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# **SURVEY FOR BATS AND BAT ROOSTS AT MENIE PARK STEADING, NEAR BALMEDIE, ABERDEENSHIRE**

**Report to Ironside Farrer  
by  
Dr Susan M. Swift**

**June 2007**

## **1.0 Introduction and Background**

A field survey of bat activity and assessment of bat interest at the site of a proposed Golf Course and associated developments at Menie House was carried out in summer 2006 (Pritchard 2006). This survey recorded relatively low levels of foraging activity by pipistrelle bats (both *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*) concentrated in the woodland around Menie House. It also noted that the buildings in this area were potential roost sites, and recommended full surveys be carried out on any buildings prior to their redevelopment. Planning Permission is now being sought at Menie Park steading for change of use from offices to a Marketing Suite for the Golf Development. A survey for bats and bat roosts at this building was therefore commissioned by Ironside Farrer, on behalf of Trump International Golf Ltd, and carried out on 25-26<sup>th</sup> June 2007 by Dr Sue Swift. For full details of the initial activity survey, including species recorded in the area, please see Pritchard (2006).

## **2.0 The Conservation Status of Bats**

Bats of all species in Britain and their roosts are protected under the Conservation (Natural Habitats, &c) Amendment (Scotland) Regulations 2007. Following recent changes to legislation in Scotland, under this law it is illegal intentionally or recklessly to kill or injure a bat, to disturb a roosting bat or to damage, destroy or obstruct access to any bat roost. This applies to both summer and winter roosts, which may be in different structures. Any action which is likely to disturb or damage a bat roost requires a licence from the Scottish Executive.

## **3.0 Site Description**

Menie Park Steading is situated 150m north-east of Menie House (O.S grid reference NJ 978206). It is a traditional stone-built farm steading, part of which has been converted to offices and the rest of which is unconverted and partially derelict. It is H-shaped, with the central section orientated east-west, and east and west wings. A stone arch in the middle of the central section divides the courtyard into north and south areas. The west wing and half the central section form the office area: these parts are heated. The east end of the central section and the east wing are unconverted and unheated. Holes in the roof of the east wing make this section cool and draughty. The

building has solid stone walls and a slate roof; in the converted part, the roof is in good condition with ridge tiles. In the unconverted part, there are slates and flashing missing, and holes close to the ridge make the roof space relatively light in places. The site is situated between the A90 trunk road and the coast, 1km from the coast and 6km from the nearest large freshwater body (the River Ythan). There is an isolated patch of deciduous woodland surrounding the steading and Menie House, and a larger area of mixed woodland on the far side of the A90 road. Apart from these areas, the surrounding habitat is predominantly arable farmland and dune grassland.

## **4.0 Biology of Bats - Aspects Relevant to the Survey**

### **4.1 Bat species**

Nine species occur in Scotland, but only five have so far been recorded in Aberdeenshire. Two very similar species of pipistrelle, *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*, are both common and widespread in Scotland. Both may occur in rural or built-up areas and their summer and winter roost sites are usually in man-made structures such as bridges and buildings. While summer maternity colonies of females and young are usually in heated houses, small groups of males sometimes roost beneath slates in unoccupied buildings such as steadings. Foraging habitat is tree lines, woodland edges and riparian vegetation. Both these species were recorded in the activity survey (Pritchard 2006).

The brown long-eared bat, *Plecotus auritus*, is also usually found in houses, particularly in rural and wooded areas. Although much less common than pipistrelles, it is frequently associated with old buildings containing large attics. While steadings are, again, too cold for nursery colonies, males seek cooler roosts in summer, and this is the species most often associated with farm buildings in Scotland. Long-eared bats rely heavily on deciduous woodland, and always forage in areas with large, mature trees. Although they were not recorded in the activity survey, brown long-eared bats may be missed in detector surveys, since their echolocation calls are of very low intensity; it was therefore considered possible, if unlikely, they would be found in the building.

Two other species were considered very unlikely, to be found: -

Daubenton's bat, *Myotis daubentonii*, is strongly associated with water and almost always roosts within 50m of lochs or rivers. Roosts are usually in trees overhanging the water, and buildings are rarely used. In view of this and of the distance of Menie from a substantial water body, there was considered to be little chance of finding Daubenton's bats on the site. Natterer's bat, *Myotis nattereri*, roosts in barns and steadings, but is uncommon in Scotland and has not been recorded within 10km of the site. Both would almost certainly have been detected in the activity survey had they been present.

### **4.2 Summer roosts**

Bats are colonial mammals which live in large aggregations at some times of the year. Pregnant females form maternity colonies of up to 1000 individuals in spring, usually early to mid May. Their young are born in mid-June to July and are reared in summer roosts, usually in warm, sheltered buildings, before colonies break up and leave the roosts in August-September (October for long-eared bats). Flightless babies are left inside the roost while their mothers go out to feed, and maternity colonies are thus very vulnerable to destruction or disturbance. Males live solitarily or in small groups during summer, often in cool roosts such as steadings, barns and tree holes.

### **4.3 Hibernacula**

As facultative heterotherms, bats are able to undergo controlled reduction of their body temperature independently of ambient temperature. Besides daily torpor in summer, they enter longer periods of torpor (hibernation) in winter, when their insect food supply diminishes. During hibernation, body temperature drops, metabolic rate slows down and vasoconstriction occurs. Bats are vulnerable to predation at this time, since it takes time for them to warm up enough to escape, and also to disturbance, since if they arouse too often they may run out of stored energy and die. Hibernacula are selected for cool, constant temperature (5-10°), high humidity, shelter and protection from disturbance. Some buildings containing deep crevices may provide suitable sites, mainly for pipistrelles and long-eared bats – the other Scottish species rarely hibernate in buildings.

### **4.5 Signs of bat roosts in buildings**

**Droppings.** Bat droppings are black, 5-10mm long and resemble those of mice except in that, when dry, they crumble easily to a fine dust consisting almost entirely of tiny pieces of undigested insect cuticle. Such droppings in attics, on windowsills, adhering to walls or windows or in heaps at the base of walls are a reliable indication that bats have been present in a building during summer. If long-eared bats are involved, a further sign is the presence of droppings and insect remains, mainly moth wings, below feeding perches. These bats take larger prey items to a perch to consume, and trim hard parts such as wings and legs off insects before consuming them.

**Staining.** Secretions on bats' fur rub off onto masonry as the bats enter and leave roost holes. This results in oily brown stains, which do not fade in winter, on walls directly beneath roost sites. Such stains would also be present on attic beams where bats had roosted.

Further signs in attics would be a distinct "batty" smell and the absence of cobwebs close to beams, since air movements created by bats' wings prevent their build-up

## **5.0 Method**

**5.1 Daylight survey.** All interior areas, including all roof spaces, were thoroughly searched for bats or signs of bat roosts, using a powerful torch and an ultrasonic bat detector tuned to 24kHz, the frequency of most bat social calls. A search was also made of the exterior of the building for bat droppings or stains on walls, window sills and windows (see section 4.5), using binoculars to search high, inaccessible places such as the tops of gable walls. Any actual or potential roost sites or access holes identified were then targeted during the dusk survey (below).

**5.2 Dusk survey.** A dusk watch was kept inside and outside the building for two hours from sunset (22.10 hours B.S.T.), using a heterodyne/time-expansion bat detector (Pettersson D240X) to record bats. Bats were identified in flight, using the detector in time expansion mode to record their orientation calls. The calls were stored on a tape recorder (Sony Professional) and later downloaded to a computer and analysed using wave analysis software (Batsound; Pettersson, Sweden). This allowed an accurate identification to be made to species level. A count was made of all bats, in order to assess colony size, and the time, direction of flight and behaviour of all bats was recorded. In the same way, a dawn survey was carried out from one hour before

dawn (02.45 hours B.S.T.) until it was fully light (04.15), since bats may circle around roost entrances (swarming) at dawn, thus making recognition of species and location of roosts more feasible.

## **6.0 Findings of the Survey**

### **6.1 Daylight survey**

**6.1.1** The daylight survey identified a small number of droppings from pipistrelle bats in one section of the roof space of the converted section of the building. These were at the base of the gable at the west end of the central section (marked X1 in Figure 1). A possible roost site was identified as a hole in the gable just north of the centre of the gable and above the droppings, although no bats were present at the time. The number of droppings was consistent with use by a very small colony of bats – probably not more than five – and thus with use by males rather than by a maternity colony.

**6.1.2** No other bat roosts were identified at this stage. There were no further droppings or staining in roof spaces, and no signs that brown long-eared bats used the building.

### **6.2 Dusk/dawn survey**

**6.2.1** Two more roost sites were identified during the dusk and dawn surveys, both on the south face of the central section of the building. One was in a crevice above the lintel of a door leading from the south area of the courtyard into the converted part of the building (X2 in Figure 1). There are two doors close together – the bat roost is the easternmost one (painted white). Two bats, both 55kHz pipistrelles (*P. pygmaeus*) emerged from this roost. In addition, five 45kHz pipistrelles (*P. pipistrellus*) emerged from under roof slates on the south face of the centre area of the central section, above the archway (X3 in Figure 1). All these bats were probably males, in view of the small numbers involved, since female pipistrelles form much larger colonies in summer.

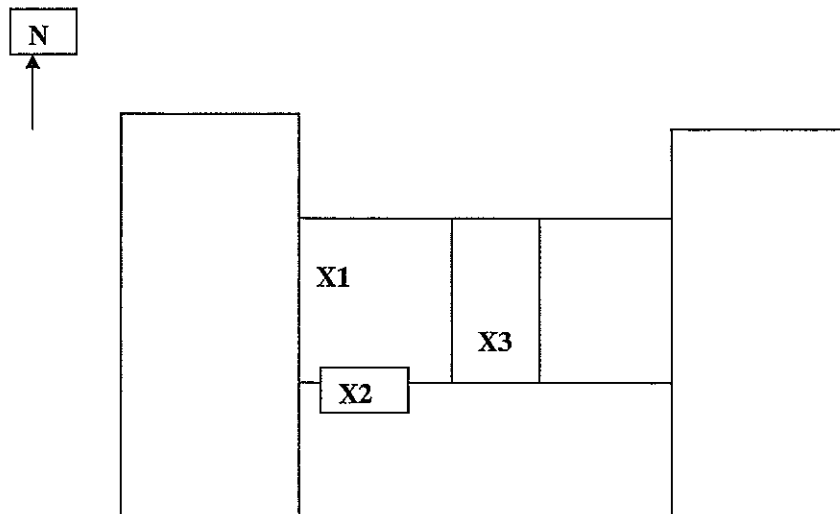
**6.2.2** No swarming was observed at dawn. This confirms that the building is used only by small numbers of bats, probably all males. Two *P. pygmaeus* returned to the roost above the door and four or five *P. pipistrellus* entered gaps under slates between 03.45 and 04.00 hours B.S.T.

### **6.3 Weather conditions**

Weather conditions on the night of the survey were suitable, if not ideal, for bat activity. Dusk temperature was 9.5°C, and flying insects were recorded in relatively low numbers. There was a north-west wind (speed 5-6 on Beaufort scale) and overhead conditions were dry. Any roosting bats could therefore have been expected to emerge and forage.

### **6.4 Bat activity**

Echolocation calls from foraging bats (both pipistrelle species) were recorded intermittently throughout the survey in the immediate environs of the steading, where flying insects accumulated in places sheltered from the wind. 45kHz pipistrelles were also recorded foraging in the trees SW of the steading and along the gravel track leading to Menie House. No bats other than pipistrelles were recorded at any time during the survey.



**Figure 1. Plan of the building, showing positions of pipistrelle roosts at base of gable (X1), in crevice above door lintel (X2) and under slates in central section (X3).**

### 6.5 Hibernacula

It is not possible to identify actual hibernacula during a survey carried out in summer, but in my opinion north-facing parts of the building would be suitable as pipistrelle hibernation sites and may be used by small numbers (1-5) of bats. Possible sites are beneath slates on north-facing parts of the roof and crevices in stonework, again in cool, north-facing walls. The start of demolition work will therefore have to be timed carefully to avoid hibernating bats being disturbed (see Section 9).

### 7.0 Conclusions

**7.1** Three roost sites of pipistrelle bats were identified in the building:-

X1 at the west gable end in the roof space of the central section

X2 in a crevice above the lintel of a white-painted door leading into the building from the south courtyard

X3 under slates on the south side at the centre of the central section, above the arch linking the north and south courtyards.

**7.2** Two of these roosts (X2 and X3) are on the outside of the building, although the presence of droppings in the roof space (X1) proves that bats also have access to the interior.

**7.3** On the night of the survey, the numbers of bats present (two *P. pygmaeus*) and five *P. pipistrellus*) were very small, and the bats of both species were almost certainly males. There is no evidence that larger numbers of bats ever use the building.

**7.4** The building may also be a hibernation site for very small numbers of pipistrelle bats.

**7.5** No maternity colonies were recorded, and no bat species other than pipistrelles were found to use the building.

## 8.0 Impact Assessment

### 8.1 Method of assessment

Impact significance is determined by the value of the receptor habitat or species and the magnitude of the impact. The criteria defining the magnitude of impacts are as follows;

*Low* – no reduction in numbers likely but vulnerability of population to further impacts may be increased; ii. short-term temporary reduction in numbers likely.

*Medium* – i) medium term, but temporary, reduction in numbers; ii) small permanent reduction in numbers likely.

*High* – large permanent reduction in numbers likely

The following method of assessment of significance is used;

Value	Magnitude		
	<i>High</i>	<i>Medium</i>	<i>Low</i>
<i>International</i>	Very High	High	Moderate
<i>National</i>	Very High	High	Moderate
<i>Regional</i>	High/Very High	Moderate/High	Low/Moderate
<i>County</i>	High	Moderate	Low
<i>Local</i>	Moderate	Low	Very Low
<i>Very local</i>	Very Low	Very Low	No Significance

### 8.2 Impact

The proposed redevelopment of the building will not necessarily involve destruction of the roost sites, but roosts will be disturbed during building work. I consider the impact of proposed work on populations of pipistrelles will be low, on a site of local importance to the species. The overall significance of impact will therefore be very low. Provided all recommendations in Section 9 are implemented, the significance of impact will be reduced to negligible, and the bats should continue to use the site in future in similar numbers as they do at present.

## 9.0 Recommendations for Mitigation

**9.1 Licensing.** A Scottish Executive licence to disturb or destroy a bat roost will be needed before work can start at Menie Park Steading. Currently, licences take 6-8 weeks to be issued, so application should be made to the Scottish Executive in good time. An application form is enclosed with this report, and further details can be found on the Scottish Executive website or from:

Susan Turpie, Landscape & Habitats Division, Scottish Executive, 1H South Victoria Quay, Leith, Edinburgh EH6 6QQ. Telephone: 0131 244 4415.

**9.2 Timing of work.** My advice is that demolition of the steading, particularly the central section which joins the east and west wings, should not begin during bats' deep hibernation period (December to February), in order to avoid harming hibernating bats. Since bats are also present in the roosts during summer, the best time to carry out work on the roof of this section of the building will be mid September to November, or March to mid May. Since there is no evidence any bats use the east or west wings, work on these sections can be carried out at any time.

**9.3 Mitigation.** If at all possible, the roost sites detailed in this report should be retained. The crevice leading into the stonework above the door lintel should not be filled in, thus leaving space for bats to roost. After conversion work on the roof in the central section is finished, bat access points should be created to allow bats to gain access to the remaining roof space. Access holes could be created either at the gable apex, around the existing chimney at the west end, or on the ridge. Ridge tiles designed to allow bat access are available from specialist suppliers. Provided bat access to these two areas is retained, no further mitigation will be needed.

**9.4 Timber treatment.** Any timber treatment in the refurbished building should use only chemicals known to be safe for use in bat roosts. Timber treatment companies should be made aware of the presence of bats and of this recommendation.

**9.5 Awareness.** During demolition work, especially in the central section of the steading, workmen should be made aware of the slight possibility of finding solitary bats in the roof, particularly in winter. Should any be found, they should be allowed time to warm up and escape before work in the vicinity continues.

## **10.0 Non-bat issues**

Two owl pellets (possibly produced by a barn owl, *Tyto alba*) were found in the roof space of the east wing of the building. In addition, two occupied swallow (*Hirundo rustica*) nests were recorded in the unconverted part of the steading. In view of the legal protection afforded to nesting birds, the site owners should take this information into account, and may like to pass it on to their bird survey consultant.

### **Reference**

**Pritchard, J.S (2006).** Bat survey of Menie (August 2006). *Report to Trump International Golf Course (Scotland) Ltd. 10pp.*

