

HABITAT MANAGEMENT FOR WOODLAND BATS

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Abstract

Most British bats are dependent to some extent upon woodland habitats for foraging and roosting. All are highly sensitive to disturbance and habitat change and are legally protected. Methods of identifying and protecting natural roost sites and providing artificial sites are described; these should ensure

that roost sites are always available. Bat habitats can be improved by increasing the structural and species diversity of woodlands, by planting native broad-leaves, by retention of a few old trees beyond rotation age, and by the sensitive management of waterside habitats, scrub, and open grassland.

Introduction

There are 15 species of bat resident in Great Britain. Only 6 of these (brown long-eared, Daubenton's, Natterer's, noctule, pipistrelle and whiskered) occur in Scotland and lesser and greater horseshoe bats are only found in the south-west of England and parts of Wales. All species are vulnerable to habitat disturbance and loss of roost sites but horseshoe bats are endangered. Barbastelle and Bechstein's bats (both woodland species) are very rare with only one or two individuals found each year.

All species have declined over the past 50 years and are now fully protected (Wildlife and Countryside Act 1981). Licences from the Nature Conservancy Council are necessary for the inspection of sites

known to harbour bats and the Nature Conservancy Council must be consulted before work commences on buildings or subterranean sites containing bats.

All species are insectivorous and many are dependent upon woodlands or woodland edges for foraging and roosting. Forest operations which may damage bat habitats should be modified and consideration should also be given to modifying woodland structure and composition to create more suitable habitats. There is little point in providing roost sites if there is an absence of foraging habitat. It is therefore important to ensure that all the necessary resources are provided.

Identifying and protecting roost sites

Bats use caves, mines, trees and buildings as roost sites during both winter and summer. They are especially vulnerable to disturbance during hibernation (September to May). Potential sites such as caves and mines should be surveyed (preferably by people experienced in this work) to detect the presence of bats and entrances grilled if necessary (Plate 2). Caves currently unused due to too little or too great an airflow can be improved by creating additional entrances/air vents or fitting partial barriers at the end/middle of the tunnel. The aim is to achieve an internal temperature of 0–6°C in January during frosty weather. The Nature Conservancy Council should be consulted if grilling is planned as grilles must be correctly designed and

3. Roost hole in birch tree showing staining below the entrance due to faeces and urine. (38850)

1. (Front cover). Bechstein's bat – a woodland bat species considered to be rare and restricted in distribution to central southern England. (F. Greenaway)

2. Cave in the Forest of Dean with entrance grilled to prevent access by the public whilst still allowing access to the bats which roost within the cave. (37831)



fitted to ensure that they do not restrict access by bats or airflow. The Nature Conservancy Council may also assist with grant-aid for such projects.

Roosts in the roof space or cavity wall of buildings may be identified from the presence of bats or by their droppings either in the roof space or beneath the roost entrance. Occasionally bats (usually juveniles) appear in the living space. Bat droppings are similar in appearance to mouse droppings, but when rolled between the fingers will crumble into a fine powder. The Nature Conservancy Council will advise on the timing of maintenance work to ensure minimum disturbance and on the use of non-toxic insecticides and fungicides.

Tree hole roosts can sometimes be identified from droppings and urine stains on the tree or droppings on the ground below the entrance hole, especially during the summer (Plate 3), but these signs are not always present. Felling operations should be preceded by inspections aimed at detecting roosts

and paying special attention to old and especially overmature broadleaved woodland. Trees containing roosts should not be felled and where possible some adjacent trees should also be retained. On stream sides and in unproductive broadleaved habitats this should not be a problem. Hollow, dead and dying trees are extremely valuable wildlife habitats and should be conserved where possible. Rather than being felled, dangerous trees should be made safe by lopping branches (Research Information Note 136).

Daubenton's bats often roost in crevices in the fabric of bridges, especially over water, and adequate care should be taken to avoid damage to the bats or their roosts during civil engineering work. Indeed, it is possible to create suitable crevices during the construction of new bridges.

Bats are faithful to both summer and winter roost sites over several years. Therefore their location should be recorded on maps and conservation plans to ensure a secure roost for future years.

Artificial roosts

In sites where winter roost sites are lacking, artificial caves and artificial tree holes (Figure 1) can be provided. The Nature Conservancy Council will advise on the design and construction of artificial caves. Artificial tree holes must provide sufficient wall thickness to insulate bats from extremes of cold. They are probably of most use for the relocation of bats which have been disturbed during hibernation due to tree felling.

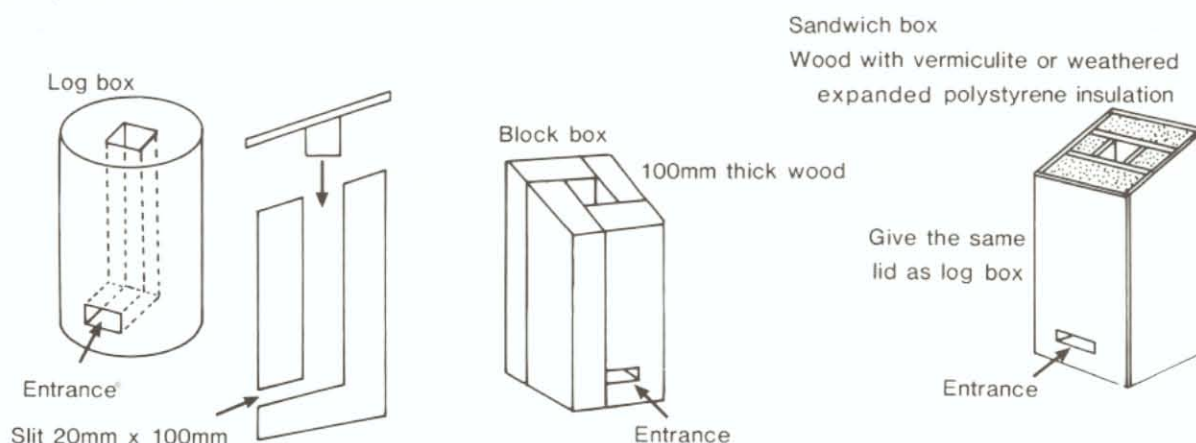
In plantations where the lack of tree holes limits bat abundance, summer roost boxes may be provided (Figure 2). Groups of up to 18 boxes, 3 per tree facing north, south-east and south-west, within a 50 metre radius, should be spaced at approximately 2 km intervals throughout the habitat. Only preservatives known to be non-toxic to bats should be used on wooden boxes. Advice on suitable treatments can be obtained from the Nature Conservancy Council.

Both winter and summer boxes should be fixed as high as practicable, preferably on trees alongside rides/open habitats, with a clear flight path to boxes.



4. Coniferous woodlands with broadleaf corridors. The latter increase diversification of the habitat and therefore encourage additional insect species, so improving the habitat for foraging bats. (20583A)

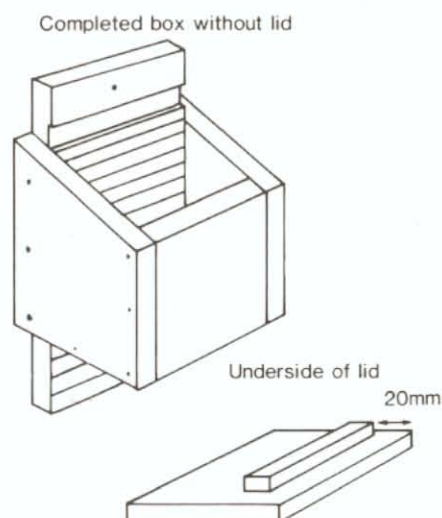
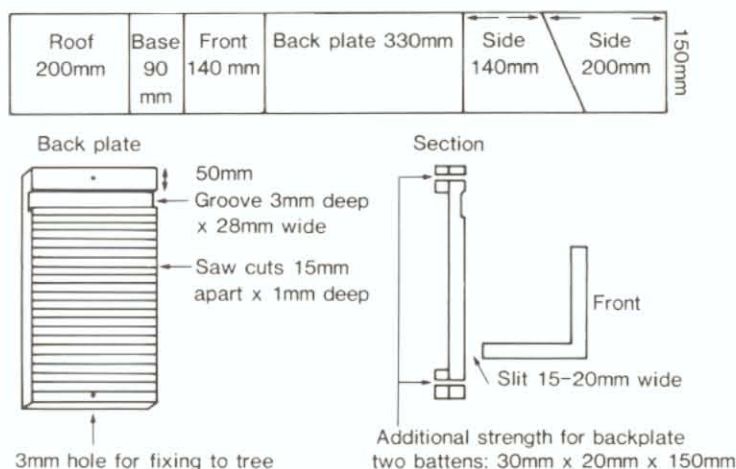
Figure 1: Hibernation box designs (after Stebbings and Walsh, 1988). All have a central hole about 100 mm square and 300 mm high (with the lid fitted) and not less than 100 mm thickness of material surrounding the cavity.



Exterior of all boxes especially around slits needs to be very rough

Figure 2: Cutting diagram for the construction of a standard summer roost box, from roughsawn softwood (after Stebbings and Walsh, 1988). The lid snaps into the groove in the backplate. Alternatively, a hinge may be made from car tyre inner tube and a hook fitted to the front to prevent the lid being lifted by animals or the wind.

Plank : 111cm x 15cm x 2.5cm (10mm allowed for marking and cutting)



Improving woodlands and foraging habitats

Habitats for many prey species can be provided by increasing the species and structural diversity of woodlands. The provision of corridors of native broadleaved trees and shrubs such as *Betula*, *Salix* and *Prunus* is especially valuable in providing habitats for moths.

Waterside habitats are very important as foraging areas for bats. Optimum conditions for bats will be provided if ponds are at least 0.5 ha in size and spaced at approximately 2 km intervals throughout the woodland. In areas where waterside habitats are lacking, ponds should be constructed. Advice and designs are available in the *Wildlife rangers handbook*. Planting broadleaved trees and shrubs around ponds and alongside streams in conifer plantations will especially improve these habitats for foraging bats. Waterside and open scrub habitats should be designed and managed to provide sheltered foraging areas where insects will be constantly available. Glades for deer control (Forestry Commission Leaflet 86) and bays to improve ride and road sides for wild plants and butterflies (Forestry Commission Research Information Note 126) are likely to provide sheltered foraging areas, as well as increasing insect species diversity. Grassy areas which are mown regularly and receive sunlight provide habitats for crane flies and ground beetles, both of which are important for foraging bats at certain times of the year.



5. Ponds habitat. Especially important as foraging habitat for many bat species. Broadleaved shrubs around the margins provide sheltered areas as well as increasing insect species diversity. (38907)



6. Brown long-eared bat. A woodland bat, distributed throughout Britain and often found in bat boxes. They forage in woodlands and are able to hover and glean insects from the foliage, taking a range of insects, especially beetles and noctuid moths. (F. Greenaway)

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