

A Key to Common Native Maine Aquatic Plant Species



Adapted by



A Key to Common Native Maine Aquatic Plant Species

COMMON NAME	SCIENTIFIC NAME	PAGE
<u>Submersed Plants</u>		
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Wild Celery	<i>Vallesneria americana</i>	2.4.6
Water Lobelia	<i>Lobelia dortmanna</i>	2.4.6
Quillworts	<i>Isoetes spp.</i>	2.4.6
Common Waterweed	<i>Elodea canadensis</i>	2.4.7
Slender Waterweed	<i>Elodea nuttallii</i>	2.4.7
Slender Naiad	<i>Najas flexilis</i>	2.4.7
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Fern Pondweed	<i>Potamogeton robbinsii</i>	2.4.10
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Large Purple Bladderwort	<i>Utricularia purpurea</i>	2.4.11
Water Crowfoot	<i>Ranunculus spp.</i>	2.4.12
Water Marigold	<i>Bidens beckii</i> , aka <i>Megalodonta beckii</i>	2.4.12
Coontail	<i>Ceratophyllum demersum</i>	2.4.13
Stoneworts	<i>Chara spp & Nitella spp.</i>	2.4.13
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Watershield	<i>Brasenia schreberi</i>	2.4.15
Little Floating Heart	<i>Nymphoides cordatum</i>	2.4.16
Burreed	<i>Sparganium spp.</i>	2.4.16
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Pickerel Weed	<i>Pontederia cordata</i>	2.4.17
Cattail	<i>Typha latifolia</i>	2.4.18
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Robbins Spikerush	<i>Eleocharis robbinsii</i>	2.4.19
Water Bulrush	<i>Schoenoplectus subterminalis</i>	2.4.19

How to Use this Key

In this key you are asked to make a series of choices between descriptions of different plants. Eventually, by observing the plant you are trying to identify and making these choices, you will arrive at an identification of the plant.

First, go to page 2.4.4, where you are asked to decide whether the plant has a submersed, floating-leaved, or emergent growth habit. By choosing one of these, the key then directs you to a page and number, where you will again make some choices. Each choice will be between two, three, or sometimes more options. In many cases you will need to look closely at the plant in order to be able to decide which description it fits.

There is a glossary on page 2.4.20 should you encounter an unknown term.

Thirty-seven of Maine's common native aquatic plants are covered in this key. However, there are over 120 aquatic plant species in Maine, so it is possible you are trying to identify a plant not covered by this key. Should you have questions or want a confirmation on an identification you are encouraged to send a plant sample to the Lake Stewards of Maine. Detailed information on how to prepare your specimen for shipping is provided on page 3.1.10 and in the forms section of this handbook. This information can also be found online at www.lakestewardsme.org/reporting-aquatic-species-6/

Please do not copy without proper credit. Additional copies of this key are available upon request from:

Lake Stewards of Maine - VLMP
24 Maple Hill Road, Auburn, Maine 04210
207-783-7733.

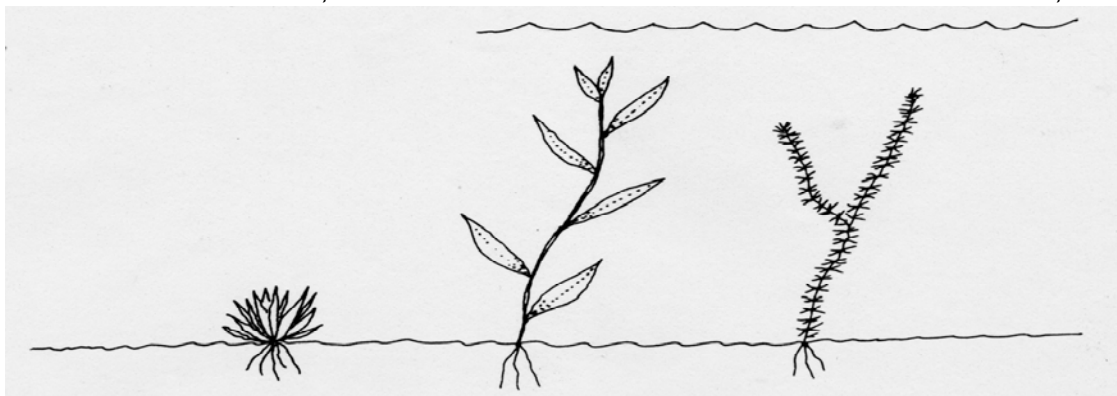
All illustrations and information, except those noted below, were adapted with permission from *A Key to Common Vermont Aquatic Plant Species* by Susan Warren, Lakes & Ponds Unit, Water Quality Division, Vermont Department of Environmental Conservation.

Lobelia dortmanna, *Isoetes* spp., *Potamogeton pusillus*, *P. spirillus*, *P. perfoliatus*, *P. robbinsii*, *P. epiphydrus*, *Utricularia purpurea*, *Juncus militaris*, *Eleocharis robbinsii*, and *Schoenoplectus subterminalis* – Information provided by Roberta Hill, Illustrations by Jacolyn Bailey.

CHOOSE BETWEEN 1A, 1B, or 1C BELOW:

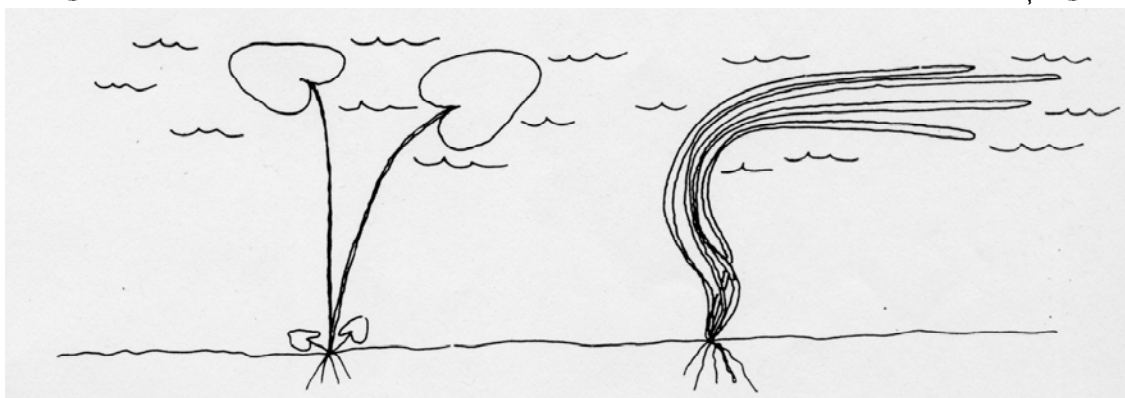
1A. Submersed:

Plants are growing completely or largely beneath the water's surface....page 2.4.5



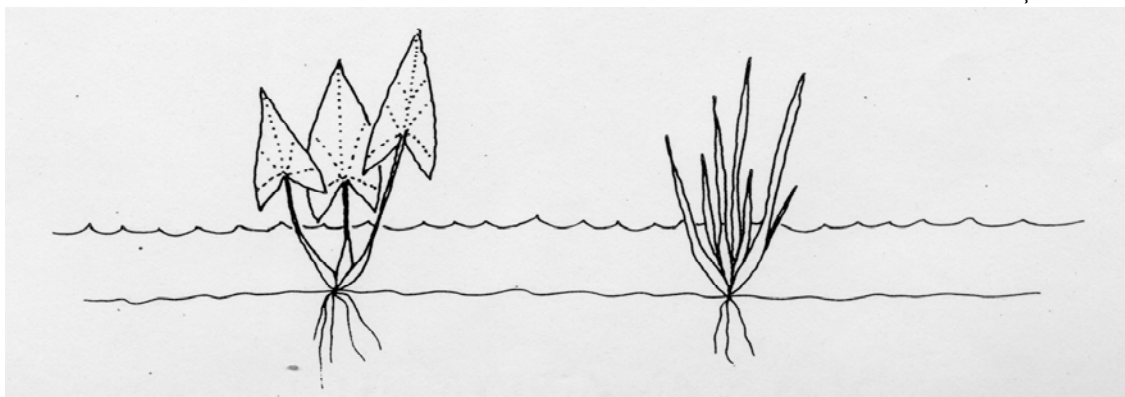
1B. Floating-leaved:

Plants having at least some leaves floating on the water's surface (surface of floating leaves shed water).....page 2.4.14



1C. Emergent:

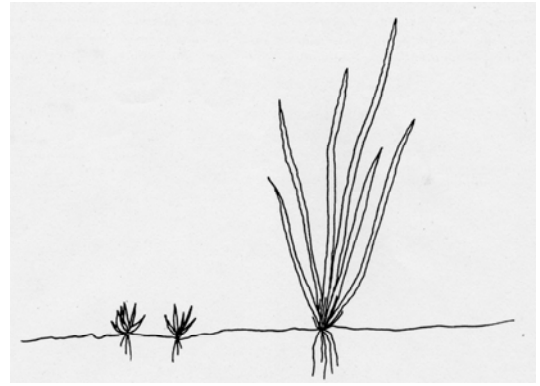
Plants are rooted on the pond bottom and extend upright above the water's surface.....page 2.4.17



SUBMERSED PLANTS

2A. Basal Leaves ~

All leaves emerge from a single point
near the pond bottom.....page 2.4.6, #4

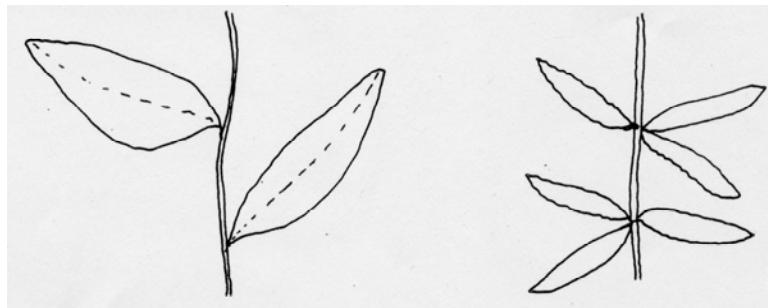


2B. Leaves on a Stem ~

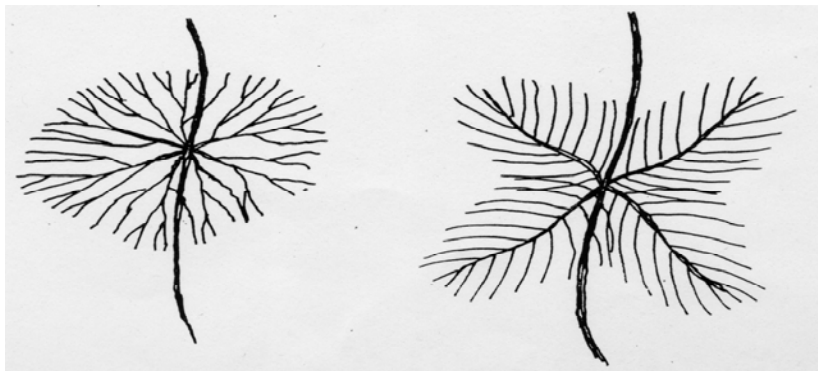
Leaves are arranged along the stem
.....see #3 below



3A. Leaves undivided, flattened, may be toothed.....page 2.4.7, #5



3B. Leaves finely divided, or narrow round leaves (not flat).....page 2.4.11, #8

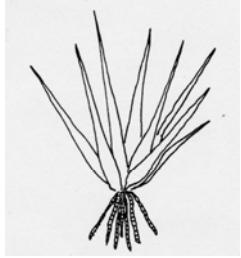


SUBMERSED PLANTS CONTINUED

4. Submersed Plants With Only Basal Leaves

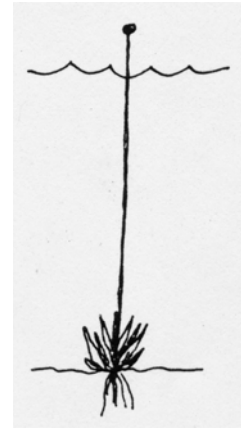
4A. Pipewort (*Eriocaulon aquaticum*)

Roots with light
& dark striations



In shallow water
Pipewort will grow an
emergent "flower"
resembling a button

Plants are usually 1 ½ to 3 inches high



4B. Water Lobelia (*Lobelia dortmanna*)

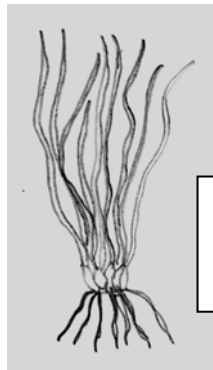
Base of plant resembles pipewort, but
leaves are rounded at the tip



Flowers are white to lavender

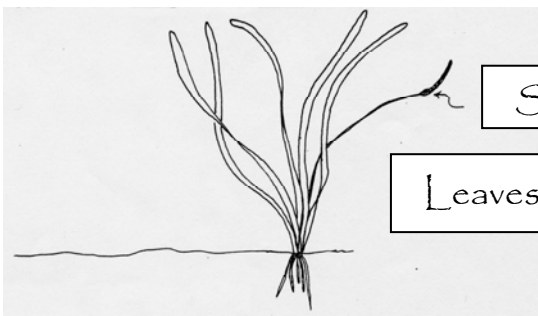
4C. Quillwort (*Isoetes spp.*)

Reproductive structures are
below water's surface and
roots are white (not striated)



Small spikey plant, may resemble the
basal leaves of the pipewort plant

4D. Wild Celery, Eel Grass (*Vallisneria americana*)



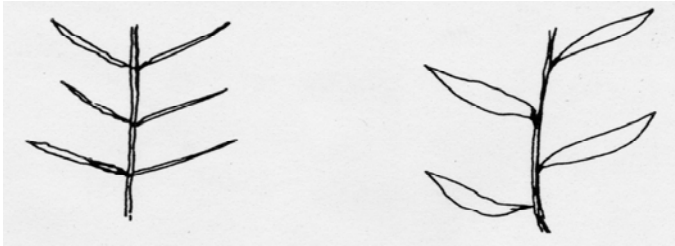
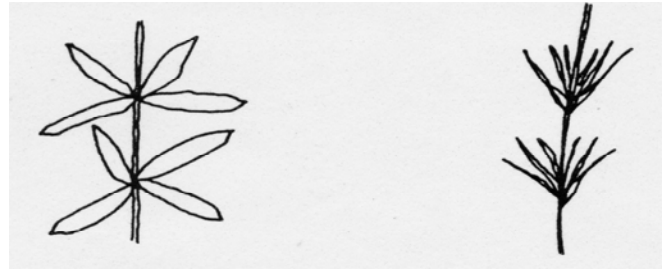
Seed Pod

Leaves are ½ to 1 inch wide and up to 2 feet long

SUBMERSED PLANTS CONTINUED

5. Submersed Plants With Blade-shaped, Entire Leaves

- 5A. Leaves in whorls of three or more around the stem.....see #6 below



- 5B. Leaves arranged oppositely or alternately along the stem....see page 2.4.8, #7

6. Whorled Leaves

6A. Waterweeds:

Common Waterweed (*Elodea canadensis*) & Slender Waterweed (*Elodea nuttallii*)

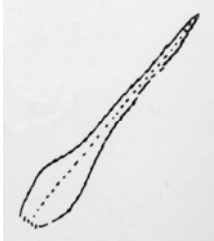
Leaves 3 in a whorl usually $\frac{1}{2}$ to 1 inch long, plants can vary in height from less than 1 foot to upwards of 6 feet



The leaves of common waterweed are generally shorter, wider and more blunt at the tip, than the leaves of slender waterweed

6B. Slender Naiad (*Najas flexilis*)

Carefully pull a leaf off. Teeth are almost invisible, even with a hand lens.



Leaves may also occur in pairs or loose clusters



Leaves are about 1 inch long.

Plants are usually 1 or 2 feet high with branching stems.

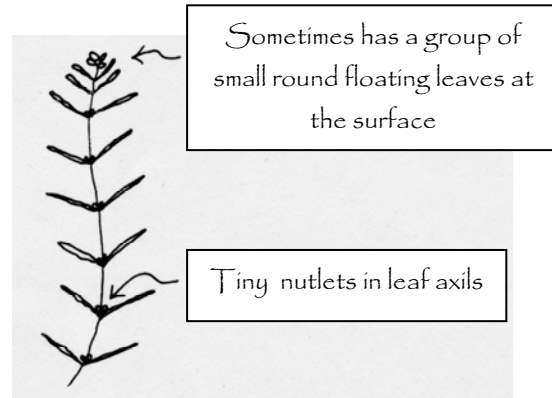
SUBMERSED PLANTS CONTINUED

7. Submersed Plants with Opposite or Alternate Blade-shaped Leaves

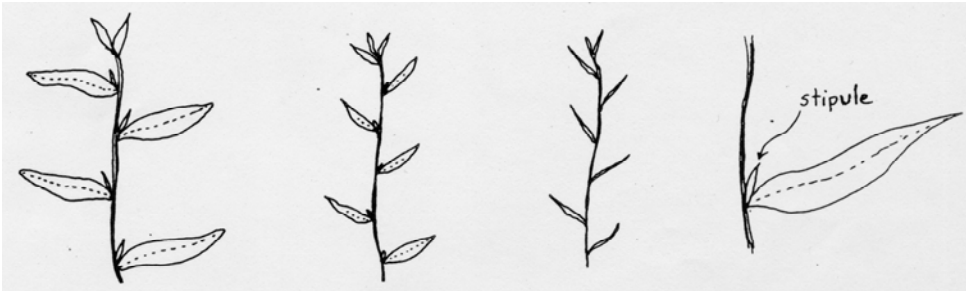
7A. Water Starwort (*Callitriche* spp.)

There are 2 species of Water Starwort in Maine

Very fragile leaves about 1 inch long and 1/32 inch wide, in pairs. Generally a small plant growing in shallow water.



7B. Pondweeds (*Potamogeton* spp.)



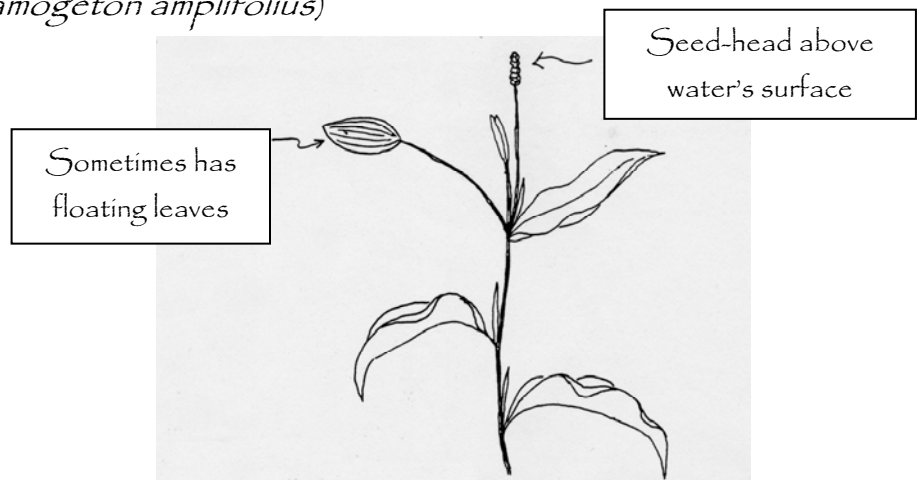
There are 22 species of pondweeds in Maine, varying between very small thin leaved species to those with large wide leaves

They are distinguished as a group by possessing a leaf mid-vein (look closely on the thin-leaves species). Also, pondweeds have small sheath-like structures (stipules) at the base of each leaf. In some species the stipule is fused to the leaf and is difficult to see.

Large-leaf Pondweed (*Potamogeton amplifolius*)

Large arched leaves with wavy edges, often brown, 3 or 4 inches long, and up to 2 inches wide.

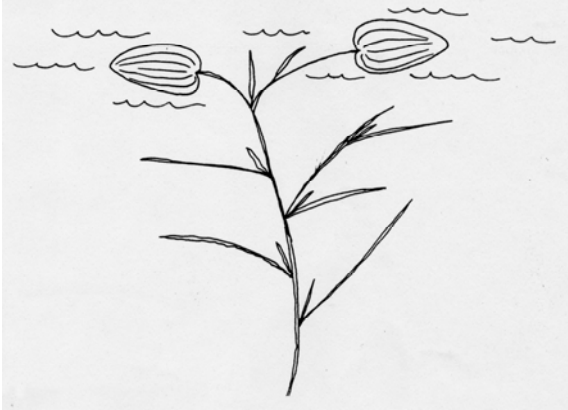
This plant can be up to 6 or 7 feet high.



SUBMERSED PLANTS CONTINUED

7B. Pondweeds Continued – Some Common Pondweeds

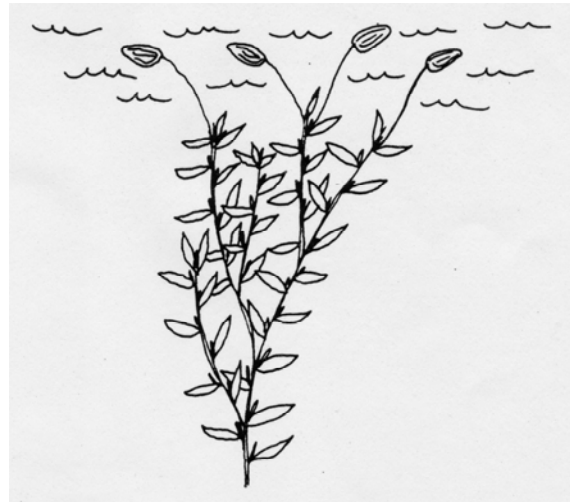
Floating-leaved Pondweed (*Potamogeton natans*)



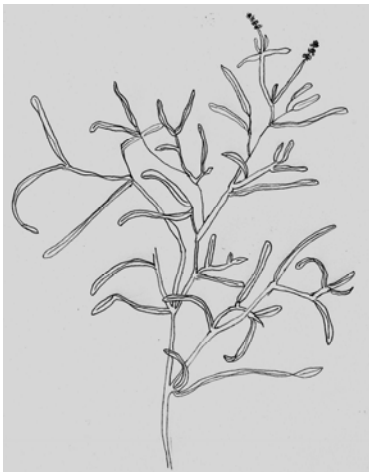
Narrow stem-like submersed leaves, up to 1/8 inch wide, usually brown, floating leaves are 2 to 3 inches long, usually growing in water 2 or 3 feet deep

Variable Pondweed (*Potamogeton gramineus*)

Heavily branched, many leaves, leaves are 1/2 inch to 4 inches long and may have small floating leaves



Small Pondweed (*Potamogeton pusillus*)



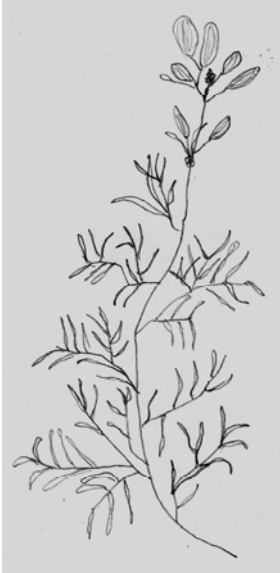
No floating leaves are produced. Submersed leaves are 1/2 to 3 inches long, linear and attached directly to the stem. Look for a pair of raised glands at the base of the leaf (Magnification may be needed.)

SUBMERSED PLANTS CONTINUED

7B. Pondweeds Continued – Some Common Pondweeds

Spiral Fruited Pondweed

(*Potamogeton spirillus*)



Submersed stems compact and highly branched. Linear leaves may have curly appearance. Stipules fused to the leaf blade for more than half their length. Floating leaves may occur.

Clasping Pondweed

(*Potamogeton perfoliatus*)



Leaves clasp the stem. No floating leaves are produced.

Fern Pondweed

(*Potamogeton robbinsii*)



Leaves are two-ranked, creating a feather or fern-like appearance

Ribbon Pondweed

(*Potamogeton epihydrus*)



Leaves are alternate. Submersed leaves are striped and floating leaves are supported by a slender leaf stalk.

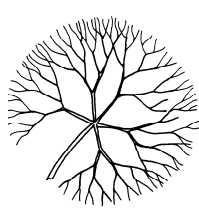
SUBMERSED PLANTS CONTINUED

8. Submersed Plants With Finely Divided Leaves Along A Stem.

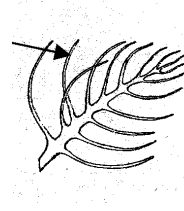
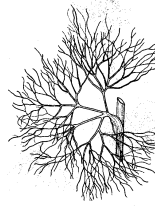
These plants must be examined closely to determine which kind of divided leaves they have.



Forked



Branched



Feather Divided



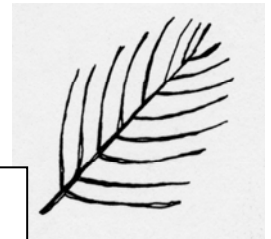
8A. Watermilfoils (*Myriophyllum* spp.)

Leaves are arranged radially around the stem; not always in strict whorls

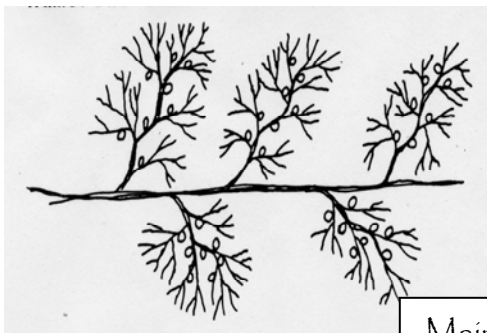


There are 6 native species of watermilfoil in Maine

All leafy milfoils have feather divided leaves (One native milfoils species lacks true leaves)



8B. Common Bladderwort (*Utricularia macrorhiza*, aka, *U. vulgaris*)



The leaves of common bladderwort are branch divided and alternately arranged along the stem

Maine has 8 species of bladderworts

Both species shown here have numerous small "bladders" attached to the leaves

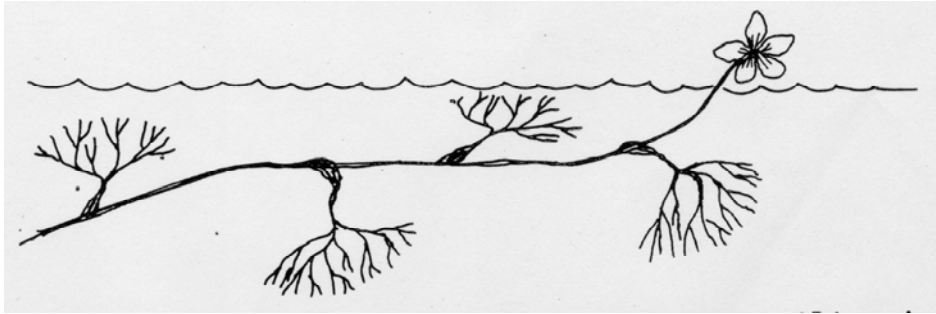
8C. Large Purple Bladderwort (*Utricularia purpurea*)

The leaves of large purple bladderwort are branch divided and arranged in whorls, spaced loosely along the stem



SUBMERSED PLANTS CONTINUED

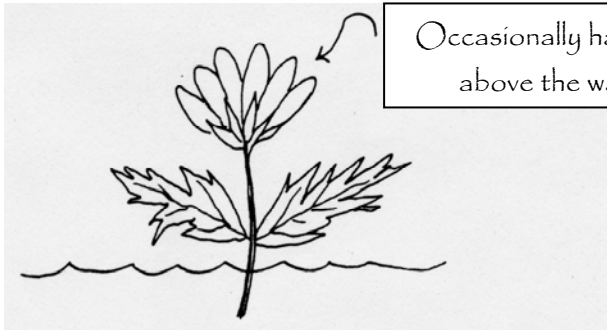
8D. Water Crowfoot (*Ranunculus spp.*)



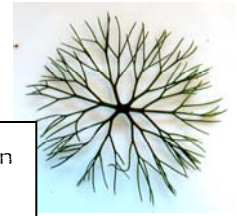
There are 2 species of water crowfoot in Maine

This plant is usually a few feet long, sometimes trailing just below the water surface. Leaves are branch divided and alternately arranged along the stem. The base of the leaf stem is thickened and clasps around the main stem.

8E. Water Marigold (*Bidens beckii*, aka *Megalodonta beckii*)



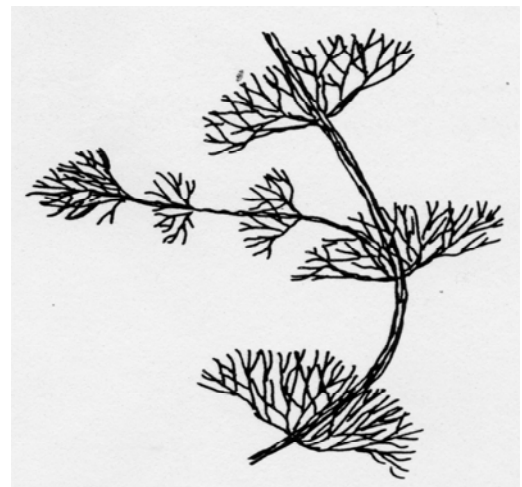
Occasionally has a yellow flower above the water's surface



Cross-section of leaves

This plant usually grows only a few feet high

Two branch-divided leaves, oppositely arranged and loosely spaced along the stem. The broadly-branching leaves have no leaf stem. As a result, the pair may resemble a whorl of six smaller leaves on short leaf stems.



SUBMERSED PLANTS CONTINUED

8F. Coontail (*Ceratophyllum demersum*)



Maine is home to one other *Ceratophyllum* species

Leaf whorls are clustered at the ends of the branches, giving the plant the appearance of a raccoon's tail



Leaves, minutely serrated

8G. Stoneworts (*Chara spp.* or *Nitella spp.*)

These are actually large upright forms of algae. Stoneworts usually grow in tangled masses along the bottom.

Chara is brittle and coarse, covered with a mineral scale



Nitella is smooth and flexible

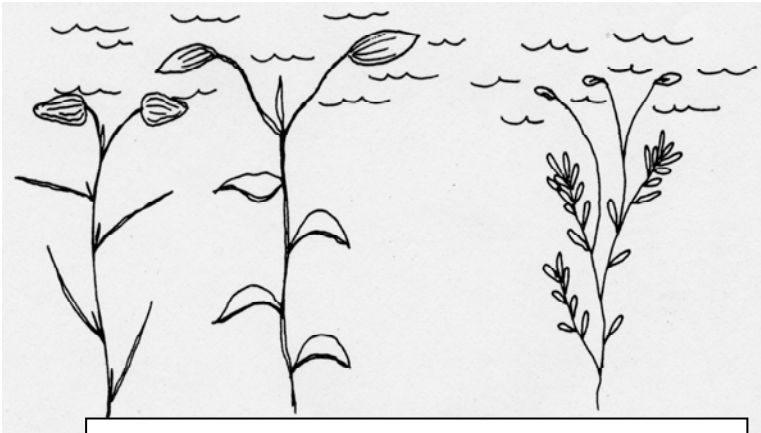


When fresh, *Chara* gives off a distinctive skunk-like odor

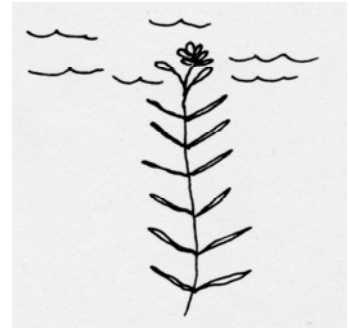
FLOATING LEAVED PLANTS

9. Plants With Floating Leaves. Choose between 9A, 9B, or 9C below.

9A. Plants with both floating leaves, and submersed leaves on a stem.



If it looks like any of these page 2.4.8, #7B



If it has thin leaves in pairs, and tiny round leaves at the surface.....page 2.4.8, #7A.
This is Water Starwort.

9B. Very small floating plants, not rooted to the pond bottom. Each plant has a small root or roots hanging from underneath.



Duckweed (*Lemna minor*)
[actual size]

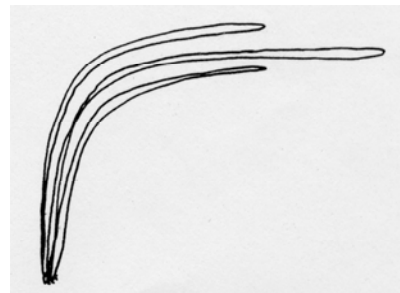


Big Duckweed (*Spirodella polyrhiza*)
[actual size]

9C. Plants with only floating leaves on stems which are rooted in the pond bottom.



Broad floating leaves.....
page 2.4.15, #10



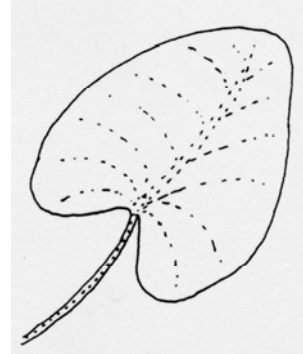
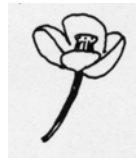
Long, narrow, grass-like
leaves..... page 2.4.16, #11

FLOATING LEAVED PLANTS CONTINUED

10. Broad Floating Leaves On A Stem Which Is Rooted In The Pond Bottom. Choose between 10A through 10D below.

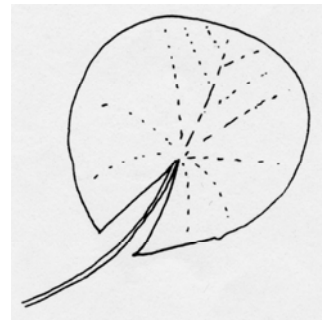
- 10A. Large elongated floating leaves with round lobes and large yellow ball-shaped flowers. **Spatterdock, Yellow Water-lily** (*Nuphar variegata*)

Leaves are 3 to 6 inches across



- 10B. Large rounded floating leaves with pointed lobes and white flowers. **Fragrant Waterlily** (*Nymphaea odorata*)

Leaves are 3 to 6 inches across



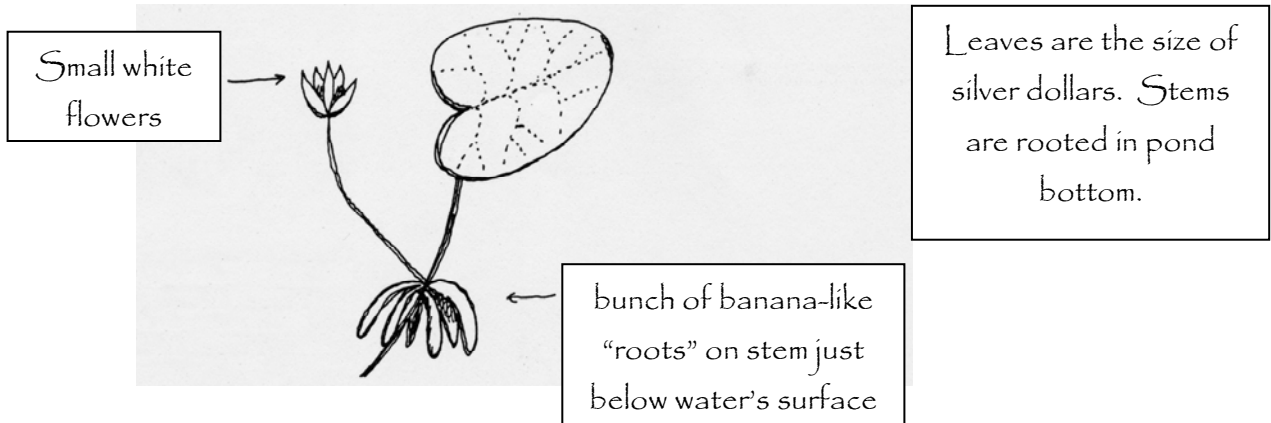
- 10C. Elliptical-shaped leaves with stem attached at the center of the leaf. **Watershield** (*Brasenia schreberi*)



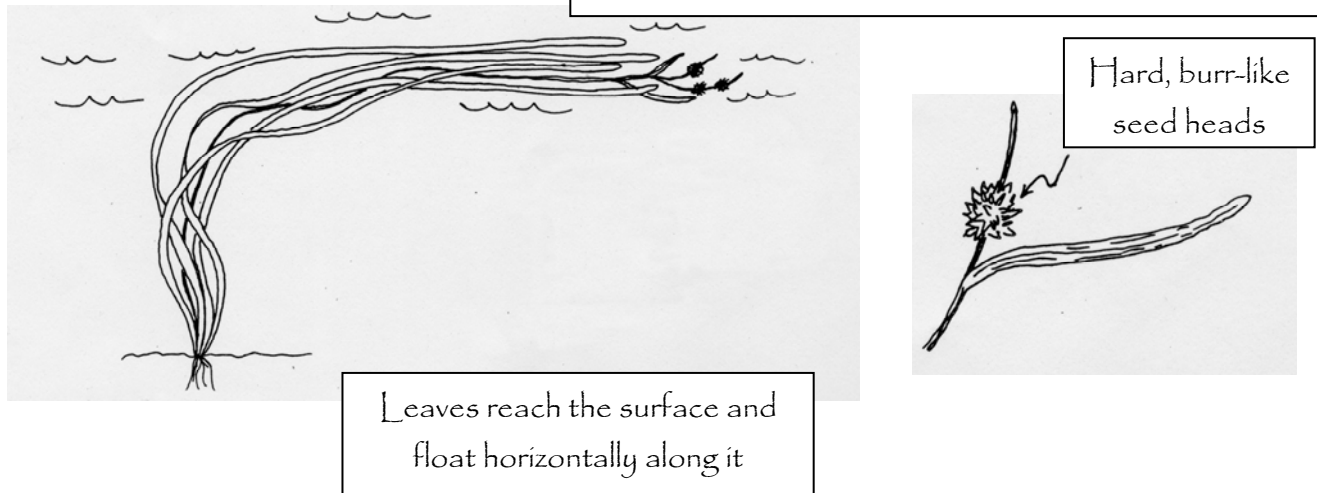
Leaves are usually 2 or 3 inches long. The stem and underside of the leaf is often covered with a clear, jelly-like material.

FLOATING LEAVED PLANTS CONTINUED

10D. Little Floating Heart (*Nymphoides cordata*)



11. Long Narrow, Grass-like Floating Leaves Burreed (*Sparganium spp.*)



EMERGENT PLANTS

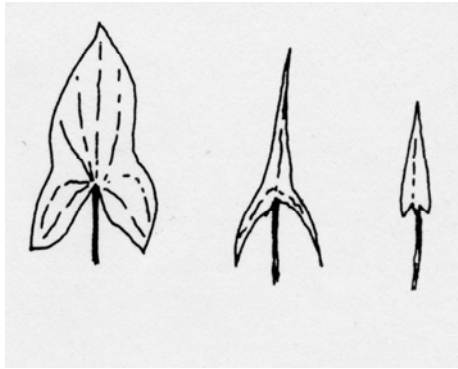
12. Plants Which Are Rooted On The Pond Bottom And With Leaves and/or Stems That Extend Upright Above The Water's Surface.

12A. Leaves long and narrow, may be round in cross-section.....page 2.4.18, #14

12B. Leaves broad....#13 below.

13A. Arrowhead (*Sagittaria spp.*)

Leaves with pointed lobes.
Leaf size is variable.



Small white
flowers with 3
petals



There are 5 species of arrowhead in Maine some erect emergents, others with floating leaves

13B. Pickerelweed (*Pontederia cordata*)



Leaves with rounded lobes. Small purple flowers in cluster. Plants are usually 1 or 2 feet tall.

EMERGENT PLANTS.....CONTINUED

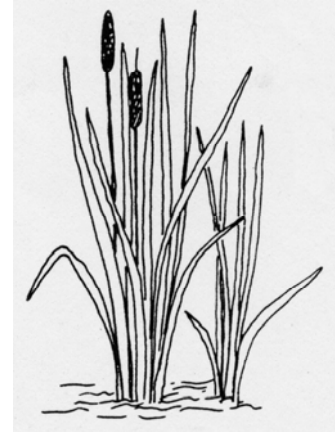
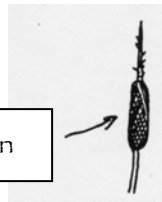
14. Emergent Plants With Long Narrow Leaves Normally Found in Relatively Shallow Water. Choose between 14A through 14C below.

14A. Cattail (*Typha latifolia*)

There is one other species of cattail in Maine

Leaves up to 5 feet tall.
Dark brown “catkins”, 5-6 inches long.

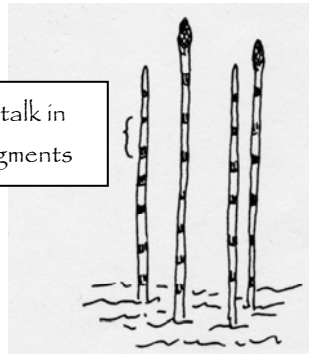
Catkin



14B. Horsetail (*Equisetum* spp.)

Round, hollow stalks, often 1-2 feet high, rough in texture

Stalk in segments

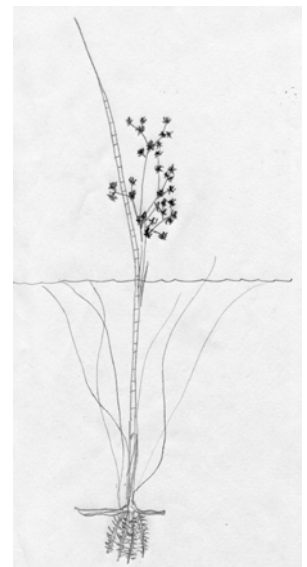


Some species branch at each segment

- 14C. The following three emergent species may produce dense patches of fine, hair-like submersed leaves.

Bayonet Rush (*Juncus militaris*)

Tall, erect, segmented stems rise above water surface. Flowers and fruits emerge on a spray of branching stems below the tip. Thin, hair-like, submersed leaves rise from the base. Tip: squeeze the emergent stem between fingers and pull firmly, to feel the “pop” of the internal segments.



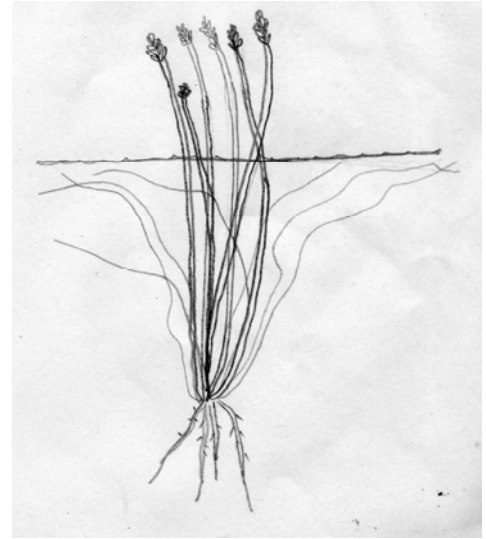
EMERGENT PLANTS.....CONTINUED

14C. continued

Robbins Spikerush (*Eleocharis robbinsii*)

Stems are stiff, slender and triangular. They are tipped with a small spikelet that is often difficult to see.

Fine, hair-like underwater stems are sterile



Water Bulrush (*Schoenoplectus subterminalis*)

Leaves sheath one another at the base. Leaf tips may float at the water surface.

Hair-like leaves arise from the base



Only the tips of fertile stems poke out of the water. Solitary spikelets emerge from fertile stems, below the tip.

GLOSSARY

axil - the junction between a stem and a leaf or branch

divided leaf - a leaf that is cut into multiple smaller divisions

fruit - the seed bearing portion of a plant

lobe - a partial division of a leaf

midvein - the main or central vein of a leaf; not all plants have leaves with midveins

nutlet - dry fruit having a hard shell which usually contains only one seed

sheath - a portion of the leaf that wraps around the stem of the plant

stipule - a small sheath-like structure borne in the axil of the leaves in some species

whorl - a circle of three or more leaves radiating from the same point on a stem