A Community Member's Guide to Aquatic Plants

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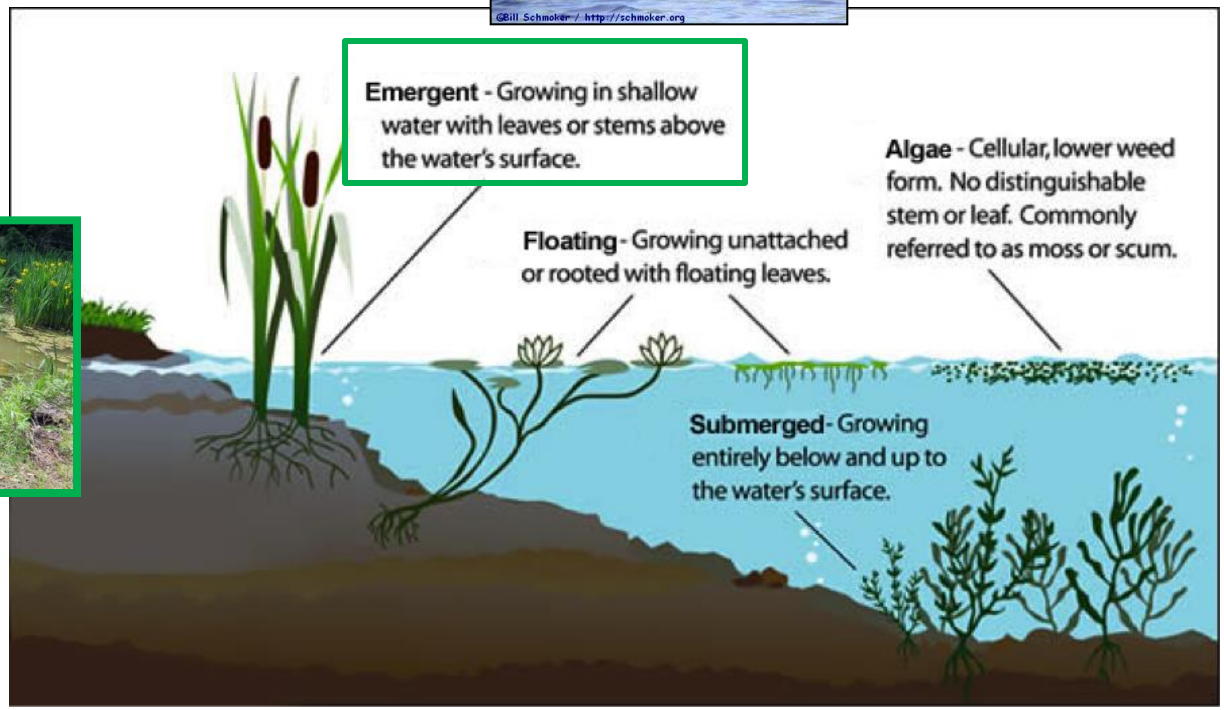
Agenda

- Importance of aquatic plants
- How to identify common native aquatic plants
- How to identify Minnesota's invasive aquatic plants
- How to set up a volunteer monitoring group

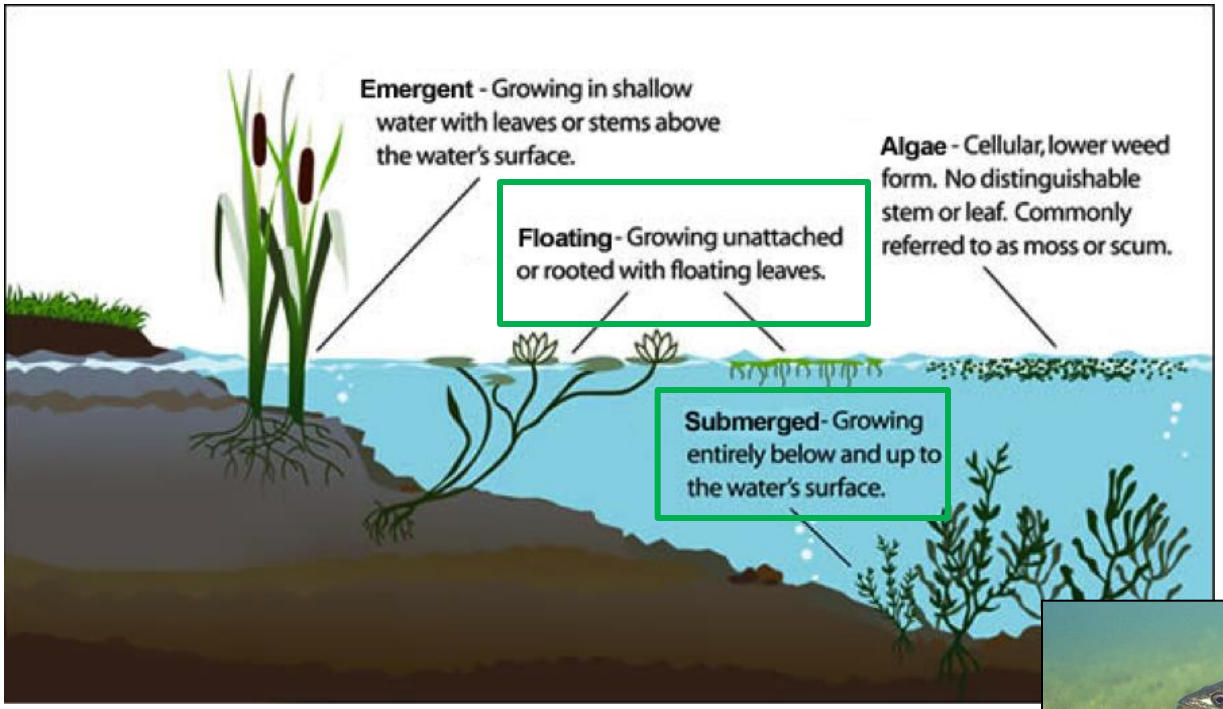
The Value of Aquatic Plants

Emergent plants:

- Shoreline stabilization
- Buffer from waves
- Provide habitat for invertebrates
- Nesting habitat for waterfowl



The Value of Aquatic Plants



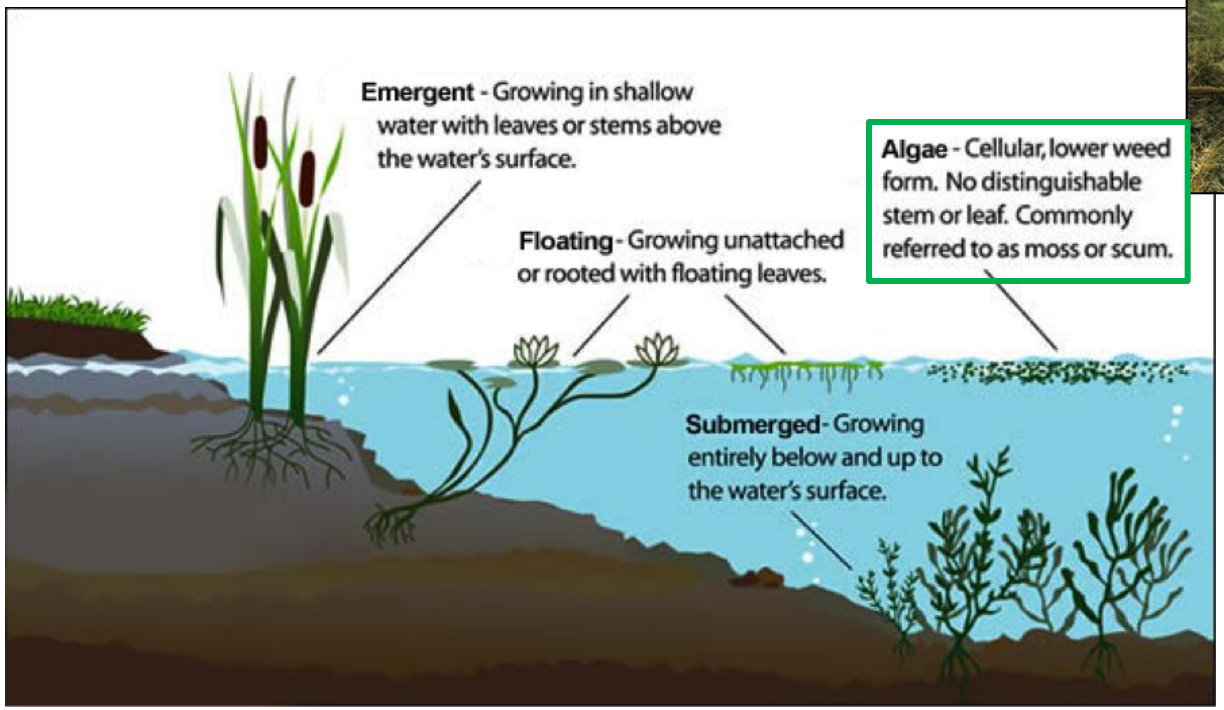
Submerged and Floating plants:

- Stabilize sediment on lake bottom
- Provide shelter for prey fish and invertebrates

The Value of Aquatic Plants

Algae:

- The base of the food web
- Provides food for fish and invertebrates

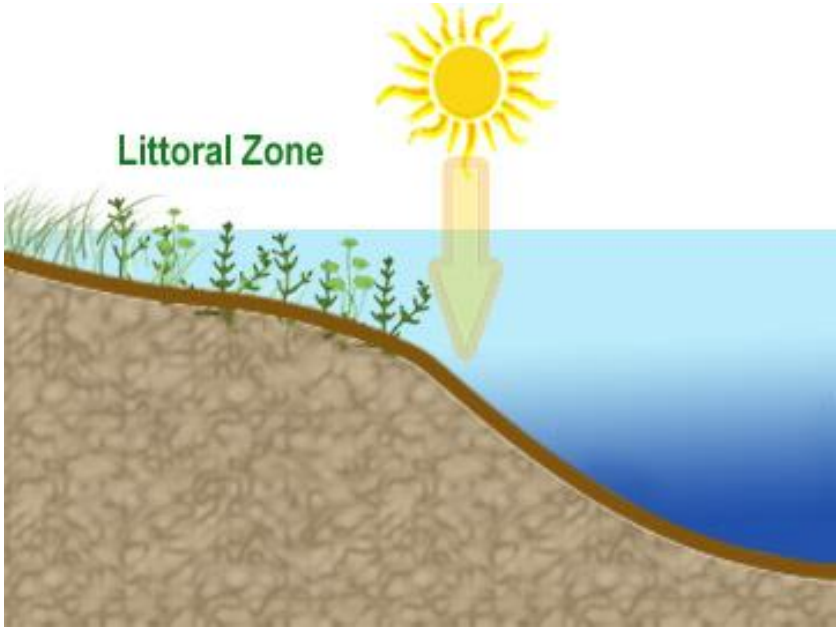


The Value of Aquatic Plants

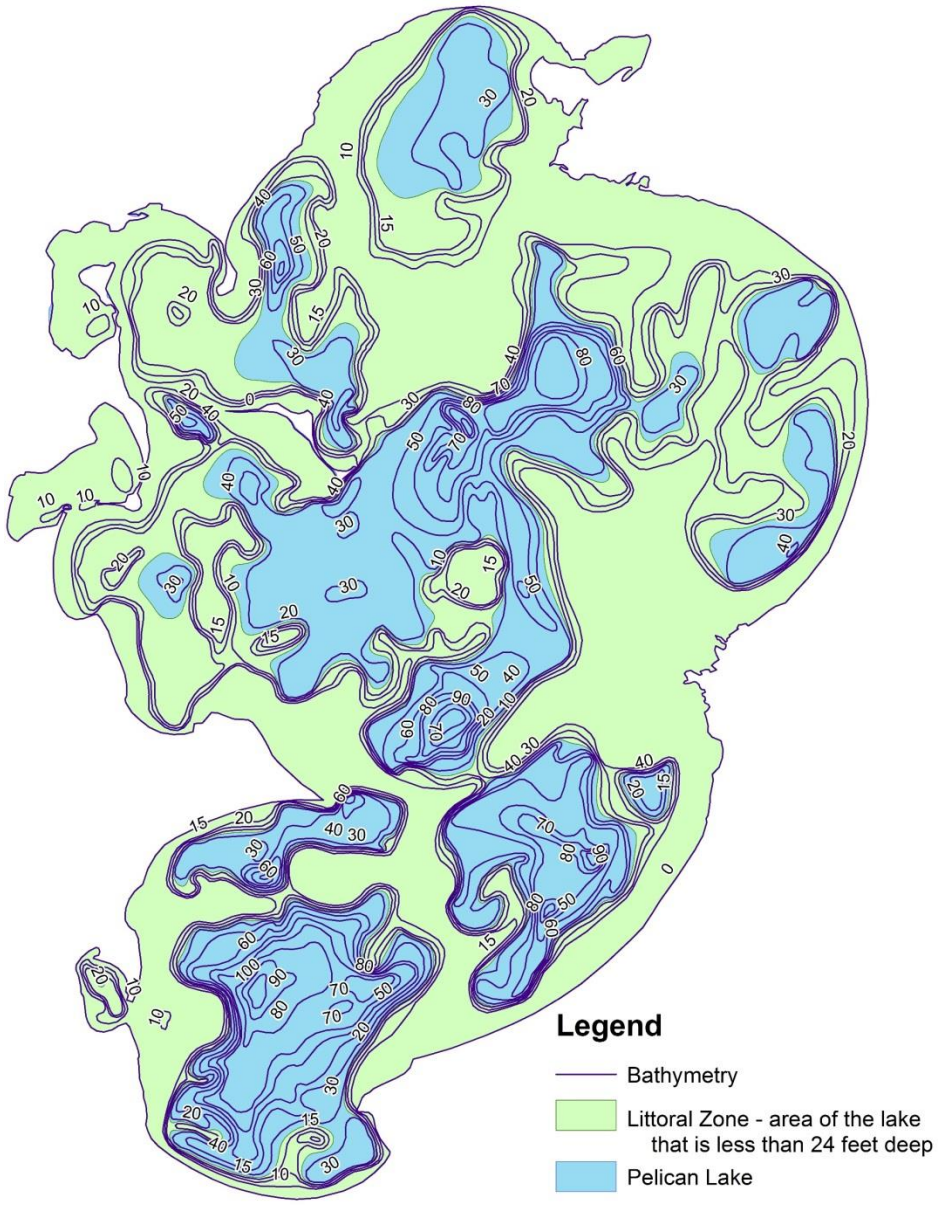
The sediment stabilization plants provide make for clearer waters

Where Aquatic Plants Grow

- Littoral Zone = area of the lake where sunlight can reach the bottom (estimated as 15 feet)
- Aquatic Plants need:
  - Sunlight
  - Nutrients
- The more area of the lake that is in the littoral zone, the more aquatic plants the lake will have



Where Aquatic Plants Grow

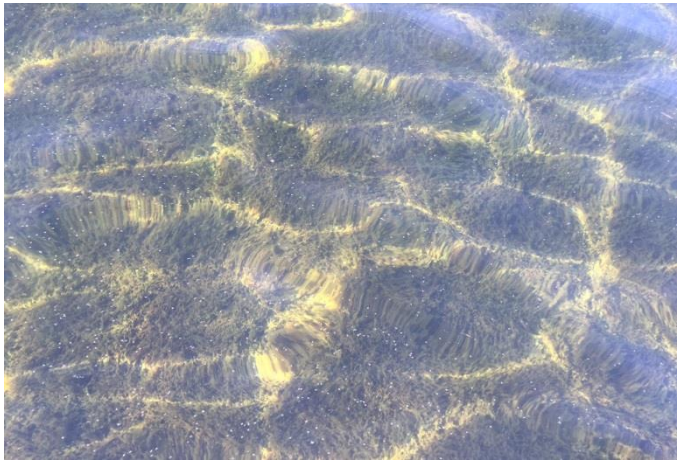


Identifying Native Aquatic Plants

- Chara
- Coontail
- Canada Waterweed
- Claspingleaf Pondweed
- Whitestem Pondweed
- Northern Watermilfoil
- Common Bladderwort
- Sago Pondweed

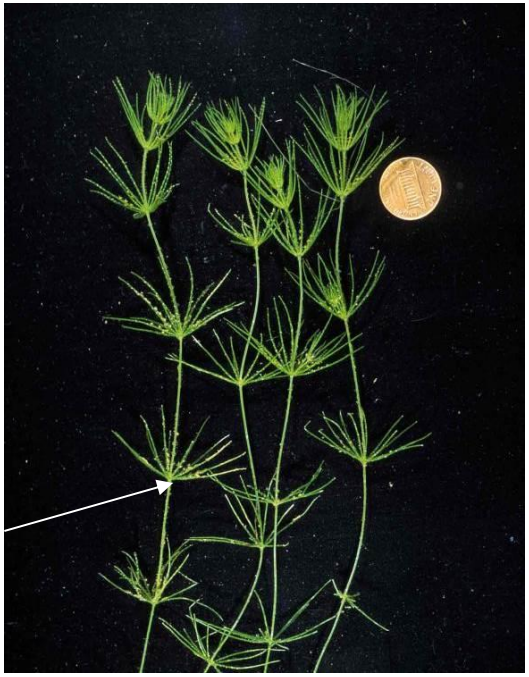
Chara

Scientific name: Chara species



Identification:

- Algal growth
- Size range from ankle high to knee high
- Encrusted by calcium carbonate
- Leaves are in whorls of 6 or more
- Doesn’t have spines
- Prefers shallow areas
- Prefers sand, silt, or marl sediment
- Has a distinct musty smell



Chara

Scientific name: Chara species

Value to the Ecosystem:

- Favorite food for waterfowl
  - >300,000 oogonia (reproductive structures) found in the stomach of a single duck
- meadows of chara offer cover for smaller fish and invertebrates

Coontail

Scientific name: Ceratophyllum demersum

Identification:

- Whorls of 5-12 stiff leaves
- Leaves fork 1-2 times
- Teeth along the outside of the leaf

Coontail

Scientific name: Ceratophyllum demersum

Value to the Ecosystem:

- Especially good at drawing up nutrients
  - Reduces phosphorous and limits algae growth
- High tolerance for low light and cold water
  - Habitat for fish and invertebrates in the winter
- Great food for waterfowl

Canada Waterweed

Scientific name: Elodea canadensis

Identification:

- Whorls of 2-3 leaves
- Leaves are small: 6-17 mm long
- Prefers fine sediment

Canada Waterweed

Scientific name: Elodea canadensis

Value to the Ecosystem:

- High tolerance for low light and cold water
  - Habitat for fish and invertebrates in the winter
- High tolerance to disturbances
- Provides food for waterfowl and muskrats

Interesting fact:

- Canada Waterweed is able to reproduce via plant fragments and is considered an aggressive invasive plant in Europe.

Claspingleaf Pondweed

Scientific name: Potamogeton richardsonii

Identification:

- Gets its name from the way the leaves partially wrap around (or clasp) the stem
- Alternate leaves
- Leaves have wavy edges and come to a defined point
- Leaves have 13-21 veins

Leaves come to a point

Leaves appear wavy

13-21 veins

Leaves “clasp” the stem

Claspingleaf Pondweed

Scientific name: Potamogeton richardsonii

Value to the Ecosystem:

- Important food source for ducks and geese
- Is also food for muskrat, deer, beaver, and moose
- Provides habitat for fish and invertebrates

Whitestem Pondweed

Scientific name: Potamogeton praelongus

Identification:

- Can be confused with claspingleaf- leaves also “clasp” the stem
- Alternate leaves
- Stem is often “zig-zagged”
- Stipules (leaf-like structures found at the base of the leaf) are white
- Leaves form a “bowl” at the tip

“Bowl” shaped tip

Zig-zag stem

White stipule

Leaves “clasp” the stem

Whitestem Pondweed

Scientific name: Potamogeton praelongus

Value to the Ecosystem:

- Important food source for ducks and geese
- Is also food for muskrat, deer, beaver, and moose
- Provides habitat for fish and invertebrates
- Good food source for trout

Northern Milfoil

Scientific name: Myriophyllum spicatum

Identification:

- Leaves are somewhat stiff
- Has 5-12 pairs of “leaflets” per leaf
- 4 leaves per whorl
- Develops a winter bud
- Is found in fairly clear lakes

Winter bud

10 leaflet pairs

4 leaves per whorl

Northern Milfoil

Scientific name: Myriophyllum spicatum

Value to the Ecosystem:

- Leaves and fruit are consumed by many waterfowl
- The feathery leaves trap foliage and provide shelter for invertebrates

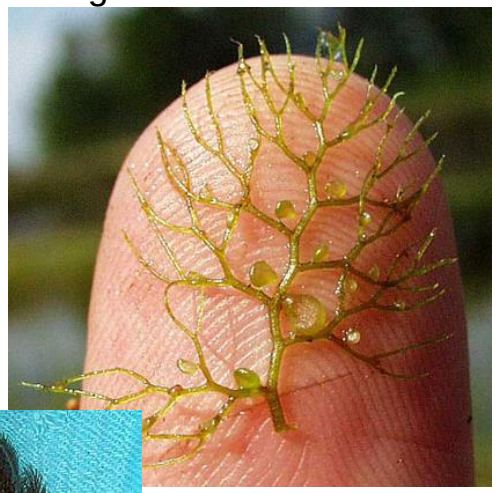
Common Bladderwort

Scientific name: Utricularia vulgaris

Identification:

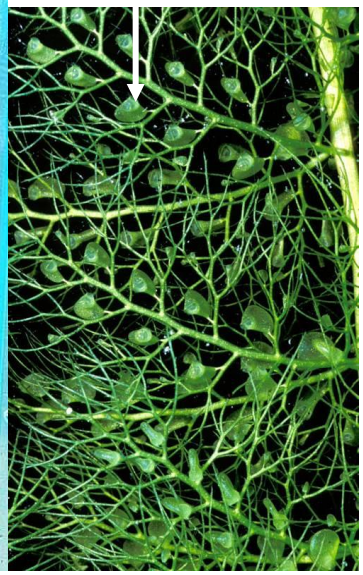
- Leaves are alternate
- Leaves branch 3-9 times
- Leaves contain an abundance of bladders (digest food)

Single Bladderwort leaf



Alternate leaves

Bladders



Common Bladderwort

Scientific name: Utricularia vulgaris

Bladderwort eating

44 seconds

Value to the Ecosystem:

- Bladderworts are free floating, so they are able to provide fish habitat in areas that most plants cannot grow. example: shallow, mucky bays
- Bladderworts are carnivorous
- Bladders create a negative pressure when the trap is set and suck in their prey when hairs on the trap's entrance are disturbed
  - 10-15 thousandths of a second to snap shut

Sago Pondweed

Scientific name: Potamogeton pectinatus

Identification:

- Leaves are alternate and stem appears zig-zagged
- Leaves are round, have one vein and come to a point
- Each branch may fork several times, resulting in a fan shape

Sago Pondweed

Scientific name: Potamogeton pectinatus

Value to the Ecosystem:

- Very resistant to turbid water
- Sago is considered one of the top food producers for waterfowl

Aquatic Invasive Plants

- "exotic", "alien", and "nonnative" means the species does not naturally occur here
- "native" plants occur naturally and are fully integrated into the ecosystem
- Not all alien plants are harmful, but those that are can disrupt the natural ecosystem, out-compete native plants and take over large areas. These plants are considered "invasive" and "nuisance" species.
- Invasive aquatic plants can get out of control because there is nothing in the ecosystem naturally to keep the population in check.
- When invasive plants take over and form dense mats, they change the habitat and make it unsuitable for fish, birds and other aquatic organisms.

Aquatic Invasive Plants

Identifying Aquatic Invasive Plants

- Curly-leaf Pondweed
- Eurasian Watermilfoil
- Flowering Rush
- Brittle Naiad
- Starry Stonewort
- Brazilian Elodea (no longer in Minnesota)
- Hydrilla (never been documented in Minnesota)

Curly-leaf Pondweed

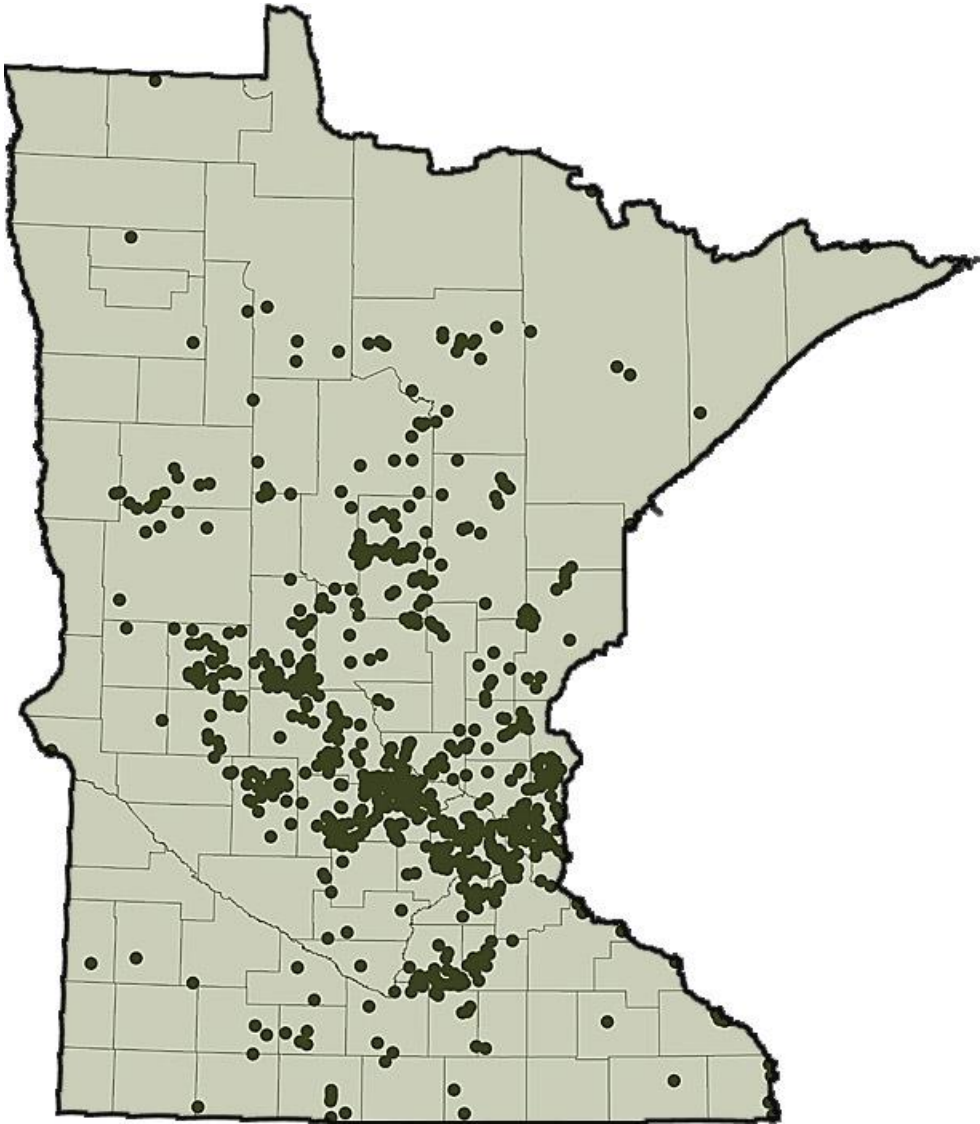
Scientific name: Potamogeton crispus

- First was found in MN in 1910
- In spring, it can form dense mats that may interfere with boating and other recreation on lakes
- Can cause ecological problems because it can displace native aquatic plants
- In midsummer, it usually dies back, resulting in rafts of dying plants piling up on shoreline

Curly-leaf Pondweed

Scientific name: Potamogeton crispus

- Found all over MN
- Introduced to lakes by fragments on boats, motors and boat trailers
- Usually first found at public boat accesses and river inlets in chains of lakes



Curly-leaf Pondweed

Scientific name: Potamogeton crispus

Identification

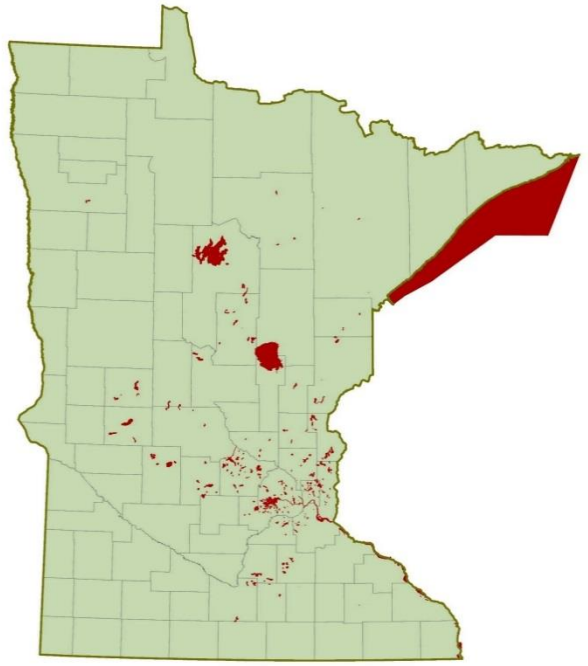
- Curly-leaf pondweed gets its name from the wavy margins on the sides of its leaves. Leaves are dark green with a reddish hue and have small teeth along the margins
- Usually the most abundant plant May-June, then dies off
- Young Curly-leaf is not always wavy, but always has serrated edges

Similar Species

Eurasian Watermilfoil

Scientific name: Myriophyllum spicatum

- The highest concentrations are found in the twin cities
- Was first found in the Midwest between 1950 and 1980
- Spread by plant fragments carried on boats, motors and boat trailers



Eurasian Watermilfoil

Eurasian Watermilfoil

Scientific name: Myriophyllum spicatum

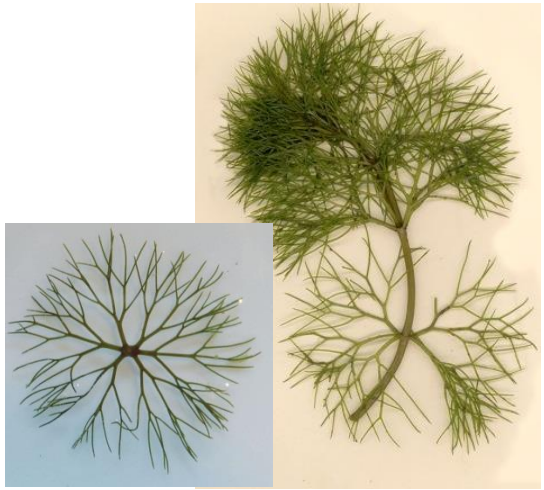
Identification

- Eurasian Watermilfoil can most easily be identified by the number of “leaflets” on a leaf: 12-21 pairs
- Has the same growing pattern as native vegetation: is most abundant in mid-summer

Eurasian milfoil

12-21 leaflet pairs per leaf

Plants that look similar



Water Marigold
(forked leaves in a circle)

Eurasian watermilfoil
(12 to 21 pairs of leaflets, leaflets are parallel)

Northern watermilfoil
(5 to 12 pairs of leaflets)

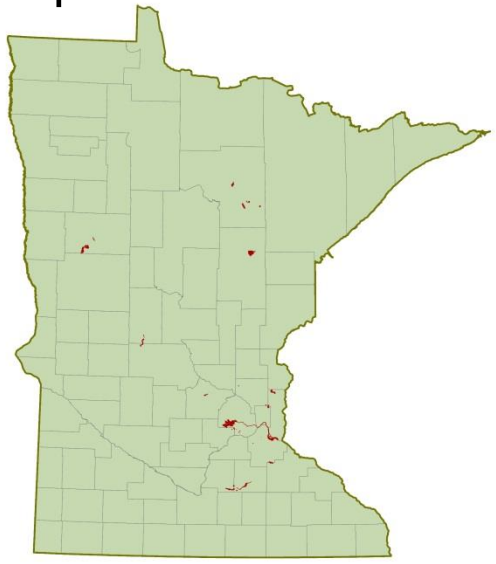
Coontail (forked leaves in a circle)

Bladderwort
(branched leaves, main branch is wavy, Usually has round “bladders”)

Flowering Rush

Scientific name: Butomus umbellatus

- First documented in Minnesota in 1968
- Competes with native shoreland vegetation
- Eurasian plant that was sold commercially for use in garden pools
- Now illegal to buy, sell or possess the plant



Flowering Rush

Flowering Rush

Scientific name: Butomus umbellatus

Identification

- Triangular “leaves”, slightly twisted when above water and feels spongy
- Sometimes a reddish color where the plant meets the water
- In deep water, it won’t produce flowers
- Reproduces through rhizomes (roots)

Stem slightly twisted

Triangular, spongy stem

Rhizome

Plants that look similar

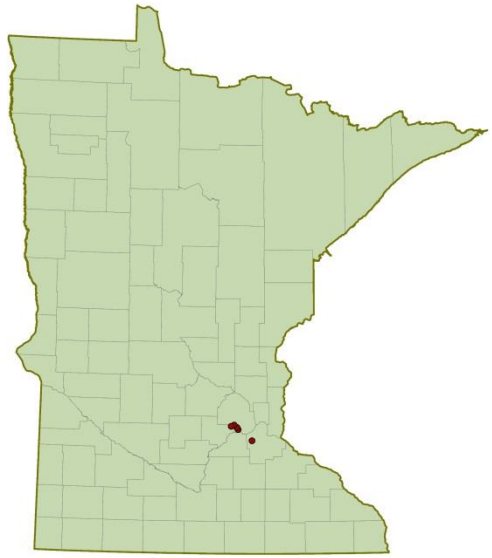
Arrowhead
Leaves are wider at the top

Bulrush
Has a round stem

Brittle Naiad

Scientific name: Najas minor

- First documented in Minnesota in 2010
- Present in Carver, Dakota, and Hennepin Counties



Brittle Naiad

Brittle Naiad

Scientific name: Najas minor

Identification

- Spines on the branching stems
- Stems are stiff and curled
- Usually compact and relatively bushy, but can grow up to 4 feet in length
- Leaves are in pairs, but can appear to be whorled at the tip

spines

Appears to be "whorled"

Leaves in pairs

Plants that look similar

Native Naiads
Don’t have ‘spines’ on leaves

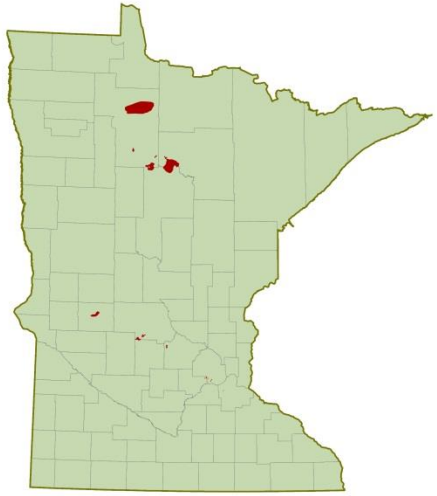
Brittle Naiad
Has spines
Leaves are flat
Leaves are opposite

Sago Pondweed
Leaves are alternating,
Don’t have spines

Starry Stonewort

Scientific name: Nitellopsis obtusa

- First documented in Minnesota in 2015
- Competes with native shoreland vegetation
- Was probably introduced by an infested watercraft from another state
- Is now confirmed in Stearns, Beltrami, Itasca, and Cass Counties



Starry Stonewort

Starry Stonewort

Scientific name: Nitellopsis obtusa

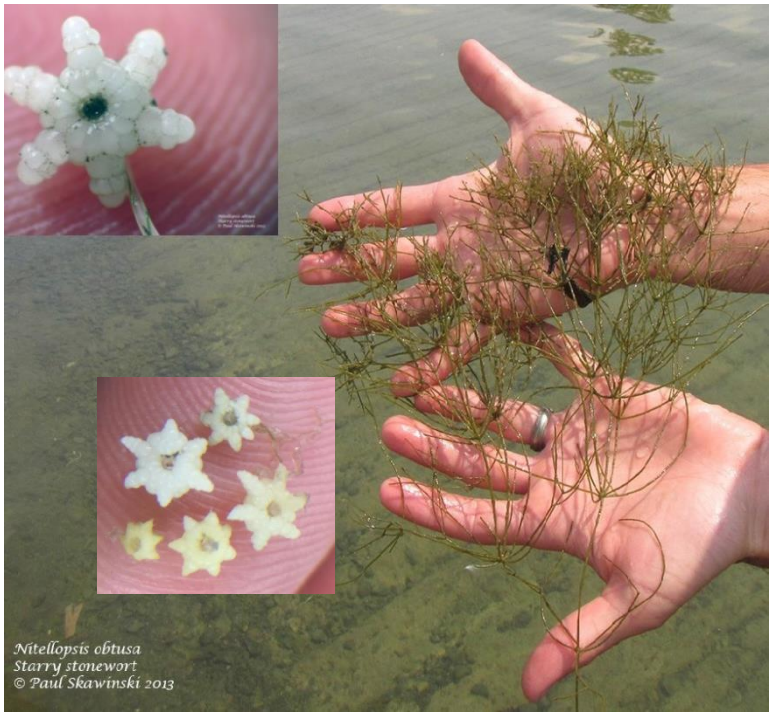
Identification

- White, star-shaped bulbils
- Branchlets in whorls of 5-8: most are forked (uneven)
- Contents can be squeezed out of the cell
- Stem is smooth

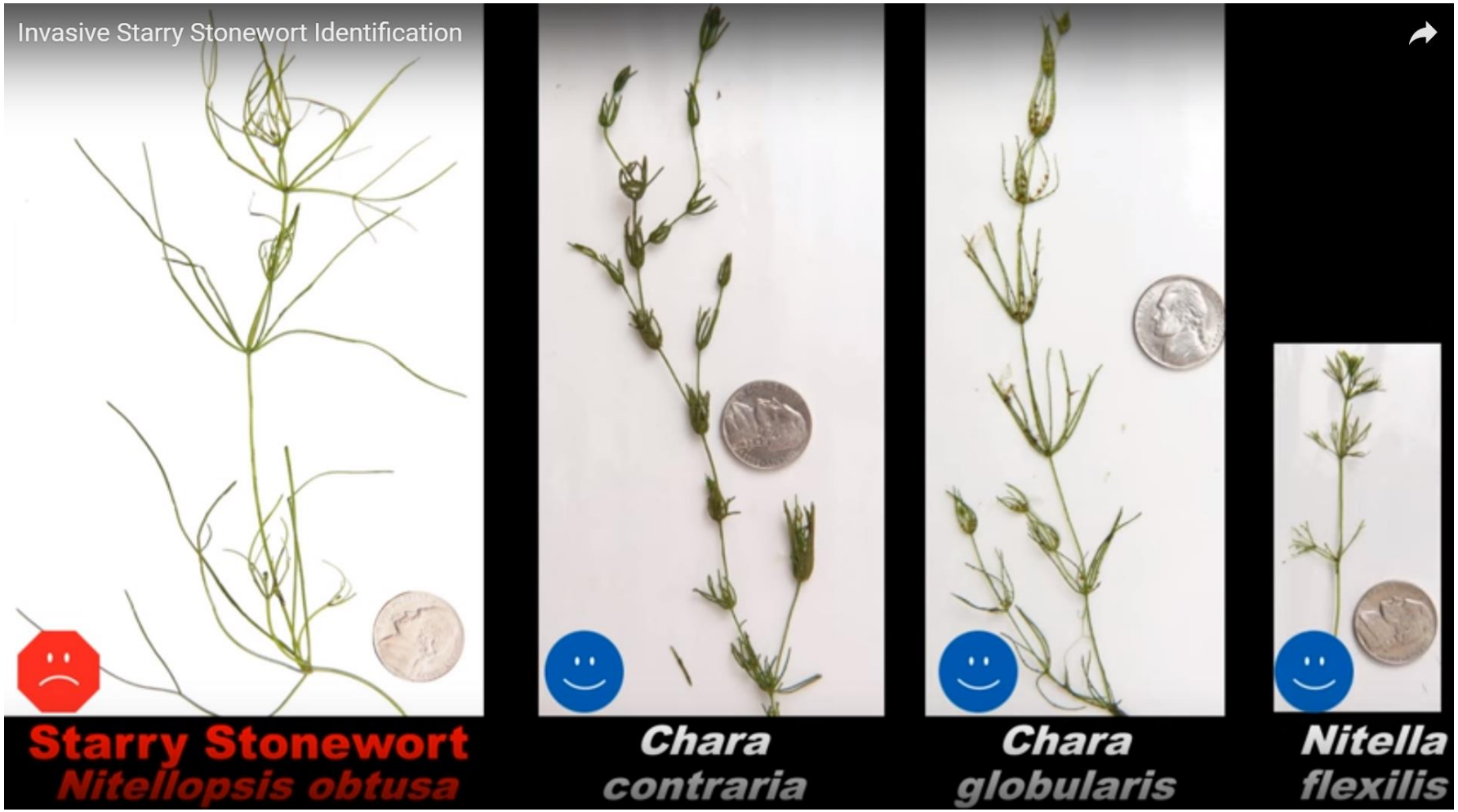
Branchlets have a forked appearance (one fork longer than The other)

Smooth stem

5-8 branchlets per whorl



Plants that looks similar



University of Wisconsin Extension: https://www.youtube.com/watch?v=te9iF5OTdtg

Brazilian Elodea and Hydrilla

(Hydrilla not documented in Minnesota)

Brazilian Elodea

Scientific name: Egeria densa

- First found in the US in 1893
- Found in Powderhorn Lake in the early 2000 (Hennepin co), hasn't been found since
- Introduced from pet stores and aquariums
- Reproduces via fragmentation

Identification

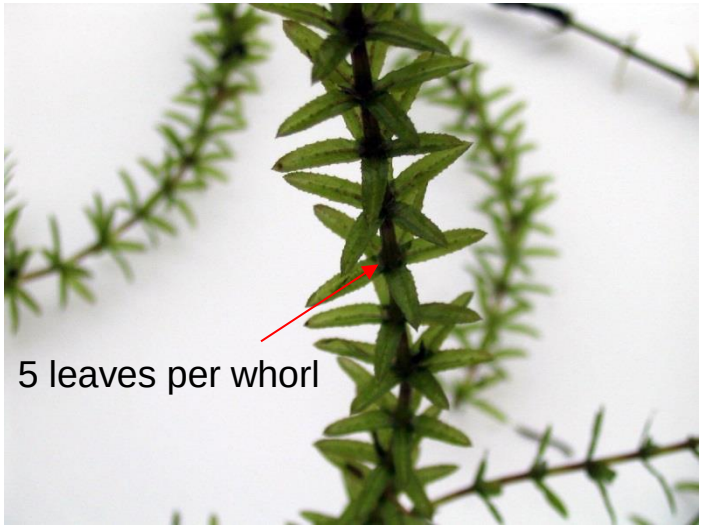
- Has 4-7 leaves per whorl
- Leaves are 2-4 cm long

7 leaves per whorl

Hydrilla

Scientific name: Hydrilla verticillata

- First found in the US in 1893
- Spread was mainly from aquarium purchases
- Reproduces via fragmentation



Identification

- Has 2-8 leaves per whorl
- Distinct serrated edges

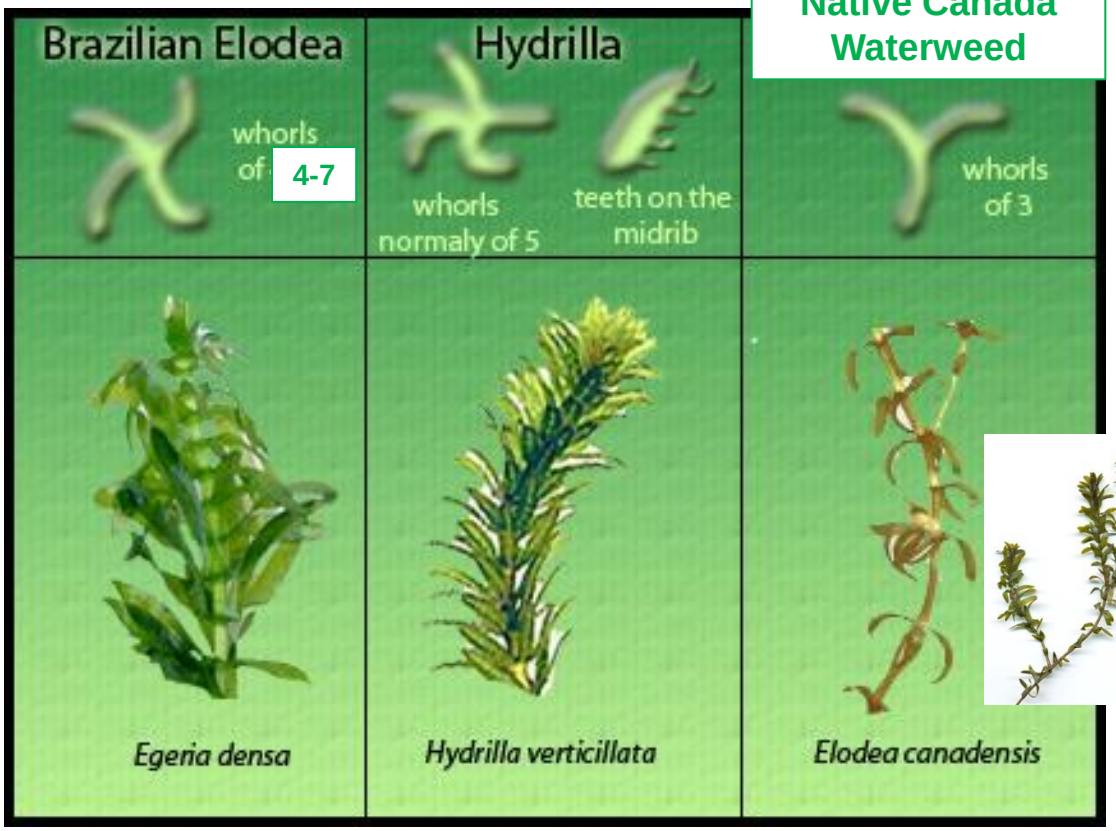
Plants that look similar

Marestail

Marestail (native)

8-12 leaves per whorl
NO serrated edges
Submerged leaves are delicate
Emergent leaves are thick

Native Canada Waterweed



Brazilian Elodea

4-7 leaves per whorl
2-4 cm long leaves

Hydrilla

2-8 leaves
Distinct serrated edges

Canada Waterweed (native)

2-3 leaves per whorl
Up to 4.5 cm long leaves


Questions?

Creating a volunteer group

- Vegetation sampling rake
- Visit accesses or area of concern three times a year
  - Early June (curly leaf pondweed)
  - Mid august
  - Mid September (starry stonewort)
- For identifying:
  - “Through the Looking Glass: A field Guide to Aquatic Plants”
- Suspicious plants?
  - Contact local AIS specialist

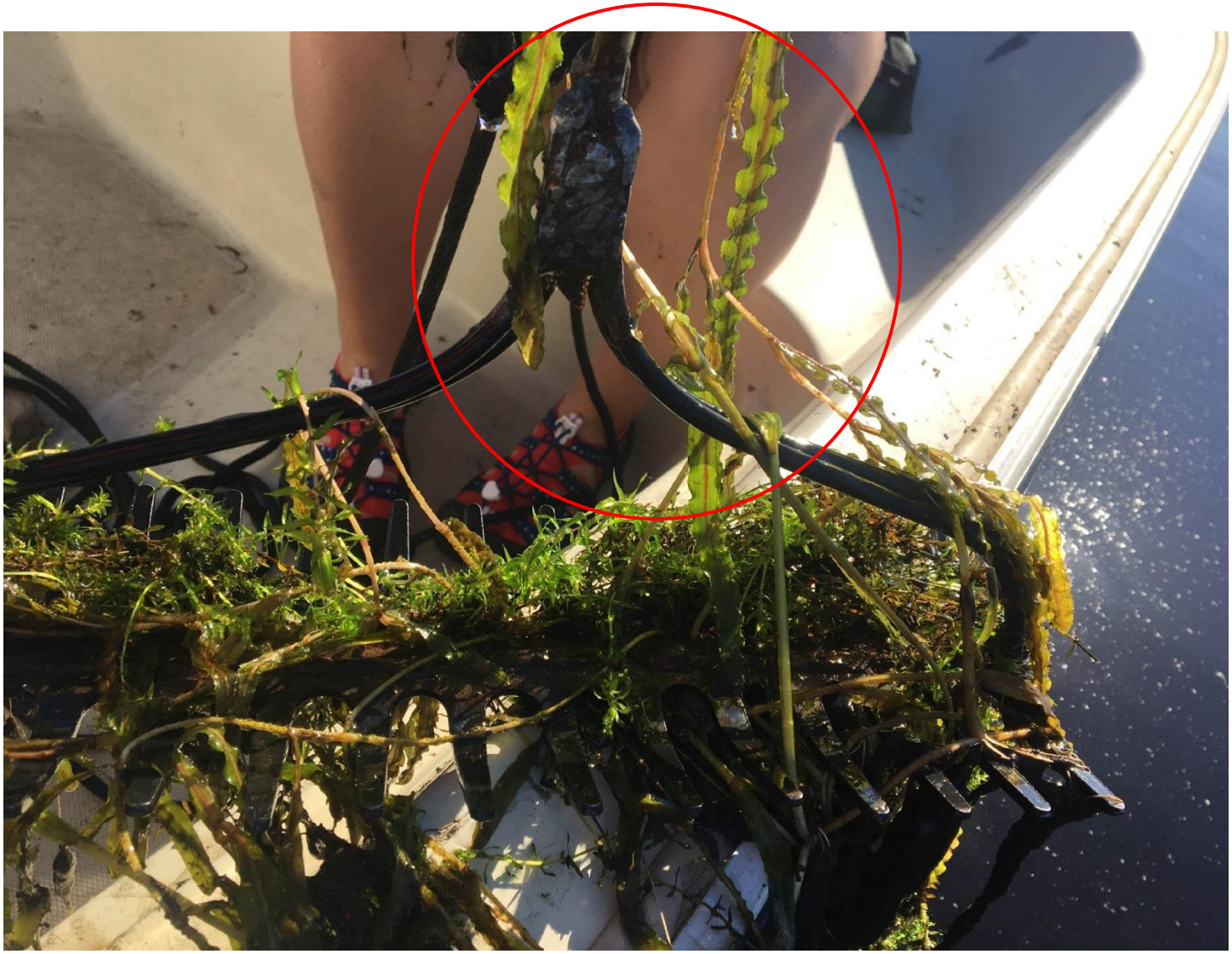
DNR AIS Specialists

Northwest Region		
Park Rapids	Nicole Kovar	218-732-8960
Fergus Falls	Mark Ranweiler	218-739-7576 ext 254
Northeast Region		
Grand Rapids	Richard Rezanka	218-328-8821
Brainerd	Tim Plude	218-203-4354
Central Region		
St. Cloud	Christine Jurek	320-223-7847
St. Paul	Keegan Lund	651-259-5828
St. Paul	Kylie Cattoor	651-259-5729
St. Paul	April Londo	651-259-5861
Southern Region		
Waterville	Allison Gamble	507-362-8786
Hutchinson	Eric Katzenmeyer	320-234-2550


Test your knowledge!

Are there any invasive plants on this rake?

Yes! Curly-leaf Pondweed



What plant is this?

Northern Milfoil- Native!

There are Seven "leaflets" on each side of the leaf – Eurasian has 12-21

Leaves and fruit of the Northern Watermilfoil are food for waterfowl
It also provides great shelter opportunities for fish

Is this invasive?

This is a species of Chara- non-invasive!

Branchlets do not fork Like starry stonewort

Although Chara can look similar to the invasive starry stonewort, Chara is much shorter.
Chara is great food for waterfowl and provides spawning habitat for fish.

Which one is invasive?

A

B

C

Which one is invasive?

Brittle Naiad!

A

Spines

Opposite

B

C

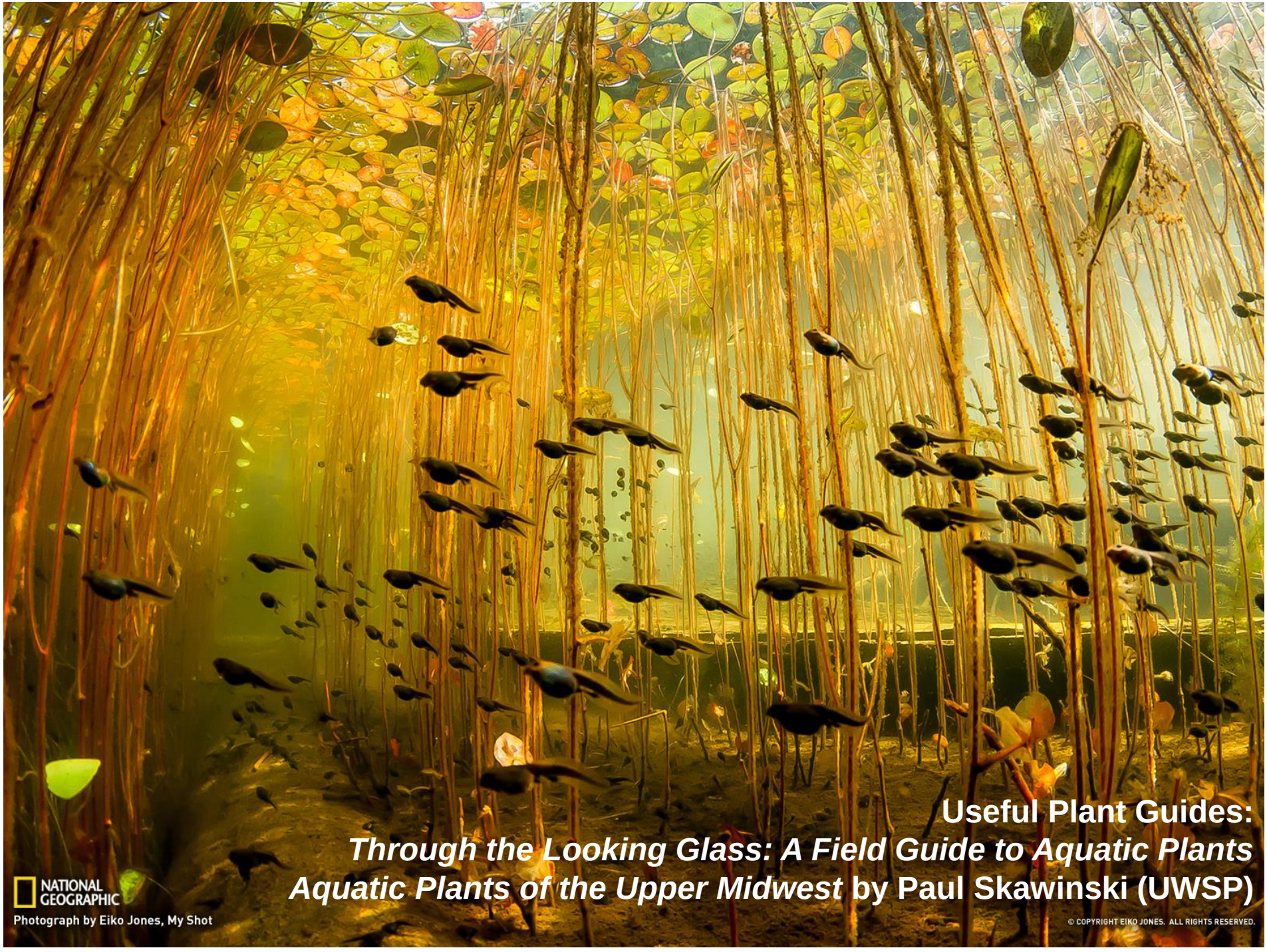
Is this invasive?

Yes!

Smooth edges

7 leaflets (narrows it down to Brazilian Elodea or Hydrilla)

This is Brazilian Elodea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