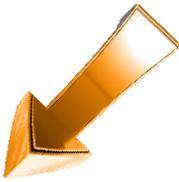


WETLAND INVERTEBRATE IDENTIFICATION GUIDE

Look closely at the creature you've discovered. Answering a few simple questions will help you identify it. Follow the key below:

Does your creature...



Have legs?



Have no obvious legs?



6 legs?

More than
6 legs?
**Go to
page 3**

Does it's
body look
hard or
solid?
**Go to
page 4**

Does it's
body look
soft and
squishy?
**Go to
Page 5**



Does it
have a
tail(s)?
**Go to
page 1**



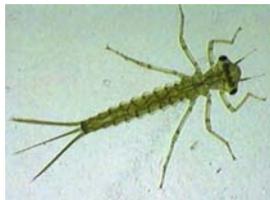
No tail(s)?
**Go to
page 2**

Some common wetland plants can also be found on page 5.

1. CREATURES WITH SIX LEGS AND A TAIL

Animal

Feeding

Mayfly nymph		Will feed mostly on plant material, but may also eat tiny aquatic animals. They are eaten by trout, dragonfly nymphs, stonefly nymphs and predacious diving beetles.
Damselfly nymph		Damselfly nymphs eat other aquatic insects, including other damselfly nymphs. They are eaten by fish and birds.
Dragonfly nymph		Dragonfly nymphs have an amazing extendable jaw, which helps them eat other aquatic insects, tadpoles and even small fish. Adult dragonflies prey on other flying insects, and are eaten by birds and bats.
Caddisfly larva		Caddisflies eat both plant material and other aquatic animals, including other larvae, worms and crustaceans. Adult caddisflies eat only nectar. The larvae themselves are food for fish and predacious diving beetles.
Predacious diving beetle larva		These larvae eat other insects, small fish and even each other. They pierce their prey, inject digestive juices, then suck out their prey's partially digested innards.

1. CREATURES WITH SIX LEGS AND A TAIL

Life Cycle

Where to find them

When the adults emerge, they do not have functional jaws, so they live for only a few hours to a few days. In this short time, their primary goal is mating.

Incomplete metamorphosis



(Mayfly adult)

Found on the bottom of unpolluted creeks and ponds, clinging to rocks. They crawl, but can also swim, in an up and down motion, like dolphins. Look for their gills, which are located on their abdomen, behind their legs.



(Damselfly adult)

Adult female damselflies will insert their eggs into the stems of aquatic plants. Most damselflies hold their wings close to their body when at rest.

Incomplete metamorphosis

Found crawling on underwater surfaces, especially plants



(Dragonfly adult)

Both dragonfly and damselfly nymphs crawl out of the water, often clinging to a plant, before emerging as adults. Adult dragonflies hold their wings flat when resting.

Incomplete metamorphosis

Dragonfly larvae are crawlers, so look for them down at the bottom of ponds. Often, they end up covered in mud and algae, which can make them hard to spot.

As larva, caddisflies build a protective case around themselves, using sticks, rocks and other material from the bottom of the pond, gluing it together with their sticky saliva. As adults, caddisflies look similar to moths.

Complete metamorphosis



(Caddisfly adult)

They can be found on the bottom of unpolluted ponds and streams. Look closely—their protective cases often make them look like moving sticks!

Eggs are deposited in various places—above the water line, inserted into aquatic plants, or on the plants. Diving beetle larvae leave the water to pupate near the water line, then return to the water as adults. See the next page to learn about the adult predacious diving beetle.

Complete metamorphosis

Look in shallow areas with vegetation. Diving beetle larvae will usually be found along the bottom.

2. CREATURES WITH SIX LEGS AND NO TAIL

<i>Animal</i>	<i>Feeding</i>
Predacious diving beetle 	As their name suggests, these are predators, eating other insects, tadpoles and even small fish.
Water strider 	Water striders eat other insects that fall onto the surface of the water, or ones that swim just below the surface. The two front legs are used as pinchers for grabbing prey.
Backswimmer 	Backswimmers are predators and can give a painful bite—be careful when handling these! They eat other aquatic insects, sometimes taking prey larger than themselves. They are eaten by predacious diving beetles and fish.
Water boatman 	Boatmen are scavengers, using their front legs to sift through muck for algae and tiny aquatic animals.
Whirligig beetle 	These beetles search for food with their split eyes, with half looking up in the air and half looking under the water. They like to eat other insects that are trapped on the water's surface.
Giant water bug 	These predators have been known to prey on small fish, frogs and even snakes in addition to a regular diet of aquatic insects.

2. CREATURES WITH SIX LEGS AND NO TAIL

Life Cycle

Where to find them

<p>Most species found in Alberta only go through one generation per year and actually overwinter as adults—uncommon for insects. <i>Complete metamorphosis</i></p>	<p>The adult diving beetle can fly, and can be found around lights after dark. In ponds, look for them swimming through vegetation in shallower areas.</p>
<p>You may find what looks like a water strider with eight long legs. Look closer—this is actually a mating pair. The female will lay her eggs at or just beneath the surface of the water, on floating objects. <i>Incomplete metamorphosis</i></p>	<p>They're easy to spot, but hard to catch. Look for them skating across the top of the water on their long back and middle legs</p>
<p>Eggs are laid on submerged plants and rocks, or are inserted into the stems of aquatic plants. Little is known about their lifecycles. <i>Incomplete metamorphosis</i></p>	<p>Backswimmers rest just beneath the pond's surface, upside down, with their legs touching the underside of the water's surface.</p>
<p>In autumn, water boatmen fly and sometimes gather in huge numbers near streams. They are often attracted to lights, and their bodies will sometimes litter the ground underneath. <i>Incomplete metamorphosis</i></p>	<p>Boatmen can be found in ponds, streams and even swimming pools.</p>
<p>Females lay eggs on aquatic plants. Whirligig beetle larvae are predacious, and come out of the water to pupate. As adults, they return to the water. The adults are <i>incredibly fast swimmers</i> and strong fliers as well. <i>Complete metamorphosis</i></p>	<p>Whirligig beetles can go below the surface of the water, but rarely do so. They can be found in all types of watery environments.</p>
<p>Females deposit eggs on plants, such as cattails, above the water line. In Alberta, the life cycle of a giant water bug can last longer than two years. <i>Incomplete metamorphosis</i></p>	<p>They live beneath the surface of the water, usually in areas with lots of vegetation. However, they are commonly found around street lights, and are sometimes called "electric light bugs."</p>

3. CREATURES WITH MORE THAN SIX LEGS

<i>Animal</i>	<i>Feeding</i>
Sideswimmer/ Scud 	These little freshwater shrimp are scavengers, feeding on dead plant and animal material. They hold their food with their front legs while they chew on it.
Fairy Shrimp 	Most of these little crustaceans feed on algae and single-celled pond life, like protozoans and bacteria.
Water Mite 	Mites feed on small pond animals by injecting them with digestive juices, then sucking the semi-digested material out of their body.
Water Spider 	Water spiders will wait along the edges of ponds with their front legs in the water, feeling for vibrations. When they sense their prey, they will scurry out to catch it. They mostly eat aquatic insects.

3. CREATURES WITH MORE THAN SIX LEGS

Life Cycle

Where to find them

<p>Mating takes place shortly after the ice melts from their pond. Females have a <i>marsupium</i>—a pouch which they carry their young in for the first three weeks of their lives.</p>	<p>Sideswimmers are usually found near the bottom of ponds and streams. They avoid light, so look around in shady vegetation for them.</p>
<p>Much like the sideswimmer, female fairy shrimp have a pouch which they use to carry their eggs. This pouch is located just behind their back legs. Fairy shrimp start out as larvae, and slowly develop into adults after several molts.</p>	<p>Fairy shrimp can be found in small ponds and pools, especially in spring and summer.</p>
<p>Eggs hatch into larvae, which are parasitic. As larvae, they have only six legs, and they attach to the bodies of insects. When they are full, they will drop off and metamorphose into nymphs, then adults. Both nymphs and adults have eight legs, and are hard to tell apart.</p>	<p>Water mites can be found at all levels of ponds, lakes and rivers. They are usually about the size of the period at the end of this sentence, so look closely for the tiny red dots moving in your net.</p>
<p>Females carry the egg sac with their fangs. Before the young spiders start to hatch, she will attach the eggs to land vegetation and spin a “nursery web” around the case.</p>	<p>Look for them on the surface of the water, near the edges of ponds. While they can submerge themselves (breathing the air caught in their hairs) for up to 30 minutes, it is difficult for them.</p>

4. CREATURES WITH NO OBVIOUS LEGS* AND A SOLID LOOKING BODY

<i>Animal</i>		<i>Feeding</i>
Midge larva 	Phantom midge larva 	Most are omnivorous. They usually eat organic materials and microscopic plants and animals. Midge larvae are a major food source for fish.
Midge pupa 		Similar to midge larva (see above).
Mosquito larva 		Larvae are mainly omnivorous, eating both plants and microscopic animals.
Mosquito pupa 		The mosquito pupa does not eat. When the adult emerges though, the mosquito requires a meal. Only female mosquitoes feed on blood, while male mosquitoes feed on nectar.
Daphnia 		Daphnia filter single celled organisms such as bacteria and algae from the water. They beat their legs, which creates a current which moves their food into their body.
<p>*Midge larvae and daphnia do have legs, but these are very difficult to see, even using simple magnifiers.</p>		

4. CREATURES WITH NO OBVIOUS LEGS* AND A SOLID LOOKING BODY

Life Cycle

Where to find them

<p>After the larval stage, midges briefly become pupas, which come to the surface to emerge as adults. <i>Complete metamorphosis</i></p>	<p>In most aquatic environments, at all depths of ponds and lakes, sometimes down to 300 metres below the surface.</p>
<p>For some species of midge, larval development can last three years. When the adult escapes from it's pupal skin, it looks quite similar to a mosquito, though most midges do not bite. Adults only live a week or two.</p>	<p>The pupas occupy the same habitat as they do in the larval stage (see above).</p>
<p>The larva becomes a pupa (see below), which comes to the surface when it is time for the adult to emerge <i>Complete metamorphosis</i></p>	<p>Most will live close to the surface of the water, hanging upside down and breathing through a tube which breaks through the water's surface. They can be found anywhere with still water, even a tin can!</p>
<p>Most mosquitoes overwinter in the egg stage. In the spring, the egg/larva/pupa/adult life cycle can repeat several times.</p>	<p>Mosquito pupae usually hang out near the surface of the water. They are nicknamed "tumbler" due to their seemingly chaotic movement.</p>
<p>Daphnia will go through several generations each season, and the young must molt several times before reaching the adult stage. Young daphnia, however, look just like small adult daphnia.</p>	<p>These can be found in shallow areas of lakes and ponds.</p>



(midge adult)



Adult mosquito

5. CREATURES WITH NO LEGS AND A SQUISHY LOOKING BODY

Animal

Feeding

<p>Snail</p> 	<p>Snails have a file-like tongue called a radula which they use to shred their food—live or dead plant material</p>
<p>Leech</p> 	<p>They pierce their prey and suck blood. Most leeches in Alberta feed primarily on other aquatic invertebrates and fish—humans rarely need to worry about them.</p>

COMMON WETLAND PLANT LIFE



Arrowhead tubers are often eaten by ducks. In fact, they are sometimes called duck potatoes.

Cattails and bulrushes are emergent plants. They provide important food and habitat for birds and mammals, such as muskrat and beaver.



Cattails



Bulrushes

5. CREATURES WITH NO LEGS AND A SQUISHY LOOKING BODY

Life Cycle

Snails lay eggs in their second year of life—some snails live as long as five years. There is no larval stage for snails—young snails generally look like tiny adults.

Where to find them

They can be found on the bottom of ponds, attached to underwater plants, or floating beneath the surface.

Leeches will lay eggs into a small cocoon, which is attached to material on the bottom of the pond. When the leeches hatch, they usually attach to the parent leech and are carried for several days before dropping off.

Leeches don't like sunlight, so look for them down on the bottom of the pond where they can be found in the mud, or under rocks and logs.



Algae forms the base of the food pyramid in many ponds, but too much algae can deplete oxygen levels in the water when it decomposes.

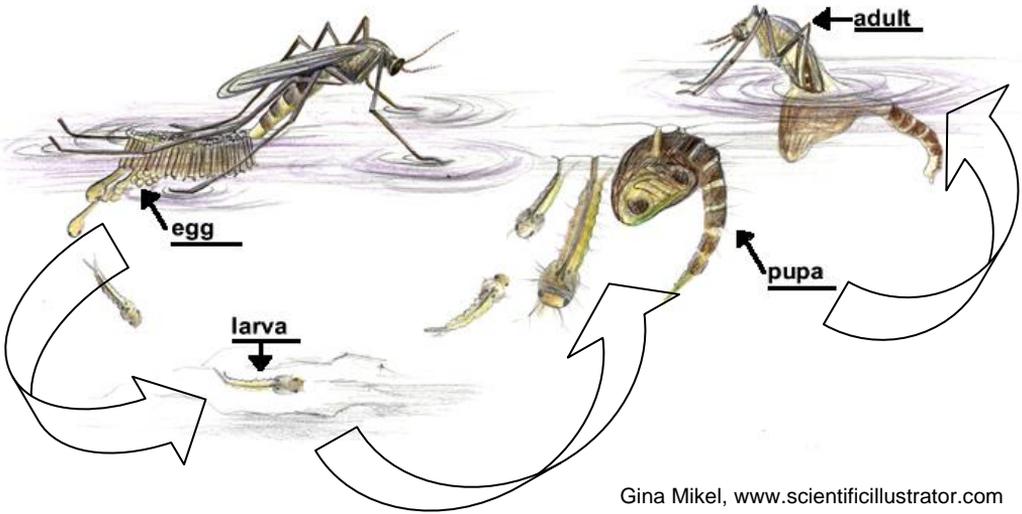


Sandbar willow grows well in moist soils and can be found around the edges of many ponds, streams and lakes. It tolerates flooding, and re-grows quickly if eaten by beavers.



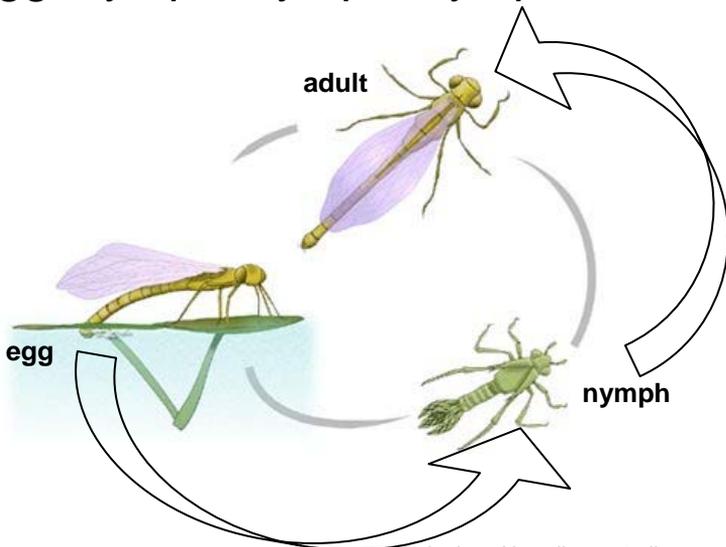
Eurasian water milfoil is an invasive species. It can quickly spread to cover a pond or lake, preventing sunlight from reaching native plants.

Complete metamorphosis: Egg, larva, pupa, adult



Gina Mikel, www.scientificillustrator.com

Incomplete metamorphosis: Egg, nymph, nymph, nymph..., adult



Andrew Howells, australianmuseum.net.au