LAKE STEWARDS OF MAINE
Volunteer Lake Monitoring Program

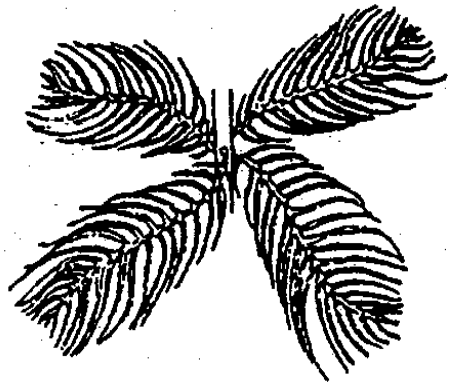
Invasive Plant Patrol

PLANT PADDLE

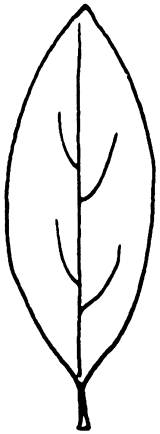
Sorting Tray Card Templates

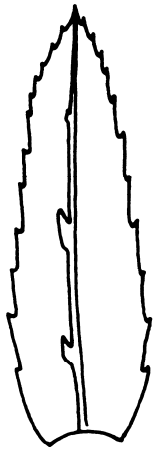
If you find a suspicious plant:

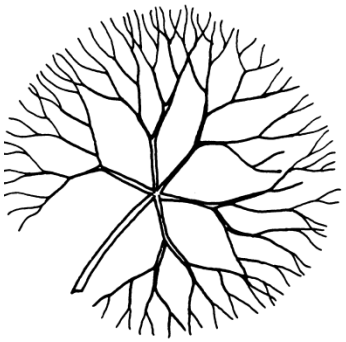
1. *Do not attempt to remove the entire plant*
2. Mark the location with a weighted buoy
3. Collect a specimen for species confirmation; include flowering portions if available
4. Place specimen in a container or Ziploc bag with cool water
5. Store in a cool place until ready to submit or ship
6. Immediately contact Lake Stewards of Maine: 207-783-7733 or Stewards@LakeStewardsME.org

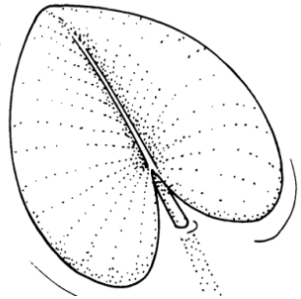


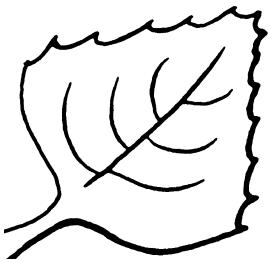
Leaf Type

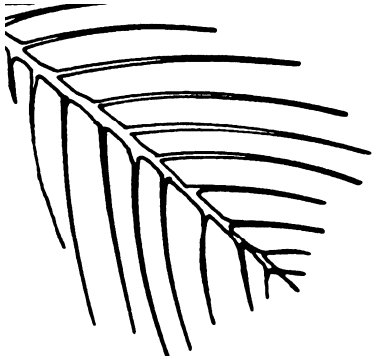










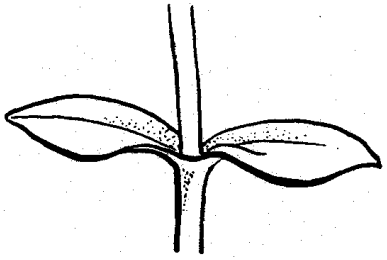


Entire

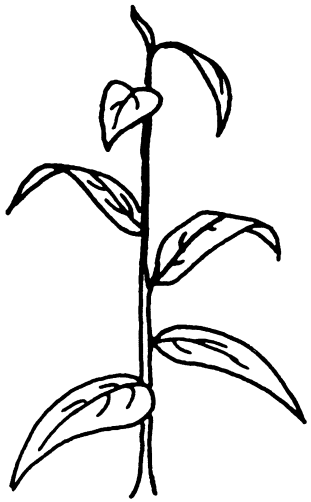
Serrated

Finely Divided

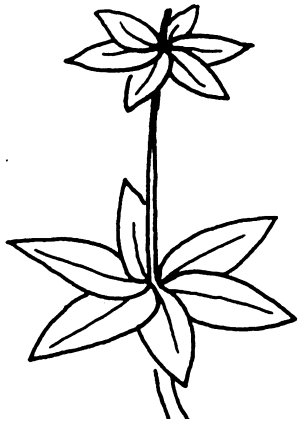
Leaf Arrangement



Opposite

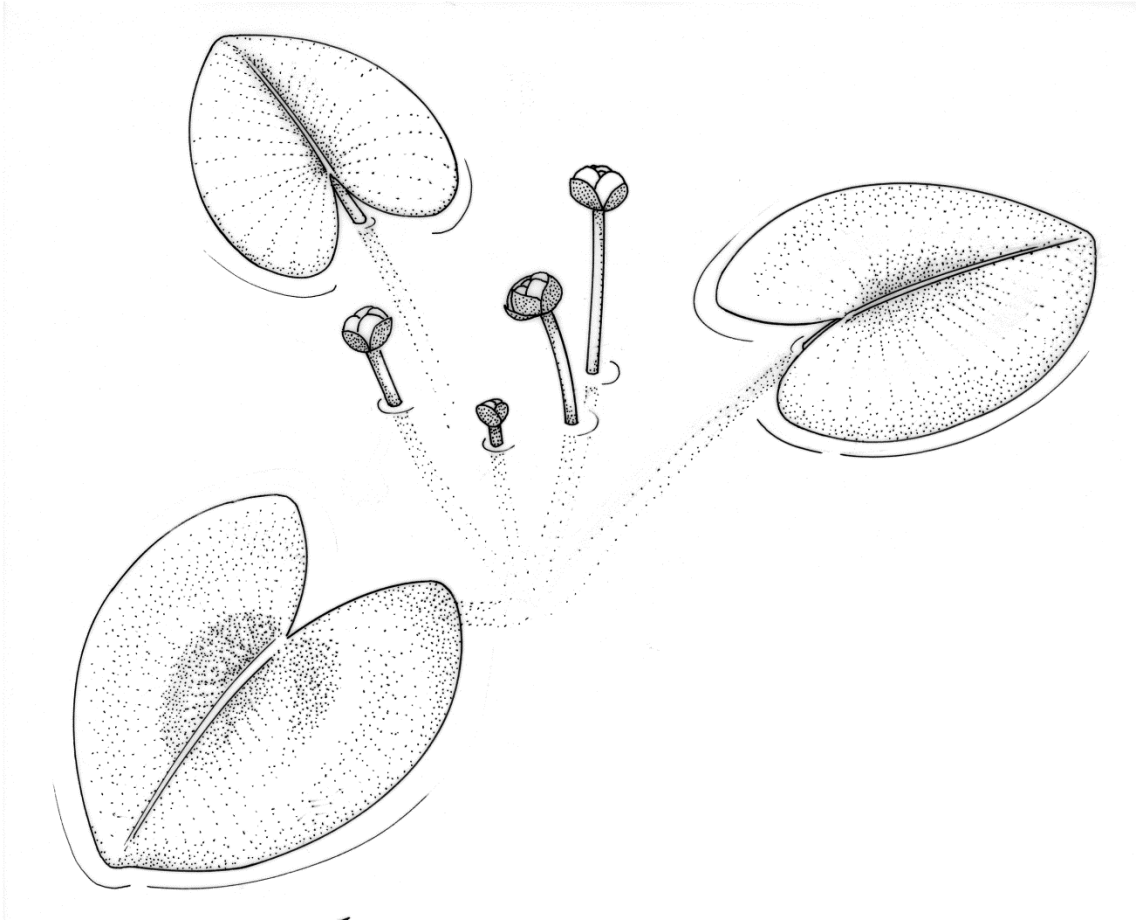


Alternate



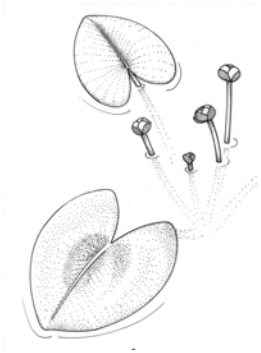
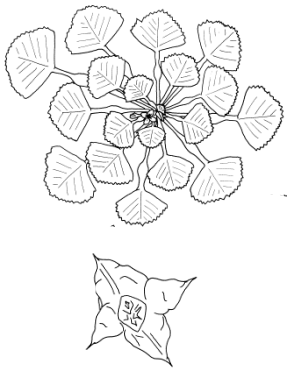
Whorled

Floating Leaf Plants



INVASIVE PLANT

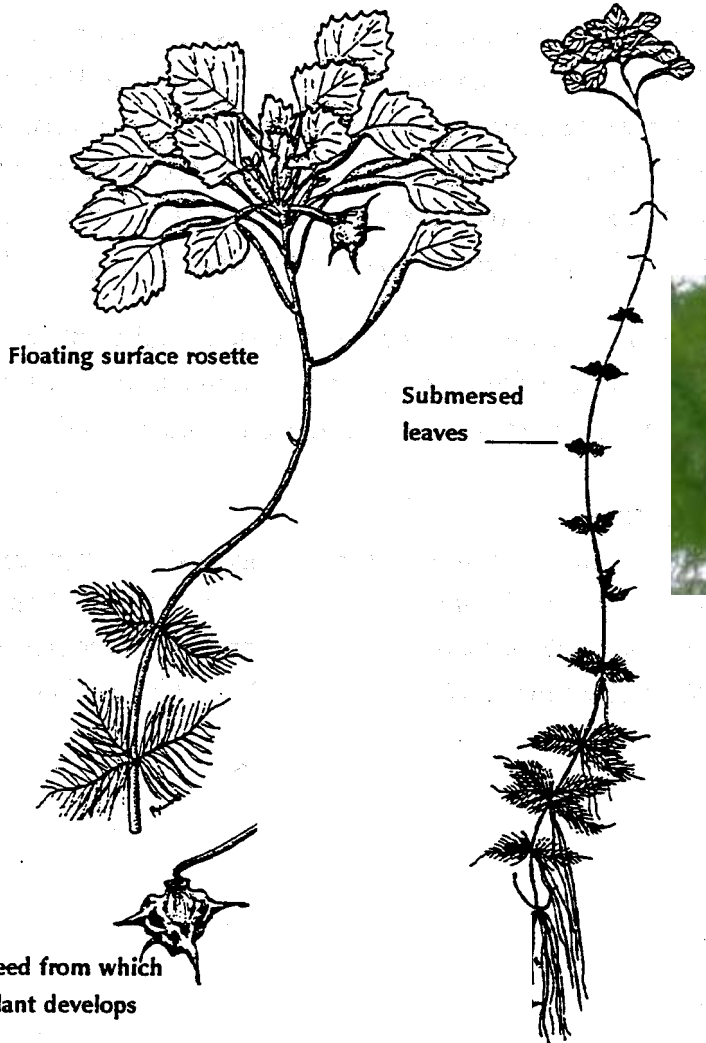
Water Chestnut (*Trapa natans*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
floating-leaf	• water chestnut has two distinct leaf types • floating leaves occur in a loose radiating pattern or “rosette” • submersed leaves are attached to the rooted stem, and are variously arranged.	• floating leaves are triangular; margins closest to tip conspicuously serrated; margins closest to leaf stem entire. • spongy floating bladders cause leaf stems to bulge midway • submersed leaves are finely divided; thread-like leaflets radiating around central midrib like a bottle brush	• small white flowers appear in the rosettes in July • fruits follow and droop to dangle below the rosette • fruits are woody and nut-like, with four sharp barbs	water chestnut is not easily confused with any other aquatic plants
				

INVASIVE PLANT

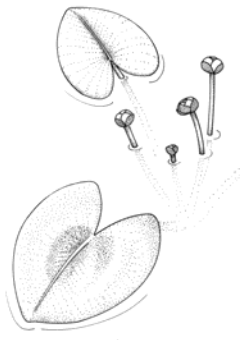
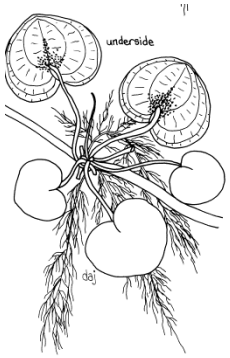
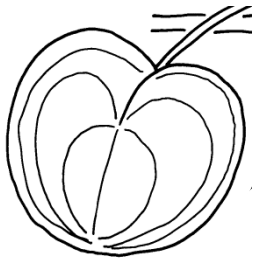
Water Chestnut

Trapa natans



INVASIVE PLANT

European Frog-bit (*Hydrocharis morsus-ranae*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
floating-leaf	leaves on stems occur in clumps	• kidney or heart-shaped • entire	• each floating clump produces one or more flowers on long stems • flowers have three white petals and a yellow center	• plants are free-floating (not rooted) • unbranched root-like tendrils (like slender bottle brushes) dangle below the floating clump • mature plants send out multiple offspring on trailing runners (stolens)
				

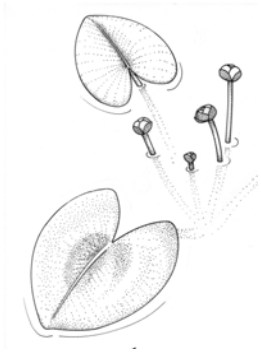
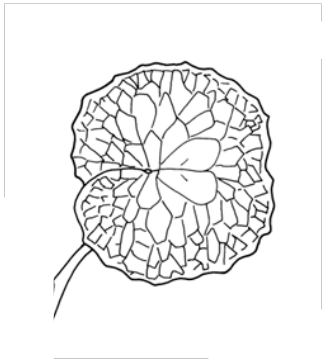
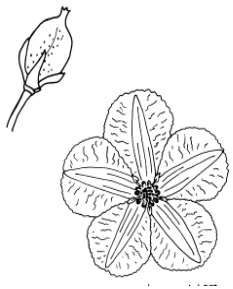
INVASIVE PLANT

European Frog-bit

Hydrocharis morsus-ranae

INVASIVE PLANT

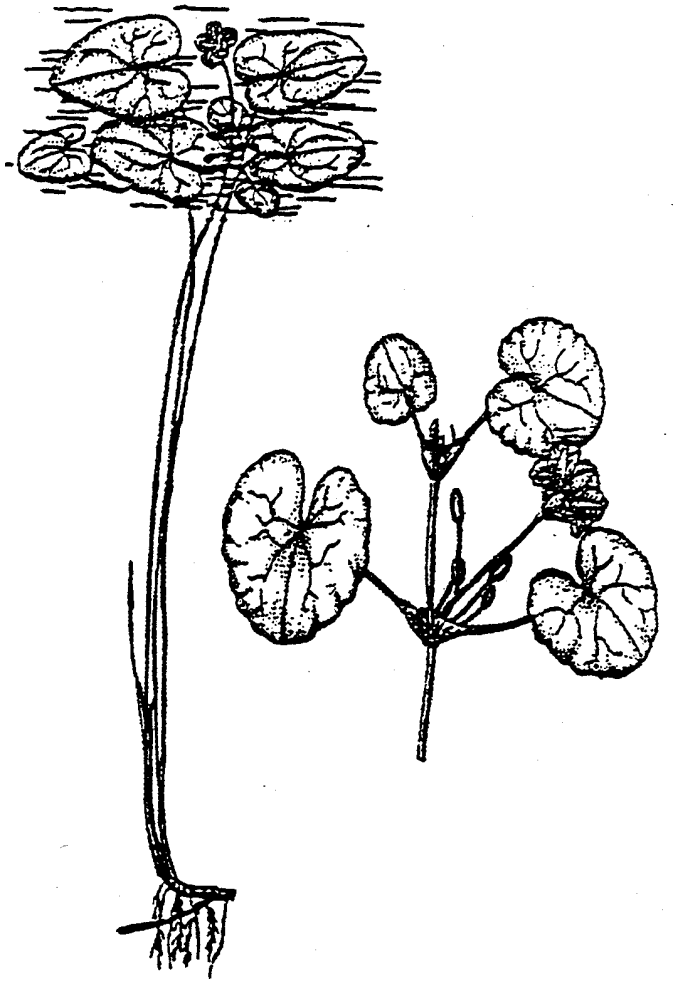
Yellow Floating Heart (*Nymphoides peltata*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
floating-leaf	• most rooted stems support a loosely branched group of several leaves • single leaves on unbranched stems may occur	• heart-shaped • 3-10 cm in diameter • may have wavy (scalloped) margins	• robust yellow flowers • 3-5 cm in diameter • 5 petals, distinctly fringed • flowers occur on emergent stalks (1-5 flowers per stalk)	• the flowers are the most distinguishing characteristic and commonly occur in July • all native look-alike floating-leaved species with heart-shaped leaves have only one leaf per unbranched stem
				

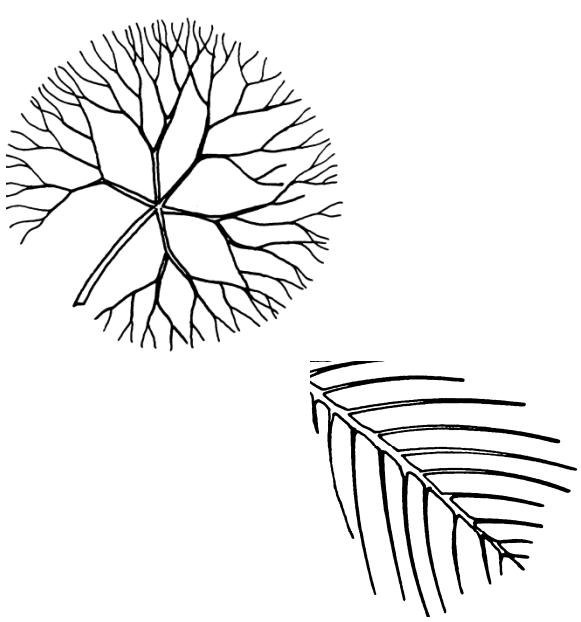
INVASIVE PLANT

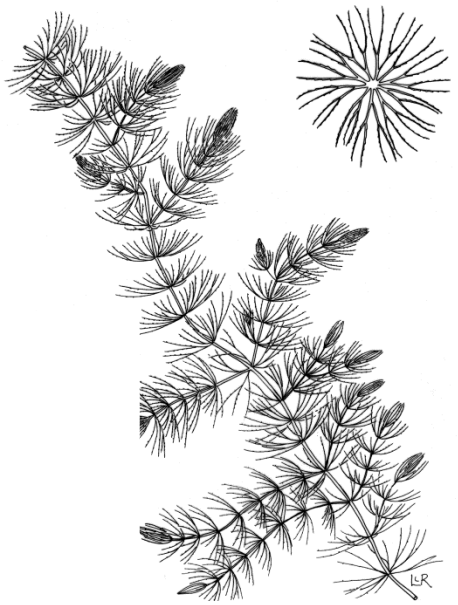
Yellow Floating Heart

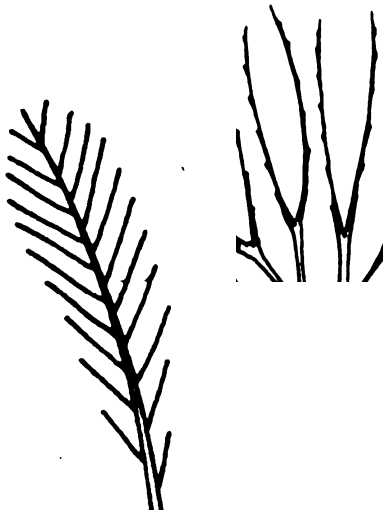
Nymphoides peltata



Plants with Finely-divided Leaves Arranged on Stems

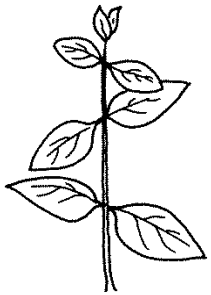
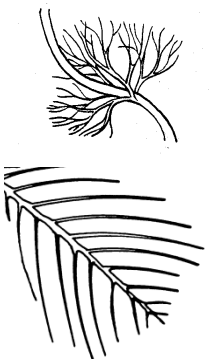
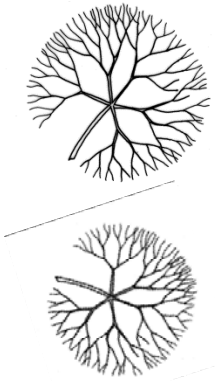
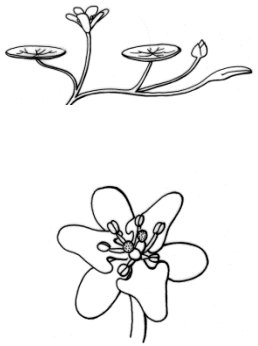
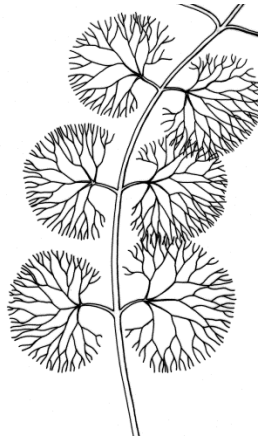






INVASIVE PLANT

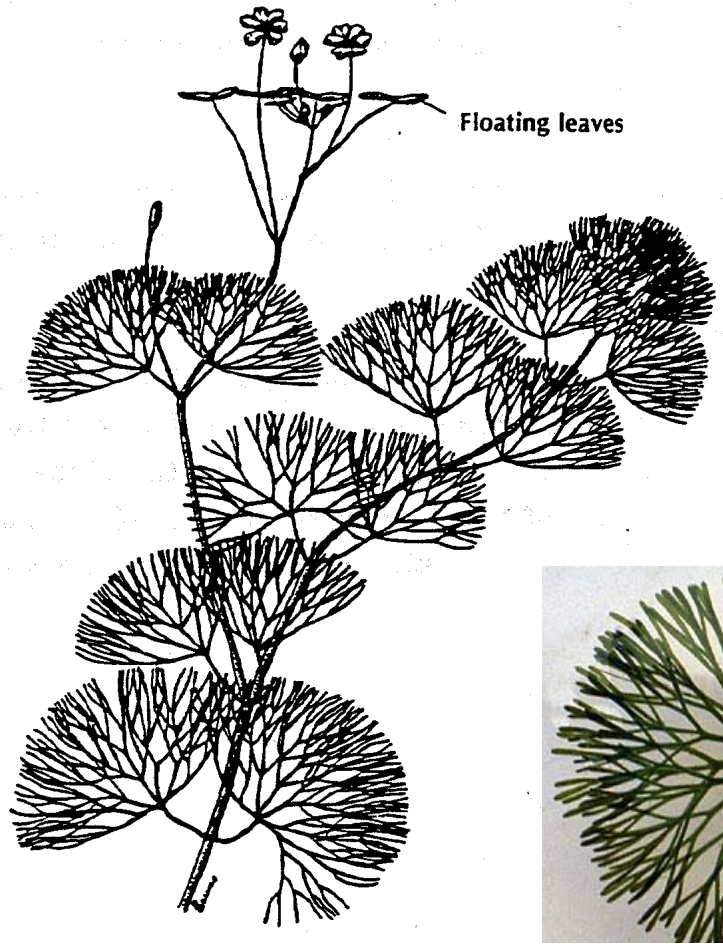
Fanwort (*Cabomba caroliniana*)

Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	• submersed leaves are strictly opposite • floating leaves are alternately arranged	• two distinct leaf types • submersed leaves are finely divided • floating leaves are oval to elliptical	submersed leaves are broadly and symmetrically branch-divided	• small white flowers (1 cm in diameter) • 6 petals and a yellow center • flowers borne on slender stalks above the floating leaves	If the following are true, strongly suspect fanwort: • broadly branch divided leaves • oppositely arranged • leaves attached to main stem by long slender leaf stems (petioles)
					

INVASIVE PLANT

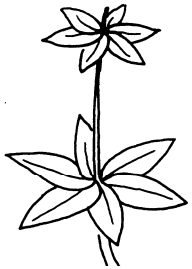
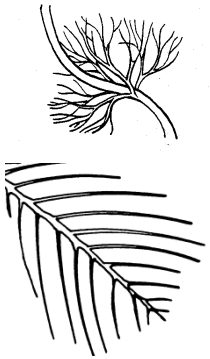
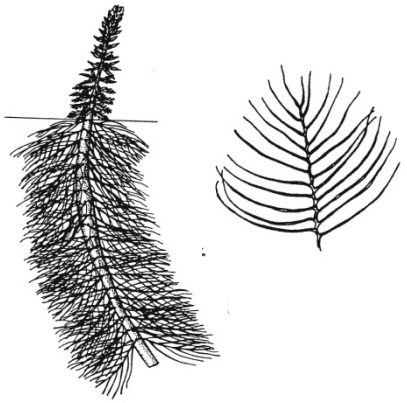
Fanwort

Cabomba caroliniana



INVASIVE PLANT

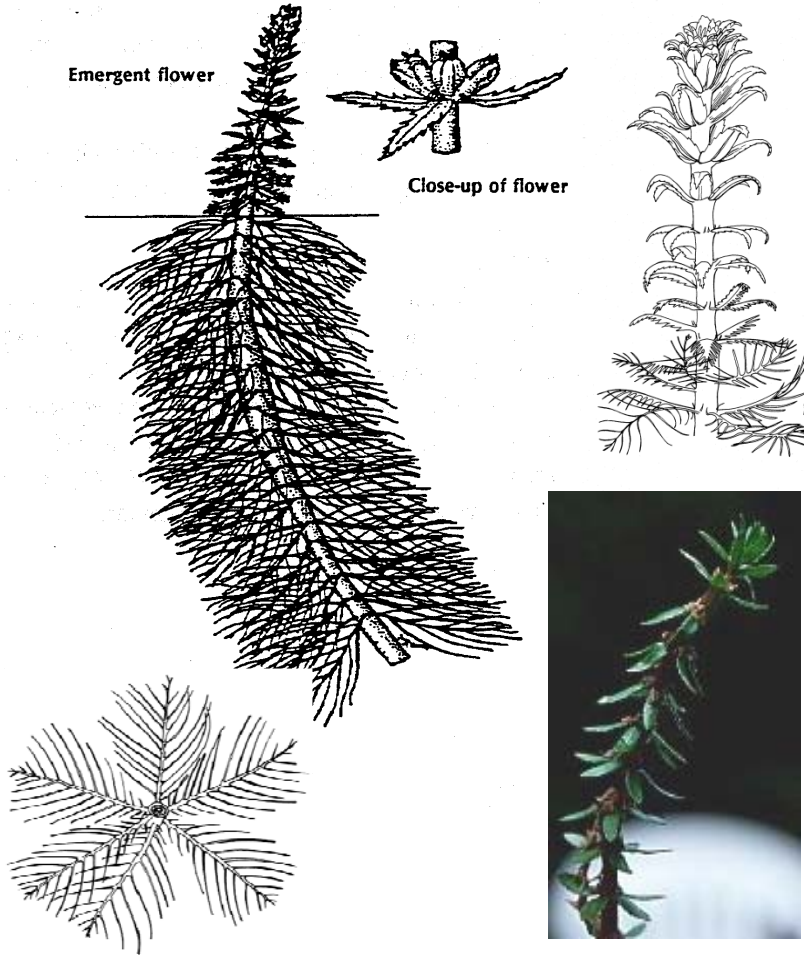
Variable Water-Milfoil *(Myriophyllum heterophyllum)*

Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	• whorls of leaves are densely arranged along the stem • generally 4 – 6 leaves per whorl	finely divided	• feather divided • all leafy milfoils have feather-divided leaves • if you find a plant with feather divided leaves, strongly suspect milfoil	• emergent flower spike • flowers and bracts arranged in whorl • serrated bracts are larger than the flowers • flowers are tiny, white, and inconspicuous	• 5 – 14 leaflet pairs per leaf • stems often red and robust • high degree of vegetative variability • an invasive hybrid of this species also occurs in Maine. The leaves of the invasive hybrid are often reddish • ALL milfoils should be considered suspect until proven otherwise
					

INVASIVE PLANT

Variable water-milfoil

Myriophyllum heterophyllum

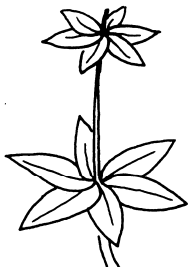
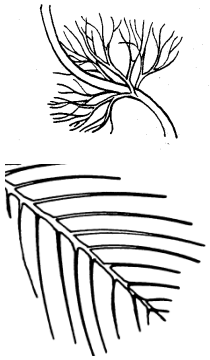
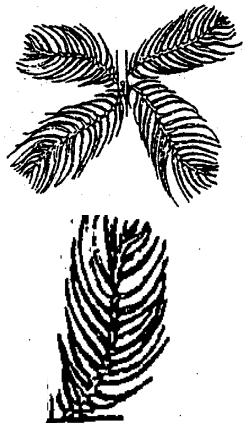
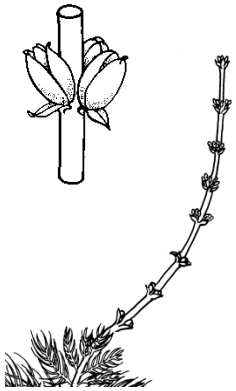
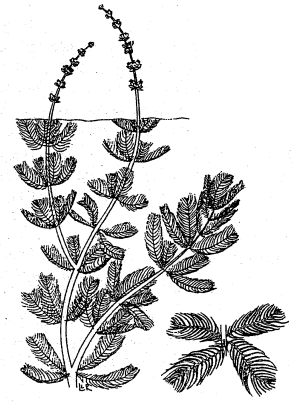


Variable milfoil

VWM
Hybrid

INVASIVE PLANT

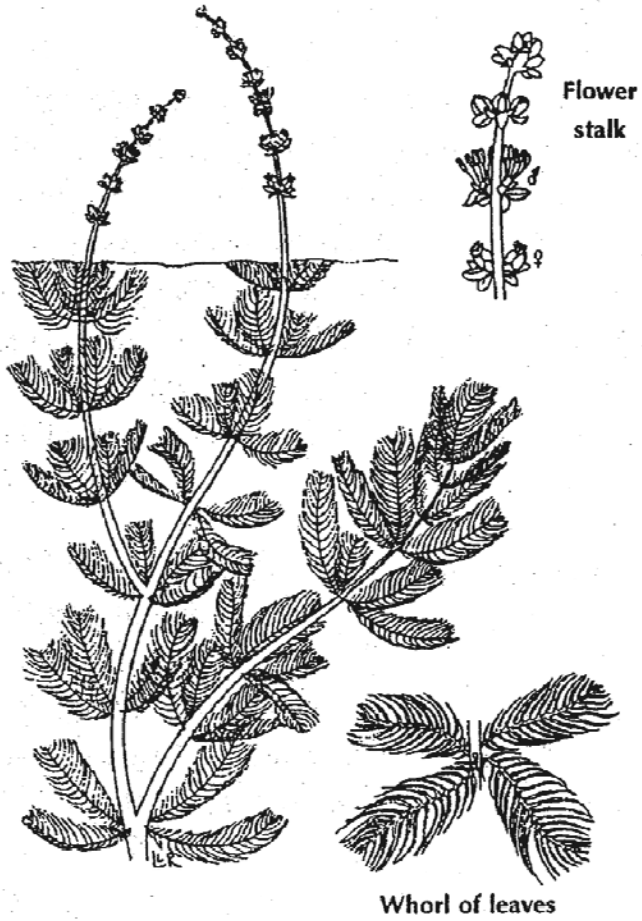
Eurasian Water-Milfoil *(Myriophyllum spicatum)*

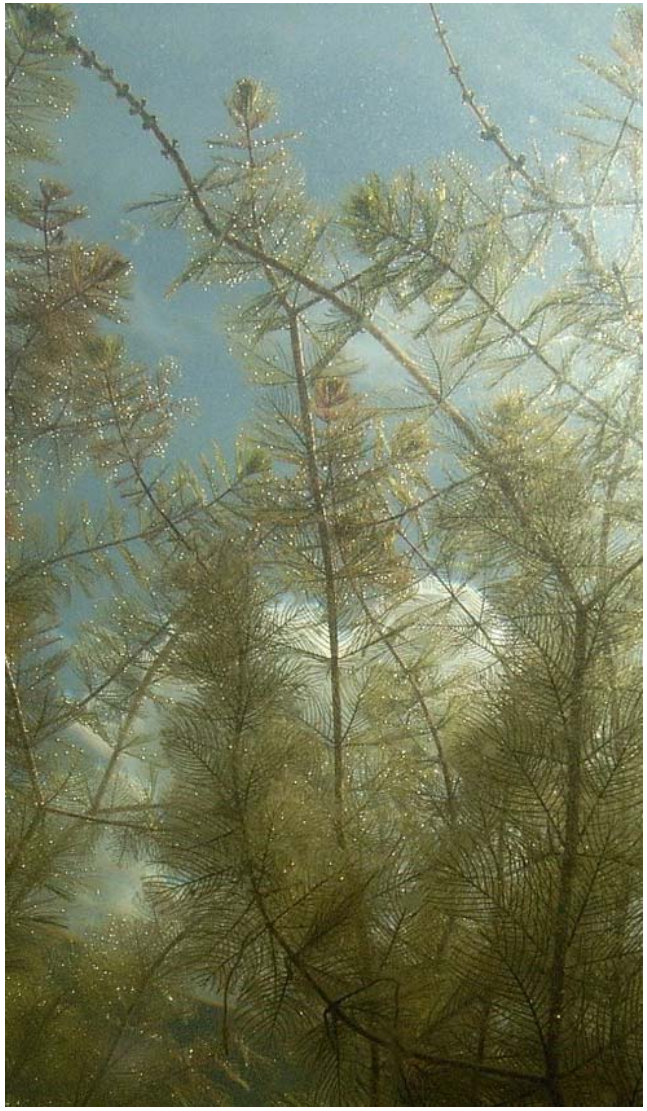
Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	• whorls of leaves openly spaced along the stem • 3 – 6 leaves per whorl (most commonly 4)	finely divided	• feather divided • all leafy milfoils have feather-divided leaves • if you find a plant with feather divided leaves, strongly suspect milfoil	• emergent flower spike • flowers and bracts arranged in whorl • flowers larger than bracts	• 12 – 24 leaflet pairs per leaf • if you count 15 or more leaflet pairs per leaf, suspect EWM • ALL milfoils should be considered suspect until proven otherwise
					

INVASIVE PLANT

Eurasian Water-Milfoil

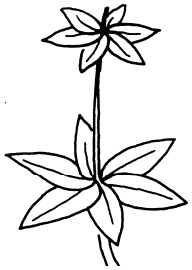
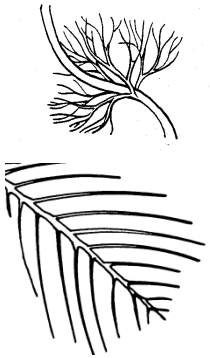
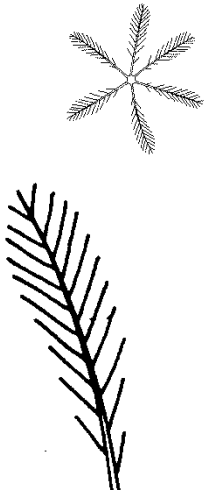
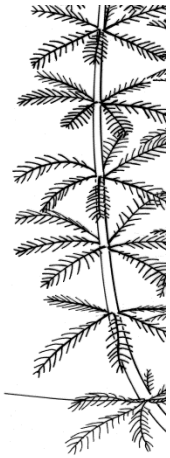
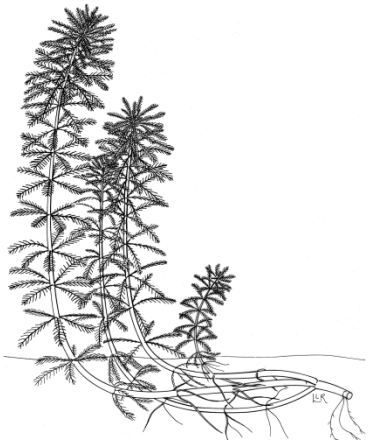
Myriophyllum spicatum





INVASIVE PLANT

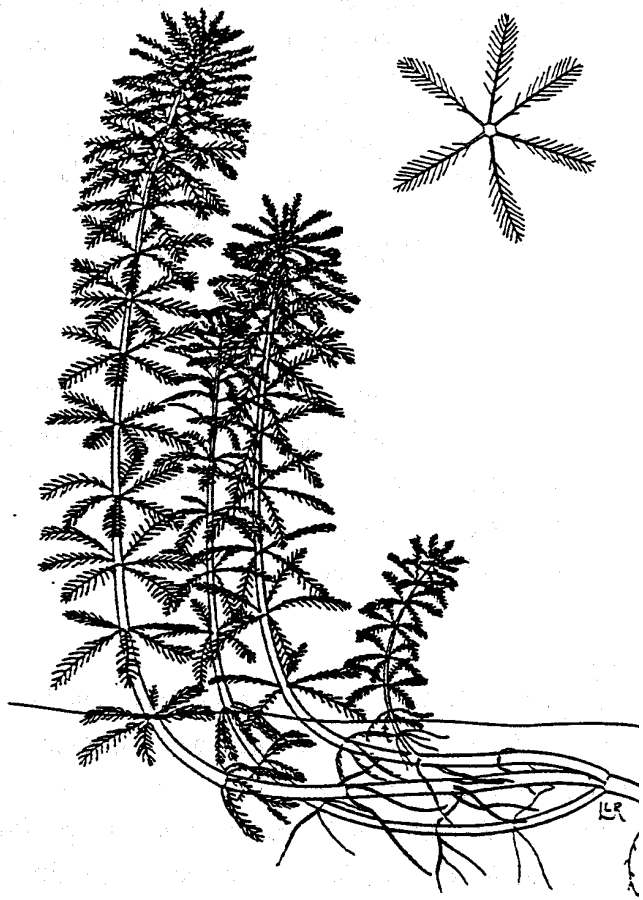
Parrot Feather *(Myriophyllum aquaticum)*

Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	• whorls of leaves openly spaced along the stem • 4 – 6 leaves per whorl	• finely divided • emergent leaves look the same as submersed leaves only more vibrant	• feather divided • all leafy milfoils have feather-divided leaves • if you find a plant with feather divided leaves, strongly suspect milfoil	• inconspicuous white flowers emerge in the axils of the emergent leaves	• 10 – 12 leaflet pairs per leaf (up to 18 possible, but not common) • emergent stems may grow to a height of 30 cm above the surface • ALL milfoils should be considered suspect until proven otherwise
					

INVASIVE PLANT

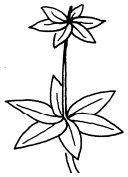
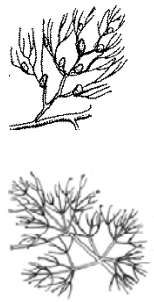
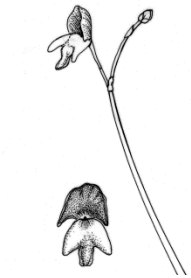
Parrot Feather

Myriophyllum aquaticum



NATIVE PLANTS

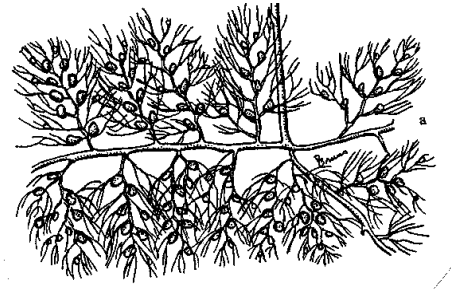
Bladderworts (*Utricularia species)*

Species	Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
common bladderwort *U. vulgaris* (previously *U. macrorhiza)*	submersed	alternate 	finely divided	branch divided 	emergent stalk with one or more yellow, snapdragon-like flowers	• bladders resembling tiny lopsided sacks are arranged on leaves in a regular pattern • younger bladders are green; older bladders are black • bladderworts are carnivorous; bladders capture and digest prey
large purple bladderwort *U. purpurea*	submersed	whorled 	finely divided	branch divided 	clusters of pale lavender snapdragon-like flowers emerge above surface	• bladders are small, translucent and usually colorless • bladderworts are carnivorous; bladders capture prey • compacted whorls of leaves at growing tips resemble tiny bird cages
						

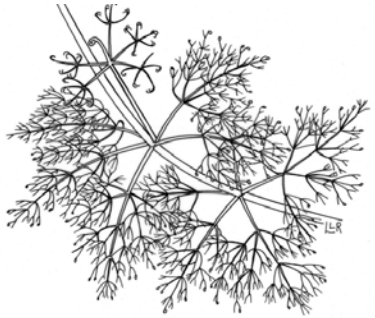
NATIVE PLANTS

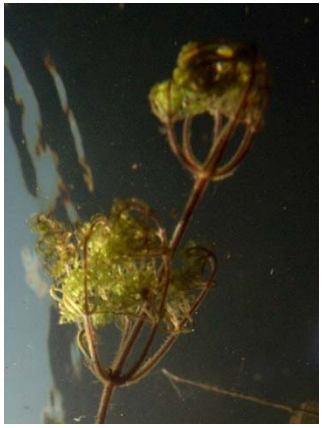
Bladderworts

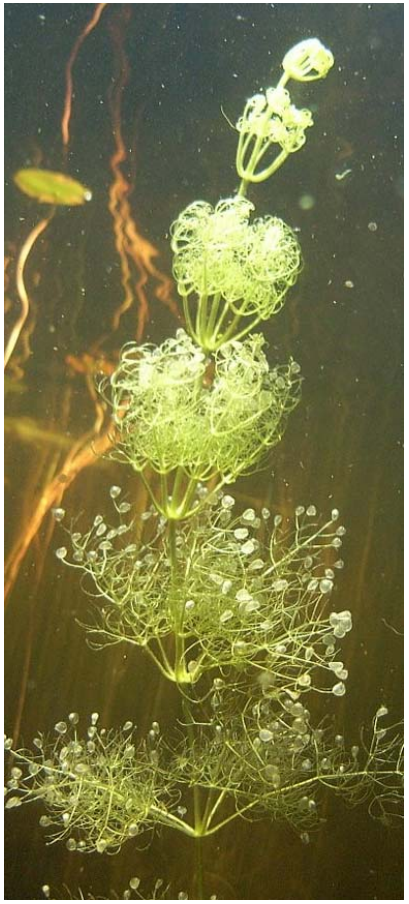
Utricularia species



Common *(U. vulgaris)*



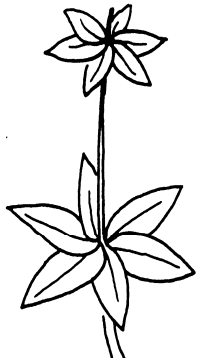
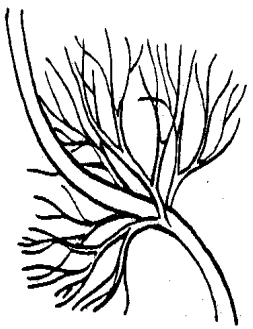
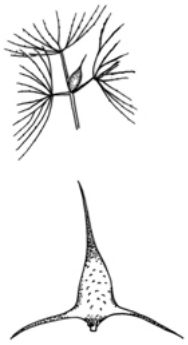




Large Purple *(U. purpurea)*

NATIVE PLANT

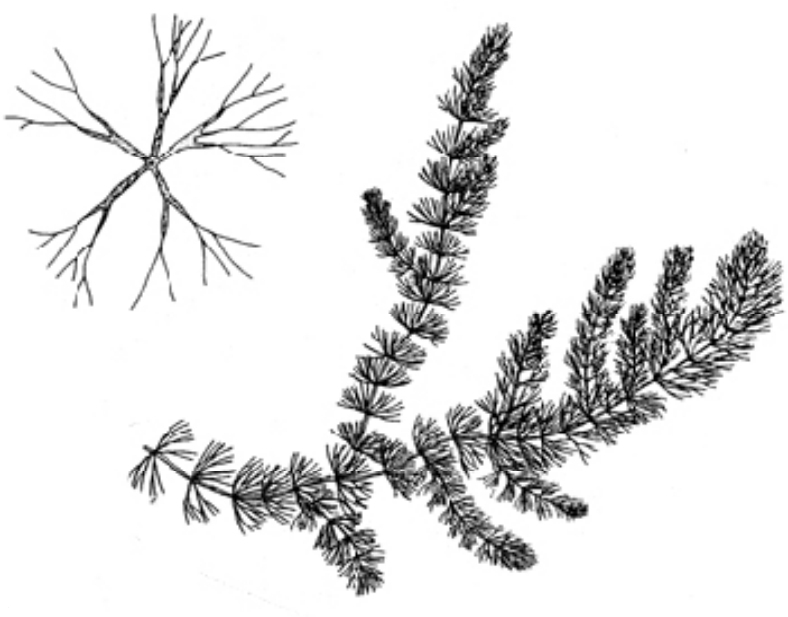
Coontail (Hornwort) *Ceratophyllum species*

Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	whorled	finely divided	• fork divided • finely serrated	minute flowers, followed by spiny fruits, occur at the base of the leaves	• coarse, branching stems with no roots • leaves are generally stiff to the touch and hold their shape when pulled from the water
					

NATIVE PLANT

Coontail (Hornwort)

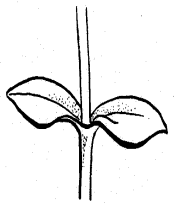
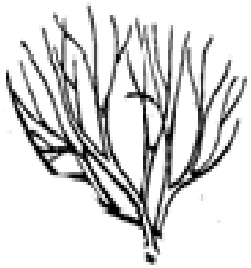
Ceratophyllum species



NATIVE PLANT

Water Marigold

Bidens beckii, Megalondonta beckii

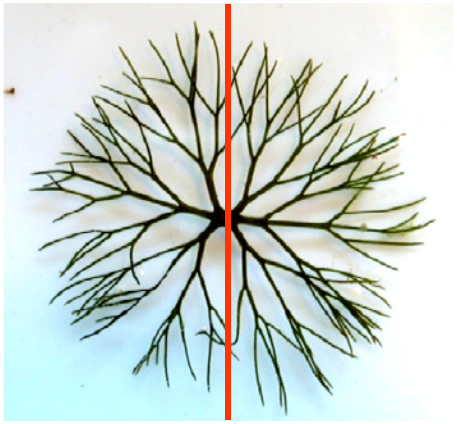
Plant Community	Leaf Arrangement	Leaf Type	Leaf Division	Reproductive Structures	Other Distinguishing Features
submersed	opposite (may appear whorled)	• submersed leaves are finely divided • emergent leaves, if present, are blade shaped and deeply serrated	branch divided	showy, yellow, daisy-like flowers are produced among the emergent leaves	The opposite submersed leaves, each dividing three times where attached to the stem, are widely branched and not easily distinguished from one another. This creates the appearance of a whorl of six smaller leaves on short leaf stems
					

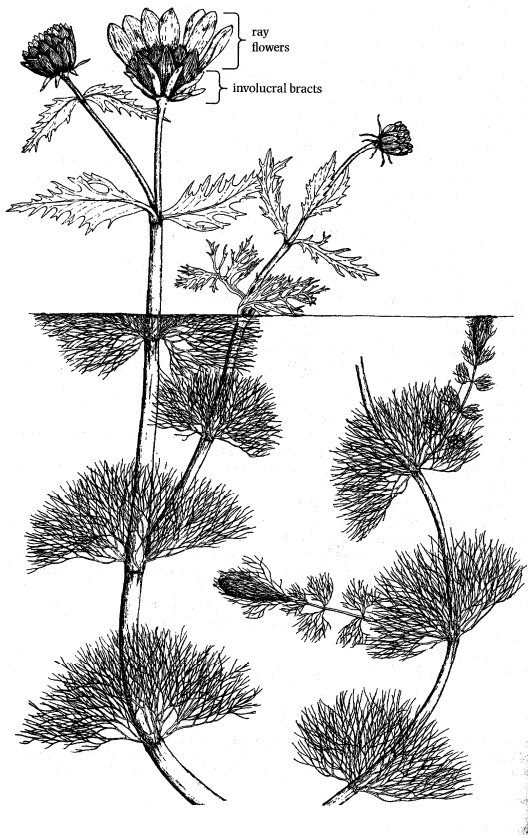
NATIVE PLANT

Water Marigold

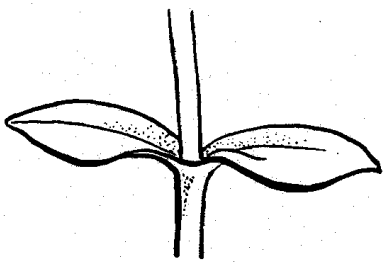
Bidens beckii

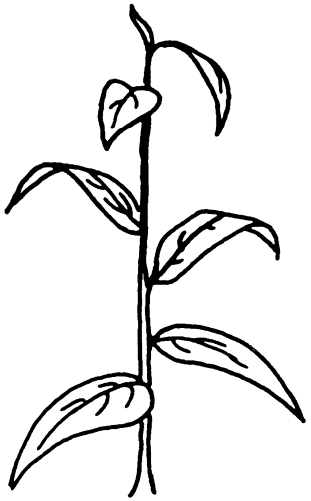
Megalondonta beckii

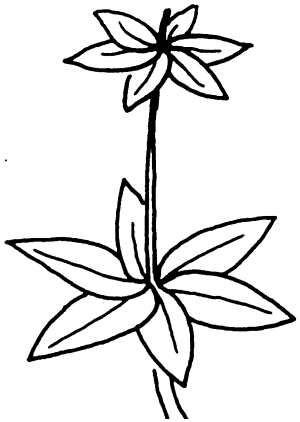




Plants with Blade or Strap-shaped Leaves Arranged on Stems

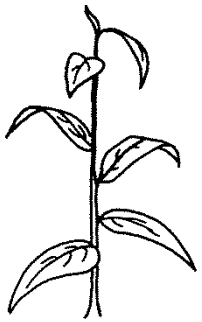
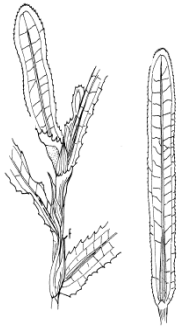






INVASIVE PLANT

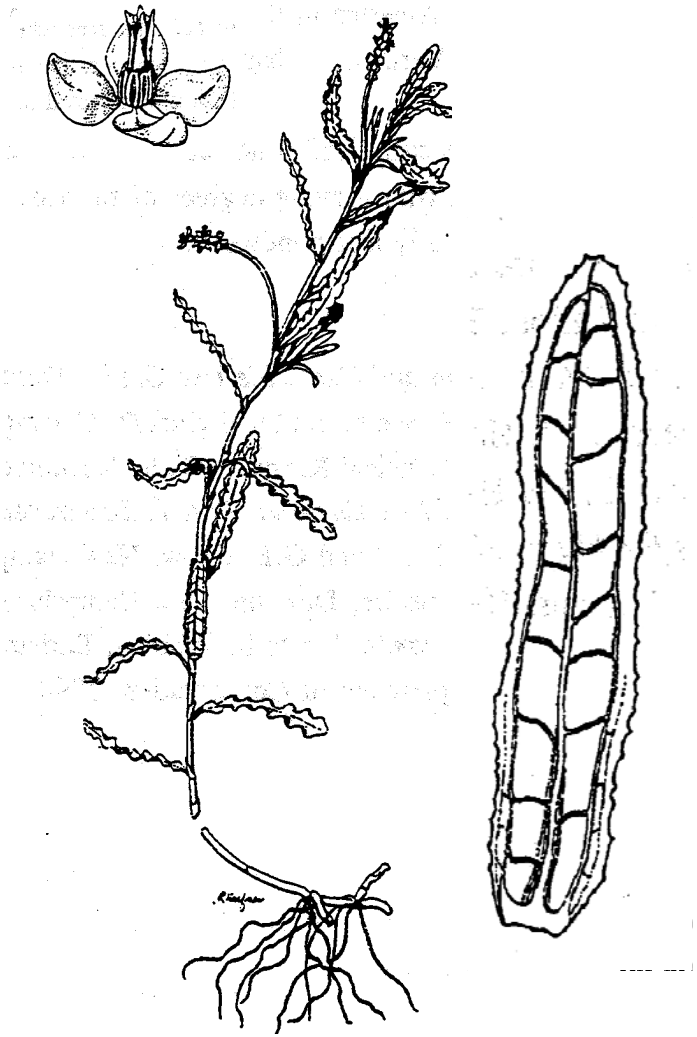
Curly-Leaf Pondweed (*Potamogeton crispus*)

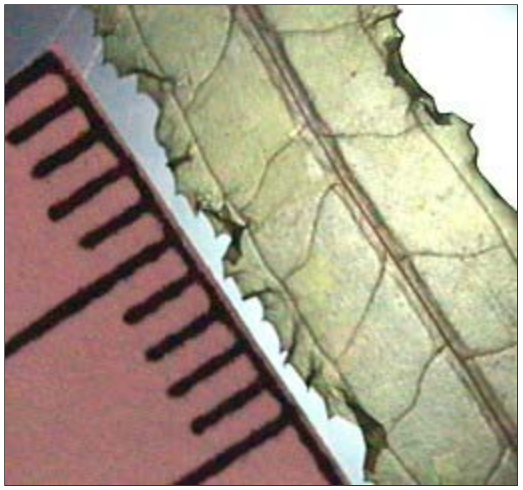
Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
submersed	alternate	• strap-shaped • margins minutely but visibly serrated (magnification helps) • leaves may be distinctly rippled, like lasagna noodles	• flowers followed by fruits are arranged in tight whorls on emergent flower spikes • each tiny fruit has a beak, resembling a bird's head • small pinecone-like turions ,produced in early summer, disperse as plants decay, eventually sinking to the bottom where they sprout new plants in the fall	• one leaf-type only; many pondweed species have two distinct leaf types (submersed and floating) • leaf vein pattern is subtle but resembles two rows of window panes in a frame (use a magnifier) • if leaf is minutely serrated, lasagna noodle-like, and has the above vein pattern, strongly suspect CLP
				

INVASIVE PLANT

Curly-leaf pondweed

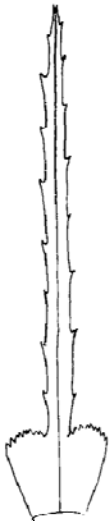
Potamogeton crispus





INVASIVE PLANT

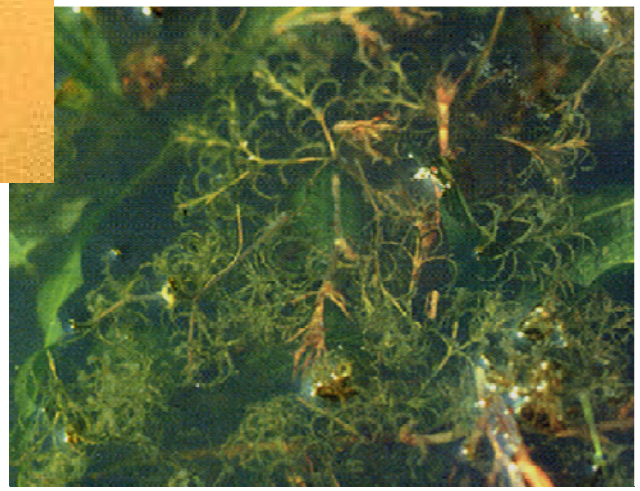
European Naiad (*Najas minor*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
submersed	• leaves are variously arranged • tight clusters of leaves often occur at stem tips	• slender, blade-like • minutely but visibly serrated (magnification helps)	• unlike most aquatic plants, European naiad is a true annual • flowers, followed by slender, elongate fruits are both inconspicuous, occurring in the leaf axils	• base of leaf, near stem is blocky (becomes abruptly wider) and may be serrated or fringed along the upper margin (use magnification)
				

INVASIVE PLANT

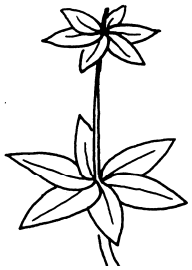
European naiad

Najas minor



INVASIVE PLANT

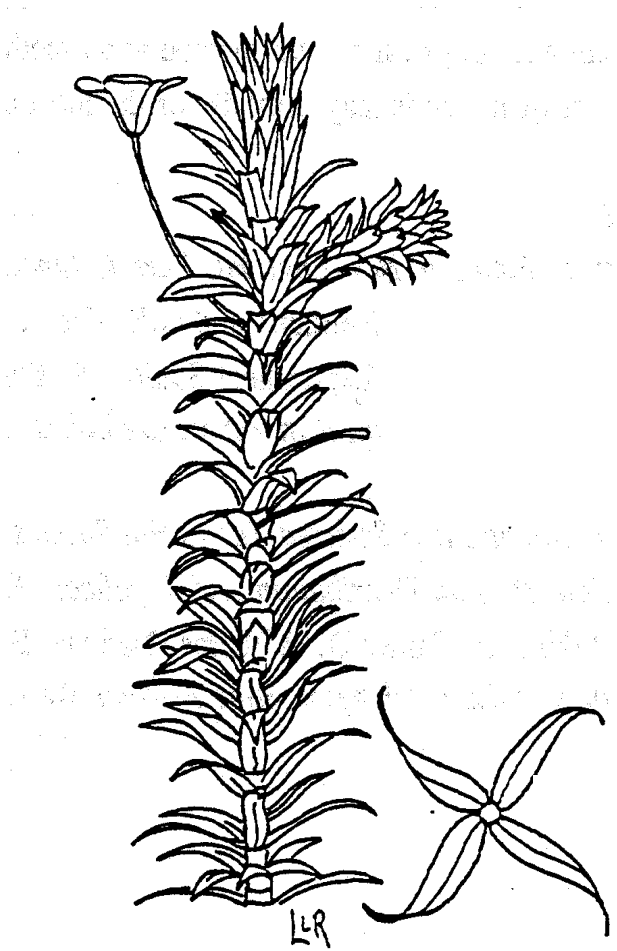
Brazilian Waterweed (*Egeria densa*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
submersed	whorls of 4-6 leaves are tightly arranged along branching stems	• blade-shaped • finely serrated • serrations not visible without high powered magnification	• small flowers (2cm in diameter) have three white petals and a yellow center • flowers emerge just above or at the surface on threadlike stalks	• trailing, unbranched roots • larger in form than Maine's native waterweeds • if you count more than 3 blade-shaped leaves per whorl, strongly suspect Brazilian waterweed or hydrilla
				

INVASIVE PLANT

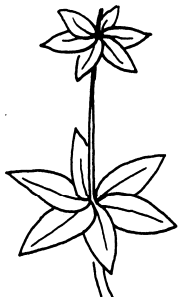
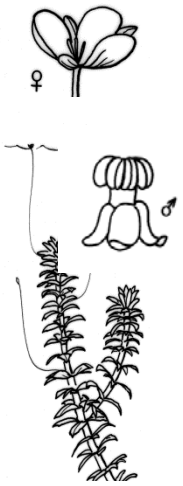
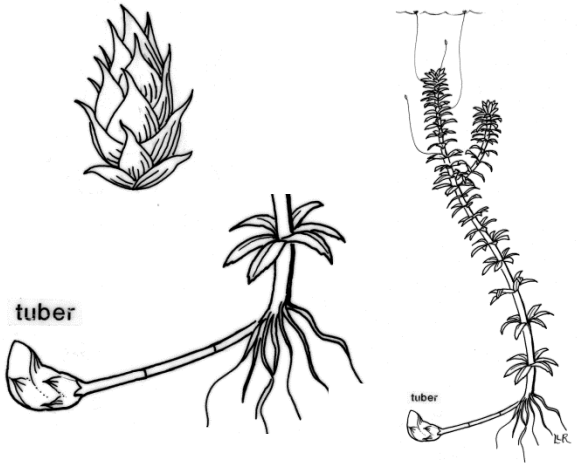
Brazilian elodea (Brazilian waterweed)

Egeria densa



INVASIVE PLANT

Hydrilla (*Hydrilla verticillata*)

Plant Community	Leaf Arrangement	Leaf Type	Reproductive Structures	Other Distinguishing Features
submersed	whorls of 3-8 leaves are openly to tightly arranged along branching stems	• blade shaped • minutely but visibly serrated (magnification helps) • the form of hydrilla found in New England does NOT have serrations along the underside of the leaf midrib	• small white flowers • flowers emerge just above or at the surface on threadlike stalks	• hydrilla produces two types of overwintering structures • spiny green turions occur in leaf axils • small, somewhat crescent shaped tubers form along the rhizomes and stolens that run through the sediment • if you count more than 3 blade-shaped leaves per whorl, strongly suspect hydrilla or Brazilian waterweed
				

INVASIVE PLANT

Hydrilla

Hydrilla verticillata

EVERYTHING ELSE !