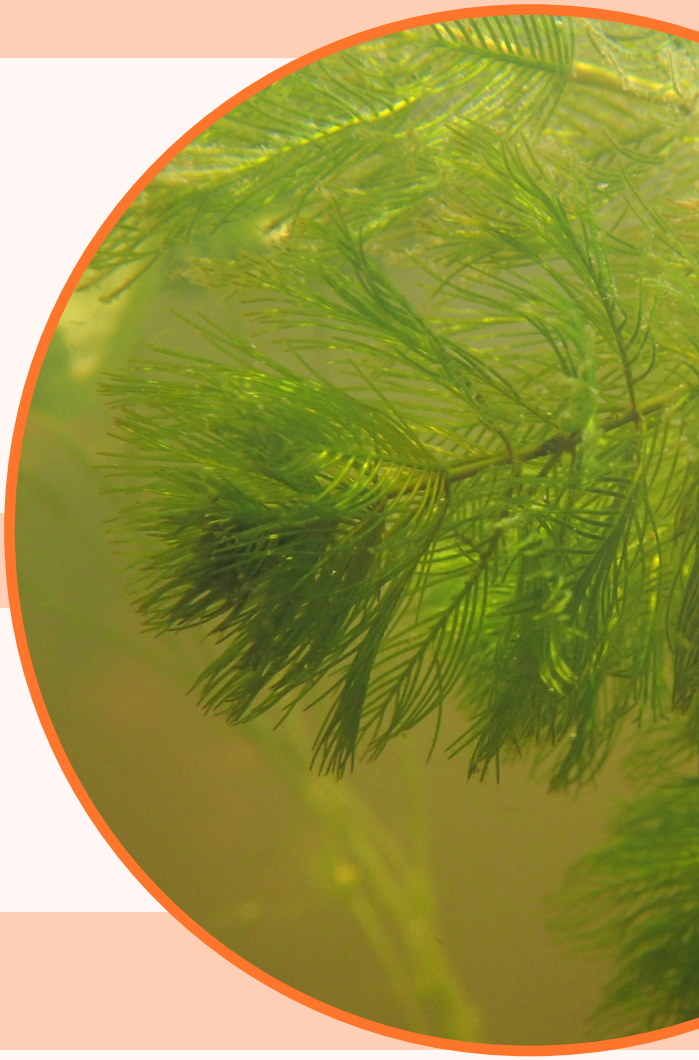
Community-Based Monitoring

INVASIVE SPECIES MONITORING

WHY

Invasive species are non-native species that have been introduced to a habitat and are able to spread rapidly and disrupt the established ecosystem. In the last 50 years, the number of invasive species in the Ottawa River watershed has increased significantly. Invasive species can significantly impact native species populations either directly, through competition for resources or predation, or indirectly, by altering the way the ecosystem works. Sadly, most invasive species were introduced through human activity.



WHEN

Invasive species monitoring is primarily focused during the summer months, as that is when most species will be most easily identified (eg. plants are flowering, animals are more active, etc). However, we welcome reports of invasive species any time of year.

Peter van der Sluijs - Wikimedia Commons

WHERE

Invasive species exist throughout the watershed. However, we are primarily interested in species that are likely to have impacts on aquatic ecosystems, so monitoring should be focused on bodies of water and shorelines. More specific information about where to find particular invasive species can be found in the identification guide on the following pages.

Ottawa RIVERKEEPER®
GARDE-RIVIÈRE des Outaouais

INVASIVE SPECIES MONITORING

HOW

Step 1: Identification

Use the identification key on following pages to identify some common invasive species found in the Ottawa River watershed. What it looks like (including photos and similar species whenever possible), where it is found, how it spreads, the impacts it has on the native species and ecosystem is available for each species on this list. This is not an exhaustive list of invasive species that are present in the watershed, and we welcome reports of any other invasive species not featured in this guide.

Step 2: Report

Please submit observations of invasive species, including photos and GPS coordinates if possible, using one of the following methods:

- use the submission form at ottawariverkeeper.ca/invasive-species-observations
- join the Ottawa Riverkeeper groups and submit observations in either of these two popular citizen science apps: Water Rangers or iNaturalist
- send an email to the contact below

CONTACT

cbm@ottawariverkeeper.ca; include "Invasive Species" in the email subject line

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Zebra Mussel


BJ Shoenmakers - Wikimedia Commons

What it looks like

- Small; between 2-2.5 cm (can reach up to 4 cm)
- Shell is triangular or "D" shaped
- Black or brown in colour with white/yellow zig-zag pattern
  - colour patterns may vary

Where it is found

- Lakes, rivers, and ponds with little current/wave action
- Larvae are free-floating, while adults settle on hard surfaces such as wood, rocks, docks, cement, and plants
- **Due to low calcium content in the water, zebra mussels are actually largely absent from the mainstem of the Ottawa River*

How it spreads

- Adults and larva (microscopic) can be transported in boat bilge water
- Adults may also attach to hard surfaces such as boat hulls and motors, and on other watercraft and equipment
- Adults can survive out of water for 5 days
  - up to 22 days when air is cool (15°C) and humid

Impacts

- Form large dense colonies that can outcompete native freshwater mussels species for food and resources
- May attach to native mussel species threatening their ability to feed, move and reproduce
- Linked to increases in harmful algal blooms
- Part of the Round Goby's diet, thus facilitating their colonization

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Purple Loosestrife

What it looks like

- Plants can grow quite tall - between 1.5 - 2.4 m
- Stems woody and square with opposite leaves 3 - 10 cm long with smooth edges
- Long flower spikes with 5 - 7 individual pink/purple flowers roughly 1 cm

Similar species

- Swamp loosestrife, Native winged loosestrife, Pickerel-weed

Where it is found

- Shoreline of rivers and streams, floodplains, wetlands, marshes, ditches, and fields
- Abundant throughout southern parts of watershed

How it spreads

- Used as an ornamental plant which. If planted too close to shoreline may spread to other areas via loose plant material during flooding or heavy rain events
- Plant material (e.g., root buds, seeds) may also be spread by boats and other watercraft or aquatic equipment

Impacts

- May outcompete native plant species for nutrients, resources and space, reducing overall biodiversity

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Eurasian Milfoil

What it looks like

- Grows under surface of water
- Leaves are green and feather-like, and circle the stem in groups of four or five
- Leaves have 12 or more thread-like segments
- Tiny, reddish flowers grow on spikes 5 – 20 cm long that rise above the water

Similar species

- Native water milfoils and coontails

Where it is found

- More common in shallow (1 - 3m deep) waters of lakes, rivers, streams, ponds, but can also occur in waters at depths up to 10 m

How it spreads

- Plant material (e.g., small fragments, seeds) are transported on boats or other equipment (e.g., fishing gear, boat trailers, scuba gear, etc.)

Impacts

- Forms dense stands and entangled branches which can cover large areas of water, suppressing native vegetation
- May also hybridize with native milfoils resulting in more aggressive invasive species

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: European Frog-bit

What it looks like

- Free floating or rooted with roots up to 50 cm long
- Produces a single flower with three white petals and yellow center
- Leaves are round or heart shaped and 2.5 – 5 cm wide
- Leaf bottom is purple with a spongy coating along the middle vein

Similar species

- North American frog-bit, Native water shield

Where it is found

- Slow moving waters of ponds, rivers, ditches, and sheltered inlets
- Originally introduced at the Central Experimental Farm in Ottawa, European frog-bit then spread to the Rideau Canal and connecting waterways

How it spreads

- Plant material (e.g., small fragments, seeds) are transported on boats or other equipment (e.g., fishing gear, boat trailers, scuba gear, etc.)

Impacts

- Can form dense, floating mats, restricting water flow, and depleting oxygen levels and blocking access to sunlight for submerged plant and animal species

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Round Goby

What it looks like

- Body is brownish or olive in colour, with dark brown spots, except in reproducing males who are almost completely black
- Prominent black spot on dorsal fin
- Fused scallop-shaped pelvic fin
- Nostril tubes do not reach the upper lip
- Fully scaled body

Where it is found

- In lakes, and middle and lower reaches of rivers, both nearshore and in deep waters
- Prefer water bodies with cobble, gravel and sandy substrates
- Observed in Rideau Canal

How it spreads

- In boat ballast water
- Unintentionally introduced as live bait
  - **It is illegal to possess Round Goby in Ontario*

Impacts

- Outcompetes and/or preys upon native fish species and game fish stocks

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Rusty Crayfish

What it looks like

- Large; adults can reach 7.5 to 13 cm from rostrum (snout) to tail
- Rusty patches on each side of shell
- Grey-green to red-brown claws with black bands near the tips
- Claws have an oval cap when closed
- Rostrum is smooth, pinched and distinctly concave

Similar species

- Native crayfish species

Where it is found

- Wetlands, ponds, rivers, lakes
- Prefers areas with rocks and logs and clay silt and gravel bottoms

How it spreads

- Escape or release of rusty crayfish used as bait

Impacts

- May outcompete native crayfish species for food, resources, and space, reducing overall biodiversity


Ryan Hodnett - Wikimedia Commons


Ryan Hodnett - Wikimedia Commons

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Japanese Knotweed

What it looks like

- Large, capable of reaching 1 - 3 meters high
- Round, bamboo-like stems that are reddish-purple in colour
- Large (7 - 15 cm long, 5 - 12 cm wide), dark green, teardrop shaped leaves with pointed tips
- Produces flower stalks with many tiny white/pale green flowers
- Small white fruit with wings to help them disperse

Where it is found

- Wetlands and near shorelines of rivers, lakes, streams, and in roadside ditches

How it spreads

- Used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material (e.g., root fragments) may also be spread by boats and other watercraft or aquatic equipment

Impacts

- May outcompete native plant species for nutrients, resources and space, reducing overall biodiversity

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Invasive Phragmites

What it looks like

- Grows in stands that can be extremely dense
- Can reach heights of up to 5 metres
- Stems that are tan-beige in colour with blue-green leaves
- Large, dense seedheads

Similar species

- Native phragmites (tend to form less dense stands; stems are reddish-brown with yellow-green leaves and smaller seedheads)

Where it is found

- In shallow waters of wetlands; along banks and shores of rivers, streams and lakes; and wet fields and ditches

How it spreads

- Used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material (e.g., fragments, seeds) may also be spread by boats and other watercraft or aquatic equipment

Impacts

- May outcompete native plant species for nutrients, resources and space, reducing overall biodiversity

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: European Water Chestnut

What it looks like

- Floating leaves, green and triangle/spade-shaped with sharply toothed edges
- Leaves form a densely crowded rosette up to 30 cm across
- Produces small white flowers (less than 1 cm long), with 4 petals
- Produces a hard "woody" nut (seed), 3-4 cm wide with sharp barbed spines

Where it is found

- Lakes, rivers, streams and ponds, in waters 2 - 4 m deep

How it spreads

- Used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material (e.g., fruits, seeds) may also be spread by boats and other watercraft or aquatic equipment

Impacts

- Can form dense, floating mats reducing amount of light submerged species receive

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Yellow Iris


Leia Rodrigues - Wikimedia Commons

What it looks like

- Plants grow between 30 cm - 1 m tall
- Yellow flowers with three drooping sepals (resemble large petals) surrounding three smaller upright petals, grow in groups of 2 to 10
- Leaves are flattened, 2 - 3 cm wide, and up to 1 m long, fanning out from the base
- Blooms between April and July

Where it is found

- Wetlands and shallow waters of streams, rivers, lakes, and ponds

How it spreads

- Often used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material may also be spread by boats and other equipment


James St. John - Wikimedia Commons

Impacts

- Forms dense stands that can outcompete native plant species for nutrients, resources and space, reducing overall biodiversity
- May also convert a wet habitat into a drier one
- Rhizomes (root projections) may cause poisoning in animals if ingested, or skin blisters in humans if plant juices make contact with skin

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Water Lettuce

What it looks like

- Free floating aquatic plant; can form large and dense floating mats
- Several leaves forming a rosette
- Leaves are light green with thick, parallel ridges, and short white hairs; rounded at top and narrow towards base (2 - 20 cm in length)
- May have small white/pale green flowers on a small stalk
- Many feathery roots 50 - 80 cm long hang below rosette

Where it is found

- Found in slow moving waters in rivers, lakes, streams, ponds, and ditches
- Generally found when temperatures are warmer
- Reported sightings in ponds connected to the Rideau Canal in Ottawa

How it spreads

- Plant material (e.g., rosettes, leaves, seeds) are transported on boats or other equipment (e.g., fishing gear, boat trailers, scuba gear, etc.)

Impacts

- Can form dense, floating mats, restricting water flow, and depleting oxygen levels and blocking access to sunlight for submerged plant and animal species

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Yellow Floating Heart

What it looks like

- Long, branched stems reaching up to 1 m or more, located below the surface of the water
- Circular or heart shaped leaves 3-10 cm in length
- Bright yellow flowers with 5 petals; petals are fringed or ruffled along edge
- Produce seed capsules with numerous flat, oval seeds


Peka - Wikimedia Commons

Where it is found

- Slow moving waters of rivers, lakes, ponds, and canals
- Can also grow on damp mud
- Found in ponds connected to the Rideau Canal

How it spreads

- Used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material (e.g., fruits, seeds) may also be spread by boats and other watercraft or aquatic equipment


Krzysztof Ziarnek - Wikimedia Commons

Impacts

- Can form dense, floating mats, depleting oxygen levels and blocking access to sunlight for submerged plant and animal species

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Flowering Rush

What it looks like

- Can grow up to 1 m in height
- Flowers grow in umbrella shaped clusters and each individual flower has 3 whitish-pink petals
- Green stems that resemble bulrushes but are triangular in cross-section

Where it is found

- Found along shores or in shallow waters (up to 2 m deep) of lakes, rivers, ponds, streams, wetlands, ditches

How it spreads

- Often used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material may also be spread by boats and other equipment

Impacts

- May outcompete native plant species for nutrients, resources and space, reducing overall biodiversity

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Himalayan Balsam

What it looks like

- Stems are hollow and smooth and often purple-red
- Can grown 1 to 3 metres tall
- Flowers have 5 pink, white or purple petals

Similar species

- Jewelweed (has orange flowers)

Where it is found

- Wetlands and near shorelines of rivers, lakes, streams, and in roadside ditches

How it spreads

- Used as an ornamental plant which, if planted too close to shoreline, may spread to other areas via plant material during flooding or heavy rain events
- Plant material (e.g., fruits, seeds) may also be spread by boats and other watercraft or aquatic equipment

Impacts

- May outcompete native plant species for nutrients, resources and space, reducing overall biodiversity
- Produces a lot of nectar and potentially resulting in reduced pollination for native species

INVASIVE SPECIES MONITORING

IDENTIFICATION KEY: Spiny Waterflea

What it looks like

- Very small, total length of 1.5 cm (60% of which is their tail)
- Long, straight tail with 1 to 3 barbs and a pointed end; red stripe runs along half the length of tail
- Ballon-like egg pouch (located on back, above tail)
- May be orange, green or blue in colour

Similar species

- Fishhook waterflea (another invasive species, however unreported in watershed to date)

Where it is found

- In rivers and lakes
- Present in Lake Temiskaming with populations also reported throughout the Ottawa River
- Often found in clumps comprised of many individuals

How it spreads

- Transported in boat bilge water and in bait buckets
- May also attach to hard surfaces such as boat hulls and motors, and on angling equipment

Michigan Sea Grant

Andrea L. Jaeger Miehls, Michigan State University

Impacts

- The introduction of a small number of Spiny Waterflea can lead to very large populations
- Can result in an on average 30 - 40% decline of native zooplankton population leading to a reduction of food available to small and juvenile fish
- May also impact angling activities with their tail spines catching on fishing lines making it difficult to reel them in, as well as clogging nets