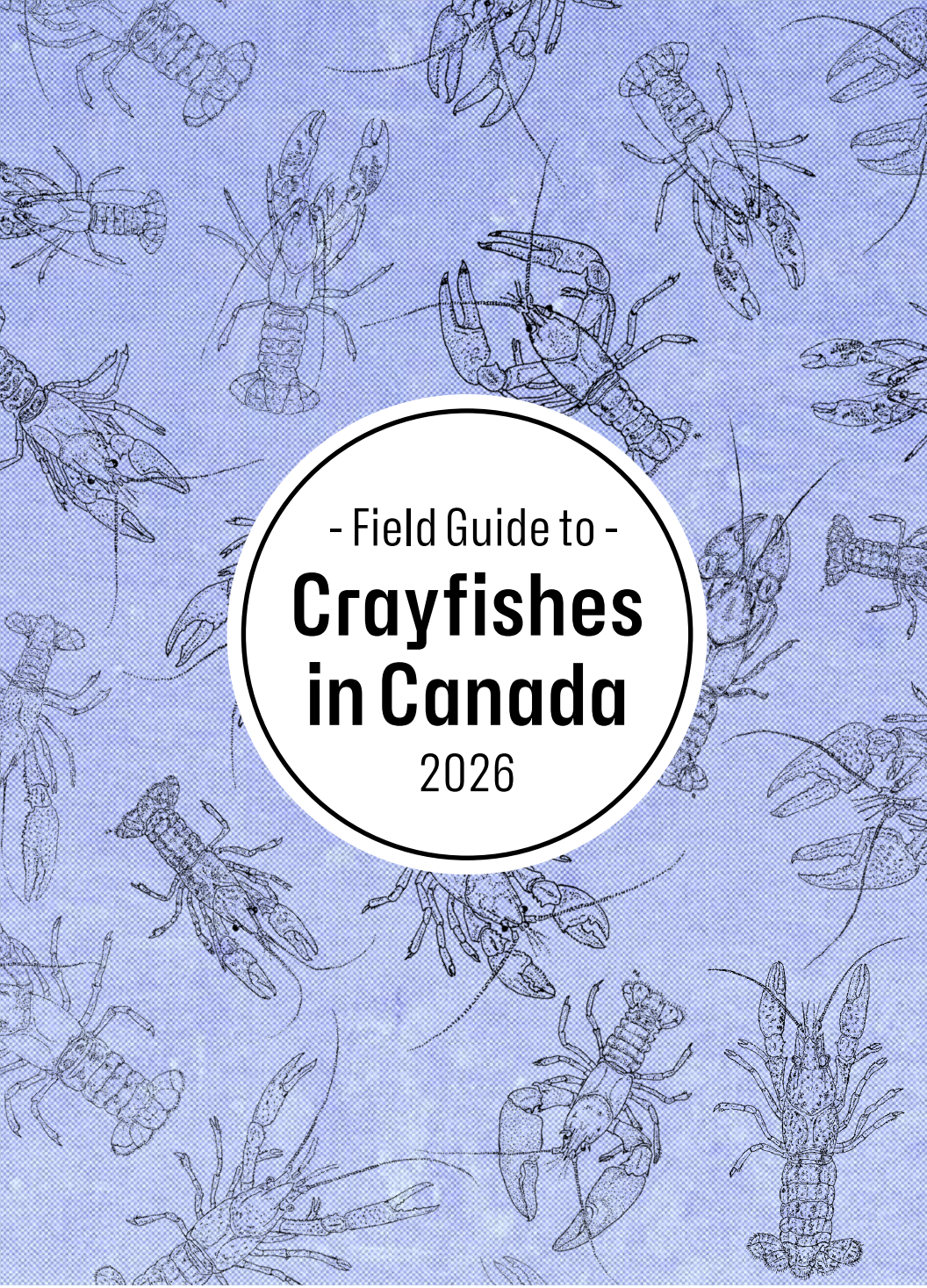

- Field Guide to -

Crayfishes in Canada

2026

OFAH FOUNDATION

ONTARIO'S INVADING SPECIES AWARENESS PROGRAM

Fisheries and Oceans Canada | Pêches et Océans Canada

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The OFAH Foundation would like to thank all of those who contributed towards the development of this guide.

Note:

At the time of writing (March 2026), we are providing you with the most up-to-date information on the status of crayfishes in Canada, including biological, geographic, and regulatory. It is important to understand that scientific names, establishment status, geographic ranges, regulatory status, etc. may change over time.

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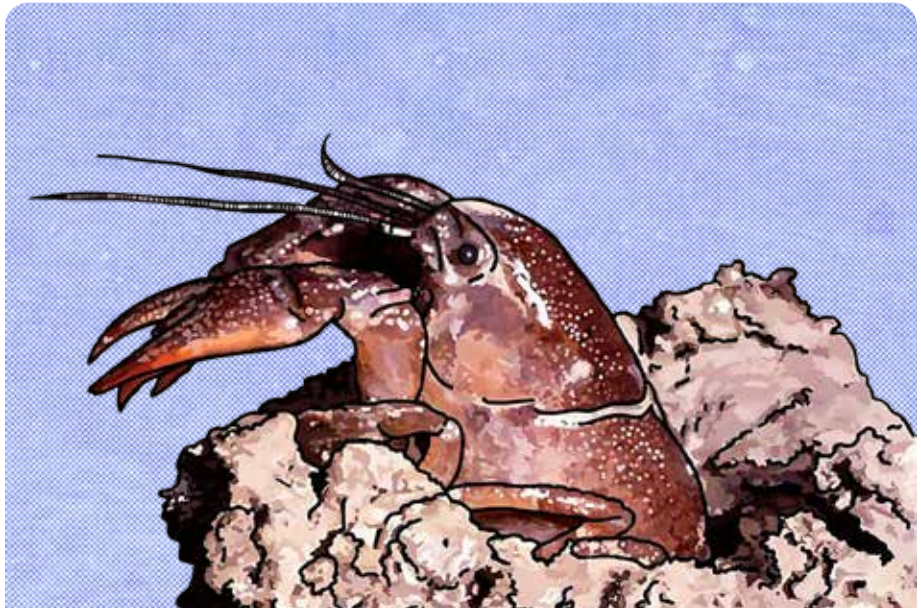
Introduction

Great Plains mudbug found near Tilbury, Ontario during surveillance efforts (M. Daniels)

Introduction to Crayfishes of Canada

What are Crayfishes?

Crayfishes are within the order *Decapoda*, which includes both freshwater and marine animals (e.g., lobsters, crabs, crayfishes, and shrimps). In Canada, there are two native families of crayfishes: *Astacidae* and *Cambaridae*. They usually only live a handful of years (3-4 years, but can be longer in the burrowing species) and mate from the spring to early summer (e.g., *Cambarus*). Crayfishes are generally omnivorous, foraging on aquatic and terrestrial invertebrates as well as vegetation. They also consume dead and decaying plants and animals, including animals that are higher in the food chain, such as fishes and amphibians. Using gills to breathe under water, they can sometimes be seen crawling on land when migrating in search of food or better habitat. Though timing varies, crayfishes cannot survive out of water for an extended period of time. As omnivorous foragers, they use their antennae and antennules to sense and locate food in the water and like their lobster cousins, crayfishes will moult (shed their exoskeleton) many times as they grow. Young crayfishes, for example, will moult much more often than adults, who will typically only shed once or twice per year. Crayfishes are an important link in aquatic and terrestrial food chains as they are consumed by a wide variety of predators, such as game fishes, frogs, snakes, turtles, and various species of birds and mammals (and even other crayfishes!). Minks and raccoons are particularly fond of crayfishes, and the former tends to leave small piles of crayfish parts on the rocks of their favourite hunting areas.



Distribution of Crayfishes in Canada

The distribution of freshwater crayfishes in Canada extends from the Atlantic region in the east to British Columbia in the west. Although crayfishes occur across much of southern Canada, their northern limits vary regionally depending on climate, watershed connections, and historical glaciation. In eastern Canada, crayfishes occur in parts of Atlantic Canada, including Nova Scotia where they are believed to have been introduced. Farther west, populations extend through Québec and Ontario and into the prairie provinces, where crayfishes reach as far north as northern Alberta. In Ontario, the northernmost records occur in watersheds draining into James Bay.

Currently, 16 species of invasive and native freshwater crayfishes, representing six genera and two families, have been documented in Canada. Of these, five species have been introduced from the United States, while the remaining eleven are generally regarded as native. Crayfishes have been recorded in every Canadian province except Prince Edward Island, and they are absent from the Yukon, Northwest Territories, and Nunavut.

Species diversity is unevenly distributed across the country and is highest in southern portions of central and eastern Canada. Ontario supports the greatest diversity, with 13 confirmed species, including five introduced species. In contrast, western provinces tend to support fewer species, reflecting both historical dispersal barriers and climatic constraints.

Some species also exhibit highly restricted habitat requirements. For example, the primary burrowing chimney builders, including the digger crayfish (*Creaserinus fodiens*), paintedhand mudbug (*Lacunicambarus polychromatus*), and Great Plains mudbug (*L. nebrascensis*), occur only in southern Ontario, generally south of Lake Huron and Georgian Bay. Their distribution is limited by the legacy of glaciation, colder northern climates, and the availability of suitable clay-rich soils required for burrow construction.

Juvenile crayfish captured near Tilbury, Ontario (M. Daniels)

Habitats of Crayfishes

While many of us have fond childhood memories of catching or seeing crayfishes at the water's edge, most people today encounter crayfishes in running clear waters near shore under rocks and logs in lakes, rivers, and streams. However, their preferred habitats are wide-ranging and include wetlands, wet meadows, stagnant waters, ponds, ditches, reservoirs, lakes, seasonal as well as permanent streams, and large rivers. They exist in these habitats in urban, agricultural, as well as natural areas. However, not all crayfishes are found in open water. Three of our native species, the digger crayfish (*C. fodiens*), the paintedhand mudbug (*L. polychromatus*), and the Great Plains mudbug (*L. nebrascensis*) construct extensive burrow networks, sometimes well away from permanent water, that go down to the water table often more than a metre deep into the ground.

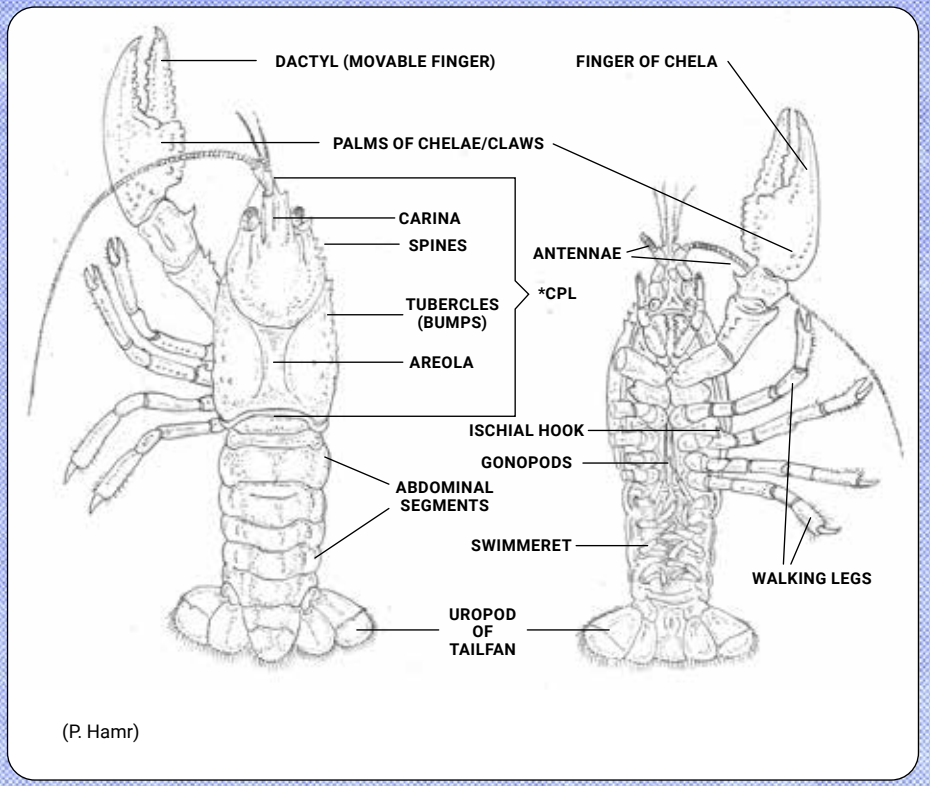
The burrows made by these species, which are constructed to help them overwinter or survive periods of drought, may have several entrances that are capped by a carefully stacked pelleted chimney. These chimneys afford some protection and help in the ventilation of the networks. Whereas the calico crayfish (*Faxonius immunis*) is often found in stagnant waters and is also capable of constructing burrows with chimneys. As many species create chimneys, it makes it difficult to identify which species is hiding in the burrow unless you carefully dig it out with a shovel or spade. All four of these species will survive the winter by burrowing below the frost line and waiting out the winter months. Similarly, open water species will move away from the shoreline into deeper waters or dig deep burrows into the embankment of the river, lake, or stream to avoid freezing.

Dr. Premek Hamr with the world's largest crayfish species, Tasmania's giant freshwater crayfish (*Astacopsis gouldi*) (L. Hamr)

Status of Canadian Crayfishes

At the time of writing, each of the native species presented in this guide have an International Union for Conservation of Nature Red List rating of "Least Concern." This label is reserved for species that are considered widespread and abundant. Visit www.iucnredlist.org for more information. Interesting to note, each of our native crayfishes in Canada have native distributions within the United States as well. Whereas, the same cannot be said for the hundreds of crayfishes that are native to the United States, which include many invasive species to Canada.

Anatomy of Crayfishes



(P. Hamr)

*CPL (carapace length), measuring from the tip of the rostrum to the back of the carapace, where it is separated from the abdomen.

Differentiating Male & Female Crayfish

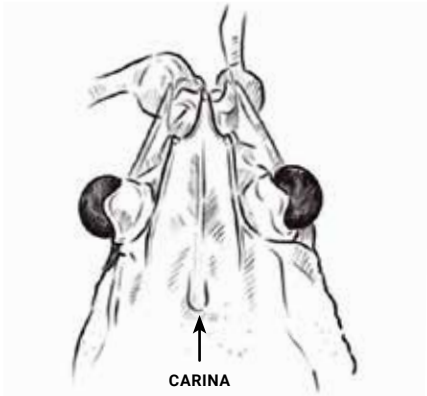
Male and female crayfish are relatively simple to tell apart. From the top of the crayfish, mature females generally have smaller claws, or chelae, and wider tails, or abdomens, when compared to males. While on the underside, males have the first two pairs of swimmerets (on the abdomen) modified into copulatory structures (the gonopods or male reproductive structures), while females have a seminal receptacle (female reproductive structure) at the base of the fourth pair of walking legs as well as oviduct openings on the bases of the third pair of walking legs. When it comes to telling species apart, things get somewhat more complicated. When identifying crayfish species, it is best to look at large male specimens. The shapes of the gonopods of males in mating form are characteristic of each species and can be reliably used to separate them. Colour in crayfishes is not always a reliable identification characteristic to use as there can be significant variation between populations and even individuals within the same species. In some circumstances, patterns or markings can be used and a few good examples include the rusty spots on the sides of the carapace in the rusty crayfish (*Faxonius rusticus*) and the double row of spots on the abdomen of the virile crayfish (*F. virilis*).

Male northern clearwater crayfish (left) and female (right) (P. Hamr)

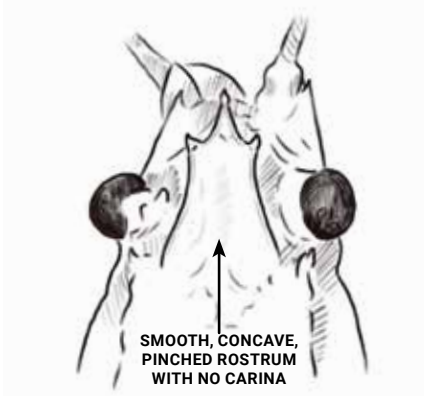
Crayfish Rostrums & Areolas

Rostrums and areolas can act as important identifying features when attempting to differentiate between species. For example, an especially important feature to look for when differentiating between the native northern clearwater crayfish (*Faxonius propinquus*) and the invasive rusty crayfish (*F. rusticus*) is the presence of a carina, or ridge-like structure running parallel to the sides of the rostrum in between the eyes. Note that the northern clearwater crayfish has a carina, while a rusty crayfish does not, though hybrids of these two species may have more subtle signs of a carina.

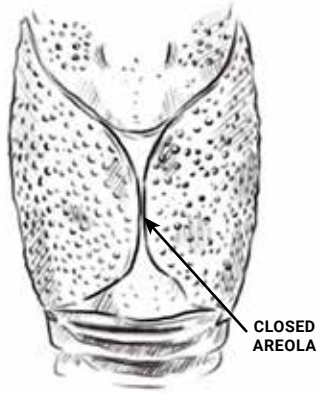
Areolas, on the other hand, can help us differentiate between species such as the invasive red swamp crayfish (*Procambarus clarkii*) and the invasive White River crayfish (*P. acutus*).



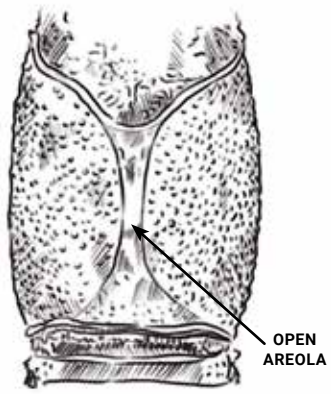
Northern clearwater crayfish (*F. propinquus*) rostrum



Rusty crayfish (*F. rusticus*) rostrum



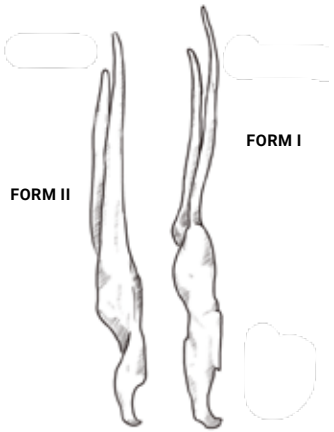
Closed areola on the red swamp crayfish (*P. clarkii*)



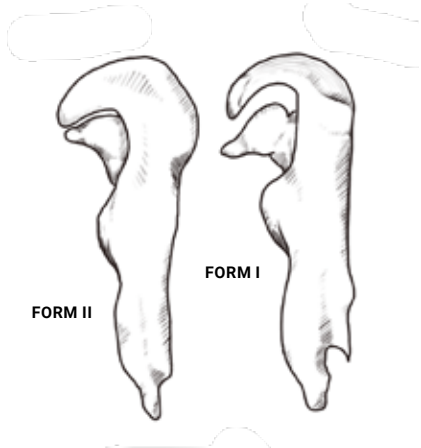
Open areola on the White River crayfish (*P. acutus*)

Crayfish Genera Gonopods

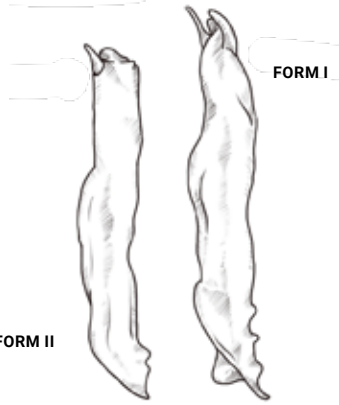
The gonopod is the male reproductive structure on crayfishes. Male crayfishes will moult in and out of mating form (Form I) to a non-mating form (Form II). This is the case with *Faxonius*, *Cambarus*, *Creaserinus*, *Lacunicambarus*, and *Procambarus* species, but is not the case with *Pacifastacus*. In some species (e.g., rusty crayfish and northern clearwater crayfish), it's important to look at the gonopods to confirm identification. In this section, we demonstrate the different forms of gonopods for the genera highlighted in this guide.



Faxonius gonopods directed forward with two narrow and sometimes different length hardened rods



Cambarus gonopods that are sickle-like and directed ventrally at 90 degrees



Procambarus gonopods with more than two short elements and have long setae

Pacifastacus gonopods (distal and lateral views of gonopod). *P. leniusculus* and *P. okanaganesis* does not alternate between forms I & II

Crayfish Profiles

Digger crayfish burrow with a pelleted chimney (P. Hamr)

Historical Records and Nativity of Crayfishes in Canada

Historical records of crayfishes in Canada are rare, and it is therefore difficult to establish their original distribution. The first Canadian freshwater crayfish records come from studies by American scientists from the eastern United States, such as Girard (1852), Ortmann (1906), and Faxon (1914). The first published record in Canada was a big water crayfish (*Cambarus robustus*) collected in 1852* in the Humber River, near Toronto, Canada. This was also the "Type" (first) specimen and locality for this species. The Canadian records in these studies are rare and sparse, however, and thus there is little information prior to mid to late 1900s.

No Canada-wide reviews or guides have been conducted or published with the exception of a report on the conservation status of crayfishes to WWF Canada by Dr. Premek Hamr in 1998. Provincially, Crocker and Barr made a comprehensive distribution and biology review in 1968 in their book "The Handbook of the Crayfishes of Ontario," while Dubé and Desroches did the same in Québec in 2007.

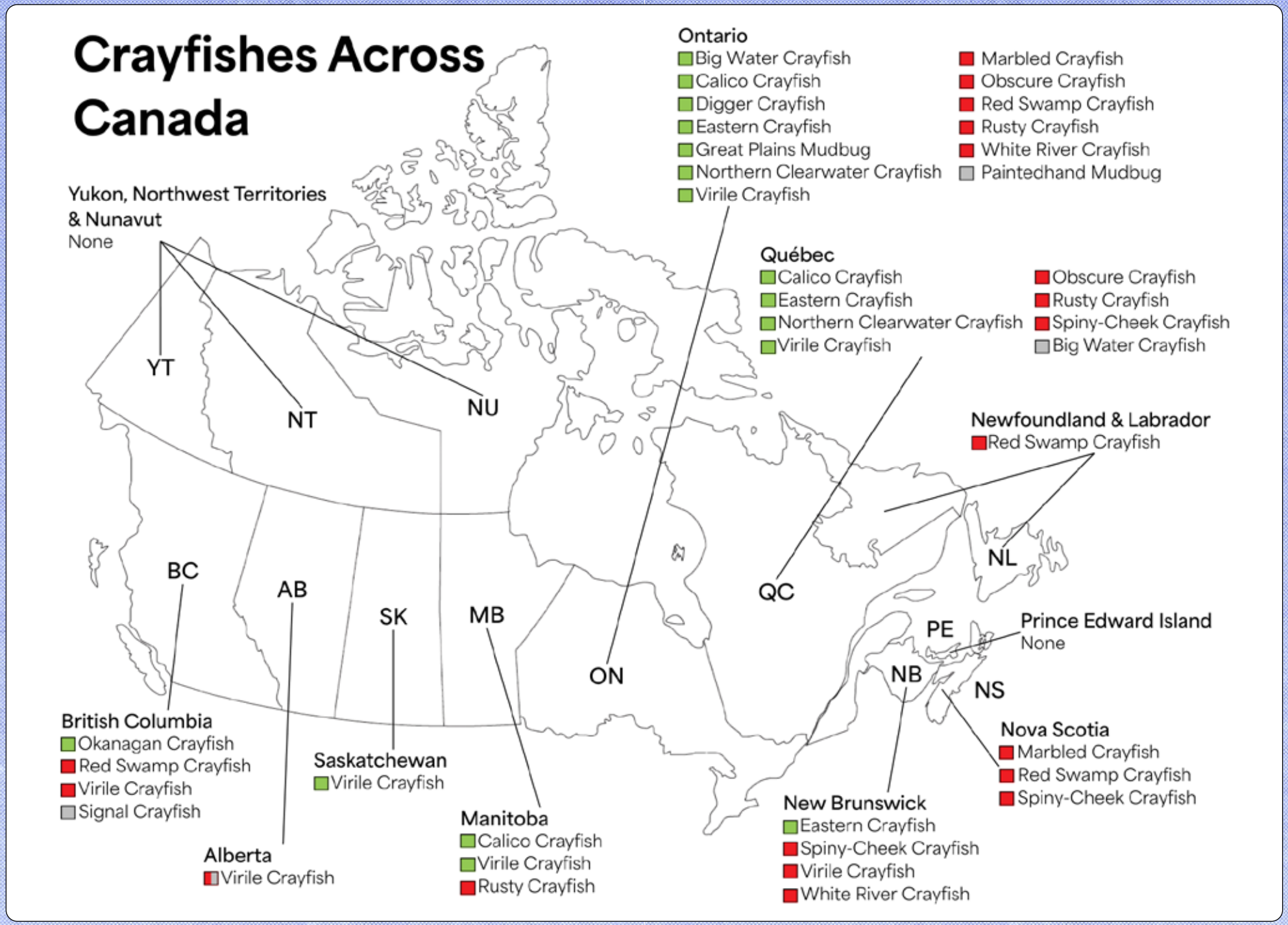
As such, the nativity of crayfishes in Canada is not always clear-cut. For most species, historical records are incomplete, early introductions were undocumented, or natural range expansions blur the line between native and introduced populations. In some cases, a species may be native to parts of Canada while simultaneously invasive elsewhere within the country, or native to North America, but introduced beyond its historical range. We present distribution bars in each profile within this guide that demonstrates the leading knowledge around the nativity of each species.

Please note that the Canadian territories: Northwest Territories, the Yukon, and Nunavut, are not included in the distribution bars as there are currently no confirmed records of crayfishes from these places.

Note: for some invasive species (e.g., common yabby, red swamp crayfish, etc.), we have assumed they could represent an invasion risk to all provinces, despite not all of the provinces having completed risk assessments for these specific species.

*in Girard C. 1852. A revision of North American Astaci. Proclamations of the Academy of Natural Sciences. Philadelphia. 6:87-91.

LEGEND for distribution bars:	
	GREEN: Present and native
	RED: Present and invasive
	GRAY: Unknown nativity
	RED / GRAY: Unknown if a population within the province is native or introduced, but species presents invasiveness in other parts of the province
	ORANGE: Absent and invasive
	WHITE: Not known to exist in the province, invasive risk is also unknown


Crayfishes Across Canada
Ontario
Big Water Crayfish
Calico Crayfish
Digger Crayfish
Eastern Crayfish
Great Plains Mudbug
Northern Clearwater Crayfish
Virile Crayfish
Marbled Crayfish
Obscure Crayfish
Red Swamp Crayfish
Rusty Crayfish
White River Crayfish
Paintedhand Mudbug
Yukon, Northwest Territories & Nunavut
None
YT
NT
NU
Québec
Calico Crayfish
Eastern Crayfish
Northern Clearwater Crayfish
Virile Crayfish
Obscure Crayfish
Rusty Crayfish
Spiny-Cheek Crayfish
Big Water Crayfish
Newfoundland & Labrador
Red Swamp Crayfish
NL
QC
BC
AB
SK
MB
ON
PE
Prince Edward Island
None
NB
NS
British Columbia
Okanagan Crayfish
Red Swamp Crayfish
Virile Crayfish
Signal Crayfish
Saskatchewan
Virile Crayfish
Alberta
Virile Crayfish
Manitoba
Calico Crayfish
Virile Crayfish
Rusty Crayfish
New Brunswick
Eastern Crayfish
Spiny-Cheek Crayfish
Virile Crayfish
White River Crayfish
Nova Scotia
Marbled Crayfish
Red Swamp Crayfish
Spiny-Cheek Crayfish

Australian Red Claw Crayfish

(*Cherax quadricarinatus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution: Native to northern Australia, especially northeastern Queensland, the Northern Territory, and the Gulf of Carpentaria region. Translocated widely due to its popularity in aquaria and aquaculture and has invaded South Africa, Mexico, and others.

Other common names: Red claw crayfish, Queensland red claw crayfish, tropical blue crayfish

French name: Écrevisse Australienne, écrevisse redclaw du Queensland, écrevisse à Pinces Rouges

Family: *Parastacidae*

Similar species: Common yabby

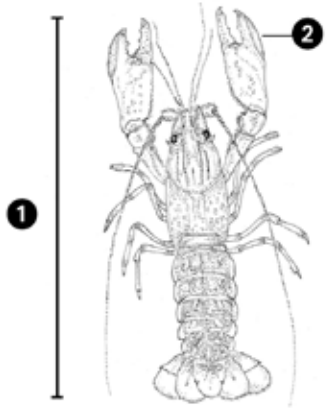
Habitat: It is a tropical crayfish that occupies rivers, streams, lakes, swamps, and irrigation canals, especially with slow-moving waters and high turbidity.

Basic identification:

1. Large-bodied crayfish (20-25 cm) and is typically blue-green to greenish with mottling and reddish/brown highlights.
2. Males have a distinctive bright fleshy red patch on the outer margin of their claws. Whereas females typically lack the red claw patches and often have bluer limbs.

Advanced identification:

3. Possesses four long distinct carinae (ridges) on the dorsal surface of the head, which is a key identifying feature, especially when differentiating from other *Cherax* species.
4. Males lack calcified gonopods typical of species of the *Cambaridae* family.
5. Females lack a seminal receptacle.



A male Australian red claw crayfish with noticeable red patches on its claws (sin-guan, iNaturalist)

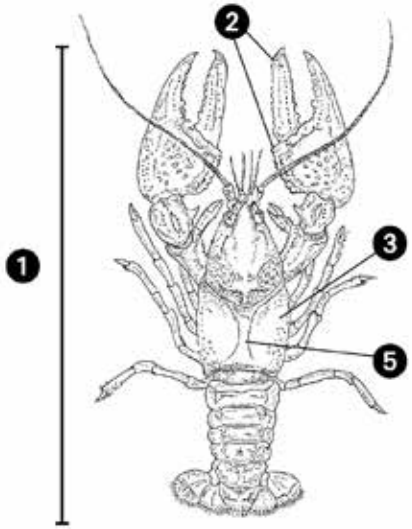
A female Australian red claw crayfish, notice the lack of red claw patches and the relatively wide abdomen (G. Baier, iNaturalist)

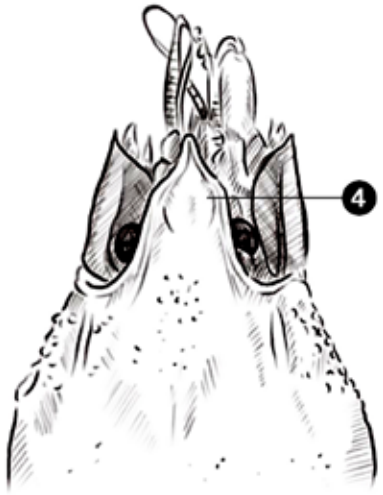
Big Water Crayfish

(*Cambarus robustus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Native to the Great Lakes and Ohio River drainage. It is found throughout southern and central Ontario as well as southern Québec, where its nativity is unknown.
Other common names:	Robust crayfish
French name:	Écrevisse géante
Family:	*Cambaridae*
Similar species:	Eastern crayfish
Habitat:	Found in lakes, rocky streams, and rivers often associated with swift flows, such as rapids, locks, and waterfalls.
Basic identification:	1. Ontario's largest crayfish (6-12 cm). 2. Their claws are large, not curved inwards, with large tubercles (bumps) on fingers and top edge of palm. 3. Overall body colour is greenish-brown.
Advanced identification:	4. The rostrum is more elongated with a single apex with no lateral spines. 5. The areola is open. 6. Their gonopods are sickle-shaped directed ventrally at 90 degrees.





Big water crayfish on a rocky substrate (P. Hamr)

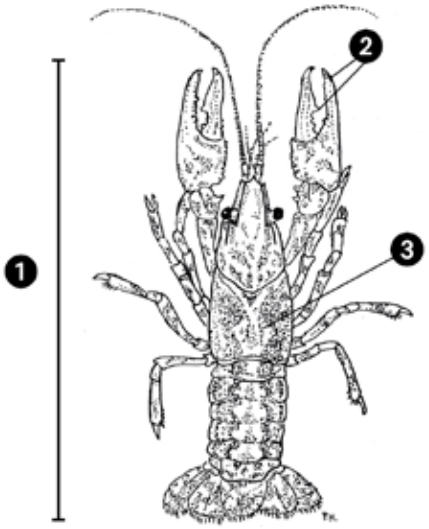
Big water crayfish from the Credit River, Ontario (P. Hamr)

Calico Crayfish

(*Faxonius immunis*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found in southern Manitoba, Ontario, and southern Québec.
Other common names:	Papershell crayfish
French name:	Écrevisse-calicot
Family:	*Cambaridae*
Similar species:	Marbled crayfish, virile crayfish
Habitat:	Found in a wide variety of habitats, ranging from slow-flowing or seasonal streams, marshes, and ditches to fast-flowing, rocky, clear streams. In seasonal waterbodies, it will construct deep burrows that are sometimes capped with chimneys.
Basic identification:	1. Medium-sized crayfish (6-10 cm). 2. Slender pointed claws with a clear notch in the dactyl. 3. Key identification feature is the "hourglass" pattern on carapace and abdominal segments.
Advanced identification:	4. The rostrum is pointed with weak lateral spines. 5. Their gonopods are forward facing but bent.



Calico crayfish from White Duck Lake, Ontario (P. Hamr)

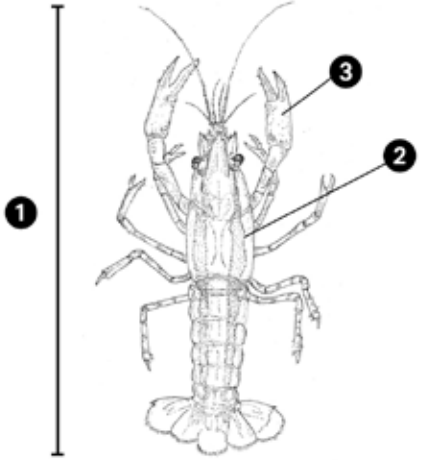
Calico crayfish from Desert Lake, Ontario (salamandersearcher, iNaturalist)

Cambarellus Crayfishes

(*Genus Cambarellus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Native to the southern United States, including the Gulf Coastal Plain and margins of the Lower Mississippi basin and Mexico.
Other common names:	Dwarf crayfishes (*C. patzcuarensis, C. shufeltdtii, C. texanus, C. diminutus,* etc.)
French name:	Écrevisses naines
Family:	*Cambaridae*
Similar species:	All *Procambarus* species in juvenile stages
Habitat:	Found in a wide range of warm-water habitats, including swamps, ditches, sloughs, lakes, ponds, and slow-flowing streams. They prefer habitats with dense aquatic vegetation.
Basic identification:	1. They are small-bodied crayfishes (2-5 cm) and their claws are small with respect to their body size. 2. Colours include brown, gray, green, bluish, but orange and blue morphs are the most popular in the aquarium trade.
Advanced identification:	3. Often confused with *Procambarus* species, the dwarf crayfishes' palm region of their claws are at least ½ the total length of their chelae. While *Procambarus* species' palms are less than ½ their length. In other words, *Cambarellus* chelae have shorter digits, but longer palms, while *Procambarus* species are typically the opposite.



Montezuma dwarf crayfish (*C. montezumae*) (D. Fabela & J. Fabián, iNaturalist)

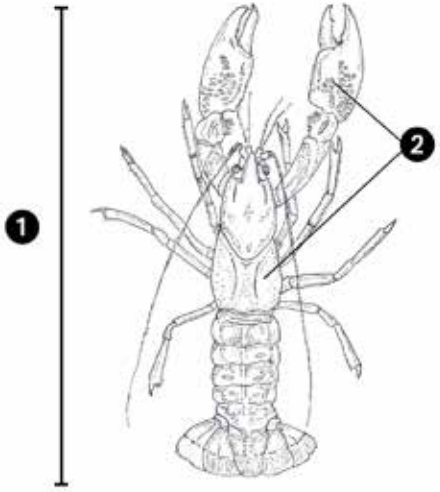
A Zacapu dwarf crayfish *(C. zacapuensis)* (R. Arredondo, iNaturalist)

Common Yabby

(*Cherax destructor*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Native to Australia but has been present in the aquarium trade and aquaculture for many years.
Other common names:	Yabbie, blue yabby, blue-claw yabby
French name:	Yabby
Family:	*Parastacidae*
Similar species:	Australian red claw crayfish, Okanagan crayfish, signal crayfish
Habitat:	Prefers ponds, lakes, slow flowing rivers, and streams. In Australia where it is native, it burrows extensively and can destabilize the shorelines of waterbodies.
Basic identification:	1. Large-bodied crayfish (10-25 cm). 2. Its carapace and claws are smooth, and the claws are broad with long palms and short, stout fingers.
Advanced identification:	3. The rostrum has smooth edges meeting at the apex. 4. Their gonopods and female seminal receptacles are both absent.



Common yabby on the edge of a pond in Tasmania (P. Hamr)

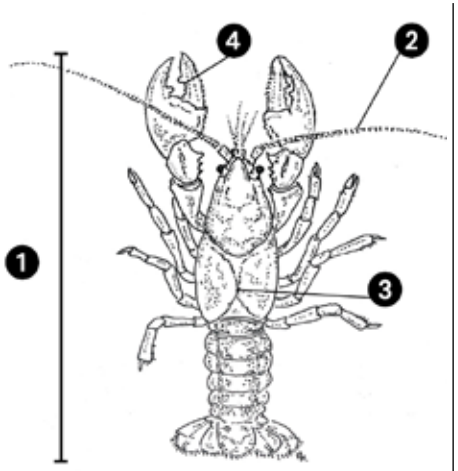
Common yabby in captivity (OpenCage, Wikimedia Commons)

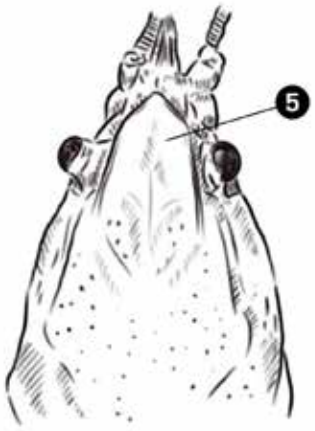
Digger Crayfish

(*Creaserinus fodiens*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found throughout southwestern and southern Ontario from Windsor as far east as Lindsay and north to Severn Sound.
Other common names:	Meadow crayfish, chimney crayfish
French name:	Écrevisse fouisseuse
Family:	*Cambaridae*
Similar species:	Great Plains mudbug, paintedhand mudbug
Habitat:	Semiterrestrial burrower that builds extensive and sometimes very deep burrows far from permanent water with multiple entrances capped with chimneys made of mud pellets. Their habitats include marshes, wetlands, permanent and seasonal streams, ponds, canals, and roadside ditches. They are occasionally found in open water in the spring or during flooding periods.
Basic identification:	1. Small to medium-sized crayfish (6-8 cm). 2. Their antennae are short.
Advanced identification:	3. Their carapace is laterally compressed with a closed areola. 4. Opposable margin of dactyl has an angular notch. 5. The rostrum is bent downwards with a single apex and no lateral spines and the suborbital angle on the front of their carapace is absent. 6. Their gonopods are sickle-shaped.





Digger crayfish from Norval, Ontario (P. Hamr)

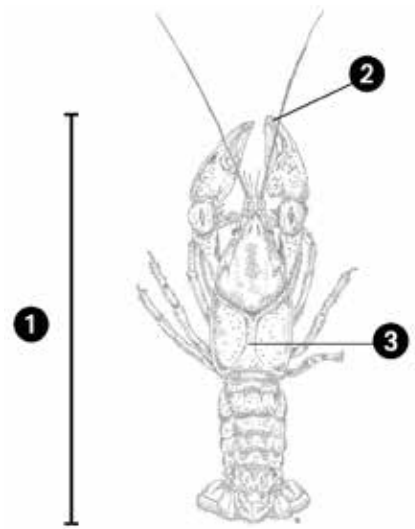
Digger crayfish at the top of its burrow with a chimney (P. Hamr)

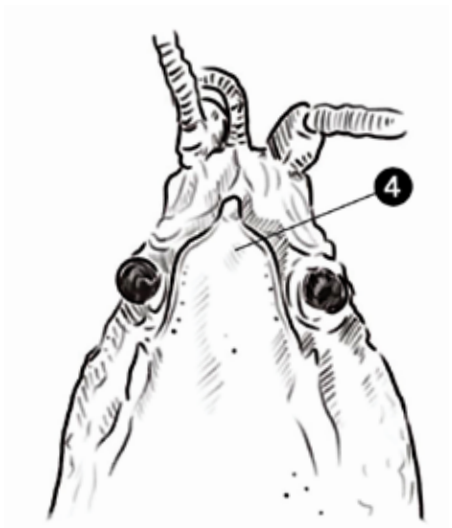
Eastern Crayfish

(*Cambarus bartonii*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found throughout Ontario, as far north as the James Bay drainage. This species is also native to New Brunswick and Québec.
Other common names:	Brook crayfish, common crayfish
French name:	Écrevisse de ruisseau
Family:	*Cambaridae*
Similar species:	Big water crayfish, Great Plains mudbug
Habitat:	Found mostly in rocky streams and rivers as well as northern lakes, often in swift flowing habitats, such as rapids and waterfalls. Given their preferred habitat, they often burrow deep into rocky substrates.
Basic identification:	1. Small to medium-sized crayfish (6-8 cm). 2. Their claws are smooth with its finger tips curved inwards, which is key to distinguishing it from the big water crayfish.
Advanced identification:	3. Its areola is open. 4. It has a relatively short rostrum with single apex and no lateral spines. 5. Their gonopods are sickle-shaped and directed ventrally at 90 degrees.





Eastern crayfish found in Cavan Creek, Bethany, Ontario (P. Hamr)

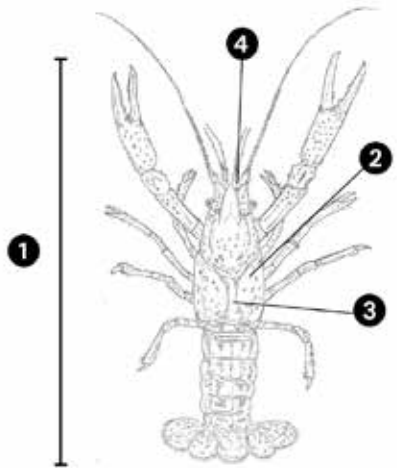
Eastern crayfish from Cavan Creek, Ontario (P. Hamr)

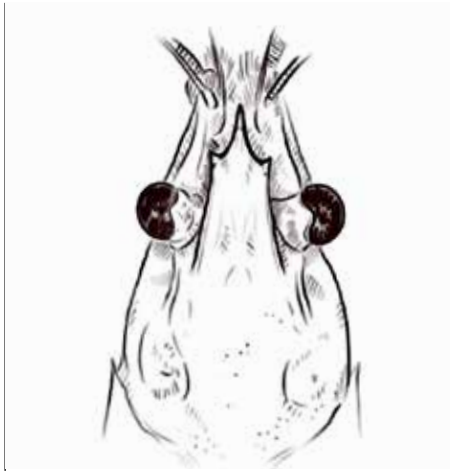
Everglades Crayfish

(*Procambarus alleni*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Native to Florida and has been introduced to Tennessee and Virginia. It is presently not found in the wild in Canada, but has been popular in the aquarium trade for many years.
Other common names:	Electric blue crayfish
French name:	Écrevisse de Floride, écrevisse bleue, écrevisse des Everglades
Family:	*Cambaridae*
Similar species:	Red swamp crayfish, White River crayfish
Habitat:	Tolerant of a wide range of seasonal and permanent wetlands, marshes, flood plains, roadside ditches, and small streams. It favours waterbodies that are still/sluggish, or shoreline areas that periodically dry out due to seasonal droughts, during which time, it burrows.
Basic identification:	1. Medium to large-bodied crayfish (6-12 cm). 2. Cultured specimens of the Everglades crayfish are blue, but wild specimens can be blue, brown, or red.
Advanced identification:	3. Its areola, like the White River crayfish, is open. 4. They have characteristic dark, circular areas, referred to as “headlights.” These headlights are found at the base of both antennal glands. 5. Their gonopods have a single terminal curved element and long setae.





Everglades crayfish in captivity (C. Joel, Wikimedia Commons)

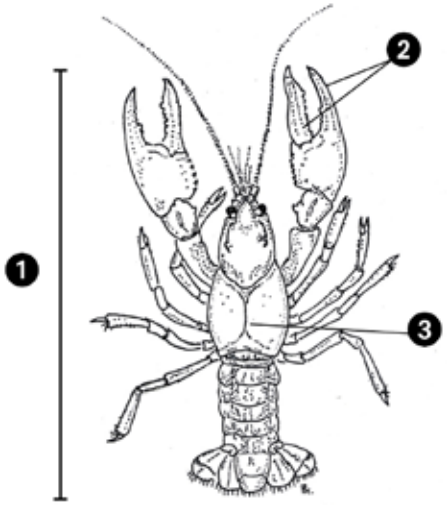
Everglades crayfish in captivity (N. Daly, Wikimedia commons)

Great Plains Mudbug

(*Lacunicambarus nebrascensis*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found in southwestern Ontario as well as the Bruce and Niagara peninsulas.
Other common names:	Devil crayfish/crawfish
French name:	Écrevisse du Nebraska
Family:	*Cambaridae*
Similar species:	Digger crayfish, paintedhand mudbug
Habitat:	Semiterrestrial burrower that builds extensive and sometimes very deep burrows with multiple entrances often capped with chimneys made of mud pellets. Their habitats include marshes, wetlands, wet meadows, ponds, canals, and roadside ditches.
Basic identification:	1. Large-bodied crayfish (8-12 cm) and are usually greenish brown or brown. 2. Their claws have tubercles (bumps) forming two rows.
Advanced identification:	3. Its areola is closed. 4. The rostrum is deep with a single apex and no lateral spines. 5. Its facial structure is identified by its suborbital angle that is acute. 6. Their gonopods are sickle shaped.



Great Plains mudbug from Long Point, Ontario (J. Mitchell)

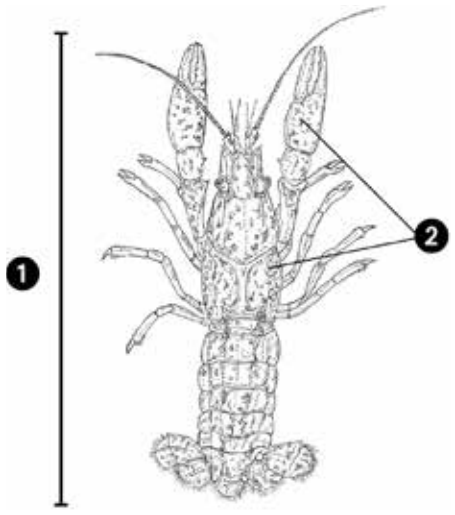
Great Plains mudbug from Lake Ontario (S. Brinker, iNaturalist)

Marbled Crayfish

(*Procambarus virginalis*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	An asexually reproducing species that originated in the aquarium pet trade and has established in the wild in several Asian and European countries as well as the island of Madagascar. It has been introduced and observed to be reproducing in the wild in Burlington, Ontario, and Yarmouth, Nova Scotia.
Other common names:	Marmorkrebs
French name:	Écrevisse marbrée
Family:	*Cambaridae*
Similar species:	Calico crayfish, virile crayfish, all other *Procambarus* species
Habitat:	Found in a variety of habitats, including ponds, lakes, rivers, streams, canals, and ditches. Where it is found, it creates cryptic burrows without chimneys.
Basic identification:	1. Small-bodied crayfish (4-7 cm). 2. They have a characteristic marbling pattern on their carapace, abdomen, and small elongated claws.
Advanced identification:	3. The rostrum is elongated with smooth sides terminating in a single point or apex. 4. Only asexually reproducing females are present in the population, so check specimens for a seminal receptacle.



Marbled crayfish with eggs from Burlington, Ontario (P. Hamr)

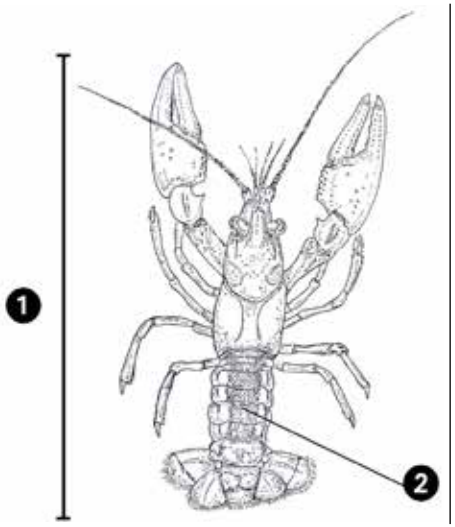
Marbled crayfish captured from Burlington, Ontario (P. Hamr)

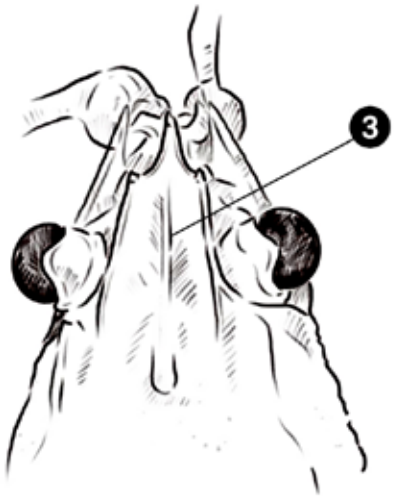
Northern Clearwater Crayfish

(*Faxonius propinquus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found throughout Ontario and Québec, including in the far-north to the James Bay drainage. Additionally, they are found in northwest Ontario, which may represent an invaded range.
Other common names:	None
French name:	Écrevisse à rostre caréné
Family:	*Cambaridae*
Similar species:	Obscure crayfish, rusty crayfish
Habitat:	Often found in rocky or soft substrates in streams, rivers, and lakes.
Basic identification:	1. Small to medium-sized crayfish (5-7 cm). 2. A distinct characteristic is the dark stripe found on the abdominal segments of its tail.
Advanced identification:	3. The rostrum is three-pronged with straight sides and a median carina. The presence of the carina is key in differentiating this species from rusty crayfish (*F. rusticus*) as the rusty crayfish lacks a carina. However, the two species are known to hybridize. If a carina and rusty patches are both present, you most likely have a hybrid (*F. propinquus* x *rusticus*). 4. Their gonopods have two forward facing elements of equal length.





Northern clearwater crayfish from Balsam Lake, Ontario (P. Hamr)

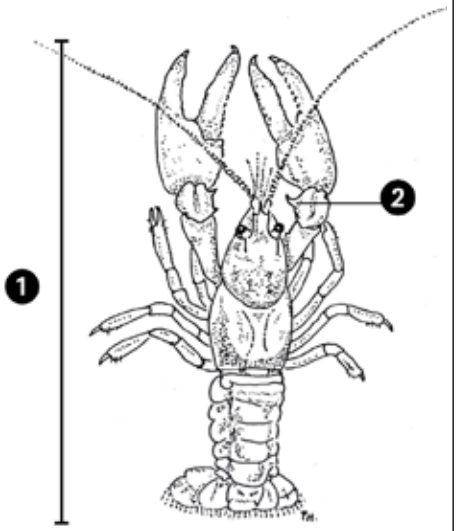
Northern clearwater crayfish from Silent Lake, Ontario (P. Hamr)

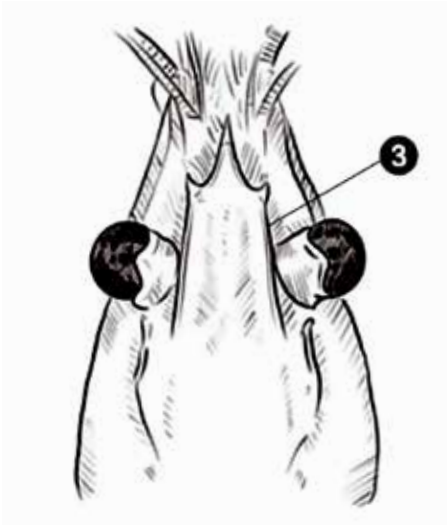
Obscure Crayfish

(*Faxonius obscurus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found throughout southern and central Ontario as well as western Québec. Native to the northeastern United States, specifically the upper Ohio River drainage.
Other common names:	Allegheny crayfish
French name:	Écrevisse obscure
Family:	*Cambaridae*
Similar species:	Northern clearwater crayfish, rusty crayfish
Habitat:	Prefers rivers, lakes, and streams and are generally found amongst rocky substrates.
Basic identification:	1. Small-bodied crayfish (4-8 cm). 2. They have strong, forward-facing tubercles (bumps) on their forearm portion of their claw arms.
Advanced identification:	3. The rostrum has straight sides without a carina. 4. Their gonopods are straight with elements of equal length, but with a distinct shoulder at the base of a projection.





An obscure crayfish from Aylen Lake, Ontario (P. Hamr)

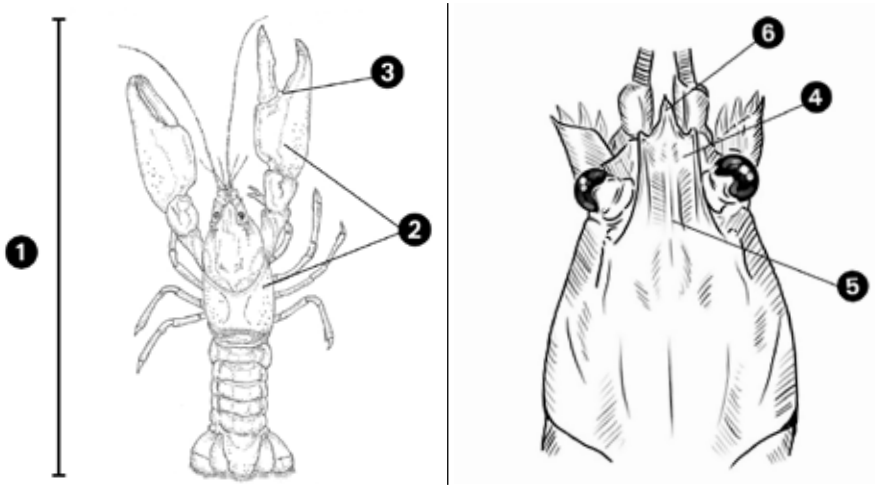
An obscure crayfish from Aylen Lake, Ontario (P. Hamr)

Okanagan Crayfish

(*Pacifastacus okanaganesis*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Lower mainland of British Columbia, Okanagan, and Thompson Plateaus. It is also found in adjacent Washington State. Given that the species was only classified in 2025, its potential invasiveness is unknown at this time.
Other common names:	Signal crayfish (this species is newly discovered and previous to 2025 was thought to be the signal crayfish)
French name:	Écrevisse de l'Okanagan
Family:	*Astacidae*
Similar species:	Common yabby, signal crayfish
Habitat:	Prefers the rocky and soft substrates of streams, rivers, lakes, reservoirs, and ponds.
Basic identification:	1. Medium-bodied crayfish (referenced to be smaller than signal crayfish). 2. Olive-brown to red colouration. 3. Absent or reduced white mark at joint of dactyl.
Advanced identification:	4. Rostrum is not as spiny/pointed as that on the signal crayfish. 5. The base and anterior of the rostrum is broad with a subtle median carina. 6. The tip of the rostrum converges strongly, separated by a single pair of weak marginal tubercles or spines.



Okanagan crayfish in amongst some grass (T. Ehlers, iNaturalist)

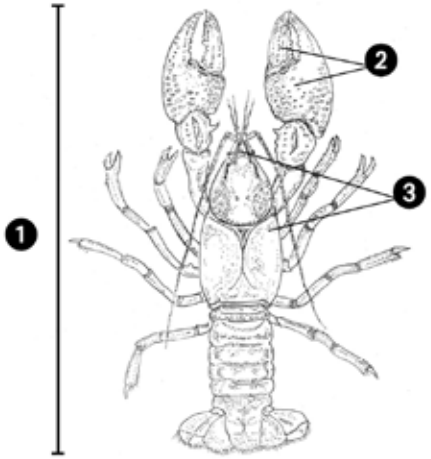
Okanagan crayfish from the Columbia River, British Columbia (S. Gilmore, iNaturalist)

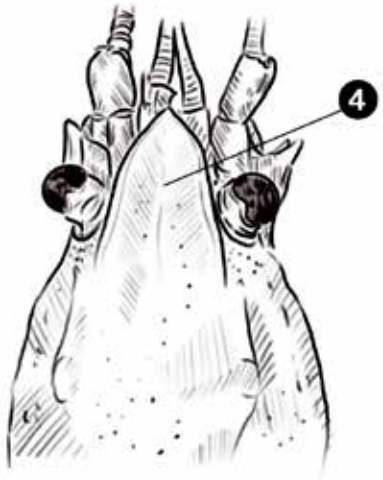
Paintedhand Mudbug

(*Lacunicambarus polychromatus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Found only in far southwestern Ontario in the Detroit River catchment in Windsor. First detected via iNaturalist in 2016.
Other common names:	Paintedhand crayfish, painted mudbug
French name:	Écrevisse des bourbiers à mains peintes
Family:	*Cambaridae*
Similar species:	Digger crayfish, Great Plains mudbug
Habitat:	Semiterrestrial burrower that builds extensive and sometimes very deep burrows with multiple entrances often capped with chimneys made of mud pellets. Their habitats include wetlands, wet meadows, stream banks, and roadside ditches.
Basic identification:	1. Medium-bodied crayfish (8-10 cm). 2. Their claws have numerous round tubercles (bumps) that do not form a row and have characteristic orange-blue hues. 3. The colour of the body is greenish and has characteristic red or orange highlights on rostrum.
Advanced identification:	4. The rostrum has a single apex and no lateral spines and it has an acute (less than 90 degrees) suborbital angle. 5. Their gonopods are sickle shaped.





A paintedhand mudbug from Windsor, Ontario (C. D. Jones, MNR)

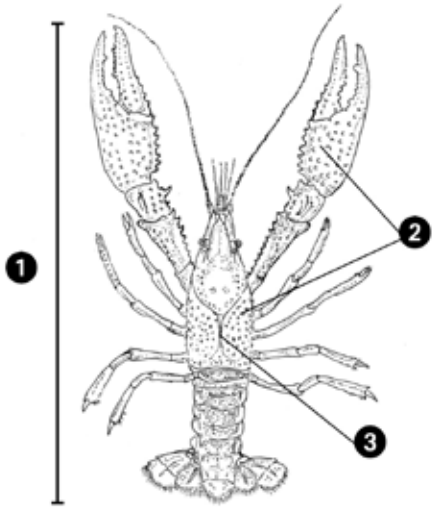
A paintedhand mudbug from Adrian, Michigan (mdraud, iNaturalist)

Red Swamp Crayfish

(*Procambarus clarkii*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	A global invader that has been introduced to Europe, Asia, Africa, and large portions of the United States. It has been reported from the wild in British Columbia, Ontario, Nova Scotia, as well as a single record from Newfoundland.
Other common names:	Louisiana red crayfish/crawfish
French name:	Écrevisses rouges des marais
Family:	*Cambaridae*
Similar species:	Everglades crayfish, White River crayfish
Habitat:	Prefers swamps, ditches, ponds, lakes, and slow flowing streams. It constructs extensive burrows without chimneys that can destabilize the shorelines of waterbodies, similar to the White River crayfish.
Basic identification:	1. Large-bodied crayfish (7-25 cm) that typically has a reddish body and claws. 2. Its body and claws are covered by short light-coloured tubercles (bumps) and their claws are long and narrow.
Advanced identification:	3. This species has a closed areola, whereas its lookalike, the White River crayfish, has an open areola. 4. Their gonopods have two short terminal elements: one pointed and one blade-like.



Red swamp crayfish dorsal view with closed areola (M. Glon, @mgglon)

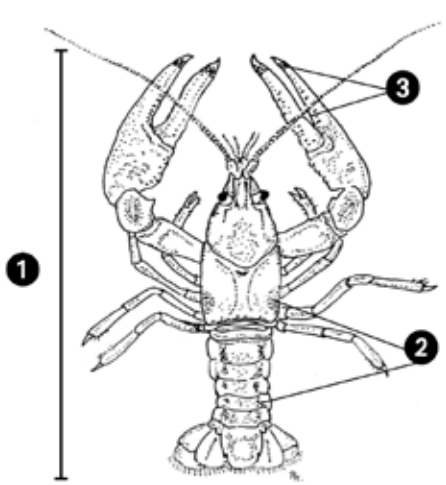
Red swamp crayfish from Sonoma County, California, United States (D. Loarie, iNaturalist)

Rusty Crayfish

(*Faxonius rusticus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Suspected to have been introduced from the state of Ohio, the rusty crayfish is now found throughout southeastern Manitoba, Ontario, and southern Québec.
Other common names:	Rusty (shorthand)
French name:	Écrevisse à taches rouges
Family:	*Cambaridae*
Similar species:	Northern clearwater crayfish, obscure crayfish
Habitat:	Commonly found in rivers, streams, and lakes. They prefer rocky substrates but can still be found in soft substrate environments.
Basic identification:	1. Medium-sized crayfish (5-10 cm). 2. Its defining characteristics are the rusty spots on the sides of its carapace as well as the rusty stripes on its abdomen. 3. Their claws are tear-drop shaped when closed and typically possess black bands, including orange tips.
Advanced identification:	4. The rostrum is pinched and without a carina. The absence of the carina is key in differentiating this species from the northern clearwater crayfish (*F. propinquus*) as the northern clearwater crayfish has a carina. However, the two species are known to hybridize. If a carina and rusty patches are both present, you most likely have a hybrid (*F. propinquus x rusticus*). 5. Their gonopods are forward facing with two elements of clearly unequal length.



Rusty crayfish in a bucket (P. Hamr)

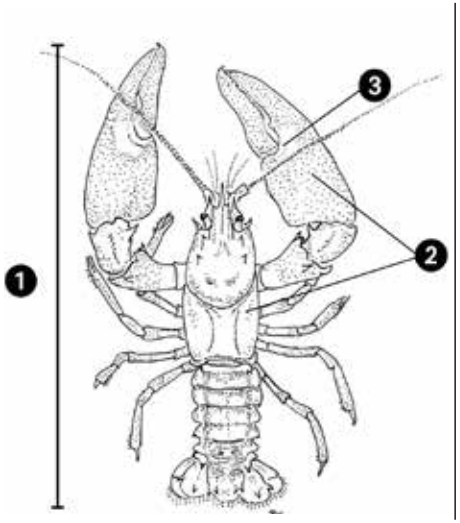
Rusty crayfish from Lake Simcoe, Ontario (P. Hamr)

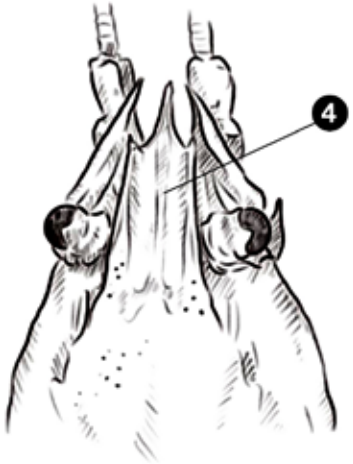
Signal Crayfish

(*Pacifastacus leniusculus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Once thought to be native to British Columbia, it is now unknown given research by Larson et al., 2012. It is, however, invasive to Europe where it is a prolific invader and has displaced native species. It was recently detected in a lake in Minnesota, representing the first record of this species east of the Rockies.
Other common names:	American signal crayfish, Pacific crayfish
French name:	Écrevisse signal, écrevisse de Californie
Family:	*Astacidae*
Similar species:	Common yabby, Okanagan crayfish
Habitat:	Lives in streams, lakes, reservoirs, and ponds in both rocky and soft substrates.
Basic identification:	1. Large-bodied crayfish (12-16 cm). 2. Its carapace and claws are smooth, without the presence of noticeable tubercles (bumps). 3. It has distinctive white patches on its claws near the base of the dactyl.
Advanced identification:	4. The rostrum is deep, three-pronged, and straight-sided with a discernible carina and sharp pointed apex. 5. Their gonopods are tubular, not alternating in form, while females lack a seminal receptacle.





Female signal crayfish from the Iller River, southern Germany (Astacoides)

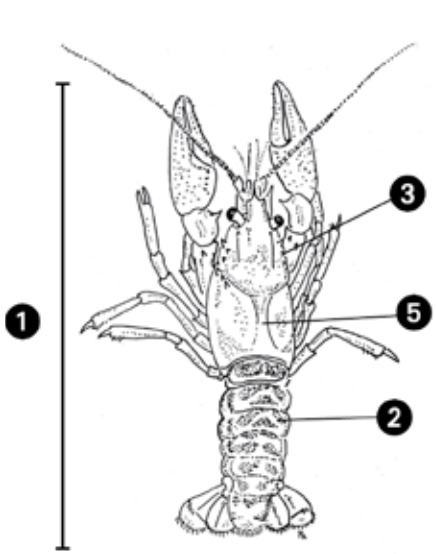
Male signal crayfish with a noticeable white patch on its chelae near the dactyl (P. Hamr)

Spiny-Cheek Crayfish

(*Faxonius limosus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	It has expanded into, or was introduced to, New Brunswick and Québec from the United States. It was also introduced to Nova Scotia (Cape Breton) and has been found to be expanding into the St. Lawrence and Ottawa River drainages.
Other common names:	American crayfish
French name:	Écrevisse à épines, écrevisse Américaine
Family:	*Cambaridae*
Similar species:	Rusty crayfish, virile crayfish
Habitat:	Known to occur in lakes, rivers, and streams and it can be found on both soft and rocky substrates.
Basic identification:	1. Medium-sized crayfish (6-12 cm). 2. It has red-brown stripes on its abdominal segments. 3. Has distinct 'spines' on its cheek, which is key for differentiating from lookalike species.
Advanced identification:	4. The rostrum is three-pronged. 5. Its areola is open. 6. Their gonopods are forward facing.



Spiny-cheek crayfish in a silty substrate (P. Kozak, natur.cuni.cz)

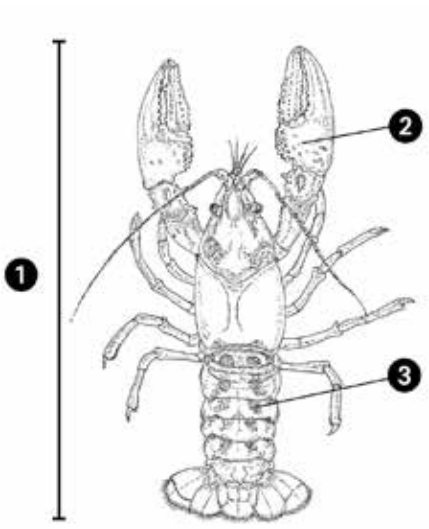
Spiny-cheek crayfish from the Ottawa River, Ontario (JM. Vallières, iNaturalist)

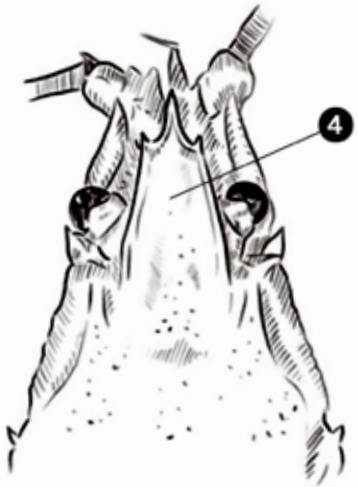
Virile Crayfish

(*Faxonius virilis*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	Most widespread species in Canada, where it has both native and invasive ranges. Some literature suggests it may have a native range in Alberta, but it is uncertain. It is invasive in Europe.
Other common names:	Northern crayfish (not to be confused with the northern clearwater crayfish)
French name:	Écrevisse bleue
Family:	*Cambaridae*
Similar species:	Calico crayfish, marbled crayfish
Habitat:	Commonly found in streams, rivers, ponds, and lakes, as well as slower flowing habitats like swamps, alongside aquatic vegetation.
Basic identification:	1. Medium to large-bodied crayfish (8-11 cm). 2. Their claws are green/blue with prominent yellow bumps. 3. They possess a double spot colour pattern on their abdominal segments.
Advanced identification:	4. The rostrum is three-pronged without a carina. 5. Their gonopods have two, slightly bent, forward facing elements of unequal length.





Virile crayfish from Lake Simcoe, Ontario (P. Hamr)

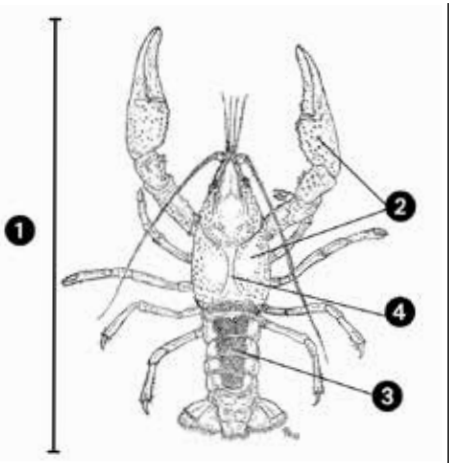
Virile crayfish in a container with noticeable rows of double spots down its abdomen and yellow tubercles on its claws (handy2, iNaturalist)

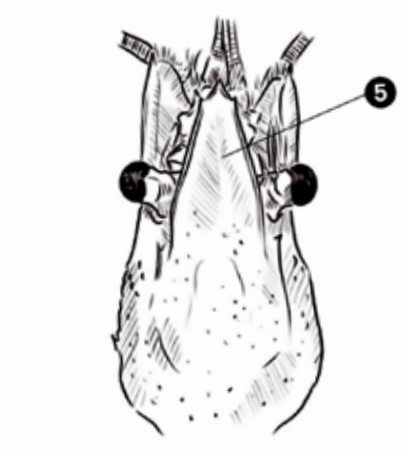
White River Crayfish

(*Procambarus acutus*)

BC	AB	SK	MB	ON	QC	NL	NB	PE	NS

Distribution:	It has multiple established populations in Ontario, including Pelee Island, Six Mile Lake, and a pond in Thornhill. It has also been reported from one lake in New Brunswick.
Other common names:	White River crawfish, southern White River crayfish (*Procambarus zonangulus*; morphologically indistinguishable)
French name:	Écrevisse de Louisiane
Family:	*Cambaridae*
Similar species:	Everglades crayfish, red swamp crayfish
Habitat:	Prefers canals, ponds, lakes, rivers, and streams, including both soft and rocky substrates. They construct large burrows, without chimneys, which can destabilize the shorelines of waterbodies, like the red swamp crayfish.
Basic identification:	1. Large-bodied crayfish (7-16 cm). 2. Their carapace and long, narrow claws are covered by short dark tubercles (bumps). 3. Their colour varies from dark red to beige-brown and they possess a dark wedge-shaped stripe present on their abdomen.
Advanced identification:	4. Its areola is open, whereas the red swamp crayfish has a closed areola. 5. It possesses a triangular rostrum tapering anteriorly to a single point. 6. Their gonopods have four short terminal elements.





White River crayfish from Port Severn, Ontario (B. Schryer)

White River crayfish (E. Concari, iNaturalist)

Sampling for Crayfishes

Monitoring for marbled crayfish in Burlington, Ontario. Background: Dr. Premek Hamr, foreground: Brook Schryer (J. Berthelette, OFAH Foundation)

How to Sample for Crayfishes

Site Inspection & Selection

When determining where to look for crayfishes, sites should be selected according to habitat suitability. Shallower areas with natural covers, such as rocks and logs are the best habitat for open water species, such as *Faxonius* and *Cambarus* crayfishes. When surveying for introduced species, you should consider where releases or introductions are likely to occur. For example, areas frequented by anglers (popular fishing spots, public boat ramps, picnic areas, marinas etc.) should be targeted as they have the highest probability of harbouring crayfishes introduced through bait fishing (e.g., bait bucket releases).

Prior to sampling at each site, you should inspect the shorelines for crayfish burrows. Burrows appear as circular openings at or above the water line. Burrows will be more common where the substrate has few natural shelters, such as rocks or submerged logs. Most crayfish species in Canada construct their burrows near or in open water, so in the circumstance that you find one far from water (it will most likely be capped with a pelleted chimney), it will be one of the three burrowing native species that are native and localized to Ontario.

It is recommended that a minimum of 20 metres of shoreline is surveyed at each site to determine the presence of burrows. Once this is done, you should put in the effort to sample all the various habitats at a given site (e.g., riffles, pools, submerged vegetation, etc.). Each site should also be inspected for crayfishes from shore as they can often be seen foraging in the open during the day or resting at the entrance of their burrows. Often, if you're surveying a rocky shoreline, their claws or antennae can be seen sticking out from beneath or in-between rocks.

Materials Needed to Sample

- Valid conservation or sports fishing licence and/or Scientific Collector's Permit (contact your local government office for details)
- Notebook, pencil (to record carapace length, water temperature, date, time, etc.)
- Vernier calipers (to measure carapace)
- Waders, rubber boots, and water shoes
- Bucket(s) with lid(s)
- Flat bottomed dip net and a large/ aquarium net
- Minnow trap with enlarged opening to 40 mm and bait to entice crayfishes
- Shovel, spade, or garden trowel (for burrowing crayfish)

Optional materials (for ecological life history measurements)

- Plastic covered metal wire hoop of a diameter of 75 cm
- Thermometer or electronic temperature probe
- Velocity, pH, oxygen, and conductivity electronic probes
- Sample jars
- 80% ethanol for reserving specimens

In-Water Sampling: Shallow Sites

When monitoring for crayfishes, do your best to minimize sediment disturbance/turbidity as this will make visual sampling of crayfishes nearly impossible. To minimize this, it is always best to work in the upstream direction if you are in a river or stream. Crayfishes can be collected by hand or by using a flat bottomed dip net or aquarium net (for small crayfishes in the shallows).

If crayfishes are seen in the open, they should be approached from downstream and caught by hand or scooped with a dip net. When catching crayfishes by hand, they should be approached slowly from behind, if possible, then caught rapidly between the thumb and index fingers of the preferred hand. Since crayfishes prefer to hide under structure on the substrate, rocks and logs are the best targets for sampling. Lifting rocks must be done slowly and carefully to avoid accidentally crushing crayfishes or other organisms. Rocks with crayfish burrows can sometimes be identified as they have semicircular areas of excavated gravel or sand along one margin.

Most crayfishes prefer large flat rocks as they generally make the most desirable shelters. The rock should be lifted slowly if it's small, or tipped onto its upstream edge, if it's large. A dip net should be placed downstream of the rock you are sampling, especially in areas of moderate to high flow. Crayfishes tend to either remain in the excavation under the rock or escape downstream along the rock's lateral edges. Once the sediment has settled, the excavation under the rock can be inspected and the crayfish can be picked up by hand or scooped with a dip or aquarium net. Young of the year crayfish can typically be found from late May onwards, while this may be later in more northern latitudes. They are usually found near shore, in shallow water (depths less than 10 cm) and can be collected by carefully and slowly lifting small rocks. Once the sediment settles, the small crayfishes can be collected using an aquarium net placed behind them and scooping them up or slowly directing them into the net with your free hand. They usually measure from one to two cm in total length and can be difficult to see.

If no rocks or logs are present, crayfishes may be burrowed directly into the soft substrate or hide in submerged vegetation. In such habitats, crayfishes have to be excavated from burrows or caught using a dip net by sweeping through the submerged vegetation, a method called the kick and sweep.

How to catch crayfish by hand (P. Hamr)

In-Water Sampling: Deeper Sites

In deeper sites where the water depth is too great to allow for hand sampling in boots or waders, snorkelling can be employed, or passive minnow traps can be set. Alternatively, a long-handled dip net can also be used from shore but this usually yields limited results.

If you have decided to deploy baited traps, two or three traps should be set per sampling area. Catch per unit effort is best when traps are set in rocky areas with good cover. Types of baits can include liver, fish, fish flavoured cat food, or hot dogs (most economical). The catch can be reduced when traps are set in areas of little or no cover and when fishes are able to enter the traps. These baited traps can be set during the day or at night and should be left for a minimum of 30 minutes, or up to 24 hours. Overnight trapping is recommended if time permits and traps should be checked periodically.

All crayfishes that are captured should be identified to species, sexed, and classified according to mating and moulting condition, if possible. Invasive crayfishes should be photographed and reported.

Freshly moulted crayfishes are clean and feel soft to the touch as their exoskeletons have not fully hardened. CPL of each crayfish should be measured to the nearest millimetre using a Vernier caliper. Several reference photographs can be taken together with location coordinates.

Snorkelling technique for crayfish sampling (J. Hamr)

Species Key

Staff photographing red swamp crayfish in Tilbury, Ontario. Left: Jofina Victor, right: Brook Schryer (M. Daniels)

Species Key to Crayfishes in Canada

If this is your first time using a species key, you will start at the top at 1a, or beginning of the list. Check to see if the description applies to your organism. Based on your answer, if yes, it will give you an answer, or direct you to the next step. This will continue this way until you reach an endpoint, or name of the organism.

1a Only females present in population; distinct marbling pattern; small chelae relative to body size ..... ***P. virginalis***

1b Males present in population with first and second pleopods modified to gonopods **2**

2a Males lacking ischial hooks on second through fourth pereopods; tip of gonopod rolled into a cylinder (never demonstrating cyclic dimorphism); females lacking seminal receptacle **3**

2b Males with ischial hooks on second through fourth pereopods; tip of male gonopod complex demonstrating cyclic dimorphism; females with seminal receptacle **4**

3a Prominent white mark at the joint of the dactyl and propodus ..... ***P. leniusculus***

3b Prominent white mark at the joint of the dactyl and propodus absent or reduced; palm of chelae long, rostrum shorter than in *P. leniusculus* ..... ***P. okanaganensis***

4a Rostrum with strong lateral spines, male gonopods directed forward **11**

4b Rostrum with weak or absent lateral spines, gonopod elements directed at 90 degrees or short **5**

5a Male gonopods sickle-like, directed ventrally at 90 degrees **7**

5b Male gonopods with more than two short elements, frequently with long setae **6**

6a Areola open ..... ***P. acutus***

6b Areola closed ..... ***P. clarkii***

7a Areola open **10**

7b Areola closed **8**

8a Opposable margin of dactyl of chelae with angular notch in proximal half; suborbital angle on front of carapace absent; carapace laterally compressed; antennae short ..... ***C. fodiens***

8b Opposable margin of dactyl of chelae without angular notch in proximal half; suborbital angle on front of carapace present **9**

9a Palm of chelae with few tubercles; uniform brown-green colour pattern ..... ***L. nebrascensis***

9b Palm of chelae with numerous tubercles; colour pattern with orange-red and blue highlights on chelae ..... ***L. polychromatus***

10a Inner margin of palm of chelae with one row of tubercles; tips of chelae slightly incurved ..... ***C. bartonii***

10b Inner margin of palm of chelae with two rows of tubercles; chelae flatter; not incurved at tip ..... ***C. robustus***

11a With central carina/ridge on rostrum. ..... ***F. propinquus***

11b Without central carina/ridge on rostrum **12**

12a Dactyl of chelae with notch at base; setae on base of immovable finger of chelae; distinct "hourglass" pattern dorsally on carapace and abdomen; gonopods weakly curved ventrally but longer and narrower than in *Cambarus* ..... ***F. immunis***

12b Dactyl of chelae without notch at base **13**

13a With numerous prominent spines on carapace under orbit and in front of cervical groove ..... ***F. limosus***

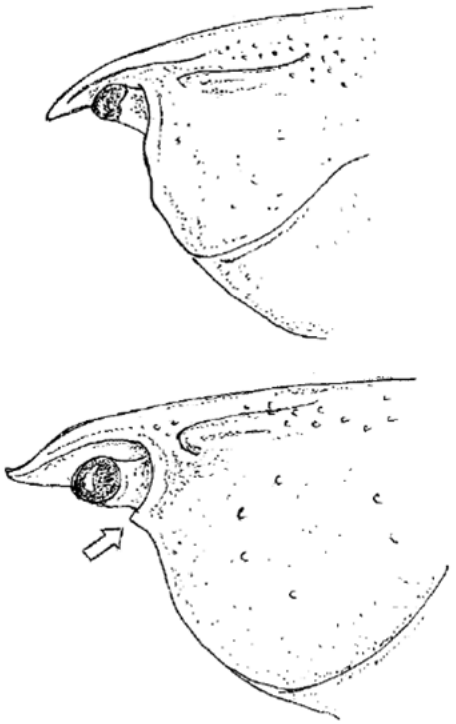
13b Without row of spines in front of cervical groove **14**

14a Rostrum sides concave/pinched; distinct lateral rusty spots on side of carapace; fingers of chelae long and narrow; gonopods straight and clearly of unequal length ..... ***F. rusticus***

14b Rostrum sides straight **15**

15a Rostrum sides straight; chelae broad and tuberculate; carapace without rusty spots; abdomen with pattern of double row of spots; gonopods tips slightly bent and clearly of unequal length ..... ***F. virilis***

15b Rostrum sides straight; no lateral spots on side of carapace or abdomen; chelae smooth; gonopods tips of equal length with distinct right-angled shoulder on anterior margin ..... ***F. obscurus***



Comparing the suborbital structure of the digger crayfish (top) to the Great Plains mudbug and paintedhand mudbug (bottom) (P. Hamr)

Reporting Methods

Provincial and Territorial Reporting Methods

Red swamp crayfish captured in a minnow trap (B. Schryer)

Alberta

Program/Agency	Reporting Method	Details/Link/Contact	Notes
EDDMapS.org	App or website	EDDMapS app www.abinvasives.ca/take-action/	General invasive species reporting and information
AIS Hotline	Phone hotline or email	1-855-336-BOAT (2628) epa.ais@gov.ab.ca	-
iNaturalist	App or website	iNaturalist app or website iNaturalist.org	Project called "Aquatic Invasive Species in Alberta"

British Columbia

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Report Invasive App	Mobile app	Available on Android and iOS	Reporting app that enables users to upload observations to a provincially monitored app
Government of British Columbia	Online Form	https://forms.gov.bc.ca/industry/report-an-invasive-species/	-

Manitoba

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Stop AIS	Email, form, or phone	www.manitoba.ca/stopais/ais_reporting.html 1-877-867-2470 AIS@gov.mb.ca	General invasive species reporting

New Brunswick

Program/Agency	Reporting Method	Details/Link/Contact	Notes
iNaturalist	App or Website	iNaturalist app or website	New Brunswick Invasive Species Council (NBISC) and partners receive notifications
New Brunswick Invasive Species Council	Website form or email	www.nbinvasives.ca/report-an-invasive-species Info@nb.invasives.ca	Email can be used for reports or for questions regarding invasives

Newfoundland and Labrador

Program/Agency	Reporting Method	Details/Link/Contact	Notes
DFO	Phone or email	1-866-759-6600 DFO.NLAIS-EAETNL.MPO@dfo-mpo.gc.ca	-
Government of Newfoundland and Labrador	Phone	www.gov.nl.ca/gs/department/contact/#locations	Website provides users with means to contact local Government Service Centres to make a report

Northwest Territories

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Environment and Climate Change	Email	Wildlifeobs@gov.nt.ca	General inquiries and reporting
NWT Council on Invasive Species, Pests, and Pathogens	Online form	www.nwtcispp.ca/report-species/report-species	Photo, sound recording, and video can be uploaded to make the report. At least one must be uploaded to make the report. GPS coordinates required
iNaturalist	App or website	iNaturalist app or www.iNaturalist.org	Observations are reviewed by NWT Council

Nova Scotia

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Nova Scotia Invasive Species Council	Online form	www.nsinvasives.ca/report-an-invasive-species/	Users can upload photos for verification
iNaturalist	App or website	iNaturalist app or www.iNaturalist.org	Project is called “Invasive Species in Nova Scotia”

Nunavut

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Local Conservation Officer	Phone	Numbers for each local office available at: www.gov.nu.ca/en/department-environment/contact-environment	Advised to contact their local conservation officer. Contact info can be found on this website
Department of Environment	Online form	www.gov.nu.ca/en/department-environment/contact-environment	-

Ontario

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Invading Species Hotline	Phone hotline or email	1-800-563-7711 isap@OFAH.org	General invasive species reporting or information line
EDDMapS.org	App or Website	EDDMapS app www.EDDMapS.org	Invasive species reporting sent to expert verifiers
iNaturalist	App or Website	iNaturalist app www.iNaturalist.org	Project is called: “Invasive Species in Ontario”

Prince Edward Island

Program/Agency	Reporting Method	Details/Link/Contact	Notes
EDDMapS.org	App or website	EDDMapS app or www.EDDMapS.org	Reports are verified by the PEI Invasive Species Council
iNaturalist	App or website	iNaturalist app or www.iNaturalist.org	Project is called: "Invasive Species of Prince Edward Island"
Prince Edward Island Invasive Species Council	Email or Facebook messenger	Peiinvasives@gmail.com Facebook app, account: PEIinvasives	General reporting or information, people are highly encouraged to send photos with reports

Québec

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Government of Québec	Email or phone	renseignements.faune@environnement.gouv.qc.ca 1-877-346-6763	General information and reporting for invasive species
Sentinelle	App or website	App available for Android and iOS "Sentinelle" or www.pub.enviroweb.gouv.qc.ca/scc	Provincial app for invasive species reporting

Saskatchewan

Program/Agency	Reporting Method	Details/Link/Contact	Notes
iNaturalist	App or website	iNaturalist app or website. www.iNaturalist.org	Reviewed by members of the Saskatchewan Conservation Data Centre. Project is called: "Saskachewan Invasive Species"
24-hour TIPP line	Phone	1-800-667-7561	Reports go to Conservation Officers

Yukon

Program/Agency	Reporting Method	Details/Link/Contact	Notes
Fisheries Yukon	Phone or email	867-667-5721 or 1-800-661-0408 ext. 5721 Fisheries@yukon.ca	General inquiries and reporting
iNaturalist	App or website	iNaturalist app or www.iNaturalist.org	Project is called "Yukon Invasive Species" and is monitored by the Yukon Invasive Species Council

How to photograph crayfishes before reporting

Underside to see reproductive organs (B. Schryer)

Dorsal view, including rostrum (B. Schryer)

Lateral view (side of carapace) (B. Schryer)

Gonopods of a male crayfish (J. Berthelette)

Management

Management of Invasive Crayfishes

When it comes to the management of invasive species, particularly those that are aquatic in nature, management is complex and highly context-dependent. The approaches summarized in this section are not intended to be exhaustive or prescriptive, nor do they represent a single recommended course of action for all situations. Instead, this overview is meant to provide resource managers with practical insight into which management techniques have been attempted elsewhere, what has and has not worked under different conditions, and why certain approaches are favoured or avoided.

For the broader public, this section aims to provide transparency into how management decisions are made, highlighting the biological, logistical, regulatory, and ecological considerations that influence invasive species response efforts. Effective crayfish management typically relies on adaptive, multi-tool approaches, informed by site-specific conditions, available resources, and the best available science.

Considerations Prior to Starting Management

Before initiating management actions for invasive crayfishes, it is essential to evaluate a set of biological, environmental, regulatory, and social considerations that will strongly influence both feasibility and likelihood of success. Early assessment of these factors helps ensure that management efforts are realistic, defensible, and aligned with site-specific conditions.

System Type: Open vs. Closed Waterbodies

The degree of hydrological connectivity is one of the most important considerations when thinking about invasive crayfish management. Management actions in relatively closed or isolated systems (e.g., stormwater ponds, small reservoirs, or disconnected drainage ditches) are generally more controllable, as dispersal pathways are limited and localized containment or eradication may be achievable. In contrast, open-water systems (e.g., streams, rivers, lakes, wetlands, and interconnected drainage networks) present substantially greater challenges. In these systems, crayfishes can disperse within the water and overland into connected watersheds, recolonize previously treated areas from adjacent habitats, and avoid control through greater dispersal. Open systems also introduce additional ecological and jurisdictional constraints, often shifting management objectives from eradication towards long-term containment and impact reduction.

Seasonal Considerations

Climatic conditions, particularly winter severity, can strongly influence which management tools are viable. In colder regions, sustained freezing conditions may allow for winter drawdowns or dewatering in certain closed systems, potentially increasing exposure of invasive crayfishes to lethal conditions. However, mild winters, fluctuating freeze-thaw cycles, or groundwater-fed systems may limit the effectiveness of these approaches. Seasonal timing also affects crayfish behaviour, detectability, and vulnerability, and should be considered when planning surveillance or control actions.

Permitting and Regulatory Considerations

Not all management tools shown to be effective elsewhere are permissible in every jurisdiction. The use of pesticides, biocides, or other chemical treatments are subject to provincial and federal regulations, and approvals may be time-consuming or unavailable depending on site conditions, waterbody classification, waterbody ownership, and presence of non-target or even species at risk. Managers must determine in advance which tools are legally available in their area and ensure that all required permits, approvals, and risk assessments are in place before implementation.

Social and Land-Use Considerations

Another consideration should be understanding how a waterbody is used by the surrounding community. Stormwater ponds, urban creeks, canals, and lakes may serve recreational, aesthetic, cultural, or functional purposes (e.g., firefighting), and management actions such as drawdowns, vegetation removal, or chemical treatments can generate public concern or push back. Early engagement with landowners, municipalities, Indigenous communities, and local stakeholders can improve transparency, build trust, and increase the likelihood of community support. In most cases, the long-term success depends as much on public buy-in and acceptance as on the technical effectiveness of the chosen management tools.

Clearly, there are many factors to consider prior to starting management efforts for invasive crayfishes. In any circumstance, management efforts will be most effective if the approach is tailored to the system, environmental conditions, regulatory realities, and social dimensions, rather than relying on a single, one size-fits-all approach.

Using calipers to measure the CPL of a red swamp crayfish (J. Victor)

Detection & Surveillance

Early detection is critical, as management options become increasingly limited once populations expand.

Visual surveys, Trapping, and Active Sampling

Shoreline and shallow-water searches can reveal foraging individuals, moulted exoskeletons, predated remains, and distinctive burrows. Freshly excavated sediment or gravel at burrow entrances is often a reliable indicator of active crayfish occupancy, particularly for the native burrowing species as well as the *Procambarus* species, although almost any species can and will burrow depending on their environments.

As described in the How to Sample for Crayfishes section of this field guide, baited minnow traps, sweep-netting, hand capture, and burrow excavation are commonly used to confirm crayfish presence and assess population structure. Trapping is most effective for mobile adult males, while juveniles and brooding females are often under-represented due to being sequestered in burrows as well as their general trap avoidance.

Red swamp crayfish burrow from Tilbury, Ontario (M. Daniels)

Environmental DNA

Environmental DNA (eDNA) sampling can be used as a screening tool to detect the presence of invasive crayfishes, particularly at low population densities when trapping and visual monitoring is unlikely to yield detections. Detection success varies with season, hydrology, population density, and reproductive/moulting cycle. Positive results must be confirmed through physical captures due to the risk of a false positive from transported eDNA into the system being tested (e.g., via predators or runoff).

Processing eDNA samples to be analyzed at Trent University for the presence of marbled crayfish, Burlington, Ontario (J. Berthelette)

Physical Control & Removal

Trapping

Intensive trapping is widely used to reduce crayfish abundance but rarely results in eradication on its own. Trapping often selectively removes larger, mobile individuals while allowing juveniles and burrow-dwelling crayfish to persist, leading to rapid population recovery once efforts are reduced. In open-water systems, such as lakes, streams, rivers, and other online waters, successful trapping is significantly less effective than it is in closed-water systems, such as stormwater ponds, ornamental ponds, etc.

Baited minnow trap with enlarged openings (40mm) for crayfishes (B. Schryer)

Manual Removal and Burrow Excavation and/or Filling

In small, isolated habitats, such as roadside ditches, stormwater ponds, or drainage canals, hand capture and excavation/filling of burrows can be effective for localized population suppression. These methods are labour-intensive but can remove life stages not easily captured by trapping, including brooding females. The filling of burrow entrances (e.g., with bentonite clay) or treating them with salts has also been done in some jurisdictions and often leads to mortality of the occupant, but again, is labour intensive and you need to check your local regulations prior to doing so.

Drawdowns and Dewatering

As mentioned above, seasonality and winter severity should be considered prior to exploring drawdowns and dewatering. Simply put, if your winters are mild, drawdowns and dewatering may just lead to dispersal overland of unwanted invasive crayfishes. Temporary dewatering of ponds or canals has shown limited effectiveness for some species, such as *Procambarus*, due to their ability to survive in deep burrows, wet vegetation, and moist sediment. Drawdowns may reduce surface activity but rarely eliminate populations unless combined with additional measures.

Barriers & Containment

Physical Barriers

Barriers may slow aquatic dispersal in controlled systems but are often ineffective at landscape scales. Many invasive crayfishes are capable of overland movement, allowing them to bypass in-water barriers, weirs, and small dams during wet conditions after a rainfall or at night when they will survive by avoiding direct sunlight exposure.

Containment Strategies

Containment is most feasible in isolated or semi-isolated waterbodies, such as stormwater ponds, small reservoirs, or disconnected drainage ditches. In open or highly connected drainage networks, long-term containment is unlikely and management should instead focus on impact reduction and prevention of human-assisted spread of the invasive species.

Sam Turner, AECOM assisting OFAH Foundation crews with sweep-netting in waters near Tilbury, Ontario (M. Daniels)

Chemical & Biocontrol Approaches

Chemical Controls

The use of pesticides is generally not recommended for crayfish control due to non-target impacts, permitting challenges, public opposition, and limited effectiveness in complex aquatic systems. Chemical treatments are particularly unsuitable in connected watersheds and habitats supporting species at risk. However, in some circumstances, such as in the case of an offline man-made waterbody with few to no native species, certain pesticides (e.g., Pyrethrin-based pesticides) can be effective when implemented alongside other control techniques, such as dewatering and intensive trapping.

Biological Control

Predation by native fishes (e.g., bass, sunfish, perch, etc.) can reduce crayfish abundance, particularly in juvenile size classes. However, biocontrol alone does not result in eradication and may have unintended ecological consequences after introduction. It should be used cautiously and only within an ecosystem-based management framework after referring to local and regional regulations as well as acquiring any necessary permits.

Safe Handling, Disposal, & Compliance

Before conducting crayfish monitoring and management, be sure to check your federal, provincial, and/or territorial regulations to ensure all laws are being followed.

Captured invasive crayfishes should never be released, once captured. However, individuals capturing suspected invasive crayfishes should refer to the Provincial and Territorial Reporting Methods section of this field guide to report the species prior to any form of euthanasia. This helps ensure that all regulations are being followed and that potential incidental euthanasia of native species is being avoided. Proper handling reduces the risk of accidental spread and supports compliance with relevant invasive species legislation and regulations.

Public education and enforcement remain essential components of crayfish management. Illegal bait use, intentional release for culture/consumption, and aquarium dumping are amongst the most significant pathways for introduction and secondary human-assisted spread in Canada.

Management Overview

Simply put, once established, invasive crayfish populations are extremely difficult and costly to eliminate. Management success is highest when efforts prioritize prevention, early detection, and rapid response in newly invaded or isolated systems. Long-term strategies emphasize ecosystem resilience, public awareness, and coordinated monitoring to limit ecological and economic impacts.

Claire Walsh, OFAH Foundation assisting Severn Sound Environmental Association staff monitor for invasive White River crayfish (P. Hamr).

Legislation & Regulations

Jordan McDonald, OFAH Foundation, and Dr. Premek Hamr visually monitoring a stream in Tilbury, Ontario (M. Daniels)

Federal, Provincial, and Territorial Legislation Summary

Canadian Federal Legislation

At the federal level, multiple pieces of legislation govern the possession, import, transport, trade, and use of crayfishes across Canada. Under the *Fisheries Act* (1985), "fish" is broadly defined to include crustaceans such as crayfish, their eggs, larvae, and any part of their bodies, meaning that provincial regulations referring to fish may also apply to crayfish. The *Fishery (General) Regulations* (1993) prohibit buying, selling, trading, or bartering any fish, including crayfishes, without an appropriate licence, such as a commercial fishing licence, a research or educational licence, or authorization under the *Aboriginal Communal Fishing Licences Regulations*. These regulations also restrict the release or transfer of live fish except into the waters where they were caught. In Canada, it is illegal to import, possess, transport, or release any non-native species into any waters without proper authorization. Collectively, federal legislation provides a framework to prevent the introduction, spread, and commercialization of invasive crayfishes while regulating their trade, transport, and use across Canada.

An example of a live crayfish being affixed with a hook for fishing (P. Hamr)

Provincial & Territorial Legislation

Crayfish harvest, possession, transport, and management in Canada are governed by a combination of federal, provincial, and territorial legislation and regulations designed to protect aquatic ecosystems and regulate fisheries. At the federal level, the *Fisheries Act* establishes rules related to fishing practices, species importation, and the prevention of aquatic invasive species. Provinces and territories complement these laws with their own regulations that address regional fisheries management, wildlife protection, water resource conservation, and restrictions on the possession or movement of live aquatic organisms. Together, these frameworks help manage crayfish harvest, reduce the spread of invasive species, and ensure the sustainable use of aquatic resources across Canada.

Below, we present you with regulations from Canada, its provinces, and the territories related to fisheries and fisheries management. Please scan the accompanying QR code or visit the corresponding link to visit the webpage.

Canada

***Aquatic Invasive Species Regulations*:**

Establishes federal rules to prevent the import, possession, transport, and release of aquatic invasive species under the *Fisheries Act*.

www.invadingspecies.com/cf-can1

***Fishery (General) Regulations*:**

Set federal rules for fishing licences, gear, and fish handling under the *Fisheries Act*.

www.invadingspecies.com/cf-can2

***Health of Animals Act*:**

Establishes requirements for the inspection, importation, transport, and control of animals and animal products to prevent the introduction and spread of animal diseases in Canada.

www.invadingspecies.com/cf-can3

Alberta

***Alberta Fishery Regulations*, 1998:**

Establishes federal rules for fishing activities and management in Alberta under the *Fisheries Act*.

www.invadingspecies.com/cf-ab

British Columbia

***British Columbia Sport Fishing Regulations*, 1996:**

Establishes federal rules for recreational fishing seasons, limits, and gear in BritishColumbia under the *Fisheries Act*.

www.invadingspecies.com/cf-bc1

Wildlife Act:

Establishes rules for the management, protection, and use of wildlife in British Columbia.

www.invadingspecies.com/cf-bc2

Manitoba

Water Protection Act:

Establishes provincial rules to protect and manage Manitoba's water resources and aquatic ecosystems, including provisions addressing aquatic invasive species.

www.invadingspecies.com/cf-MB1

***Manitoba Fishery Regulations*, 1987:**

Establishes federal rules for fishing seasons, limits, and gear in Manitoba under the *Fisheries Act*.

www.invadingspecies.com/cf-MB2

Maritimes (NS, NB, & PEI)

***Maritime Provinces Fishery Regulations*:**

Sets federal fishing rules for the Maritime provinces, including limits and prohibitions on certain species.

www.invadingspecies.com/cf-mr1

***Live Fish Possession Regulations*:**

Under Nova Scotia's Fisheries and *Coastal Resources Act* set out when and how a person may legally possess live fish in the province.

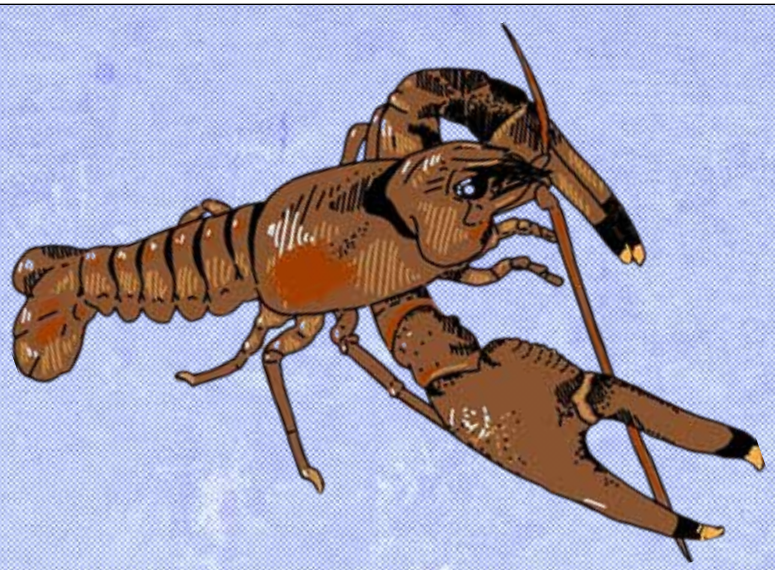
www.invadingspecies.com/cf-mr2

Newfoundland & Labrador

***Wild Life Regulations*:**

Under Newfoundland and Labrador's ***Wild Life Act*** set rules for fishing, hunting, possessing, importing, and releasing wildlife in the province.

www.invadingspecies.com/cf-nflb



Ontario

***Fish and Wildlife Conservation Act*, 1997:**

Governs the protection, management, and lawful harvest of fish and wildlife in Ontario.

www.invadingspecies.com/cf-on1

***Invasive Species Act*, 2015:**

Provides authority to prevent the spread of invasive species through restrictions on possession, transport, and release.

Note: some species and genera presented in this guide are **PROHIBITED** in Ontario under the *Invasive Species Act,* 2015.
To see the full list, visit
www.invadingspecies.com/invasive-species-legislation

www.invadingspecies.com/cf-on2

***Ontario Fishery Regulations*, 2007:**

Establishes federal rules for fishing seasons, limits, and gear in Ontario under the *Fisheries Act.*

www.invadingspecies.com/cf-on3

Québec

***Québec Fishery Regulations, 1990*:**

Federal rules that set out detailed requirements and restrictions for fishing in the province under the *Fisheries Act.*

www.invadingspecies.com/cf-qc1

***Règlement sur l'aquaculture et la vente des poisons*:**

Québec provincial regulation that governs the production, keeping, transport, importation and sale of fish and aquaculture activities to protect native species and manage fish commerce under the Loi sur la conservation et la mise en valeur de la faune.

www.invadingspecies.com/cf-qc2

Saskatchewan

***Angling Regulations*:**

Governs sport fishing rules, licences, seasons, and catch limits in provincial waters.

www.invadingspecies.com/cf-sk

Northwest Territories

***Northwest Territories Fishery Regulations*:**

Canadian federal regulations under the *Fisheries Act* that govern fishing activities (methods, seasons, limits, gear, etc.) in the waters of the Northwest Territories.

www.invadingspecies.com/cf-nwt

Nunavut

Nunavut's **Sport Fishing Guide:**

Outlines rules, licences, seasons, and catch limits for recreational fishing.

www.invadingspecies.com/cf-nv

Yukon

***Yukon Territory Fishery Regulations*:**

Federal regulations under the *Fisheries Act* that govern fishing activities (licences, methods, seasons, limits and prohibitions) in the Yukon Territory.

www.invadingspecies.com/cf-yk

Capturing measurements of invasive White River crayfish while monitoring near Port Severn, Ontario. Left to right: Brook Schryer, Claire Walsh, Dr. Premek Hamr, and Mackenzie Moxley (P. Jackson, Severn Sound Environmental Association)

Resources & Credits

Glossary of Terms and Definitions

ACUTE: refers to the angle; less than 90°.

ANTENNULES: are two short, paired 'feelers' on the front of the crayfish's head. Unlike longer antennae, these are mainly used for smelling and sensing its surroundings, including locating food.

ANTERIOR: situated before or at the front of.

APEX: in biology, the term 'apex' refers to the narrowed or pointed end of the anatomical structure (e.g., rostrum apex, claw apex).

AREOLA: area on the dorsal surface of carapace, behind the head portion, made up of two arching grooves. These can be open (grooves have a distinct gap between them) or closed (the grooves in the centre of the carapace).

ASEXUAL(LY): independent of sexual processes, especially not involving the union of male and female germ cells.

BURROW: a hole or tunnel dug by crayfish, often used for shelter, reproduction, or survival during drought or winter season.

CARAPACE: hard unsegmented covering of the head and thorax.

CARINA: a keel-shaped anatomical part or ridge that is found on the rostrum of the crayfish.

CERVICAL GROOVE: a transverse line that separates the head (cardiac) and thorax (gastric) regions of the crayfish. It is located between the head and thorax on the underside of the body.

CATCH PER UNIT EFFORT (CPUE): a measure used in sampling to quantify the number of organisms captured per unit of effort, such as per trap per hour.

CHELA(E): claws of crayfish; these are modified first pairs of pereiopods.

CONCAVE: hollowed or rounded inward like the inside of a bowl.

CYCLIC: revolving or recurring in cycles; characterized by recurrence in cycles.

CPL (CARAPACE LENGTH): measured from the tip of the rostrum to the back of the carapace, where it is separated from the abdomen.

DACTYL: in biological sciences, this refers to an organism's digit like a toe or finger.

DIMORPHISM: the occurrence of two distinct forms in structure, colouration, etc. among animals of the same species.

DORSAL(LY): situated on or toward the upper side of the body, equivalent to the back, or posterior, in humans.

DRAWNDOWN AND DEWATERING: the process of lowering the water level in a waterbody to expose crayfish to lead to their mortality in an effort to control their population.

eDNA (ENVIRONMENTAL DNA): genetic material shed by organisms into their environment, used as a tool for detecting the presence of a species in a waterbodies.

GONOPOD: refers to the male copulatory or reproductive organs; modified first and second pleopods/swimmerets on underside of abdomen.

HYDROLOGICAL CONNECTIVITY: the degree to which waterbodies are connected, influencing the dispersal and management of invasive aquatic species.

INVASIVE: a species that is not native to a region and has been introduced outside of its known range and is having negative impacts on the environment, economy, and/or society.

ISCHIAL HOOKS: hooks on bases of the second and third walking leg, present in mating males.

LATERAL: of or relating to the side of something (e.g., lateral spines on rostrum are found on the side of the rostrum, whereas the tip is called the apex).

LATERALLY COMPRESSED: flattened from side to side.

MINNOW TRAP: a type if trap used to capture crayfish, often baited to attract them. Most people use modified minnow traps.

NON-NATIVE: a species which has been introduced to an area it did not previously exist, but is not having significant impacts on the environment, economy, or society.

NON-TARGET SPECIES: species that are not the intended focus of a management action, but may be affected by it.

ORBIT: the bony cavity of the skull that contains the eye; eye socket.

OVIDUCT: located at the base of the third pair of walking legs on female crayfishes. This is where eggs will be shed by the female crayfish during reproduction. The eggs will then be held by her swimmerets.

PELLETED CHIMNEY: a structure made of stacked mud pellets that caps the entrance of certain crayfish burrows, aiding in ventilation and protection.

PEREOPODS: each of the eight walking limbs of a crustacean, such as a crayfish or crab, growing from the thorax. The first pair are modified into chelae.

PROPODUS: the segment of the crayfish's claw that connects the palm to the movable finger (dactyl).

SEMINAL RECEPTACLE: is a circular structure located between the bases of the last two pairs of walking legs on female crayfish. It is used to store sperm from the male crayfish during mating.

ROSTRUM: sharp, dorsal extension of carapace between the eyes.

SETAE: a stiff structure resembling a hair or a bristle, especially in an invertebrate.

SICKLE: refers to the shape of some male gonopods in crayfishes. These gonopods are curved and shaped similar to that of the sickle tool.

SUBORBITAL: situated beneath the eye or the orbit of the eye.

SWIMMERETS: are small appendages located on the underside of the crayfish nearest the tail. They function to hold their eggs, movement, aiding in bringing oxygenated water to the gills, etc.

TUBERCLES: raised bumps on claw and/or body.

VENTRALLY: situated on or towards the lower abdominal plane of the body; equivalent to the front, or anterior, in humans.

YOUNG OF YEAR CRAYFISH: these are crayfish that were born in this calendar year and are typically less than 10mm in CPL in the early summer months.

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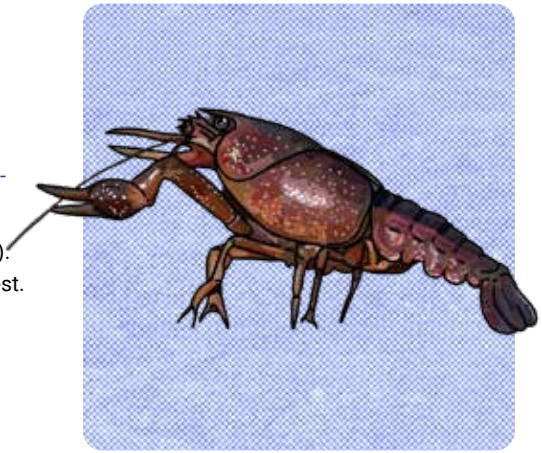

Field Guide to Crayfishes in Canada authors and artists.
Left to right: Morgan Daniels, Dr. Premek Hamr, and Brook Schryer

Notes

Personal Crayfish Captures

Species	
Date	
Location	
CPL	
Sex	
Water temp	
Weather	

Notes

Species	
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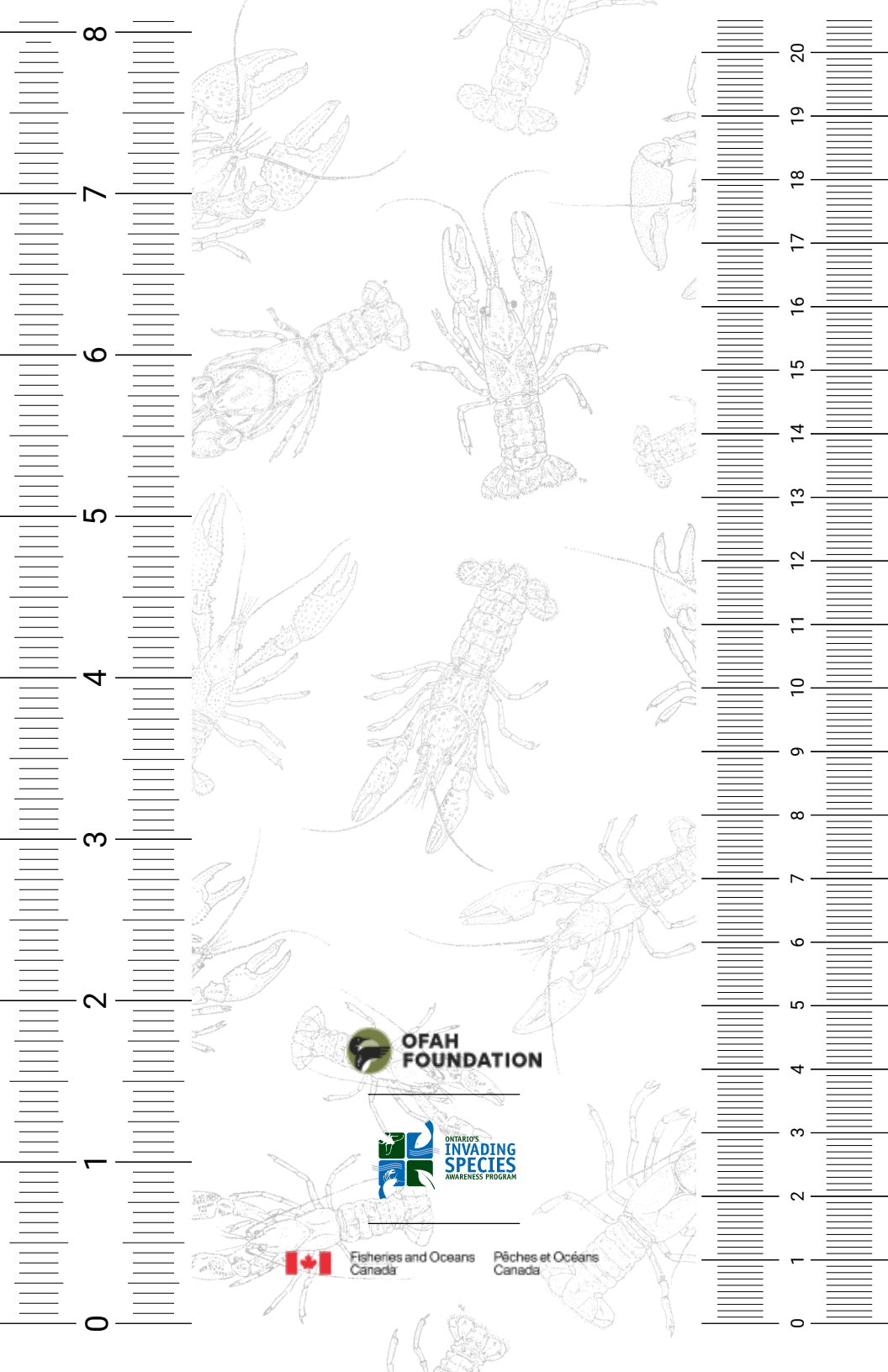
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