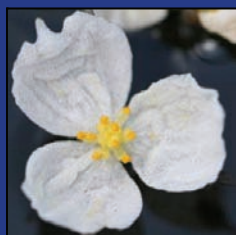
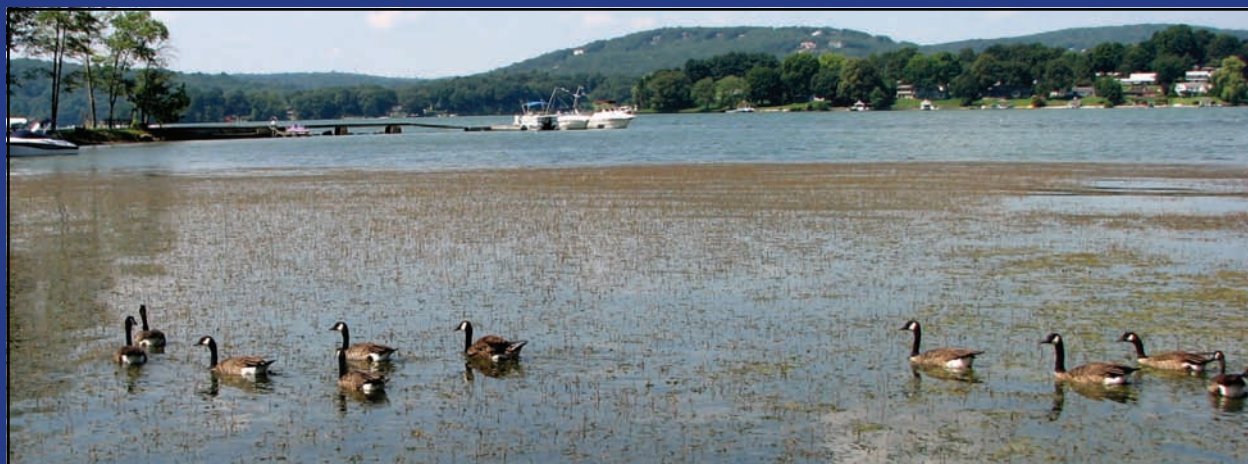


# Connecticut's Invasive Aquatic and Wetland Plants

## Identification Guide



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## **Introduction to Aquatic Plants**

Aquatic plants are essential components of healthy ecosystems in lakes and ponds. They cleanse water and provide habitat for rich communities of aquatic organisms. Because invasive species are not native, they have few natural enemies. Their dramatic growth rates can clog water intakes, decrease recreational opportunities, reduce local real estate values, and alter native ecosystems (Connecticut Aquatic Nuisance Species Working Group, 2006, Fishman et al. 1998). Recent vegetation surveys of 162 lakes and ponds, by the Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP), found one or more invasive plants in nearly two-thirds of the water bodies (CAES IAPP, 2010).

Approximately three-quarters of the invasive aquatic plant species in southern New England were introduced as cultivated plants (Les and Mehrhoff, 1999). These introductions come from recreational boating (Couch and Nelson, 1985), dumping of unwanted plants in aquariums, water gardening, and plant fragments mixed with live bait used by fishermen. Spread of invasive plants from one lake to another also occurs naturally by wildlife and downstream flow. Once established, eradication of invasive aquatic plants is extremely difficult. Preventing introductions by inspections, early detection and rapid response is critically important.

This guide is intended to provide information on the identification and distribution of the 22 aquatic plants listed as invasive or potentially invasive (Table 1) by the Connecticut General Statute (Sec. 22a-381d). The sale of these plants, with the exception of common waterhyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*), is also banned by State Statute and their transport is limited to activities associated with control and education. Fines of up to one hundred dollars can be imposed for each violation.

## **How to Use This Guide**

Identifying of many of Connecticut's freshwater aquatic plants is challenging. CAES IAPP surveys have found nearly 100 native species and 13 invasive species (Figure 1). These do not include many of the wetland plants in this guide because our surveys are limited to lakes and ponds. We use many resources when plant identification is questionable including; books by Crow and Hellquist (2000) and Fassett (1957), other recognized experts and molecular identification using DNA sequencing. Some of the potentially invasive plants discussed here have never been documented in Connecticut and may be unfamiliar to readers. Certain invasive aquatic plants can be easily confused with native or other invasive plants so care must be taken to ensure accuracy. The places where plants are found are often related to their means of dispersal (Table 1) and sometimes this gives a clue to their identification.

Table 1. Invasive and potentially invasive aquatic plants listed in the Connecticut General Statutes (Sec. 22a-381d).

#	COMMON NAME	SCIENTIFIC NAME	DISPERSAL
1	American water lotus	<i>Nelumbo lutea</i>	Water Gardening
2	Brazilian water-weed, Anacharis, Egeria	<i>Egeria densa</i>	Aquariums, Boats/Trailers, Bait
3	Brittle water-nymph, Minor naiad	<i>Najas minor</i>	Boats/Trailers
4	Common water-hyacinth*	<i>Eichhornia crassipes</i>	Water Gardening
5	Curly leaf pondweed, Crispy-leaved pondweed	<i>Potamogeton crispus</i>	Boats/Trailers
6	Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	Aquariums, Boats/Trailers, Bait
7	European waterclover, Water shamrock	<i>Marsilea quadrifolia</i>	Water Gardening, Boats/Trailers
8	Fanwort	<i>Cabomba caroliniana</i>	Aquariums, Boats/Trailers
9	Flowering rush	<i>Butomus umbellatus</i>	Water Gardening
10	Forget-me-not, Water scorpion-grass	<i>Myosotis scorpioides</i>	Water Gardening
11	Giant salvinia	<i>Salvinia molesta</i>	Water Gardening
12	Hydrilla	<i>Hydrilla verticillata</i>	Aquariums, Boats/Trailers, Bait
13	Onerow yellowcress	<i>Rorippa microphylla</i>	Water Gardening
14	Parrotfeather	<i>Myriophyllum aquaticum</i>	Water Gardening, Boats/Trailers
15	Pond water-starwort	<i>Callitriche stagnalis</i>	Water Gardening
16	Purple loosestrife	<i>Lythrum salicaria</i>	Nursery Stock, Water Gardening
17	Variable-leaf watermilfoil	<i>Myriophyllum heterophyllum</i>	Aquariums, Boats/Trailers
18	Water chestnut	<i>Trapa natans</i>	Water Gardening, Boats/Trailers
19	Water lettuce, American water lotus*	<i>Pistia stratiotes</i>	Water Gardening
20	Watercress	<i>Rorippa nasturtium-aquaticum</i>	Water Gardening
21	Yellow floating heart	<i>Nymphoides peltata</i>	Water Gardening
22	Yellow iris, Yellow flag iris	<i>Iris pseudacorus</i>	Nursery Stock, Water Gardening

\*plants that are not banned

This guide has three main parts to help identify aquatic invasive plants. First, each plant has a summary page containing pictures, a list of key features, and a map of where the plant has been found by either CAES IAPP or the Invasive Plant Atlas of New England (IPANE, 2009). Other sources have found some of the plants elsewhere, and the maps are not meant to suggest the plants are limited to the locations shown. Second, there is a series of comparative pictures that help differentiate the invasive species from similar native plants. Third, there is a plant identification key that provides a step-by-step method for narrowing plants to their species. This key also includes native plants that are commonly mistaken for invasive species.

## What to do if You Find a Plant Discussed in This Guide

Before taking action, it is important that the plant be positively identified and the location of the plant is noted. Latitude and longitude coordinates taken with a global positioning system (GPS) are best. Plant samples requiring further identification need to be mailed or taken to the CAES IAPP, 123 Huntington Street, New Haven, CT 06511, or another qualified entity such as the Connecticut Department of Environmental Protection. You can call CAES IAPP at (203) 974-8512 with questions.

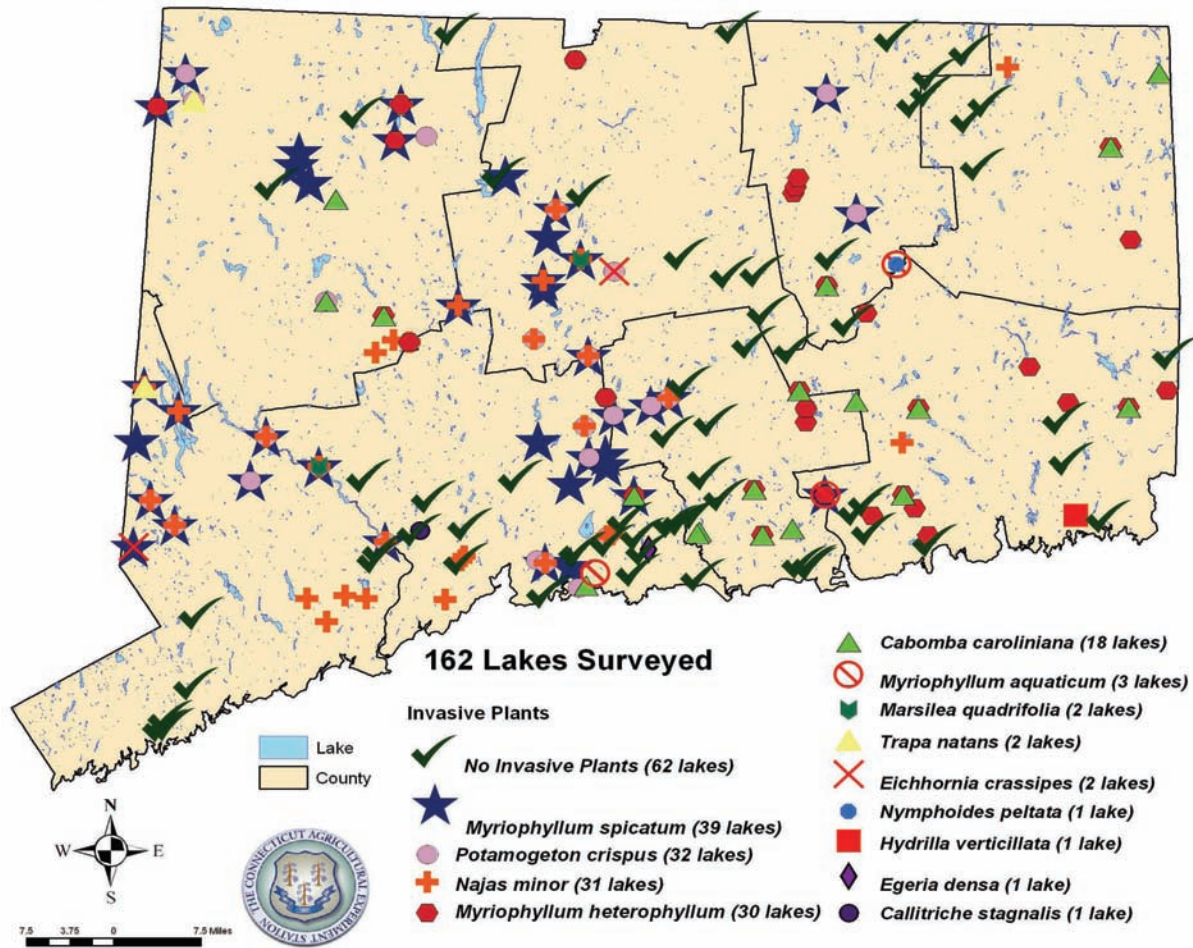


Figure 1. Locations of invasive aquatic plants found by CAES IAPP surveys from 2004-2009.

## Additional Resources for Plant Identification

CAES IAPP web page, aquatic plant survey requests and reprints of this guide

<http://www.ct.gov/caes/IAPP>

The Invasive Plant Atlas of New England

<http://nbii-nin.ciesin.columbia.edu/ipane/>

Invasive Plants of the Eastern United States: Identification and Control

<http://www.invasive.org/eastern/>

State of Washington Department of Ecology Non-native Freshwater Plants

<http://www.ecy.wa.gov/programs/wq/plants/weeds/exotic.html>

Center for Aquatic and Invasive Plants, University of Florida

<http://plants.ifas.ufl.edu/>

USDA National Invasive Species Information Center

<http://www.invasivespeciesinfo.gov/>

## DEFINITIONS OF PLANT TERMS

**Alternate:** leaves not directly across from each other on the stem

**Dissected:** leaf divided into many narrow segments; appear feathery, branched or forked

**Entire:** leaf not divided and margins not toothed

**Forked:** leaf divided into two or more equal segments

**Lanceolate:** lance-shaped, long, wider in the middle foliage

**Leaflet:** one of many leaf-like structures that make up a leaf

**Margin:** the edge or border of a leaf

**Opposite:** leaves are directly across from each other on the stem

**Petiole:** leaf stalk; stem-like structure that attaches a leaf to the stem

**Pinnately compound:** leaf containing many leaflets

**Rhizome:** underground stem often sending out roots and shoots from its nodes

**Stolon:** above ground stem often sending out roots and shoots at nodes, also termed “runner”

**Rosette:** a dense cluster of leaves that are all at a single height, like petals of a rose

**Spike:** unbranched continuation of the stem where flowers are located, usually located above the water

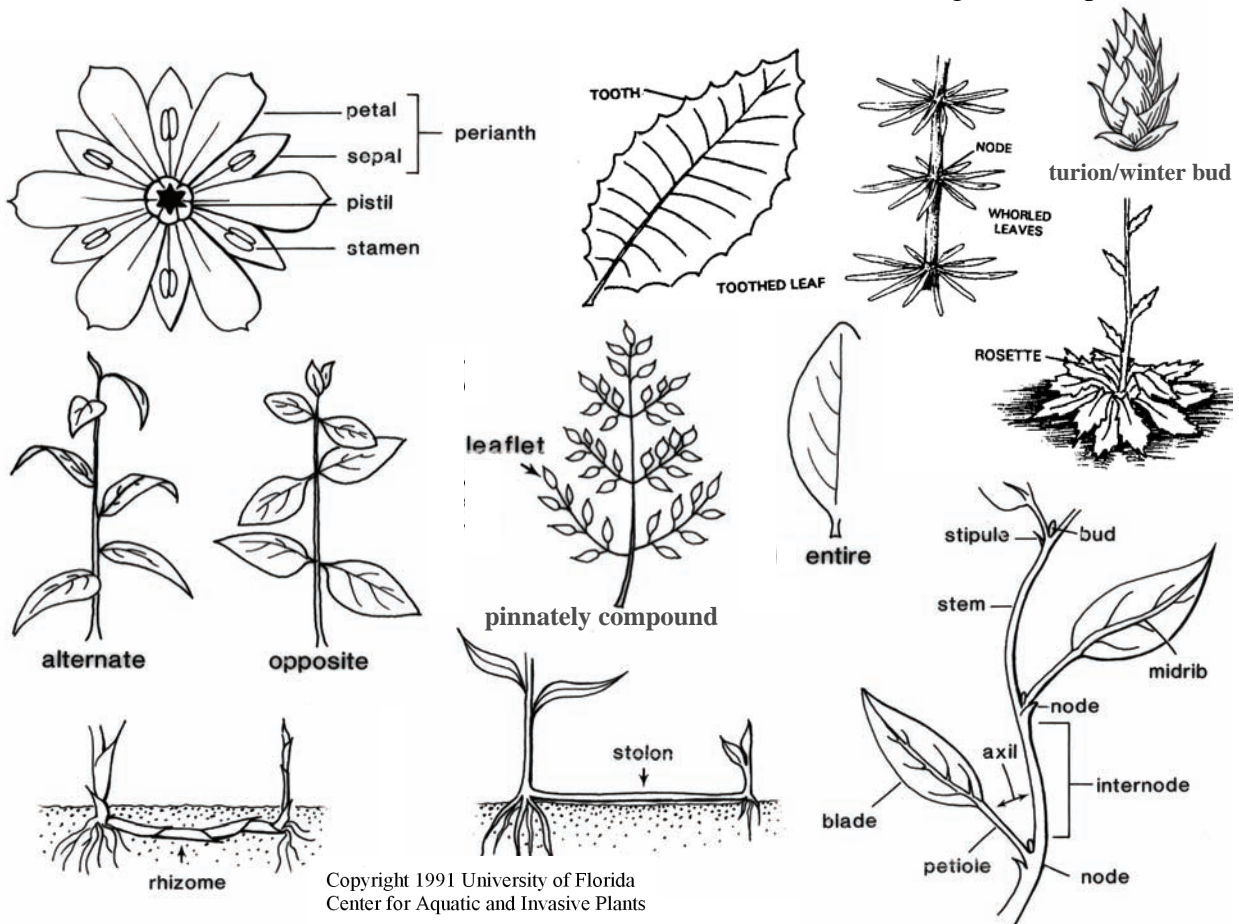
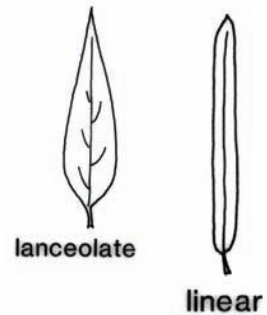
**Tooth:** points or lobes along a leaf margin

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

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

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

**Winter bud:** a modified leaf bud that survives the winter and facilitates vegetative reproduction



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# *Butomus umbellatus*

**Common name:**  
Flowering rush

**Origin:**  
East Asia

**Key features:**

**Stems:** Can be found along shorelines and into water 9 feet (3 m) deep

**Leaves:** Long, narrow, sword shaped leaves up to 3 feet (1 m) tall that originate at base. Leaves are fleshy with twisted ends, grass-like, cross section of leaves are triangular

**Flowers:** Inflorescence contains pink to white flowers 0.8-1.2 inches (2-3 cm) across with 3 petals and 3 sepals on a stalk that can be 3 feet (1 m) tall

**Fruits/Seeds:** Fruit is a follicle

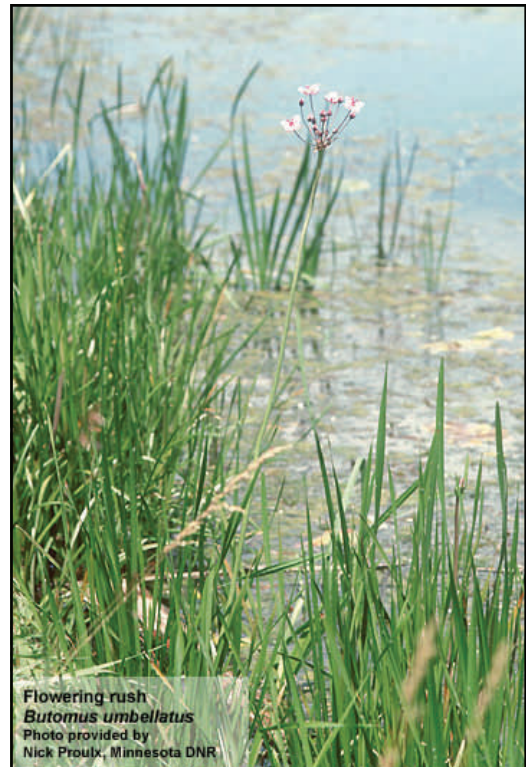
**Reproduction:** Seeds and rhizomes

**Easily confused species:**

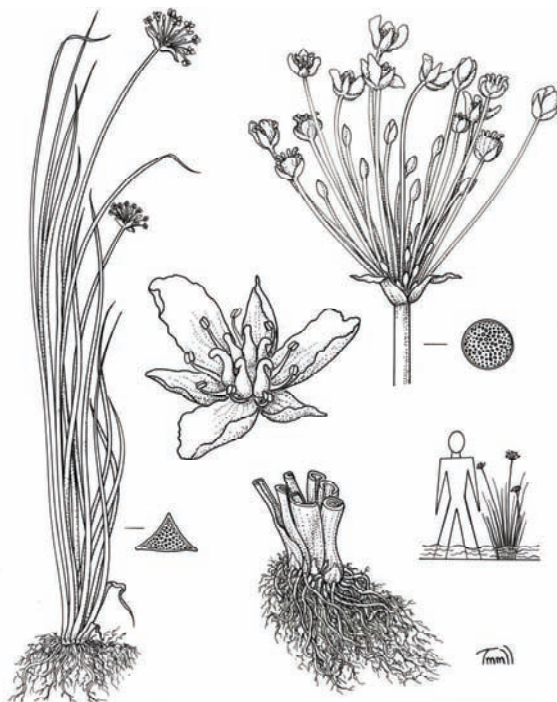
Bur-reeds: *Sparganium* spp.



Photo by Leslie J. Mehrhoff

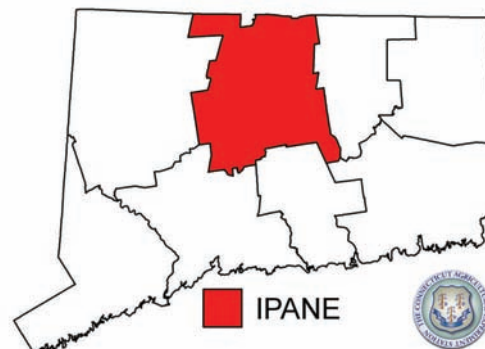


Flowering rush  
*Butomus umbellatus*  
Photo provided by  
Nick Proulx, Minnesota DNR



*Butomus umbellatus*  
flowering rush

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# *Cabomba caroliniana*

## Common names:

Fanwort

Carolina fanwort

## Origin:

Southeast United States

South America

## Key features:

Plants are submersed

**Stems:** Can be 6 feet (2 m) long

**Leaves:** Dissected, opposite leaves 0.8-2 inches (2-5 cm) are fan-like and made up of forked leaflets attached to the stem by a petiole. Floating leaves 0.2-0.8 inches (6-20 mm) wide are oblong and produced on flower shoots

**Flowers:** Small, solitary flowers are usually white to pinkish

**Fruits/Seeds:** Flask shaped

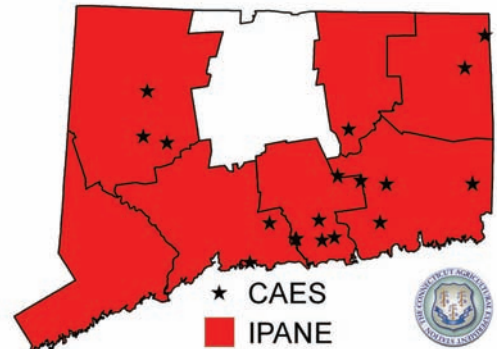
**Reproduction:** Seed and fragmentation

## Easily confused species:

Watermilfoils: *Myriophyllum* spp.

White water crowfoot: *Ranunculus longirostris*

Water marigold: *Megalodonta beckii*



- A. Copyright 1991 Univ. of Florida, Center for Aquatic and Invasive Plants
- B. Copyright 2002 Univ. of Florida, Photo by A. Murray
- C. Photo by A. Smagula

# *Callitriche stagnalis*

**Common name:**

Pond water-starwort

**Origin:**

Europe and North Africa

**Key features:**

Plants are submersed with floating rosettes

**Stems:** 4-12 inches (10-30 cm) long

**Leaves:** Floating leaves are opposite and oval or spoon shaped 0.8 × 0.1-0.3 inches (2 cm × 3-8 mm), submerged leaves are narrower and tend to be smaller

**Flowers:** Small with 2 small bracts at their base, flowers are close to each other at leaf bases for self pollination

**Fruits/Seeds:** Round 0.06-0.08 inches (1.5-2 mm) thick forming 4 mericarps that have thin winged margins

**Reproduction:** Cloning and seeds

**Easily confused species:**

Other *Callitriche* spp. (can only distinguish them by their fruit)



Photo by CAES IAPP

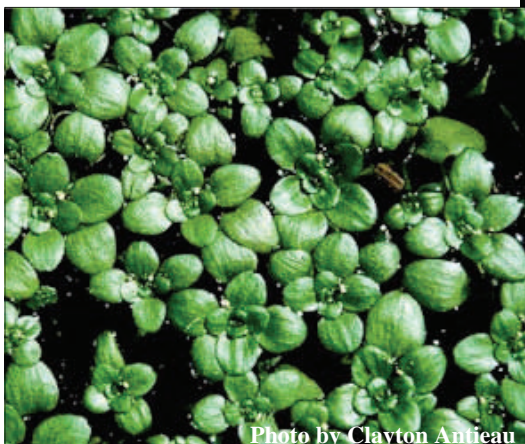


Photo by Clayton Antieau



Photo by Gordon Leppig & Andrea J. Pickart

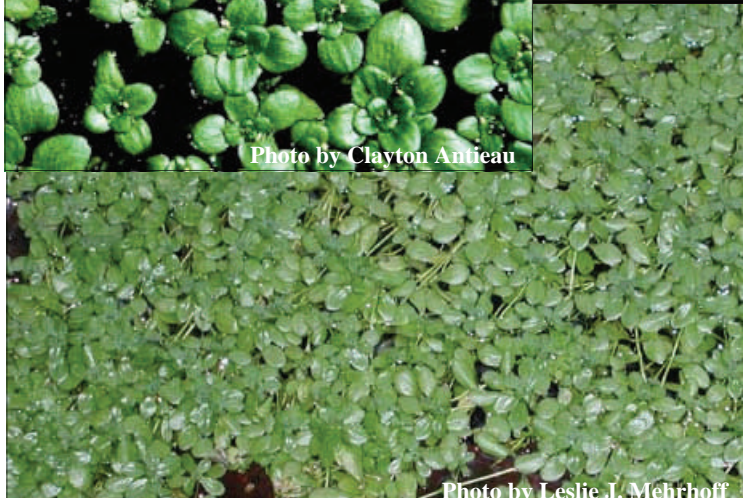
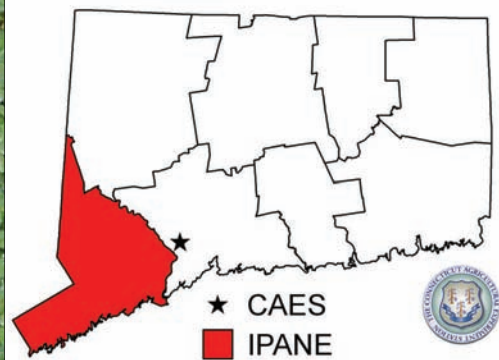


Photo by Leslie J. Mehrhoff



# *Egeria densa*

## Common names:

Brazilian waterweed  
Brazilian elodea  
South American waterweed

## Origin:

South America

## Key features:

Plants are submersed

**Stems:** Plant stems green, soft and typically 1-2 ft ( 0.3-0.6 m) long

**Leaves:** Leaves entire 0.4-1.2 inches (1-3 cm) long by 0.2 in (5 mm) wide, leaves toothed (need magnification), leaves are whorled with typically 4 leaves per whorl

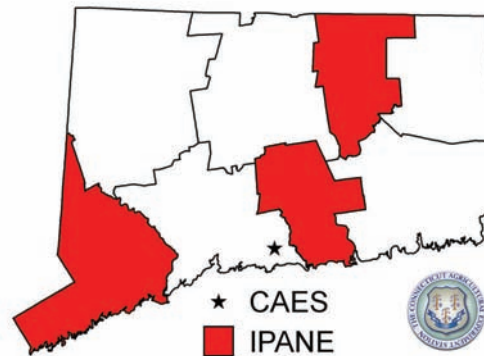
**Flowers:** Small white flowers with three petals, only staminate (male) flowers found in the US

**Reproduction:** Fragmentation

## Easily confused species:

Waterweeds (Native): *Elodea nuttallii* and  
*Elodea canadensis*

Hydrilla: *Hydrilla verticillata*



# *Eichhornia crassipes*

## Common names:

Common water-hyacinth

Floating water-hyacinth

## Origin:

Brazil

## Key Features:

**Stems:** Free floating plant

**Leaves:** Leaves are oval 1.6-4.7 inches (4-12 cm), thick, waxy and form a rosette, petioles are inflated which helps with floatation

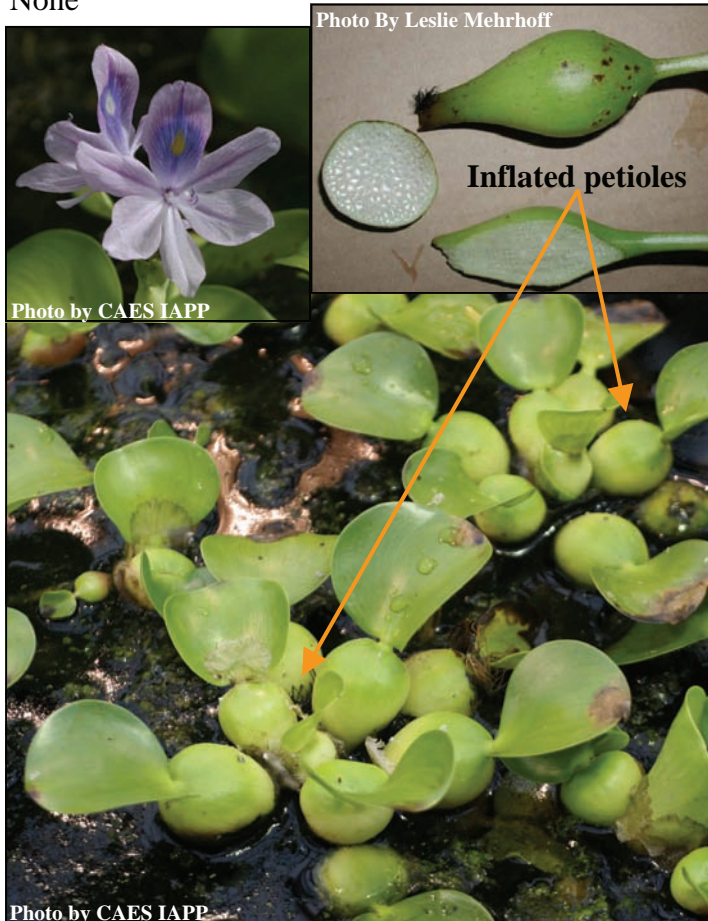
**Flowers:** Flowers are light purple with one petal having a darker blotch with a yellow center 2.0-2.8 inches (5-7 cm)

**Fruits/Seeds:** Fruit is a capsule with ribbed seeds

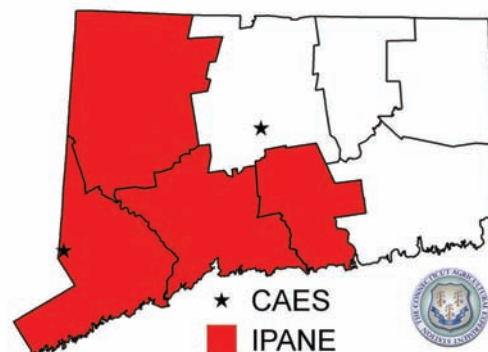
**Reproduction:** Seeds and stolons

## Easily confused species:

None



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# *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

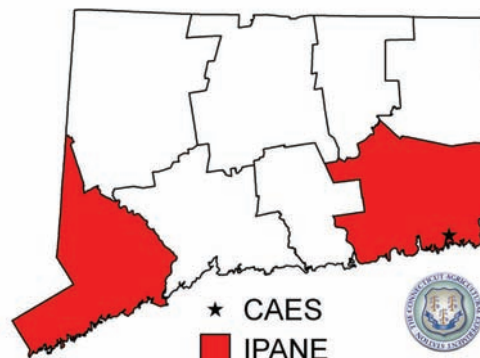
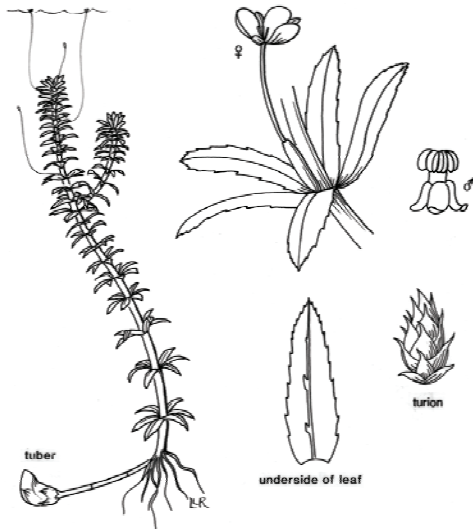
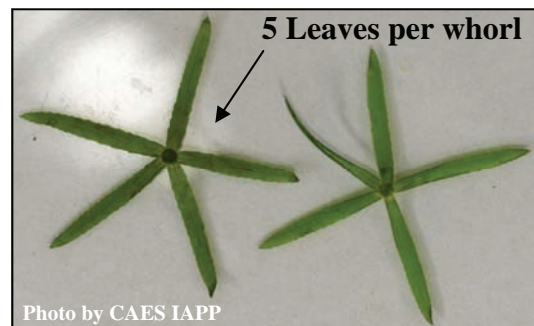
**Fruits/Seeds:** Small tubers (key feature) can be found in the sediment, turions form along the stem

**Reproduction:** Fragmentation, turions, tubers and seeds

**Easily confused species:**

Waterweeds (Native): *Elodea nuttallii* and *Elodea canadensis*

Brazilian waterweed: *Egeria densa*



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*Hydrilla verticillata*  
Hydrilla



# *Iris pseudacorus*

## Common names:

Yellow iris  
Yellow flag

## Origin:

Europe, western Asia, and northwest Africa

## Key features:

**Leaves:** Sword shaped leaves are flattened with a raised mid rib and rise out of the soil, the tips of the leaves are pointed and arch over

**Flowers:** Flowers are on peduncles 3-4 feet (1-1.3 m) tall. Several light to dark yellow flowers are on each stem with 3 small erect petals and 3 large downward sepals

**Fruits/Seeds:** Fruit is a capsule, seeds are brown

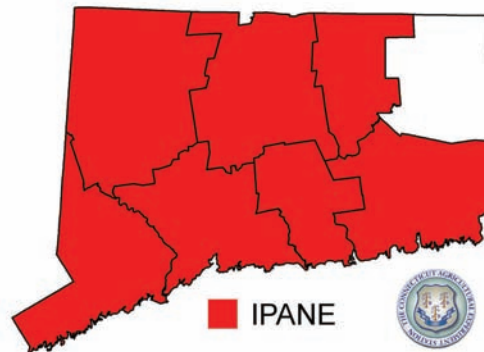
**Reproduction:** Seeds and rhizomes

## Easily confused species:

Northern blue flag iris: *Iris versicolor*



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# *Lythrum salicaria*

**Common name:**  
Purple loosestrife

**Origin:**  
Europe

**Key features:**

**Stems:** Plants have herbaceous stems and can grow 1.5-5 feet (0.5-1.5 m) tall

**Leaves:** Opposite, or in whorls of 3, 1-4 inches (3-10 cm) long, linear, or lanceolate in shape, leaves can be smooth or hairy

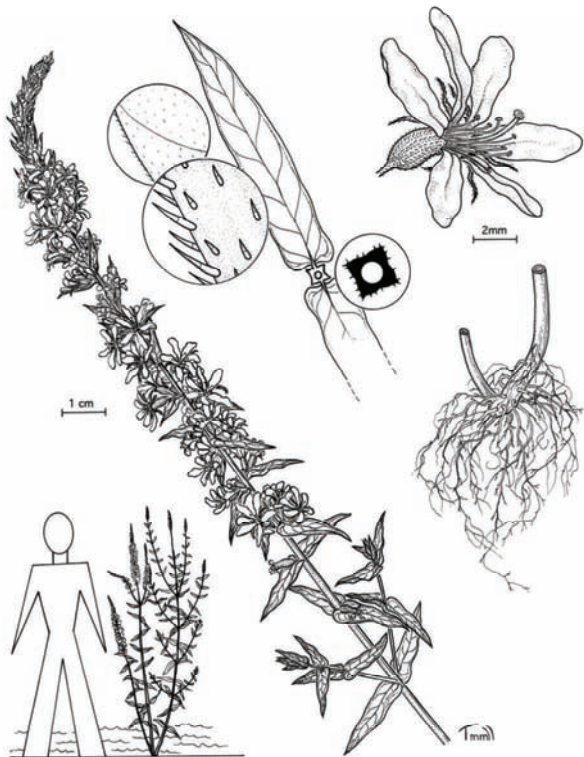
**Flowers:** Large, pink-purple flowers clustered on long terminal spikes 4-16 inches (10-40 cm) long, floral tube is twice as long as it is wide and typically has 6 petals

**Fruits/Seeds:** Fruit is a two cavity capsule with numerous reddish-brown seeds

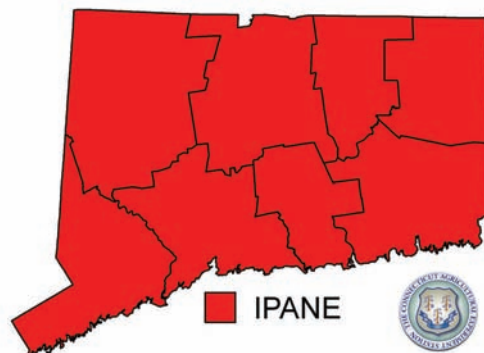
**Reproduction:** Seed

**Easily confused species:**

Winged loosestrife: *Lythrum alatum*



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# *Marsilea quadrifolia*

## **Common names:**

European waterclover

Water shamrock

## **Origin:**

Europe

## **Key features:**

Floating leaf plant

**Stems:** Smooth petioles 2-12 inches (5-30 cm)

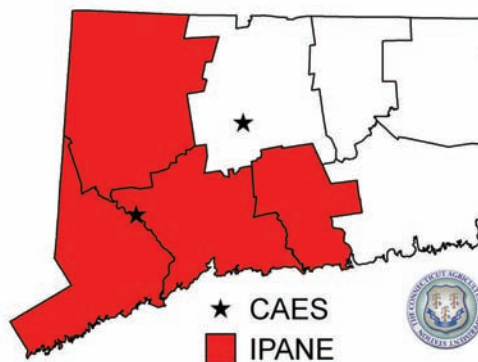
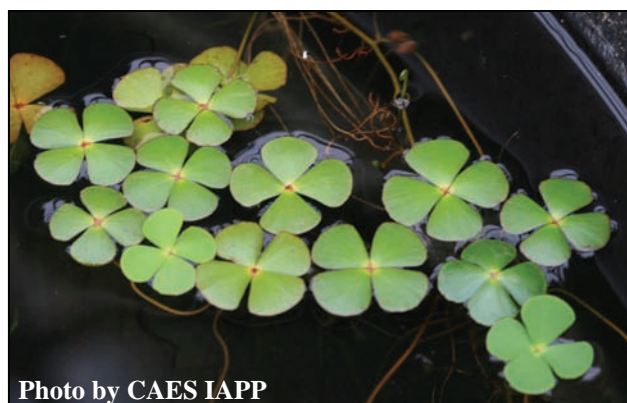
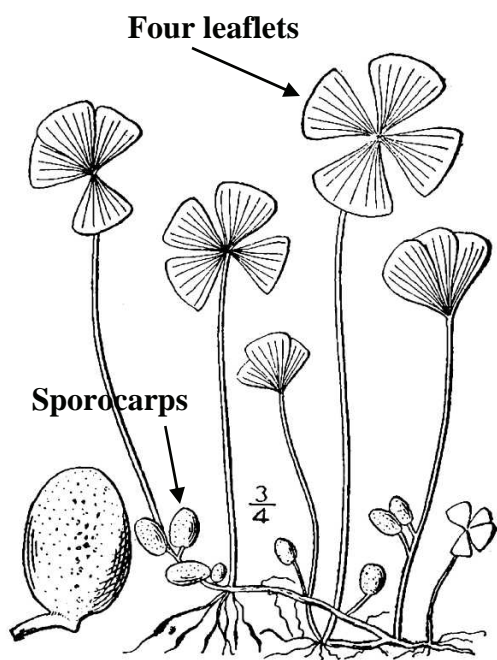
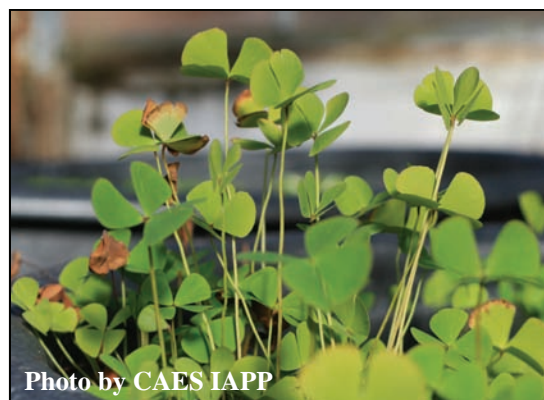
**Leaves:** Comprised of 4 fan-shaped leaflets (similar to a four-leaf clover)

**Fruits/Seeds:** 2 or 3 dark brown sporocarps 0.2 inches × 0.2 inches (4-5.5 mm × 3-4 mm)

**Reproduction:** Cloning and sporocarps

## **Easily confused species:**

None



Britton, N.L., and A. Brown. 1913



# *Myosotis scorpioides*

**Common names:**

Forget-me-not  
Yellow eye forget-me-not  
Water scorpion-grass

**Origin:**

Europe and western Asia

**Key features:**

Plants grow 8-24 inches (20-60 cm) in height

**Stems:** Stems are angled, often creeping

**Leaves:** Lower leaves are tapered to the base while the upper leaves are more oblong, leaves are alternate, with short hairs

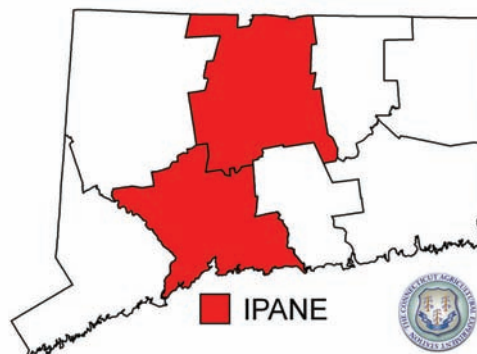
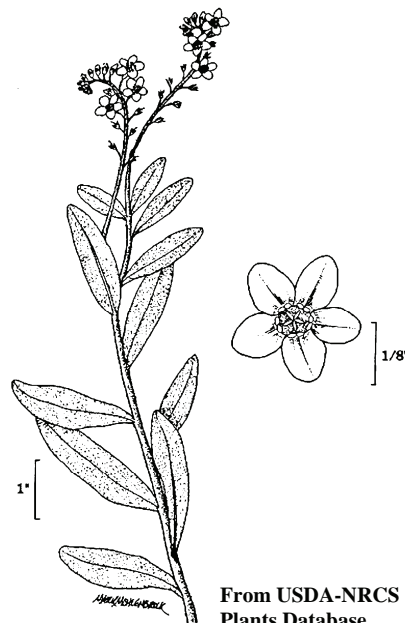
**Flowers:** Flowers are flat and are typically blue with a yellow center, 0.2-0.4 inches (6-9 mm) wide, along a simple inflorescence with a common axis

**Fruits/Seeds:** Seeds are contained in a nutlet that is angled and keeled on the inner side

**Reproduction:** Seeds

**Easily confused species:**

Bay forget-me-not: *Myosotis laxa*



# *Myriophyllum aquaticum*

## Common names:

Parrotfeather

Brazilian watermilfoil

## Origin:

Amazon River basin

## Key features:

Plants occur mostly above the water's surface

**Stems:** Thick green stems

**Leaves:** Leaves are a blue-green color and have a feathery appearance, leaves are whorled, dissected with rounded tips

**Flowers:** Flowers have white sepals and no petals (only females found in the US)

**Fruits/Seeds:** 0.06-0.08 inches (1.5-2 mm) long

**Reproduction:** Fragmentation



## Easily confused species:

Eurasian watermilfoil: *Myriophyllum spicatum*

Variable-leaf watermilfoil: *Myriophyllum heterophyllum*

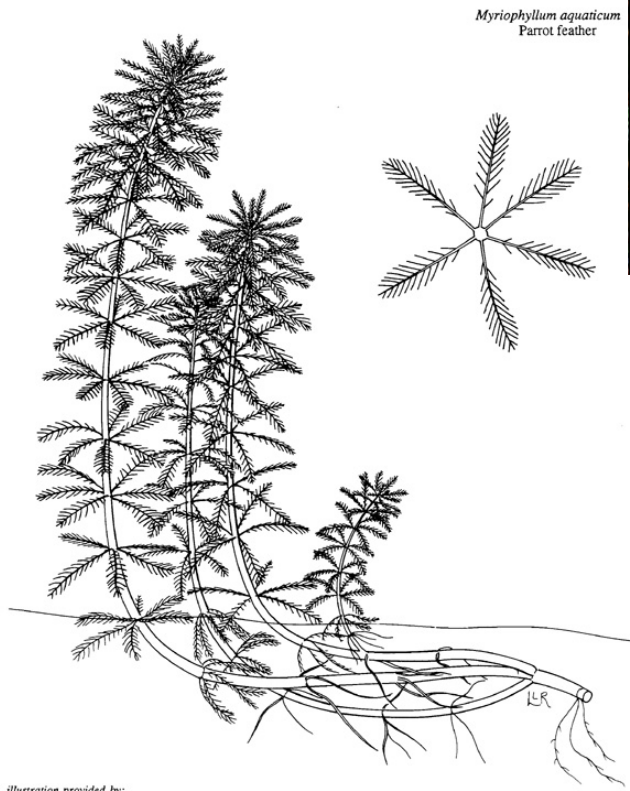
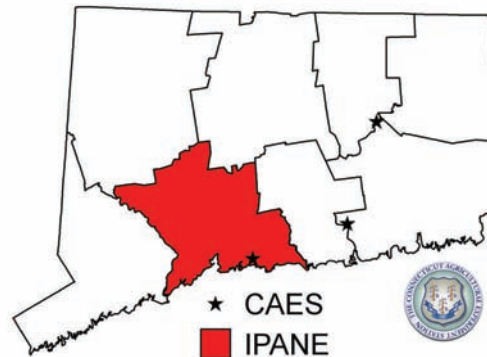


illustration provided by:  
IFAS, Center for Aquatic Plants  
University of Florida, Gainesville, 1990



# *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  $\leq 11$  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*

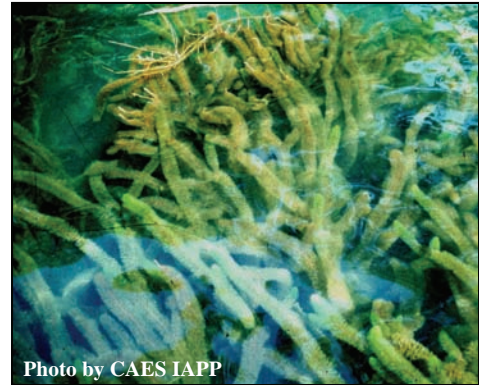


Photo by CAES IAPP



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Leaves collapse out of water  
Photo by CAES IAPP

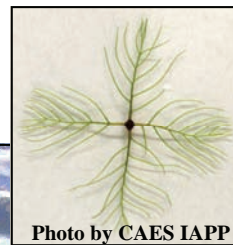
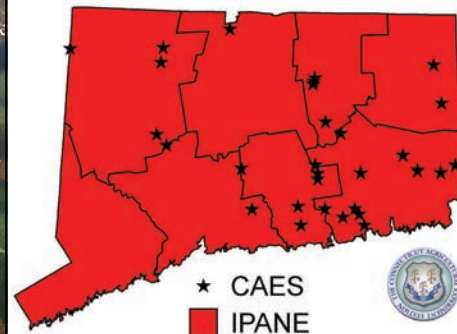


Photo by CAES IAPP



Photo by Leslie J. Mehrhoff



# *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  $\geq 12$  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



## **Easily confused species:**

Variable-leaf watermilfoil: *M. heterophyllum*

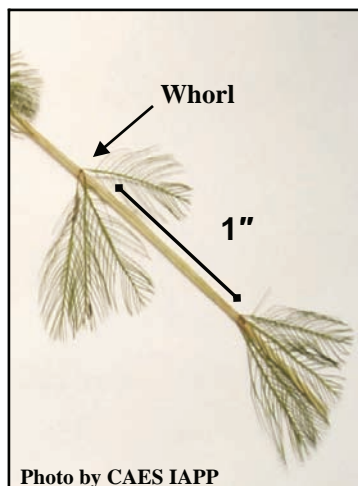
Low watermilfoil: *M. humile*

Northern watermilfoil: *M. sibiricum*

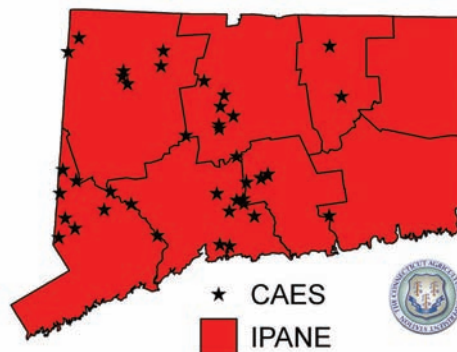
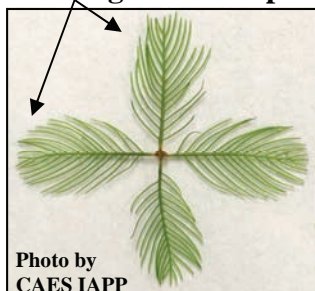
Whorled watermilfoil: *M. verticillatum*



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## **Rectangular leaf tips**



# *Najas minor*

## Common names:

- Minor naiad
- Brittle waternymph
- Spiny leaf naiad
- Eutrophic waternymph

## Origin:

Europe

## Key features:

Plants are submersed

**Stems:** Branched stems can grow up to 4-8 inches (10-20 cm) long

**Leaves:** Opposite and lance shaped on branched stems with easily visible toothed leaf edges and leaves appear curled under, basal lobes of leaf are also serrated, 0.01-0.02 inches (0.3-0.5 mm)

**Flowers:** Monoecious (male and female flowers on same plant)

**Fruits/Seeds:** Fruits are purple-tinged and seeds measure 0.03-0.06 inches (1.5-3 mm)

**Reproduction:** Seeds and fragmentation

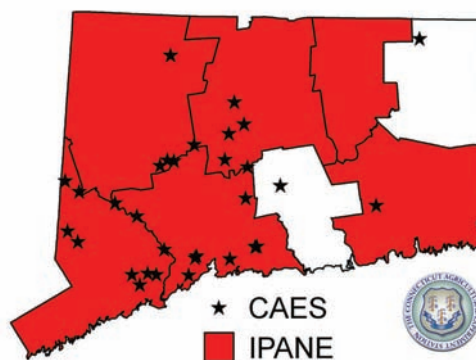
## Easily confused species:

Other naiads (native): *Najas* spp.



Toothed leaf edges

Basal lobe



# *Nelumbo lutea*

**Common name:**

American water lotus

**Origin:**

Southeastern United States, Mexico, Honduras, and the West Indies

**Key features:**

Plants are on or above the water

**Stems:** Stiff stalk attaches to the center of the leaf

**Leaves:** Large, bluish-green, circular leaves with no “slit” like water lilies

**Flowers:** White to yellowish flowers measure up to 8 inches (20 cm) wide

**Fruits/Seeds:** Seeds are nut-like and contained in a structure that resembles the top of a watering can

**Reproduction:** Seed

**Easily confused species:**

None

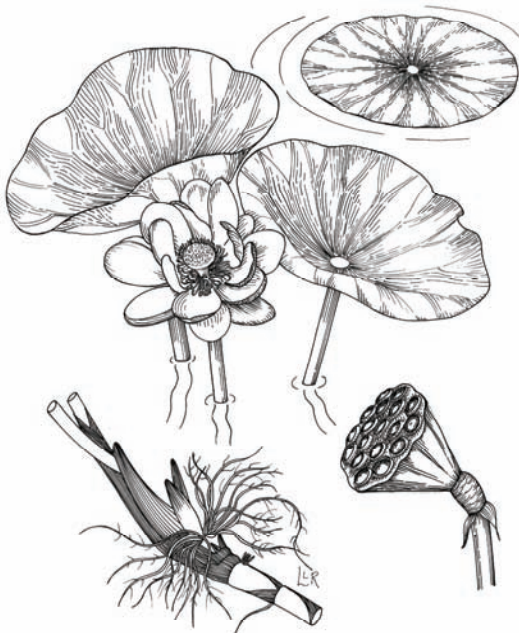


Photo by Robert H. Mohlenbrock © USDA-NRCS PLANTS Database



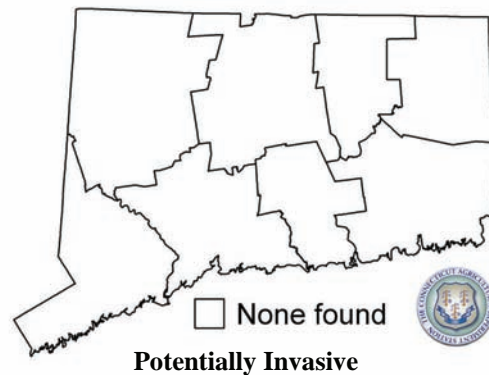
*Nelumbo lutea*  
Photo by Anne Barkdoll

Photo by Anne Barkdoll



*Nelumbo lutea*  
american lotus

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# *Nymphoides peltata*

**Common name:**  
Yellow floating heart

**Origin:**  
Europe, Japan, China, and India

**Key features:**  
Floating leaf plant

**Stems:** Branching stems spread over water's surface

**Leaves:** Floating leaves are round and heart-shaped at base, paired at each node

**Flowers:** Flowers are bright yellow on long peduncles with 5 fringed petals

**Fruits/Seeds:** Seeds are flat and oval and are in capsules

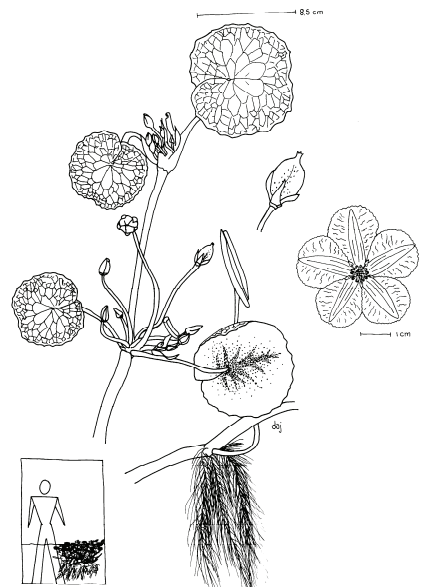
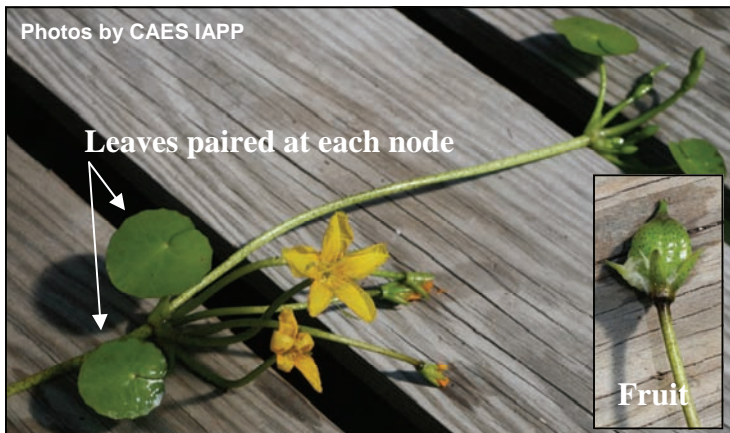
**Reproduction:** Seeds and rhizomes



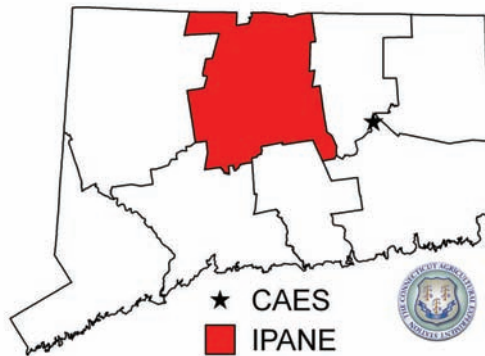
## **Easily confused species:**

Little floating heart: *Nymphoides cordata*

Yellow water lily: *Nuphar variegata*



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# *Pistia stratiotes*

## **Common names:**

Water lettuce

Tropical duckweed

## **Origin:**

Nativity unknown, but possibly South America, Africa, Southeastern US

## **Key features:**

Free floating plant that resembles a head of lettuce

**Stems:** Roots are long and feathery

**Leaves:** Leaves are fleshy and covered with dense white hairs and have parallel venation

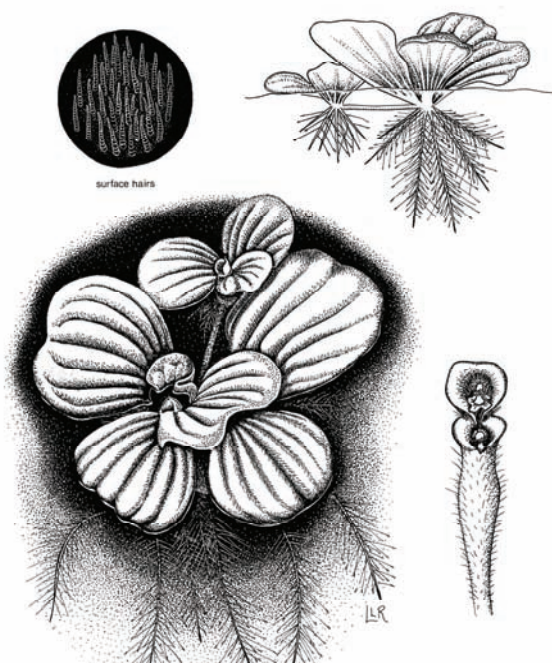
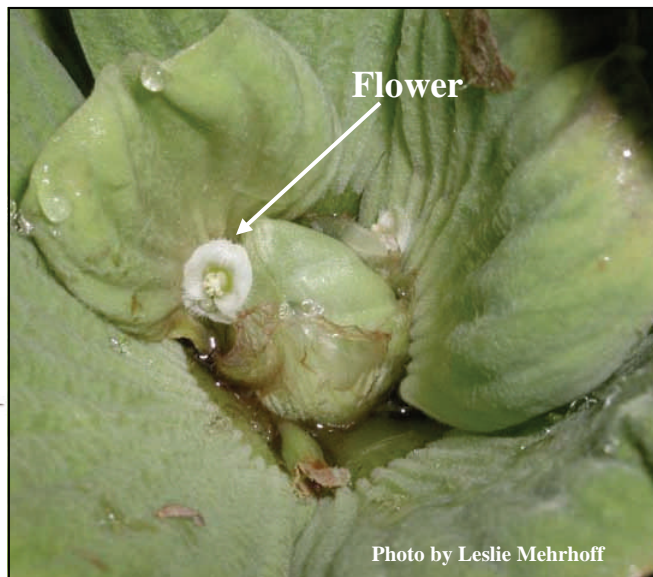
**Flowers:** Several male flowers form a whorl around a spike with one female flower below them

**Fruits/Seeds:** Fruit are light green berries that produce 0.04 inch (1 mm) brown seeds

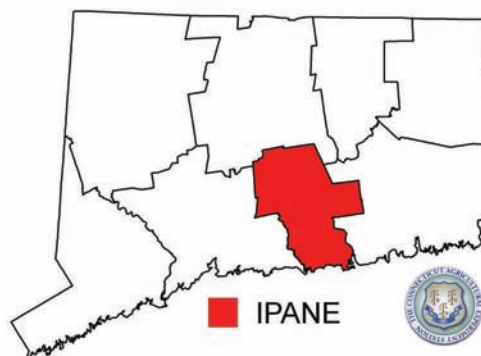
**Reproduction:** Seeds and stolons

## **Easily confused with:**

None



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# *Potamogeton crispus*

## **Common names:**

Curly leaf pondweed  
Crispy-leaved pondweed  
Crisped pondweed

## **Origin:**

Asia, Africa, and Europe

## **Key features:**

Plants are submersed

**Stems:** Stems are flattened, can form dense stands in water up to 15 feet (5 m) deep

**Leaves:** Alternate leaves 0.3-1 inches (3-8 cm) wide with wavy edges (similar to lasagna) with a prominent mid-vein

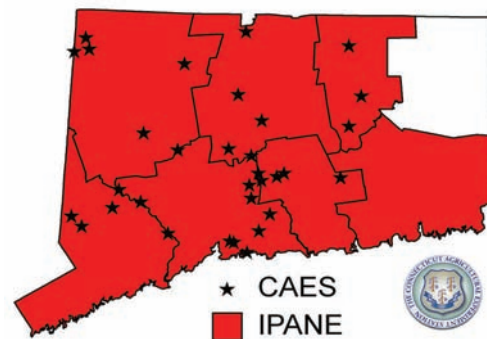
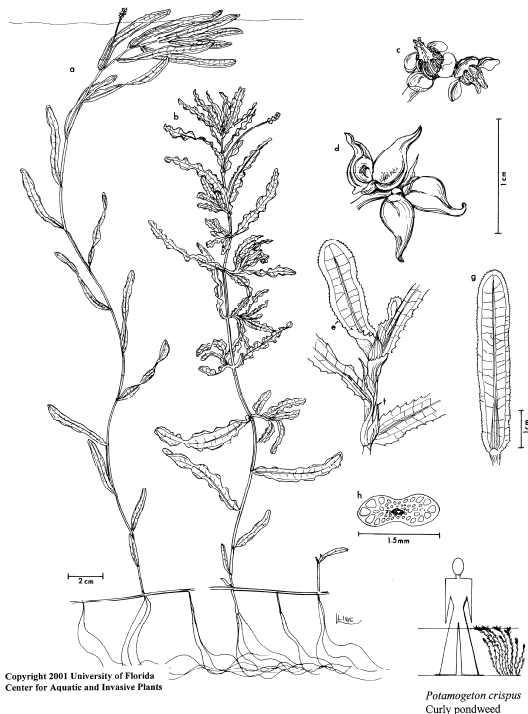
**Flowers:** Brown and inconspicuous

**Fruits/Seeds:** Fruit is oval 0.1 inches (3 mm) long

**Reproduction:** Turions (right) and seeds

## **Easily confused species:**

None



# *Rorippa microphylla*

**Common name:**

Onerow yellowcress

**Origin:**

North Africa, Europe, and the Middle East

**Key features:**

**Stems:** Grow flatly across the ground and root at nodes and forms large mats, can be fully to partially submerged

**Leaves:** Pinnate leaves with 3-9 segments and the terminal leaf is the largest

**Flowers:** White petals with 4 part perianth

**Fruits/Seeds:** Fruit is a long and slender silique, up to 1 inch (25 mm) long, with seeds in one row on each side

**Reproduction:** Seed

**Easily confused species:**

Watercress: *Rorippa nasturtium-aquaticum*

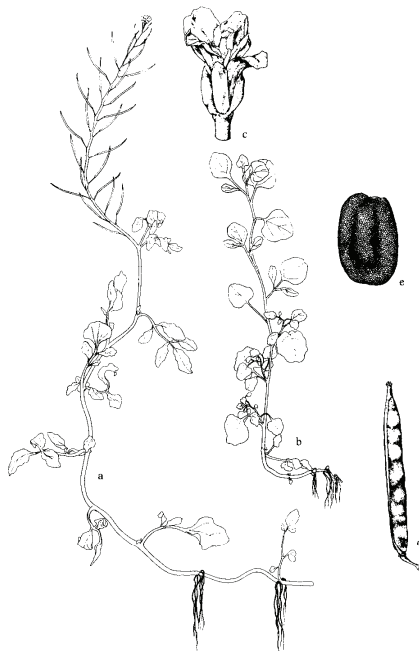
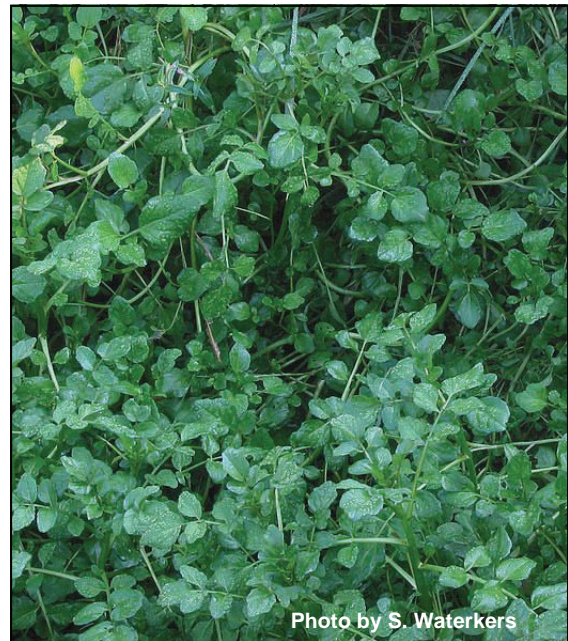
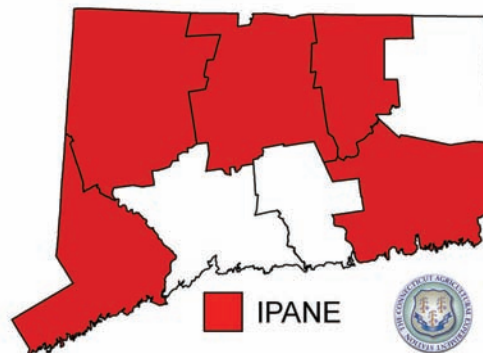


Fig. 129. *Nasturtium microphyllum*: a. habit, flowering and fruiting; b. habit, vegetative; c. flower; d. fruit; e. seed (G&W).

155

Crow and Hellquist 2000



# *Rorippa nasturtium-aquaticum*

**Common name:**

Watercress

**Origin:**

North Africa, the Middle East, and Europe

**Key features:**

**Stems:** Hollow stems can grow flat on mud or be fully or partially submerged

**Leaves:** Leaves are pinnately compound have 3-9 segments and vary in shape, the terminal leaf is the largest in each segment

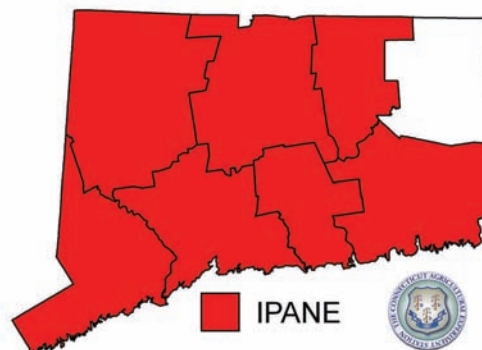
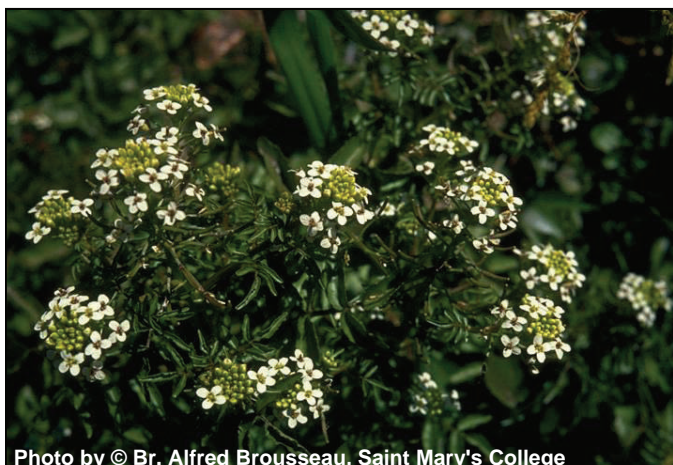
**Flowers:** Small white and green flowers; four white petals with four long and 2 short stamens

**Fruits/Seeds:** Fruit is pod-like silique, 0.4-0.6 in. (10-15 mm) long, with seeds in two rows per side

**Reproduction:** Fragmentation and seed

**Easily confused species:**

Onerow yellowcress: *Rorippa microphylla*



# Salvinia molesta

**Common names:**

- Giant salvinia
- Water fern
- Salvinia
- Kariba weed
- Aquarium watermoss

**Origin:**

Brazil

**Key features:**

Free floating plant with no roots

**Stems:** Horizontal stems float below the surface

**Leaves:** Submersed leaves are brown and feather-like; surface leaves are folded at midrib and covered with many water repellent hairs that are split in the middle but rejoin at the tips; leaves become tightly packed into long chains as the plant grows

**Fruits/Seeds:** Egg shaped sporocarps

**Reproduction:** Fragmentation

**Easily confused species:**

None



Photo by CAES IAPP

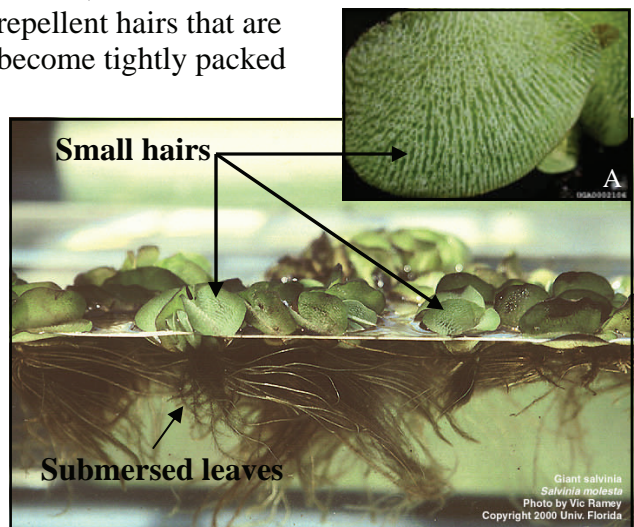
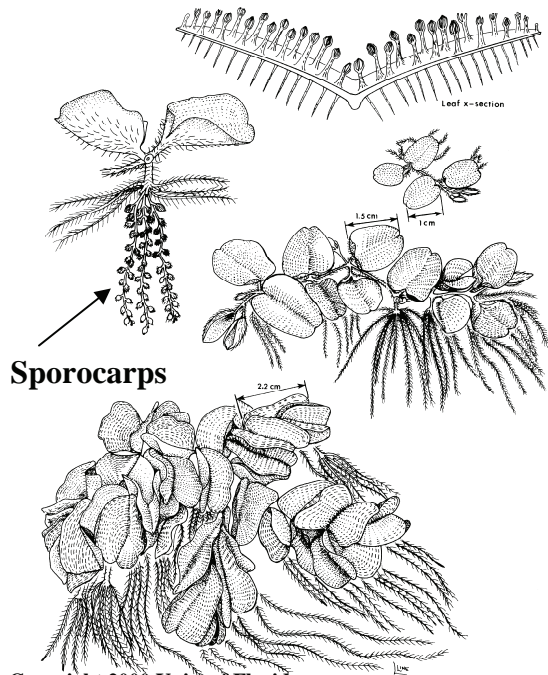
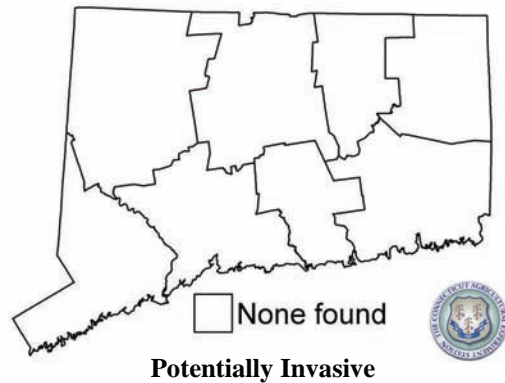


Photo credit A: Mic Julien, Commonwealth Scientific And Industrial Research Org., Bugwood.org



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Salvinia molesta Giant salvinia



# *Trapa natans*

**Common names:**

Water chestnut

European water chestnut

**Origin:**

Asia and Europe

**Key features:**

Plants are rooted to substrate and float

**Stems:** Stem is submersed, flaccid and can be up to 15 feet (5 m) long

**Leaves:** Leaves 0.8-0.16 inches (2-4 cm) long are triangular and toothed along the front edge with inflated petioles, leaves float in a rosette pattern

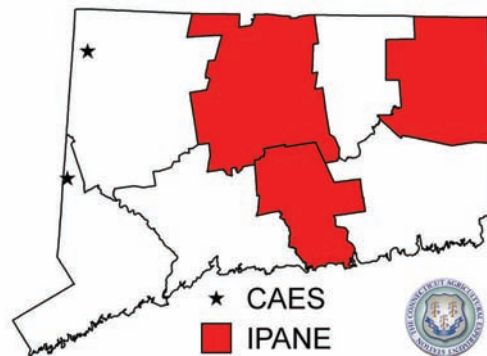
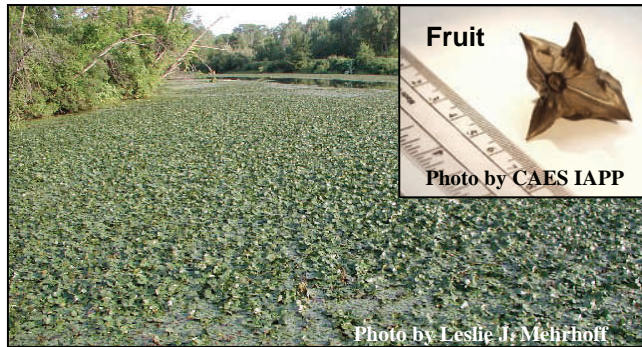
**Flowers:** Flowers are located in the center of the rosette and have four white petals

**Fruits/Seeds:** Fruit is hard and has four sharp spines

**Reproduction:** Seeds and fragmentation

**Easily confused species:**

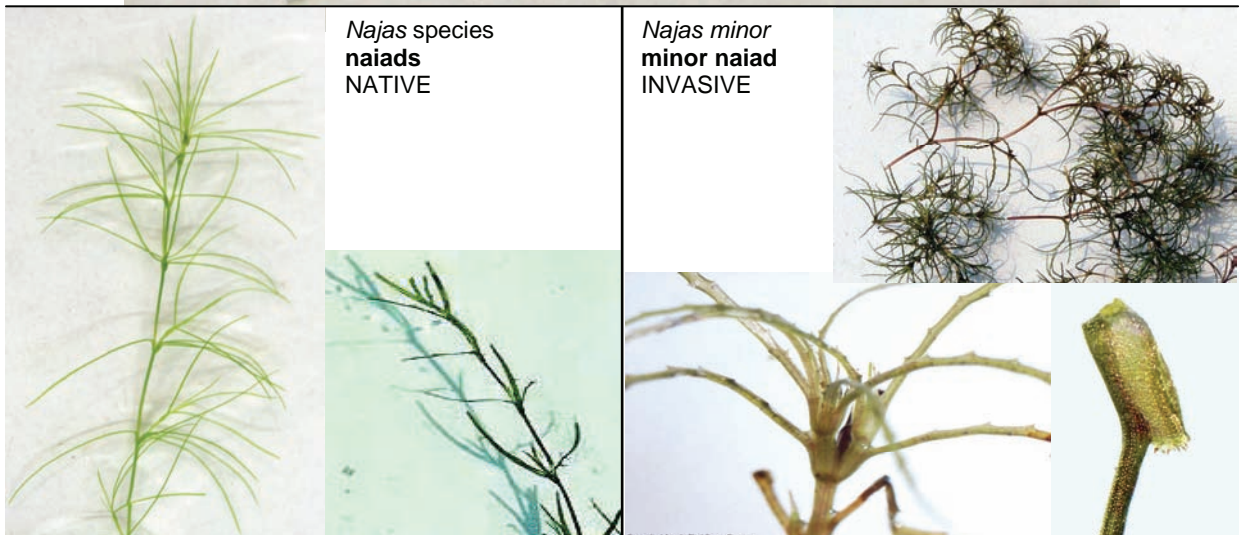
None



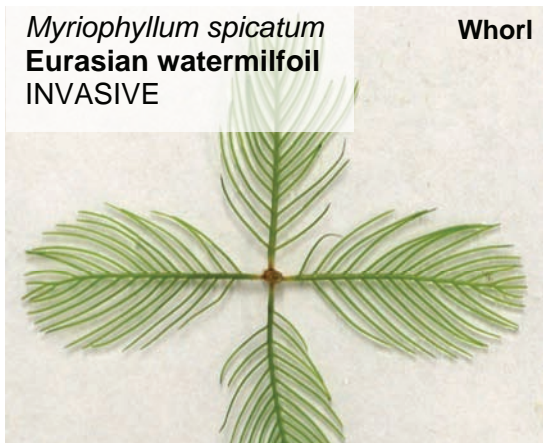
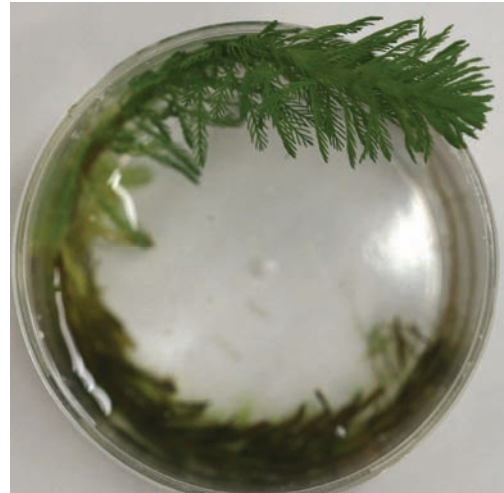
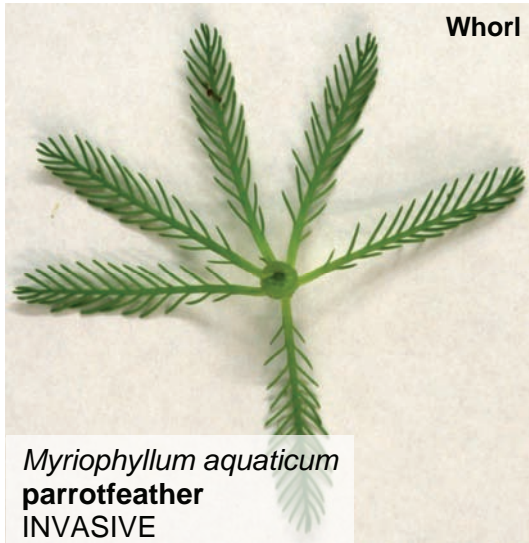
# Commonly confused aquatic plants

Submersed plants with non-dissected leaves

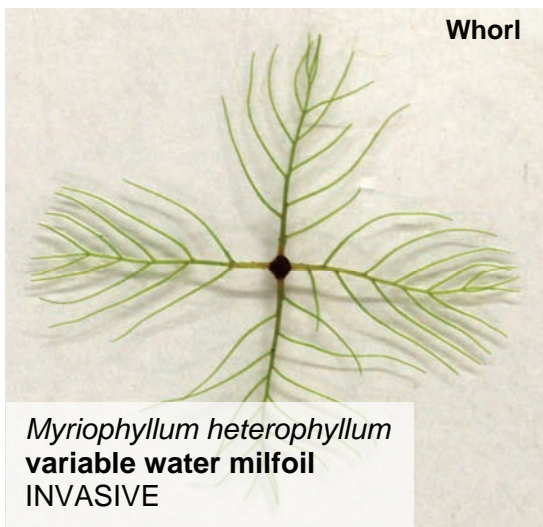
(all photos CAES IAPP)



**Submersed plants with feathery dissected leaves**  
*(all photos CAES IAPP)*

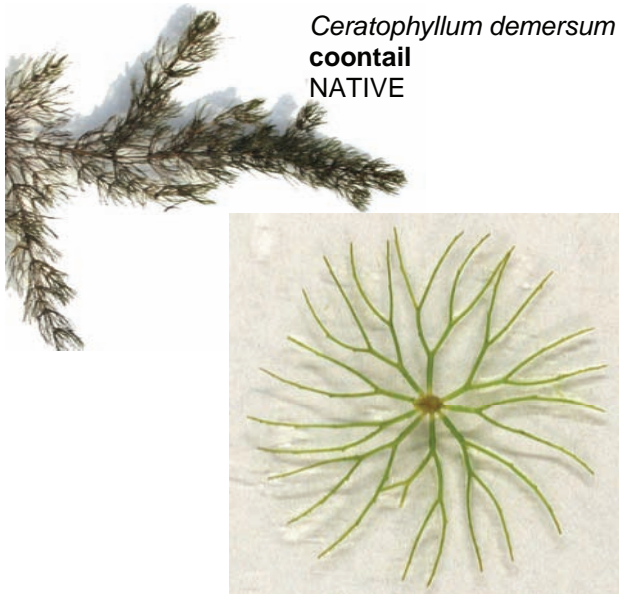


**Note:** *Myriophyllum sibiricum*, **northern watermilfoil**, is a threatened native species that is easily confused with *M. spicatum*. *Myriophyllum sibiricum*'s distinguishing features include; less than 12 leaflet pairs per leaf, winter buds and stem tips that are usually green instead of red.



**Submersed plants with forked and branched dissected leaves**

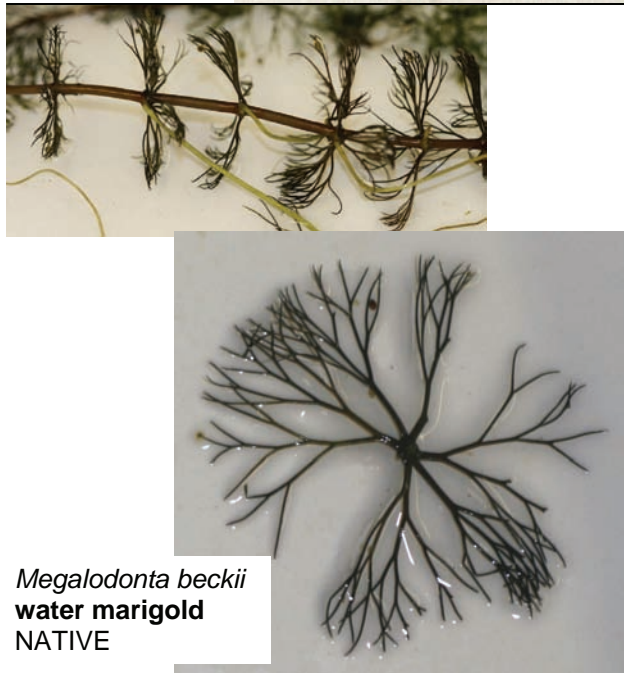
(all photos CAES IAPP except where noted )



*Ceratophyllum demersum*  
**coontail**  
NATIVE



*Utricularia* species  
**bladderworts**  
NATIVE



*Megalodonta beckii*  
**water marigold**  
NATIVE

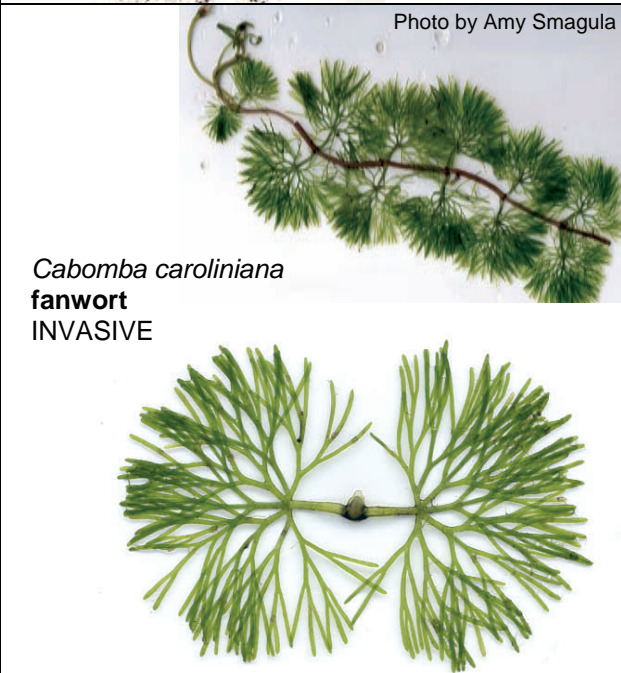
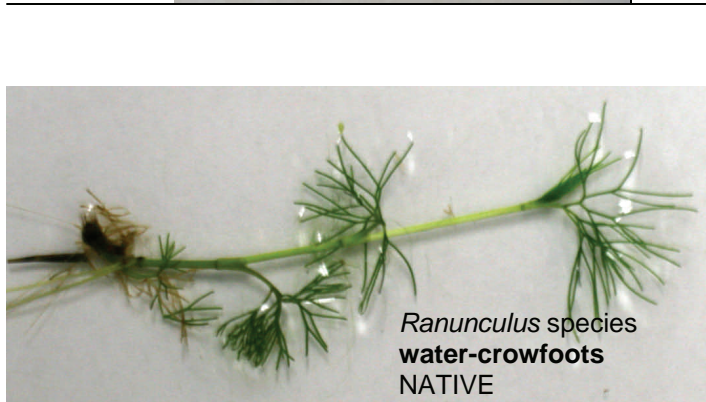


Photo by Amy Smagula

*Cabomba caroliniana*  
**fanwort**  
INVASIVE



*Ranunculus* species  
**water-crowfoots**  
NATIVE





# Key to Invasive or Potentially Invasive Aquatic Plants of Connecticut

*Key also includes commonly confused native species*

## Floating-Leaf Plants (field characteristics)

1. Plants free-floating on water's surface, not rooted to the substrate\*
  2. Leaves folded along midrib, surface covered with hairs.....*Salvinia molesta* (**Giant Salvinia**)
  2. Leaves not folded, surface smooth
    3. Petioles inflated; oval leaves in a rosette; light purple flowers .....  
..... *Eichhornia crassipes* (**Water Hyacinth**)
    3. Petioles not inflated; broad, fleshy leaves in a rosette, covered with dense white hairs.....  
..... *Pistia stratiotes* (**Water Lettuce**)
1. Plants rooted in substrate
  4. Leaves forming a rosette; leaves triangular, toothed; petioles inflated; spiny fruit.....  
..... *Trapa natans* (**Water Chestnut**)
  4. Leaves not forming rosette
    5. Leaves compound, cut into several leaflets
      6. Leaves comprised of four leaflets, like a four-leaf clover.....  
..... *Marsilea quadrifolia* (**European Watercress**)
      6. Leaves pinnately compound with 3-9 leaflets, terminal leaflet is largest; hollow stems floating; small white and green flowers in clusters
        7. Pod-like fruit 0.4-0.6 inches (10-15 mm) long, 2 rows of seeds per side.....  
..... *Rorippa nasturtium-aquaticum* (**Watercress**)
        7. Pod-like fruit 0.7-1 inches (17-26 mm) long, 1 row of seeds per side.....  
..... *Rorippa microphylla* (**Onerow Yellowcress**)
    5. Leaves entire or lobed
      8. Leaves entire (no slit), circular, bluish green, on stiff stalk above water.....  
..... *Nelumbo lutea* (**Water Lotus**)
      8. Leaves lobed, heart shaped
        9. Yellow flowers
          10. Flowers with five, fringed petals..... *Nymphoides peltata* (**Yellow Floating Heart**)
          10. Flowers ball shaped, petiole flattened.....  
..... *Nuphar variegata* (**Yellow Water Lily**) (native)
        9. White flowers with five, fringed petals; roots close to the floating leaves, near the surface of the water..... *Nymphoides cordata* (**Little Floating Heart**) (native)

\*Plants such as yellow and little floating heart and water chestnut can become free-floating when dislodged from sediment or detached from a rooted plant.

## Submersed Plants (field characteristics)

1. Leaves entire, sometimes toothed
  2. Leaves alternate, with wavy edges (lasagna-like); turions may be present; prominent leaf mid-vein..... *Potamogeton crispus* (**Curly Leaf Pondweed**)
  2. Leaves whorled, opposite, or clustered
    3. Leaf bases wider than the leaf blade, appearing opposite, whorled or clustered
      4. Toothed leaf edges visible without magnification; leaves appear curled under.....  
..... *Najas minor* (**Minor Naiad**)
      4. Magnification needed to see toothed edges.....*Najas* species (**Other Naiads**) (native)
    3. Leaf base not distinct from rest of leaf blade, leaves strictly whorled
      5. Whorls of 3 leaves; leaf margins not toothed..... *Elodea* species (**Waterweeds**) (native)
      5. Whorls of 4 or more leaves; leaf margins toothed (magnification sometimes needed)
        6. Leaves 4 per whorl (rarely up to 6 leaves/whorl), 0.5-1.5 inches (1.2-4 cm) long, toothed leaf margins (need magnification)..... *Egeria densa* (**Brazilian Waterweed**)
        6. Leaves 5 per whorl (rarely 2-6 leaves/whorl), 0.2-0.7 inches (0.6-1.7 cm) long, toothed leaf margins; mid-vein may be toothed; tubers present; may have turions.....  
..... *Hydrilla verticillata* (**Hydrilla**)
1. Leaves dissected
  7. Leaves feathery in appearance (pinnate)
    8. Leaves concentrated above the water; thin, rounded-tipped, blue-green leaves.....  
..... *Myriophyllum aquaticum* (**Parrotfeather**)
    8. Leaves concentrated below the water, except for emergent flower spikes
      9. Leaf whorls less than 1 inch (2.5 cm) apart, giving the plant a ropy look; triangular shaped leaves, with less than or equal to 11 pairs of leaflets; thick spike with entire to toothed leaves..... *Myriophyllum heterophyllum* (**Variable Watermilfoil**)
      9. Leaf whorls 1 inch (2.5 cm) apart; rectangular shaped leaves, with greater than or equal to 12 pairs of leaflets; thin spike with leaves smaller than flowers.....  
..... *Myriophyllum spicatum* (**Eurasian Watermilfoil**)
      9. Leaves rounded in whorls with less than 12 pairs of leaflets; winter buds .....  
..... *Myriophyllum sibiricum* (**Northern Watermilfoil**) (native, threatened)
  7. Leaves forked
    10. Leaves with numerous small bladders, not rooted.....  
..... *Utricularia* species (**Bladderworts**) (native)
    10. Leaves lacking bladders
      11. Leaves alternate; petioles sheathing stem; flowers usually solitary.....  
..... *Ranunculus* species (**Water-crowfoots**) (native)
      11. Leaves opposite or whorled
        12. Leaves whorled; leaf divisions fork in pairs, forking a total of 1-4 times, leaves often toothed; no roots or flower spike..... *Ceratophyllum* species (**Hornworts**) (native)
        12. Leaves opposite, fan-shaped; leaf divisions fork into either 2 or 3 segments
          13. Leaves attached to the stem with petioles; small floating leaves; flowers white.....  
..... *Cabomba caroliniana* (**Fanwort**)
          13. Leaves not attached to the stem by a petiole, leaves opposite but appearing whorled; emersed leaves on spike entire to toothed; flowers yellow.....  
..... *Megalodonta beckii* (**Water Marigold**) (native, threatened)

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**Notes:**