Aquatic Plants of Alberta

A COLLECTION OF NATIVE AND INVASIVE SPECIES

1st Edition

ALMS
Alberta Lake Management Society

ACKNOWLEDGEMENTS

The Alberta Lake Management Society is a charitable organization which strives to educate lake users about aquatic environments, encourage public involvement in lake management, and facilitate cooperation and partnership between government, industry, the scientific community, and lake users.

In 2014 and 2015, the Alberta Lake Management Society, alongside citizen scientist volunteers, collected aquatic plant specimens from across Alberta through the Aquatic Plant Monitoring Program. One invasive species (Flowering Rush) and numerous native species were collected and archived during two summers of sampling. This book is the result of those two summers and we would like to thank everyone who assisted with this project, especially: our numerous volunteers for their time, interest, and patience; Alyssa Cloutier, who helped to develop and deliver the program; Dorothy Fabijan, of the University of Alberta Vascular Plant Herbarium; and Kate Wilson, of Alberta Environment and Parks. Thank-you as well to our sponsors: TD Friends of the Environment and Alberta Environment and Parks.

Alberta Government

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THE IMPORTANCE OF AQUATIC PLANTS

About This Guide:

The purpose of this guide is to highlight the often overlooked biodiversity which exists in Alberta's aquatic plant community and to assist individuals in distinguishing between invasive species and their similar-looking native counterparts. Few of the invasive species highlighted in this guide have been reported in Alberta, and we hope to limit their occurrences through education, awareness, and early detection. Unless otherwise cited, all photos in this book are of ALMS or Alberta Environment and Parks specimens.

Why Are Aquatic Plants Important?

Aquatic plants have the ability to impact the physical, chemical, and biological characteristics of a lake. For example, macrophytes may stabilize lake sediments and shorelines, limiting the re-suspension of sediments and shoreline erosion. Submerged macrophytes may increase oxygen concentrations in a lake, whereas emergent macrophytes may remove oxygen from a lake system. Macrophytes may also directly impact a lake's food web by creating habitats for aquatic insects, providing refuge for fish, or acting as food for birds. Like cyanobacteria and algae, macrophytes require phosphorus and nitrogen to grow – many rooted macrophytes will obtain the nutrients they require from the sediment, but the water column may act as an important source of nutrients for non-rooted species such as Coontail. As you can see, macrophytes are an integral part of our aquatic ecosystems and it is important to recognize their biodiversity and the significant roles they play in our lakes.

What Is An Invasive Plant?

Invasive plants are non-native species, often introduced by humans through boating activities, which have the potential to harm an aquatic ecosystem. Invasive plants have few natural predators, reproduce quickly, and can convert open-water areas into veritable meadows. Such infestations may make a lake unsuitable for recreation, destroy fisheries, and clog infrastructure. To limit the spread of invasive species, you should clean, drain, and dry your boat between waterbodies. If you spot an invasive species in your lake, call 1-855-366-BOAT. The improper removal of invasive aquatic plants may cause these species to spread more widely.

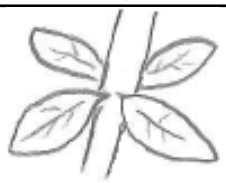
Should I Remove Native Plants?

Some lakes naturally have dense growth of aquatic plants, and this may be influenced by many factors such as a lake's size and depth. Removing aquatic plants may make your lake susceptible to negative changes in water quality. A permit from the Government of Alberta is required to remove aquatic plants from the bed and shore of a lake.

GLOSSARY

Note: Common and scientific names for plants in this book are variable, and we made our best efforts to include as many aliases as possible. For more information, check out the following resources:

- Alberta Conservation Information Management System
- Database of Vascular Plants of Canada
- Alberta Native Plant Council
- Alberta Invasive Species Council

Term		Definition	
Macrophyte		An aquatic plant, either submerged, floating, or emergent, large enough to be seen by the naked eye	
Stipule		Scale-like tissue at the base of the leaf (sometimes in pairs)	
Leaf Arrangement	Opposite	Pairs of leaves that are directly across from each other on the stem	
	Alternate	Only one leaf occurs per node, and each side alternates	
	Whorled	Leaves occur all the way around the stem at each node in groups of 3 or more	
Axils		Where the leaf meets the stem	
Submergent		The plant grows completely underwater, with the exception of floating leaves or flower stalks	
Emergent		The plant has a base underwater, but parts grow above the water's surface	

Native Plant

Invasive Plant

If you think you have discovered an invasive species, call the invasive hotline:

1 855 336 BOAT (2628)

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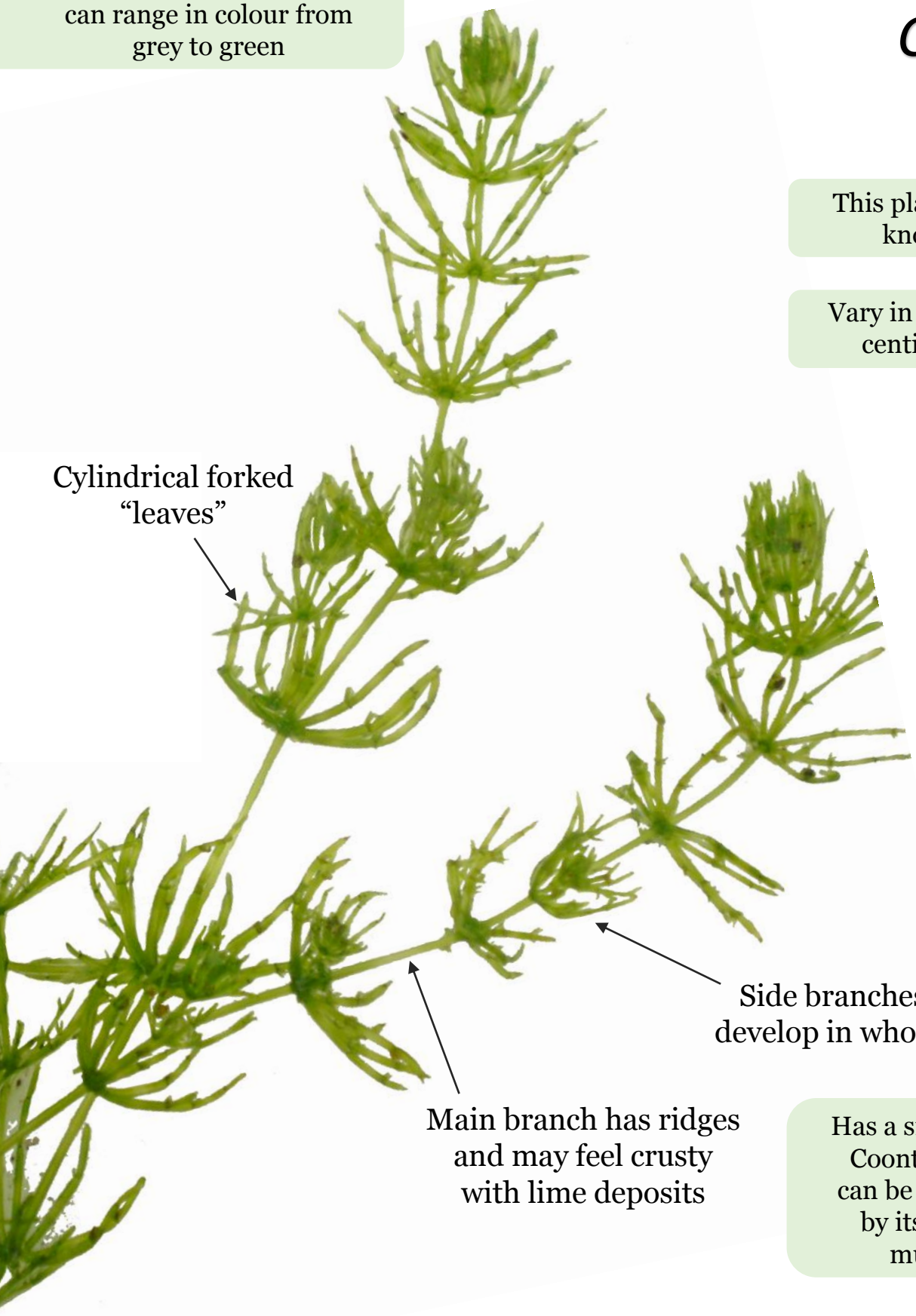
Chara

Chara spp.

Completely submerged and can range in colour from grey to green

This plant-like ***algae*** is also known as stonewort

Vary in size, from only a few centimetres to a metre



Has a similar appearance to Coontail and Milfoil, but can be easily distinguished by its **odour** – usually musky or garlicky

Coontail

Ceratophyllum demersum

Also known as Hornwort

Leaves are forked with small teeth on the edge

Tiny flowers may be present at the leaf bases in early summer

Does not form roots, but anchors into the substrate

Leaves become denser near the tip

Forked leaves

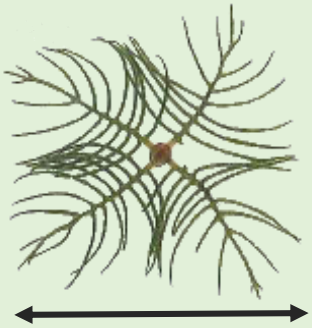
Leaves in groups of 5 to 12, whorled around a small stem

Northern Milfoil

Myriophyllum sibiricum

Flower spike may be long and stick out of the water

Plant can appear sparse or dense with leaves, depending on the season



4 to 8 cm

- Leaves appear feather-like, with less than 12 divisions on either side
- Leaves are stiff and retain their shape out of water (unlike **Eurasian Milfoil**)
- Leaflet length gives leaves an overall pointed appearance

Leaves grouped in four, whorled on a round stem

Stem can range from green to red in colour

Can hybridize with **Eurasian Milfoil**

INVASIVE

Eurasian Milfoil

Myriophyllum spicatum

This invasive plant can create new plants from small fragments, no roots needed

Flower spike may be long and stick out of the water

Plant can appear sparse or dense with leaves, depending on the season

Stem can range from green to red in colour

Leaves in groups of 3 to 5, whorled around a round stem

4 to 8 cm

- Leaves appear feather-like, with 14 – 20 divisions on either side
- Leaves are limp and don't hold their shape out of water (unlike **Northern Milfoil**)
- Leaflets have a squared off appearance at the end, rather than a point

Canada Waterweed
Elodea canadensis

Mats of this plant may become tangled in boat motors

Leaves tend to be more crowded towards the tip

Leaves are mostly arranged in whorls of 3 (occasionally 4)

Flower stalks can be very long in comparison to the rest of the plant

This rare plant looks very similar to **Hydrilla**, but can be distinguished by its **smooth leaves**

Long, slender stem that may be branched

Whorl with 3 leaves

Leaves on the lower stem may be oppositely arranged

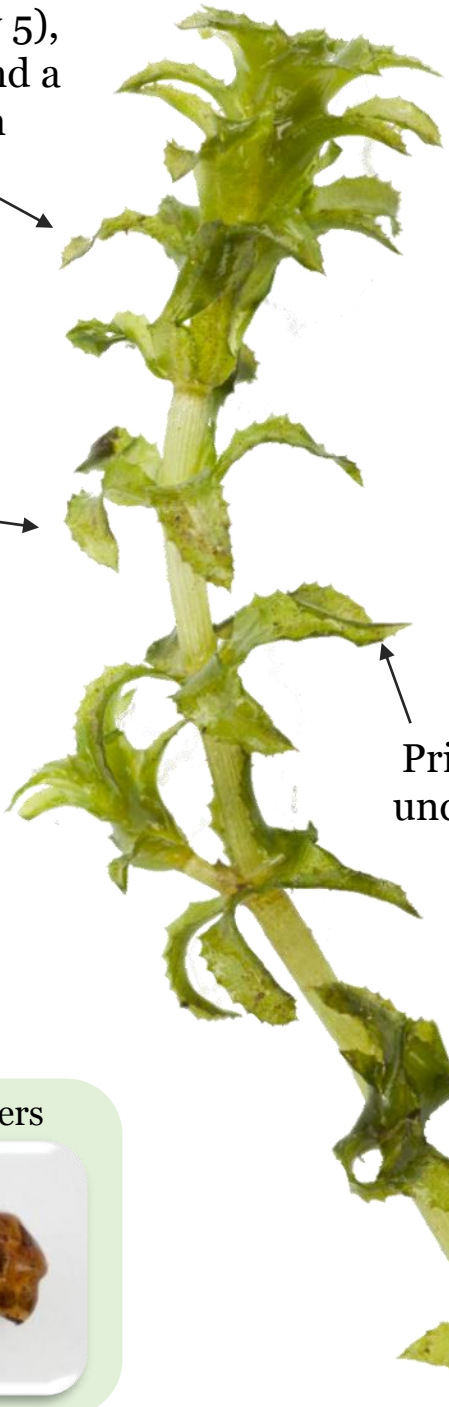
INVASIVE

Hydrilla

Hydrilla verticillata

Also known as Water-thyme

Leaves in groups of 4 to 8 (usually 5), whorled around a round stem



Whorl with 5 leaves

Leaf edges are obviously serrated

Prickly hairs on the underside of the leaf

Mats of this plant can block light, obstruct waterfowl habitat and impede activities like boating, swimming and fishing

Looks very similar to **Canada Waterweed**, but can be distinguished by the **serrated leaves, prickly leaf "hairs", and root tubers**.

Roots have potato-like tubers

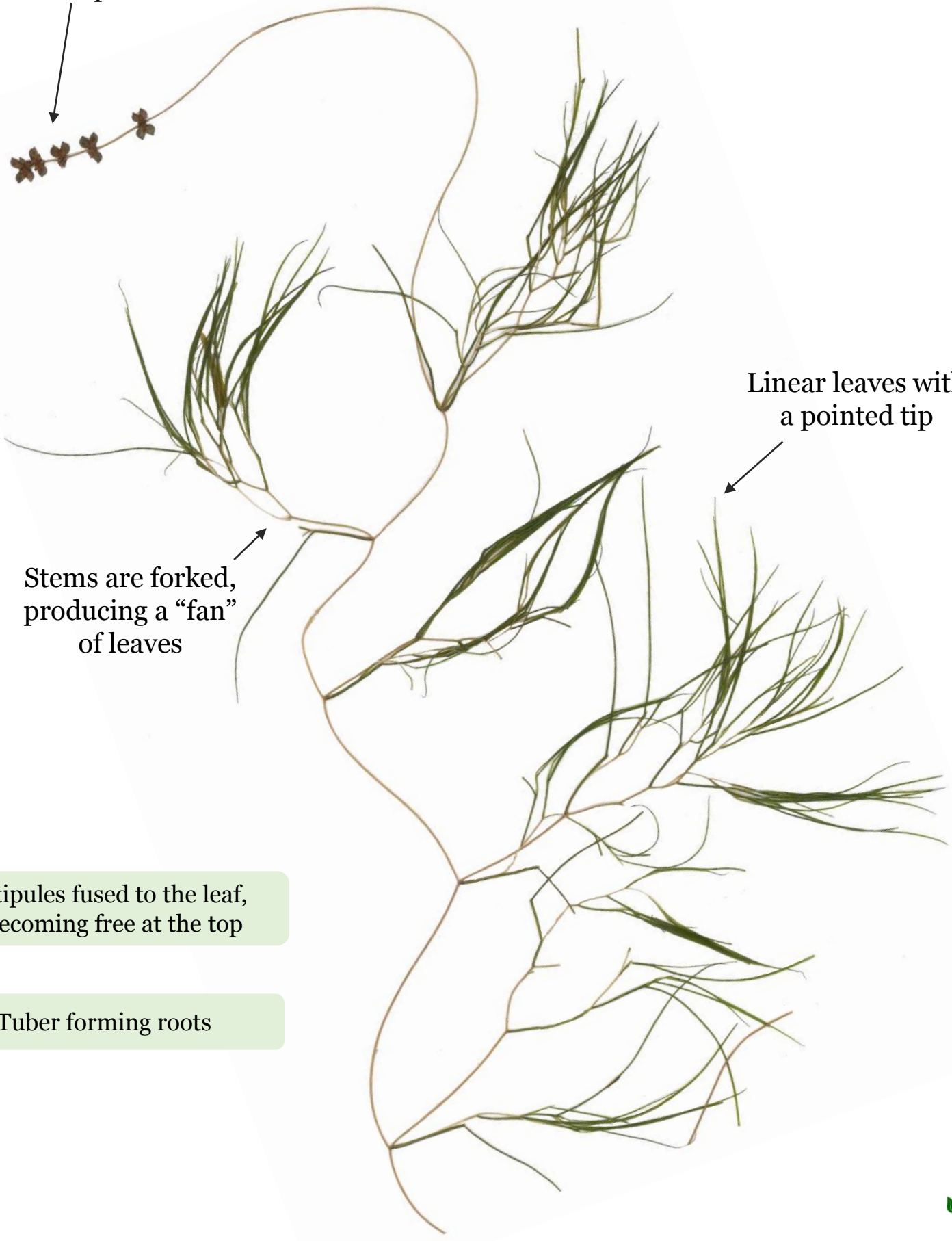
All images on this page: New York State Federation of Lake Associations (www.nysfola.org) Photographer: Jon Reis

Sheathed Pondweed

Stuckenia vaginata

Sago Pondweed

Stuckenia pectinata



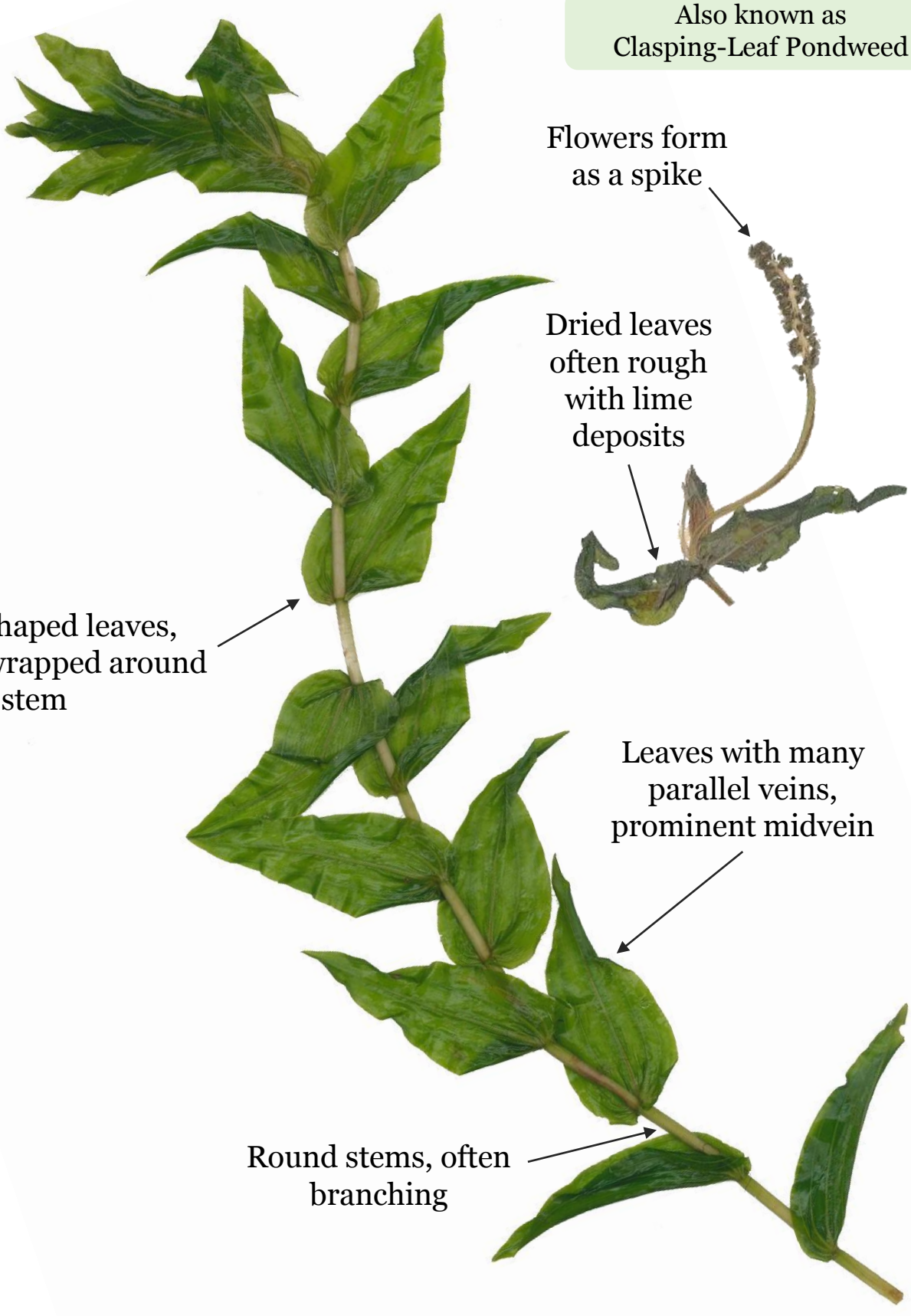
Stipules fused to the leaf, becoming free at the top

Tuber forming roots

Richardson's Pondweed

Potamogeton richardsonii

Also known as
Clasping-Leaf Pondweed



INVASIVE

Curly Leaf Pondweed

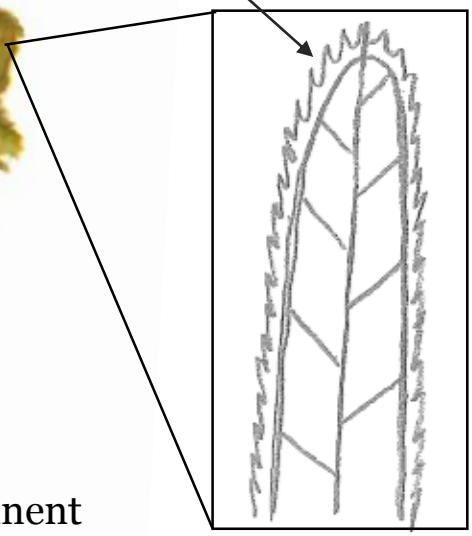
Potamogeton crispus

Also known as Crisp-Leaved Pondweed

Long, stiff, alternate leaves that have ruffled edges (like lasagne noodles)

Plants are fully submersed, but may have a small flowering stalk that sticks above the water

Leaf edges are serrated



One prominent midvein

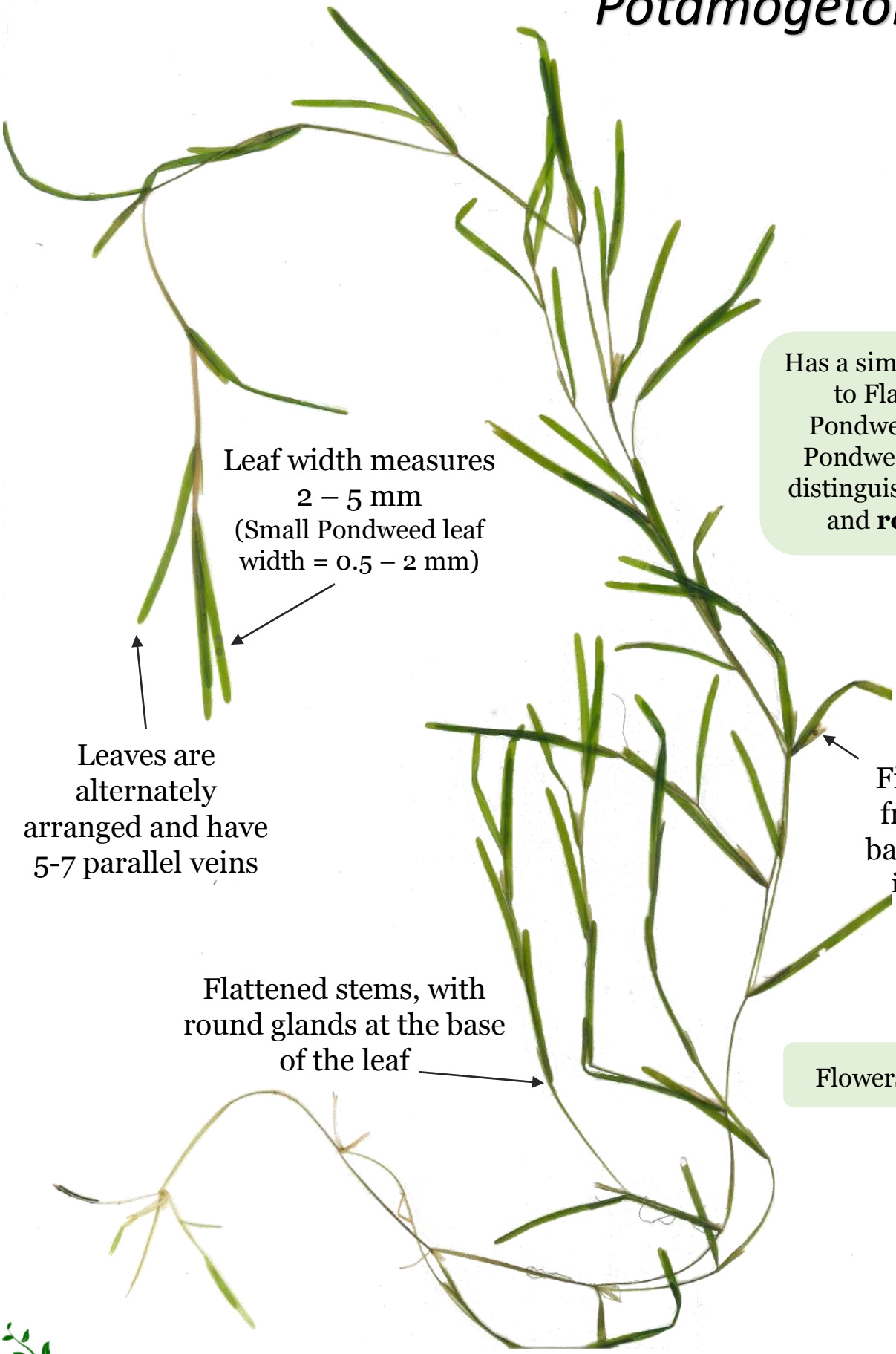
Tell it apart from native pondweeds by holding the leaves up to the light – they almost appear like stained glass windows

Stems are long (up to 3 m), slightly flattened, and may have many branches

Main image on this page: New York State Department of Environmental Conservation (www.dec.ny.gov); image cropped and background removed

Fries' Pondweed

Potamogeton friesii



Has a similar appearance to Flat Stemmed Pondweed and Small Pondweed, but can be distinguished by its **size** and **round stem**

Leaf width measures 2 – 5 mm (Small Pondweed leaf width = 0.5 – 2 mm)

Leaves are alternately arranged and have 5-7 parallel veins

Fibrous stipule free of the leaf base (often shreds in late season)

Flattened stems, with round glands at the base of the leaf

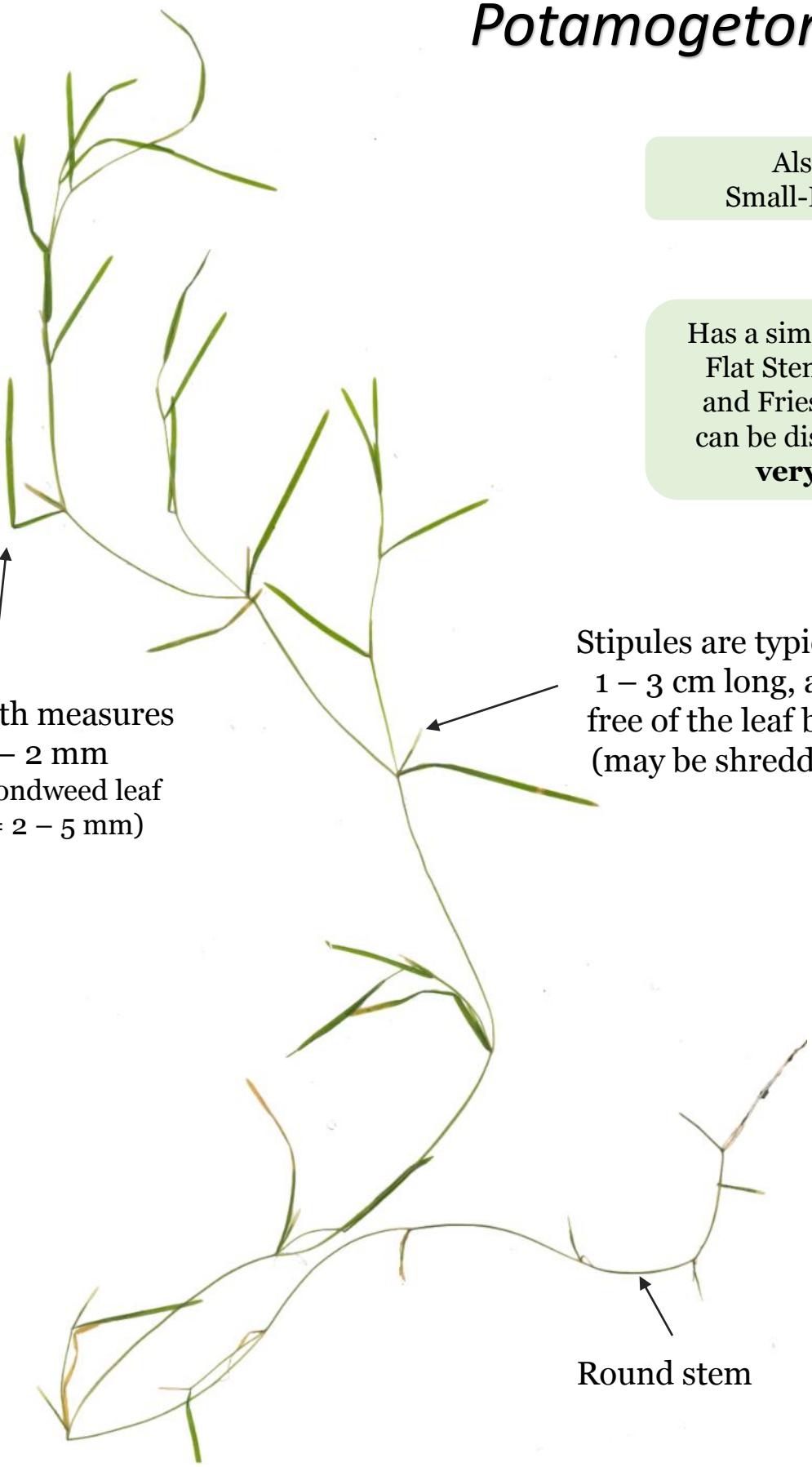
Flowers form as a spike

Small Pondweed

Potamogeton pusillis

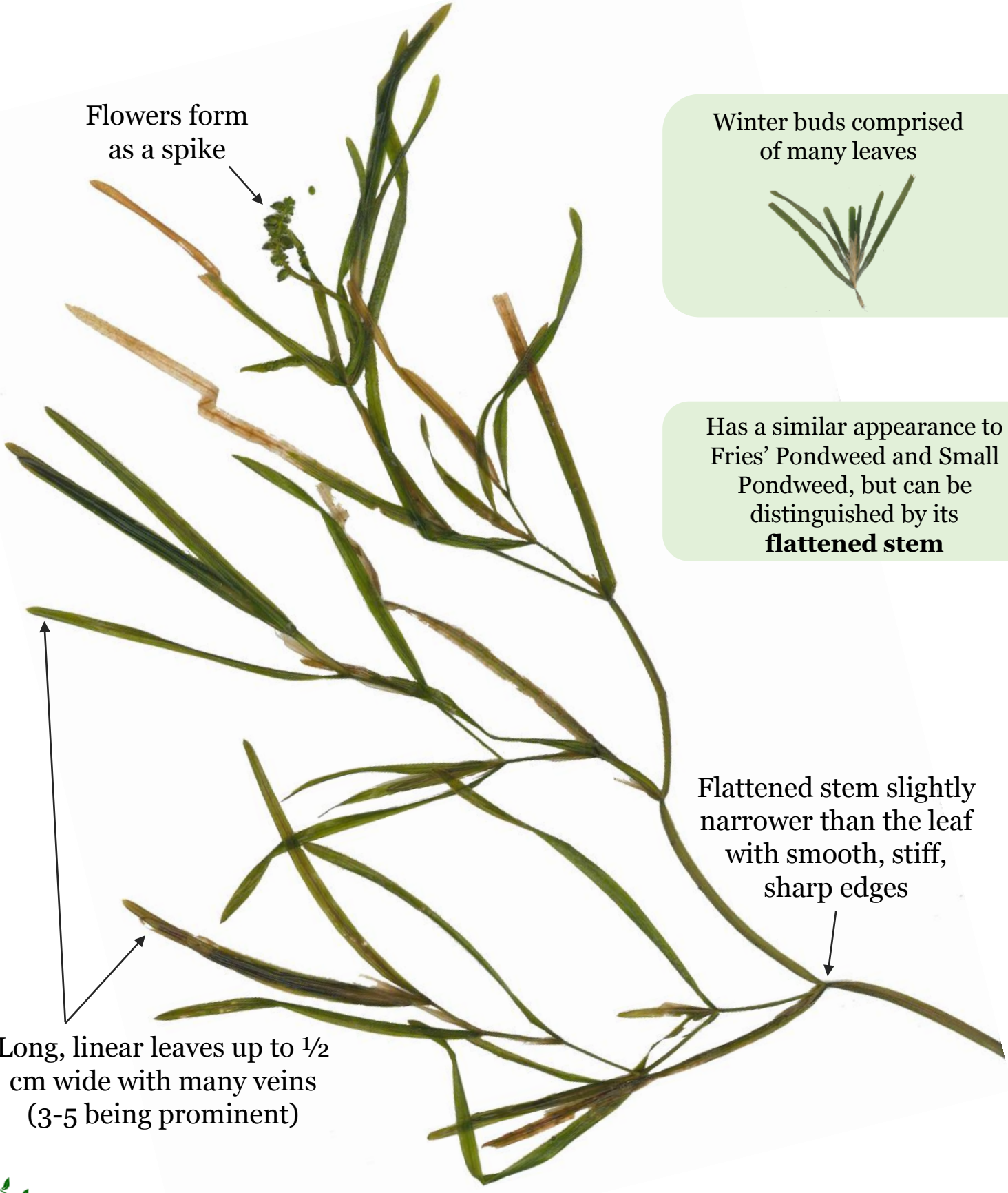
Also known as
Small-Leaf Pondweed

Has a similar appearance to Flat Stemmed Pondweed and Fries' Pondweed, but can be distinguished by its **very small size**



Flat-Stemmed Pondweed

Potamogeton zosteriformis



Flowers form as a spike

Winter buds comprised of many leaves

Has a similar appearance to Fries' Pondweed and Small Pondweed, but can be distinguished by its **flattened stem**

Flattened stem slightly narrower than the leaf with smooth, stiff, sharp edges

Long, linear leaves up to ½ cm wide with many veins (3-5 being prominent)

Spiral Ditchgrass

Ruppia cirrhosa

Usually found in brackish, saline, or very alkaline water

Coiled flowering stalk

Grass-like leaves fan out under water

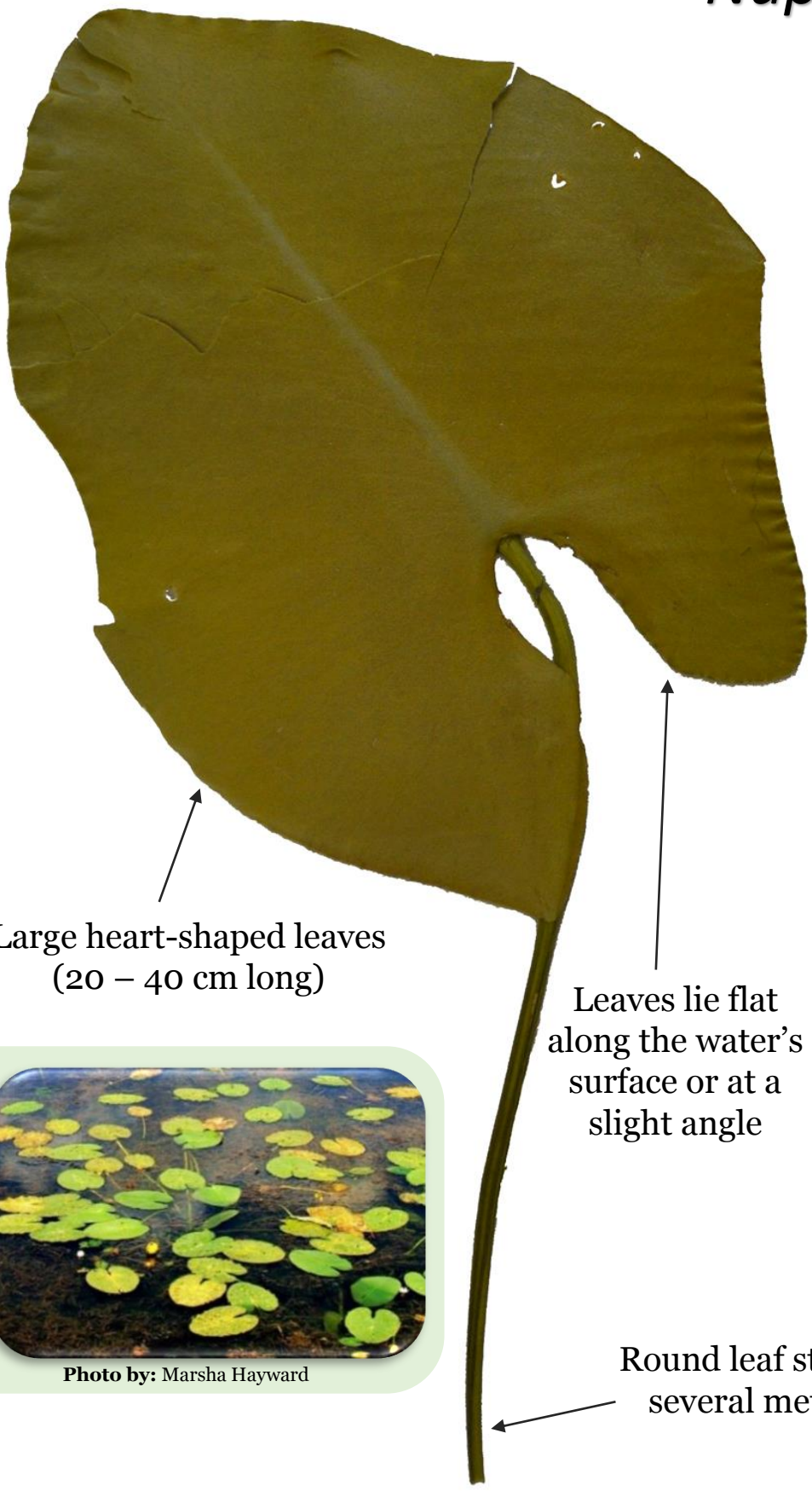
Stipule fused to the base of the leaf

Can be confused with ***Sago Pondweed***, but flowers are in an umbrella structure, not a singular spike

Floating-Leaf Pondweed

Potamogeton natans

Yellow Pond Lily
Nuphar variegata



Yellow flowers about the size of a ping pong ball

Photo by: Marsha Hayward

Large heart-shaped leaves (20 – 40 cm long)

Leaves lie flat along the water's surface or at a slight angle

Photo by: Marsha Hayward

Round leaf stalk can be several metres long

Duckweed
Lemna spp.

Ivy-Leaved or Star Duckweed
(*Lemna trisulca*)

A small, free-floating colonial species that exists in different shapes and sizes depending on the species

Each leaf is only a few centimetres wide

Flat, blob-like leaves with a single root dangling from each

Some species produce ***turions***: wintering buds that can detach and lie dormant at the bottom of a waterbody

Found in quiet areas of waterbodies that are undisturbed by wave action

Image from: Christian Fischer (commons.wikimedia.org)

Lesser or Common Duckweed
(*Lemna turionifera*)

Other images on this page from:
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Bladderwort

Utricularia spp.

This is a free-floating, carnivorous aquatic plant

No true leaves. There is a main stem, and a heavily branched network of smaller stems that support round bladders

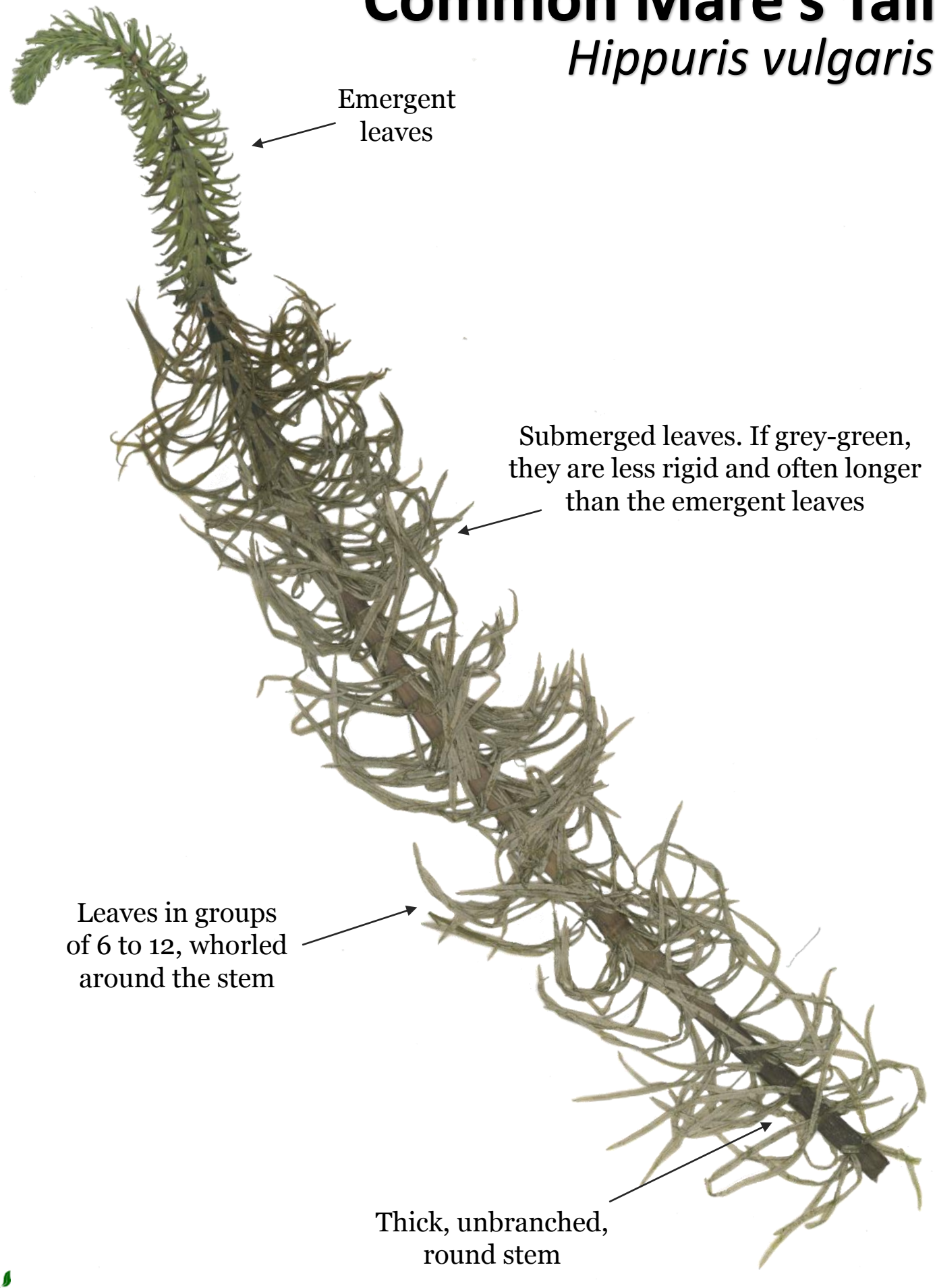
Bladders capture invertebrates or tiny fish and secrete digestive enzymes to absorb nutrients

Produces bright yellow emergent flowers

Note: Alberta is home to 4 or 5 species of bladderwort

Common Mare's Tail

Hippuris vulgaris



Arrowhead

Sagittaria cuneata

Also known as
Arum-Leaved Arrowhead,
Duck Potato, or Wapato

Flowers grow on a stalk. Each individual flower has 3 main petals and 3 smaller petals (sepals)

Leaves are floating and have a recognizable arrowhead shape

Leaves may be entirely emergent in shallow water

Tuber-like roots

Image from: born1945
www.flickr.com

INVASIVE

Flowering Rush

Butomus umbellatus

Can grow along the shoreline as an emergent plant, or be partially submerged

Pinkish-white flowers grow in umbrella-like structures

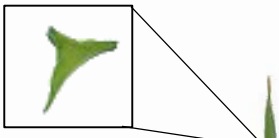
Individual flowers have 3 main petals and 3 smaller petals (sepals)

Round stem that supports the flower can grow as high as 1 m

Flowering Rush in seed

DO NOT PULL OR DIG:
Root clusters can break into new plants if disturbed

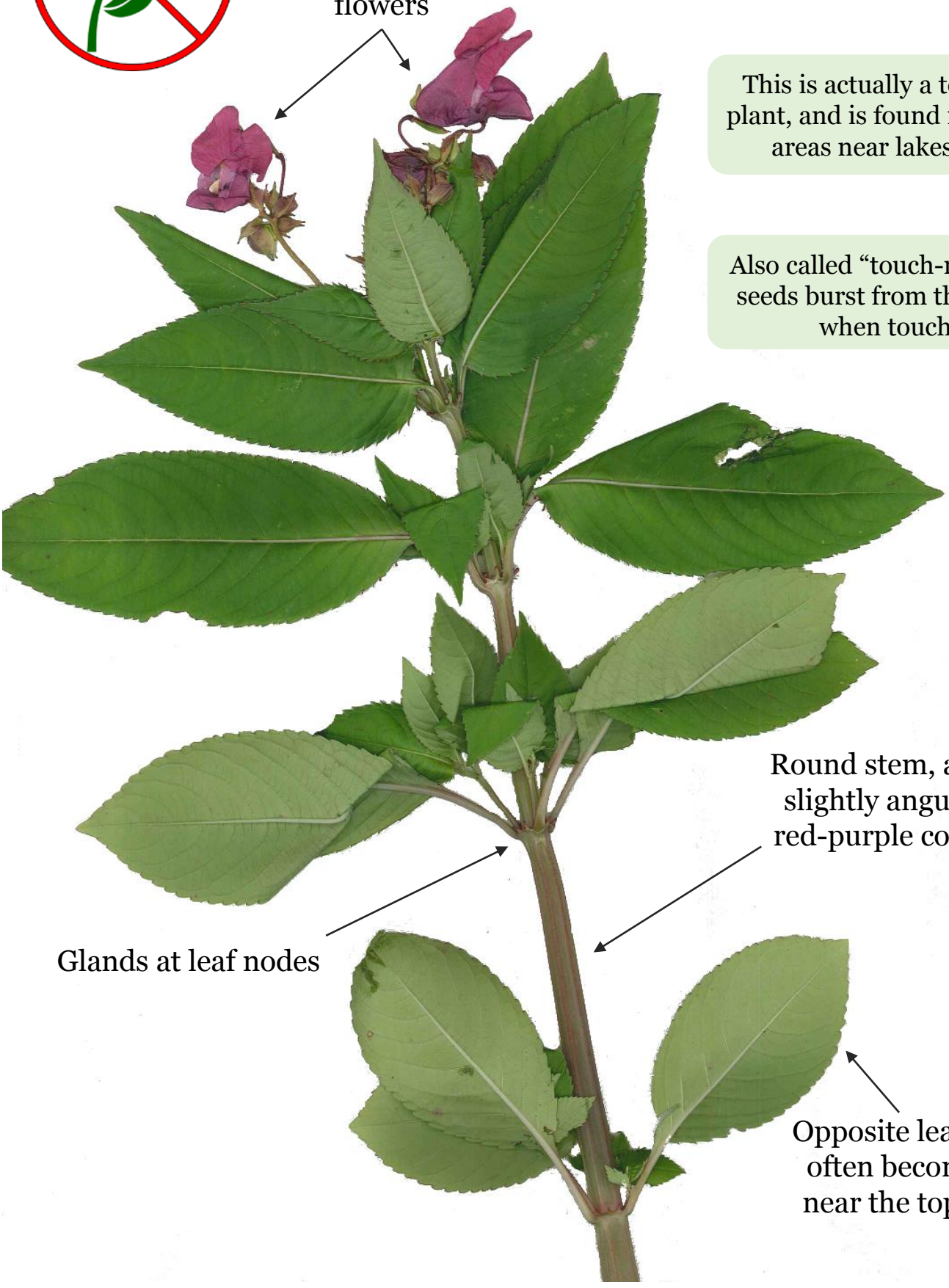
Early in the season, this plant can be identified by its sword-shaped leaves, which are triangular in cross section



INVASIVE

Himalayan Balsam

Impatiens glandulifera



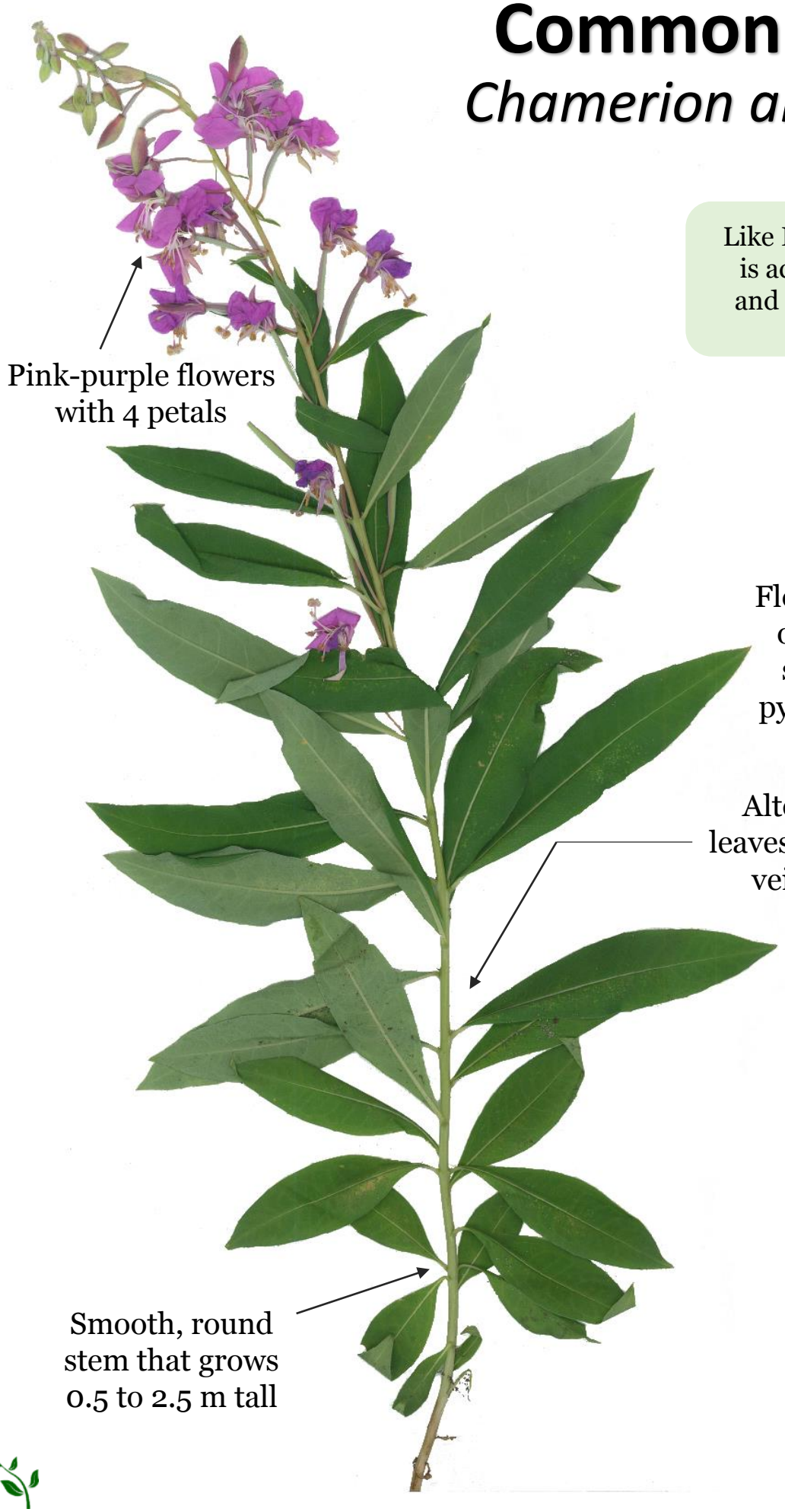
This is actually a terrestrial plant, and is found in riparian areas near lakeshores.

Also called “touch-me-not” as seeds burst from the capsule when touched

Common Fireweed

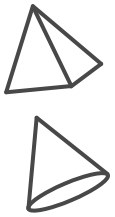
Chamerion angustifolium

Like **Purple Loosestrife**, this is actually a terrestrial plant, and is found in riparian areas near lakeshores.



Pink-purple flowers with 4 petals

Flowered section of the plant is shaped like a pyramid or cone



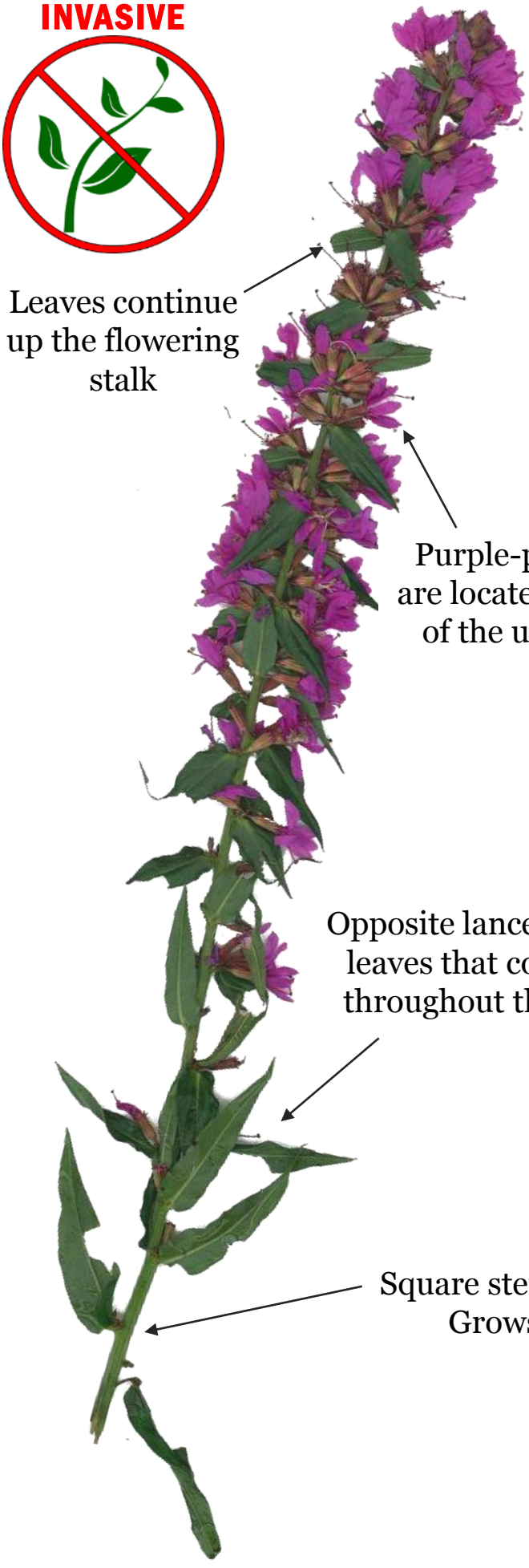
Alternate lance-shaped leaves with three prominent veins, may be toothed

Smooth, round stem that grows 0.5 to 2.5 m tall

INVASIVE

Purple Loosestrife

Lythrum salicaria



Leaves continue up the flowering stalk

Purple-pink flowers are located in the axils of the upper leaves

Opposite lance-shaped leaves that continue throughout the stalk

Square stem, often branching. Grows 1.5 to 3 m tall

This is actually a terrestrial plant, and is found in riparian areas near lakeshores. Looks very similar to **Fireweed**.

Flowered section of the plant is shaped like a cylinder

Flowers have 4-8 petals (commonly 6)

Leaves and stems may have fine hair

1st Edition released Spring 2016

Please remember that this book is designed to act as a basic identification guide for lake residents and visitors to be able to distinguish between native plants and their similar-looking invasive counterparts.

It is not a comprehensive guide to *all* aquatic and shoreline plants of Alberta, but the option for expansion is open to future versions. The release of new versions will be announced via the ALMS e-newsletter and our social media platforms.

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