



If you have set up bat boxes in you garden or at your school, register your bat box scheme with Bat Conservation Ireland. We are always interested in hearing your reports on the types of bat boxes used and the success of your bat box scheme.

Email: [batline@eircom.net](mailto:batline@eircom.net)

Batline phone number: 046 9242882

Address: Bat Conservation Ireland, Deerpark House, Maio, Kells, Co. Meath.

Web site address: [www.batconservationireland.org](http://www.batconservationireland.org)

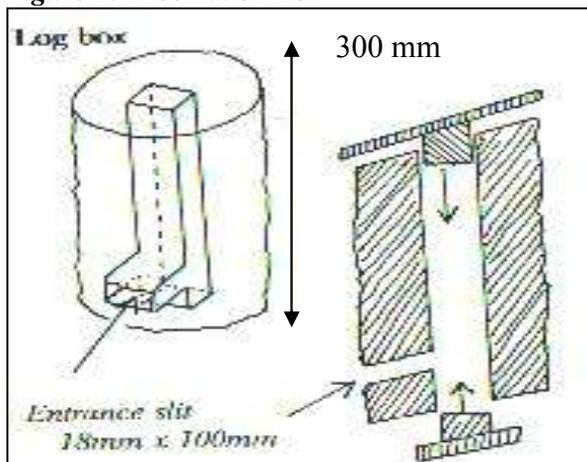
### Alternative Roosts: Bat Boxes

Bats are social animals and often congregate in large numbers. Providing bat boxes offer bats additional roosting areas, or can often help to replace lost or degraded roosting sites once sited correctly. They are particularly suitable for providing artificial roosting sites in areas such as coniferous plantations where there is a shortage of natural sites. Bat box schemes are also a great education tool and allow communities and schools to get involved in bat conservation.

Many bat box designs are available. A basic bat box is constructed from untreated rough sawn timber and resembles a bird box, but the typical access hole in front of the box is replaced by a narrow slit of up to 1.5 cm in width on the underside of the box (Information Box A). Many alternatives to the traditional wooden bat box design are available including the ‘Tanglewood Wedge’ bat box (Gwent Bat Group), which is considered to increase the life-span of the bat box under weather conditions, reduce the loss of warm air within the box and prevent injury to bats during inspection of the box contents (Information Box B). A more advanced bat box comes in the form of Schwegler ‘Woodcrete’ bat box, which offer considerable advantages over the basic wooden box (Information Box C). This type of bat box is made from sawdust and concrete moulded into the required shape (numerous designs are available). Woodcrete boxes have excellent thermal insulation properties with less fluctuation of internal temperature conditions providing a more suitable environment for roosting bats. They are also longer lasting than wooden boxes. Wooden bat boxes are the simplest to make while Schwegler Woodcrete bat boxes are alternatively available to purchase.

The bat boxes described below are essentially for summer occupancy since they lack the required insulating properties to make them suitable as hibernation sites. Hibernation boxes require sufficient wall thickness to insulate bats from the extremes of cold. Bats are often found in hollow branches of trees with a minimum thickness of 80-100mm on all sides and internal height of 300mm. A winter box therefore can be made by hollowing out a suitable sized log (Figure 1) or with 100mm planks of wood. However, such boxes are heavy so a lightweight alternative is to sandwich polystyrene insulating materials between 20mm thick wood ensuring that the polystyrene is weathered to remove odours. Additionally, large maternity bat box designs are available as well as bat boxes suitable for particular species and particular environments (e.g. Daubenton’s bat roosting in bridges). An array of websites discusses these in more detail (See Bibliography).

**Figure 1:** Hibernation Box



### Bibliography

Mitchell-Jones, A. J. and McLeish, A. P. (1999) *The Bat workers’ manual*, 2<sup>nd</sup> Edition, JNCC.

Stebbing, R. E. and Walsh, S. T. (1991) *Bat Boxes: A guide to the history, function, construction and use in the conservation of bats*. The Bat Conservation Trust.

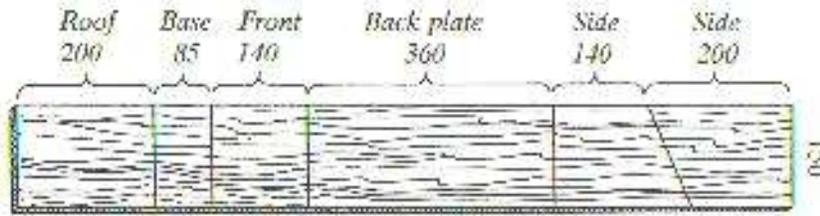
Bat Conservation Trust (GB) [www.bats.org.uk](http://www.bats.org.uk)  
Maternity Bat Boxes

[www.dnr.state.md.us/wildlife/batboxes.html](http://www.dnr.state.md.us/wildlife/batboxes.html)

Alternative designs [www.jwaller.co.uk/batgroup/](http://www.jwaller.co.uk/batgroup/)

**Information Box A**

Basic Wooden Bat Box



**Always use untreated timber as wood preservatives are harmful to bats**

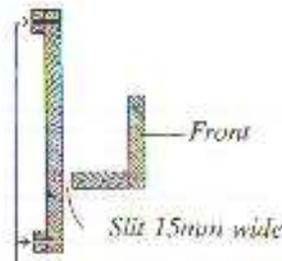
**Make sure the box is well sealed to ensure that it is draught free and rainproof**

**Back plate**



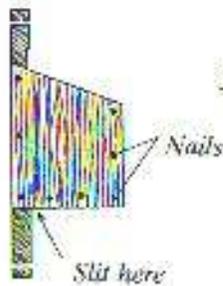
4mm hole for nail-fixing to tree

**Section**

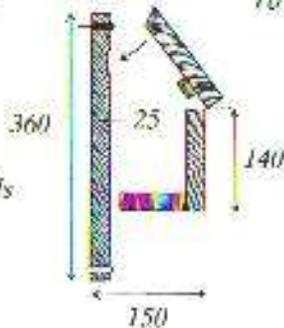


Two battens 30 x 20 x 150mm provide additional strength for back plate

**Side nailed to back front and base**



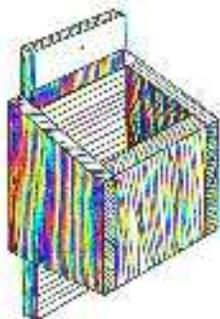
To put on lid, snap into top groove in back plate



Lever off to remove lid



**Completed box without lid**



**Underside of lid**



**Alternative lid**



Softwood should be rough all over. Saw cuts on the back plate are only necessary if wood is smooth.

A hinge lid is an alternative to the described snap lid. A strip of tyre inner tube is tracked to the lid and back plate with a wire hook fitted to the front to prevent animals or the wind lifting the lid.

A well fitted lid greatly improves the chances of boxes being used by bats.

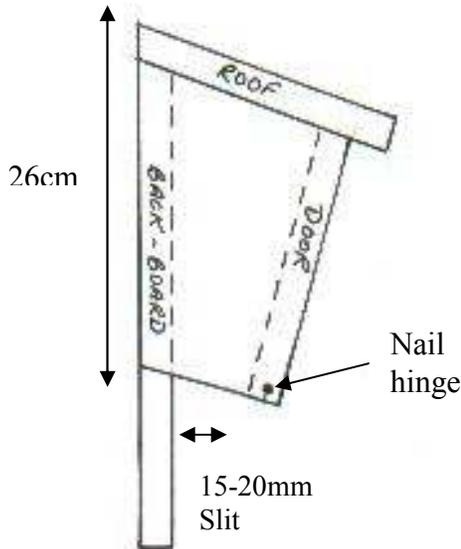
Front or side opening boxes are alternatives to the design described.

**Construction:** figures show the construction of a basic wooden bat box. The box may be glued using a waterproof resin glue or fixed by nails or a combination of both. Roof felt cover over the lid offers extra rainproofing.

Bat boxes with exterior paint (dark colours) allow boxes absorb sunlight quicker and may make boxes less conspicuous. Non-toxic paints should be used.

**Information Box B** *The ‘Tanglewood Wedge’ bat box*

Side Panels (34 cm)    Backboard (40 cm)    Roof (23 cm)    Door (23cm)



The acute angled ends of triangular sides are cut off to give the entrance slot of required width. The top edge of the backboard must be bevelled to fit. The roof and backboard are next to each other on the cutting plan so that, with a tilting circular saw or jig-saw, the bevels can be cut in one go. The cutting edge is approximately 60°.

The front opening door is pivoted at the bottom on two clout nails. A hole is drilled high up through one side of the box and into the side of door. This takes a loose-fitting clout nail which holds the door firmly closed against the doorstops. These are cut from 10-12mm strip and are fitted at the top and sides of the door opening to act as a doorframe and aid waterproofing. The side doorstops are cut off about 3cm short of the bottom to allow freedom of movement of the door. A small screw is fitted as a knob for opening the door.

**Cutting Plan & Side view of bat box**

Source: BCT leaflet The ‘Tanglewood Wedge’ Bat Box



**Information Box C**  
*Schwegler ‘Woodcrete’ bat box*

Woodcrete boxes have the highest rate of occupation for all bat boxes. Numerous designs are available with the simplest design shown in photograph (2F Bat Box). This bat box is suitable for species including Pipistrelle, Long-eared and Daubenton’s bats. Additional designs are available including a hibernation Box. An array of boxes is available for purchase through [www.alanaecology.com](http://www.alanaecology.com) and [www.jacobijayne.com](http://www.jacobijayne.com).

**Siting and fixing bat boxes**

**Careful siting of bat boxes is crucial to their success**

Bat boxes are intended for attachment to trees. Some boxes are available for attachment to other structures such as bridges and buildings. But the following guidelines can be followed, in general, for all bat box schemes.

**Fixing of bat boxes**

Bat boxes should be attached firmly and safely to trees to ensure suitability for use by bats. Nailing is the cheapest method. Iron nails can be used on trees for non-commercial use while aluminium nails on trees destined for the commercial market. Headless nails should be used to allow growing trees to push off the box with minimum damage to the tree. Alternatively, the method described in Figure 2 can be used to accommodate growing trees. Another method

Bat Conservation Ireland Information Leaflet no. 3 – Bat Boxes used tie bands or cord and wire on the top and bottom of the bat box, which allows readjustment during the life of the bat box. However, this method is considered to be less secure.

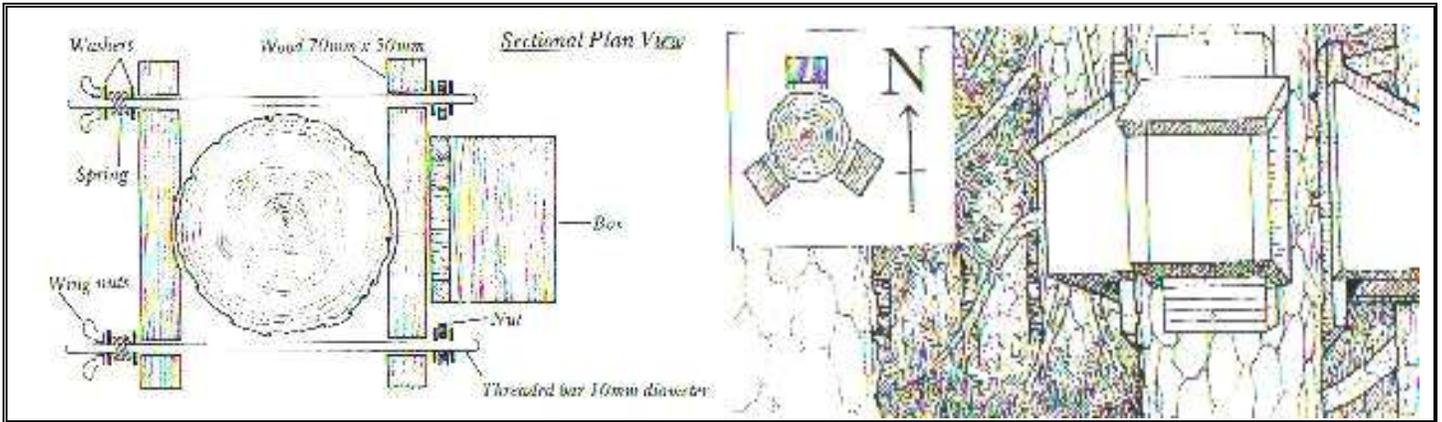


Figure 2: Fixing bat boxes to trees

Figure 3: Recommended layout of bat boxes

### Height above ground

Bat Boxes are, in general, intended for attachment to trees. There should be no crowding branches or other obstructions for three meters radius around where the bat boxes are to be fitted. It is best to site bat boxes in places where they can be easily relocated for inspection e.g. woodland rides. In general, the higher the boxes, the safer it is and therefore the greater likelihood that bats will use them. However, different heights do suit different species but to reduce vandalism, aim to position bat boxes as high as is convenient (3-5m).

### Aspect

The number of boxes per tree will depend in the size of the project. For projects with fewer than ten boxes then place two boxes per tree in a south-east and south-west facing so sun falls on most of them for part of the day. In larger projects, three bat boxes per tree arranged in a north, south-east and south-west facing (Figure 3). This allows a range of temperatures for residing boxes with south facing boxes receiving sun while a north facing box remains cool for day where temperatures are too high. Warm boxes are essential for bats to reduce energy expenditure especially for pregnant females and later for young bats. Having several boxes on one tree allows bats to move about during the day without too much risk from predation.

### Siting

The best areas to site bat boxes are those where bat forage regularly and where natural roosting sites are rare. They need to be sheltered from strong winds and where exposure to sunlight is assured. Generally woodland rides or glades adjacent to wet grasslands are the best. Bat boxes in garden are also possible with success improved when all the above guidelines are followed.

### Inspection of boxes

It is essential that bat boxes are being used and reposition unused boxes to a more suitable site. If a bat box or group of bat boxes are not used over a two-year period then they should be repositioned. However, if some bat boxes in an area are regularly used and others in the same are not, leave them. Often bat will use boxes without leaving any evidence. Inspect that area around the bat box to look for signs of usage e.g. droppings or alternatively, watch the box at emergence time to observe whether bats leave the box.

**Boxes should never be inspected from mid-May to mid-August when bats are giving birth or lactating. Disturbance at that time can cause abortions or abandonment of young.**

Bat droppings may be black to brown and vary in size. Roll a dropping between index finger and thumb and if the dropping crumbles into a fine dust, this is an indication of a bat dropping. However other animals especially birds may use bat boxes and if is essential that boxes are cleaned out over the winter period to make them available to bats in the following season.