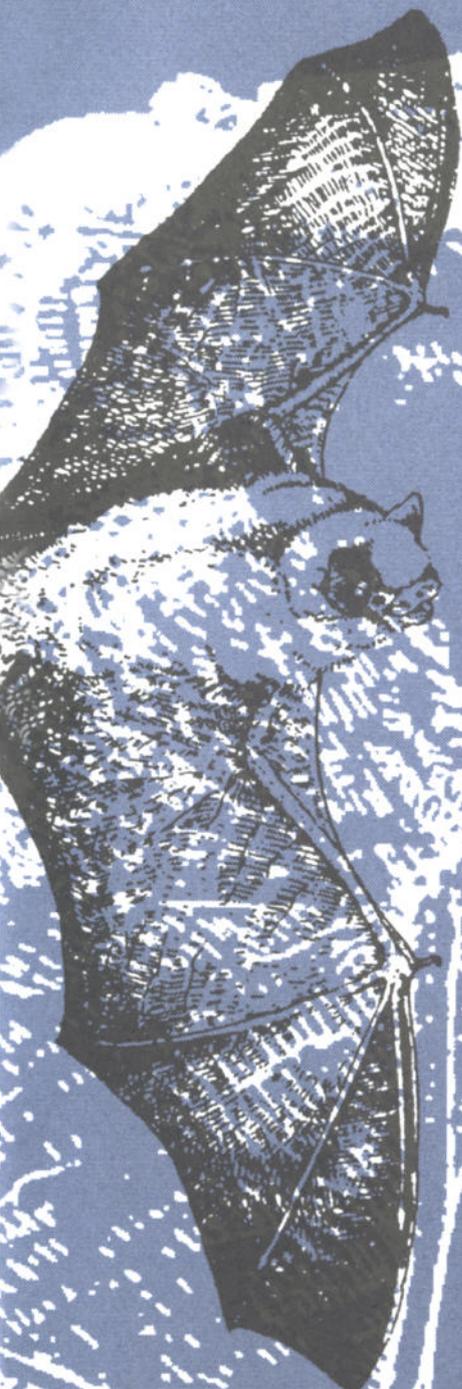


Focus on BATS

their conservation
and the law

ENVIRONMENT AND HERITAGE SERVICE



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Bats are the only flying mammals and are found throughout the world, except for the coldest regions. Like other mammals, they have fur, are intelligent, suckle their young and have a complex social life. Their wings are formed of skin supported by arms and elongated fingers. They do not breed until their second to fourth year and produce a single baby, but not always every year. Mating occurs in autumn and winter, but females do not become pregnant until the following spring, when fertilisation occurs, so that the young are born in June or July. The baby is raised with great care by its mother and is suckled frequently both by day and night. At three weeks the young bat can fly and after five weeks is weaned. Bats can live for up to 30 years.

Bat roost in Tree

Rotted hole with stain beneath



Bat biology

Unlike most other mammals, bats do not have a steady body temperature. In flight, their body temperature of 42°C and pulse rate of 1000 beats per minute are much higher than man's 37°C and 75 beats per minute. After landing, their temperature rapidly falls 10 degrees for digestion and later falls to the surrounding temperature, helping to conserve energy. British bats all feed on insects caught in flight or picked off water, the ground or foliage. During summer, they consume vast numbers, many of which are crop pests. One pipistrelle may eat up to 3,500 insects each night.

Bats are not blind but have good eyesight which is used mostly for navigation. Their most highly developed sense is that of hearing. They use a form of sonar for obstacle avoidance and for locating food. High-frequency sounds are emitted which enable bats to 'see' or discriminate fine detail even in complete darkness, but their range is limited to a few metres. This is why bats have a twisting turning flight as they only notice insects or obstacles when close to them.

Because few insects are available in winter, bats put on about one third extra weight during autumn and then hibernate from October to April. Body temperatures approximate their surroundings, which may be down to zero.

Occasionally, bats may be seen flying on mild days in winter, but unless there are sufficient insects, they may lose more weight than they can replace by feeding. In very cold weather, they may be seen moving to alternative hibernation sites with a more suitable temperature.

Bats should never be disturbed during hibernation as if this happens they use up vital energy reserves and may die.

Roost and habitat requirements

Bats can be found in almost any well protected situation, but there are three major types of roost.

Buildings - houses, farms, ancient monuments, churches, fortifications and industrial buildings - are the most important in summer.

Cave - like places - natural caves, mines, cellars, lime-kilns, ice-houses, tunnels of all kinds (railway, canal, servants' and service) - are mostly used for hibernation.

Hollow trees - in hedgerows and woodlands -are used throughout the year. Each bat species - and there are 6 species resident in N Ireland has its own preferred types of roost. Some are confined almost exclusively to hollow trees, while others have become adapted to using various parts of buildings such as hollow walls, roof spaces and crannies behind weatherboarding or hanging tiles and above soffits. Whatever the situation, there is always at least one entrance hole which may be many metres from where the bats actually roost during the day.

Individual roosts are not usually occupied throughout the year, since bat colonies frequently move, but the same site tends to be occupied by the same colony at the same season each year. Distances between roosts may be only a few metres or many kilometres.

The largest colonies are found during June to August when females congregate in favoured nursery roosts to have their young.

The bats often gather from several hundred square kilometres and therefore these roosts are vital. When weaning is complete, the adult females leave, followed later by the young. Generally, adults begin leaving the nursery in early August and in most cases they have gone by the end of the month, though some may stay till October. Nursery roosts are mostly on the south side of buildings and average colony size is about 50 but may exceptionally reach 500.

Bats prefer clean and fairly draught-free buildings, not liking dust or cobwebs. A large number of colonies are found in houses less than 15 years old. Bats tend not to like old barns, although some barns do house large colonies. Roosts are selected very critically, depending on season, temperature and body condition.

Feeding habitat is variable from species to species. Most bats need sheltered areas with plentiful insects. The best areas are parkland with permanent unimproved pasture, woodland, river valleys with slow moving rivers, meadows and marshland. Hollow trees provide major roosting places for bats in these areas.

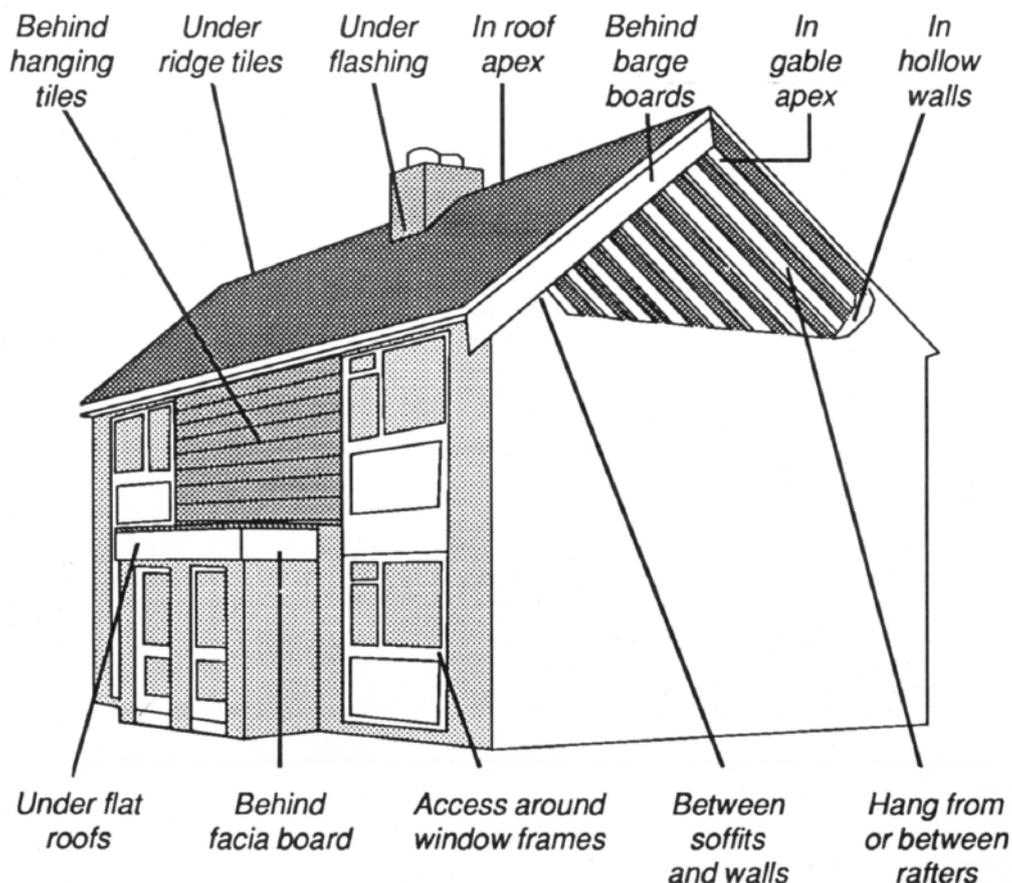
Bats in houses

Bats are usually temporary residents in houses as colonies become established and disperse seasonally. Most will leave houses naturally when they have finished breeding. There are no significant health risks in having a bat colony roosting in one's house in the British Isles.

The droppings consist of the skeletons of insects and, unlike those of rodents, dry to a dust. Unless they get wet, for example through a leaky roof, they cause no problems as they do not rot. They are not corrosive to paintwork, though urine spotting can be a problem on marble, brass or varnished surfaces. Bats do not gnaw or cause any damage to buildings or paintwork and they do not build nests but simply cling or hang. If droppings are a nuisance in lofts, plastic sheets can be spread out and emptied periodically. Occasionally, bats enter rooms through windows near their roost entrances. These are usually young bats inexperienced in navigation but do not worry as they can see well and will not become entangled in your hair. If a bat is flying inside a room, open outside doors and windows to allow it to escape.

Crawling or sleeping bats should be picked up carefully (wear gloves if you like) and taken outside and released, or hung on the house wall.

One way to pick up a bat without touching it is to place a cloth over it and gather it up loosely with the bat inside. It can then be taken outside. In late June, July and August, crawling bats found in rooms are often babies, which are a dull grey in colour. These may enter through around pipes or possibly under skirting or between floorboards. They should be taken outside near dusk and hung on the wall below the bat roost entrance. When the mother flies out, the baby calls and the mother usually picks it up and flies off. If the baby has not been collected by dawn, it may be fed with milk if young, but older bats need insects or other meat. Canned pet foods, scrambled eggs, chopped liver or gentles (pupae are best) may be eaten by bats, but the best food is meal-worms which can be obtained from pet shops.



Threats to bats

Originally bats were animals of woodland and river valleys, roosting in hollow trees and caves. With the clearing of our woodland cover they adapted to live in buildings. Nothing is known of population changes in historical times, but modern declines have been severe. In Britain, for example the Greater Horse-shoe Bat has declined by over 98% in the last century and from being one of southern Britain's widespread species has become one of its rarities. Recent counts over 6 years in sample colonies of some of the more common species have shown declines of about 50%. The main causes of these declines have been loss of roosts, loss of feeding habitat and food, pollution and bad weather at critical times. Roosts in natural cave sites are confined to a few localised areas, mostly in limestone, but bats have quickly colonised mines and underground buildings including disused railway tunnels. However in the past 30 years many such sites have become unusable because entrances have been blocked for safety or by rubbish tipping, or sometimes because of accidental disturbance by industrial archaeologists and cavers. Hibernating bats in caves and mines have been killed by vandals. Roost sites in buildings are reduced when access holes, such as ventilators are blocked and cavity walls are filled for insulation. Retiling and underfelted of old buildings often result in the exclusion of colonies. Remedial timber treatment is probably the greatest threat. Many buildings are treated annually with chemicals that are lethal to bats and poisonous to mammals generally. These organochlorine woodworm killers (mainly lindane) and fungicides are extremely persistent within buildings, and even if bats are not present during treatment they can pick up poison by inhalation of vapour or contact with treated surfaces for many years afterwards. Fortunately, the situation is now improving since the introduction of the synthetic pyrethroid insecticides, such as permethrin and cypermethrin, which have a much lower toxicity to mammals than lindane.

When treatment of woodworm, repairs, or alterations are planned in any building used by bats advice must be sought from the Department of Environment to conform with legislation. Also, when bats are unwanted, free advice will be given so as to avoid harm to the bats. The address is: EHS Conservation Science, Klondyke Building, Cromac Avenue, Belfast BT7 2JA.

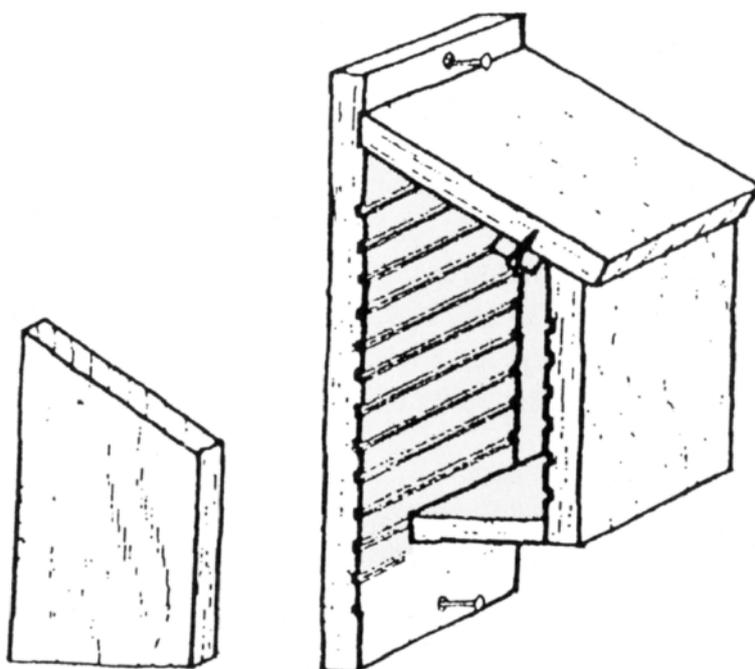
Trees with holes are important for a wide range of creatures including bats. But such trees are too often regarded as dangerous and mistakenly felled or tidied. Also riverside trees are removed for convenience during canalisation. Habitat destruction may also affect food supply. Elimination of permanent unimproved pasture and hedgerow, felling of woodland and canalisation of rivers have greatly reduced the number and variety of night-flying insects and the sheltered places where bats can feed on them. Cockchafer beetles are now far fewer but they are vital to the large bats after hibernation as they are available from April to June. A change in farm practice, from hay making to cutting grass for silage has meant that many insects that fly and breed when plants are in flower are now killed before maturing. Use of agricultural and forestry insecticides may result in traces of persistent chemicals inside insects which accumulate in the bats which feed on them.



Conservation measures

Bats will quickly adopt suitable new sites for roosting as possible sites are constantly being investigated during foraging. Long-eared Bats, which glean food off foliage or branches, find new sites quicker than other species which catch flying insects or feed on the ground.

Bat roost boxes placed on trees or buildings can attract bats, especially if placed in areas lacking roosts and close to feeding areas. These boxes simulate tree holes and can be used by large numbers of bats of most species. A box with each internal dimension about 10 centimetres can hold 50 bats or more. Box shape and size are not critical, but front or back depth should not exceed 10 cm because bats like narrow spaces. Very rough sawn timber at least 2.5 cm thick should be used. Wood can be roughened by making many shallow horizontal cuts inside and out. Bats often alight on the outside and crawl about before entering. Entrances should be 15 to 20 mm wide and at least 50 mm long - or the full width of the box. It is best to have a means of inspection: a lifting lid is easiest to construct. If birds nest in boxes, their nests may be cleared out in autumn, but bats will sometimes roost in boxes with nesting birds. A specialist booklet on this subject is available from the Fauna & Flora Preservation Society or from DOE.



Preservatives must not be used on the timber because they are toxic to bats.

Siting boxes needs care. Generally boxes facing south will be used in spring and summer and those facing north in the autumn and winter. South-facing boxes should receive direct sun for part of the day, preferably in the morning. All boxes need to be clear of crowding branches, but shelter from wind provided by adjacent trees is beneficial. Height above ground is not critical, but species have different preferences. Large, fast, highflying bats prefer roosts over 5 metres above the ground, while Long-eared Bats and Pipistrelles will use boxes as low as 1.5 metres.

Inspect boxes monthly and look for the characteristic crumbly black or brown droppings. Often bats will use boxes as temporary roosts for a few years before breeding in them. If boxes are not used for two or three years, move them to a fresh site.

Boards attached to walls with battens 20 mm thick can provide roosting for large colonies. Elm boards which warp are ideal, as natural slits develop and provide access. These should be on the east, south or west side of a building so as to receive direct sun for part of the day. Small slits about 2 cm wide and 15 cm long made in the soffit against the brickwork near the apex of a southfacing gable end can give access to bats for roosting above the soffit

Droppings can be a nuisance on windows or in lofts. This problem can be remedied by placing deflector boards just above windows and covering stored goods with polythene sheeting. Polythene, attached with drawing pins to the underside of rafters will prevent bats roosting and making droppings beneath. Cold cellars can be made suitable for hibernating bats by replacing covers over ventilation holes with grilles. These gratings need bars about 10 cm apart. Railway and other tunnels are often too draughty for hibernating bats. One or both ends of disused tunnels should be partially blocked, so that draughts are slight even when it is windy. Centre temperatures inside need to be in the range of 3°C to 8°C. Timber planking leaning against the walls can provide additional shelter. Bats squeeze into narrow gaps where mortar has fallen out between bricks and so it is helpful to make such crevices. Important cave or tunnel roosts that suffer disturbance require grilles. These must be planned and built most carefully or bats may be deterred. Some expensively grilled sites have been lost to bats by incorrect design. The purpose is to prevent casual or deliberate disturbance of hibernating bats, while not affecting the roost's climate or interfering with flying bats. It is vital to consult other interested people, such as cavers and archaeologists, and obtain their co-operation. Grilles should be placed at or over the entrance to minimise disturbance of air flow, and not at the narrowest point. Because vandalism may occur, the lock should always be the weak link so that it is broken rather than the expensive grille. Especially where there is a high risk of vandalism, high tensile reinforcing steel, 25 mm in

Bats and the law

Under the Wildlife (Northern Ireland) Order 1985 it is illegal for anyone without a licence intentionally to kill, injure or handle a bat of any species, to possess a bat, whether alive or dead (unless obtained legally) or to disturb a bat when roosting. Ringing or marking bats or photographing them (except when they are flying outdoors) thus requires a licence from the DOE. It is also an offence to sell or offer for sale any bat, whether alive or dead, without a licence. (Sale includes hire, barter or exchange). But the law does allow you to tend a disabled bat in order to release it when it recovers, or to kill a seriously disabled bat which has no reasonable chance of recovery.

Bats have been given fuller protection than other protected wild animals because of their special requirements for roosting. It is also an offence to damage, destroy or obstruct access to any place that bats use for shelter or protection, whether bats are present or not, or to disturb a bat while it is occupying such a place; this applies even in houses and outbuildings. The only exception is for bats in the living area of a house. Otherwise the DOE must be notified about any proposed action to get rid of bats or any operation, such as timber treatment, likely to disturb them or their roosts and must then be allowed time to advise on whether the action or operation should be carried out and, if so, the method to be used and its timing.

To summarise, do not kill or injure bats, or disturb them when roosting, or block entrances to their roosts; and only handle carefully to remove them from the living area of your house or to feed and tend them if this is essential. If bats are unwanted do not take action yourself, obtain advice from Natural Heritage. Application for licences should be made to **EHS Conservation Science, Klondyke Building, Cromac Avenue, Belfast BT7 2JA.**

This explanation should be regarded only as a guide to the law. In case of doubt, reference should be made to **The Wildlife (Northern Ireland) Order 1985.**

Identification of bats

Several books give information on the biology of bats and their identification. These include:

The Handbook of British Mammals, edited by G B Corbet and H N Southern published in 1977 by Blackwells, Oxford.

The Lives of Bats by Wilfred Schober, published by Croom Helm.

Which Bat is It? by R Stebbings. Published by The Mammal Society and The Vincent Wildlife Trust.

Bats, by P Richardson published by Whittet Books.

The Identification of British Bats, by D W Yalden, published by the Mammal Society.

The following bats are known to exist in NORTHERN IRELAND

Species	Latin Name	Size	Preferred Roost Site*
Leisler's Bat	Nyctalus leisleri	medium	B,T
Brown Long-eared Bat	Plecotus auritus	medium	B,T
Common Pipistrelle	Pipistrellus pipistrellus	small	B,T
Soprano Pipistrelle	Pipistrellus pygmaeus	small	B,T
Natterer's Bat	Myotis nattereri	medium	B,C,T
Daubenton's Bat	Myotis daubentoni	small	B,C,T
Whiskered Bat	Myotis mystacinus	small	B,C,T
Nathusius's Pipistrelle	Pipistrellus nathusii	small	B,T

*B = Buildings C = Caves, Mines, Tunnels, Bridges, etc T = Trees

Further advice is available from
EHS Conservation Science
Klondyke Building
Cromac Avenue
Belfast BT7 2JA
Telephone 028 9056 9623
or

National Museums Northern Ireland
153 Bangor Road, Cultra
County Down, BT18 0EU
Telephone 028 9039 5264

The Environment and Heritage Service acknowledges the assistance of English Nature in the publication of this booklet



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Our aim is to protect and conserve our man-made environment and to promote its appreciation for the benefit of present and future generations

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