

BATS (*Chiroptera*)

There are more than 1,100 different species of bat found throughout the world, and they are absent only from the Arctic, Antarctic and some remote oceanic islands. Bats belong to a biological order of mammals called 'Chiroptera', which comes from the Ancient Greek words meaning 'hand' and 'wing', and they are the only mammals that are capable of powered flight. Throughout the world bats are divided into two sub-orders: mega-bats that are found in tropical and subtropical areas of the old world and feed almost exclusively on fruit and flowers, and micro-bats which are found worldwide and include insect eating bats.

All of the bats in Britain are micro-bats that feed exclusively on insects. They can be further grouped into the vespid and horseshoe bats. There are 17 native species in Britain and there are known breeding roosts of 11 of these species in Cornwall. The following information applies to all of Cornwall's resident bat species, more specific details and maps are provided under each species page.

HABITAT

The place a bat lives is called its roost and bats will roost in built structures, trees and underground sites. In built structures bats will roost in gaps such as underneath fascia boards and in roof spaces. Bats need different roosting sites that offer different conditions throughout the year.

Bats can be found in a variety of different habitats where there are roosting sites, shelter from predators and a constant source of water and insects. Bats use linear landscape features such as hedgerows to navigate between sites and provide protection on the way. Habitat comprising water offers good opportunities for breeding insects, and insects will find shelter along habitat edges. Bats can be found in habitat such as grassland, farmland, woodland, parks and gardens. Some species of bat avoid artificial light whilst other species will forage on insects that are drawn to the light.

BEHAVIOUR

The vespid bats are also referred to as crevice-dwelling bats, as they roost within a crevice, whereas the horseshoe bats hang freely.

Bats hunt their insect prey nocturnally and predominantly use echolocation, although they do also use their eyesight. Some bat species such as the pipistrelle bats (*Pipistrellus* spp.) aerial hawk by capturing insects in flight whilst on the wing. Other species such as the brown long-eared bat (*Plecotus auritus*) glean stationary insects from above vegetation surfaces, and the Daubenton's bat (*Myotis daubentonii*) is also known as the 'water bat' as it trawls insects from above water surfaces.

Bats are highly sociable and clean animals, spending a lot of their time grooming.

DIET

The different bat species favour different prey. For example, the common pipistrelle (*Pipistrellus pipistrellus*) favours smaller prey such as midges, and can eat over 3,000 small insects in a single night. The brown long-eared and lesser horseshoe bats (*Rhinolophus hipposideros*) are moth specialists, whereas the noctule (*Nyctalus noctula*) and greater horseshoe bats (*Rhinolophus ferrumequinum*) will consume cockchafer beetles. Bats will often find a sheltered roost in which to take larger prey to eat.

LIFE HISTORY

Bats have their young in the summer, and hibernate during winter as insects are scarce. In the summer, bats choose warm roost sites where pregnant and lactating females group together to form maternity roosts. In the winter, bats choose cool and stable sites as hibernacula. For example, the lesser horseshoe often roosts in warmer buildings during the summer and in cooler underground sites during the winter.

Bats typically breed in the autumn and also in the spring, and the female delays fertilisation until the summer. Unlike many other small mammals, bats usually only have one young per year which is called a pup, and they have a long lifespan, for example the greater horseshoe bat has been recorded living as long as 30 years in Europe. Pups are typically weaned at 4-5 weeks when they begin to venture out from the roost to forage.

PREDATORS AND THREATS

Historically bats have suffered significant declines due to human influences such as from habitat loss, development and agricultural intensification. Owls do prey upon bats although they form only a very small part of their diet and domestic cats will also prey on bats.

SURVEY METHODS

Bat detectors can be used to detect bats and identify species. Bats typically echolocate at a frequency range that is beyond the range of human hearing and most bat detectors basically convert the high pitch calls to a frequency that can be heard. There are also detectors that allow for recordings to be analysed as sonograms, which are visual displays of sound.

CONSERVATION STATUS

All British bats are European protected species (included on Annex IV(a) of the EC Habitats Directive; CEC, 1992). Annex IV(a) species are protected in this country under Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994. (HM Government, 1994). Additionally bat species in the UK are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (HM Government, 1981).

BAT SPECIES IN CORNWALL

Genus	Species
<i>Pipistrellus</i>	Common Pipistrelle (<i>Pipistrellus pipistrellus</i>) Soprano Pipistrelle (<i>Pipistrellus pygmaus</i>)
<i>Plecotus</i>	Brown Long-eared (<i>Plecotus auritus</i>)
<i>Nyctalus</i>	Noctule (<i>Nyctalus noctula</i>)
<i>Myotis</i> (mouse-eared bats)	Natterer's (<i>Myotis nattereri</i>) Daubenton's (<i>Myotis daubentoni</i>) Whiskered (<i>Myotis mystacinus</i>) Brandt's (<i>Myotis brandti</i>)
<i>Barbastella</i>	Barbastelle (<i>Barbastella barbastellus</i>)
<i>Rhinolophus</i>	Lesser Horseshoe (<i>Rhinolophus hipposideros</i>) Greater Horseshoe (<i>Rhinolophus ferrumequinum</i>)