

Capital Region PRISM

Partnership for Regional Invasive Species Management

*"Detect, prevent, and control invasive species,
through direct action and education to protect
biodiversity, the natural environment, economy, and
quality of life."*

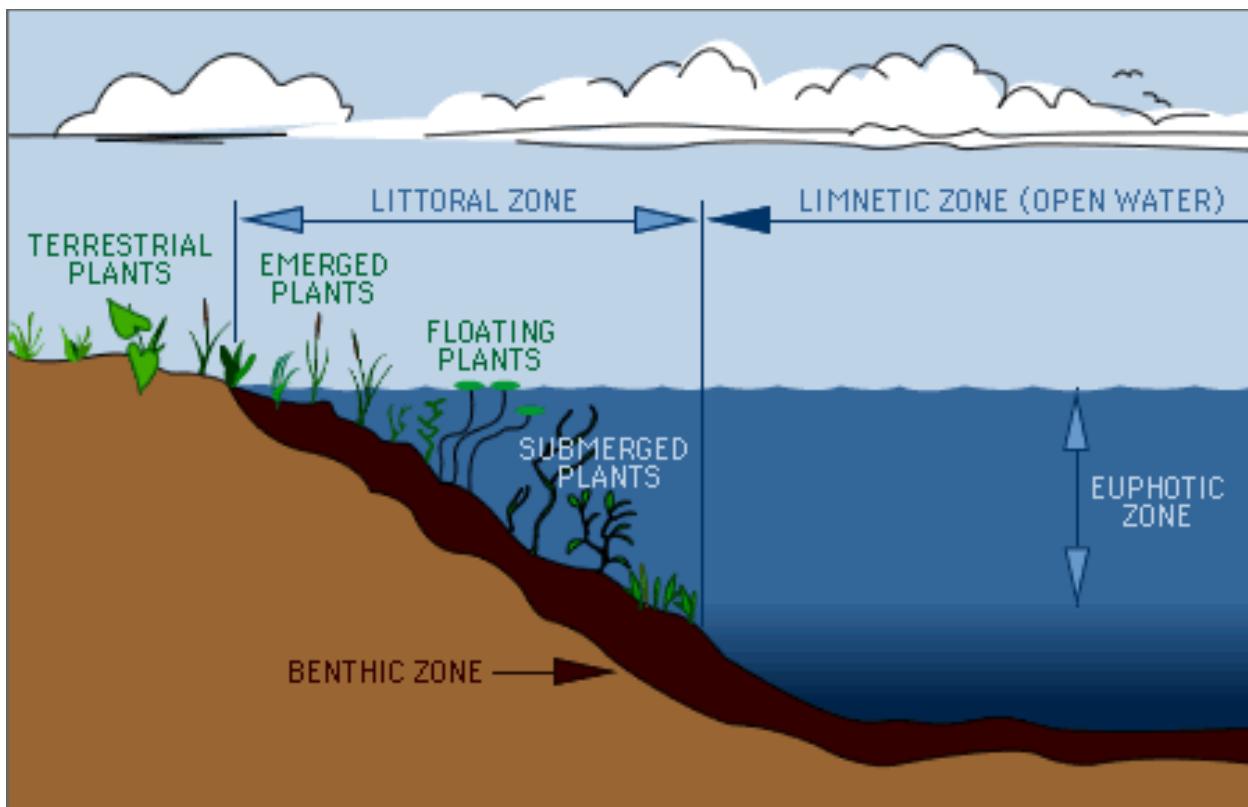


Aquatic Invasive Species Spread Prevention Program Native Species Identification Guide

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Littoral zone – the area near shore where sunlight is able to penetrate down to the sediment allowing aquatic plants to grow.

Limnetic zone – the open and well-lit zone of the waterbody.

Euphotic zone – the layer of water that absorbs enough light for photosynthesis to occur.

Benthic zone - the sediment layer at the bottom of a body of water, such as the oceans floor or the bottom of a lake, stretching from the shore to the deepest point.

Submerged plants – plants growing completely below the water surface.

Emerged plants – plants rooted in the benthic zone with part of the plant emerging from the water surface.

Floating plants – plants rooted in the benthic zone, or free floating, with a majority of the plant submerged with floating leaves on the water surface.

Macrophyte – a plant growing in or near water

Benthos – organisms living in the benthic zone

Dichotomous Key

Used to help identify aquatic plants. It may be easier to identify plant characteristics when plants are submerged in water. A magnifying glass may also be useful to see detail.

Leaf Arrangements



Alternate



Opposite



Whorled

Leaf Margins



Entire



Toothed or Serrated



Pinnately Lobed



Finely Divided

Leaf Shapes



Triangular



Heart



Strap or Elongate



Oval



Elliptical

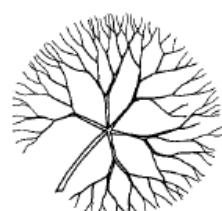


Lance or Blade

Finely-divided Leaf Patterns



Fork-divided

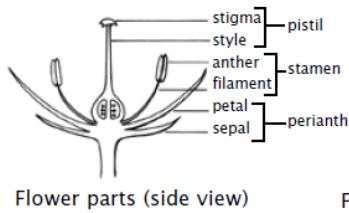


Branch-divided

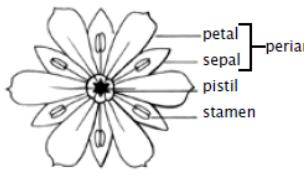


Feather-divided

Flower Structures

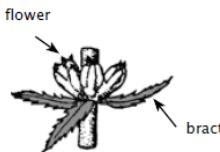


Flower parts (side view)



Flower parts (top view)

Bracts are specialized leaves associated with flowers. Note the "leaf-type" of the bracts and their size in relation to the flowers.

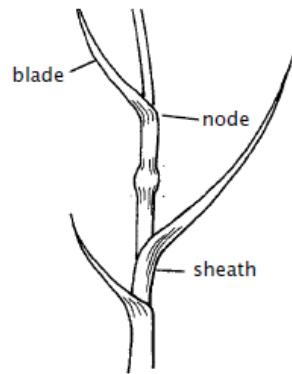
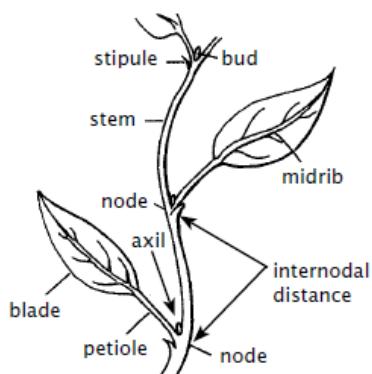


Bracts are serrated and larger than flowers (variable water-milfoil)

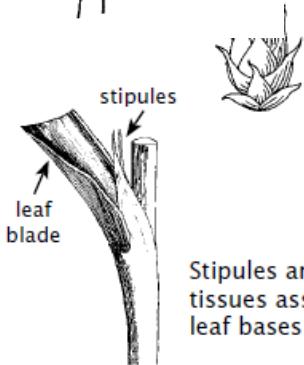


Bracts are entire and smaller than flowers (Eurasian water-milfoil)

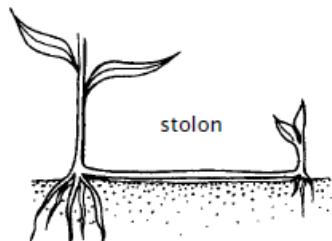
Stem and Leaf Structures



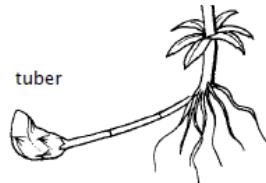
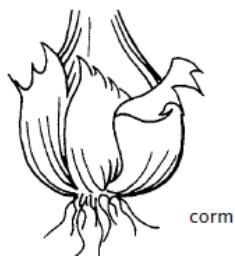
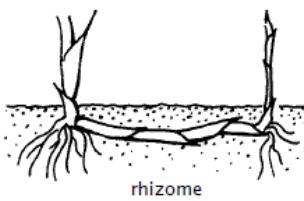
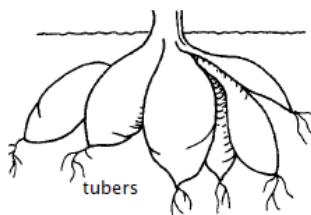
Turions, also called winter buds, are compacted vegetative buds produced along the stem that can overwinter and form a new plant



Stipules are sheath-like tissues associated with the leaf bases of some species



Root Structures



Native Lookalikes

Common Name	Scientific Name
Canadian waterweed/ Western waterweed/Native elodea	<i>Elodea canadensis/</i> <i>Elodea nuttallii</i>
Clasping-leaved pondweed	<i>Potamogeton perfoliatus</i>
Coontail / Hornworts	<i>Ceratophyllum demersum</i>
Water buttercup	<i>Ranunculus aquatilis</i>
Muskgrass / Skunkweed	<i>Chara spp.</i>
Slender naiad/Southern naiad	<i>Najas flexilis/Najas guadalupensis</i>
Watershield	<i>Brasenia schreberi</i>
Little floating heart	<i>Nymphoides cordata</i>
White waterlily	<i>Nymphaea odorata</i>
Common bladderwort	<i>Utricularia vulgaris</i>
Soft-stemmed bulrush	<i>Scirpus tabernaemontani</i>
River bulrush	<i>Scirpus fluviatilis</i>

Other Common Native Species

Common Name	Scientific Name
Spatterdock/Yellow Pond-lily	<i>Nuphar advena</i>
Pickerelweed	<i>Pontederia cordata</i>
Eel grass/Water celery	<i>Vallisneria americana</i>
Common duckweed	<i>Lemna minor</i>
Pondweeds	<i>Potamogeton spp.</i>

Lookalike Native Plants

CANADIAN / WESTERN WATERWEED / ELODEA

Elodea canadensis / *Elodea nuttallii*

These species are submerged plants with smooth and slender, lance-shaped leaves arranged in whorls of 3. The leaves appear to be smooth but are slightly toothed, only visible with significant magnification. The whorls become closer when approaching the growing tip. During the summer, 3-petaled, white flowers arise.

HABITAT

Canadian and western waterweed prefer nutrient-rich sediment, growing in depths of several meters. They are found in a variety of environments including slow-moving streams, tidal tributaries and freshwater ponds.

NATIVE LOOKALIKE: Brazilian Elodea/Hydrilla

Distinguishing Characteristics:

Native Elodea	Brazilian Elodea (invasive)	Hydrilla (invasive)
<ul style="list-style-type: none">• No tubers• Leaves in whorls of 3	<ul style="list-style-type: none">• No tubers• Leaves in whorls of four to six leaves, usually 4	<ul style="list-style-type: none">• Tubers• Toothed leaves in whorls of four to eight, usually 5



CLASPING-LEAVED PONDWEED *Potamogeton perfoliatus*

Clasping-leaved pondweed is a rooted, submerged aquatic plant. The alternately arranged, oval leaves wrap around the stem and have a smooth edge with 3-5 prominent veins. The flower spike grows in the leaf axils.

HABITAT

This species lives in tidal fresh and brackish waters including inland ponds and slow-moving streams. They can survive in depths up to 4 m deep.

NATIVE LOOKALIKE: Curly-leaf pondweed

Distinguishing Characteristics:

Clasping-leaved pondweed (native)	Curly-leaf pondweed (invasive)
<ul style="list-style-type: none">Smooth edged leavesWide, stem-clasping leaves	<ul style="list-style-type: none">Wavy-edged, finely toothed leavesNarrow leaves, attached to the stem but not clasped



COONTAIL / HORNWORTS *Ceratophyllum demersum*/ *Ceratophyllum spp.*

Coontail is a submerged aquatic plant with whorls of bristle-like, toothed leaves. The plants have branching stems and no roots. The leaves are arranged in whorls of 5-12 leaves. The leaves are closely packed at the growing tip, giving the plant a racoon tail appearance. It remains stiff when taken out of water, unlike other aquatic plants.

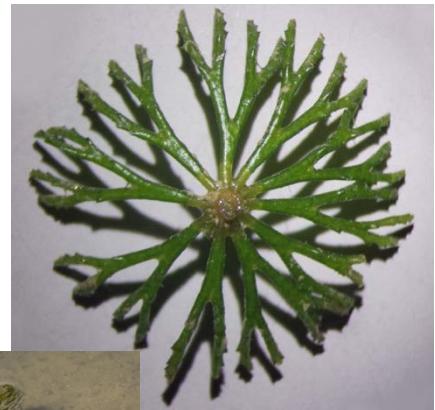
HABITAT

This species is found in slow-moving waters and lakes or ponds. They are tolerant of cool temperatures and low light conditions.

NATIVE LOOKALIKE: Carolina Fanwort

Distinguishing Characteristics:

Coontail/Hornworts (native)	Carolina fanwort (invasive)
<ul style="list-style-type: none">Leaves remain stiff out of waterWhorled leaf arrangement	<ul style="list-style-type: none">Leaves limp out of waterOpposite leaf arrangement



WATER BUTTERCUP / CROWSFOOT *Ranunculus aquatilis*

Water buttercup is a submerged plant with alternately arranged, thread-like leaves, appearing fan-like. The leaves are stiff and remain erect when removed from the water. The petioles widen at the stem to form a clasping sheath to wrap around the stem. The flowers have 5 white petals and a yellow center.

HABITAT

This species is found in shallow ponds, streams with slow currents, wetlands, and deep ditches. It prefers some shade and depths less than 2 m. It does well at the water's edge and can be found along muddy shores.

NATIVE LOOKALIKE: Carolina fanwort

Distinguishing Characteristics:

Water buttercup (native)	Carolina fanwort (invasive)
<ul style="list-style-type: none">Leaves remain stiff out of waterAlternate leaf arrangement	<ul style="list-style-type: none">Leaves limp out of waterOpposite leaf arrangement



MUSKGRASS / SKUNKWEED *Chara spp.*

These species are plant-like macroalgae with cylindrical, whorled leaf arrangement. Calcium carbonate covers the macroalgae and gives it a crusty texture. When removed from the water and crushed, it has a musty, skunky, garlic-like odor. They also have a distinctive pop when crushed.

HABITAT

Muskgrass and skunkweed can be found in moderately to highly alkaline freshwater or brackish water.

NATIVE LOOKALIKE: Brittle naiad/Starry stonewort

Distinguishing Characteristics:

Muskgrass/Skunkweed (native)	Brittle Naiad (invasive)	Starry Stonewort (invasive)
<ul style="list-style-type: none">Whorled leavesRigid textureSkunk odorWhen stems are broken it makes a popping sound	<ul style="list-style-type: none">Opposite leavesRigid textureNo odorWhen stems are broken it doesn't make a popping sound	<ul style="list-style-type: none">Whorls of 4-6 branchletsDelicate textureNo odorWhen stems are broken it doesn't make a popping sound



SLENDER / SOUTHERN NAIAD *Najas flexilis*/*Najas guadalupensis*

Slender/southern naiad are small, submerged plants. They have many branches and finely toothed, narrow leaves. Both species have leaves arranged either in opposite pairs, whorls or clumped together at the stem tips. The flowers are small and develop in the leaf axils.

HABITAT

They are found in ponds and lakes and streams. Naiads prefer sandy or gravel substrates.

NATIVE LOOKALIKE: Brittle naiad

Distinguishing Characteristics:

Slender/Southern naiad (native)	Brittle naiad (invasive)
<ul style="list-style-type: none">Very small serrations on leavesGently broadened leaf-bases	<ul style="list-style-type: none">Serrations on leaves are visible without magnificationSquarely bulging, fringed leaf-bases



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WATERSHIELD *Brasenia schreberi*

Watershield is a floating plant with oval shaped leaves that can grow up to 13 cm in diameter. The leaves are whole and do not have a slit in them. They are green on the tops of the leaves and reddish-purple with a distinctive mucilaginous slime below. The stems attach to the middle of the leaves. They have emergent pink or purple flowers with three or four petals.

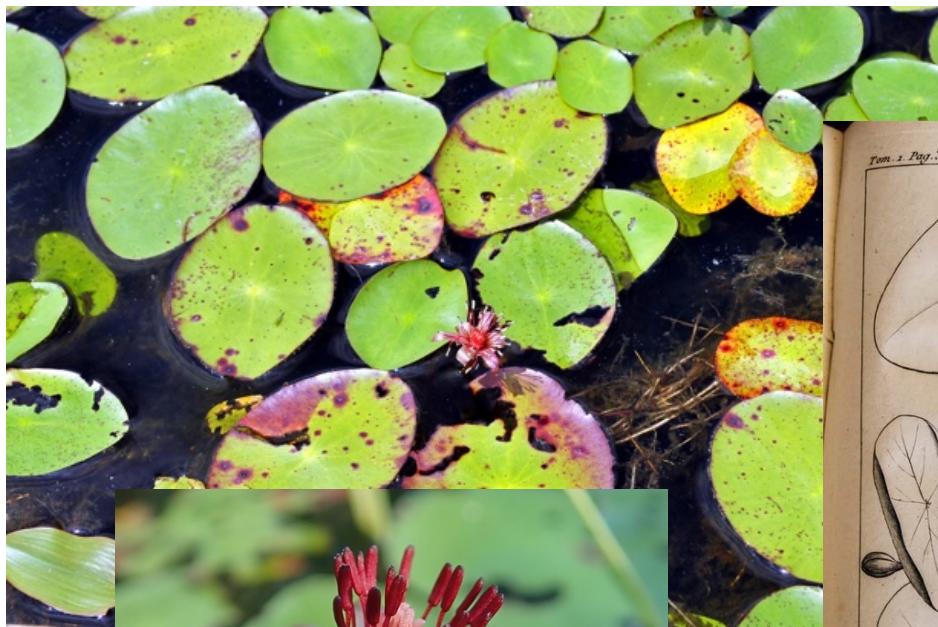
HABITAT

This species is commonly found in slow-moving or still water up to 2 m deep. It prefers environments with rich organic matter.

NATIVE LOOKALIKE: European frog-bit

Distinguishing Characteristics:

Watershield (native)	European frog-bit (invasive)
<ul style="list-style-type: none">• Oval-shaped leaves• Rooted plant• Mucilaginous slime	<ul style="list-style-type: none">• Heart-shaped leaves• Free-floating plant• No slime



LITTLE FLOATING HEART *Nymphoides cordata*

The leaves are small (1.5- 5 cm) and heart-shaped with entire or slightly scalloped margins. Each stem only produces a single leaf. The flowers are white, have 5 petals and emerge to the surface from a submerged stem. Tuberous roots are also produced close to the surface and resemble a cluster of bananas.

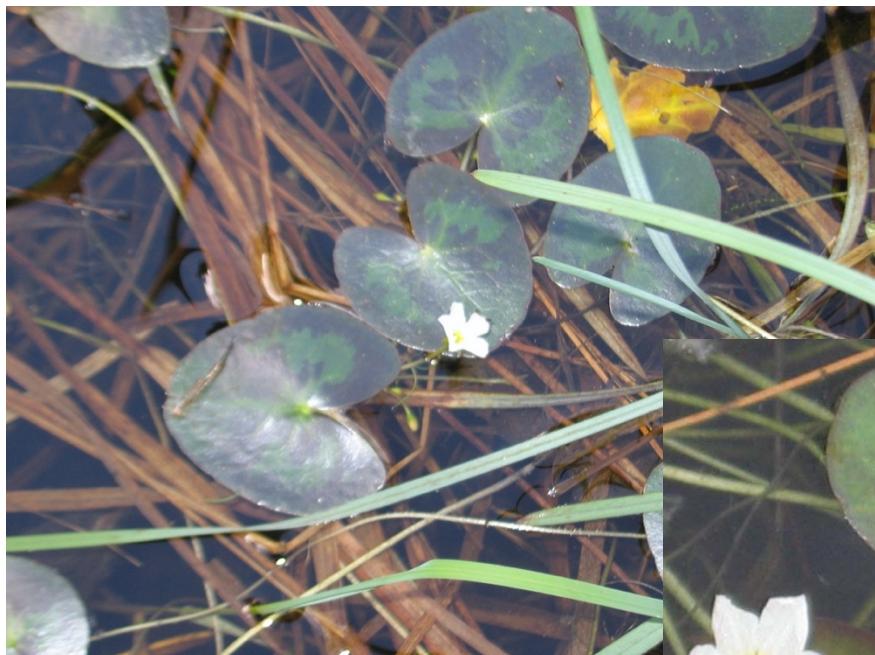
HABITAT

Little floating heart is found in quiet waters of lakes and streams. It is free-floating and is typically found with other floating plants.

NATIVE LOOKALIKE: Yellow heart/European frog-bit

Distinguishing Characteristics:

Little floating heart (native)	Yellow floating heart (invasive)	European frog-bit (invasive)
<ul style="list-style-type: none">• Tuberous roots• White, 5-petaled flowers• Leaves have scalloped edges	<ul style="list-style-type: none">• Lacks tuberous roots• Larger leaves (3-12 cm)• Leaf margins are wavy• Yellow, 5-petaled flowers	<ul style="list-style-type: none">• Lacks tuberous roots• Entire leaf margins• White, 3-petaled flowers



FRAGRANT/WHITE WATERLILY *Nymphaea odorata*

This species is a floating-leaved, aquatic plant with large, round leaves. The leaves range from 10-30 cm wide and have a pie-slice shaped slit from the center of the leaf to the edge. The lobes of the leaves are sharply pointed. The tops of the leaves are leathery and green with reddish-purple undersides. The flowers are 10-20 cm wide with many white petals arranged around a yellow center.

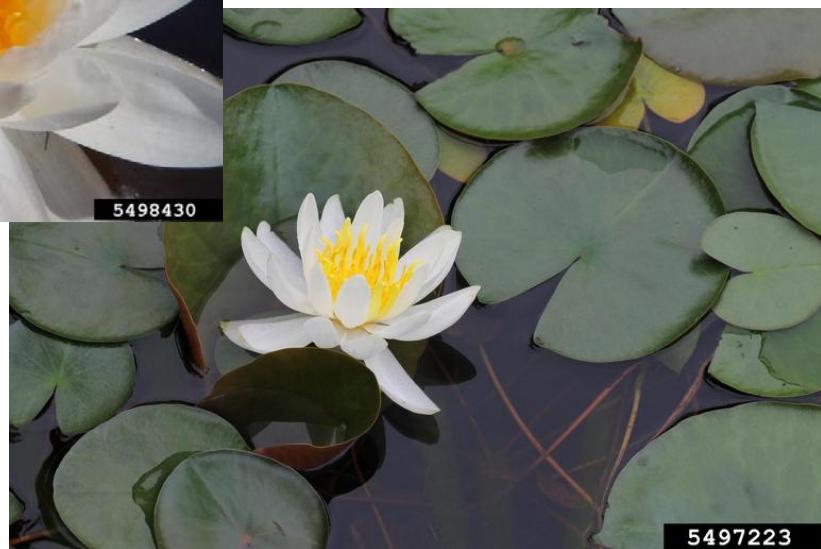
HABITAT

White waterlily can be found in quiet, shallow waters of lakes or ponds. It can grow well in a variety of different sediment types and up to 2 m depth.

NATIVE LOOKALIKE: Pink/Sacred lotus

Distinguishing Characteristics:

Fragrant/White waterlily (native)	Pink/Sacred lotus (invasive)
<ul style="list-style-type: none">• Pie-shaped slit in the leaves• Leathery leaves• Flat leaves	<ul style="list-style-type: none">• No slit in the leaves• Non-leathery leaves• Cup-shaped leaves



COMMON BLADDERWORT *Utricularia vulgaris*

This plant is a submerged, carnivorous plant and uses tiny bladders located on its leaves to trap small organisms. The leaves are alternately arranged and finely divided and branched. Flowers are bright yellow, resemble snapdragon and grow in clusters.

HABITAT

Common bladderwort is found floating above water, at the bottom of the water or just below the water surface. They can be found in slow-moving streams, lakes, ponds or wetland pools.

NATIVE LOOKALIKE: Waterwheel

Distinguishing Characteristics:

Common bladderwort (native)	Waterwheel (invasive)
<ul style="list-style-type: none">• Alternate leaves• Snapdragon-like, yellow flowers• Zig-zag stem	<ul style="list-style-type: none">• Whorls of 6-8 leaves• Small, pinkish flowers• Straight stem



SOFT-STEMMED BULRUSH *Scirpus tabernaemontani*

Stems are soft, round and taper to a point with no visible leaves. The stems can reach up to 10 ft tall. The flowers grow in a cluster just below the point of the stem. They have many orange-brown, bud-shaped spikelets filled with flowers.

HABITAT

Soft-stemmed bulrush grows in tidal fresh and brackish marshes, shallow inland waters and shores.

NATIVE LOOKALIKE: Flowering rush

Distinguishing Characteristics:

Soft-stemmed bulrush (native)	Flowering rush (invasive)
<ul style="list-style-type: none">• Round stems• Flowers are borne in spikelets• Orange-brown spikelets	<ul style="list-style-type: none">• Triangular leaves• Flowers are borne in umbrella-shaped clusters• White/pink, 3-petaled flowers



RIVER BULRUSH *Scirpus fluviatilis*

This species has triangular stems with numerous grass-like leaves, growing up to 5 ft tall. The flowers are in a spray-like cluster with smaller, orange-brown spikelets holding multiple flowers. This plant flowers from July- September. However, sterile plants are common with no flowers because this species can spread vegetatively.

HABITAT

River bulrush grows in tidal fresh marshes, inland marshes, riverbanks and shallow waters of lakes and ponds.

NATIVE LOOKALIKE: Flowering rush

Distinguishing Characteristics:

River bulrush (native)	Flowering rush (invasive)
<ul style="list-style-type: none">• Grass-like leaves• Flowers are borne in spikelets• Orange-brown spikelets	<ul style="list-style-type: none">• Triangular leaves• Flowers are borne in umbrella-shaped clusters• White/pink, 3-petaled flowers



Other Common Native Plants

SPATTERDOCK/YELLOW POND-LILY *Nuphar advena*

Spatterdock is an emergent aquatic plant. Leaves are heart-shaped, smooth-edged and can be up to 16" long. The lobes are rounded. Each stem supports only one leaf. Underground is a thick rhizome covered in leaf scars from fallen leaves. The flowers are shaped like a ball and have 5 or 6 petals with a yellowish-green stigmatic disk. The plant flowers from May to October.

HABITAT

This species is typically found in quiet, slow-moving water such as marshes as well as swamps and ponds with soft sediments. It can grow up in water of 3 m depth.

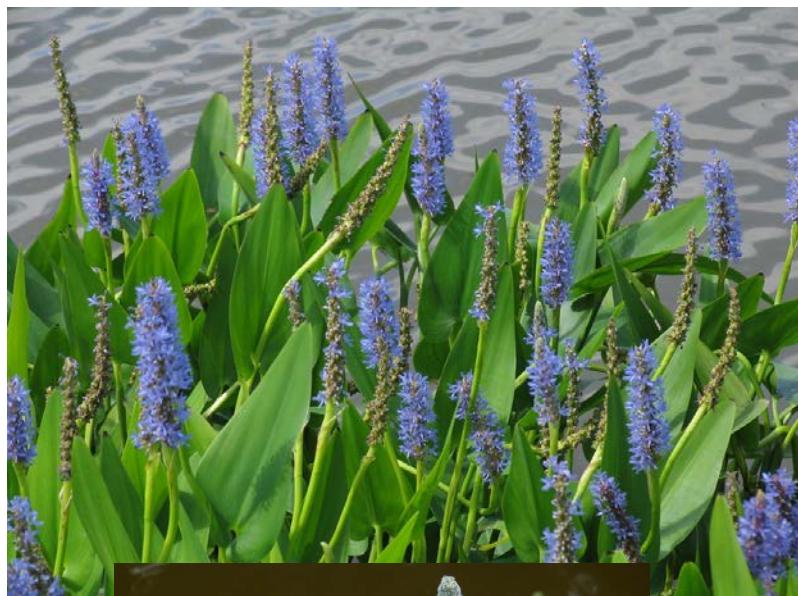


PICKERELWEED *Pontederia cordata*

Pickerelweed is an emergent, aquatic plant. It has heart-shaped, entire leaves up to 7" in length that are broadest at the base. The leaves arise from the base of the plant. It can grow up to 3½ ft. The flowers are a large cluster of small, violet-blue, tubular flowers borne at the end of the stout stalk. It blooms from June to November.

HABITAT

Pickerelweed is often found in tidal fresh and slightly brackish marshes, and inland marshes. It can also be found in shallow waters of ponds and lakes.



Pontederia Cordata

Pontederie en Cœur

EEL GRASS / WATER CELERY *Vallisneria americana*

Eel grass is a rooted, submerged aquatic plant. It has untoothed, ribbon-like leaves that can reach up to 7 ft long with a narrow strip along the center. The leaves arise from the base of the plant. Flower stalks have small, 3-petaled white flowers on the surface of the water. They flower from July through October.

HABITAT

This species is commonly found in tidal freshwater or slightly brackish water and a variety of inland waters. It prefers a solid substrate and can grow in depths up to several meters.



COMMON DUCKWEED *Lemna minor*

Common duckweed is a very small, free-floating plant. It can be up to 0.5 cm and has 1-3 yellow-green leaves, each with a single root hanging below the surface.

HABITAT

This species is typically found in still or slow-moving water in colonies.



PONDWEEDS *Potamogeton spp.*

Pondweeds are submerged plants, with various leaf shapes that can range from oval to thread-like, to ribbon-shaped leaves. The leaves can be leathery or translucent. The flowers are typically emergent greenish spiked flower clusters.

HABITAT

These species grow in shallow, quiet waters with soft sediment. The species can be found in lakes, streams, ponds and rivers.



Image Credits:

Canadian/Western Waterweed/Elodea

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Slender/Southern Naiad

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Fragrant/white waterlily

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