

Damselfly nymph

(2 cm – 3 cm)

Damselflies are very close relatives of dragonflies. Like dragonflies, their young are called nymphs, but they are smaller than dragonfly nymphs. They are totally aquatic and prey on small invertebrates living in the pond.

3 pairs of long legs

Body thinner than that of
dragonfly nymph



Pouch containing wing
buds

3 tails at end of abdomen; may
be thin or leaf shaped, can be
bitten off by predators (these
are gills)

Damselfly adult

Damselflies are very close relatives of dragonflies but are smaller and more delicate in appearance. There are many different species and some of them can be hard to distinguish.

Take photographs to aid identification.

Eyes do not meet in the middle



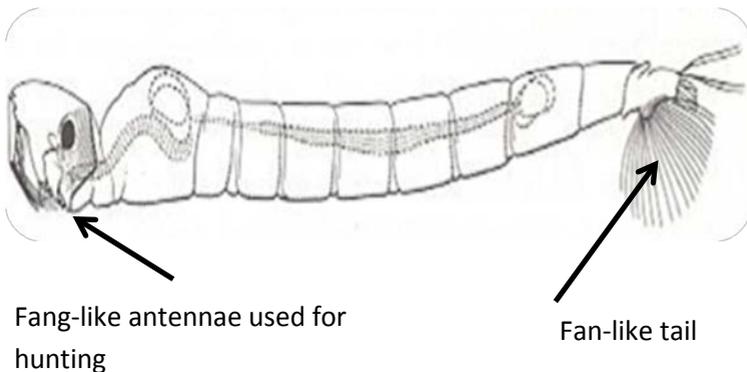
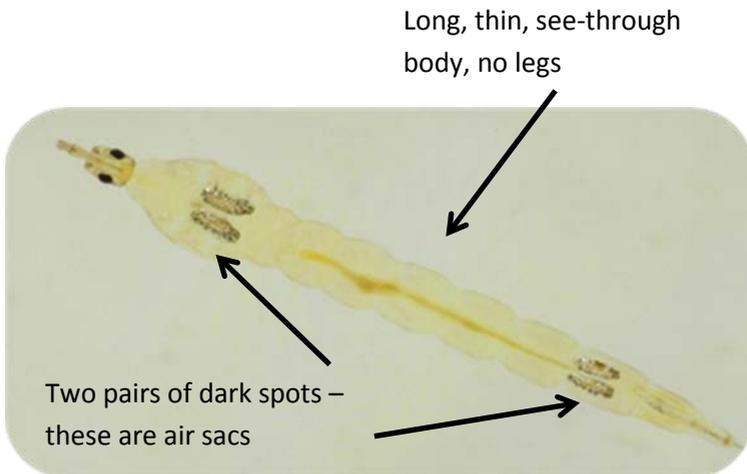
Body long and thin

Wings held together at rest

Photograph by Nick Littlewood

Phantom midge larva (1 cm - 1.2 cm)

These are larvae of small flies that are similar to mosquitoes. They are called phantom midges because of their transparent bodies. They are predatory and feed on water fleas and other small fly larvae.



Caddisfly nymph

(1 cm – 4 cm)

Caddisflies are related to moths. The adults have wings and can fly, but the larvae, which look like caterpillars, are totally aquatic and are herbivorous. They live at the bottom of the pond and make a case from small twigs, leaves or stones to protect them from predators.

If you look closely, you may see the head and legs of the caddisfly poke outside its case as it walks around

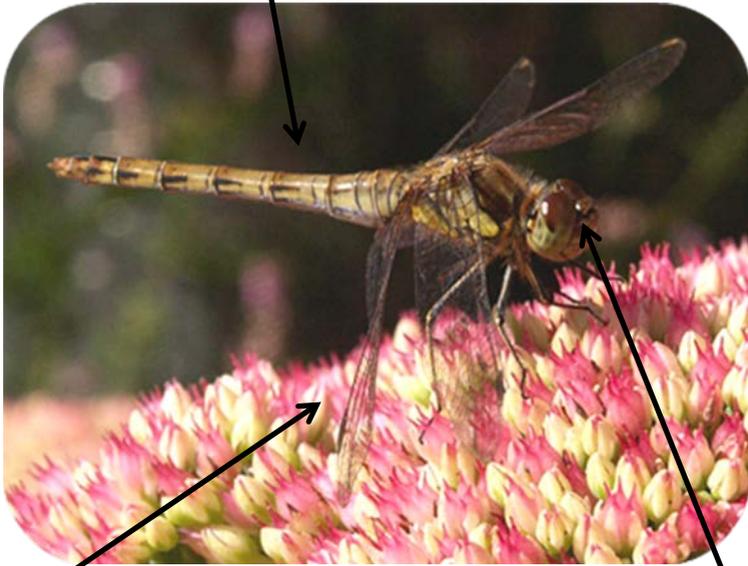


Case made from leaves, twigs, shells and stones and held together with silk

Dragonfly adult

Dragonflies are large, predatory insects that feed by snatching smaller insects from the air in mid-flight. Being powerful fliers, they can fly large distances and are often seen away from water, but always return to ponds and lochs to breed. There are many different species, some of which can be hard to identify.

Large, robust body



Wings remain
outstretched at rest

Large eyes that touch
in the middle

Photograph by Roger Key

Dragonfly nymph (2.5 cm – 5 cm)

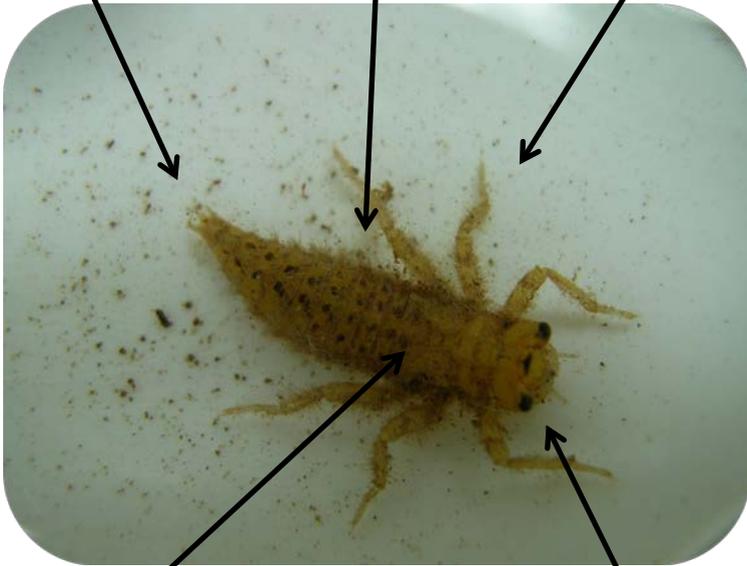
I may
bite!

Adult dragonflies are large flying insects but their young, called nymphs, live in water and are predators. They feed on smaller invertebrates in the pond and can also feed on small amphibian tadpoles.

Short spines
emerging from
end of abdomen

Broad, heavy
abdomen

3 pairs of long,
robust legs



Pouch on back, like
a “backpack”
contains wing buds

Large eyes and short
antennae

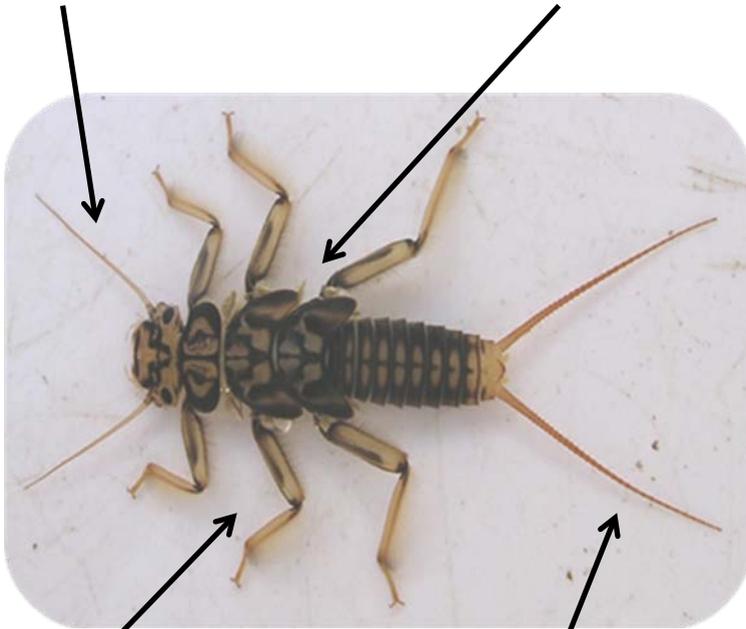
Photograph by Jonathan Willet

Stonefly nymph

Stonefly nymphs are fully aquatic and feed on algae growing on the bottom of pools, although some of the larger species are carnivorous. They generally prefer running water but a few species are found in ponds. They need lots of oxygen and therefore cannot tolerate stagnant or polluted water.

Long, thread-like antennae

Body wide and flattened



Long, powerful legs

2 long tails emerging from
tip of abdomen

Stonefly adult

Stoneflies are never found far from water as their young, known as nymphs, are fully aquatic. The adults are short-lived compared to the nymph stage and are most often seen on waterside vegetation or crawling over stones, hence their name “stonefly”. When disturbed, they only fly a short distance before landing again.

Take photographs to aid identification.

Long, thin body, long legs

Dull, grey wings with black veins, cover body when at rest

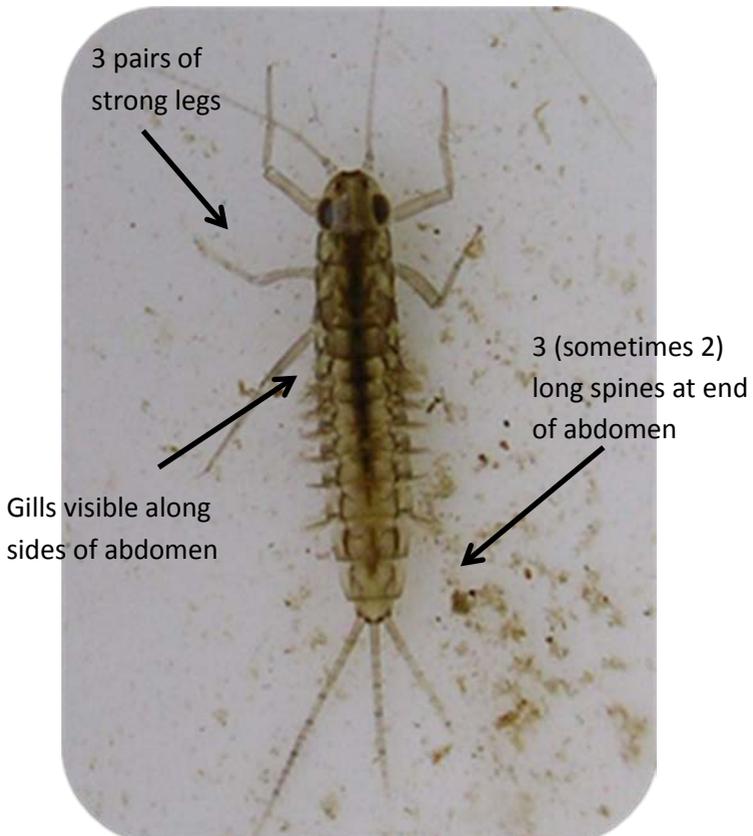


Long, thread-like antennae

Photograph by Craig Macadam

Mayfly nymph

Mayfly nymphs are fully aquatic and are generally dependent on clean water. Only a few species can tolerate pollution. They can appear similar to stonefly nymphs at first, but have some distinguishing features that can be viewed more easily with the use of a microscope e.g. position and shape of gills and number of claws at the end of each leg. Mayfly nymphs are herbivorous.

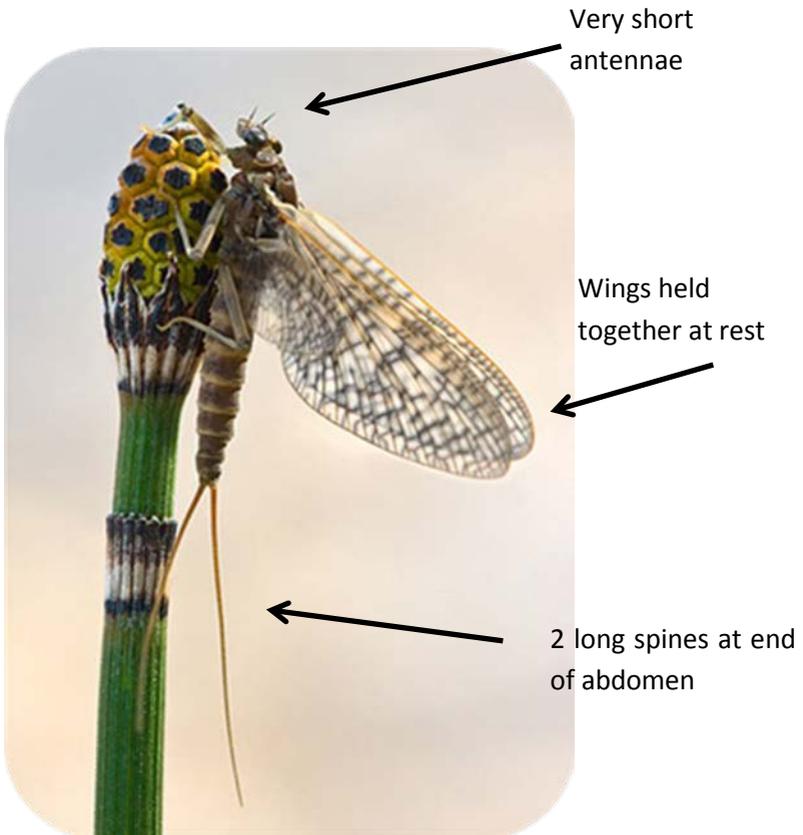


Photograph by Craig Macadam

Mayfly adult

Mayfly adults are generally small and very delicate-looking insects that are never found too far from water. They are very short lived compared to the nymph stage; some only live for a day, some up to a week. The adults do not feed and have very small mouthparts.

Take photographs to aid identification.

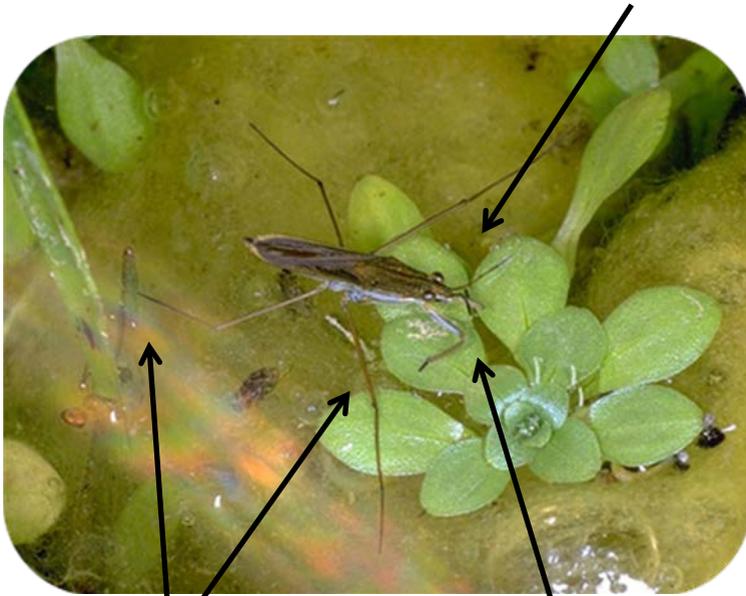


Photograph by Richard Bartz

Pond skaters

Pond skaters belong to the group of insects called bugs and are one of the first insects to colonise a new pond, as they are good fliers. They do not swim but move about on the water's surface; the middle pair of legs acts like oars while the hind legs are used as rudders. They are predators and snatch prey like small flies that land on the water using the shorter front legs.

Large eyes and antennae clearly visible



Very long, thin middle
and hind legs

Short front legs

Photograph by Roger Key

Water boatmen and backswimmers

Water boatmen and backswimmers are two closely-related types of aquatic bugs that live on, or close to, the water's surface. They use long hind legs to swim. Backswimmers are predatory while water boatmen are mainly herbivorous. Both groups are good fliers.

Backswimmers (Up to 2 cm)

Swim upside down on their backs and are generally larger than water boatmen.



Water boatmen (Up to 1.5 cm)

Very similar in appearance to backswimmers but swim the **"right way up"** and are generally smaller in size.



Photograph of backswimmer by Thomas Banks

Photograph of water boatman by Piet Spaans

Great diving beetles

These are large aquatic beetles that spend most of their lives in water, but have the ability to fly away to find new ponds. They are ferocious predators, both as larvae and as adults, and feed on invertebrates, tadpoles and even small fish.

I may
bite!

Adult

(Year round, 2.7 cm - 3.5 cm)

Dark green body with
yellow border



Larva

(Summer, up to 6 cm)

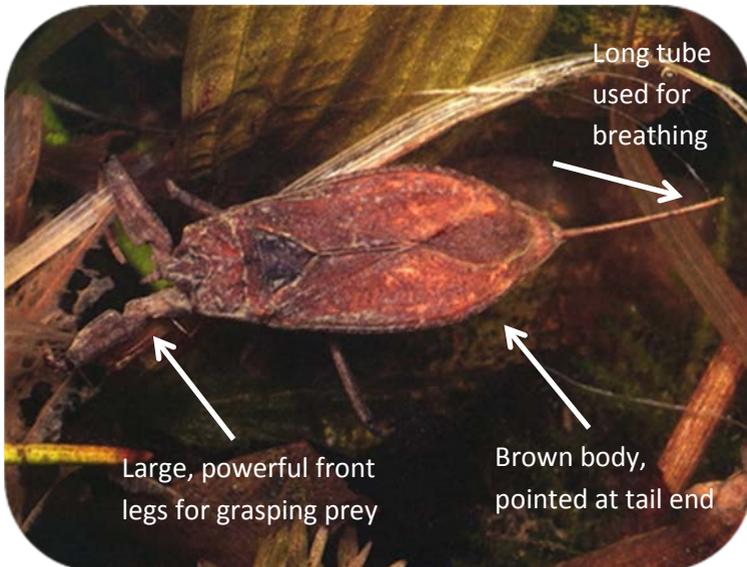
3 pairs of legs

Wide head with large
pincer-like jaws



Water scorpion (1.8 cm - 2.2 cm)

These insects are bugs, and are related to pond skaters and water boatman. Bugs have a tube-like mouth which they use to feed. Water scorpions are predatory and grab hold of prey with their long front legs. Their long, tube-like tail is a snorkel which allows them to breathe air.



This is a relatively under recorded species in Scotland, despite being common and widespread in England and Wales. Can you find any living in North East Scotland?

Water hoglouse (or Water slater)

(About 11 cm)

An aquatic relative of land-dwelling woodlice or slaters. Very similar in appearance to woodlice, these invertebrates live at the bottom of ponds and feed on decaying plants and animals.

More than 3 pairs of legs



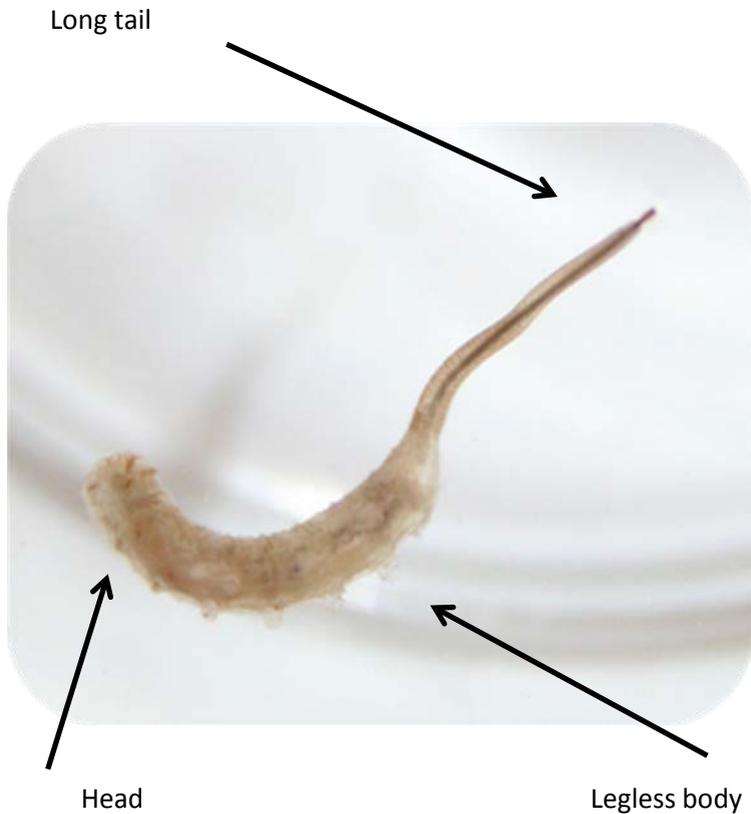
Body made of segmented plates like a woodlouse

Long antennae

Photograph by Craig Macadam

Rat-tailed maggots (Up to 2 cm)

Rat-tailed maggots are the larvae of a hoverfly called a drone-fly. They are aquatic and feed on decaying matter. They have a long tail which acts as a snorkel allowing them to breathe air.



Photograph by Brian Jones

Canadian waterweed

(*Elodea canadensis*)



- Grows under the water and can form dense mats
- Leaves curve downwards but not as strongly as **Curly waterweed**
- Leaves in whorls of three
- Leaves can be rounded (top photo) or longer and more slender (bottom photo)

Take a photo if you are not sure

Inset photograph by Kristian Peters

Main photograph by Christian Fischer

Curly waterweed

(*Lagarosiphon major*)



- Grows under the water and can form dense mats
- Leaves roll back on themselves and point at the stem below
- Stems can reach 3 cm long!
- Flowers are very small and reddish and are on long thread-like stalks
- **Don't confuse with Canadian waterweed**

Take a photo if you are not sure

New Zealand pygmyweed

(*Crassula helmsii*)



- Fleshy plant forming dense mats. Can grow beneath the surface, emerging from the water or even within mud adjacent to the pond
- Small white flowers with four petals
- Round stem
- Leaves up to 2 cm long, pointed, in opposite pairs. Form a “collar” around the stem

Take a photo if you are not sure

American skunk cabbage

(*Lysichiton americanus*)

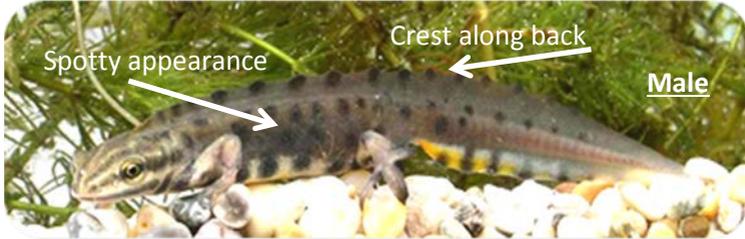


- Large plant growing up to 1.5 m tall
- Large fleshy leaves, look like cabbage leaves
- Flowers up to 45 cm tall, single large yellow petal
- Green berries are produced in late summer
- Found in muddy places next to ponds and rivers, can form dense patches

Take a photo if you are not sure

Smooth newt

Adults (In ponds February to June)



- Look like small lizards, up to 10 cm long
- Skin smooth
- Brown or olive coloured body, there may be spots or stripes
- Orange or yellow belly with black spots
- Males have a **wavy crest along back and tail**
- **To distinguish females from female palmate newt – neck is spotty**

Tadpoles

(Spring to late summer)

Similar to frog/toad tadpoles, look for **feathery gills** behind head.

Very young tadpoles are tiny and have no legs.

Can't distinguish from palmate newt tadpoles

Take a photo if
you are not sure



Palmate newt

Adults (In ponds February to June)



- Look like small lizards, up to 9 cm long
- Brown or olive coloured, may be spots and a thin stripe
- Orange or yellow belly with some spots
- Skin smooth
- Male has a **filament** at the end of tail and **webbed hind feet**
- **To distinguish females from female smooth newt – no spots on neck**



No spots on neck

Take a photo if you are not sure

Tadpoles

(Spring to late summer)

Similar to frog/toad tadpoles, look for **feathery gills** behind head. Very young tadpoles are tiny and have no legs.

Can't distinguish from Smooth newt tadpoles

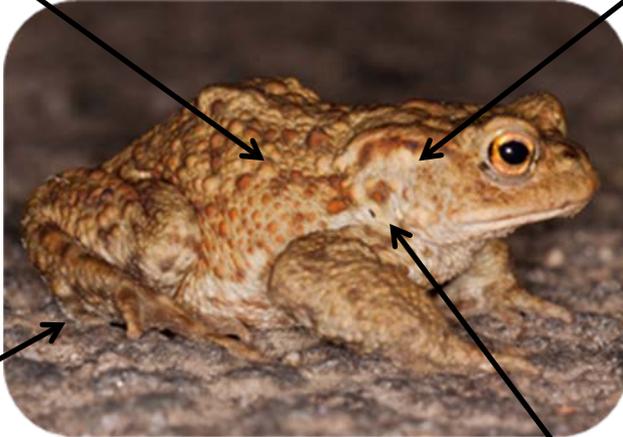
Photos of male and female palmate newts by Fred Holmes (ARC)

Female palmate newt close up by Howard Inns (ARC)

Common toad

Adult (In ponds in spring, sometimes to late summer)

Body colour generally brown



No dark patch behind eye

Short legs used more for crawling rather than jumping

Warty skin

Tadpoles

(April to August)

Dark coloured bodies, long tail

Can't tell apart from tadpoles of frogs



Spawn

(February to May)

Always in strings



Take a photo if you are not sure

Common frog

Adult (In ponds in spring, sometimes to late summer)

Smooth skin



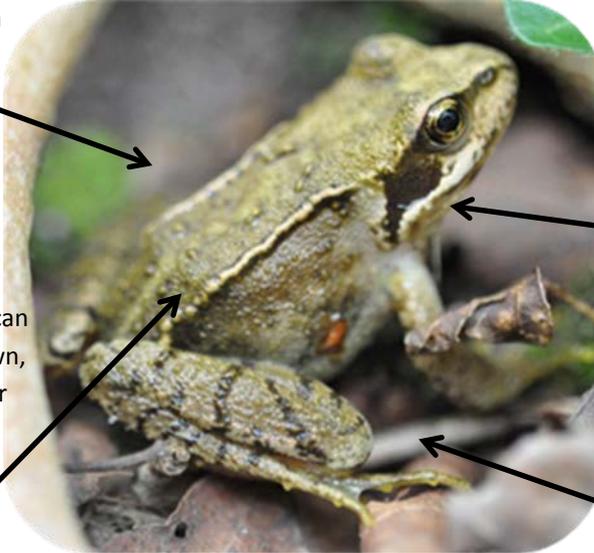
Body colour can be brown, green or orange



Dark patch behind the eye



Long legs for jumping



Tadpoles

(April to August)

Dark coloured bodies, long tail

Can't tell apart from tadpoles of toads



Spawn

(February to May)

Always in clusters



Take a photo if you are not sure

Photo of adult frog and frogspawn by Chris Dresh (ARC)

Photograph of frog tadpole by Howard Inns (ARC)