

**Bat Survey  
Clachan Church, Applecross**

For

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On 31 August & 01 September 2010 I carried out an internal and external bat survey (Stage One Survey) of Clachan Church, Applecross (NG714459), followed by dusk and dawn surveys. The survey information is required prior to proposed works to repair the building and is to assess whether bats will be affected by these works.

## **Legislation**

As you are aware, all bats and their roosts are legally protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats & etc) Regulations 1994. As such it would be an offence to recklessly or intentionally obstruct access to a bat roost or to recklessly or intentionally disturb or harm any bat or roost. This does not mean that nothing may be done to a bat roost, but the law requires that a licence be obtained where works that will affect bats or their shelter/ breeding places (whether or not they are present) is proposed. In this case the licensing authority is the Scottish Government.

## **Some relevant bat information**

Bats feed where there is a plentiful supply of insects which means that their favourite feeding areas include traditional pasture, woodlands, marshes, ponds and lochs and slow moving rivers. Bats leave their roosts (under suitable conditions) at around sunset, although some species (e.g. brown long-eared bats) do not leave until around 50-60min after sunset. At dawn, bats tend to 'swarm' around a roost before entering (fly around several times, including up to the entrance – and may include several hovers or landings near the entrance before flying round again). This may be a single bat or hundreds, and may last from several seconds up to an hour or more before dawn.

Because so much woodland has been cleared, bats have lost a lot of their natural habitat and consequently have had to adapt to living in buildings. They now rely very heavily on buildings for roosting and so they are dependent on us for their conservation.

Bats tend to be seasonal visitors to buildings. The tendency is for them to form maternity colonies in May and June and then leave in August and early September when the young bats can survive independently. The colonies are most obvious during July, when the young bats make their first attempts at flying. Soon after this the adults will start to leave, closely followed by the young. Male pipistrelle bats tend to roost singly or in small groups, and pipistrelles usually move to different 'mating roosts' for the autumn. Different species of bats have different habits and a notable exception to this is the brown long-eared bat which has been known to occupy the same building throughout the year.

Most species will move roosts within a given period to seek the most favourable conditions (some more frequently than others) e.g. one species (Daubenton's bat) was found to move roosts every few days; even with very young infants attached.

Bats are very selective when looking for a roost. During the summer months, breeding females will choose warm roost sites which typically would be found on the south or west of buildings or near sources of heat such as chimneys and boilers. Most species prefer to roost in fairly small spaces and would avoid open draughty areas like barns. The pipistrelle, our commonest & smallest species, favours spaces in parts of the roof structure around its edges. They prefer confined spaces especially between slates and sarking or roof felt, under ridge tiles or behind soffit, barge or eaves boarding. Pipistrelles would only rarely enter the loft space. Pipistrelles can access gaps as small as 8mm x 16mm.

On the other hand, the brown long-eared (BLE) bat, our second most common species prefers older buildings with large roof spaces and is often seen in clusters at the top of the roof ridge inside the loft. BLE bats will also roost in tree holes, bat boxes and in crevices in

ridge tiles.

Through December to mid February bats hibernate individually or in small groups; generally underground, but also in trees and buildings. Few pipistrelles are found in winter, but most winter records are of isolated individuals or small groups in crevices in buildings, trees, stone walls, bridges, barns and bat boxes. During the winter months, any bats remaining in buildings tend to be alone or in small scattered groups, hidden in crevices or under slates away from artificial sources of heat.

Bat droppings are often deposited just before a bat enters its roost and so the distribution of them can help us identify possible roosts.

BLE bats can use temporary 'night roosts' for short periods between phases of foraging activity, or 'feeding roosts' (or perches) where they take prey back to eat. These roosts are also protected.

Bats prefer to navigate along linear features such as tree lines, hedges, buildings and water courses. Although they will cross open areas (greater than 20-25m) they do so later at night and closer to the ground; but this puts them at risk from predators and collision with traffic.

## Site Information

The building is of stone construction with slate roof over sarking. The walls are either rendered or fully pointed.

The interior has a partitioned entrance and balcony; both of which are open to the main interior of the church; which is open up to a high ceiling below a low loft running the length of the building. There was no access to this loft.

The building is surrounded by a graveyard, walls and fields, with several mature broadleaved trees close by.

The main side of the church with the doors and windows faces SE. There is also a window on the NE.

## Survey Information

The main objective of this survey was to determine whether bats could use/ are using the widows for roosting, because replacing the windows is the first and the most urgent of the work required. However, while on site, the opportunity was also taken to generally inspect the building externally and internally for signs of bats and their roosts and to generally assess it for the suitability and potential for containing roosting and/or hibernating bats: the chance of finding them at some point in the year will be rated as low, medium or high.

The exterior was checked for any suitable cracks or gaps where bats could gain access and roost. A high powered torch was used to aid viewing of the roof and under the eaves. The signs looked for were droppings on outside floors, walls and sills (especially below places where bats may have been roosting, or entering roosts), and marks made by the passage of bats.

The interior was checked for droppings on the floors, windowsills, and walls/ ledges, especially beneath any likely roosting places. And greasy patches around timber joints or smooth areas in the apex where bats may have been roosting were looked for in the loft. Again, a torch was used to aid viewing. The age of any droppings found were described as old, recent, or fresh. The building would be classed as *suitable* or *unsuitable* for bats.

Dusk and dawn surveys were then carried out to look for emergence and general bat activity around the building, and to locate any roosts by watching for re-entry towards dawn

– with the main attention paid towards the windows.

The dusk & dawn surveys, with the aid of a Duet frequency division bat detector, would be carried for 1½hrs or so after sunset and 2¼hrs or so before sunrise, and any bat activity at or around the buildings was recorded. The building was walked round, and watched from the ground, with viewing concentrated on the windows and any areas showing bat activity.

Weather:

- during the inspection survey: 100% thin cloud, dry, calm & 16°C
- during the dusk survey: 100% thin cloud, dry, a N breeze & 13°C
- during the dawn survey: 100% cloud, dry (apart from a few spits of rain at dawn), calm & 9°C.

## Findings and discussion

### Exterior

- Although the pointing around the windows was mostly loose, it was still well fitting with no gaps where bats could access. However, there were a few places where it was missing and a few holes in rotten areas of the woodwork where bats could access and roost and/or hibernate i.e. (windows as marked on the attached drawing):
  - a: slight hole at apex of window (missing cement)
  - b: small hole in bottom right of woodwork
  - c: several holes in right-hand woodwork/ pointing
  - d: several holes in right-hand woodwork/ pointing
  - e: small hole in bottom right of woodwork
  - f: small hole in bottom right of woodwork
  - g: small hole in bottom right of woodwork
- Generally the slates appeared to be fairly well fitted, with only a few small gaps here and there (on both sides) where bats could access and roost and/or hibernate. The ends of the slates where they joined the gable coping stones were sealed with cement fillets.
- The walls were all well pointed or rendered with no cavities or cracks where bats could access.
- The eaves (under the gutters) appeared to contain many gaps, and there were several gaps/ holes at the corners by the drainpipes where bats could access and roost and/or hibernate.
- External bat signs (e.g. droppings): only 2 droppings were found – stuck to windows b & c.

### Interior

- Many (probably all) BLE bat droppings were found scattered throughout the church interior, with small concentrations of a few dozen droppings in several places at the edges; under gaps between wall and the roof support timbers. Droppings were mainly old and recent, with a few fresh ones.
- No worn or greasy patches could be seen – mainly due to the height of the timbers from the floor.
- No actual bats were seen in the interior – apart from during the dawn survey (see below).

Due to the small number of gaps around the windows, the fact that they would be open to the weather, and that the ones in the rotten woodwork would most likely be too damp for much of the time, I considered the windows to be 'suitable' for bats, and to have a **low** (although unlikely) potential to contain bats *at some point in the year* (including hibernation, as I could not rule this out).

Due to number of gaps under the slates, eaves and corners, I considered the general building to be 'suitable' for bats, and to have a **high** potential to contain bats *at some point in the year*, probably in reasonable numbers.

#### Dusk Survey (sunset 20.25)

Key: CP: common pipistrelle bat *Pipistrellus pipistrellus*: (calls at 45 KHz)  
SP: soprano pipistrelle bat *Pipistrellus pigmaeus*: (call at 55 KHz)  
BLE: brown long-eared bat *Plecotus auritus*: (soft call at 49 KHz)

- Survey started 20.20:
- The first bat was heard at 20.40, where several CP bats emerged from the S corner; position 1 over 5min (see attached drawing for detail). Generally flew NE, with some going to trees to W.
- 20.50: bats continued to emerge as above, plus various exits along the eaves, including 5CP from an area on the ridge (positions 2 – 5) over the next 5mins.
- Single passes of CP bats were then heard every few minutes flying past/ around the church, and feeding around the sycamore tree to the SE.
- 21.25: several BLE exit from W corner
- No bats were seen to emerge from the windows. Finished survey 21.55.

#### Dawn Survey (sunrise 06.25)

- Survey started 04.15:
- 04.20: Several CP circling S corner – then flew E
- Passes of feeding CP bats were then heard every few minutes flying past/ around the church
- 04.35: several BLE feeding along NW side, then swarm at W corner, by electricity cable entry area
- 04.47: 3CP swarm to positions 1 & 2 for 5min
- 05.00: 1 BLE **enters hole** (roost) just to L of electricity cable entry point
- 05.08: BLE's swarming at W corner, & at 05.15
- 05.10 & 05.18: 2CP swarm to positions 1 for 1 & 2mins
- 05.22: 6 or so BLE swarm at W corner, then **enter roost**
- 05.35: 10 or so BLE swarm at W corner, then start **entering roost**
- 05.45: 3CP swarm at S corner, then several pairs seen chasing over roof
- 05.50: 6CP flying over roof & along S side, with social calls
- 05.55 – 06.05: 18 or so CP swarm at then **enter roosts** at positions 1 – 6
- 06.11: 6CP swarm at position 1 then **enter roost**, just as a few spits of rain started
- 06.12: no further bat activity. Finished survey 06.25.
- No bats were seen to enter the window gaps. Finished survey 21.55.

Note: at 05.35, I looked through the door and could see the entering BLE bats making their way up the edge of the ceiling panelling (gap to gable wall), then up onto the wallhead and upwards – probably making their way into the loft space.

## Limitations of Survey

- Roofs and cavities off-ground cannot be surveyed completely during an initial (Stage One) survey i.e. from the ground – it is only their potential to contain bats that can be assessed. Dawn surveys, with the aid of a bat detector, during a suitable period between May and September can show numbers and species of any roosting bats present; but only ‘at that point in time’. And when small numbers of bats are involved results will most likely be inconclusive i.e. a negative result from a dawn survey only tells us that bats are not using a particular place for roosting *on the day of the survey*; it does not necessarily imply that bats do not roost there at some point in the year. Doing several such surveys will increase the chances of finding bats, while surveying when bats are *expected* to be present will reduce the survey effort needed. A huge amount of survey effort could still miss bats that only use a roost for a few days each year.
- External bat droppings may have been dispersed by recent weather.
- Bats are usually easier to locate where they occur in high numbers but, when they are found individually or in small numbers in locations that cannot be observed directly, surveying for them can be very difficult – with the result that some can be missed.
- Since few bats are found in winter, surveying for hibernating bats is almost impossible and so the potential of finding them in a building has to be estimated. The mitigation for hibernating bats is to avoid works during the hibernation period.

## Conclusions

The survey has shown that:

- Bats are not currently using the windows for roosting.
- Common pipistrelle bats are using the roof as a roost.
- Brown long-eared bats are using the roof as a roost.
- Common pipistrelle and brown long-eared bats use the building as a flight/navigation route, and as a place to forage around.

It is my opinion that the pipistrelle and brown long-eared bats could use the building as maternity roosts, as well as autumn roosts. Although the building is in an exposed position, it is possible that both species may choose to hibernate during the winter, when conditions are favourable.

The various mature trees provide suitable foraging for bats due to the shelter they offer in windy conditions.

## Advice

As the windows have not been identified as bat roosts, I advise that you can seal the identified holes **immediately** with a suitable material, such as newspaper, to prevent bats from using them in the future. This will enable you to start the works on the windows at your convenience, or start/ continue the window work throughout the hibernation period,

and without the necessity of a repeat 'pre-works' survey. The sealing work should be done immediately to minimise the chance of a bat choosing to roost in the windows before you seal the holes up (thus sealing the bat in); otherwise the hibernation period (December - mid February) would have to be avoided. The hibernation period is generally avoided as bats will be in torpor or hibernation, and disturbing them at this critical time would most likely be detrimental to their health.

It is my opinion that any work on the windows should not significantly disturb any bats roosting in the roof, **provided that:**

- the work is restricted to the hours between dawn and dusk
- bright lights are not used from the period half an hour before dusk to sunrise
- certain mitigation measures are in place to avoid disturbing and/or harming any bats that may potentially be present i.e. Workers will be briefed on the possible presence of bats during any work, and of the procedures to follow should bats be found. If bats are found, work will stop in that area and the bat worker (e.g. myself) or SNH will be contacted immediately and the Procedures for Dealing with Grounded Bats (see below) will be followed. The batworker/ SNH will decide whether works can continue after the bat(s) have flown, or have been removed, or decide whether a visit by the bat worker will be necessary to assess the situation before the works could start again.

As the roof has been confirmed as a bat roost, the bats are protected from disturbance and destruction under the Legislation (above). Therefore, a **Licence** for European Protected Species must be applied for and received from the Scottish Government **before** any work on the structure of the roof is carried out; including timber treatment. Further survey work will most likely be necessary next May/June in order to provide necessary information for the Licence Application:

#### Procedures for Dealing with Grounded Bats

Note: given the fact that bats can enter crevices just 8mm x 16mm wide and turn up unexpectedly, builders should be aware of the possibility of discovering roosting or hibernating bats when working on any building. If they do, then the following advice should be followed:

- If a grounded bat is discovered during works then work will stop immediately: if it has not flown away, the bat will be gently covered over again, to subdue it and advice sought (as below) as soon as possible – even if the bat(s) has flown away. Alternatively, protective leather gloves will be worn and the bat handled as little as possible; or an old cloth will be used to gently pick the bat up with to place it in a shoebox, or similar container. Or a box could be placed by the bat and a piece of card used to gently and carefully slide the bat into the box. Then the loosely crumpled piece of cloth can be put in one corner: the bat will feel safer if it has something to hold on to and to hide in. A few small air holes will then be carefully put in the box lid. Bats can get dehydrated quickly so a source of water will be provided by placing a piece of soaked material in the corner of the box, or a little water in an upturned jam jar lid. It will be noted that, during cold weather (less than 7°C) bats may be quite torpid and seem lifeless.
- The bat worker will then be contacted for advice on what to do next, on 01463 790533 (mobile 07748 574633). If unavailable, contact any SNH branch. And, if it is thought that the bat is injured in any way, the Scottish Society for the Prevention of Cruelty to Animals (SSPCA) may also be contacted. The bat worker/SNH will decide whether works can continue after the bat(s) has been removed, or has flown, or decide whether a visit by the bat worker will be necessary to assess the situation before the works could start again.

### Notes for future Licence Application)

- The best mitigation to avoid disturbing/ harming bats and/or their roosts is to **avoid** works during the periods when they are most likely to be present, and vulnerable i.e. during the summer (May-August – possible breeding), and during hibernation (December-mid February).
- Any roof timber treatment will use bat friendly products, and follow the manufacturers' guidelines.
- Replacing the slates will most likely leave natural gaps for bats to return to but, if not, small gaps can be deliberately left for them e.g. 15x35mm, and ridge flashing can be raised up slightly in places to allow bat access.
- In order to provide some suitable roosting/ hibernation opportunity for bats during works, numerous bat boxes could be erected on the nearby trees. It would be advisable to do this at your earliest opportunity in order to give the bats chance to find and get used to the boxes (but there is no guarantee that they will be used).

### Licence Application

Where it is proposed to carry out works which will affect European protected species or their shelter/breeding places, whether or not they are present in these refuges, a licence is required from the licensing authority (in this case the Scottish Government). It is strongly advised that you refer to the Scottish Government information on the current interim licensing arrangements, which can be found in the document *European Protected Species, Development Sites and the Planning System: Interim Guidance for Local Authorities on Licensing Arrangements*, (October 2001) before applying for a licence. Copies of this are available via the general web site at:

<http://www.scotland.gov.uk/topics/environment/wildlife-habitats/16330>

Or directly at: <http://www.scotland.gov.uk/Publications/2001/10/10122/File-1>

Or you may wish to discuss the case with them direct:

Contact David Lang, Species Licensing Team, Landscape & Habitats Division,  
1-D North, Victoria Quay, Edinburgh, EH6 6QQ. Tele: 0131 244 6549, or e-mail:  
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