

Bats & Bat Boxes

Guidance Notes for:

Agri-environmental Schemes

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BAT CONSERVATION
IRELAND

What is a bat box?

Bat Boxes are artificial roosts erected to encourage bats to roost in areas where few roosts are present. Bat boxes can be made from various materials from untreated timber to woodcrete (combination of sawdust and concrete). Each bat species require different spaces to roost in. Therefore, bat boxes come in various shapes and sizes. The microclimate within a bat box is a very important factor. In general, prefer warm spaces in the summer for rearing young and cooler spaces in the winter for hibernation. The bat box should be draught proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone. If possible, it is better to provide several internal chambers or several types of bat boxes in different locations so that the bats can move around as their needs change.

Timber Bat Boxes

These bat boxes tend to be cubic or wedge shape and often look like a bird box without the front entrance. Instead bats enter from below, through a narrow slit, into a draught-free chamber. These boxes can be easily made but for bats to use them, they need to be well sealed and well made. In addition, it is important that no chemicals or toxic paint is used to treat or paint the timber used as this will poison the bats. A number of different designs are available which are described below. And are recommended for internal structures only.

Woodcrete Bat Boxes

These are specialised bat boxes moulded into different shapes. As a consequence they cater for different species of bat. In addition, due to their composition, they last longer when open to the weather and their dark colouring make them very favourable for bat usage (i.e. they heat up quickly in the sunlight). Such boxes are purchased from websites such as www.nhbs.com. Bat Conservation Ireland recommends this composition of bat box for agri-environmental schemes especially for location outside on trees and external walls.

Integrated Bat Boxes

This is another specialised bat box that can be built into the walls and facade of a building and can be purchased in different shapes and sizes. They have the advantage of being permanent spaces for bats with good thermal properties. This bat box is highly suitable for locating within agricultural buildings such as hay barns.



Photo 1: Flat (self cleaning) woodcrete bat box hung on a south-facing aspect of a mature tree. Photo 2: Selection of woodcrete bat boxes. Photo 3: Integrated bat box

Ireland's bat fauna

Ireland's bat fauna is comprised of nine resident species, forming one third of Ireland's land mammals. Eight species are vesper bats and all vespertilionid bats have a tragus (cartilaginous structure found inside the pinna of the ear). Vesper bats are distributed throughout the country. Nathusius' pipistrelle is a recent addition to the Irish list with it first being recorded in the 1990s

Common pipistrelle *Pipistrellus pipistrellus*

Soprano pipistrelle *Pipistrellus pygmaeus*

Nathusius' pipistrelle *Pipistrellus nathusii*

Leisler's bat *Nyctalus leisleri*

Brown long-eared bat *Plecotus auritus*

Natterer's bat *Myotis nattereri*

Whiskered bat *Myotis mystacinus*

Daubenton's bat *Myotis daubentonii*

The ninth resident species, the lesser horseshoe bat *Rhinolophus hipposideros*, belongs to the Rhinolophidae and has a complex nose leaf structure. This species' current distribution is confined to the western counties of: Mayo, Galway, Clare, Limerick, Kerry and Cork.

Two additional species have been recorded once: the Brandt's bat *Myotis brandtii* in the 2003 and Greater horseshoe bat *Rhinolophus ferrumequinum* in 2012.

Bats are widely distributed throughout a range of habitats in the Irish landscape. Due to their reliance on insect populations, specialist feeding behaviour and habitat requirements, they are considered to be valuable environmental indicators of the state and condition of the wider countryside.



Above: Natterer's bat (Photo: Tina Aughney).

Below: Brown long-eared bat (Photo: Faith Wilson).



Bats and the Law

Due to increasing pressure on bat populations, all Irish bat species are protected by the 1976 Wildlife Act and 2000 Amendment. They are also protected under the European Communities (Birds and Natural Habitats) Regulations 2011.

Consequently, it is a criminal offence to

- Intentionally kill, injure or take a bat
- Possess or control any live specimen or anything derived from a bat
- Wilfully interfere with any structure or place used for breeding or resting by a bat
- Wilfully interfere with a bat while it is occupying a structure or place which it uses for that purpose

This is a brief summary of the main points of the law. Further details of the Wildlife Act and the Habitats Directive may be found on www.npws.ie.

More information about bats and their conservation can be sourced from the following documents:

McAney, K. (2006) A conservation plan for Irish Vesper bats. *Irish Wildlife Manuals* No. 25. National Parks & Wildlife Service, DoEHLG. www.npws.ie/en/PublicationLiterature/IrishWildlifeManuals

Kelleher, C. & Marnell, F (2006) Bat mitigation guidelines for Ireland, *Irish Wildlife Manuals* No. 25. National Parks & Wildlife Service, DoEHLG. www.npws.ie/en/PublicationLiterature/IrishWildlifeManuals

Marnell, F. & Presetnik, P. (2009) Protection of Overground roosts for bats, *EUROBATS Publication Series* No. 4. www.eurobats.org/publications/publications_series.htm

Mitchell-Jones, A.J. & A. P. McLeish [Eds.] (2004) *Bat Worker's Manual*, 3rd Edition. Joint Nature Conservation Committee Peterborough.

If a bat is encountered during operations, please stop works and contact your local NPWS Conservation Ranger.

Erecting Bat Boxes in a Farm Yard

Bat boxes are more likely to be used if positioned where bats are known to feed. If you see bats zipping around in the evening in particular areas of the farm, then these areas would be a good place to position bat boxes. Bats, in particular, like hedgerows and treelines to commute along and will feed over ponds. Bat boxes should be located as high as possible (at least 4m off the ground) in sunny but sheltered from the wind.

If erecting on a mature tree, choose one that has a clean bark (no ivy) with no branches for 1m radius around the location of the box. Because timber boxes will only last up to 5 years open to the weather, BCIreland recommends that Woodcrete boxes are used and Timber bat boxes are used inside buildings.

If erecting on a building, erect as close as possible to the eaves of the building, on a south-facing wall and, if possible, on a building located adjacent to a treeline or hedgerow.

Bat boxes can also be erected inside a barn. This is an ideal location for Timber bat boxes as it protects the bat box from wind and rain (thereby increasing the life span of a timber box, which can be as little as 5 years if erected on external surfaces) while providing a wonderful space for young bats to practice flying. It also provides a suitable space for bats to feed when weather conditions are poor.

When erecting bat boxes externally (i.e. on a tree or external wall of a building), put up a minimum of three boxes facing in different directions to provide a range of temperature conditions. For example, boxes facing from south-east to south-west allow the sun to fall on each box for part of the day. During very hot days a south-facing box may overheat, but the other boxes should have some shade. Three boxes can be arranged around the trunk of large, mature and clean trunk trees.

When erecting bat boxes, erecting three different types of bat boxes will increase the chance of catering the different species likely to be found foraging on your farm.



Photographs: 1FF flat woodcrete bat boxes erected on timber poles (this bat box is often used by brown long-eared bats and pipistrelles); Two pipistrelle bats roosting in a 1FF woodcrete box; bat tube strapped to ceiling of culvert (similarly could be used for internal walls); timber maternity boxes erected on exterior wall.

For more information on bats please check out the following websites and guidelines: www.batconservationireland.org – there are series of guidelines on Bats in Buildings, Bat and Lighting etc. that will provide more detailed information. www.batroostireland.org is a website with specific information on bat boxes that have been successfully designed to provide suitable conditions for maternity roosts in Ireland.

Kent Bat Box – Design and Construction

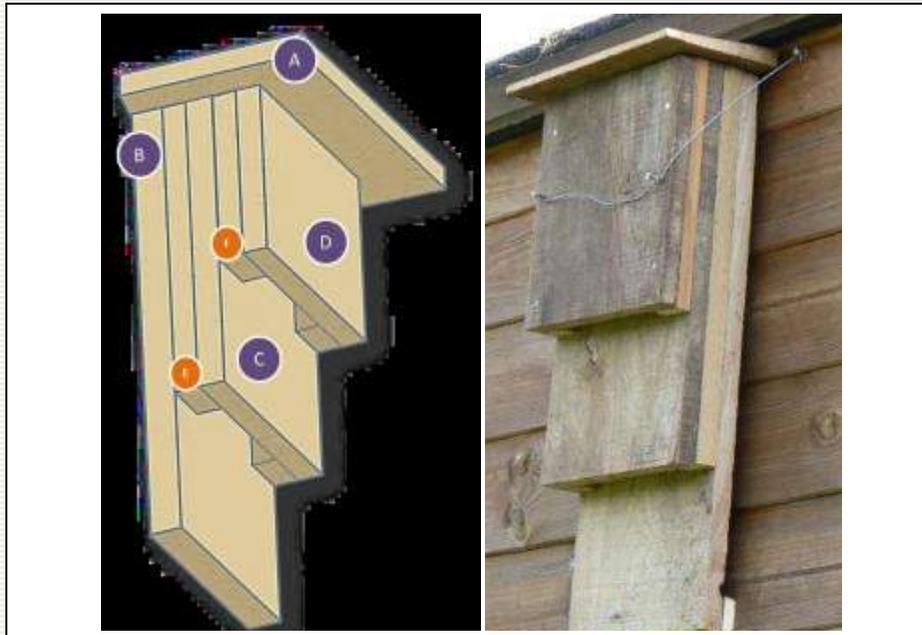
Design and measurements

Simple to construct, self-cleaning and low maintenance, the Kent bat box (designed by the Kent Bat Group) is a great extra home for bats to hang out and rest on a hunting night out. These boxes won't be spacious enough to be used as maternity roosts but are a great way to encourage bats in your garden or your green space. The box should be rainproof and draught-free and suitable for erecting within barns.

The only critical measurement is the width of the crevices: between 15-20mm. Other measurements are approximate. Timber should be approximately 20mm thick. Measurements for one Kent bat box kit would be as follows:

Part	Quantity	Size (mm)
Roof (A)	1	250 x 160 x 20
Back (B)	1	450 x 200 x 20
Centre (C)	1	330 x 200 x 20
Front (D)	1	210 x 200 x 20
Centre Rails (E)	2	330 x 20 x 20
Front Rails (F)	2	210 x 15 x 15
Stand-offs (optional)	2	200 x 20 x 20

Please see <http://www.kentbatgroup.org.uk/links.html> for more information



Lighting and bat boxes

DO NOT PLACE BAT BOXES IN A LIT UP AREA OF THE FARM YARD OR ADJACENT TO LIGHTING

Lighting has increased dramatically over the last number of years with many new developments. This includes aesthetic lighting of bridges, monuments and buildings, flood lighting of sports grounds, street and road lighting and security lighting of urban and rural areas to name but a few.

Contrary to common belief, bats are not blind. Various studies have shown that bats' eyesight works best in dim light conditions. Where there is too much luminance, bats' vision can be reduced resulting in disorientation. Lighting can impact on bats' roosting sites, commuting routes and foraging areas especially along waterways. Too much luminance at bat roosts may cause bats to desert a roost. Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk. Any delays of emergence can reduce feeding periods

*Please consult the BCIreland leaflet - **Bats & Lighting: Guidance Notes for Planners, engineers, architects and developers** for further information.*



Case Study – Renovation works in sheds and barns to provide roosting sites for bats



The majority of Irish bat species are fissure dwelling bats i.e. they like to squeeze into tight spaces. So these timber batons erected in a shed and stable have proved successful as bat roosts (there is a pipistrelle bat shown roosting in the space in the 2nd photograph).

Dimensions if you would like to replicate in your shed or barn: The timbers are 1.5 metres in length approximately x 102 mm deep by 51 mm wide. They are spaced 16 mm apart. There is also a strip of bituminous felt behind each against the roof. They run NE-SW within the stable and are at a height of no less than 4 metres. Bats will use most areas but prefer the apex a bit more than anywhere else overall (Courtesy of Brian Keeley).

If you have any examples of successful bat conservation measures, why not submit to info@batconservationireland.org

In addition, if you do erect bat boxes, register them with Bat Conservation Ireland. We are always interested to know what types of bat boxes were successfully used by bats.

If you are interested in learning more about bats, become a member; join our training courses and monitoring schemes.