

Garden factfile

This factfile intends to provide the background information necessary for teachers to use the lesson plans and worksheets confidently. A number of other websites that may be useful include Wikipedia, ARKive, BBC Nature, Naturenet, RSPB and The Wildlife Trust.

Pipistrelle bat

Latin: *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*

Two species of pipistrelle bats are found in Britain; the common and soprano pipistrelles. Originally thought to be a single species, they were split in 1999 after it was discovered that the two species echolocate at different frequencies. Common pipistrelles call at 45kHz whilst Soprano pipistrelles echolocate at 55kHz. Since this discovery it has been realised that the two species differ slightly in size and feeding habits.



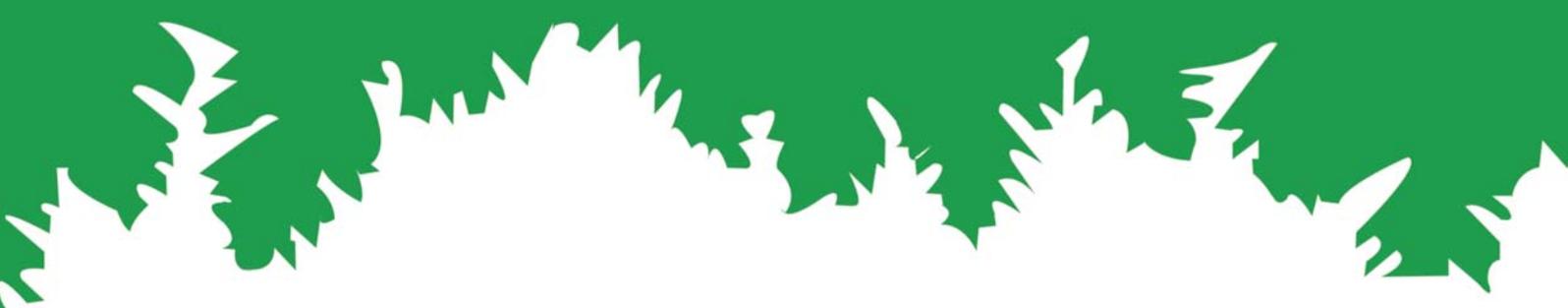
Pipistrelles are the smallest and most common of Britain's bats, often roosting in the roofspace of inhabited buildings. Pipistrelle bats are found across a range of habitats, including woodlands, wetlands, grasslands, farms, parks and gardens. They tend to forage over open grassy areas surrounded by trees or bushes. They may also be seen hunting insects over water.

Pipistrelle bats gather together in colonies throughout the year. During summer they congregate in large colonies, roosting in trees, buildings such as churches and rock crevices. Favourite summer roosting places are small, warm spaces behind tiles or weather-boarding on



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a south-facing wall. Being so small, pipistrelles are able to squeeze through gaps only 15mm wide. The bats sleep during the day, emerging 15-30 minutes before sunset to hunt for insects. They feed on small, flying insects such as gnats, moths and caddisflies, and consume up to a third of their own bodyweight per night.

Bats detect prey by echolocation; they emit very high-pitched (ultrasonic) squeaks which bounce back from any solid object. The bat is able to interpret the time taken for the echo to return and 'see' its surroundings.

Bats hibernate over winter from about mid-October. The colony will find a suitable site such as a church roof, bell tower, a hollow tree or a rock crevice. Each bat hangs or wedges itself head down, gripping with its feet and descends into torpor. Torpor is a state of decreased physiological activity in an animal, usually characterized by a reduced body temperature and rate of metabolism.

Mating takes place in autumn, but the female delays fertilisation until the spring. The developing embryo is dependent on weather and food supply. Female pipistrelles form nursery colonies over the summer whilst the males roost in separate, small colonies. Gestation is 44-50 days and the single (usually) pup is born in June. Baby bats are very tiny, hairless and blind for about a week. Warmth is very important, leading to faster growth. The young are weaned and ready to fly at 3 weeks old. Female males reach sexual maturity in a year, males in 2 years.

All British bat species have been declining due to a decrease in suitable habitat and available insect prey. Old, mature trees which were traditionally a source of insects and roosting locations have been lost. The insects on which bats rely are often killed with pesticides or are also suffering population declines as a result of habitat loss. All bat species are protected by law, this includes their roosting locations.

Garden spider

Latin: *Araneus diadematus*

The garden spider is a common, large orb-web spider that is widespread throughout Britain and northern Europe. It is found in a wide range of habitats, including gardens, meadows, woodland clearings and hedgerows.

The garden spider spins a large, complex orb-web, which can measure up to 40cm in diameter. This web is used to catch insect prey. The spiders tend to wait at the centre of the web, detecting vibrations in the silk through their leg, indicating that an insect has been trapped. The



spider will proceed to wrap the prey item in silk before consuming them. The web is consumed at the end of the day so that the proteins are conserved and re-used. A new web is spun every day.

As with all spiders, the garden spider possesses 4 pairs of legs; the first pair are long and are used to sense vibrations on the web. In front of the walking legs are a pair of 'palps' which are used for sperm storage in males, and are inserted into the female's body to transfer sperm. Three pairs of spinnerets, at the end of the abdomen, secrete silk.

The colour is variable, from pale yellow to blackish-brown. Pale markings on the abdomen often resemble a cross. Females are larger than males, which are often eaten. During copulation, males embrace the female's abdomen and sperm is transferred by insertion of one of the male's palps. The male departs after mating and dies soon afterwards. The female spends a number of days in her retreat, then begins spinning an egg sac or 'cocoon' which protects the eggs. She stays close, protecting the cocoon for a number of days before dying. The young spiders emerge from the cocoon in spring and gather in dense groups until after their first moult. Following this, they disperse by 'ballooning', a form of dispersal in which the spiderlings throw up threads of silk and are carried by the wind.

Wren

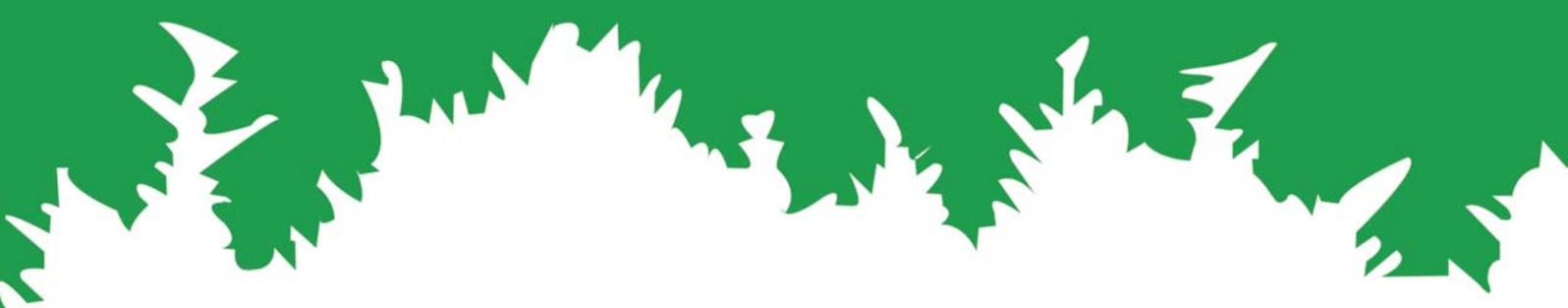
Latin: *Troglodytes troglodytes*

Also known as the Winter Wren or the Northern Wren, the species is the only one of the sixty species in the family which occurs in the Old World (Europe, Asia and Africa). A very small bird, the wren is known for its long and complex song.

Usually between 9 and 10.5cm long, the Wren is brown above, greyer underneath and has darker brown bars on the wings and tail. The bird has a dark brown bill and pale brown legs. The primarily insectivorous bird will also take seeds and pupae over winter.

Its song is loud and emphatic, for its size ten times louder, weight for weight, than a cockerel. Individuals vary in the quality and volume of their song; females may base mate choice on those that have the loudest and most complex song structure. The song begins with a few preliminary notes, then runs into a trill, slightly ascending, and ends in full clear notes or another trill.

At night, usually in winter, it often roosts, true to its scientific name, in dark retreats, snug holes and even old nests. In hard weather it may do so in parties, either consisting of the family or of many individuals gathered together for warmth. Male Wrens build several nests, sometimes 6



or 7, these 'cock nests' are never lined until the female chooses which one to use. The normal round nest of grass, moss, lichen or leaves is usually tucked into a hole in a wall, tree trunk, crack in a rock or corner of a building, but it is most often built in bushes and hedgerows. Five to eight white or slightly speckled eggs are laid in April, and second broods are reared.

Snail

The term snail is given to almost all members of the molluscan class Gastropoda that have coiled shells in the adult stage. Snails, in a general sense, include sea snails, land snails and freshwater snails, although during this topic we will be dealing with land snails. Snails lacking a shell or having only a very small one are known as slugs, whilst those having a broadly conical shell are often referred to as limpets. Other than the difference in shell, there is no real difference between slugs and snails, except possibly habitat and behaviour.

Gastropoda are second only to insects in terms of total number of species. Snails are incredibly diverse, in habitat, form, behavior and anatomy. Most are herbivores, although some are omnivores or predatory carnivores.

The Common or garden snail (Latin: *Helix aspersa*) is common and widespread throughout Britain and Europe. Found in varied habitats they are often encountered in gardens, parks, forests and dunes. The common snail has pale grey, moist skin. It has four tentacles, the shorter (front) two are for feeding, whilst the longer two are eye stalks. The shell is usually light brown with darker bands following the spiral of the shell.

The garden snail is a herbivore, feeding on decaying vegetation, algae, fungi, lichens and plant leaves. They are often found feeding on garden plants and are often considered as pests. They have also been known to feed on damp paper and cardboard – they are able to digest it due to the presence of a symbiotic bacterium in their crop. The snail feeds by scraping a tongue covered in horny teeth, called a radula, over their food. This allows them to scrape algae and lichen from the surface of rocks and walls. The common garden snail is closely related to *Helix pomata*, the edible snail used in cooking in France.

Because of their moist skin, common snails are most active in damp weather and at night. During particularly dry conditions the snail is able to retreat into its shell and seal the entrance with a barrier known as an epiphragm. Snails in this state are often found under rocks in gardens or on a wall in a sheltered corner. The snail can remain in this state of suspended animation for several months.



All land snails are hermaphrodites. This means they possess both male and female reproductive organs. They do not self-fertilize, but will pair up with another snail and co-fertilize. Up to around a month after mating the snail lays around a hundred small eggs under damp soil. If conditions remain suitable, the eggs will hatch after approximately 14 days. Newly hatched snails have a small fragile shell and it takes two years for them to reach maturity.

Grasshopper

Grasshoppers are insects of the suborder Caelifera, in the order Orthoptera (grasshoppers, crickets and locusts). Grasshoppers have antennae that are almost always shorter than their body. Those species that make easily heard noises usually do so by rubbing their hind femurs against the forewings or abdomen (known as stridulation), or alternatively by snapping the wings during flight. Females tend to be larger than the males.

Like all legs, grasshoppers have a three-part body (head, thorax and abdomen), six jointed legs, two pairs of wings, and two antennae. Their body is covered with a hard exoskeleton. They breathe through a series of holes called spiracles which are located on either side of their body. The hind legs are typically long and strong, fitted for leaping, whilst the short front legs are used to hold food and walk. Grasshoppers can leap 20 times the length of their own body, in human terms this would be almost 40 yards!!

Grasshoppers are herbivores, eating grasses, leaves and cereal crops. Some species are considered pests. They are predated on by birds, beetles, reptiles, mice and spiders. When a grasshopper is picked up they 'spit' a brown liquid which is sometimes known as 'tobacco juice'. Some scientists believe that this may protect the grasshoppers from attacks by predators. Grasshoppers also evade predation by hiding among grass or leaves.

It is estimated that there are some 11,000 described Caelifera species, and it is thought that many remain undescribed, especially in tropical wet forests.

During reproduction, male grasshoppers introduce sperm into the ovipositor, and inserts a spermatophore (package containing the sperm) into the female's ovipositor. The female then lays an egg pod, buried one to two inches underground, although they are sometimes laid in plant roots or manure. The egg pod contains several dozens of tightly-packed eggs that look like rice grains. The eggs stay there over winter and hatch in spring when the weather has warmed significantly. In Britain, the grasshopper spends most of its life as an egg, hatching and living as an adult for up to 3 months. Grasshoppers develop through stages, progressively moulting as they get larger in wing and body size.



Newts

Three species of newt are found in Britain: The common or smooth newt (*Lissotriton vulgaris*), palmate newt (*Lissotriton helveticus*), and the great crested newt (*Triturus cristatus*). Smooth newts are the most common newt species in the UK, whilst they are also considered as one of the most common species of amphibian in Europe. Palmate newts are found throughout Western Europe, are not particularly rare in Britain, but are absent from Ireland. Great crested newt populations have declined dramatically over recent years, and are therefore highly protected under European law.

Smooth and common newts grow to approximately 10cm in length, including the tail, whilst great crested newts are significantly larger, attaining up to 17cm length. Great crested newts appear almost black in colour; they have small white spots on the lower flanks and yellow or orange coloured undersides with large black blotches. Males possess a large jagged crest which runs the length of their back, dipping at the end of the abdomen before continuing along the tail. The skin is much rougher than is the case with the other two newt species, which is why the animals are sometimes called warty newts. The smaller, common and palmate newts are more difficult to distinguish. These are the species that you are most likely to come across, and have an appearance of the 'traditional' newt; smooth olive green or light brown skin with darker speckles. Both species also have orange bellies, although the smooth newt has rounded dark spots along their bellies and pale throats, whilst palmate newts have an unspotted throat. Male smooth newts grow a continuous undulating crest along the length of the back and tail as well as fringes of skin around the toes of the hind feet. Males also develop large spots on the upper body during the breeding season. Breeding behaviour and life cycle of palmate newts are almost identical to that of the smooth newt, although the male dorsal crest is far less pronounced than is the case with smooth newts and has a straight edge. There is a noticeable "thread" at the end of the tail of a breeding male as well as webbing on the hind feet.

The breeding season lasts from March through to June and takes place in water, the female laying eggs either singly or in pairs, attaching them to the leaves of aquatic plants and then folding the leaf over the egg with her hind legs. For the remainder of the summer, newts live out of the water and take refuge in shady areas such as logs piles in gardens, venturing out at night to feed upon small invertebrates. Breeding and life cycle of great crested newts are very similar to the other two newt species although great crested newts are chiefly nocturnal and can be difficult to detect in ponds during the daytime.



Whilst in water the newts feed on aquatic invertebrates, frog tadpoles, insect larvae and water snails. On land, they hunt insects and worms and other invertebrates. Great crested newts may eat other newts, particularly when in water.

Outside the breeding season, newts can be found in a variety of habitats including gardens, heathland, marshes, farms and parkland. They return to areas with slow-moving or standing water and plenty of vegetation to breed.

Following courtship, the male deposits a spermatophore (packet of sperm) in front of the female, which she then picks up with her cloaca (reproductive and kidney opening). The female will lay a few eggs a day, individually on or wrapped in aquatic plants. They tend to lay 200-300 eggs in total. Larvae hatch after 2-3 weeks, and fully metamorphose into air-breathing juveniles after about 10 weeks. They become sexually mature adults after 2 or 3 years.

Further information on Amphibians and their conservation can be found in our downloadable [.pdf Amphibians and Reptiles in South Wales](#).