



Fisheries and Oceans
Canada

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Canada

AQUATIC INVASIVE SPECIES

Identification Booklet
of Freshwater Invasive Species in Quebec



WANTED



AQUATIC INVADERS



To stop the proliferation of aquatic invasive species and thus protect our ecosystems, it is essential that all users of water bodies be on the lookout. The purpose of this booklet is to raise awareness about several species that have invaded freshwater habitats in Quebec. It also contains species that are not yet present, but could invade our lakes and rivers. It will help you recognize them and tell you what to do to prevent their spread and settlement in our water bodies.

Like everywhere else in the world, Quebec is struggling with animal and plant species that invade our fresh waters. Native to Asia, Europe, Africa, or even America, they harm native species (species originally from the region) and often, in the absence of natural predators, grow and multiply to the point where it becomes impossible to control and get rid of them. This booklet focuses on invasive animal species.



Pathways of invasion



It is often through human intervention that species leave their original environment to invade new ones. Many pathways contribute to the introduction and spread of aquatic invasive species (AIS) in our waters:

- > Ballast waters from ocean-going vessels
- > Boats and equipment associated with watersports and recreational fishing
- > Aquaculture, aquarium trade (animal and plants in aquariums) and other commercial sales of live species resulting in accidental or intentional introductions

Once introduced, species can become established and spread naturally:

- > By migration
- > With currents
- > Because of floods caused by rains
- > By clinging to aquatic fauna and flora



Threats to the environment, the economy and society



Aquatic invasive species have impacts on native species because they:

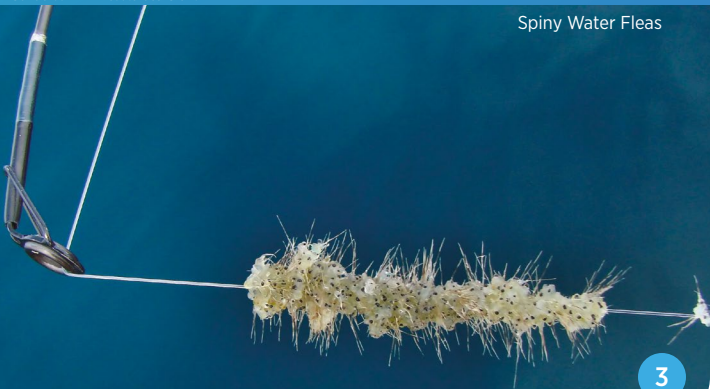
- Have few or no natural predators;
- Compete with native species for food and space, potentially causing them to become extinct;
- Contribute to the degradation of ecosystems by affecting water quality, and by transporting diseases or parasites.

Some invasive species have serious economic impacts because they affect:

- Recreational, commercial and indigenous fisheries, as well as aquaculture, causing a decline in native species of interest;
- Infrastructures by causing damages resulting in high costs associated with their control, and with cleaning and repair of affected facilities (irrigation canals, water treatment plants, power plants).

▼ Jeff Gunderson Minnesota Sea Grant

Spiny Water Fleas



Focus on an invader



The Zebra Mussel is an example of an invasive species that has caused significant impacts since its introduction in 1988 in Lake St. Clair, Ontario:

- > With its high reproductive capacity and ability to attach to any solid surface, it has rapidly spread in the Great Lakes system and eastern North American rivers;
- > Its predators are not sufficient to significantly reduce its populations;
- > By attaching to the shells of native molluscs, it interferes with their feeding, makes them more vulnerable to predators and leads to the decline of several species;
- > By filtering large quantities of water containing phytoplankton, it increases water clarity and light absorption, which in turn increases algae growth at greater depths;
- > By clogging the water intake pipes, it causes serious problems for various industries and public services (power plants, water treatment plants). The costs generated by this damage are in millions of dollars.



WHAT YOU CAN DO

How to stop the spread of aquatic invasive species?

To avoid the spread of AIS between different bodies of water, it is important to respect the following basic precautionary rules:

Watersports and recreational fishing

- > Before leaving a body of water, empty all the water that is in your boat or your equipment (livewells, engine, hold, coolers);
- > When exiting the water, inspect your boat, trailer and equipment used, completely remove any deposits or residues of aquatic plants, mud, and organisms visible to the naked eye and dispose of them in a garbage can or a place far away from the water;
- > At more than 30 m from any body of water, thoroughly wash and dry your boat, trailer and any equipment that has come into contact with water. When possible, use hot water under high pressure to maximize washing efficiency.



**CLEAN
DRAIN
DRY**



WHAT YOU CAN DO

Aquarium and water garden animals and plants

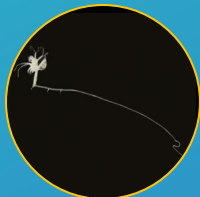
- > NEVER release animals or empty the water from fish tanks and water gardens into streams, drains, ditches, or sewers. Empty it on dry land, away from any body of water;
- > When you want to dispose of an aquatic animal or plant:
 - Donate them to a public institution or organization (pet shops, schools, museums, aquariums or zoological gardens), to another hobbyist or to aquarium clubs or associations;
 - If none of these solutions work, consider throwing out the plant far away from any body of water or euthanizing the animal. You can contact your veterinarian to inquire about recommended methods of euthanasia.





SPINY WATER FLEA
(*Bythotrephes longimanus*)

FISHHOOK WATER FLEA
(*Cercopagis pengoi*)



The Spiny Water Flea and the Fishhook Water Flea are two tiny crustaceans, part of zooplankton, which live suspended in water and drifting with currents.

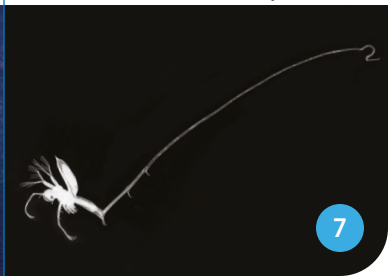
CHARACTERISTICS

Spiny Water Flea

- > Between 1 cm and 1.5 cm
- > Tail is dotted with spines and occupies more than 50% of the total length
- > Females have a balloon-shaped bag containing the eggs on their back

Fishhook Water Flea

- > Between 0.6 cm and 1.3 cm
- > Tail is at a 90-degree angle from the rest of the body, with three spines and a hook-shaped loop at its end, and occupies approximately 80% of the total length
- > Females have a pointed-shaped bag containing the eggs on their back



ORIGIN

The Spiny Water Flea and the Fishhook Water Flea are native to the region of the North Sea and to central Europe and Asia. They were introduced to North America due to ballast waters from ocean-going vessels. The two species were found for the first time in Lake Ontario, the Spiny Water Flea in 1982 and the Fishhook Water Flea in 1998. Both species can be found in the interior waters of Northeast America, in particular the Great Lakes, the St. Lawrence River, Lake Champlain and, since 2019, in the Richelieu River. The Spiny Water Flea is also found in Lake Témiscamingue since 2018 and has been reported in the Lake McConnell area of the Ottawa River in 2021.

HABITAT

The Spiny Water Flea lives in all types of aquatic habitats (fresh and salt waters). Although it prefers large and deep lakes with temperate and well-oxygenated waters, it can also be found in less oxygenated waters rich in organic matter. On the other hand, the Fishhook Water Flea prefers fresh waters with low salinity, but tolerates a wide range of temperatures, salinities and depths. It can migrate towards deeper waters during the day and swim closer to the surface at night. Usually it is found in pelagic zones far from the coast, but in the Richelieu River it is found closer to shore.

SIMILAR SPECIES

The Spiny Water Flea and Fishhook Water Flea look similar to some native water flea species, such as *Daphnia*. However, the drop shape body of the *Daphnia* only measures up to 0.5 cm and its tail is very short, accounting for only a quarter of the total length.





KILLER SHRIMP
(*Dikerogammarus villosus*)

**ECHINOGAMMARUS
ISCHNUS**



The Killer Shrimp and *Echinogammarus ischnus* are two small invasive scuds (gammarids). They have the appearance of curved shrimps with laterally compressed bodies.

CHARACTERISTICS

Killer Shrimp

- > Up to 3 cm
- > Two pairs of antennae
- > Fan-shaped tail
- > Curved and semi-transparent body, uniform colour or striped

E. ischnus

- > Average of 1 cm
- > V-shaped tail
- > Curved, semitransparent body



ORIGIN

These two species are native to central Europe and Asia. The Killer Shrimp has not yet been recorded in North America. However, *E. ischnus* was first observed in the Detroit River in 1994. It was introduced through ballast waters from ocean-going vessels. Through watersports and recreational fishing, it has since spread to the Great Lakes and the Upper St. Lawrence River. It was found near Gentilly in 2010.

HABITAT

The Killer Shrimp and *E. ischnus* are species found in lakes and rivers, where the current is weak or moderate. They are able to live in both fresh and brackish waters because they can tolerate large variations in temperature and salinity. They usually colonize rocky, gravelly or shell-strewn bottoms that provide shelter. *E. ischnus* can be found on bottoms with sand and clay, near solid surfaces like docks and submerged structures.

SIMILAR SPECIES

The Killer Shrimp and *E. ischnus* resemble several native gammarids such as *Gammarus fasciatus*. It is very difficult to tell them apart without a microscope and, usually, only experts can do it.



BLOODY RED SHRIMP

(*Hemimysis anomala*)



S. Pothoven GLERL ▲

CHARACTERISTICS

- > Females up to 1.7 cm and males up to 1 cm
- > Large, prominent black eyes
- > Square tail with two spines at the end
- > Red or orange body, partly translucent with pigmented red spots; colour varies depending on the light and water temperature



◀ Department of Fisheries and Oceans Canada Bugwood.org

NOAA ▼



ORIGIN

The Bloody Red Shrimp is a small crustacean native to the coastal regions of the seas of central Europe. It was first intentionally dispersed in Europe between the late 1940s and the 1980s to increase fish productivity. Its dispersion continued via ballast waters of ocean-going vessels. It then ended up in the Great Lakes, except Lake Superior, as well as the St. Lawrence River since 2008.

HABITAT

Although it can tolerate brackish waters, the Bloody Red Shrimp lives mostly in fresh waters with weak or moderate currents. It is often found near docks, ships, and maritime structures, finding refuge in bottoms strewn with rocks and shells. It moves in swarms and can shift very quickly when disturbed. During the day, the Bloody Red Shrimp migrates in deep water to avoid light and rises to the surface at night to feed on insect larvae and plankton.

SIMILAR SPECIES

The Bloody Red Shrimp resembles a native shrimp found in the Great Lakes, the Opossum Shrimp (*Mysis diluviana*). However, the tail of the Opossum Shrimp is forked. Using a magnifying glass helps to see this difference.



RUSTY CRAYFISH

(*Faxonius rusticus*)



Doug Watkinson DFO ▲

CHARACTERISTICS

- > Between 7.5 cm and 13 cm
- > Black bands at the tips of the claws and oval gap when closed
- > Rusty patches on each side of the shell (near the tail)
- > Colour of the shell varies between a grey-blue and a dark brown-greenish

▼ Doug Watkinson DFO



ORIGIN

The Rusty Crayfish is a freshwater crustacean that resembles a small lobster and belongs to the order Decapoda (ten legs). This invasive species is from the Ohio River basin in the United States. It is believed to have been spread by either live-bait for recreational fishing or the aquarium trade. It was first observed in Ontario in the early 1960s. In Quebec, it was only present in the Outaouais region up to the early 2000s. It has since then been observed also in Montérégie.

HABITAT

Due to its ability to adapt to weak or strong currents, the Rusty Crayfish can live in ponds, streams, and lakes as well as in rivers. It prefers bottoms strewn with rocks, gravel and objects that form shelters. It can also be seen on sandy or loamy bottoms and in areas covered with aquatic plants. This species can tolerate a large range of temperature (0°C to 39°C).

SIMILAR SPECIES

Several species of crayfish look alike, and it is easy to confuse the Rusty Crayfish with native crayfish species. It particularly resembles two crayfish, the Virile Crayfish (*Faxonius virilis*) and the Northern Clearwater Crayfish (*Faxonius propinquus*). Besides the rusty patches on its body, the Rusty Crayfish is larger than the others and its claws have black tips.

Virile Crayfish



MARBLED CRAYFISH

(*Procambarus virginalis*)



C. Chucholl ▲

CHARACTERISTICS

- > Generally less than 10 cm, can be up to 13 cm
- > Narrow pincers, like claws
- > Brown or green mottling on the shell, darker on wild individuals and lighter on captive individuals

▼ Klaus Rudloff



ORIGIN

The Marbled Crayfish, also known as Marmorkreb, is a freshwater crustacean that resembles a small lobster. It belongs to the order Decapoda (ten legs). It is thought to have originated from captive breeding. Therefore, it is not indigenous to any territory. First reported in 1995, it was introduced voluntarily to Madagascar for food. It is now found in several European countries and Japan. Although wild Marbled Crayfish have not yet been seen in North America, it is a concern because it is presently available for sale (food, live bait and aquarium trade).

HABITAT

Due to its ability to adapt to weak or strong currents, the Marbled Crayfish can live in ponds, streams, and lakes as well as in rivers. Optimal water temperature for this species is around 20°C, but the species has now adapted to the cooler waters of temperate zones. During a drought, it can also survive out of water for up to three days.

SIMILAR SPECIES

It is easy to confuse the Marbled Crayfish with native species such as the Spinycheek Crayfish (*Faxonius limosus*). However, the mottling on the carapace of the Marbled Crayfish can be used to distinguish it from native crayfish. It also resembles the Calico Crayfish (*Faxonius immunis*), a crayfish native to Ontario, but introduced to Quebec.

▼ MAPAQ

Spinycheek Crayfish





ZEBRA MUSSEL
(Dreissena polymorpha)



QUAGGA MUSSEL
(Dreissena bugensis)

Zebra and Quagga mussels are two freshwater bivalves that resemble each other, both in morphology and ecologically.

CHARACTERISTICS

Zebra Mussel	Quagga Mussel
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- > Triangular, rests on its flat side
- > Between 0.5 cm and 4 cm, average of 2 cm to 2.5 cm
- > Varies in colour, but is typically dark brown with white or yellowish zigzag patterns

- > Round, including its ventral surface
- > Up to 3 cm, average of 2 cm
- > Lighter colour than the Zebra Mussel, with dark concentric rings

Dave Brenner Michigan Sea Grant

Dave Brenner Michigan Sea Grant



ORIGIN

Zebra and Quagga mussels are native to the Caspian and Black Sea regions. These bivalves were introduced to the Great Lakes via ballast waters of ocean-going vessels, before spreading into the St. Lawrence River and most of the Northeastern U.S. waterways in the late 1980s.

HABITAT

Zebra and Quagga mussels live in freshwater or low salinity environments. Both species are observed in similar habitats, on rocky and sandy bottoms or covered with aquatic vegetation. The Zebra Mussel is usually more common in shallow waters (2 m to 12 m) where the current can sometimes be strong, while the Quagga Mussel is found in deep waters (as deep as 100 m), where it is cooler and the waters are usually still or calm.

SIMILAR SPECIES

Zebra and Quagga mussels live in the same environments as native freshwater mussels, including 23 species of freshwater mussels within the Unionidae and Margaritiferidae families. These native mussels can be easily differentiated because they are three to four times the size of the invaders, their shells are more oval, and they are usually greenish or dark brown, with visible growth rings.

▼ Todd J. Morris



Invasive mussels on native mussels



CHINESE MYSTERY SNAIL
(*Cipangopaludina chinensis*)



BANDED MYSTERY SNAIL
(*Viviparus georgianus*)

The Chinese Mystery Snail, also known as Oriental Mystery Snail, and the Banded Mystery Snail are two molluscs that are part of the gastropods. These freshwater snails are said to have been introduced to North America by the aquarium trade.

CHARACTERISTICS

Chinese Mystery Snail	Banded Mystery Snail
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- > Between 6.5 cm and 7 cm
- > Thick spherical shell
- > Winding of shell is of six to seven whorls separated by prominent sutures (lines of contact between the turns)
- > Colour ranging from olive green to a greenish brown or reddish brown

- > Between 3.5 cm and 4 cm
- > Thin, spherical shell, with whorls that wind clockwise, separated by deep sutures
- > Colour ranging from yellow to greenish brown with darker spiral bands

▼ D. Boudreau Saint Mary's University



Severn Sound Environmental Association ▼



ORIGIN

The Chinese Mystery Snail is native to East Asia, and the Banded Mystery Snail comes from the eastern and central United States. The Chinese Mystery Snail was first reported in the Niagara River in 1931, in the lakes Erie in the 1940s and Champlain in 2003. The Banded Mystery Snail was first observed in the lakes Michigan and Erie at the beginning of the last century, as well as in the Quebec portion of the St. Lawrence River since 1953. After their introduction, these molluscs were disseminated through various pathways including the water garden trade, watersports, and recreational fishing.

HABITAT

The Chinese Mystery Snail and the Banded Mystery Snail live in various types of aquatic habitats (ponds, marshes, rivers, lakes, and irrigation canals) in depths less than 3 m where currents are slow, and bottoms are covered with mud or loam. They are also found in areas with sandy and gravelly bottoms. These snails usually avoid large rivers with strong currents, but the Banded Mystery Snail is present in the St. Lawrence River.

SIMILAR SPECIES

Several other species of freshwater snails are native to Quebec so experts are often needed to differentiate them. The Chinese Mystery Snail also closely resembles the Japanese Mystery Snail (*Cipangopaludina japonica*), an exotic snail originating from Southeast Asia, whose shell is more elongated. This last species is present in Lake Erie.

Japanese Mystery Snail

Carnegie Museum of Natural History ▶



NEW ZEALAND MUD SNAIL

(*Potamopyrgus antipodarum*)

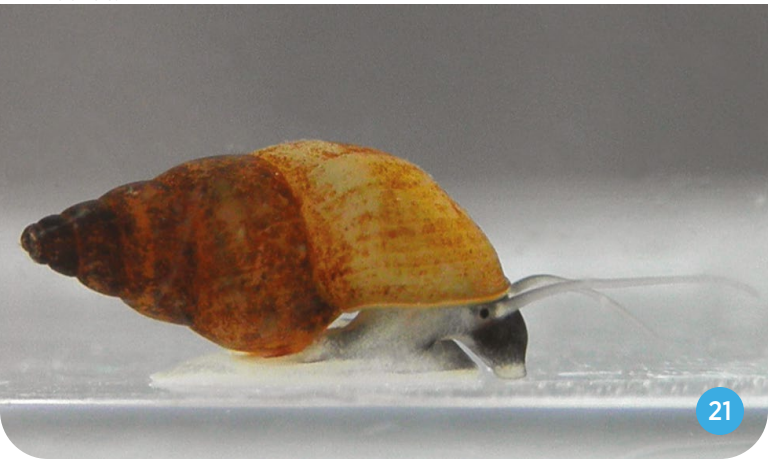


Ryan Utz Carnegie Museum of Natural History ▲

CHARACTERISTICS

- > Between 0.5 cm and 0.7 cm
- > Thin shell that varies in shape, with five to seven whorls winding clockwise, separated by deep sutures (lines of contact between the turns)
- > Colour varies from light to dark brown

▼ Michal Mañas



ORIGIN

The New Zealand Mud Snail, a mollusc that is part of the gastropods, comes from New Zealand and its surrounding islands. First reported in Lake Ontario and the St. Lawrence River in 1991, this freshwater snail is said to have been introduced to North America by the aquarium trade. After their introduction, these snails were disseminated through various pathways including the water garden trade, maritime traffic, watersports and recreational fishing.

HABITAT

The New Zealand Mud Snail lives in a variety of aquatic habitats (ponds, marshes, rivers, lakes, and irrigation canals), where the bottom is covered with silt, clay, sand, gravel, or large algae. This snail lives mainly in the littoral zone, but it can survive up to 25 m of depth.

SIMILAR SPECIES

Several other species of freshwater snails are native to Quebec so experts are often needed to differentiate them. The New Zealand Mud Snail resembles the Common Mud Snail (*Potamopyrgus estuarinus*) and *Potamopyrgus pupoides*, but these two species of snails live in brackish waters.

▼ Stephen Moore Manaaki Whenua – Landcare Research New Zealand

Common Mud Snail



GOLDFISH

(*Carassius auratus*)



Dat doris ▲

CHARACTERISTICS

- > Between 13 cm and 25 cm, up to 50 cm
- > Small mouth, no barbels
- > Caudal fin (tail) forked
- > Long dorsal fin (2/3 of the body)
- > Colour may vary from gold to olive green in wild populations

▼ OFFLHD R. J. Eakins



ORIGIN

The Goldfish is native to central and eastern Asia. This fish arrived in Quebec at the end of the 19th century for the aquarium trade and the ornamentation of water gardens. It ended up in the waterways following the accidental or intentional release of aquarium fish.

HABITAT

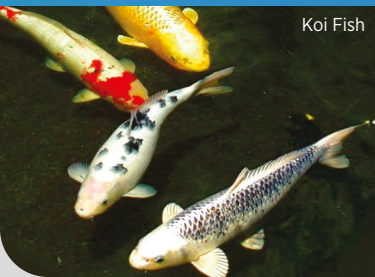
In the wild, the Goldfish is found in ponds, rivers, and lakes where the current is weak, and there is plenty of aquatic vegetation. It tolerates turbid waters (containing suspended matter), with low oxygen concentrations. It has adapted to harsh climates and cold waters by hiding in the mud and reducing its energy consumption to survive Canadian winters.

SIMILAR SPECIES

The Goldfish resembles more particularly the Common Carp (*Cyprinus carpio*). However, Common Carp have a pair of barbels on each side of their mouth and can be from 45 cm to 100 cm. Goldfish can also look like Koi Fish, an ornamental variety of carp with different colours and patterns (gold, orange, silver, white and black). However, Koi Fish have a pair of barbels at the corner of their mouth, their body is more elongated than the Goldfish or the Common Carp and they range in size from 30 cm to 120 cm.

▼ Stan Shebs

MAPAQ ▼



Koi Fish



Common Carp

GRASS CARP

(*Ctenopharyngodon idella*)



Ryan Hagerty USFWS ▲

CHARACTERISTICS

- > Between 50 cm and 90 cm, can be up to 130 cm
- > Short head, no barbels
- > Dorsal fin short and rounded
- > Long and slender body, covered with large scales with dark edges, making a crosshatched appearance
- > Dark grey back, white to yellow sides with a slightly golden shine, blending to white towards the belly

▼ Dan O'Keefe Michigan Sea Grant



ORIGIN

The Grass Carp is native to rivers stretching from southern Russia to northern Vietnam. It is one of four invasive carp species introduced to North America in the 1960s and 1970s. Their escape from aquaculture centres, intentional releases, as well as live fish markets have resulted in them being found in the rivers of Northeastern United States. In Canada, the Grass Carp was first captured in Lake Erie in 1985. In Quebec, it was first found in the St. Lawrence River in 2017.

HABITAT

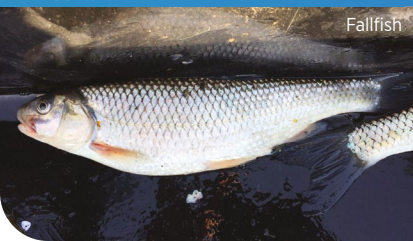
The Grass Carp prefers large bodies of water where currents are weak and where the bottom is covered with grass beds, which are food for adults. It can typically be found near shorelines in depths of 3 m or less. It tolerates a wide range of water temperatures (0°C to 38°C) as well as low oxygen concentrations.

SIMILAR SPECIES

The Grass Carp resembles several species found in Canadian waters, including the Fallfish (*Semotilus corpolaris*), the Common Carp (*Cyprinus carpio*) and a species at risk, the Copper Redhorse (*Moxostoma hubbsi*). Fallfish differ in size with Grass Carp, ranging from 15 cm to 30 cm. Common Carp have a pair of barbels near the mouth and a long dorsal fin. Copper Redhorse have a sucker-shaped mouth with fleshy lips, a trait unique to redhorses and suckers, a group of fish often misidentified as carp.

▼ Marc Bourret

N. Vachon MFFP ▼



Fallfish



Copper Redhorse

GREEN SUNFISH

(*Lepomis cyanellus*)



S. Normand MFFP ▲

CHARACTERISTICS

- > Between 12 cm and 20 cm
- > Large mouth that extends to the middle of the eye
- > Iridescent blue lines on cheeks and blue speckles arranged in rows on the body
- > Black operculum (covering the gills), sometimes surrounded by a white or orange border
- > Dorsal and anal fins often marked with black spots at their junction with the body

▼ Fredlyfish4



ORIGIN

The Green Sunfish is a freshwater fish native to the central and north-eastern United States. It has been introduced into many countries (Asia, Africa, Europe) through various means such as aquaculture, aquarium trade, and live bait. In Canada, the Green Sunfish is native to Ontario (Great Lakes-Hudson Bay basins) and is considered non-indigenous everywhere else in the country. It was found for the first time in Quebec in 2007 in the Yamaska River.

HABITAT

The Green Sunfish lives in calm or still waters, such as ponds and shallow lakes. It can be found in clear waters as well as in murky waters, often being the only species of sunfish caught in muddy waters.

SIMILAR SPECIES

The Green Sunfish can be confused with other species of sunfish, including the Pumpkinseed (*Lepomis gibbosus*), which is very widespread in Quebec. It is also similar to the Bluegill (*L. macrochirus*) and the Northern Sunfish (*L. peltastes*), which are both less common in Quebec but present in southern Ontario. The Northern Sunfish is also a species at risk in the Great Lakes and Upper St. Lawrence. All these sunfish species are similar in appearance, but their opercula differ in colour.

▼ OFFLHD R. J. Eakins

OFFLHD R. J. Eakins ▼



Northern Sunfish



Pumpkinseed

ROUND GOBY

(*Neogobius melanostomus*)



CHARACTERISTICS

- > Between 6 cm and 16 cm, up to 25 cm
- > Bulging and prominent eyes
- > Pelvic fins welded in the shape of a suction disk
- > Noticeable black spot on the first dorsal fin
- > Brown, olive green, or slate grey, with dark brown spots



▼ Dave Jude



ORIGIN

The Round Goby is a fish native to central Europe and Asia. Disseminated by ballast waters from ocean-going vessels, it was first seen in North America in 1990 in the St. Clair River, Ontario. It quickly spread to the Great Lakes and the St. Lawrence River. Captured near Québec City in 1997, it was found in the St. Lawrence Estuary, near Rivière-Ouelle in 2009.

HABITAT

The Round Goby is a bottom-dwelling fish that lives mainly in rivers and lakes but can also be found in brackish waters. It generally lives near shores, particularly in rocky bottoms which offer shelter, but it can also be found on sandy bottoms.

SIMILAR SPECIES

The Round Goby resembles several other fish found in Canadian waters, including the Deepwater Sculpin (*Myoxocephalus thompsonii*), a native species at risk. However, unlike the Round Goby, sculpins have a smooth skin (no scales), no black spot on their first dorsal fin, and have two distinct pelvic fins. The Round Goby also looks like the Western Tubenose Goby (*Proteorhinus semilunaris*), another invasive species which can be found in Ontario and Quebec. It can be distinguished from the Round Goby by the lack of a black spot on its first dorsal fin and by its tube-shaped nostrils.

▼ Eric C. Maxwell

Western Tubenose Goby



TENCH

(*Tinca tinca*)



Karelj ▲

CHARACTERISTICS

- > Average of 20 cm to 40 cm, up to 70 cm
- > Body covered with small scales embedded in slimy skin
- > Single, short barbel on each side of the mouth
- > Rounded, dark coloured fins without spines
- > Back is olive green or black, with golden sides and a white or yellowish belly

▼ Sunci Alvlijas



ORIGIN

The Tench is a fish native to Europe and Asia. In Quebec, the Tench was illegally imported from Germany in 1986 to a fish farm near the Richelieu River. Some of them escaped from the breeding ponds in the fish farm in 1991 during a heavy flood. It was then found in Lake Champlain in 2001, and in the St. Lawrence River in 2005. The Tench is also present near the Ontario-Quebec border, between Cornwall and Lake Ontario. As of spring 2021, the Tench is also located in the Ottawa River.

HABITAT

The Tench can live in a variety of aquatic environments, including areas with low levels of oxygen and still waters. It often lives in areas where the bottom is muddy and covered with aquatic vegetation and therefore is found in marshes, ponds, lakes, and rivers where the current is weak. This tolerance to these kinds of conditions allows it to colonize places that are too hostile for most other species.

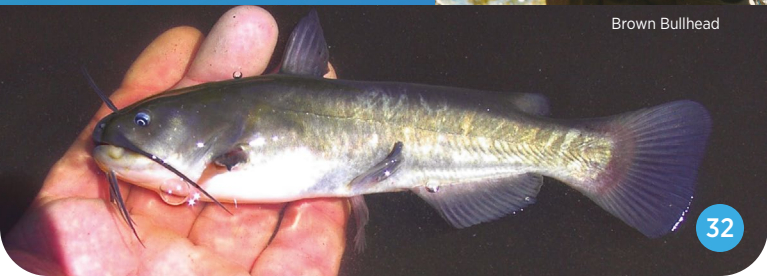
SIMILAR SPECIES

The Tench is similar to the Brown Bullhead (*Ameiurus nebulosus*). The difference between them is that the Brown Bullhead has no scales and four pairs of barbels rather than a single barbel on the Tench. The Common Carp (*Cyprinus carpio*) also looks very similar to the Tench, except it has larger scales, two pairs of barbels and a very long dorsal fin (2/3 of the back) preceded by a single spine.

▼ OFFLHD R. J. Eakins ▼



Brown Bullhead



SNAKEHEAD

(*Channa* sp., *Parachanna* sp.)



Brian Gratwicke ▲

CHARACTERISTICS

- Between 17 cm and 180 cm, depending on the species
- Elongated and cylindrical body
- Very long dorsal and anal fins, round caudal fin, pelvic fin near the head
- Small head covered with large scales
- Large mouth with many sharp teeth
- Colour ranges in different shades of brown with camouflage patterns

▼ George Berninger Jr.



ORIGIN

There are 29 different species of snakeheads, and the vast majority of them are native to southern and eastern Asia. None of these species are present in Canada. The species that is most likely to adapt to Canadian waters is the Northern Snakehead (*Channa argus*), due to its ability to thrive in colder temperatures. Their two most likely pathways of propagation are food markets and the aquarium trade.

HABITAT

Snakeheads are found in shallow bodies of water (ponds and marshes) with weak currents, low oxygen levels, and muddy bottoms covered with aquatic vegetation. Most species can withstand temperatures ranging from 0°C to 30°C.

SIMILAR SPECIES

The Northern Snakehead can be confused with two native fish: the Bowfin (*Amia calva*) and the Burbot (*Lota lota*), also known as the Eelpout. The Bowfin does not have scales on its large head, but it has two outer nostrils shaped like small tubes, and a short anal fin. The Burbot has an elongated body, scales that are nearly undetectable, two dorsal fins (one short and one long), and a barbel under the jaw.

New York State DEC ▼

Bowfin



▼ MAPAQ

Burbot



RUDD

(*Scardinius erythrophthalmus*)



Peter van der Sluijs ▲

CHARACTERISTICS

- > Between 15 cm and 25 cm, up to 50 cm
- > Small upturned mouth
- > Red brown to bright red fins
- > Golden-greenish back, golden-yellow sides and whitish belly completely covered with scales

▼ Robin Gáspárdy DFO



ORIGIN

The Rudd, also known as Pearl Roach or Redeye, is native to central Europe. It was first observed in the United States in the late 1880s, and is believed to have been accidentally disseminated in North America through live bait and aquaculture. In Canada, it was first observed in 1990 in the St. Lawrence River in Ontario. In the following years, it was reported in Lakes Saint-Pierre, Champlain, Ontario, Erie, and Michigan.

HABITAT

The Rudd lives in calm waters with bottoms covered with thick aquatic vegetation such as ponds, lakes, and rivers. It is able to adapt to various environmental conditions by changing its diet according to available resources. Since it only tolerates temperatures between 10°C and 22°C, the cold temperatures of our winters are probably a limiting factor for its establishment in our waters.

SIMILAR SPECIES

The Rudd closely resembles the Golden Shiner (*Notemigonus crysoleucas*) at first glance. However, the Golden Shiner is much smaller (between 8 cm and 12 cm, sometimes up to 23 cm). It has no scales on its belly and its fins are usually greenish yellow, possibly turning bright orange during breeding season (May to August). The possible hybridization between these two species worries biologists.

▼ OFFLHD R. J. Eakins



Golden Shiner

CLEAN DRAIN DRY



HELP STOP AQUATIC INVADERS



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WHAT TO DO IF YOU FIND AQUATIC INVASIVE SPECIES?

1. Try to identify them;
2. Take pictures, note the location (GPS coordinates), number of individuals (if possible) and observation date;
3. Report any aquatic invasive species sightings to Fisheries and Oceans Canada:

DFO.QUEAIS-EAEQUE.MPO@dfo-mpo.gc.ca

1-877-722-4828

dfo-mpo.gc.ca/aquatic-invasive-species