Aquatic Plants of Lees Pond, Moultonborough

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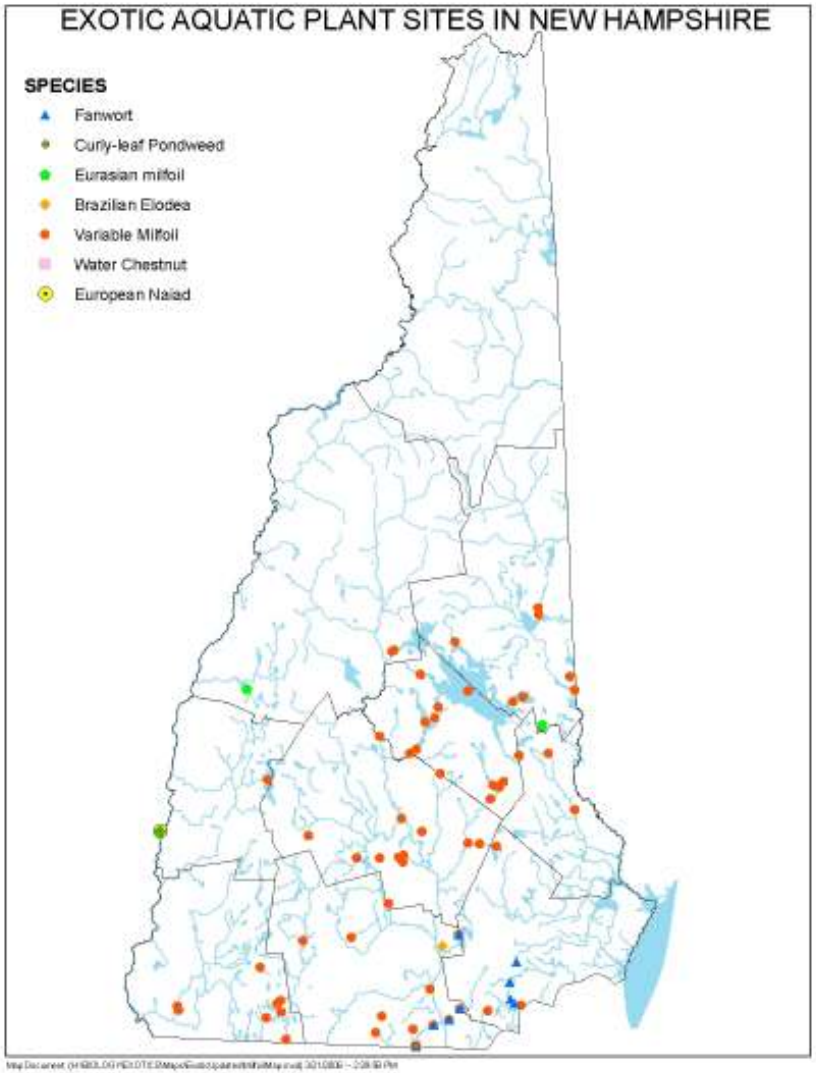
Current status of exotic plant infestations in New Hampshire



- 69 variable milfoil sites
- 5 Eurasian milfoil sites
- 9 fanwort sites
- 1 Brazilian elodea site
- 1 water chestnut site
- 4 curly-leaf pondweed sites
- 3 water naiad sites

Plant Refresher

MORPHOLOGY

Structural Plant Characteristics

The Basics

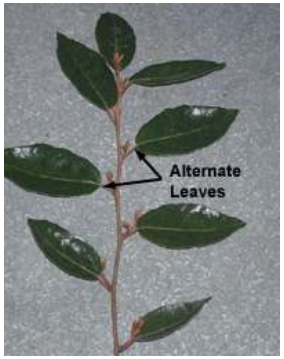
Leaf Type

- **Forked -** These leaves divide into two prongs, resembling the shape of a fork
- **Branched** - Branched leaves have many divisions, which continue to split until the edges are composed of many tiny prongs. This type of leaf resembles the branching pattern of a tree.
- **Feathered** - Feathered leaves have several divisions off of a central stalk. These divisions do not split again. These leaves, as the name implies, look much like a feather.
- **Entire** – These leaves do not split. Each leaf is one continuous unit without lobes or serrated edges.




Leaf Arrangement

- **Alternate** - the pattern of leaf arrangement in which leaves vary back and forth on the stem, with one leaf per node.
- **Whorled** - Leaves are arranged around the stem in a circular pattern. There can be three or more leaves per node.
- **Opposite** - Leaves are arranged in pairs on either side of the stem with two leaves per node.
- **Basal** - the plant lacks an erect stem. Leaves are attached around the a very short stem located just below the soil.
- **Rosette** - Able to move freely at or just below the surface of the water. Leaves are generally arranged in clusters attached to short stems






Leaf Margin

- Smooth: A leaf edge without bumps or points
- Serrated: A margin with tiny points all along the edge much like a serrated knife.
- Lobed: The leaf edge is split into subsection as with the maple leaf.

Types of Aquatic Plants

Emergent

Submergent

Floating

Algae

Plant Refresher

NATIVE
PLANTS
Lees Pond

Floating-leaved plants

- Includes both rooted and unrooted here

(also includes common natives that may not currently be in pond, or that were not documented during the last survey done by NH DES)


Yellow water lily


White water lily


Water shield


Floating heart

Emergent plants

- Plants that are rooted and have most of their biomass as erect vegetation above the water

(also includes common natives that may not currently be in pond, or that were not documented during the last survey done by NH DES)


Cattail

Bur-reed


Pickerelweed

Submergent plants

- Rooted or unrooted
- Vegetative portion wholly underwater
- Flowers may be emergent

Bladderwort

Water marigold

Coontail


Pondweed

Mermaid weed

Algae
(also important to look at)

- Single celled to colonial
- Simple plants
- Base of the food chain


Green algae= OK


Cyanobacteria often form scums at the surface. Scums often wash up close to shore due to wind or water current. Scums can be greenish, blue-greenish or bluish.
Cyanobacteria (Blue-green algae)-
Call us! These could produce toxins.

The Exotic Plants
(aka- plants you don't want)

Use these pictures to help you identify any new growth that may come in.

Report any sightings of these to:

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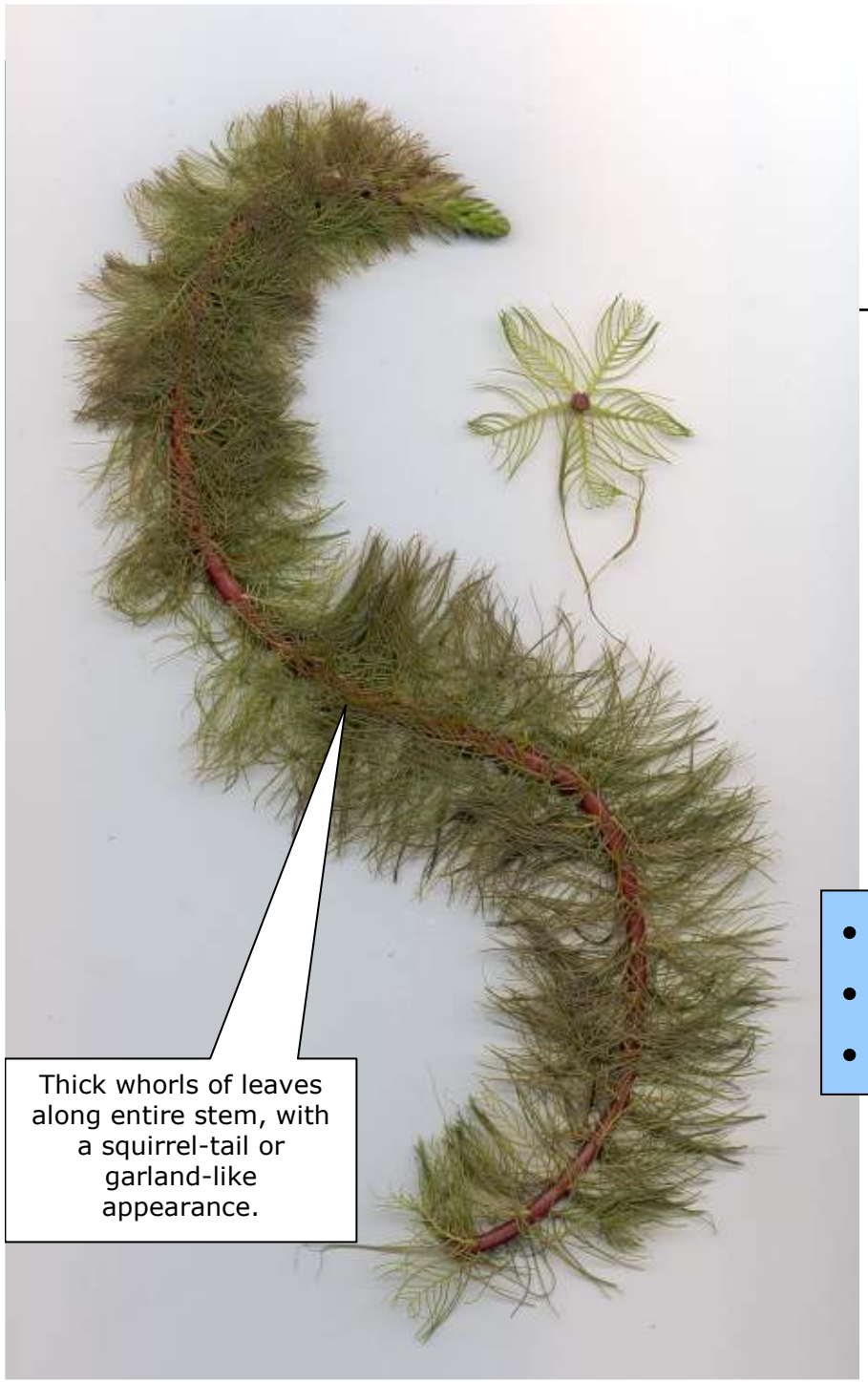
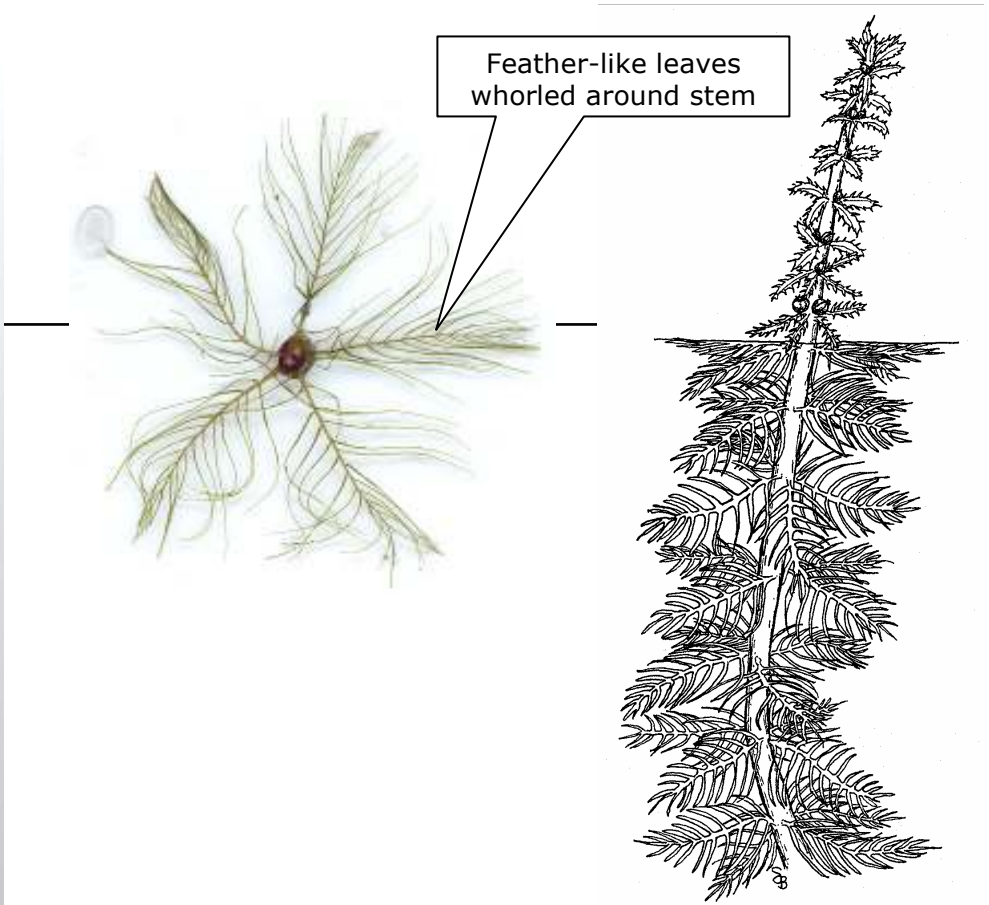
Variable milfoil (EXOTIC)



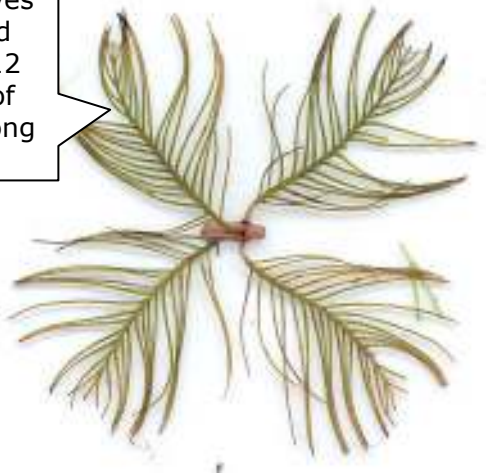


- Variable milfoil- *Myriophyllum heterophyllum*
- Native to southern and central U.S., not to NH
- In several waterbodies in NH


Variable milfoil flower

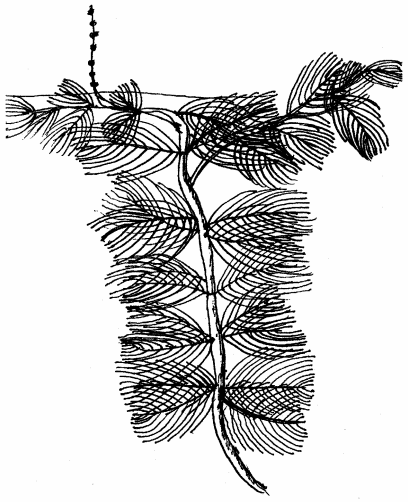

Eurasian milfoil (EXOTIC)

Feather-like leaves whorled around stem, at least 12 or more pairs of small leaflets along one leaf



Whorls of leaves arranged along stem, with gaps of 1/2in to a couple inches between whorls.

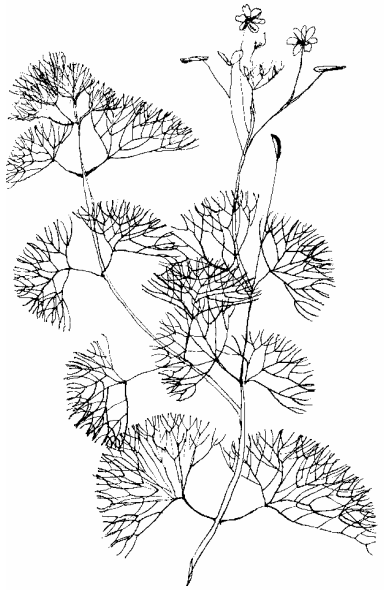
- Eurasian milfoil- *Myriophyllum spicatum*
- Native to Asia
- In 5 waterbodies in NH



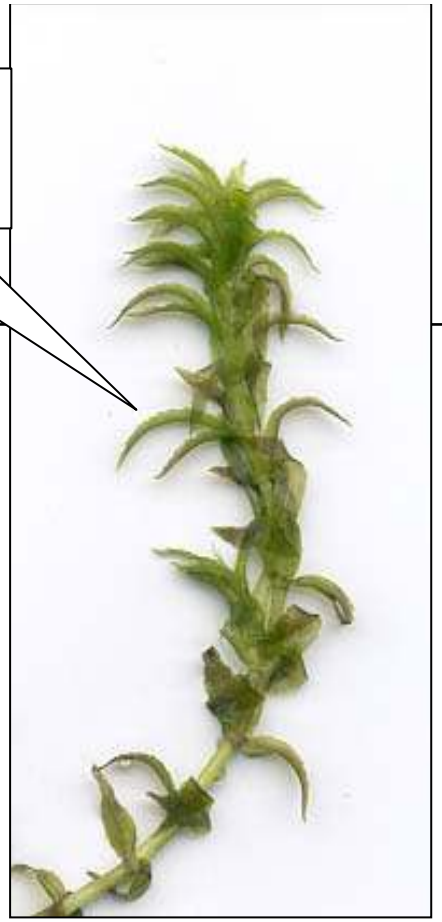

Fanwort (EXOTIC)

Branching leaves arranged oppose along stem. Note leaf is attached by a short stem to main stem of plant.

- Fanwort- *Cabomba caroliniana*
- Native to Europe/Asia
- In 9 waterbodies in NH

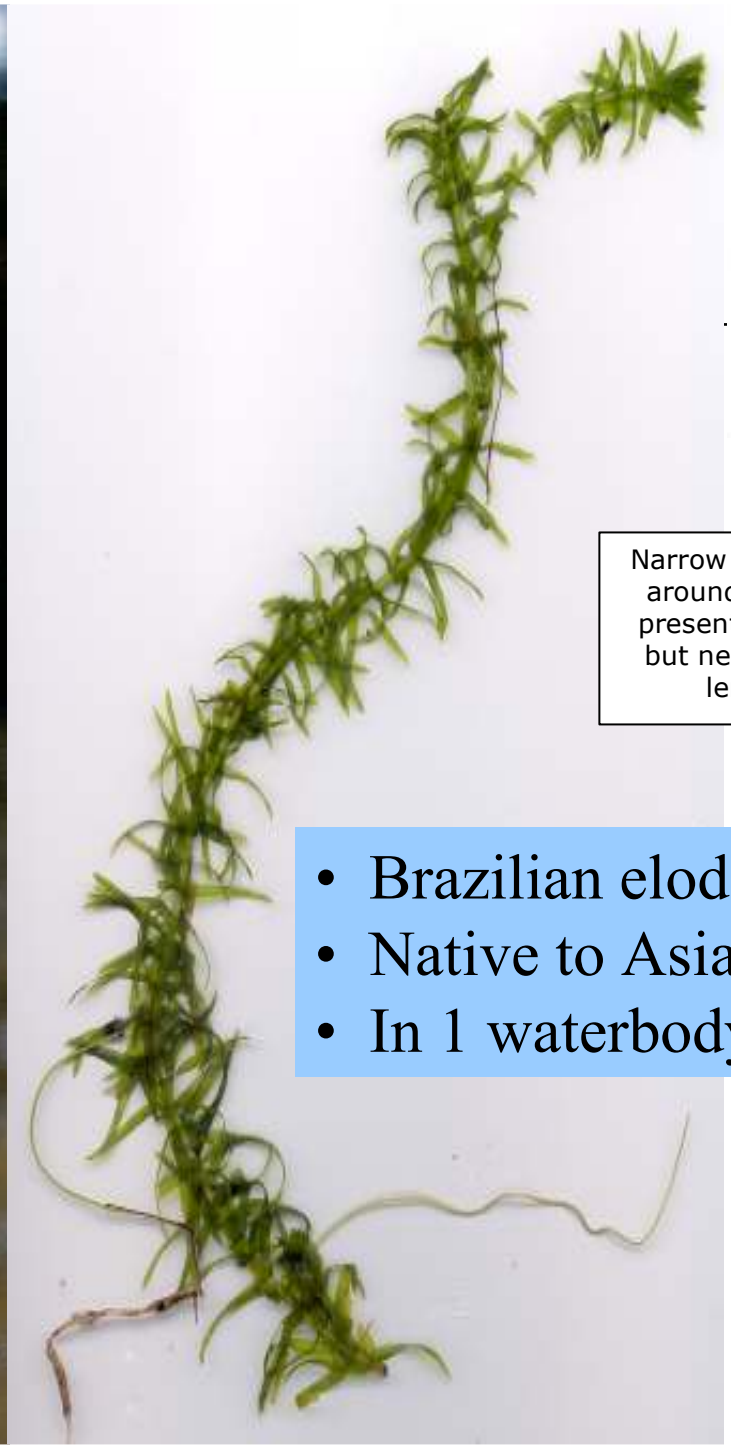



Hydrilla (EXOTIC)



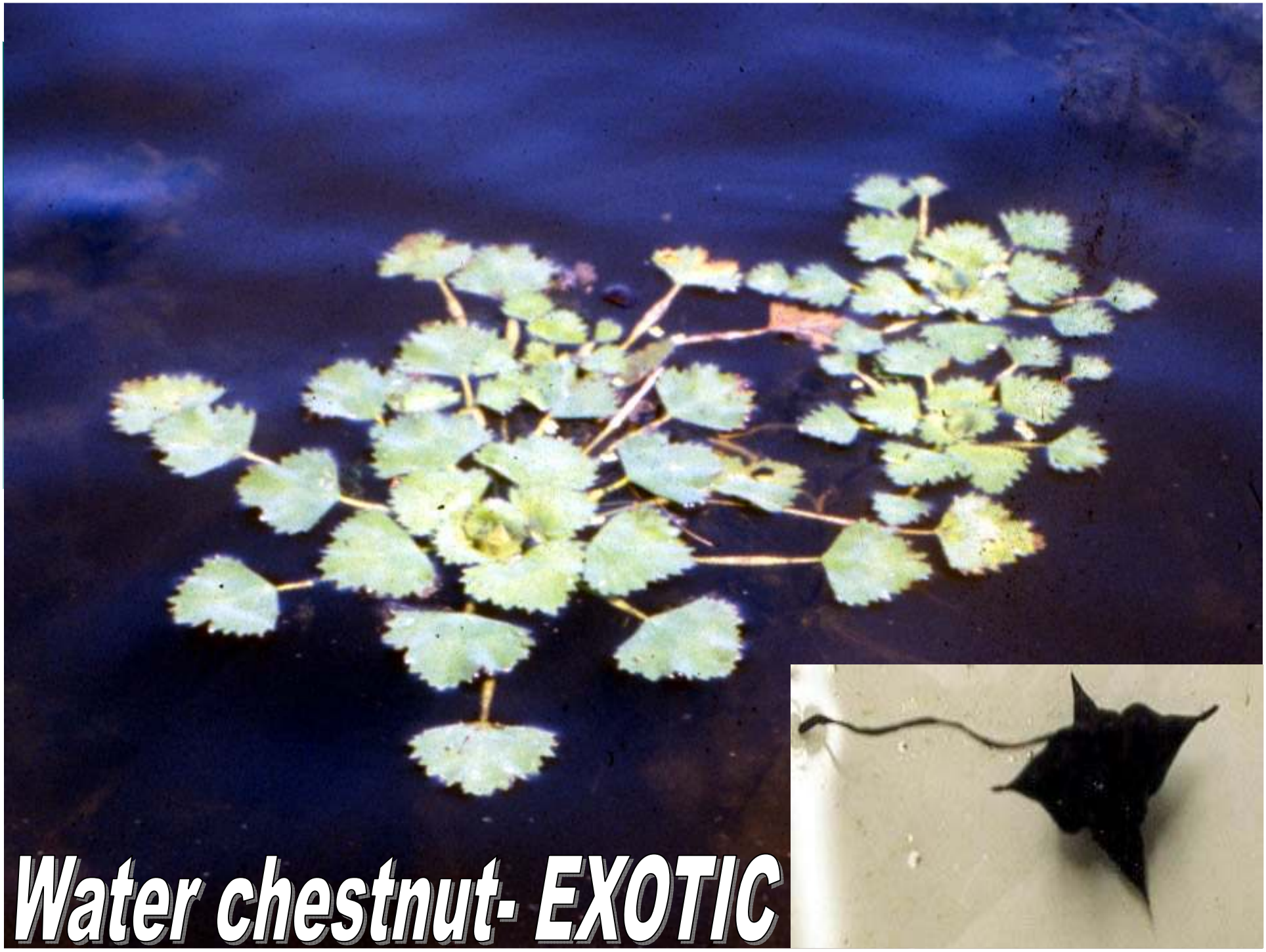
- Hydrilla- *Hydrilla verticillata*
- Native to South America
- Not yet found in NH (but found in MA and ME)


Brazilian elodea (EXOTIC)

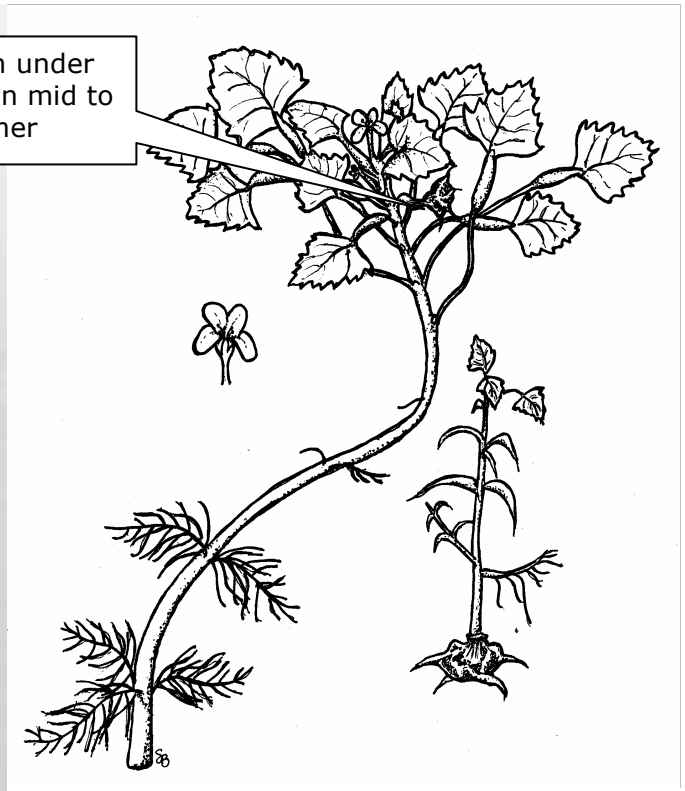


Narrow leaves whorled around stem. Teeth present on leaf edges but need magnifying lens to see.

- Brazilian elodea- *Egeria densa*
- Native to Asia and South America
- In 1 waterbody in NH


Water chestnut- EXOTIC

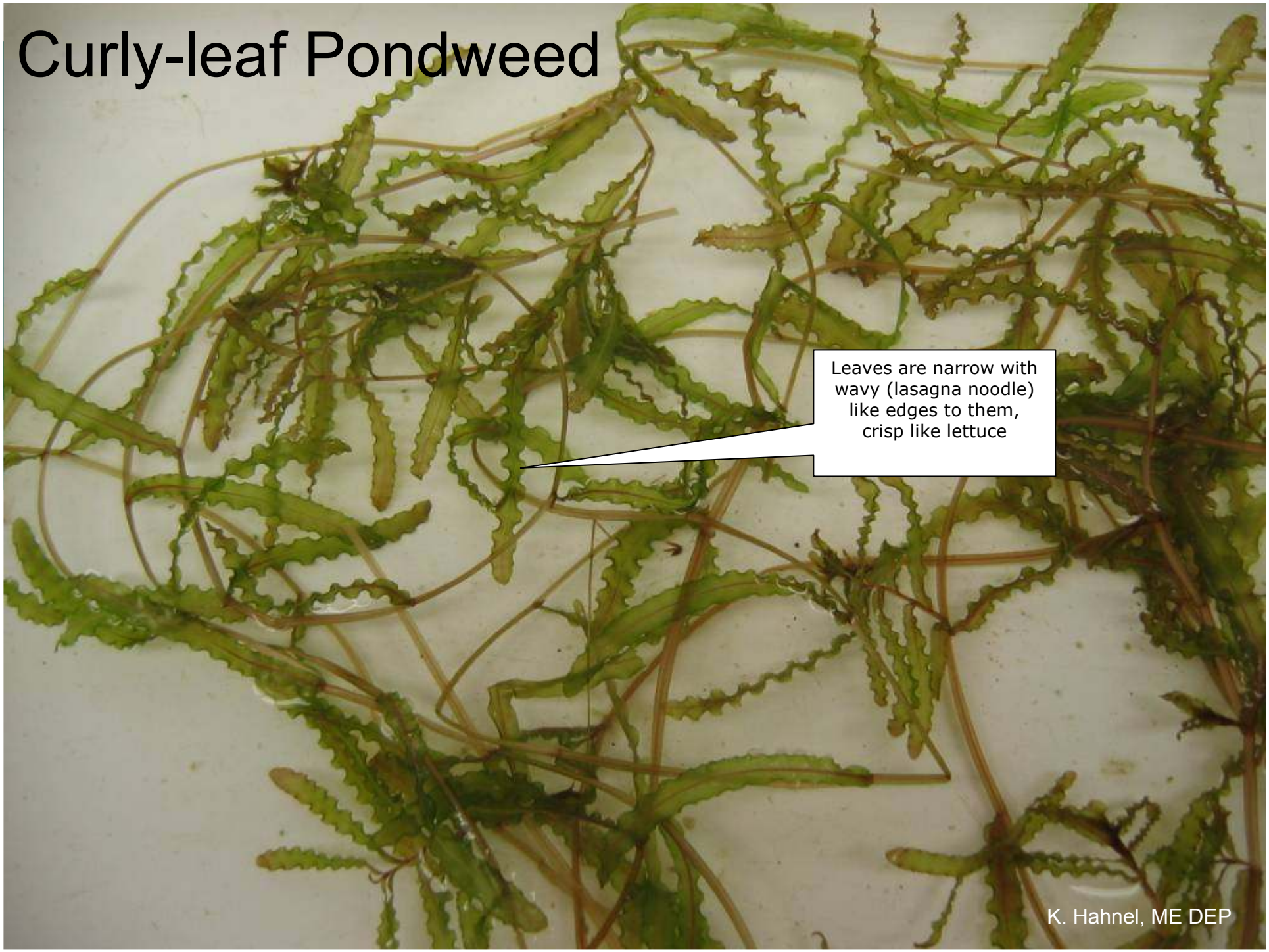
Seeds form on under side of rosette in mid to late summer



Floating rosette of triangular shaped leaves on surface of water, connected to seed in sediment with a long stem/petiole

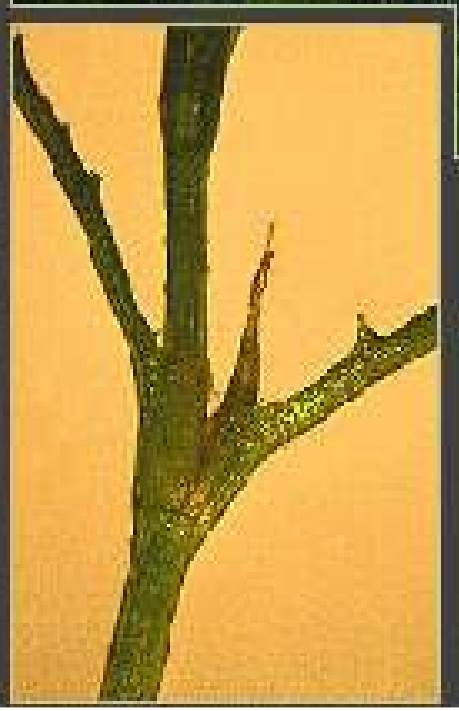
- Water chestnut- *Trapa natans*
- Native to Asia
- In 1 waterbody in NH

Curly-leaf Pondweed

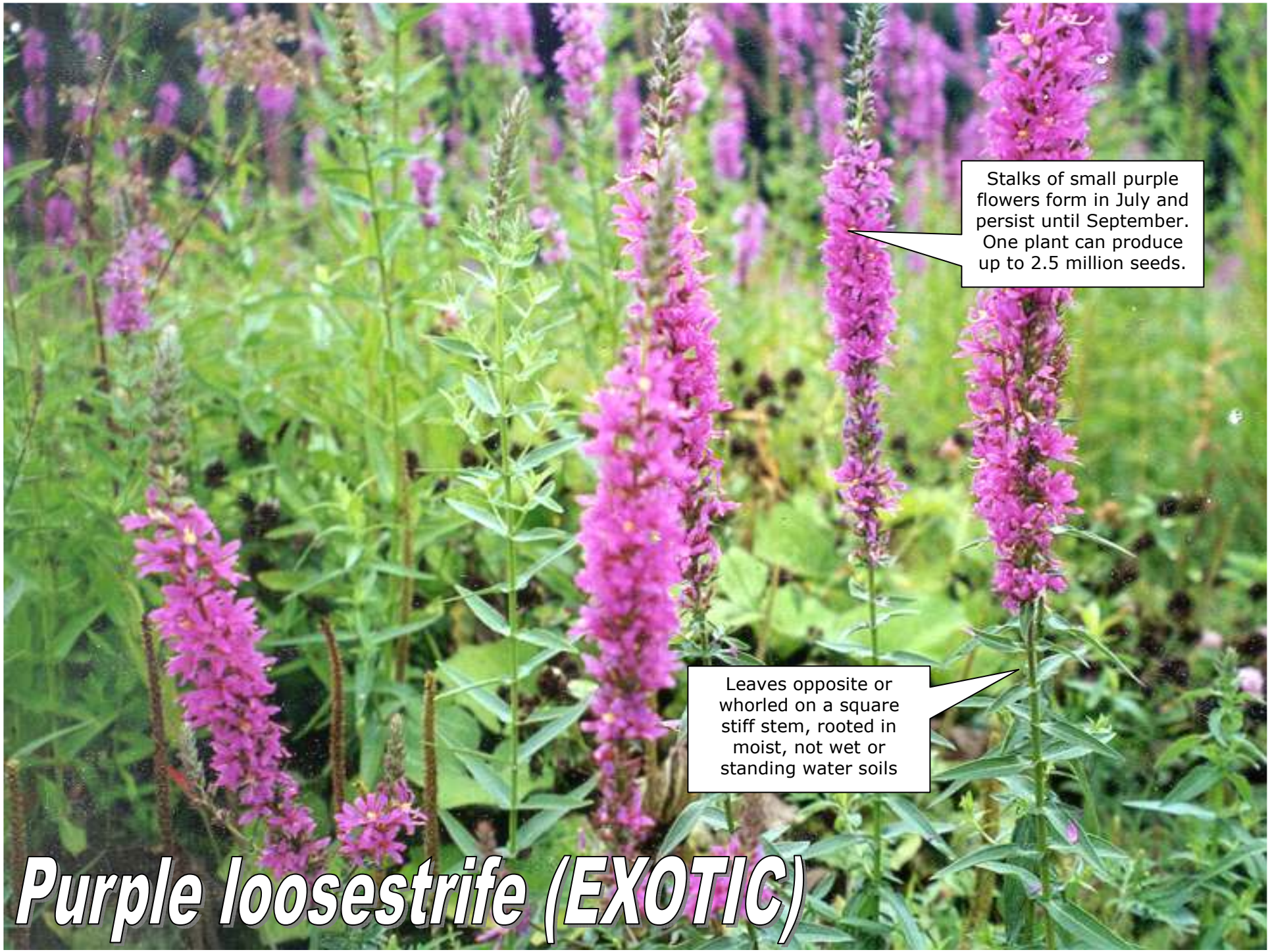


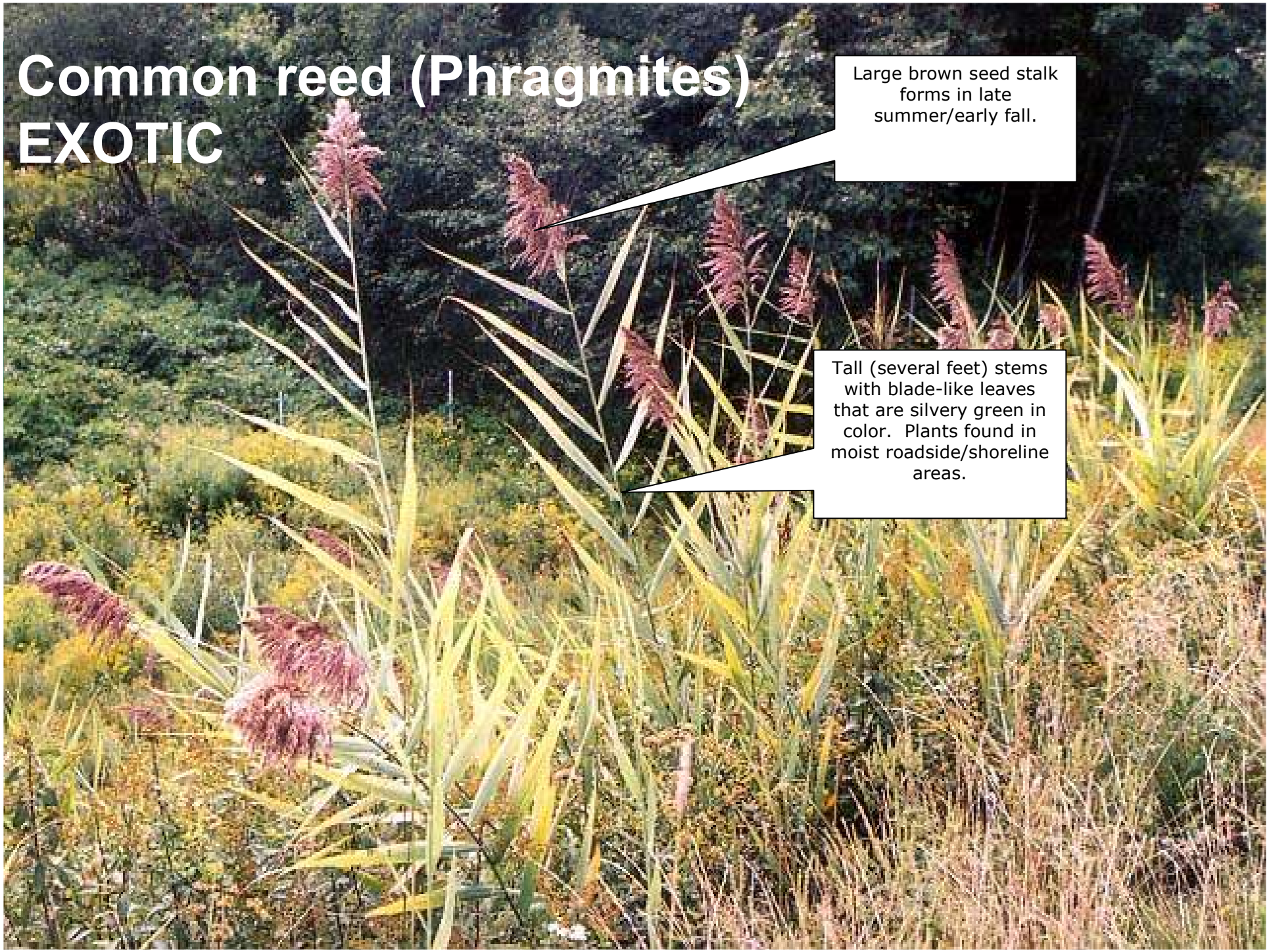
Water Naiad

Leaves narrow with teeth on edges, very brittle and low growing plant



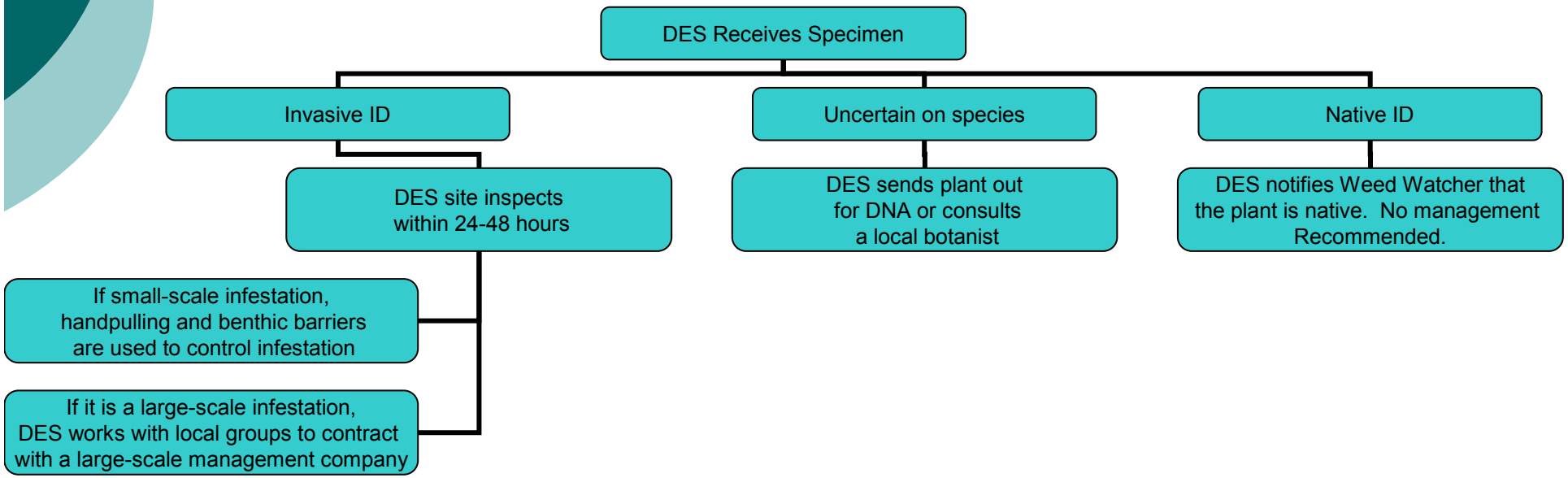
A. Bove, VT DEC


Stalks of small purple flowers form in July and persist until September. One plant can produce up to 2.5 million seeds.
Leaves opposite or whorled on a square stiff stem, rooted in moist, not wet or standing water soils
Purple loosestrife (EXOTIC)


Common reed (Phragmites)
EXOTIC
Large brown seed stalk forms in late summer/early fall.
Tall (several feet) stems with blade-like leaves that are silvery green in color. Plants found in moist roadside/shoreline areas.


Yellow iris (EXOTIC)

State Response

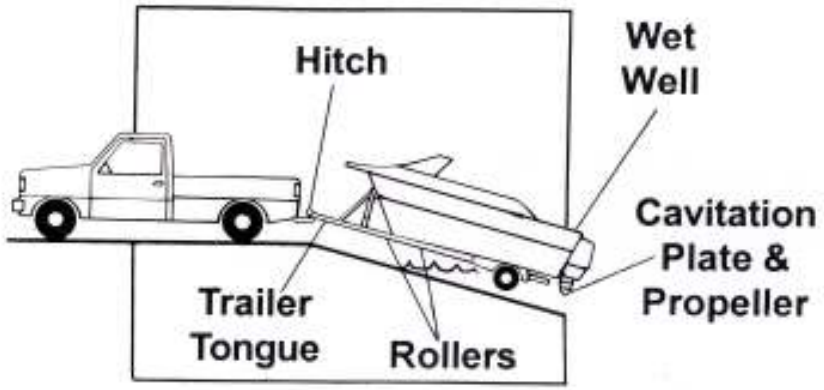


The Exotic Species Mantra

- Prevention
- Early Detection
- Rapid Response
- Control/Management

Prevention

- Focus on the public access site
  - Post signs and/or information at kiosks
- Develop a monitoring program to inspect boats as they enter and leave your waterbody
  - Remove all attached plants and animals from the boat, trailer, live wells, anchor, etc.



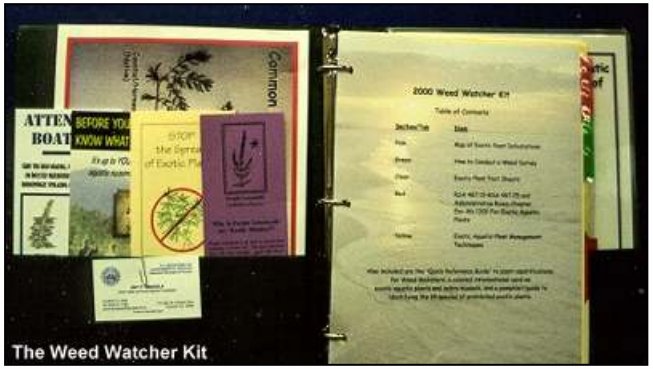
Early Detection:
Volunteer Weed Watchers

Why Develop a Weed Watcher Program?

- Proactive approach
  - Volunteer Weed Watchers are the first line of defense if an exotic is introduced
- Catch infestations early
- Facilitate a Rapid Response Action
- Prevent the further spread

What is Involved?

- **Volunteers are trained to monitor waterbodies for exotics, generally on-site at their own waterbody**
  - **Once a month from May to September is recommended**



The Weed Watcher Kit

- **NHDES provides resources:**
  - **Weed Watcher Kit**
  - **Pictures**
  - **Fact sheets**
  - **Maps of the subject lake/pond (bathymetric and historical plant maps with keys)**

Equipment needs are generally minimal, and easy to obtain.

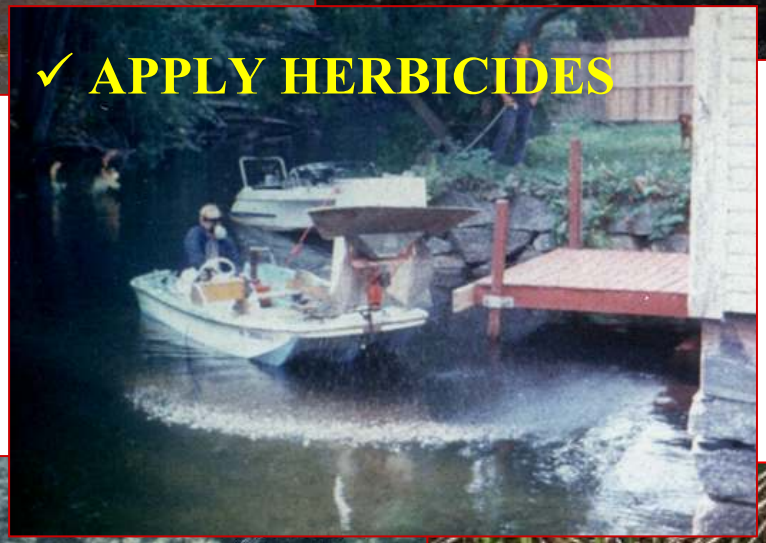
- ✓ Small boat with short shaft motor, canoe, kayak, or row boat
- ✓ Driver and one or more observers
- ✓ Lake outline map, pens/pencils
- ✓ Plant identification keys/pictures
- ✓ Small long-handled rake or throw rake
- ✓ Zip-lock bags
- ✓ Polarized glasses or view scope (optional)

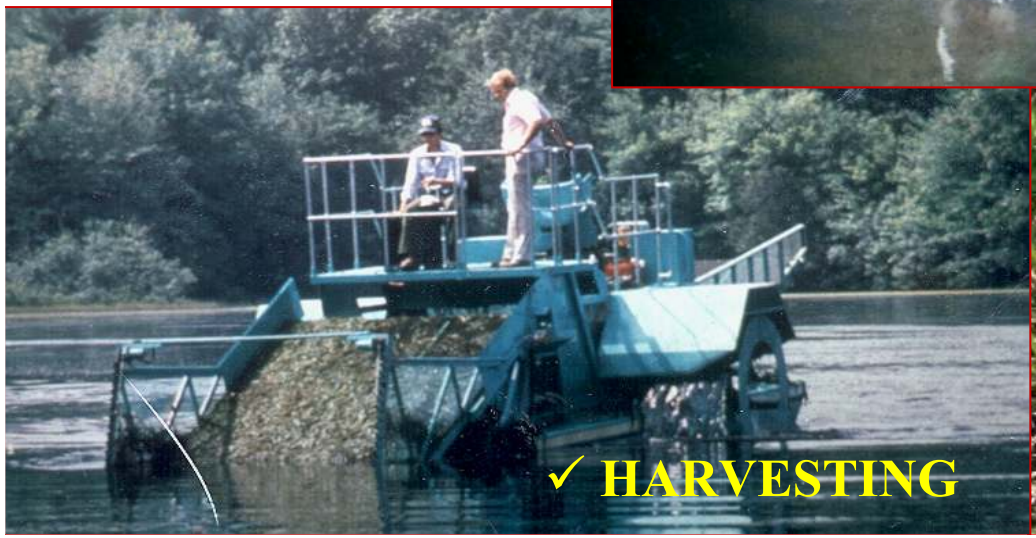
Control/Management

Plant Management

- When a new infestation is detected, reporting it immediately can increase the odds of a rapid response, quick containment, and possible eradication
- If an infestation is very large when it is found, more intensive management is needed, and the chances of eradication can be lower
- Integrated plant management techniques are varied and effective when well planned, and DES will guide management based on site-by-site conditions if an infestation is found.

Management & Control





Resources

DES Exotic Species Website

www.des.state.nh.us/wmb/exoticspecies

Aquatic Plants and Algae of NH's Lakes and Ponds

http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-05-30.pdf