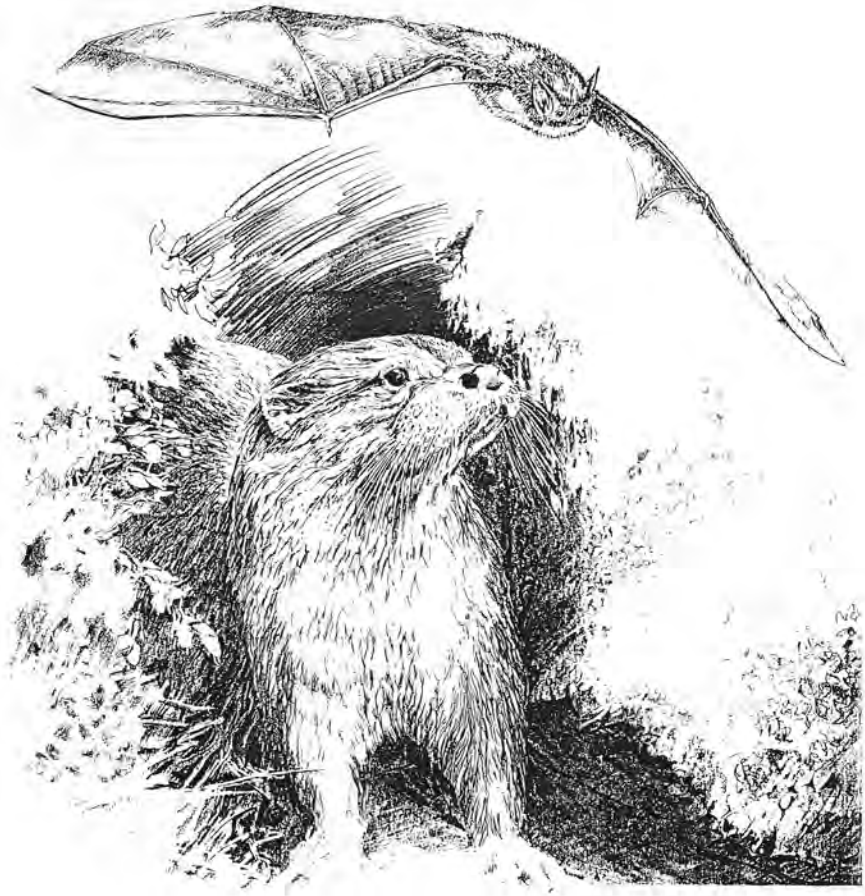

Scottish BATS

Volume 3 1995

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Editors John F Haddow and Jeremy S Herman

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Preface

Welcome to the third volume of *Scottish Bats*. Papers and articles concerning bat conservation and research can be published in scientific journals, regional journals of natural history and *Bat News* (newsletter of the Bat Conservation Trust). *Batchat* was published by the former Nature Conservancy Council and unfortunately no issue has appeared since the dismemberment of that organisation - the last issue was dated June 1990. *Scottish Bats* is intended to complement these publications and to collect together articles and information on bats in Scotland in a recognisable and easily available form. We particularly hope to encourage the publication of items which would otherwise remain within notebooks, computer files or peoples' heads. Without the stimulus to put this information down in publishable form, it can be lost, or at least never achieve a wide circulation.

The articles have been collected from the authors by the committee for South East Scotland Bat Groups. The opinions stated within the articles are those of the authors themselves, who also retain responsibility for the accuracy of the information contained therein. The editors take responsibility for such essential changes as were necessary to provide consistency.

JFH/JSH

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A whiskered bat in north-east Scotland

Paul A Racey and Jens Rydell

On the 28th September 1994 our attention was drawn to a bat roosting at a height of eight feet on the external wall of a porch of the Cruikshank Building, University of Aberdeen. It was caught and identified as a male whiskered bat *Myotis mystacinus* on the basis of the following characters: a forearm length of 33.0 mm, a relatively long and narrow tragus extending to about half the length of the ear, a second lower premolar which was half the size of the first and slightly displaced outwards, a second upper premolar which was much smaller than the first (Corbet and Harris 1991), and a long and slender penis with a prominent right angle bend (as illustrated in Schober and Grimmberger 1987). The bat was released over the River Dee later that evening. At 57°10'N this appears to be the most northerly record of this species in the UK.

We are grateful to Mr David Sangster for drawing our attention to the roosting bat.

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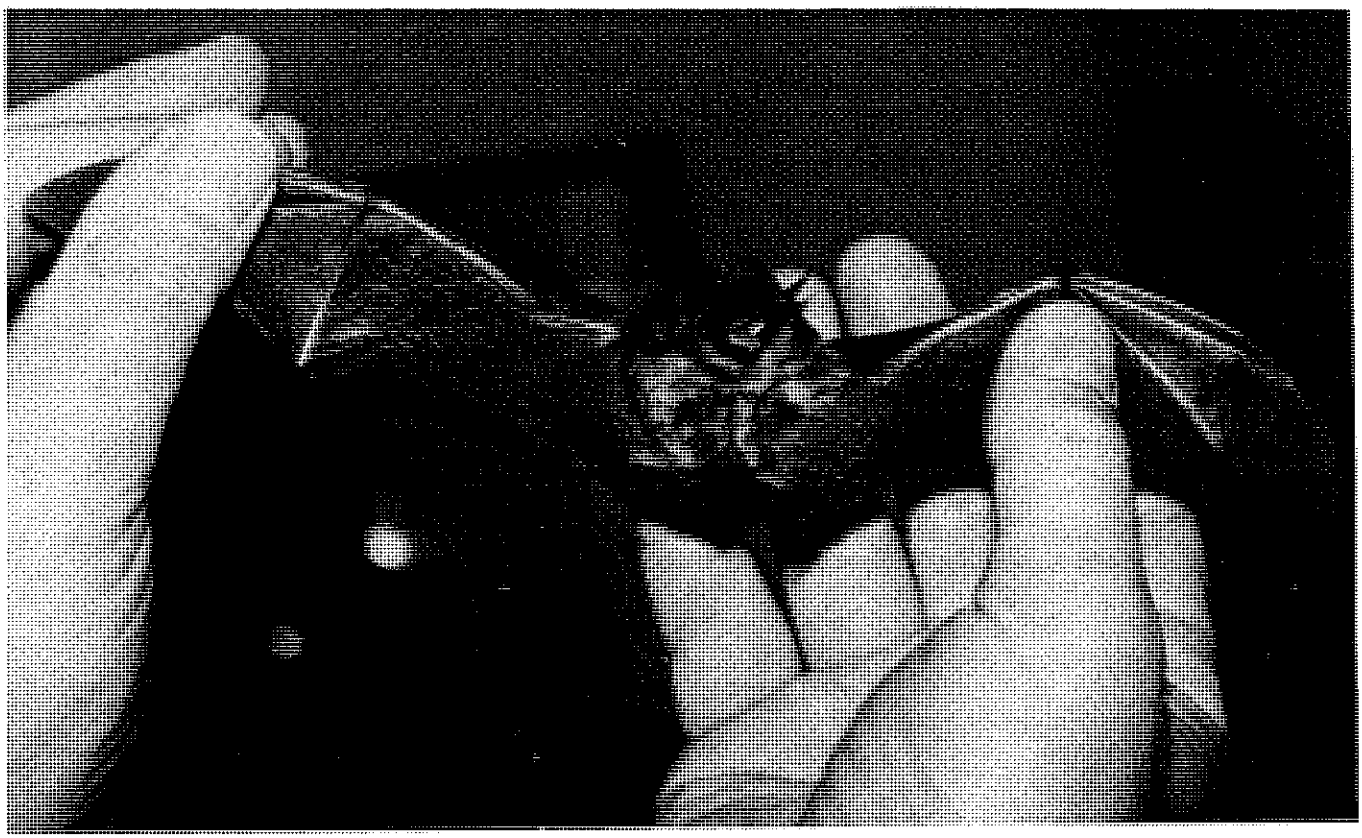

Fig.1. Whiskered bat *Myotis mystacinus* (John Haddow)

Observations of Nathusius' pipistrelle *Pipistrellus nathusii* in northern Scotland

Jens Rydell and *Susan M Swift*

While listening for pipistrelle bats *Pipistrellus pipistrellus* along the river Dee near Balmoral Castle, Aberdeenshire, on the evening of 26th June 1994, using bat detectors, a pipistrelle bat suddenly caught our attention as being different from the others flying nearby and from those we have previously seen in the area. The echolocation calls of this bat were centred around 40 kHz rather than around 45 or 55 kHz, as is the case in the other British pipistrelle "phonotypes" (Jones and van Parijs 1993). The aberrant bat flew about 10 metres above the ground, back and forth in a straight line over one of the greens of the Balmoral golf course, and between two tall beech trees which were situated about 50 m apart. The bat stayed in this same beat for several minutes while we watched it and was still there when we returned to the spot fifteen minutes later. However, it soon disappeared from the site and was not seen again. The bat was occasionally joined by at least two other individuals with similar appearance, behaviour and echolocation calls.

The bat detectors which we used (QMC S-25 and Pettersson D-960) permitted a good evaluation to be made of the echolocation calls used by the three bats. The search phase pulses were of the common pipistrelle type, consisting of a sweep followed by a tail of nearly constant frequency, but they were distinctly and consistently lower in frequency and also slightly longer in duration. The pulse repetition rate was also slightly slower than that which is normally the case in pipistrelle bats. This call structure, as well as the foraging behaviour, corresponds very well with that described for Nathusius' pipistrelle (Ahlén 1990), and also with previous observations of that species in Scandinavia by one us (JR). We were therefore confident that we were observing three individuals of Nathusius' pipistrelle.

These observations recall another observation on 24th June 1993, when one of us (JR), while listening for bats in Seaton Park, Aberdeen, heard a series of echolocation pulses from a bat flying high above the trees. These pulses were similar to those heard near Balmoral, although they were a little lower in frequency (36-38 kHz) and also slightly longer in duration. A downward shift in frequency of a few kHz and lengthening of the pulses is typically associated with an increase in foraging height to above the treetops in aerial-hawking bats (Rydell 1990). Therefore, the observation from Seaton Park most likely represented a high flying Nathusius' pipistrelle.

Nathusius' pipistrelle has occasionally been caught on the British mainland including Scotland as well as on Shetland and on oil rigs in the North sea (Speakman *et al* 1991). It is a migratory species on the continent, and since most observations in Britain have been made outside the summer season, it is believed to be a non-breeding visitor here (Speakman *et al* 1991). However it is a tree-roosting species, which implies that maternity colonies would be very difficult to find.

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Editors' note Nathusius' pipistrelles have been recorded by students of the University of Bristol making songflights in the Bristol area during the late summer of 1994. The species has a characteristic ultrasonic "song" which can be recorded using sophisticated bat detection equipment (John Speakman, *pers. comm.*)

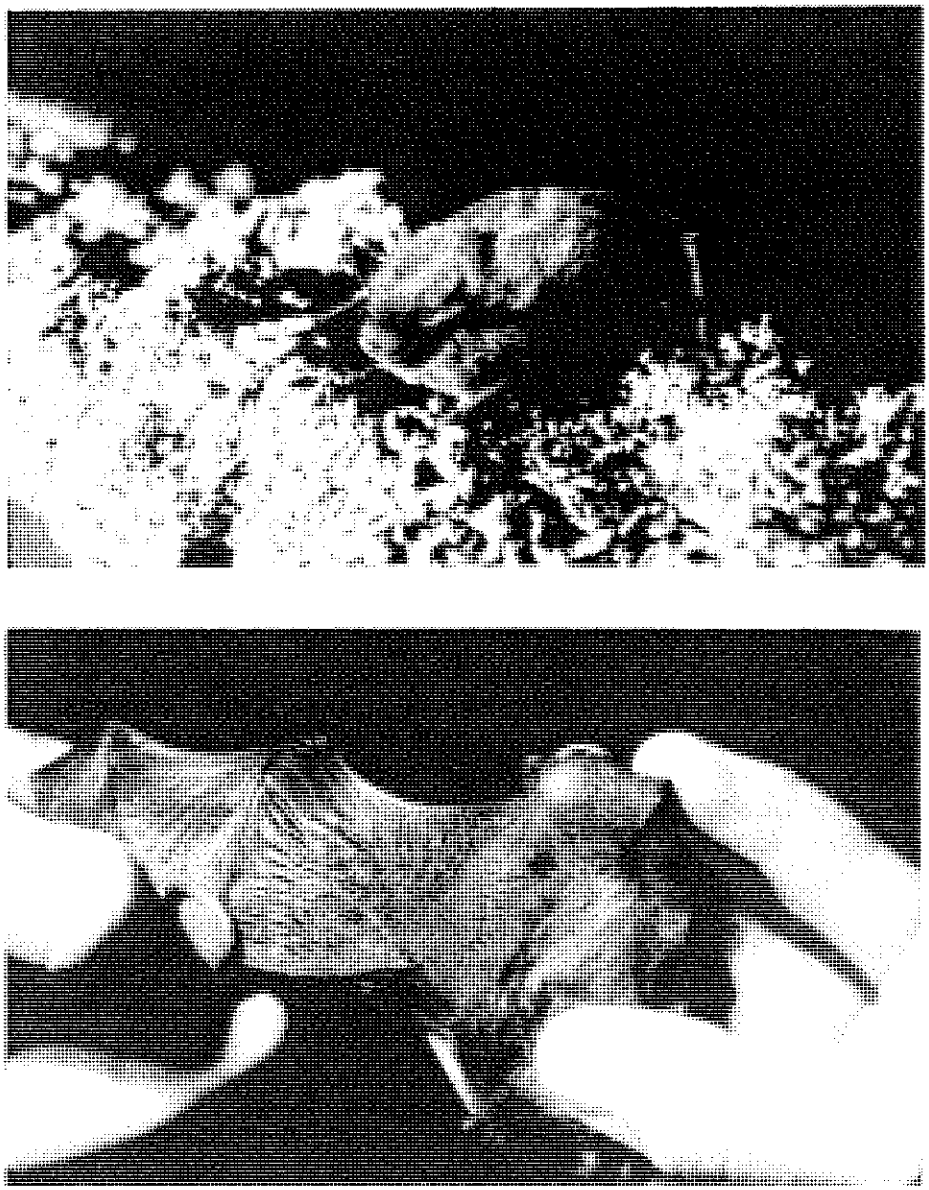

Fig.1. Nathusius' pipistrelle *Pipistrellus nathusii* found on a wall of RAF Buchan radar station, Peterhead, 1989 (Bob Davis, SNH)

Leisler's bats from Galloway

Paul N Collin

Whilst cleaning bird boxes at Caldons Wood on 9th February 1994, Geof Shaw came across a box containing an active male Leisler's bat *Nyctalus leisleri* and an active male pipistrelle *Pipistrellus pipistrellus*. This record prompts me to record that bats are regularly seen on the wing on mild winter evenings and have been recorded by Geof and myself in every month of the year. Indeed the sight of bats on the wing in winter is not unusual and I have therefore not bothered to note the occurrences, but a recent comment from Paul Racey would suggest that such occurrences are indeed rare elsewhere in Scotland.

On 22nd June 1994 I ventured out to try and net bats from a rock-crevice roost on the Wood of Cree reserve. The netting was unsuccessful and no bats were caught but while at the location a large bat with a strong powerful flight flew along the edge of the wood at the height of the tree tops, making numerous shallow dives. It was hawking up and down the edge of the wood for some 15 minutes and produced the characteristic Leisler's/Noctule sound registering at 22kHz on a bat detector. I have seen numerous Noctules *Nyctalus noctula* in southern counties of England and this bat did not appear big enough for that species. As it never ventured much above the height of the canopy and the dives although sudden and steep were not more than 15 feet I am certain that it was a Leisler's bat. It was later joined by a second individual. These represent the first mid summer records for Leisler's bat in the area.

Following this discovery I checked the 30 bat boxes in the wood on 3-4 July, which produced two Leisler's bats, one Natterer's bat *Myotis nattereri*, three brown long-eared bats *Plecotus auritus* and five pipistrelles. After the failed netting attempt on 22nd June I went to a location which offers a fine view over the waters of the River Cree. It was perfectly calm, snipe drummed from a nearby meadow, a barn owl flew over, about 45 pipistrelles milled around and approximately 10 Daubenton's bats *Myotis daubentonii* hawked low over the river trawling with their hind feet. It was a memorable evening.

Fig.1. The first Leisler's bat recorded in Scotland, Newton Stewart, January 1988 (John Haddow)

Second British record for the Northern Bat *Eptesicus nilssonii* : from a North Sea oil platform.

Speakman, J.R., Racey, P.A. and Rydell, J.

The Northern Bat *Eptesicus nilssonii* is a widespread and common bat throughout northern continental Europe (Stebbings 1988), extending to above the arctic circle (Rydell et al 1994). Although it is a widespread species it is considered not to be migratory and does not often cross areas of open water - for example it is abundant in southern Sweden but absent from northern Denmark, although these areas are separated by only 10km of open water. There is only a single record of this bat from Britain, which was found in Surrey (Greenaway and Hill, 1987). We report here a second British record of this species from an oil platform in the North Sea.

A bat was imported under licence from the oil platform "Dundee Explorer" to Aberdeen University Zoology department on the 12th August 1993. The bat was not identified by the technician who collected it and was immediately placed in quarantine. It died the same night and unfortunately much of it was devoured by mealworms. The remains however were sufficiently intact for us (JRS/PAR) to identify several key features. In outward appearance the bat was clearly of *Eptesicus/Pipistrellus/Nyctalus* rather than Myotid or Rhinolophid in type. The forearm was 38.5 mm which is too large for any *Pipistrellus* species but too small for *Eptesicus serotinus*. The only species it could represent from the forearm size were Leisler's bat *Nyctalus leisleri*, possibly parti-coloured bat *Vespertilio murinus* or Northern bat *Eptesicus nilssonii*. We identified it as the latter on the basis of the hair being very dark, on both the ventral and dorsal surfaces and the brown fur having golden tips. The last tail vertebra was free and the calcar extended half way from the foot to the tail tip. Unfortunately we were unable to determine its sex. Three days later and independently of our identification JR reached the same conclusion as to its identity using the same external characteristics and examination of the skull and teeth.

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The largest pipistrelle roost in Britain

Ian Tanner

When 2,000 pipistrelles *Pipistrellus pipistrellus* take up summer residence at the same address the difficulties faced by the human occupants are almost beyond normal endurance. As it was in a house in south Ayrshire last year.

Local Scottish Natural Heritage staff and the Ayrshire Bat Group responded to a call for help in May 1993 and arranged to make an evening visit in order to discuss the problems and to undertake the roost count. The usual procedure was followed and assurances were made in an effort to calm the situation suspecting that the owners were exaggerating the problem and the numbers of bats involved.

At approximately 9.15pm Graeme Walker (SNH area officer for Ayrshire) and I took up our positions outside the house. The distribution of bat droppings suggested emergence from three sides of the building and we placed ourselves accordingly. The weather was warm and humid, ideal for bats and midges alike, so that by the time the first bat emerged (just before 10.00pm) we had already been half eaten.

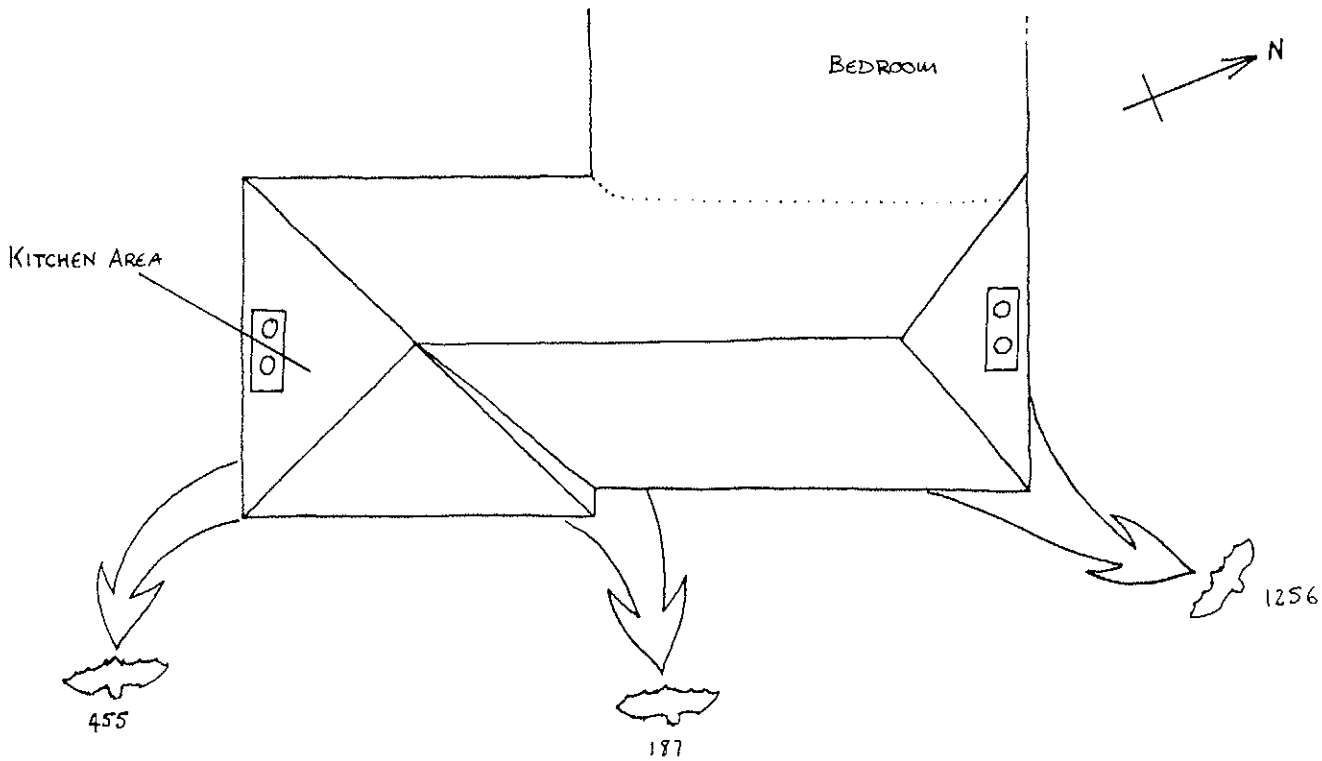

Fig.1. Initial count from 25th May 1993

The pattern of emergence probably resembled a normal distribution curve and, since all the bats had left the roost by about 10.40pm, the major part of the roost would have taken only 20 minutes to exit. The use of tally counters and having two people undertaking the count proved invaluable - indeed it would have been impossible to do the count any other way. The total number of bats recorded on the 25th May 1993 was 1,898.

The main problem faced by the human occupants of the house was the smell that leaked into their bedroom - indeed the access hatch into the roof space was in the bedroom and smells could easily waft into the room. It is assumed that bats have been using the site for many years and it was clear from the array of

fumigators found within the roof space that some attempt to smoke out the bats had been made in the past. All of the dead bats found on that day were collected together and photographed (a total of only 48 bats were recovered from the site with about ten of these adult, suggesting that the attempt was in vain).

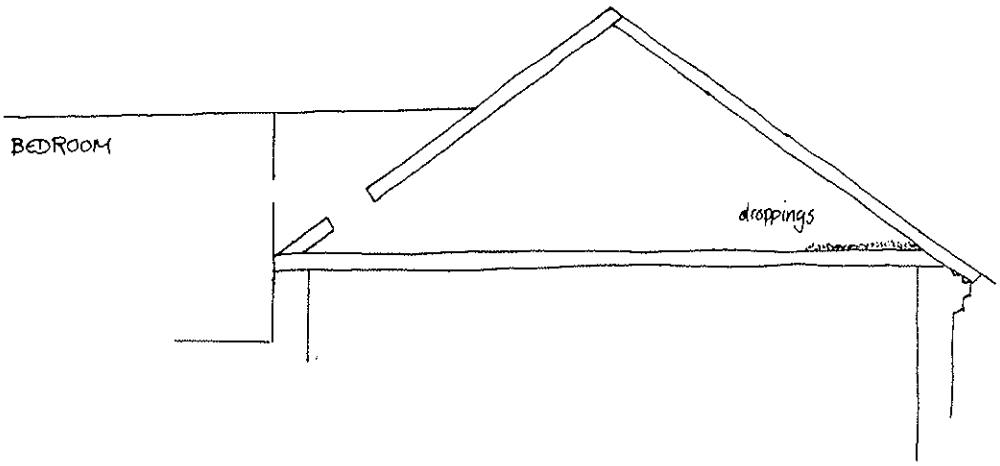

Fig.2. Cross section of roof showing entrance to roost

It is assumed that, since the smell is only a problem during the summer when the bats are in residence, a combination of warm conditions and the resoaking of old droppings with urine promotes dramatic bacterial growth. I would be interested to hear of any evidence suggesting that roof insulation material compounds the problem of smells through its ability to harbour bacteria. On 4th June 1993, a nice hot early summer afternoon I entered the roost site to clear away the old droppings and to put down plastic sheeting to catch new droppings. The smell was unbelievable even when wearing a face mask (which is strongly recommended). Droppings and encrusted loft insulation material were raked into plastic bin bags and removed and the hatch was sealed tight to reduce the amount of air passing into the bedroom. The work was a complete success.

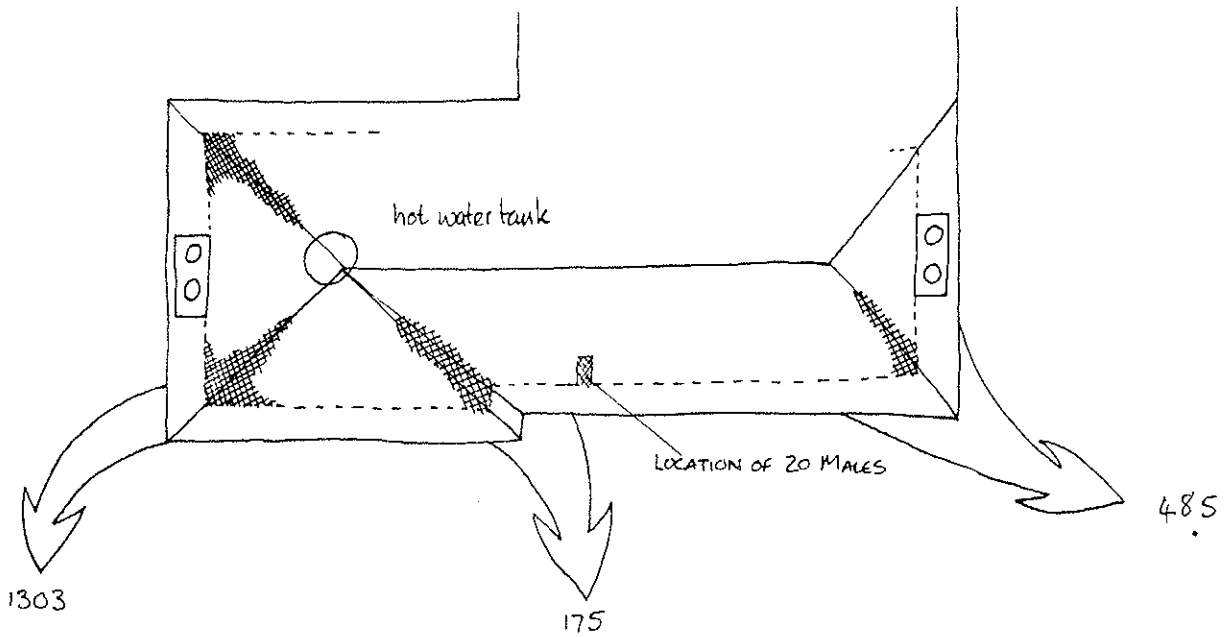

Fig.3. Details of second count on 8th June 1993 showing observed locations of bats

A second count was made on 8th June 1993 to gauge whether the clearing out operation had had any adverse effect on bat numbers. The overall numbers had not changed significantly (we even recorded an increase of 65 from our previous count) however either due to the work we had carried out or because of changing weather conditions the bulk of the bats now emerged from the other side of the house.

The occupants then started complaining of a strong smell in their kitchen. Consequently it was necessary to return to the roost site and remove droppings from the other end of the roof. This was done on 29th June 1993 and it was clear that the bats had already started to produce young. Some of young were quite a distance from any adults and although small and naked were very mobile; a great deal of care was taken to keep disturbance to a minimum.

A further roost count was attempted on 19th July 1993 but proved unworkable after bats started to return to the roost before the count was completed. Approximately 1,600 were recorded before the exercise was aborted.

The occurrence of a group of males (about 20) found underneath the roof insulation was of some interest. These bats were discovered during the first visit and were re-found late in the year after the maternity roost had been abandoned. It was only because these bats had been in an unusual location that they were sexed at all and this may suggest that male occupation of maternity roosts is more common than previously thought.

It may be appropriate to consider some of the factors governing the size of bat roosts - the condition of the roost itself, the availability of alternative roost sites, the condition of feeding habitats, the availability of food, the local climate, the availability of suitable hibernation sites and the age of the roost. The roost described above is situated within the Stincher Glen in the south of Ayrshire, comprising of a patchwork of mainly native broadleaf woodlands with agriculture and wetland habitats along the River Stincher flood plain. The glen is steep sided and offers protection from harsh weather conditions (although it often rains) and restricts human habitation to areas adjacent to the river. The low intensity farming and the surrounding areas of blanket bog and heath produce an over abundance of small invertebrate life - as we discovered during our first roost count. The red sandstone house is about 100 years old, the roof is spacious with plenty of entrances, just big enough for a pipistrelle to squeeze through, which extend around three sides of the building and allow easy access for a large number of bats.

The Ayrshire Bat Group is currently looking at ways to ensure continuing good relations with the occupants and is making every effort to reduce the impact of all these bats on the people who live there. The occupants are prepared to consider allowing research on the roost as long as they are kept fully informed as to the amount of disturbance to them that this will cause. They, of course, will have the final say on whatever - if anything - is decided.

Whittingehame roost - revisited

Stuart Smith

Members of Lothians Bat Group have been monitoring the numbers of bats in a large pipistrelle *Pipistrellus pipistrellus* colony at this roost in East Lothian since the summer of 1987 (Fig.1). An analysis of the counts carried out during the period from 1987 to 1991 and a brief description of the roost itself have already been published here (Smith 1992).

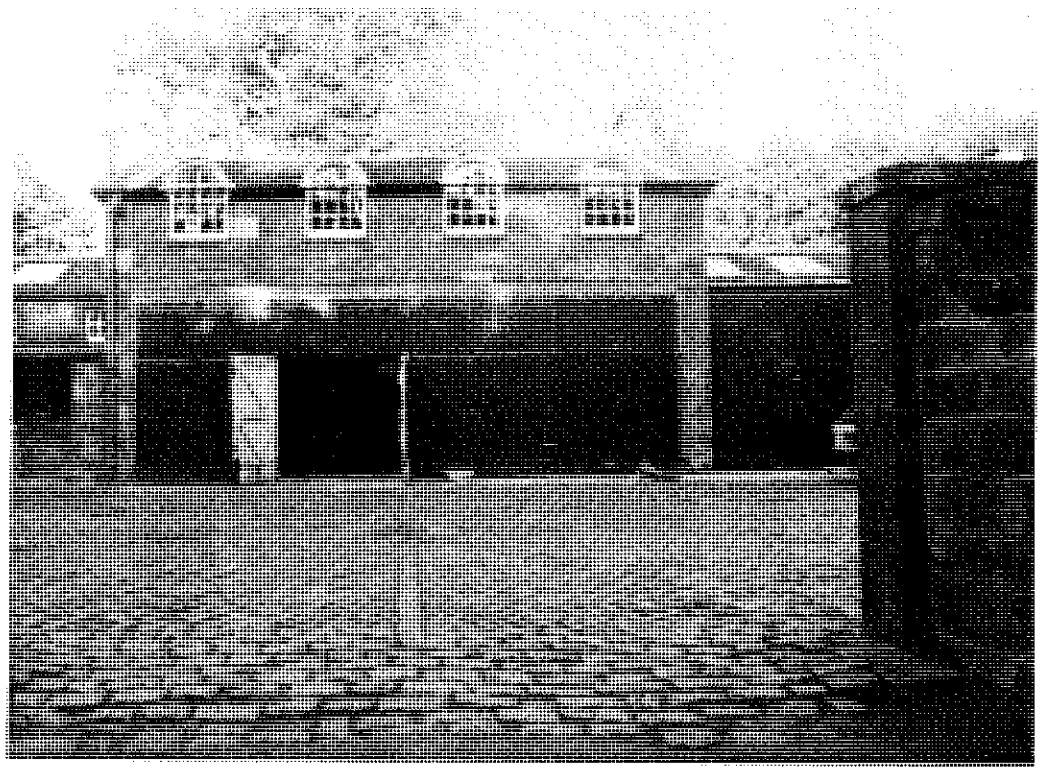

Fig.1. The roost is located within the roofspace of the former coach-house; most of the bats emerge from beneath the guttering at the eaves.

Since that time I have continued to organise counts of the bats in June for the national bat colony survey coordinated by Bob Stebbings and Henry Arnold and I have in addition carried out a more extensive series of counts during the summer of 1994. These counts took place after the loftspace, in which the bats roost, had been treated during the previous winter with "safe chemicals" against an outbreak of Spider Beetle - large numbers of this insect had been associated with the guano in the roofspace and had begun to invade the living quarters in the flat below. At the same time the loft insulation material, to which the bat droppings show great affinity making our annual clean-up job more time consuming, was covered with a layer of thick paper. The loft was subsequently swept clean of droppings in the autumn of 1994, in about half of the time that it had taken to do this in the previous year.

The large accumulation of droppings along the midline of the roofspace and the lesser accumulations leading across from this to the bats' exit areas at the eaves are a clear indication of these pipistrelles somewhat unusual habit of roosting mainly along the ridge beam at the roof apex, which they reach by crawling along the rafters which run from the ridge beam down to the eaves (Fig.2).

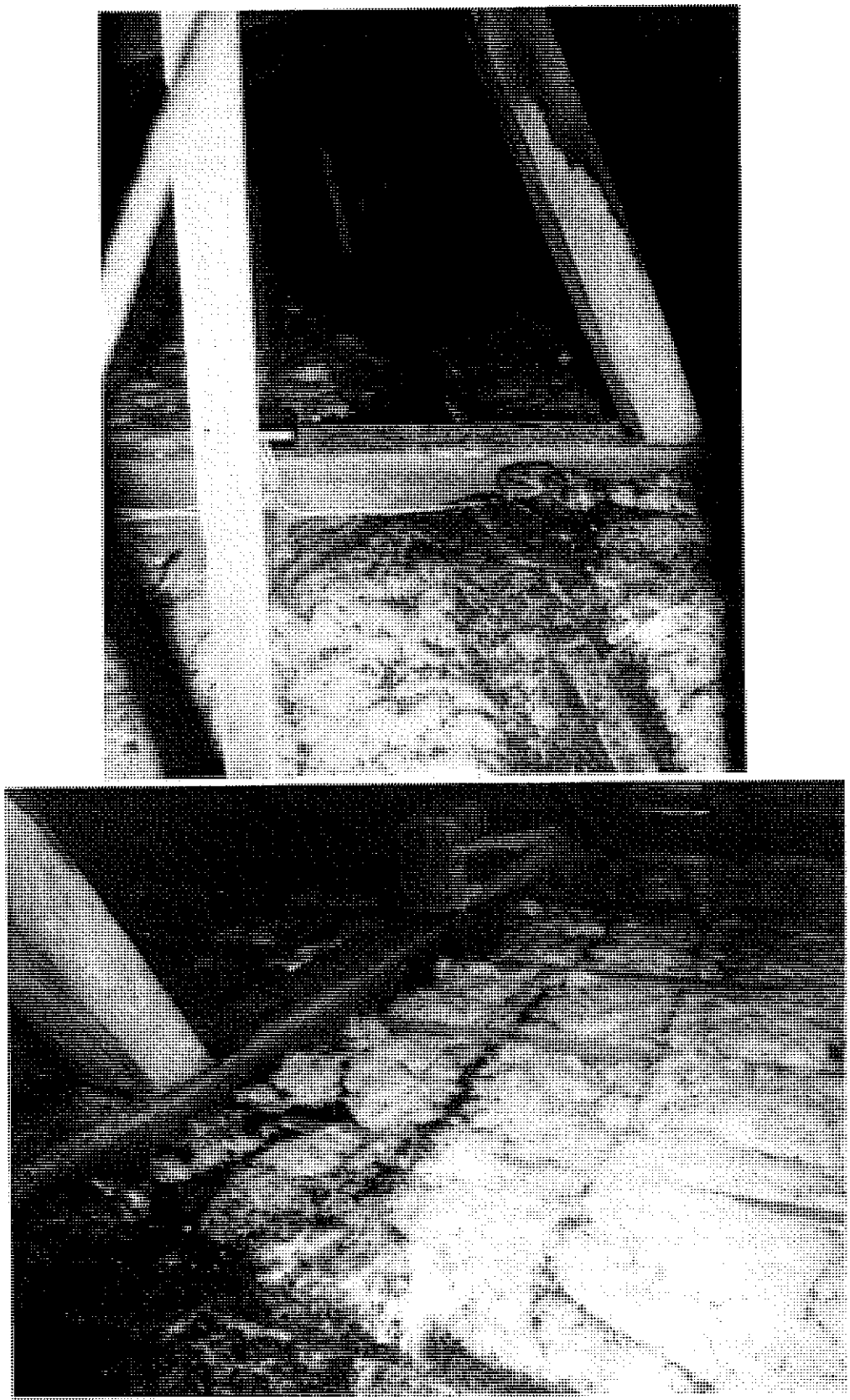

Fig.2. Interior of roofspace showing accumulations of droppings beneath main roosting site along ridge beam (upper picture) and below rafters running between ridge beam and bats' exit points at eaves (lower).

The counts recorded during the summer of 1994 are shown in Table 1. We believe that the counts taken up until the end of June represent adult females only, with an increasing proportion of juveniles in the subsequent counts as the adults begin to leave the maternity roost.

Date	9/5	25/5	1/6	4/6	15/6	29/6	14/7	28/7	10/8
Nos of bats	845	1229	1468	1449	1530	1554	1771	2047	1159

Table 1. Numbers of bats emerging on dates of counting, 1994.

We also believe that we are still seeing an overall expansion in the numbers of bats belonging to the colony itself, shown by the gradual increase in June counts from 1987 to 1994 which are shown in Table 2.

Year	'87	'88	'89	'90	'91	'92	'93	'94
Nos of bats	549	739	920	1105	890	1129	1262	1500

Table 2. Average numbers of bats recorded emerging in June, 1987 to 1994.

For how long the colony can increase in size before possible limiting factors such as the availablity of food within the feeding range of the bats or the confines of the roofspace itself begin to have an effect is something at which we can only guess.

This pipistrelle colony is of the brown-faced, 55 kHz phonotype, of Jones and van Parijs (1993).

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Bats at Battleby - an update

J Stewart Pritchard

The bat roost in Scottish Natural Heritage's building at Battleby near Perth and its maternity colony of pipistrelles *Pipistrellus pipistrellus* did extremely well following the re-roofing works proposed in 1993 (Pritchard 1993) and which gave rise to various concerns.

Almost the entire roof of the building was removed at one stage or another between November 1993 and March 1994, for essential timber repairs, and stonework repointing was carried out at the same time. Several hibernating pipistrelles were uncovered in the course of this work.

Prior to repointing, those crevices and gaps known to be used by bats or which looked like they could be of value to bats were marked and subsequently left open.

To maximise the chances of the bats returning to their main roost, whilst also preventing their frequent appearances inside the building, a bat roost box was designed and fitted into the roof during the works. Measuring more than 6 metres in length and in two parts each weighing more than 50 kg this may be the largest purpose built bat box in Scotland!

With the exception of the floor, the box was made of untreated, rough-sawn, softwood timber. The floor is surfaced on both sides with melamine for ease of cleaning and to help resist warping from the effect of the wall mounted heaters located a short distance below. Inside, the box is partially divided with boards every 15 - 20 cm to provide numerous surfaces and corners for roosting. Access for the bats is via specially prepared routes across or through the stonework of the wall and for humans via hinged doors on the inner side.

A visit in June recorded an unexpectedly high count of 682 bats, far more than any previous indications of the colony size. There was disappoiutment however when inspection of the boxes revealed that the bats had gained access to the space between the box and the roof covering and were not actually using the box! Although not as many as previously, bats (and their droppings) were also still finding ways of getting through into the building. Roost sites elsewhere around the building continued to show signs of activity throughout the summer.

With the workmen back again in March 1995 the opportunity to investigate the situation and make some modifications was seized. "Leaks" in the box were sealed up. The access routes, from the bat holes at the wall head into the box, were simplified and widened in places.

We now wait again, in expectation, to see what the bats make of their modified roost.

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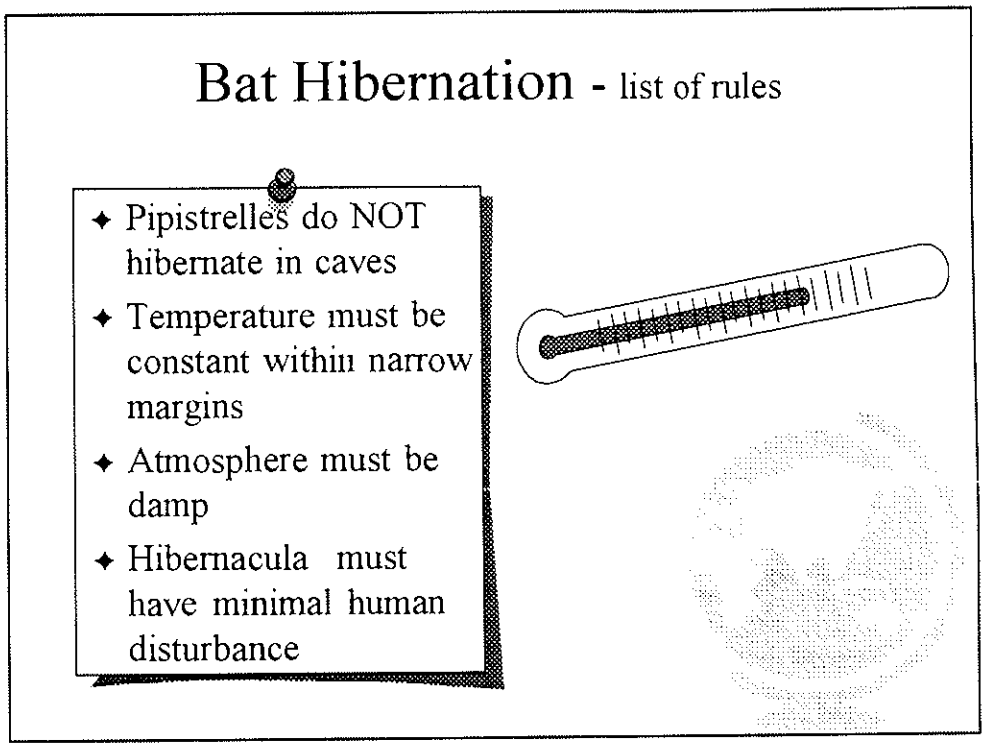
Pipistrelles in a sea cave

Nigel Mortimer

Early in 1994 I explored a series of famous Fife caves with a local geologist. I had already discounted a seashore cave as a possible hibernation site and explained to my companion the general "rules and regulations" for hibernation.

The cave in question is open at both ends and as it is orientated from east to west it catches most of the winter winds. It is only about 20 metres from the high water mark and during storms it must have sea spray howling through it. The temperature in the cave is by no means constant and as it is so close to the sea it is often relatively warm. The cave is also very near to a housing scheme and it is obviously often walked through and played in by children. So imagine my surprise when the beams of our torches picked out the faces of several bats in a 30 centimetre crack only 3 metres above the cave floor.

I identified the six bats as pipistrélles *Pipistrellus sp.* on the basis of their facial features, the colour of their fur, their size and the presence of a postcalcarial lobe.



Pipistrelles hibernating in an underground site in Dumfriesshire

Jeremy S Herman and Stuart Smith

A small group of pipistrelles *Pipistrellus pipistrellus*, three of which were clearly visible, was discovered during the survey of a disused limestone mine in Dumfriesshire in March 1994. The bats were lodged about 10 centimetres into a vertically orientated crevice in one of the pillars of rock which had been left to support the roof of the mine. They were located at a distance of about 25 metres from one of the entrances to the mine (Fig.1.), in the dark zone on the far side of the pillar from the entrance. Pipistrelles were again found in exactly the same place during a second visit to the mine in March 1995. On that occasion squeaking which might have come from bats could be heard from another crevice at a similar distance from a different entrance, however no bats were visible there.

Fig.1. Entrance to the limestone mine.

The mine has a typical layout consisting of a large horizontal area cut out of the limestone, with pillars of rock left at intervals for support. The temperature in the mine ranged from 4°C at the lowest level at the rear of the mine to 10°C near to the entrances, which is similar to the range within which we have found *Myotis spp.* and *Plecotus auritus* hibernating in other limestone mines in Scotland (Herman and Smith 1992), however none of these were found in this site. The absence of these species and the presence of the pipistrelles may have been connected with the unusually dry conditions which we noted within this mine.

Pipistrelles have only rarely been recorded in underground sites in the British Isles (Greenaway and Hutson 1990) where they have usually been found close to the entrance. One was found, about 50 metres from the entrance, in another site iu Scotland (Haddow, *pers. comm.*).

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Do pipistrelles use night roosts?

M Holmes, P A Racey and J Rydell

During an expedition in May 1994 to locate bat roosts in Orkney, one of us (MH) found bat droppings beneath a sealed and rusted stove pipe, which passed through the roof of a small unused chapel adjacent to a large house on the island of South Walls which is linked by a causeway to Hoy. A number of observers convened at dusk to look for bats emerging from the house or the chapel. Five bats did so at dusk from the same general area at the lower part of the roof of the house or around the guttering. The bats circled for some time and were recorded by one of us (JR) who confirmed that they were pipistrelles *Pipistrellus pipistrellus* of the 45 kHz phonotype. As the observers convened to discuss the impossibility of catching the bats from such a high exit point, one of us (PAR) returned to the chapel about 45 minutes after the initial emergence and discovered a bat flying. A mist net was rapidly deployed over the door arch and the bat made several attempts to leave the church through the door which has been permanently wedged open, but it could apparently detect the net and turned back. On one occasion it even bounced off the net and in torch light the identification of *Pipistrellus pipistrellus* was confirmed. As the net was temporarily lifted from the door arch to allow one of us (JR) to leave the chapel, the bat also made its escape! The net was replaced and was approached several times from the outside of the chapel by bats.

These observations suggest to us that the chapel was being used as a night roost by the pipistrelles. Studies on pipistrelles in north-east Scotland have provided no evidence for the use of night roosts (Swift 1981; Racey, Speakman and Swift 1987) although Maier (1992) found strong circumstancial evidence for their use in Oxfordshire and also found light tagged pipistrelles roosting in trees near feeding sites 1-2 hours after emerging (C Maier, *pers. comm.*). Brown, Flinders and Richardson (1983) also found pipistrelles using church porches as night roosts in Northamptonshire. We hope to learn of further evidence of night-roosting of pipistrelles through the pages of this journal.

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Racey, P A, Speakman, J R and Swift, S M 1987. Reproductive adaptations of heterothermic bats at the northern borders of their distribution. *South African Journal of Science* **83**, 635-638.

Swift, S M 1981. *Foraging, colonial and maternal behaviour of bats in north-east Scotland.* PhD Thesis, University of Aberdeen.