A Boater’s Reference Guide to Aquatic Invasive Species in the Great Lakes

Developed in Coordination with the Great Lakes AIS Landing Blitz

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Suggested Citation:
Asian Clam  
 *(Corbicula fluminea)*

**Size:** Up to 5 cm long (2 inches)

**Characteristics:**
- Small freshwater clam, rounded triangular shape
- Shells are typically greenish-yellow or brown with thick concentric rings
- Inside of shell is smooth and polished with a light purple tinge
- Three cardinal teeth in each valve (native unionid mussels have none)

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New Zealand Mudsnaill  
 *(Potamopyrgus antipodarum)*

**Size:** 0.5-0.8 cm long (0.2-0.3 inches)

**Characteristics:**
- Small, slender freshwater snail
- Slender cone-shaped snail with a raised ridge on the body whorls
- Colour is variable, ranging from light to dark brown
- Operculum (thin, plate like cover on the shell opening) is ear-shaped
Quagga Mussel  
(*Dreissena bugensis*)

**Size:** Adults are 2-3 cm long (0.75-1.25 inches); larvae (known as veligers) are barely visible to naked eye

**Characteristics:**
- Small freshwater mussel, sometimes with a striped pattern on shells
- Mussels are pale coloured, from cream to white, and may have darker stripes, bars, or rings
- Rounded triangular shell without a flat surface on hinge area
- Left and right shell sides are asymmetrical

**Similar Species:** Zebra mussel – has the “D” shaped shell with one flat side.

Zebra Mussel  
(*Dreissena polymorpha*)

**Size:** Adults are 2-4 cm long (0.75-1.5 inches); larvae barely visible to the naked eye

**Characteristics:**
- Small, freshwater mussel with a striped pattern on shells
- Shells are zigzagged or striped but number of stripes varies; colour patterns can be from light to dark
- “D” shaped shell: flat on hinge side
- Usually attached to objects, surfaces, or other zebra mussels using silky threads (known as byssal threads) excreted near hinge

**Similar Species:** Quagga mussel – does not have the “D” shaped shell with one flat side.
Banded Mysterysnail  
(*Viviparus georgianus*)

**Size:** Up to 3.5 cm long (1.4 inches)

**Characteristics:**
- Large freshwater snail with dark spiral bands
- Spherical, inflated shell with 4-5 whorls; whorls separated by deep indents
- Yellow to greenish brown with 3-4 dark reddish-brown spiral bands
- Operculum (thin, plate-like cover on the shell opening) is ear-shaped with concentric growth lines

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Chinese Mysterysnail  
(*Cipangopaludina chinensis*)

**Size:** Up to 6.5 cm long (2.5 inches)

**Characteristics:**
- Large freshwater snail
- Spherical, inflated shell with up to 7 whorls; whorls separated by deep indents
- Brownish to olive-green
- Operculum is oblong with concentric growth lines

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Bloody-Red Shrimp  
(*Hemimysis anomala*)

**Size:** Generally less than 1.2 cm (0.5 inches)

**Characteristics:**
- Telson or ‘tail’ has flat end with two prominent terminal spines (photo A), unlike telson of native *Mysis diluviana* which is forked (photo B)
- Spends daylight hours hiding in rocky crevices, but occasionally swarms near the surface
- The shrimp are most often seen during the day in shaded waters as reddish swarms of small animals.
Spiny Waterflea
(Bythotrephes longimanus)

**Size:** 1 cm long (0.4 inches); about 60% is tail length

**Characteristics:**
- Tiny aquatic crustacean, just visible to the naked eye; often collects in jelly-like clumps on fishing lines, cables, and commercial fishing nets
- Clear body with orange, blue, or green colouring
- Long, barbed tail filament; 1-4 pairs of barbs; straight needle-like tip
- Head has a single, large, dark eye

Fishhook Waterflea
(Cercopagis pengoi)

**Size:** Less than 0.5 inches at maturity (12 mm)

**Characteristics:**
- Long barbed tail filament which makes up 80% of total body length
- Tail can have between 1-4 pairs of barbs running down it
- Four pairs of legs, the first being the longest
- Often collect on fishing lines and downrigger cables
- Unique loop at the end of the tail
Plants

Curly-Leaved Pondweed
(Potamogeton crispus)

Size: up to 2 m long (6 feet)

Characteristics:
- A submerged, rooted, aquatic perennial plant
- Oblong leaves, 4-10 cm long (1.5-4 inches) and 0.5-1 cm wide (0.2-0.4 inches), with a midvein, wavy edges, and finely-toothed margins; arranged along the stem in alternating pattern; reddish-green coloured
- Flattened, branching stems
- Flowers are tiny and extend above the water in small spikes; blooms in May and June
- Spreads from rhizomes and turions (vegetative overwintering buds) in late fall and early winter, giving it a competitive advantage over native plants

Eurasian Water-Milfoil
(Myriophyllum spicatum)

Size: 50-70 cm long (20-28 inches)

Characteristics:
- A submerged, rooted, aquatic perennial plant
- Feather-like leaves, with a mid-vein and 12-20 paired leaflets (native water-milfoil has 11 or fewer leaflet pairs); arranged along the stem in whorls of 4-5
- Stem is a leafy shoot, branching repeatedly, especially at the water’s surface; shoots have reddish brown tips
- Flowers are small and red; extend above the water on 5-20 cm terminal spikes (2-8 inches); bloom in July and August
- Spreads primarily by fragmentation; can spread by seeds as well
Variable-leaved Watermilfoil  
*Myriophyllum heterophyllum*

**Characteristics:**
- Rooted, submersed and emergent perennial aquatic plant
- Leaves finely divided, resembling a feather; arranged in whorls of 4 to 6 around the stem
- Emergent leaves are long and slender with serrated margins
- Flowers grow from the base of the emergent leaves and form an erect spike
- Spreads through fragmentation, roots, winter buds, and seeds
- Looks like a bottle brush

European Frog-Bit  
*Hydrocharis morsus-ranae*

**Size:** leaves are 1-6 cm wide  
(0.4-2.4 inches)

**Characteristics:**
- Free-floating, perennial aquatic plant; forms a rosette on the water's surface
- Rounded, heart-shaped, floating leaves 1-6 cm wide (0.4-2.4 inches), with a petiole (leaf stem)
- Small, white flowers with three petals open just above the water's surface
- Well-developed root system, up to 50 cm long (20 inches), which tangles around other plants to form dense mats
- Spreads by turions or by offsets that detach and form new plants
Fanwort
(*Cabomba caroliniana*)

**Size:** 2–9 m long (6–30 feet)

**Characteristics:**
- Rooted, submerged, perennial aquatic plant
- Leaves are finely divided, fan-like, and about 6 cm wide (2.5 inches); petioles up to 1.5 cm long (0.6 inches). The native lookalike, water marigold (*Megalodonta beckii*) has leaves without a petiole; arranged oppositely along the stem
- Inconspicuous, oblong-shaped, floating leaves
- Stems are tubular, long, and multi-branched
- Single white or yellow flowers, 0.6–1.5 cm wide (0.2–0.6 inches); on a long stem, usually emergent
- Spreads primarily by stem fragments or rhizomes

Water Chestnut
(*Trapa natans*)

**Size:** Rosette up to 30 cm wide (12 inches)

**Characteristics:**
- Annual aquatic plant that can be rooted or free-floating; appearing as a rosette up on the water’s surface
- Surface leaves are waxy and triangular, 2–5 cm wide (0.8–2 inches), with toothed edges, located at the end of petioles up to 15 cm long (6 inches); additional submerged leaves are feather-like
- Petioles have swollen sections that help the plant float
- Small, white flowers with four petals; bloom from July until first frost
- Spreads by fragmentation and by its nut-like fruit that has four sharp, barbed points
**Hydrilla**
*Hydrilla verticillata*

**Size:** up to 7.5 m long (up to 25 feet).

**Characteristics:**
- This plant is an emergent perennial
- Stems are rooted, erect, either branched or unbranched
- Leaves are green, attached to the stem and arranged in whorls of 3 to 8. Visibly saw-toothed edges, and sometimes have prickles on the underside
- Flowers are small, with petals 2 to 4 mm wide (0.1 to 0.2 inches), and are white to reddish or white to light-green with red stripes. When open, they float on the surface of the water

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**Brazilian Elodea**
*Egeria densa*

**Size:** 3-5 metres (10 to 16 feet)

**Characteristics:**
- Grows to the surface of the water
- Thin upright stems, 1 to 3 mm (0.4 to 1.2 inches) in diameter
- Leaves are 1 to 3 cm long (0.2 inches), up to 5 mm broad, and found in whorls of 4 to 8
- Bright-green leaves and stem with short internodes (stem length between sets of leaves)
- Small, emergent flowers with three white petals
Parrot’s Feather
(Myriophyllum aquaticum)

**Characteristics:**
- Submersed, rooted perennial
- Emergent grey-green, stiff leaves, arranged in whorls of 4-6
- Submersed leaves are limp and feather-like, divided into 24-36 thread-like leaflets, often appear to be decaying
- Flowers white to pinkish
- Stems are brownish and rarely branch; can grow to 2.1 m (7 feet) and protrude up to 20 cm (8 inches) above the water surface
- Forms thick mats at the surface of the water
- Spreads from stem fragmentation

Didymo (“Rock Snot”)
(Didymosphenia geminata)

**Characteristics:**
- Microscopic, single-celled algae (diatom) that produces visible, thick stalk material
- Tan, light brown or brown clumps or ropy strands
- Feels rough, cottony or fibrous is *not* slimy to the touch
- Can form thick solid mats 2.5 to 10 cm (1-4 inches) on rocks or stream bottoms, or may appear clumpy or feathery
- Dried stalk material on shore may look like dried cardboard or toilet tissue
Yellow Floating Heart
(*Nymphoides peltata*)

**Size:** leaves are 3-10 cm wide (1-4 inches)

**Characteristics:**
- Rooted, perennial, aquatic plant
- Heart-shaped, almost circular, floating leaves 3-10 cm wide (1-4 inches)
- Bright yellow flowers, about 2-4 cm wide (0.8-1.6 inches), with five ruffled petals; 2-5 flowers from each leaf stalk; blooms from June to October
- Reproduces by seed and vegetatively by broken stems

Starry Stonewort
(*Nitellopsis obtusa*)

**Size:** Up to 83 cm (33 inches)

**Characteristics:**
- A bright green submerged annual macroalga
- Grows in tall and dense colonies and can form mats on the surface of the water
- Dense collections of vegetation can resemble underwater hills or mounds and are often called “pillows”
- Thin branchlets (branch-like structures) vary in length and are arranged in whorls (radiating out from a single point) around the stem
- Small white, star-shaped structures called bulbils, 3-6 mm (0.1-0.2 inches), are produced at the nodes
- Anchored by clear filaments called rhizoids
- Spreads by bulbils and fragments
**Water Soldier**  
(*Stratiotes aloides*)

**Size:** leaves up to 40 cm long (16 inches)

**Characteristics:**
- Perennial, aquatic plant, submerged during the winter and early spring, but becomes buoyant and rises to the water's surface, becoming emergent during the summer
- Leaves are sword-shaped, bright green, with sharp spines on the margins; form rosettes
- Flowers are white with three petals; however, flowering plants are rare in Ontario
- Similar to the runners of household spider plants; water soldier can also spread via turions
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