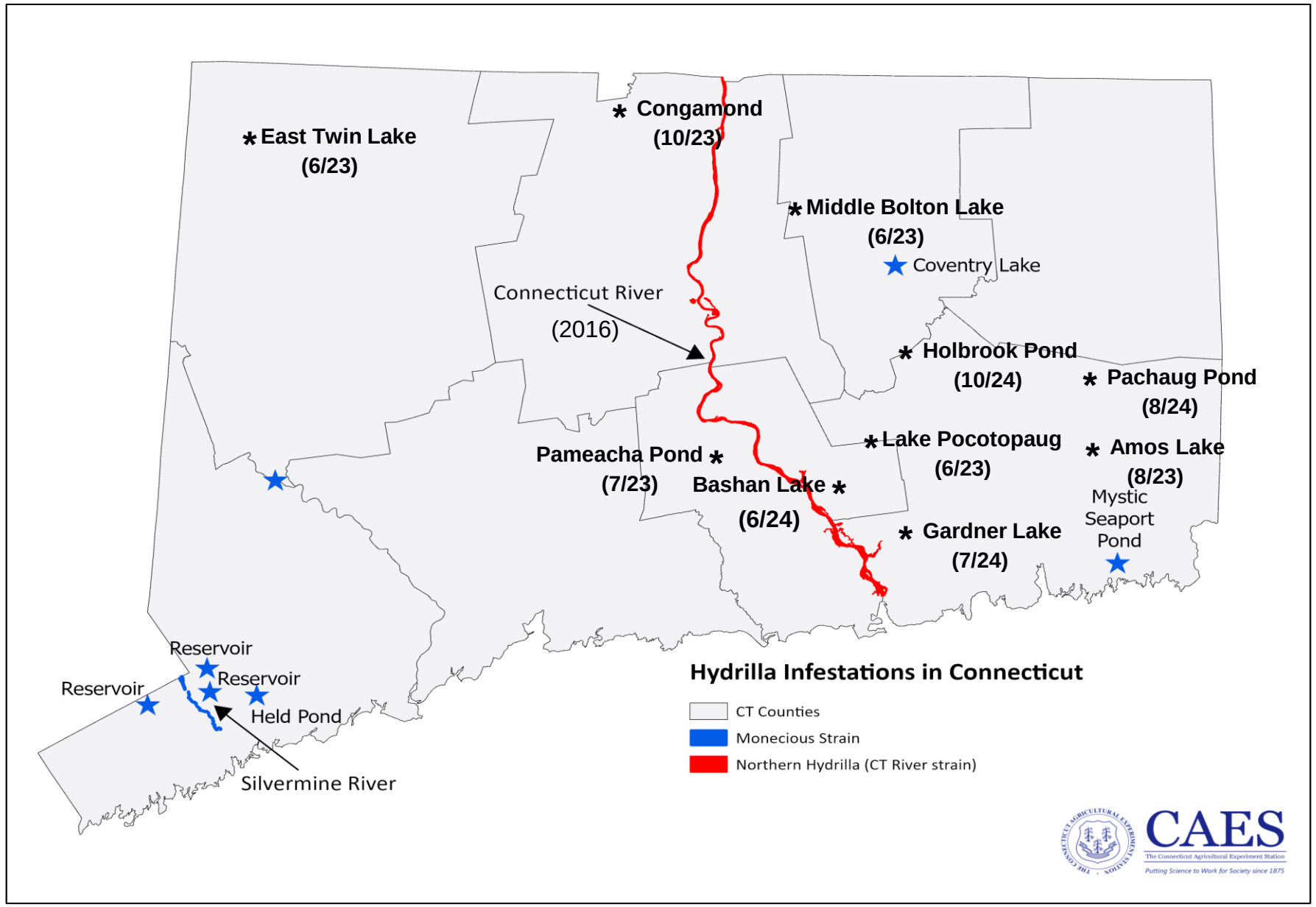

31 Species
30 Native
1 invasive
Rogers Lake
Lyme, Old Lyme
260 acres
Surveyed on July 12, 2006
By Roslyn Selsky and Emily Pysh
Invasive Aquatic Plant Program
*Invasive
Legend
To view locations of individual plant species or other features, open in Adobe Reader DC and click on the "Layers" tab on the left. Turn features on or off by clicking the "Eye" icons.
Plant Collection Site
Transect Point
Water Sample Site
Bathymetry (ft)
Arrowhead
Canadian waterweed
Cattail
Common bladderwort
Coontail
Dortmann's cardinalflower
Eelgrass
Floating bladderwort
Floating-leaf pondweed
Golden hedge-hyssop
Humped bladderwort
Large-leaf pondweed
Marsh mermaid weed
Needle spikerush
Purple bladderwort
Ribbon-leaf pondweed
Robbins' pondweed
Slender naiad
Small waterwort
Snailseed pondweed
Southern naiad
Unidentified sedge
Variable-leaf watermilfoil*
Water smartweed
Water starwort
Watershield
White water crowfoot
White water lily
Yellow water lily
N
CAES
Feet
0 500 1,000 2,000
Esri, USDA Farm Service Agency

2021


35 Species
32 Native
3 invasive
Rogers Lake
Lyme, Old Lyme
260 acres
Surveyed on July 14, 15, 19-21, 23, and August 6, 10, 2021
By Gregory Bugbee, Summer Stebbins, Sunayna Wahi, and Adam Pakalnis
Invasive Aquatic Plant Program
*Invasive
Legend
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
State Boat Launch
Transect Point
Water Data
Bathymetry (ft)
American featherfoil
Arrowhead
Bur-reed
Canadian waterweed
Cattail
Common bladderwort
Common duckweed
Coontail
Curlyleaf pondweed*
Dortmann's cardinalflower
Eelgrass
Fanwort*
Forget-me-not*
Floating bladderwort
Floating-leaf pondweed
Golden hedge-hyssop
Great duckweed
Humped bladderwort
Large-leaf pondweed
Low watermilfoil
Mudmat
Phragmites*
Pickerelweed
Primrose-willow
Purple bladderwort
Ribbon-leaf pondweed
Robbins' pondweed
Sevenangle pipewort
Small pondweed
Snailseed pondweed
Southern naiad
Spikerush
Spiral pondweed
Spotted pondweed
Variable-leaf watermilfoil*
Water starwort
Watershield
Waterwort
White water lily
Yellow water lily
N
CAES
Feet
0 500 1,000 2,000
Esri, USDA Farm Service Agency

THE SPREAD OF CONNECTICUT RIVER HYDRILLA

CT Hydrilla Detection Timeline



Movement by Watercraft

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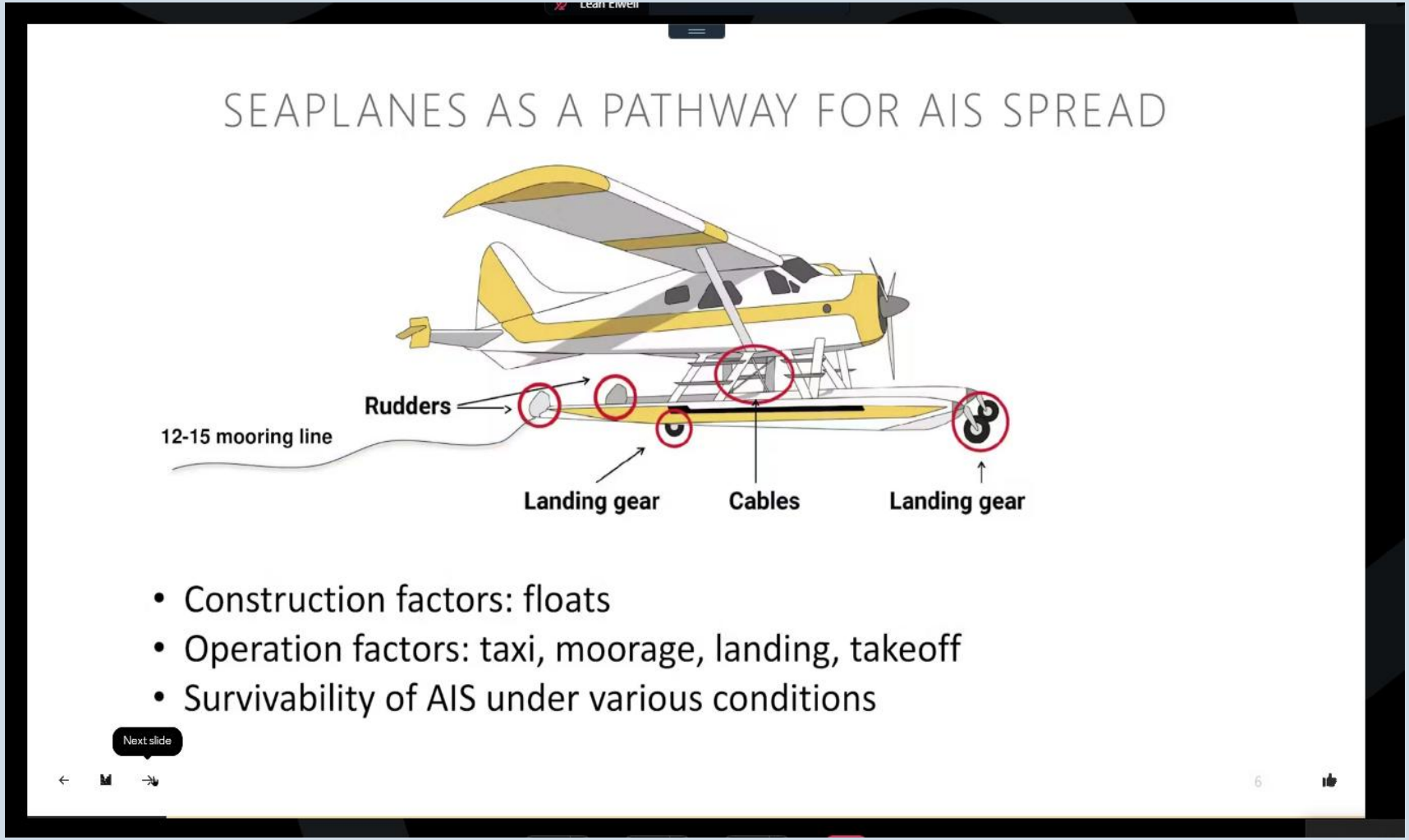
SEAPLANES



- **Flight plans are optional when flying under Visual Flight Rules (VFR)**
- **Only Illinois, Maine, Washington, and Wisconsin have AIS requirements**
- **Connecticut requires the owner of any aircraft to register with their municipality**

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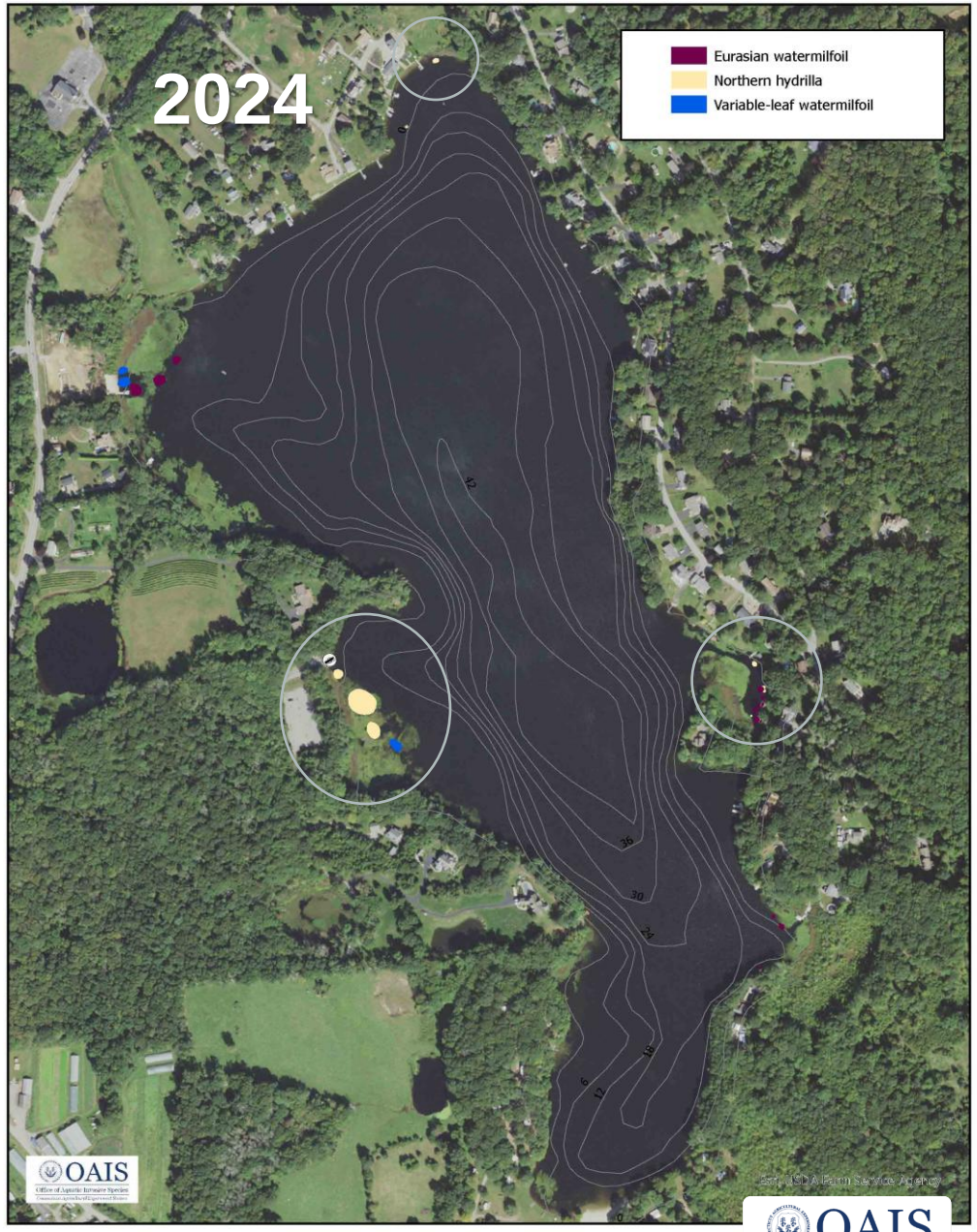
Amos Lake


2023


2024
Eurasian watermilfoil
Northern hydrilla
Variable-leaf watermilfoil
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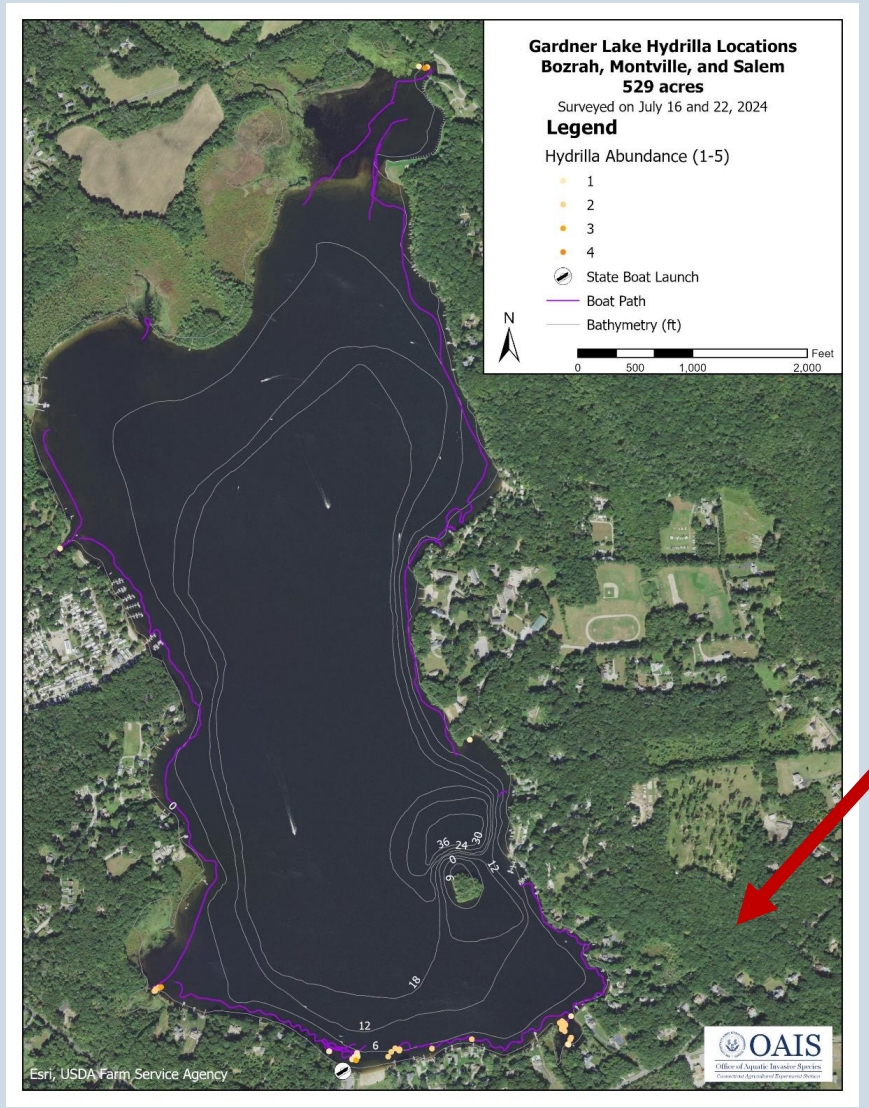
Gardner Lake



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Pachaug Pond

Ultralow Grass Carp Stocking

Leveraging Feeding Preference

Table 1. Crass Carp Feeding Preferences

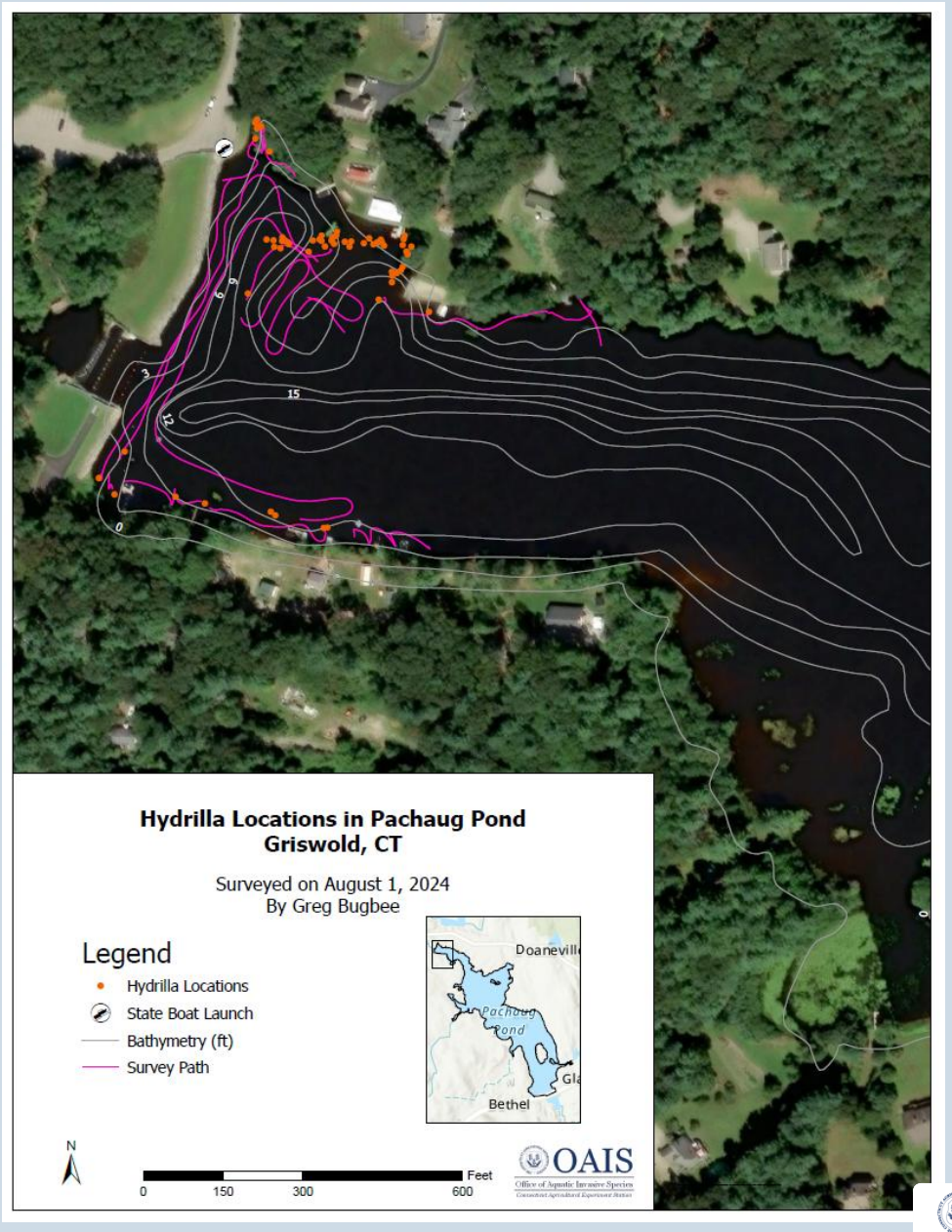
Order of Preference	Common Name	Scientific Name
1	Hydrilla *	*Hydrilla verticillata* (L.f.) Royle
2	Muskgrass	*Chara* spp.
3	Southern Waternymph; Southern Naiad	*Najas guadalupensis* (Spreng.) Magnus
4	Brazilian Waterweed; Brazilian Egeria; Brazilian Elodea	*Egeria densa* Planch.
5	Watermeal	*Wolffia* spp.
6	Duckweed	*Lemna* spp.; *Spirodela* spp.; *Landoltia* spp.
7	Azolla; Waterfern; Mosquitofern	*Azolla* spp.
8	Pondweeds	*Potamogeton* spp.; *Stuckenia pectinata* (L.) Börner; *Zannichellia palustris* L.
9	Coontail	*Ceratophyllum demersum* L.
10	Torpedograss	*Panicum repens* L.
11	Cattail	*Typha* spp.
12	Crab's-claw; Wateraloe	*Stratiotes aloides* L
13	Watercress	*Nasturtium* spp.
14	Eurasian Watermilfoil	*Myriophyllum spicatum* L.
15	Tapegrass; American Eelgrass	*Vallisneria americana* Michx.
16	Parrotfeather	*Myriophyllum aquaticum* (Vell.) Verdc.
17	Waterhyacinth	*Eichhornia crassipes* (Mart.) Solms
18	Waterlettuce	*Pistia stratiotes* L.
19	Waterlily	*Nymphaea* spp.
20	Spatterdock	*Nuphar lutea* ssp. advena (Ait.) Kartesz & Gandhi

*

UF FLORIDA IFAS Extension

Grass Carp: A Fish for Biological Management of Hydrilla and Other Aquatic Weeds in Florida[1]

David L. Sutton, Vernon V. Vandiver Jr., and Jeffrey E. Hill[2]



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Lake Pocotopaug

"TAKE A RAKE TO THE LAKE"

Hydrilla Raking Contest!

Sunday, September 22nd

RULES:

1) Harvesting of Hydrilla can begin at sunrise on Sept. 22nd and must come from Lake Pocotopaug.

2) Collected Hydrilla must be in trash bags no larger than 45 gallon size or a container approx. 19Lx14Wx14H for weighing purposes on a scale. Harvested Hydrilla not in proper bags or containers will not be accepted.

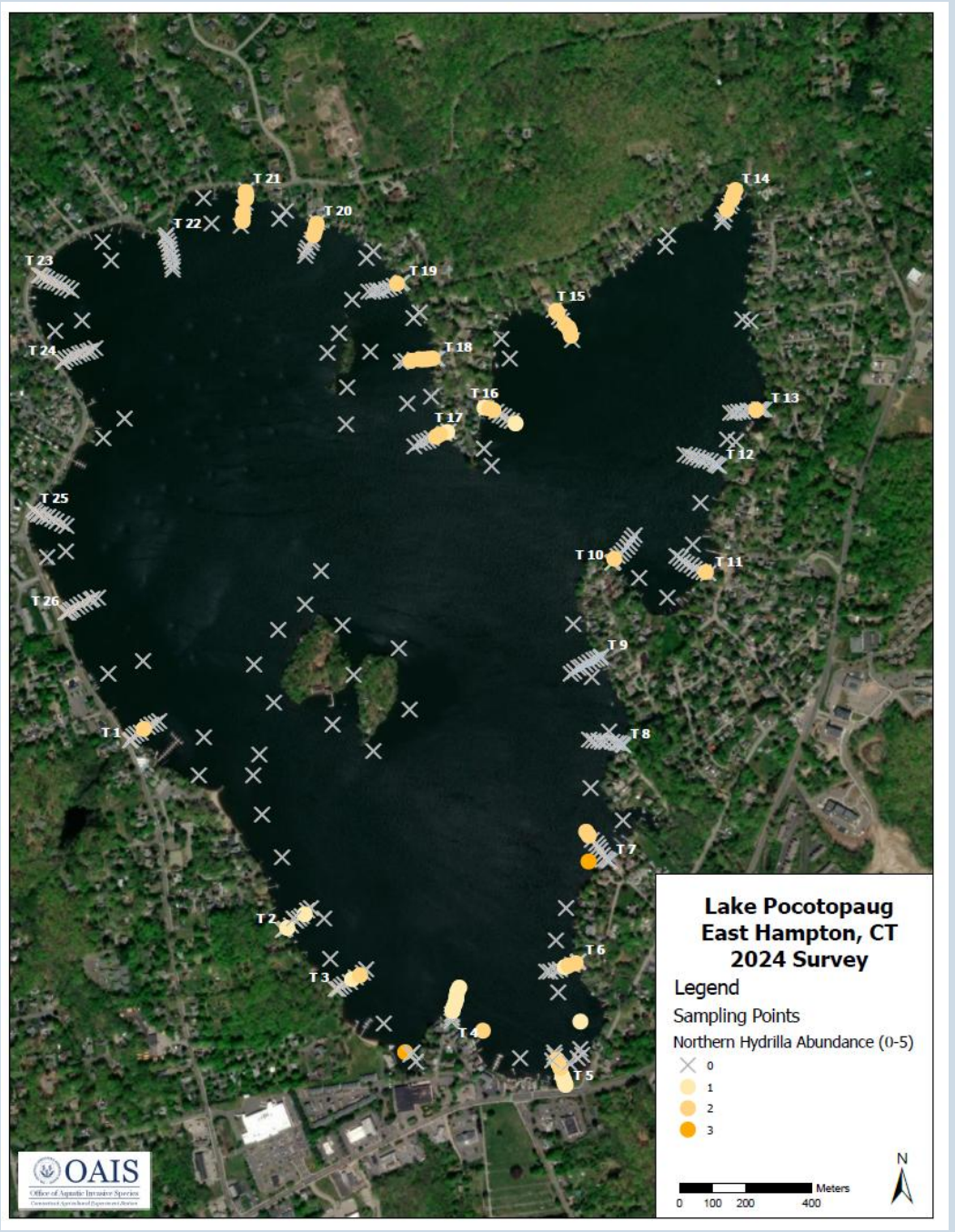
3) Weigh-in will occur between the hours of 12pm-4pm on Sunday Sept.22, 2024 at Sears Park. Only one delivery to the weigh station of collected Hydrilla is allowed.

4) Judges will collect names, addresses and record weights. All decisions by Judges are final.

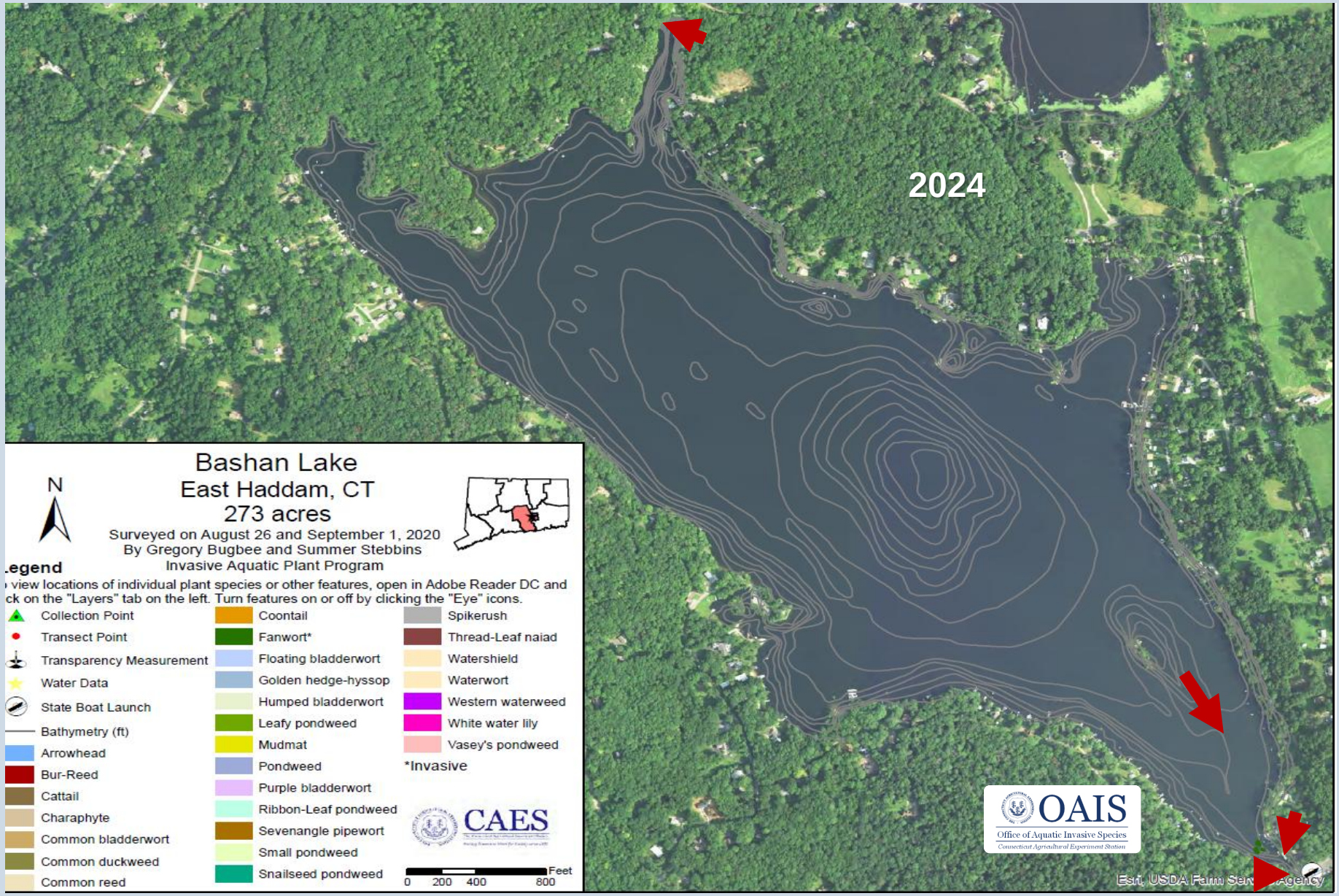
5) Three prizes will be awarded of 1st place $500, 2nd place $300 and third place $200. Prize winners will be announced at 4:15pm on the 22nd, unless other arrangements are made. In the event of a tie weight, prizes will be awarded to the first recorded person/group. Prize checks will be mailed to the winners within (5) days.

6) The Conservation Lake Commission and Friends of the Lake reserve the right to publish names and pictures of the prize winners

For more information email ryenkner3@comcast.net or call Rob Yenkner 860-638-9874



Hand Pulling Pioneer Infestation



Bashan Lake, East Haddam

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Bashan Lake, East Haddam

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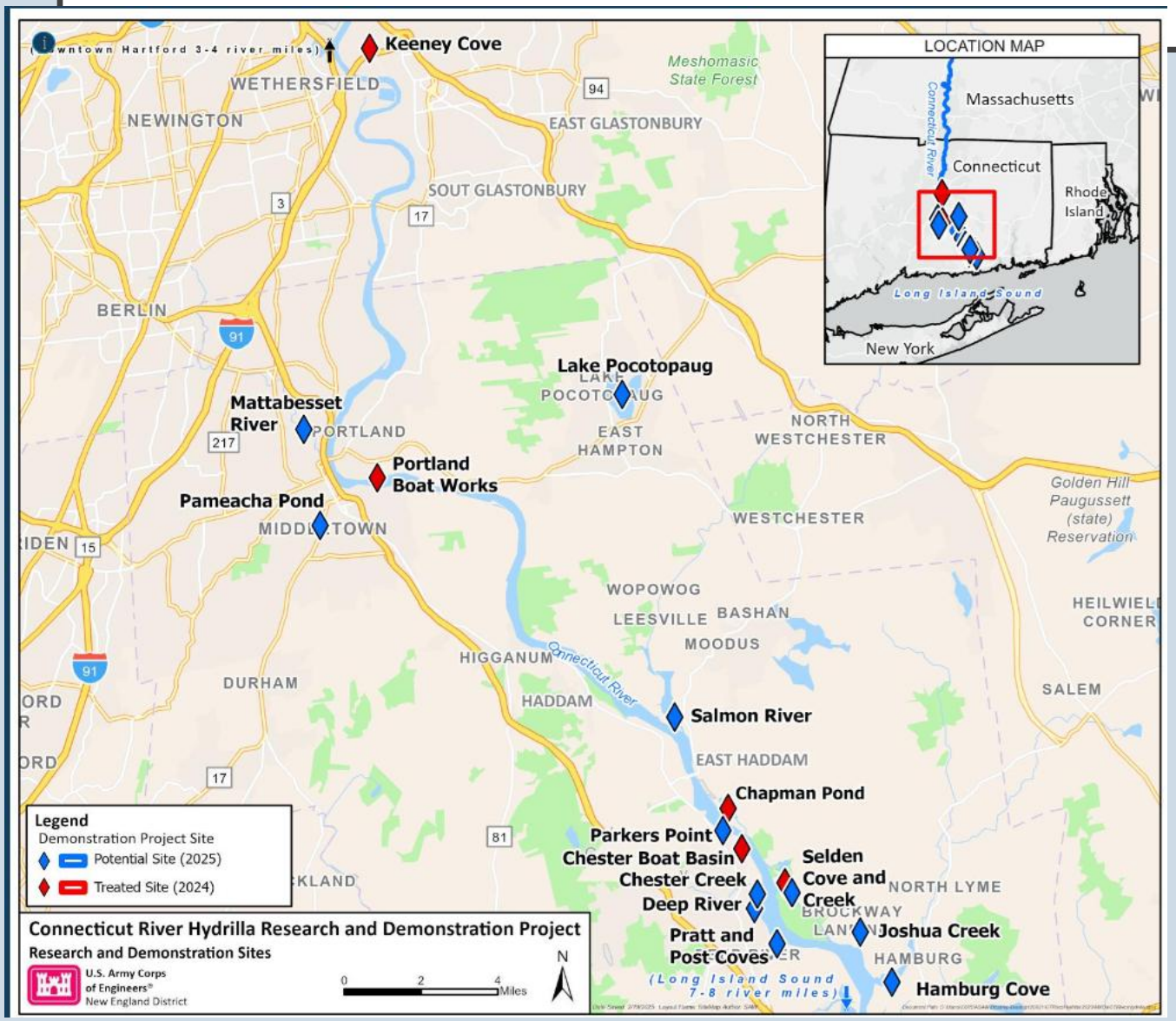
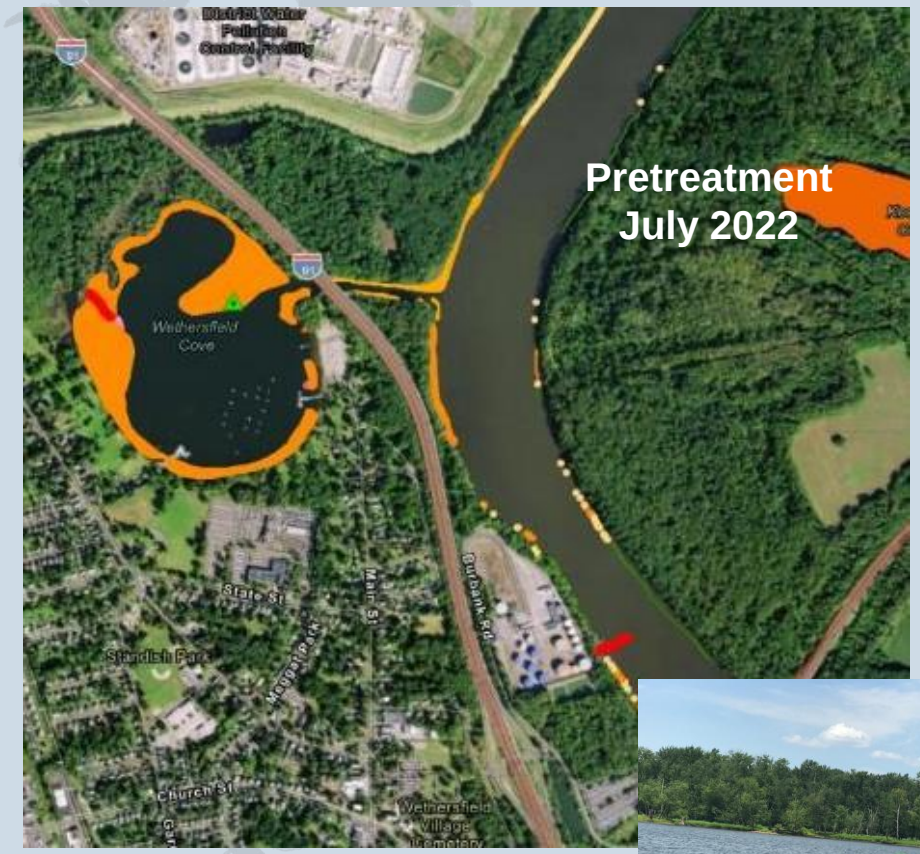
Bashan Lake, East Haddam

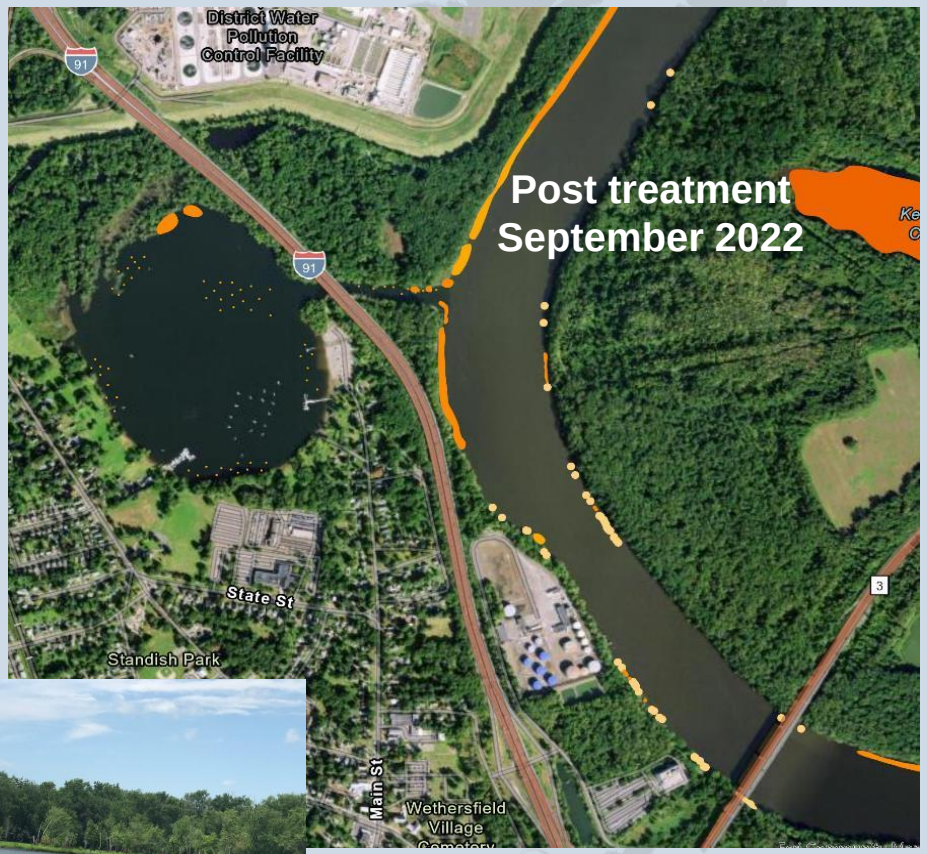
USACE Hydrilla Control Demonstration Project



Wethersfield Cove

Treated with Diquat - 2022, 2023, 2024*





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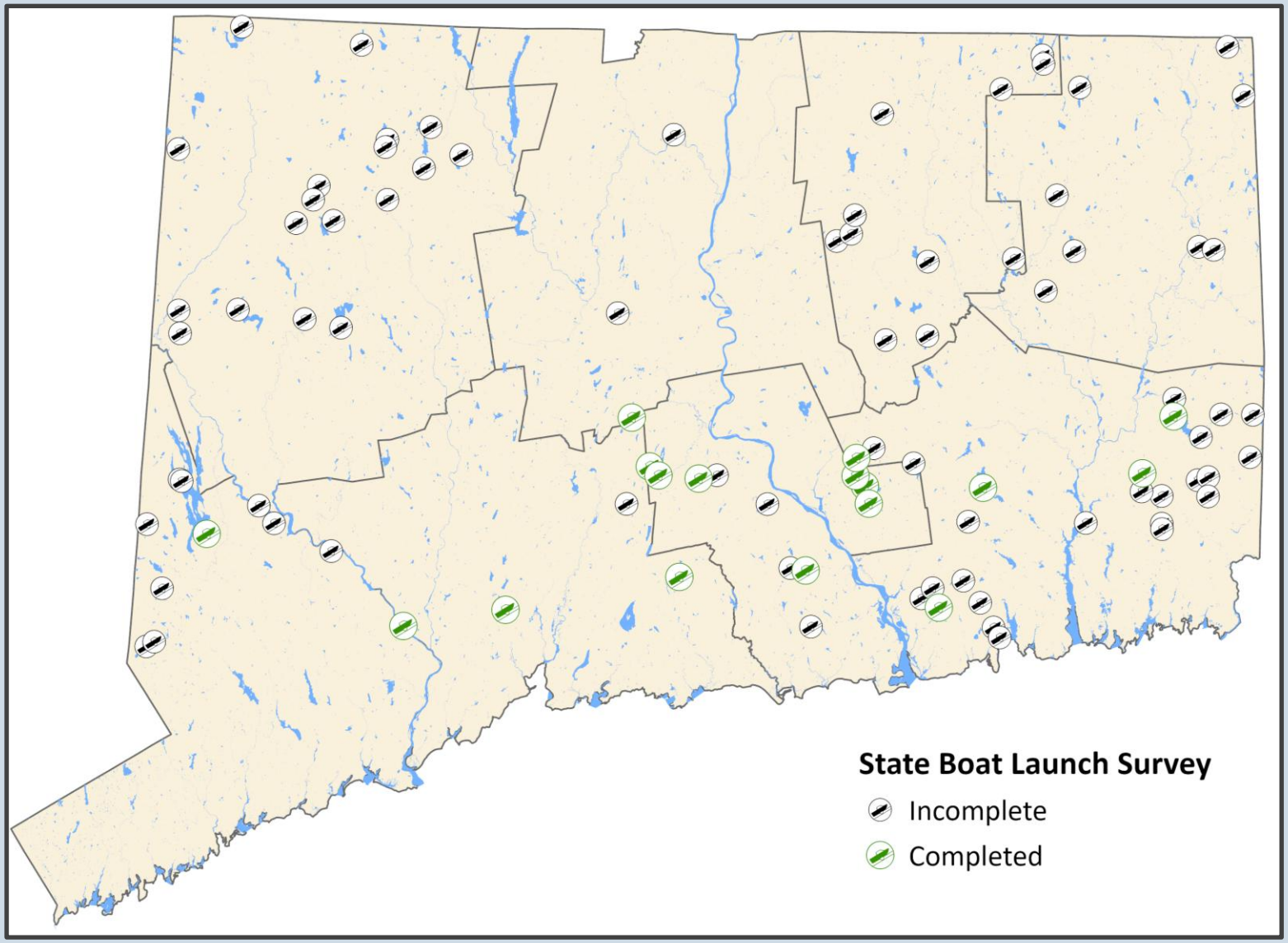
OAIS Survey of all State Boat Launches for Hydrilla

- Funded by CT DEEP AIS grant
- 94 State boat launches
  - Trailer & carry in
- 1 acre radius
- 17 completed (18%) in 2024
  - 4 detections
    - Only 1 new



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CT DEEP AIS Grants

Aquatic Invasive Species Grant Release

CT DEEP Aquatic Invasive Species (AIS) Grant Request for Proposals (RFP) Release

The Connecticut Department of Energy and Environmental Protection (DEEP) has released the Aquatic Invasive Species (AIS) Grant for the year. The grant aims to provide funds to eligible organizations and individuals to prevent the spread of AIS in Connecticut's inland and marine waters.

Deadline to submit questions to CT DEEP is November 4, 2024

Deadline to apply is December 6, 2024

CT DEEP AIS Grant Webpage

CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION

AQUATIC INVASIVE SPECIES (AIS) STAMP

Changes that will affect the 2025 boating season.

https://portal.ct.gov/DEEP/Boating/Boating-and-Paddling

2024 AIS STAMP OVERVIEW

- AIS Stamp was included in the 2024 Connecticut vessel registration, if paid prior toSeptember 30, 2024.
- Vessel operators registering their vessel after October 1, 2024, must purchase through the Online Sportsmen Licensing System.
- Out-if-state registered vessel operators must purchase through the Online Sportsmen Licensing System
- The AIS Stamp expires at the end of the calendar year (December 31).

2025 AIS STAMP CHANGES (Effective October 1, 2024)

- These options are available for CT residents and non-residents
  - Option 1- $7 individual operator
    - The AIS Stamp is assigned to the individual purchasing the stamp.
    - It will print on the Sportsmen Conservation License as a privilege (like a fishing or hunting license)
  - Option 2- $20 decal to cover the individual plus all operators of a vessel
    - The decal must be affixed to the vessel and will cover any operator of that vessel
    - The total cost will be $25 which includes a processing fee
    - The decal will be mailed to the customer and must be adhered to the vessel.
    - The AIS Stamp will also print on the Sportsmen Conservation License as a privilege (like a fishing or hunting license)to cover the purchaser on additional vessels.

INSTRUCTIONS FOR APPLYING AIS THE STAMP DECAL

To properly use the AIS Stamp decal, it must be placed amidship on the port side of your vessel. You have the option of attaching it to the hull of the vessel or at the operator's station.

WHERE DO THE AIS STAMP FEES GO?

All fees collected are deposited into the "Connecticut Lakes, Rivers and Ponds Preservation Account". This account provides funding through a competitive grant process to state and municipal agencies, as well as non-profit organizations. These funds are utilized to conduct research on CT's lakes, rivers, and ponds, provide public education, and enhance public awareness. This ultimately helps improve the management of natural resources throughout the state.

If you have additional questions, contact DEEP Boating at deep.boating@ct.gov or 860-434-8638.

WHO NEEDS AN AIS STAMP?

- Any person who operates a vessel on Connecticut inland waters and is required to display a registration decal, issued by this state or another state must have a CT AIS Stamp.
- For CT residents, until September 30, 2024, the AIS Stamp will be included with your Connecticut vessel registration.
- After October 1, 2024, CT residents needing an AIS Stamp or vessel decal must purchase through the Online Sportsmen Licensing System.
- For vessels registered out-of-state, the AIS Stamp must be purchased through the Online Sportsmen Licensing System.
- The AIS Stamp will be valid for the calendar year it was issued.
- The demarcation line for inland waters is the same as that used for inland fishing licenses.

How to purchase your AIS Stamp

Beginning October 1, 2024, you must obtain your AIS Stamp on the Sportsmen Online Licensing System- https://ct.aspirafocus.com/internetsales

USACE Cost Share Funding

33 U.S. Code § 610
Control of aquatic plant growths and invasive species

50/50 Cost Share
50% of cost is reimbursed when project is complete

$75 million
for each fiscal year 2021 through 2029

USACE – CAES
project partnership agreement is currently in the works

Cost share funding should be available in 2026

Federally *funded projects* ***cannot*** *be reimbursed*

USACE Cost Share Funding

What types of projects does it cover?

AIS Prevention & Control

All Aquatic Invasive Species but...

Hydrilla is a USACE **priority**

Project Examples

AIS Management

Herbicide Treatments

Harvesting

Benthic Blankets

Monitoring & Survey Work

Boat Wash Stations

Boat Inspectors

Outreach & Education

USACE Cost Share Funding

Project Reimbursement Process

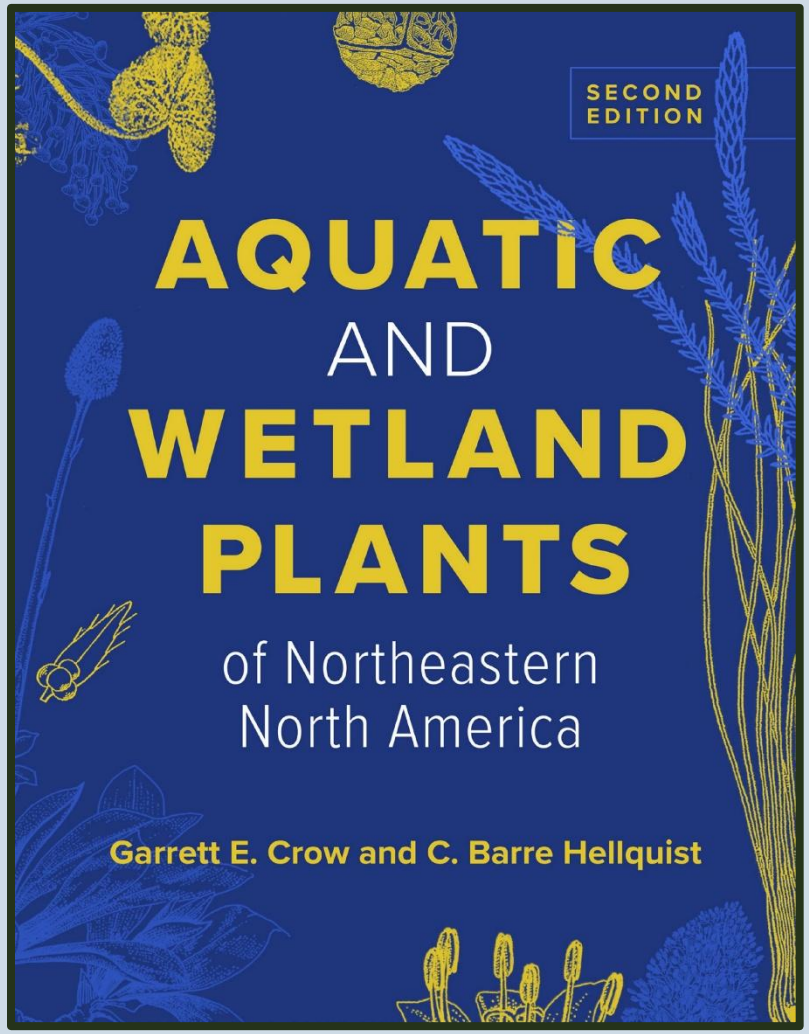
1. **Partners submit project proposals**
   - ***Future*** webpage on CAES OAIS website will include information and instructions

2. **CAES OAIS submits list of projects to USACE every Jan/Feb**

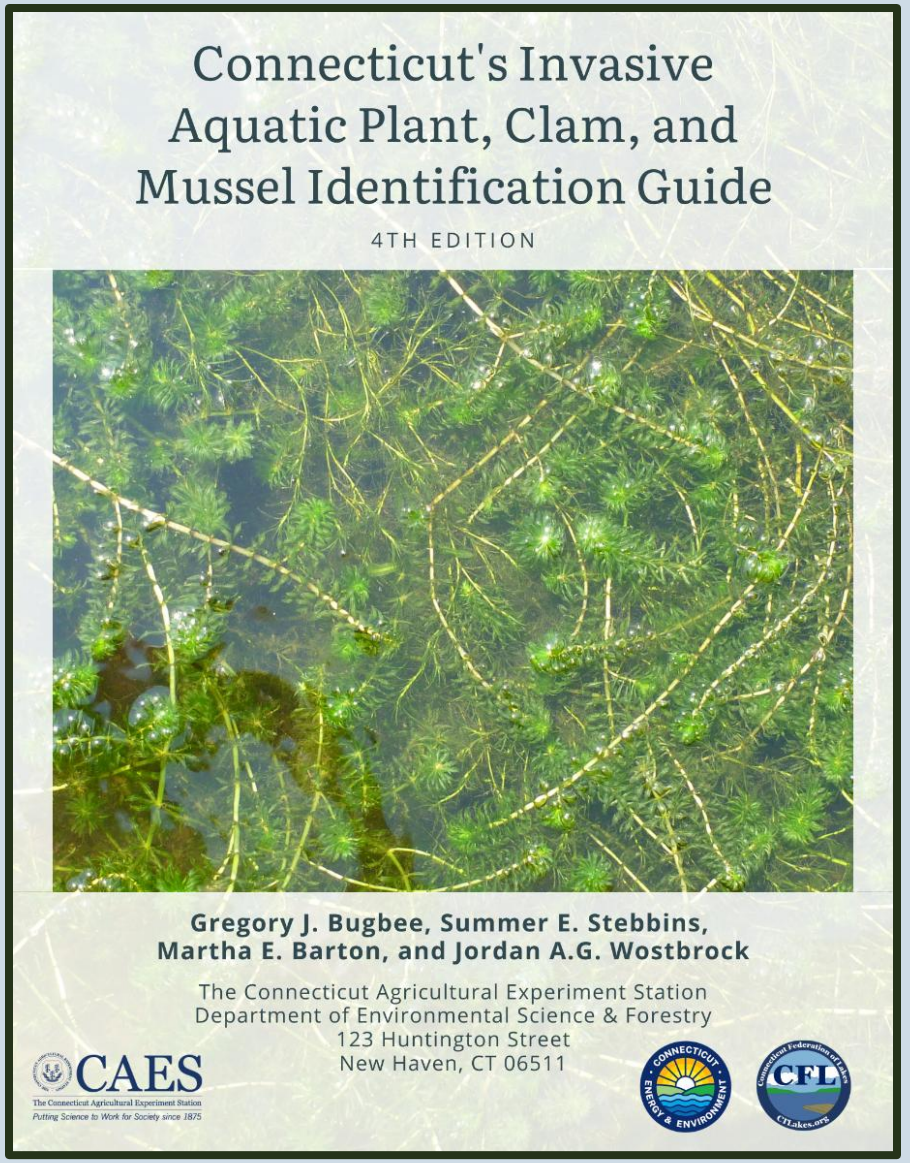
3. **USACE approves projects for funding**
   - CAES OAIS sends confirmations to partner groups and creates contracts with partners

4. **When project is complete, partners receive 50% reimbursement from CAES**

Invasive Aquatic Plant Guide



https://uwpress.wisc.edu/books/5921.htm



https://tinyurl.com/AISGuide

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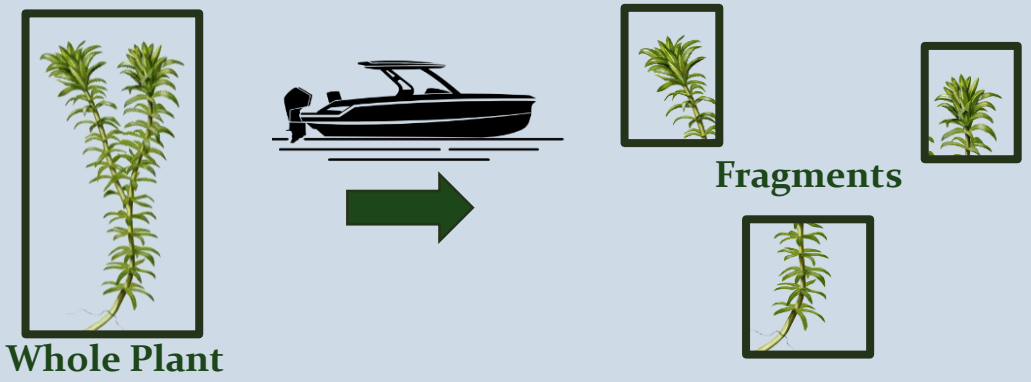
Plant Terms (Reproduction)

- **Fragment** - plant part that breaks off and grows to form a genetically identical plant



- **Tuber** - modified, underground stem for starch storage and form of vegetative reproduction

- **Turion** - a modified leaf bud on a stem or shoot, form of vegetative reproduction

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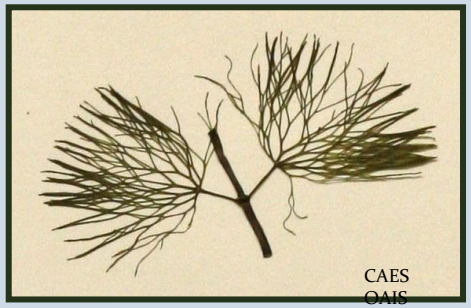
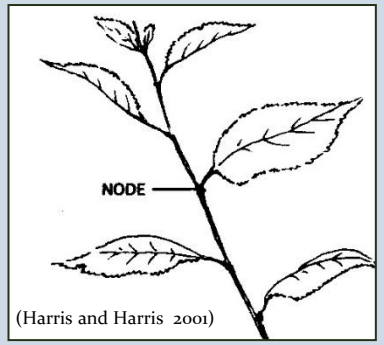
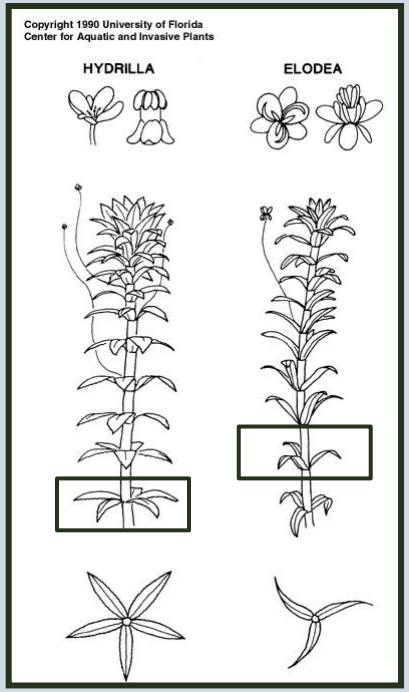
Plant Terms (Leaves)



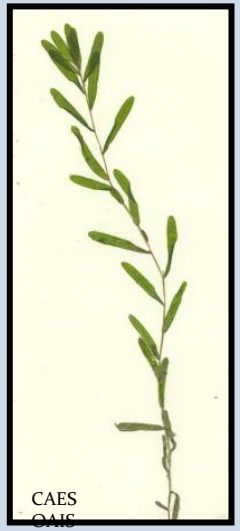
- **Node** - the point where leaves or branches attach to the stem



- **Opposite** - across from each other at the same node



- **Alternate** - one leaf per node on different sides of the stem



- **Whorled** - three or more leaves at the same node, forming a ring-like arrangement

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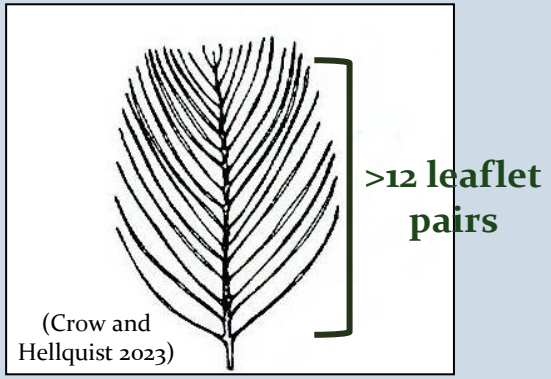
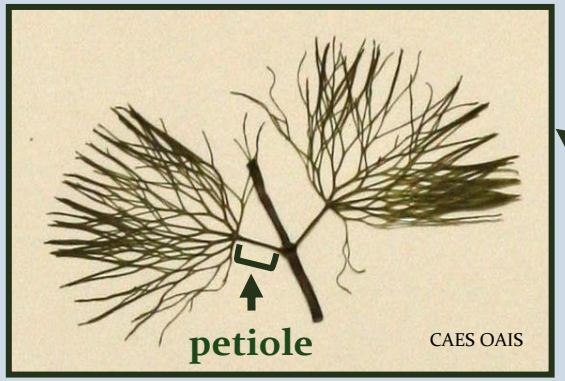
Plant Terms (Leaves)

- **Leaflet** – one of many leaf-like looking structures that when combined make one leaf





- **Petiole** - leaf stalk

- **Rosette** - a cluster of leaves that surround the stem at the same point

- **Tooth/Teeth** – sharp points along a leaf margin

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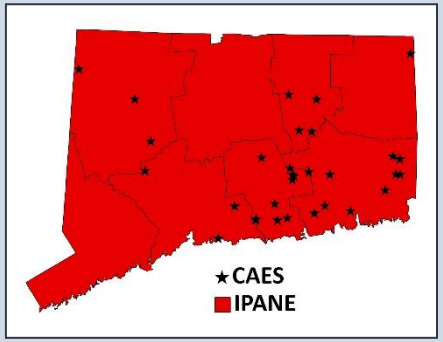
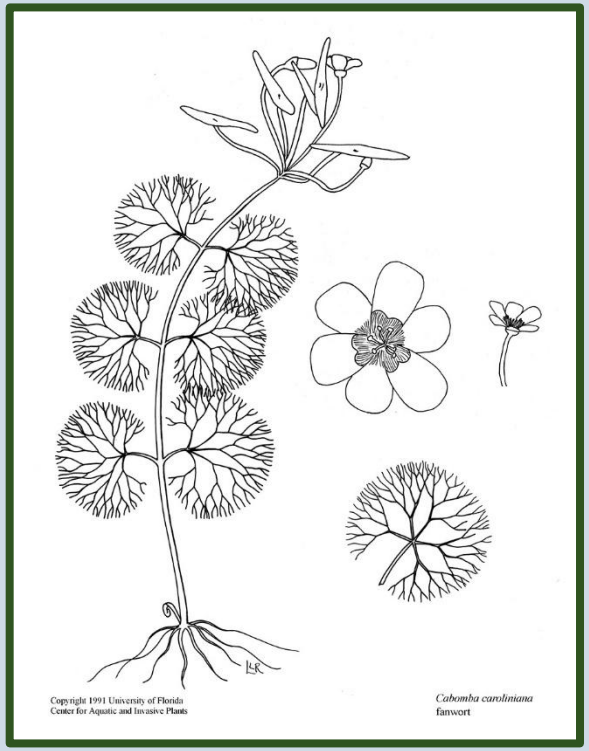
Fanwort
Cabomba caroliniana



Key Info:

- Introduced to CT in 1937
- Submersed plant
- Grows in 3-10 feet of water
- Spreads through fragmentation



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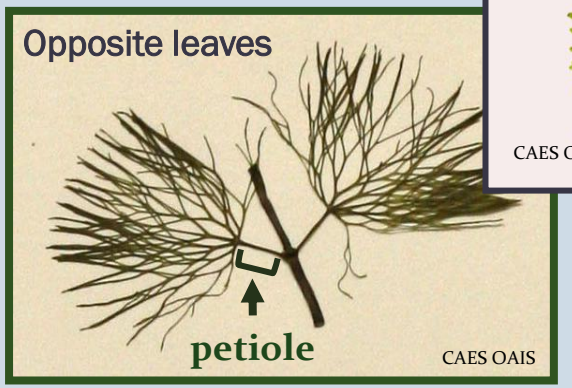
Fanwort
Cabomba caroliniana

Key Features:

- Bright green, looks like a pipe cleaner
- Flowers: white, solitary
- Leaves: opposite, long petioles, fan-like



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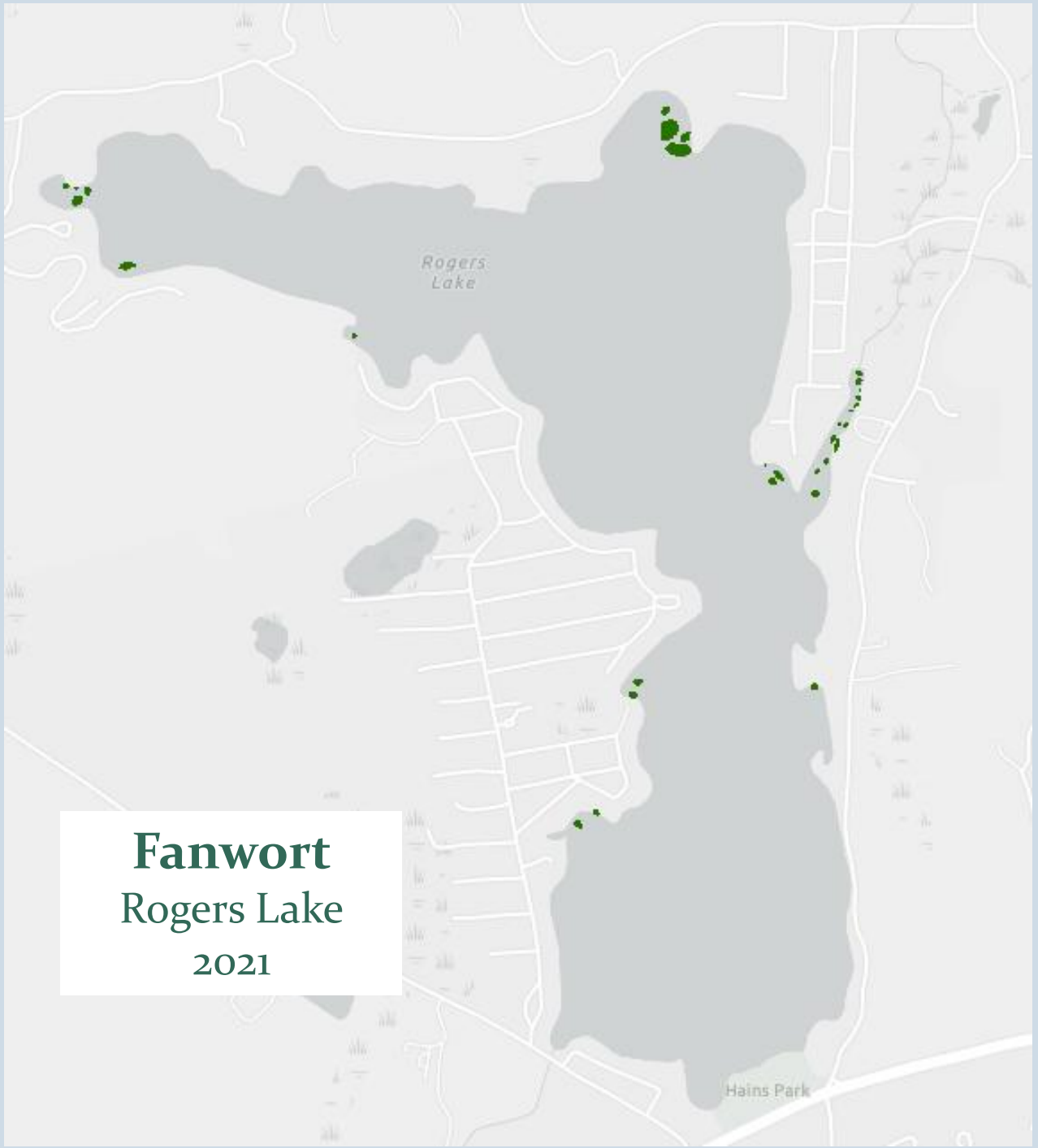

Fanwort

Rogers Lake

2021

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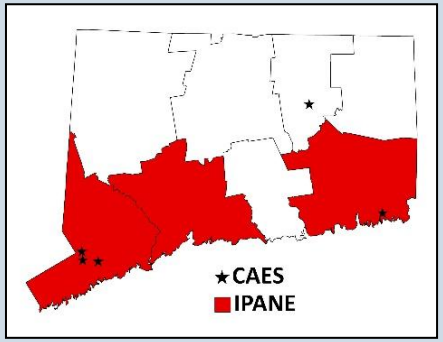
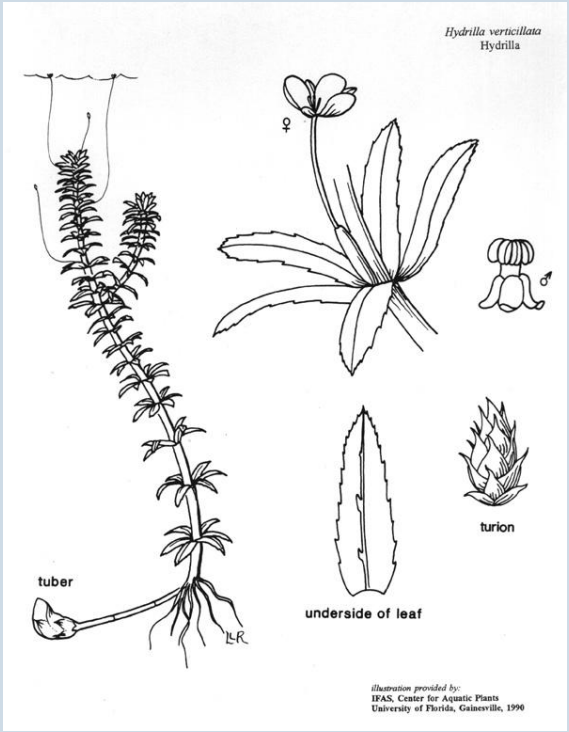
Hydrilla
Hydrilla verticillata



Key Info:

- Introduced to CT in 1989
- Spreads through turions, tubers, fragmentation
- Commonly confused with native waterweed



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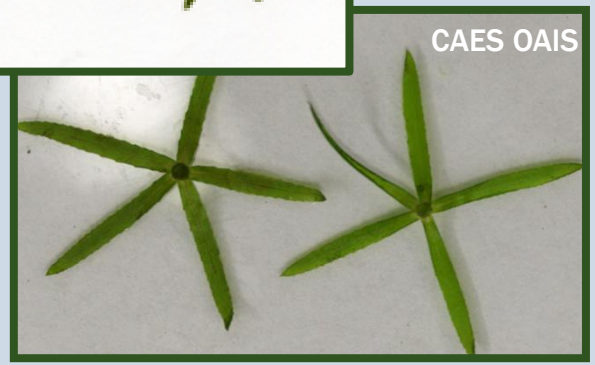
Hydrilla
Hydrilla verticillata



Key Features:

- Whorls of ≥ 5 leaves
- Submersed plant
- May have turions or tubers

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Wandering Hydrilla
"Monoecious Hydrilla"

- Whorls of 5
- Less robust
- Tubers
- Less turions
- Coventry Lake
- Silvermine River

Hydrilla verticillata* subsp. *peregrina

Northern Hydrilla
"CT River Hydrilla"

- Whorls ≥ 5
- Very robust
- No tubers
- Abundant turions
- CT River, 10 other waterbodies*

Hydrilla verticillata* subsp. *lithuanica

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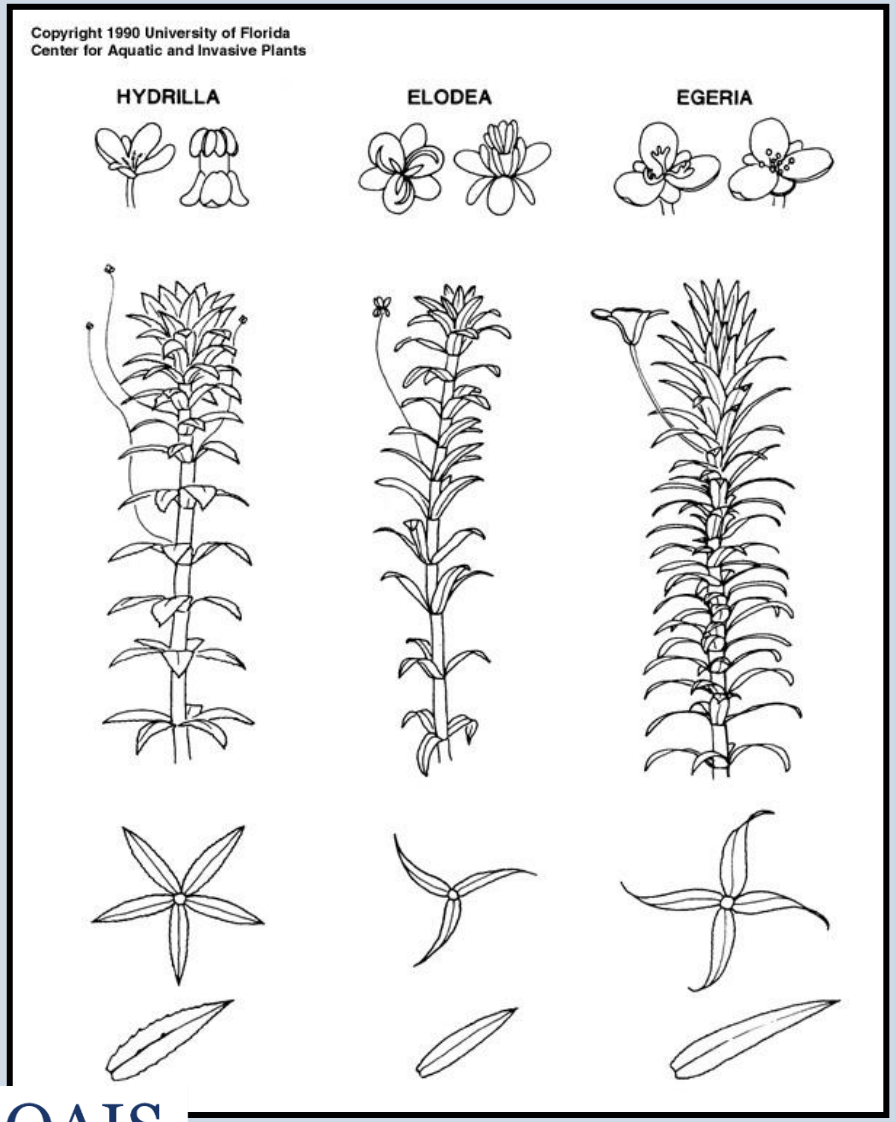
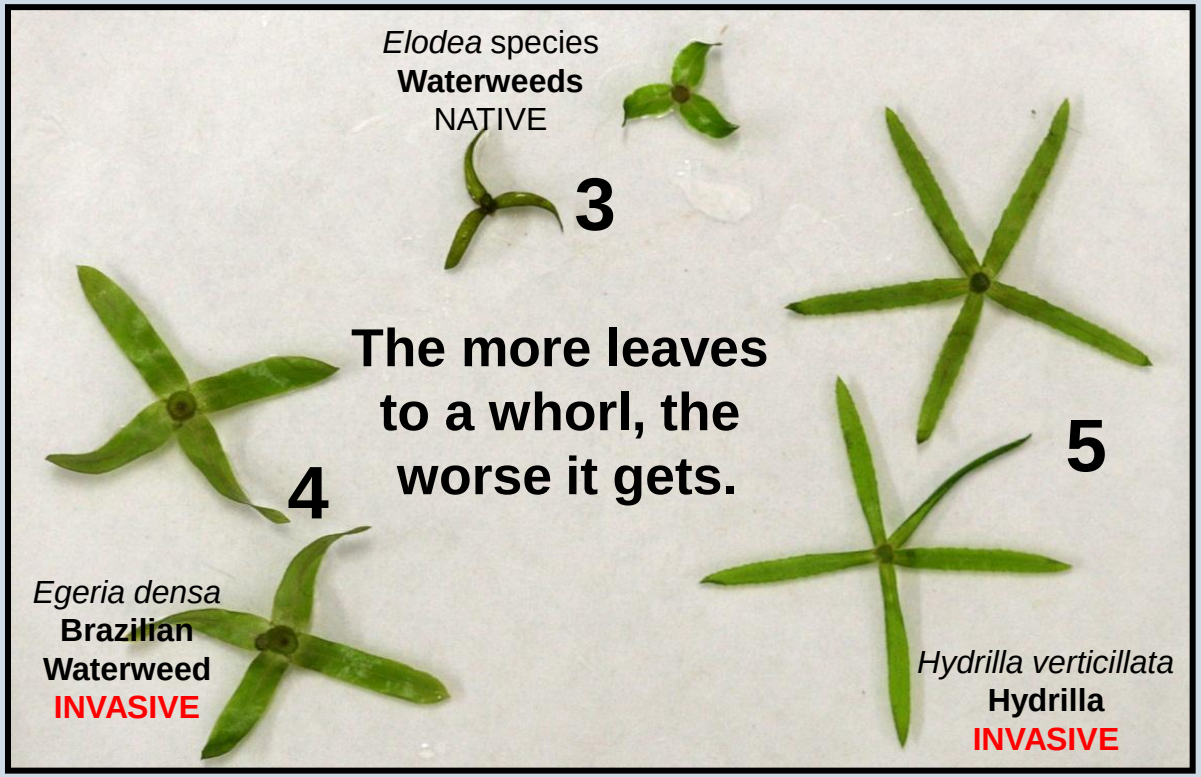
Commonly Confused Species





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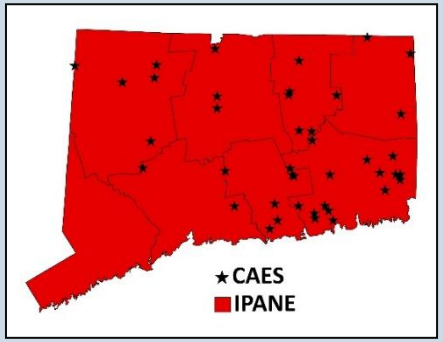
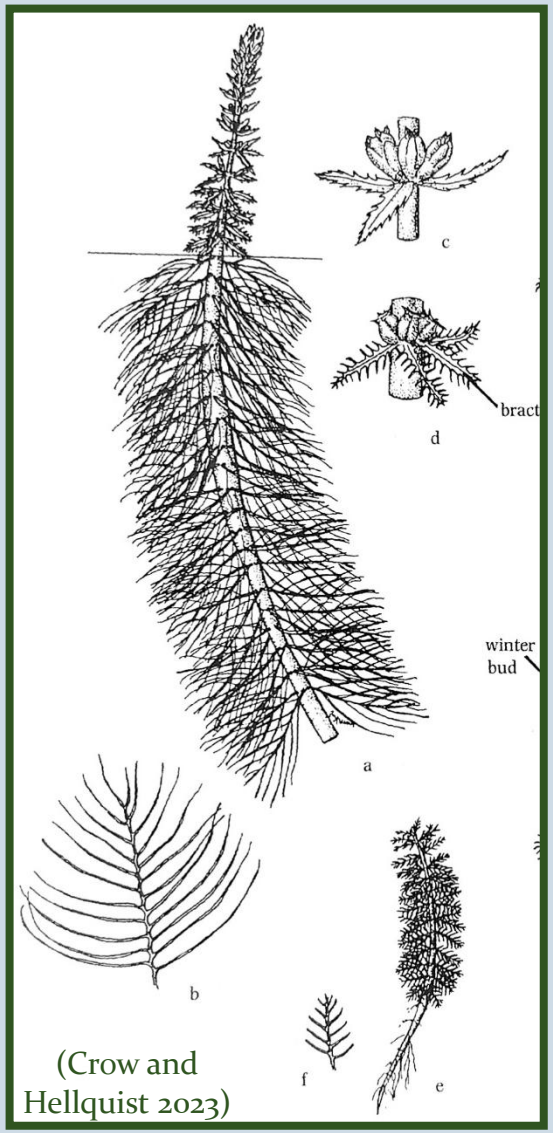
Variable-leaf watermilfoil
Myriophyllum heterophyllum



Key Info:

- Introduced to CT in 1932
- Variable appearance, sometimes reddish, sometimes green
- Spreads through fragmentation



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Variable-leaf watermilfoil
Myriophyllum heterophyllum

Key Features:

- Thick flower spike
- Red or green Stem
- Triangular leaf
- Leaves < 1 inch apart
- ≤ 11 leaflet pairs

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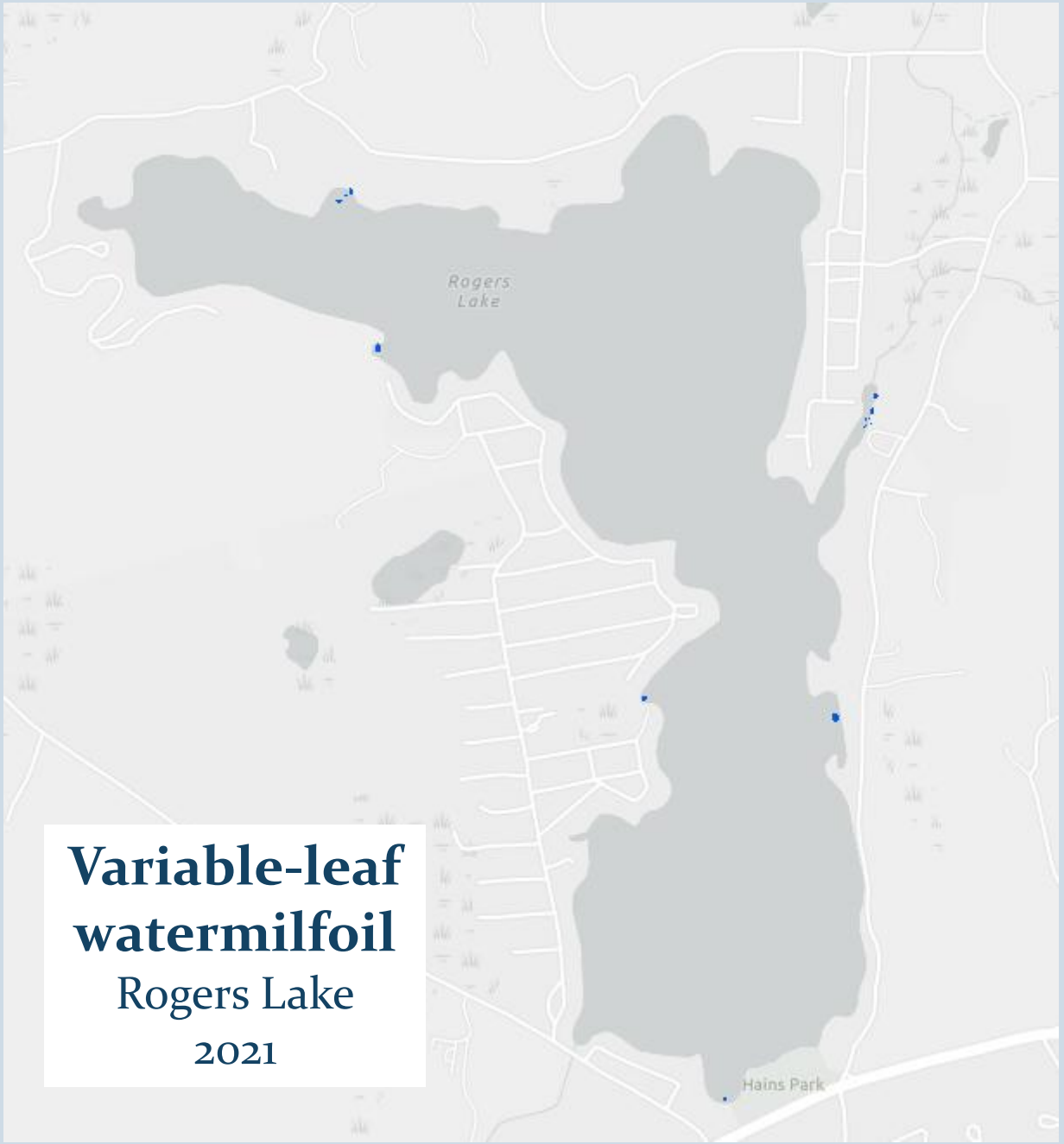

Variable-leaf watermilfoil

Rogers Lake

2021

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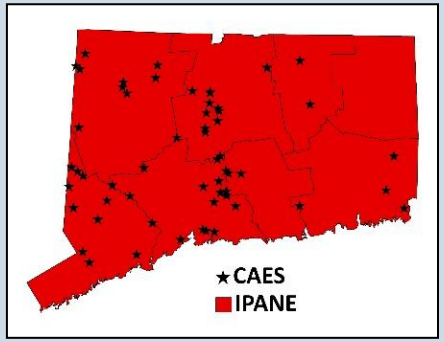
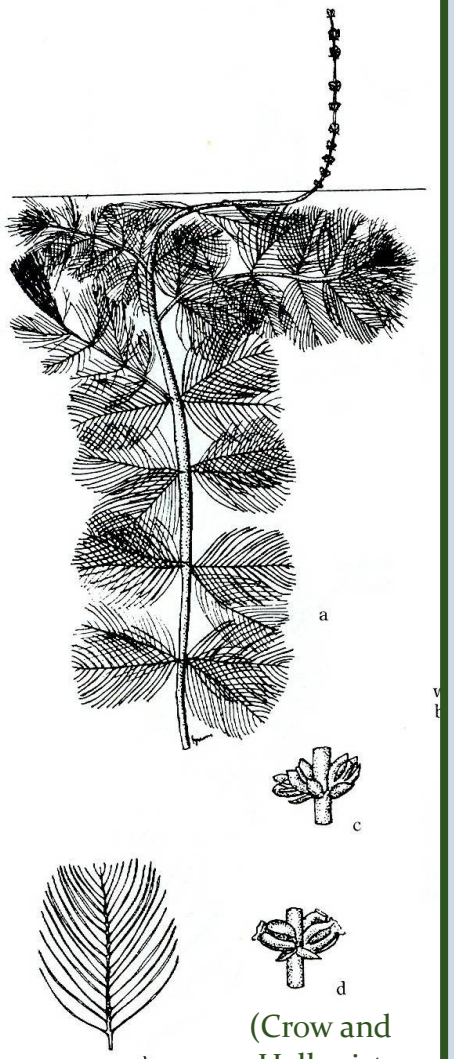
Eurasian watermilfoil
Myriophyllum spicatum



Key Info:

- Introduced to CT in 1979
- Most common invasive aquatic plant in CT and northern U.S.
- Spreads through fragmentation



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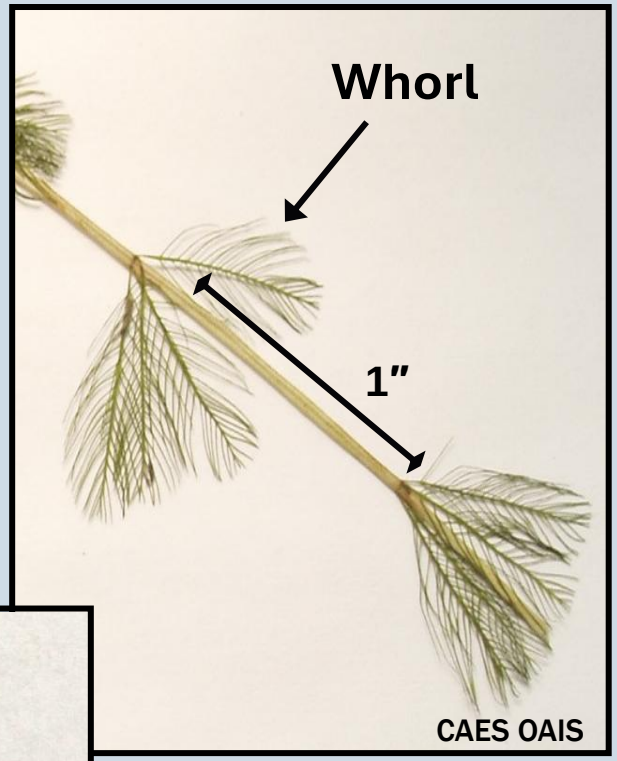
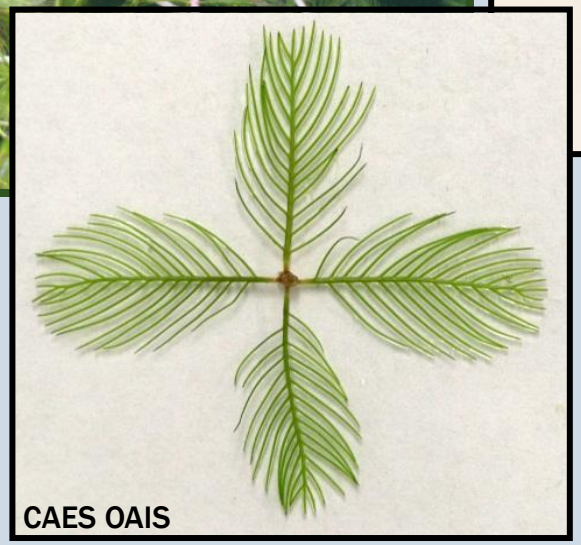
Eurasian watermilfoil
Myriophyllum spicatum





Key Features:

- Thin flower spike
- Rectangular leaf
- Leaves > 1 inch apart
- ≥ 12 leaflet pairs

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Eurasian watermilfoil

Myriophyllum spicatum

- Thin flower spike
- Rectangular leaf
- Leaves > 1 inch apart
- ≥ 12 leaflet pairs

Fewer leaves, more leaflets

Variable-leaf watermilfoil

Myriophyllum heterophyllum

- Thick flower spike
- Triangular leaf
- Leaves < 1 inch apart
- ≤ 11 leaflet pairs

More leaves, fewer leaflets

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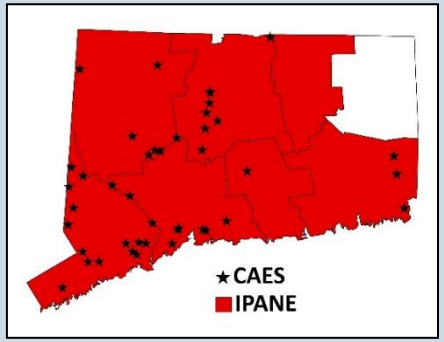
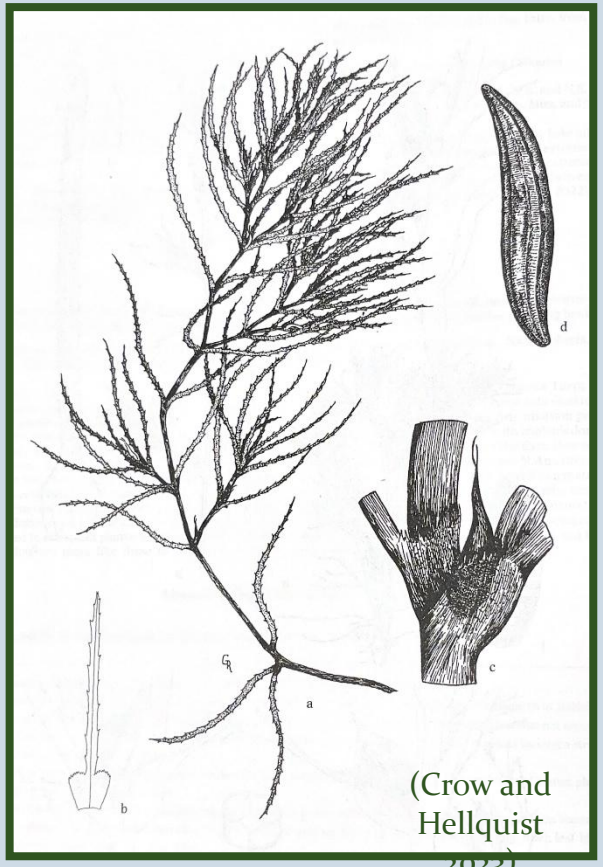
Minor naiad
Najas minor



Key Info:

- Introduced to CT in 2004
- Annual, sprouts from seed
- Low-growing, often found in shallow waters



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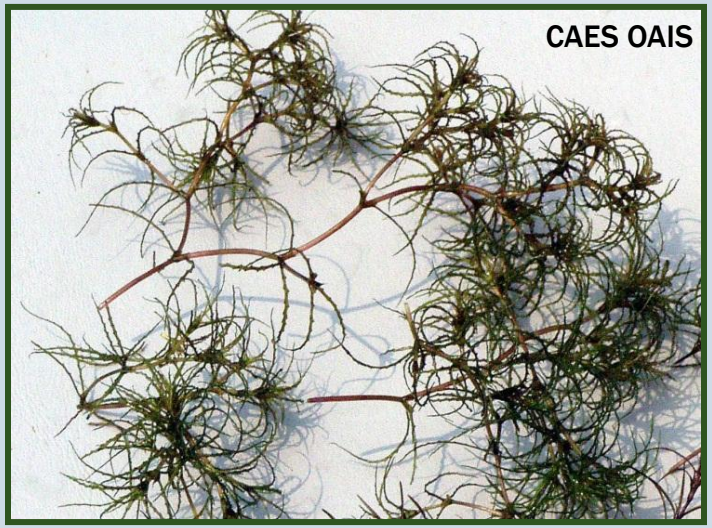
Minor naiad
Najas minor



Key Features:

- Compact, bushy with highly branched stems
- Stiff, curled leaves
- Toothed leaves, visible to the naked eye

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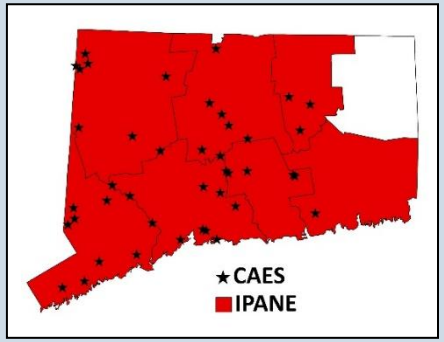
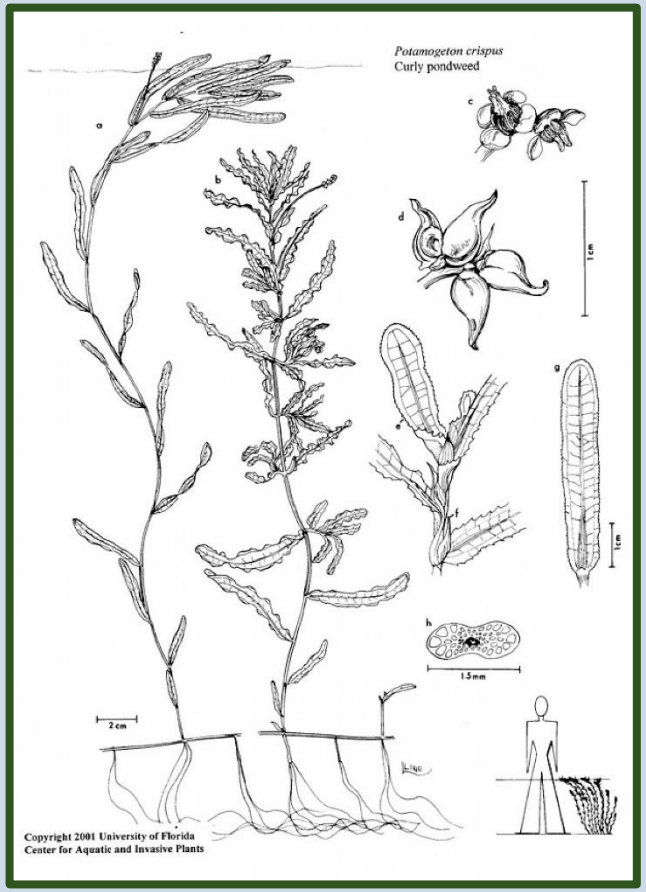
Curlyleaf pondweed
Potamogeton crispus



Key Info:

- Introduced to CT in 1943
- Annual, sprouts from turions
- Fully grown in May/June, dies back midsummer



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Curlyleaf pondweed
Potamogeton crispus

Key Features:

- Wavy, lasagna-like leaves
- Leaves alternate, no petioles
- Brown turions, like small pinecones

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Curlyleaf pondweed

Rogers Lake

2021

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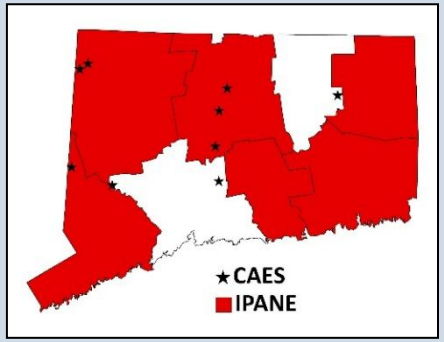
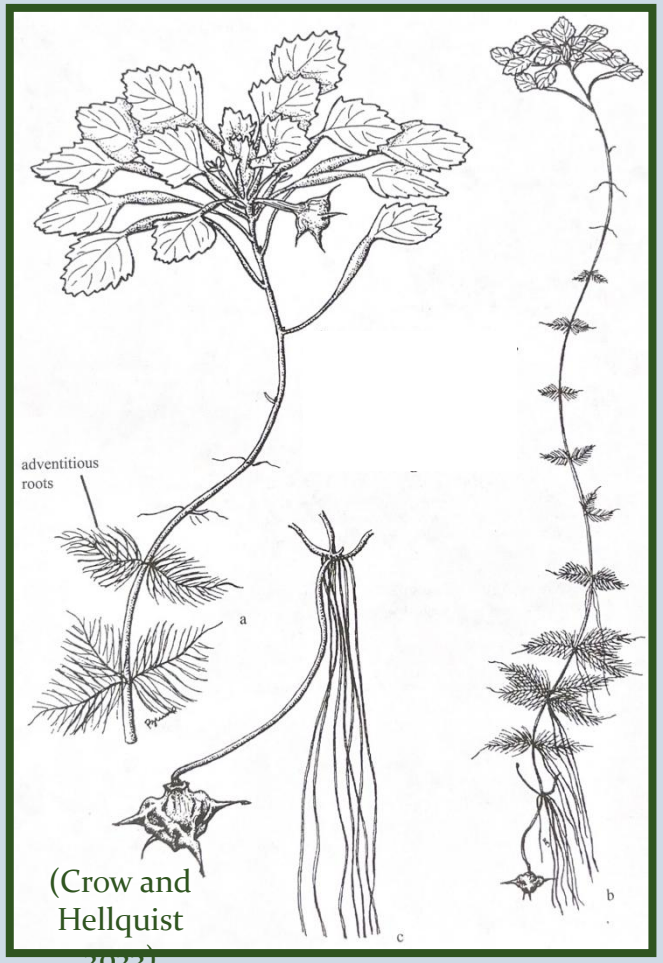
Water chestnut
Trapa natans



Key Info:

- Introduced to CT in 1998
- Annual, sprouts from nutlets
- One nutlet = 10-15 rosettes
- One rosette = 15-20 seeds
- One nutlet = 150-300 new nutlets



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Water chestnut
Trapa natans

Key Features:

- Floating rosette
- Waxy, triangular leaves
- Feathery submersed leaves
- Small, white flower

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Other Invasives

Brazilian waterweed
Egeria densa

- Whorls of 4 leaves
- White flowers with 3 petals

European waterclover
Marsilea quadrifolia

- Floating or emergent
- Clover-like leaves with 4 leaflets

Parrotfeather
Myriophyllum aquaticum

- Thick, red stem
- Blue-green feathery leaves

Other Invasives

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Water hyacinth
Pontederia crassipes

- Free-floating with black, feathery roots
- Inflated petioles, light purple flower

American water lotus
Nelumbo lutea

- Emergent
- White flowers
- Seed head like the top of a watering can

Yellow floating heart
Nymphoides peltata

- Round, heart-shaped floating leaves
- Bright yellow flower

Pond water-starwort
Callitriche stagnalis

- Submersed plant with floating rosettes
- Spoon-shaped, opposite leaves

Emerging Invasives

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Swollen bladderwort
Utricularia inflata

- Alternate, submersed leaves
- Large inflated floating leaves
- Yellow flower

Spiny naiad
Najas marina

- Brittle, branched stems
- Conspicuous, brownish, prickly teeth

Let's Identify Some Plants!

- ❑ Brazilian waterweed – *Egeria densa*
- ❑ Common water hyacinth – *Pontederia crassipes*
- ❑ Curlyleaf pondweed – *Potamogeton crispus*
- ❑ Eurasian watermilfoil – *Myriophyllum spicatum*
- ❑ European waterclover – *Marsilea quadrifolia*
- ❑ Fanwort – *Cabomba caroliniana*
- ❑ Hydrilla – *Hydrilla verticillata*
- ❑ Minor naiad – *Najas minor*
- ❑ Parrotfeather – *Myriophyllum aquaticum*
- ❑ Variable-leaf watermilfoil – *Myriophyllum heterophyllum*
- ❑ Water chestnut – *Trapa natans*

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https://tinyurl.com/OAISWebApp

Questions?

https://tinyurl.com/AISGuide

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