

EXAMPLES OF SPECIES

Myotis bechsteinii - Bechstein's bat

Bechstein's bat is a rare species throughout Europe. It seems to be strongly associated with mature deciduous woodland, particularly oak and beech, with a well-developed understorey and many large old trees. However, it may also use mixed woodland with conifers. Maternity roosts are generally in tree cavities such as woodpecker holes. It hibernates in tree cavities and also in underground sites. Colonies may use 30-50 tree cavities throughout the year.

This is a medium sized bat (wingspan 250-300 mm) with noticeably long ears that reach beyond the muzzle when folded forwards. It uses quiet echolocation calls (a 'whispering' bat) for hunting in a cluttered environment and picks a range of invertebrates off foliage or the ground.



P. Kanuch

Nyctalus noctula - Noctule

The noctule is widespread throughout Europe, though absent from the north and less common in the Mediterranean. It is primarily a woodland bat, with summer roosts often in tree cavities, particularly woodpecker holes. It hibernates in tree cavities, rock crevices and crevices in tall buildings, particularly in central and eastern Europe, where large numbers of individuals may cluster. It usually chooses roosts more than 3 m above the ground and hunts above the tree canopy and over a variety of open areas.

The noctule is a large bat with distinctive reddish-brown oily fur, though duller brown after moult and in juveniles. The ears, nose and wing membranes are dark brown. It has a strong and distinctive musky smell. It flies fast on long narrow wings and has very loud echolocation calls, which many people can hear.



NABU

Barbastella barbastellus - Barbastelle bat

This bat occurs widely across Europe, but its range is heavily fragmented and it is considered rare almost everywhere. It is typically found in beech or oak forests.

Although maternity groups may sometimes use live trees or more rarely buildings, they mostly roost beneath loose bark or in splits found in dead trees, so standing dead trees represent a crucial component of forests for this bat.

Barbastelles frequently switch between roosts, so to protect colonies, the management of entire forest patches is required rather than the protection of single trees. Consequently, high numbers of dead trees should be retained to ensure the survival of this fragile bat species.

A medium sized bat (forearm length 35-43 mm), it is characterised by small triangular ears joined on the top of the head, making identification unmistakable. When flying in open space or along vegetation edges, it often alternates between two different types of echolocation calls. It forages in a range of habitats (especially forest and wooded river valleys), its diet being dominated by moths.



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BATS AND FORESTRY



ABOUT BATS

Bats are the only true flying mammals. Their wings are made of skin stretched over elongated fingers. They are warm-blooded and give birth to live young, which they suckle with milk.



L. Cistrone

There are more than 1000 species of bats world-wide and they can be found from the tropics to the edges of the polar regions. All European

insectivorous species, the subject of this leaflet, eat insects and spiders, which they catch in the air or pick off foliage or the ground. Bats can see perfectly well, but they also use a sophisticated echolocation system to navigate and find their prey in the dark. This system, where the bat emits high-pitched sounds and analyses the returning echoes, is so sensitive that bats can catch small insects in flight. Although they are warm-blooded like us, bats have great control of their body temperature and can allow their temperature to drop so they become cold and torpid, thus saving energy. In cooler climates, many species hibernate for long periods when no prey is available.



P. Boye

Bats have complex social lives and all are colonial for at least part of the year. Most commonly, they form colonies during the breeding season, when females gather to have their young. Depending on the species, these colonies can range in size from just a few bats to several thousand, with the biggest colonies being found in caves or similar places. At other times of the year, bats may live singly or in small groups. During the breeding season, bats seek out warm places or gather in large clusters to keep themselves warm. At other times, they may seek out cooler places, so they can allow their body temperature to drop and save energy.



P. Kanuch

Bats can roost in a wide variety of places, but the most important are trees, buildings and underground places, such as caves and abandoned mines. Some species use mainly trees, others prefer underground places and some move between trees and underground places, depending on climate and season. Many now roost in buildings, as these can provide similar conditions to both trees and underground places.



L. Cistrone

Tree-roosting bats use cracks, crevices, rot-holes and wood-pecker holes, as well as areas of loose bark for roosting. Some species like to squeeze into small crevices, whilst others prefer to gather in cavities, such as those made by woodpeckers. Trees with these kinds of features are very important in forests of all sorts. Most bats that roost in trees will move between several trees over a period of time, so they need to have a supply of trees with suitable roosting places within a small area and also a continuous supply of new roosts, as old trees decay or are removed.

All European bats are nocturnal, usually emerging from their roosts at dusk and returning at dawn or earlier. They will hunt wherever there is a good concentration of their insect prey, with different species specialising on different types of insect or different ways of hunting. For example, some species specialise in catching moths resting on foliage, while others hunt small insects out in the open or over water. Some even flycatch, hanging from a branch until they detect a suitable insect within range. Most bats hunt within just a few kilometres of their roosts, so forests need to provide both roosting places and hunting places within this flying distance. In addition, many small species of bats avoid flying out in the open, so suitable connections between areas of forest, allowing the bats to move between them, can be very important. A few species migrate long distances in spring and autumn and need suitable resting places in forests along the way.

PROTECTION

Bats are legally protected in almost every part of the EUROBATS area. Within the European Union, all species are protected under the Habitats and Species Directive.

BATS AND FORESTRY

Forests of all types, ranging from the dry Mediterranean forests of southern Europe to the boreal conifer forests of northern Europe, are used by bats. In many cases, bats will seek out particular features, such as ponds or streams, clearings or forest edges, where insects tend to be most abundant. Exactly which features are most important will depend on the forest type and the species of bats that are present.



A. Bashita

Bat distribution, diversity and density in managed forests may be affected by competition for limited roosting places. Managing forests to maintain or improve bat populations needs a good understanding of what species of bats are present and their roosting, hunting and commuting needs. It is also important to understand the effects of forest management on the bats.

The great diversity of forest types across Europe, together with the diversity of management practices and administrative and regulatory structures, mean that detailed ad-

vice on the management of forests and bats needs to be developed locally. However, there are several important principles that apply right across Europe and can form the basis for the development of local advice. We recommend that the following good practice guidance is used as the basis for the development of national guidance that takes account of local forest types and forestry practices.

GOOD PRACTICE GUIDANCE FOR BAT-FRIENDLY FORESTRY IN EUROPE

LANDSCAPE PLANNING

- A strategy for the whole landscape benefits bats. In order to be able to combine conservation with timber production it is important to do the right thing in the right place. Integrate advice from bat specialists at an early stage in forest planning.
- Some bat species are affected by fragmentation: avoid creating isolated stands.
- Corridors along streams are used by bats as foraging sites and for commuting. Hedgerows and tree-lines connecting forests or areas of woodland benefit bats.

FORESTRY OPERATIONS

- Preserve and increase roosting sites by conserving standing dead trees, old and big trees and trees with holes in all forestry operations (logging, thinning and cleaning). Groups of old trees are particularly valuable.
- Wherever possible try to increase variation in tree species and forest structure. Use native species wherever possible.
- Conserve deciduous trees in coniferous forests. Deciduous trees produce food and roosting sites.
- Increase food production for bats by conserving important habitats: wet forests, riparian habitats, gaps and forest edge zones.
- Limit the use of pesticides in forests.

- Avoid drainage of forest land. Creating new small wetlands and ponds within the forest benefits the bats. Flooding and storms can create dead trees and a variable forest structure.
- Semi-open pastures are sometimes important habitats. Nowadays grazing is often abandoned and these areas are allowed to regrow or are planted with trees. It is important to conserve some areas with semi-open structure and high abundance of flowering plants. Do not cover the whole landscape with monoculture plantations.
- Grazing and browsing by cattle or other large herbivores creates a variable semi-open forest which is a good foraging habitat for bats. However, too much grazing can remove the whole understorey.
- Avoid creating large clear-cuts.
- Identify the next generation of trees for bats and leave these during harvesting.
- Avoid cutting through any trees close to holes; there may be bats roosting inside.

OTHER

- Buildings and underground places such as caves and mines can provide important roosting places for bats. Ensure these are not affected by forestry operations.



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