

BAT SURVEYS
in
BERWICK-upon-TWEED
May to September 2009

A report on surveys at
Bell Tower & Magdalene Fields House
Cornwall Avenue & Ord House Country Park
The Parade & The Ramparts at Holy Trinity Church
Longridge Towers School
Seaview, Spittal and
Holy Island Village
by
Berwick Wildlife Group

ACKNOWLEDGEMENTS

The following members of Berwick Wildlife Group were the principal surveyors involved in the 2009 bat survey programme: Fiona Aungier, Leslie Cook, Molly Hardie, John Inglis, David Johnston and Enid Turnbull. Other Group members who assisted in survey work were: Maurice McNeely, John Rae, and Kevin and Holly Rideout.

This report was written and the accompanying sketch maps were drawn by Leslie Cook.

INTRODUCTION

The end of the 2009 bat surveying season marked the completion of five years of bat monitoring work, during which much information was obtained on the distribution of bats within Berwick, Tweedmouth and Spittal. This only served to show how much more remains to be discovered in terms of the ecology of the local bat populations.

The season commenced with a 'bat detector' workshop at which several Group members were given an insight into the use of a frequency division bat detector and on how to interpret sound recordings taken from it as an aid to species identification through specialist computer software. The Group is grateful to Steve Betts and Paul Lowing who led the workshop.

The earliest surveys provided assistance to a bat consultant, Ruth Hadden, in determining whether or not a bat roost was located in any part of the structure of the Royal Border Bridge, particularly the section adjacent to the Riverdene private housing estate where bats were known to be present. This work formed part of a feasibility study for a project to illuminate the bridge superstructure as an extension to the celebration this year of the 'Stephenson 150 Festival' that commemorated the death of Robert Stephenson, who designed and built the railway viaduct.

As in previous years, part of the 2009 survey was devoted to acquiring more knowledge of bats' feeding areas around the perimeter of Holy Trinity churchyard, particularly along those interfaces with The Parade and the north-east section of the Ramparts between Brass Bastion and the Cowport Gate. A new area was opened up at Bell Tower and Magdalene Fields house that produced interesting results for future study.

The remaining surveys were interspersed with two visits to sites outside the Group's prescribed study area, the first a 'bio-blitz' on Holy Island and the second a visit to known bat roosts at Longridge Towers School; also visited was a roost site at East Ord that developed into a bat walk in Ord House Country Park.

The mainstay of the bat detecting equipment used since 2005 has been the Batbox III heterodyne bat detector, that converts the high-pitched (ultrasonic) sounds emitted by bats to sounds audible to the human ear: the pattern of these echolocation calls assists in the identification of the species concerned. The Group's equipment resource has been boosted this year by the addition of a frequency division detector, the Batbox Duet that has a heterodyne facility. It can simultaneously transmit these calls to a mini-disc recorder for later reference through sound analysis software which creates sonograms for greater accuracy in identification of bat species.

SURVEY RESULTS

Riverdene, Tweedmouth

Three surveys were carried out on 28th May and 11th and 18th June under the direction of a bat consultant as part of a feasibility study for an extension to the celebration of the 'Stephenson 150 Festival' commemorating the death of the engineer, Robert Stephenson, who designed and built the Royal Border Bridge.

The results from these surveys were communicated to the agency for the Festival's sponsors.

Holy Island

The bat survey on 12th June formed part of a 'bio-blitz' of the island, which is shorthand for saying that Holy Island was the focus for many naturalists from all disciplines who, over one weekend, recorded as much as could be recorded of everything that crawled, walked, swam, flew or grew.

Two members from Berwick Wildlife Group joined other bat surveyors to patrol the village in search of bats. The BWG element first made contact at 10.30 p.m. with bats in St. Mary's churchyard (grid ref. NU126417); this was followed a short time later with bat calls being recorded between the small village green and the west elevation of the Lindisfarne Mead buildings (grid ref. NU125418). The bat calls at each location were recorded using the frequency division bat detector and were identified as common pipistrelle bats (*Pipistrellus pipistrellus*).

Other groups of surveyors in the village also recorded small numbers of the common pipistrelle and of the very similar *Pipistrellus pygmaeus*, the so-called 'soprano' pipistrelle.

Bell Tower/Lord's Mount Fortifications and Magdalene Fields House

An historical report of a bat having entered the living space of a dwellinghouse in Low Greens, reports of bats in the vicinity of Fields House plus the seeming suitability of the area as a bat feeding site prompted this survey.

July 02 The survey commenced at 9.30 pm but it was not until 10.25 pm that the first bat call was recorded in the sunken ditch between Fields House and the Bell Tower; this was followed by intermittent, more distant calls from the same area for the next twenty minutes.

At 10.35 pm, other surveyors recorded bats over the rough grassland in the area of ground between the Lord's Mount fortification and the walled garden of Fields House. Here, the bats' activity was very strong with extensive recordings being made of their calls. Some bats were seen flying towards the trees adjacent to Fields House and along the frontage of the building, others were flying along the sunken ditch between the Lord's Mount private housing estate and the Magdalene Fields golf course. Two bat calls were recorded in Low Greens, one at 10.35 pm at its eastern end and the second at 11.00 pm, 50m west of The Pilot Inn.

The recordings of the bat calls confirmed the presence of the common pipistrelle.

July 09 A supplementary visit was made to Fields House to check whether or not there could be a bat roost in part of the building: the result was negative, and fewer bats were recorded over the rough ground, probably partly due to a cool breeze blowing from the sea.

Sept 17 A third visit was made to the Bell Tower area to find out from which direction bats were flying to the feeding area at Lord's Mount. Again a very cool easterly breeze may have had a deterrent effect because few bats were seen, but of those that did appear, two about 8.00 pm and another two five minutes later, came from the direction of Low Greens. No bat call recordings were made.

(see Sketch map no. 01/09)

Longridge Towers School

Knowledge of bat roosts at Longridge Towers dates from 1988 when a pipistrelle maternity roost was recorded on the main building at the side of one window to the housemaster's room at second floor level. Subsequently, another pipistrelle roost was located in the north gable of the single storey, pre-prep building and, later, brown long-eared bats were discovered in the roof space of the main building.

July 16 Surveyors arrived on site at 8.45 pm only to discover that bats had already commenced emerging from the gable of the pre-prep building. An accurate count could not be made but a partial count was indicative of a population of some 300 – 400 bats, a quite substantial roost. Recordings were not made of bat calls but heterodyne bat detectors registered 55 kHz, indicative of the 'soprano' pipistrelle (*Pipistrellus pygmaeus*). It is this species which most often forms larger maternity roosts of 200 or more individuals.

Monitoring of the main building failed to detect any bats emerging from the original roost at the second floor window. Continued monitoring of the perimeter of the building later in the evening for brown long-eared bats, which normally emerge well after sunset, registered one uncertain call in deteriorating weather conditions that led to the termination of the survey.

Seaview Farm, Spittal

While BWG was carrying out a survey of Spittal promenade in 2008, a passerby mentioned that he had seen bats at Seaview Farm, particularly in the vicinity of the small railway bridge that crosses the track where it meets the old coastal route to Lindisfarne. Distant calls from the direction of this site were detected in 2008 but were not followed up at that time.

July 30 From 9.45 pm onwards bats were detected on the seaward side of the bridge – in quite small numbers when judged by the frequency of passes that were recorded. Similarly, only small numbers of bats were recorded on the Seaview Farm side of the bridge. The bat species was identified as the common pipistrelle.

(see sketch map no. 02/09)

Cornwall Avenue / Ord House Country Park

A small bat roost has been known to exist in the gable overhang of a house on Cornwall Avenue for at least five years. A roost count was proposed conjointly with a bat walk in East Ord.

Aug 13 The first bat emerged at 9.15 pm from the Cornwall Avenue roost and was followed by a further two bats by 9.25 pm when the count was abandoned. With five visitors including two young enthusiasts present, on a very cool evening, a bat walk within the grounds of Ord House Country Park was considered the more interesting option. Bat detection, however, remained low with only one very positive contact being made where the Country Park abuts Cornwall Avenue. The species identified was the common pipistrelle.

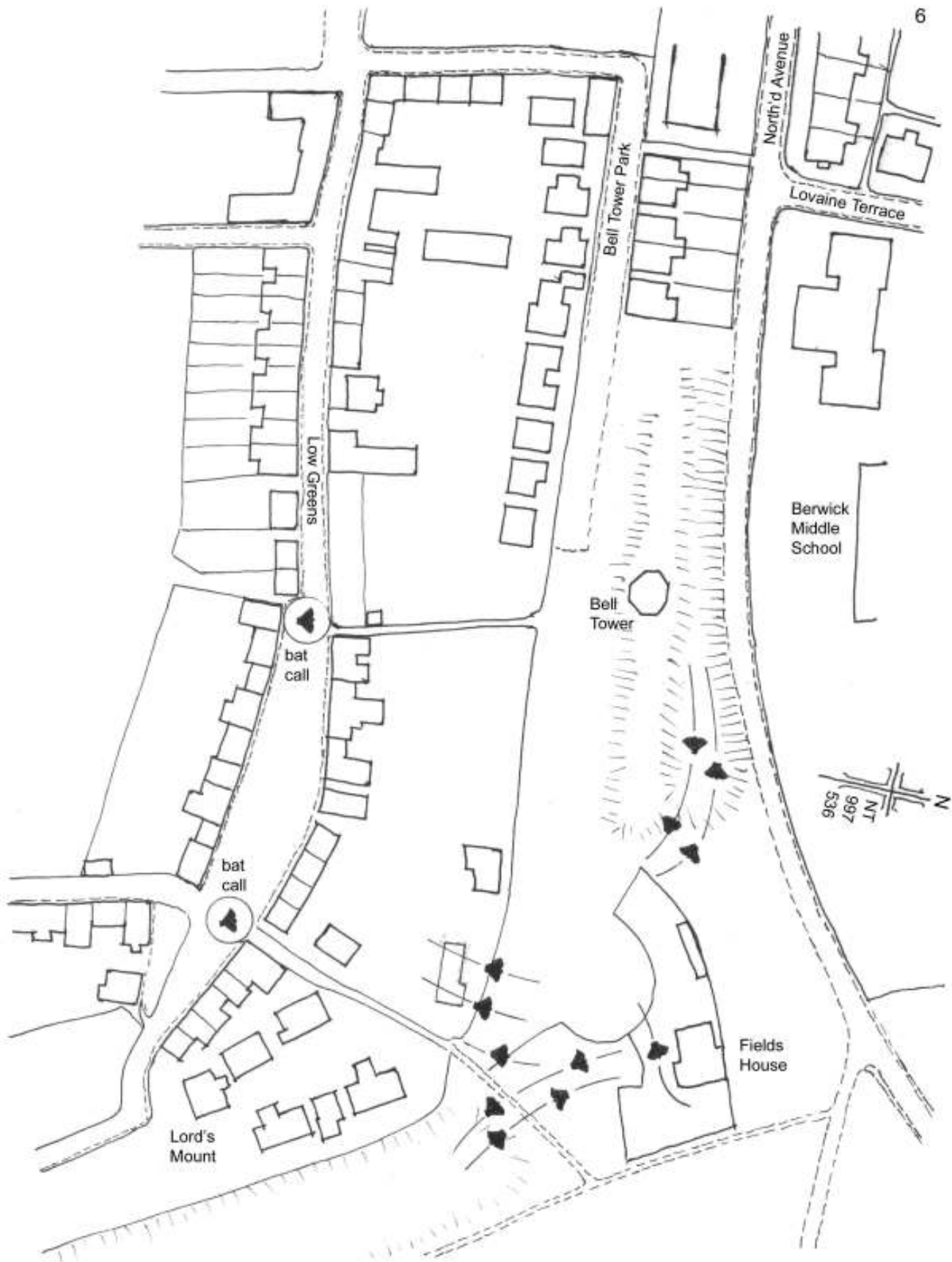
(see sketch map no. 03/09)

The Parade and the Ramparts at Holy Trinity Churchyard

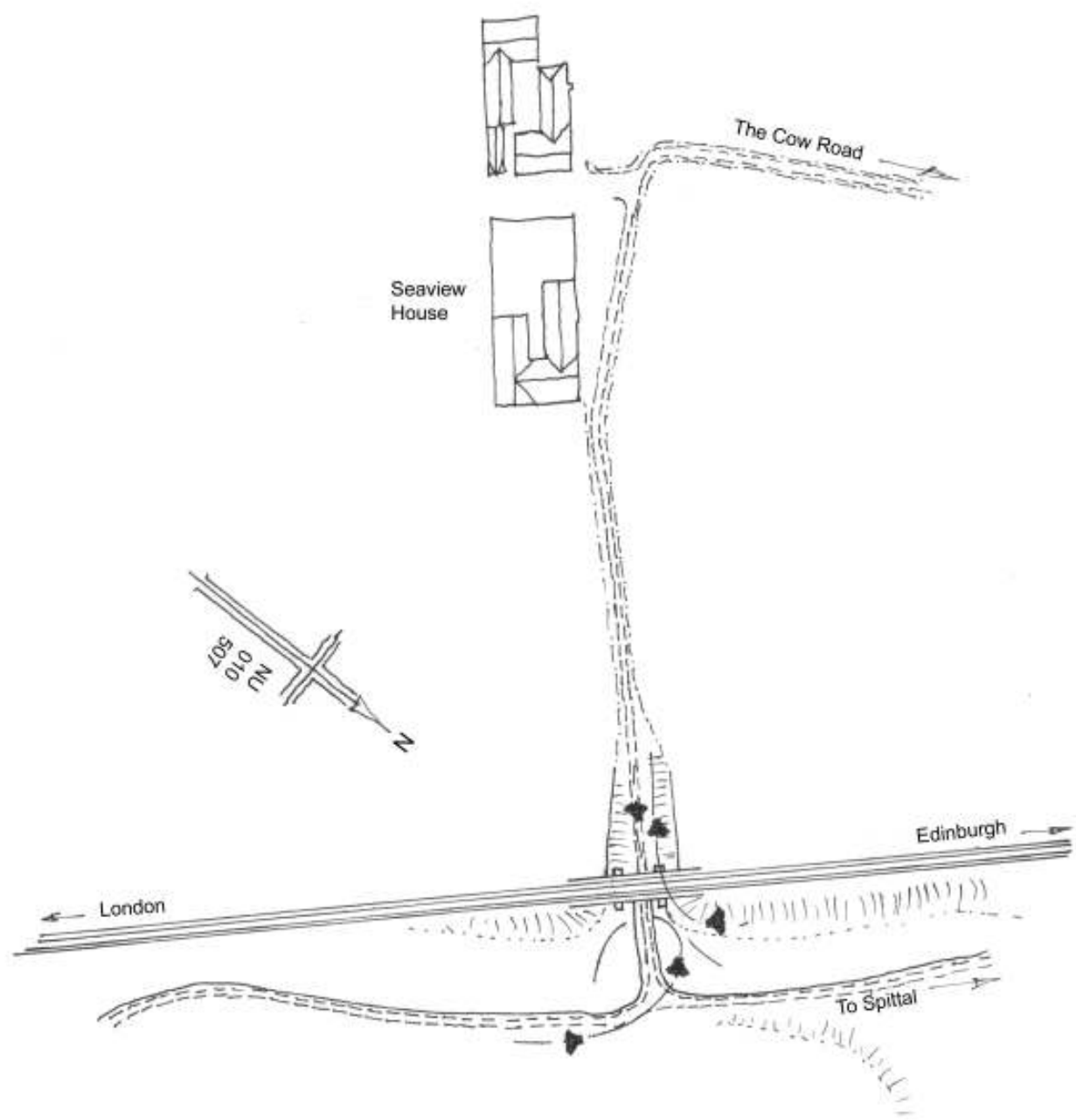
Having recorded bats around the perimeter of the churchyard in 2006, 2007 and 2008, the Group's survey concentrated on trying to determine if the bats were coming from outwith the area to feed along The Parade frontage of the churchyard, and along the Ramparts between the Cowport Gate and the Brass Bastion fortification.

Aug 27 Surveyors were located on The Parade and on the Ramparts from Cowport Gate to Brass Bastion and also on the Ramparts to the north-west of Holy Trinity churchyard. The first bat was noted at 8.45 pm coming towards the churchyard trees from a north-westerly direction followed within the next fifteen minutes by a further four bats – two at high level and two at low level; a sixth bat was observed coming from the north over Brass Bastion. The first and only bat call on The Parade was registered at 8.45 pm, thereafter, bat calls were restricted to the tree-lined perimeter of the churchyard facing the Ramparts on the north-east, and to the northwest during the period 8.55 pm to 9.05 pm when the survey was terminated. The species of bat was identified as the common pipistrelle.

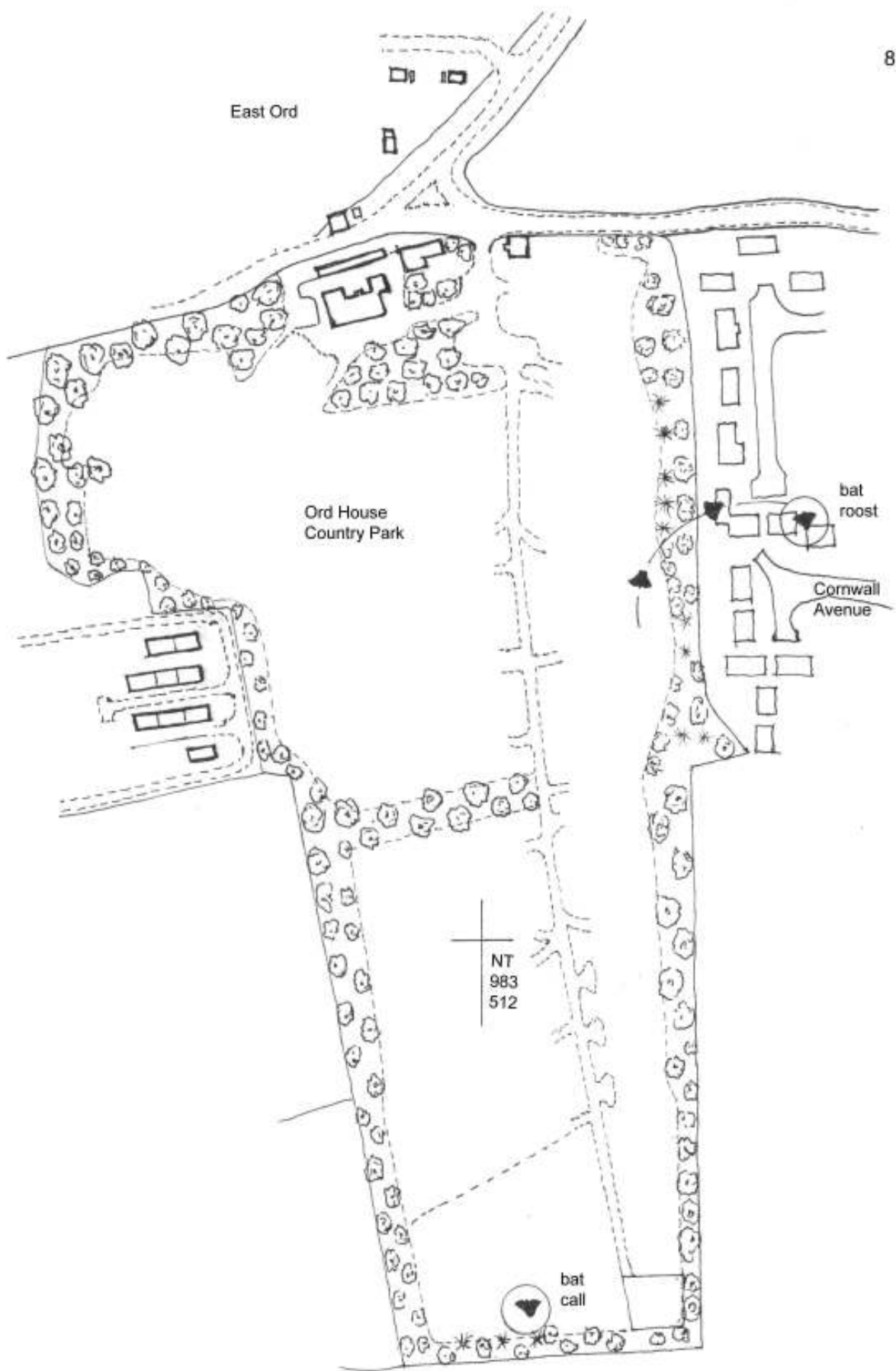
(see sketch map no. 04/09)



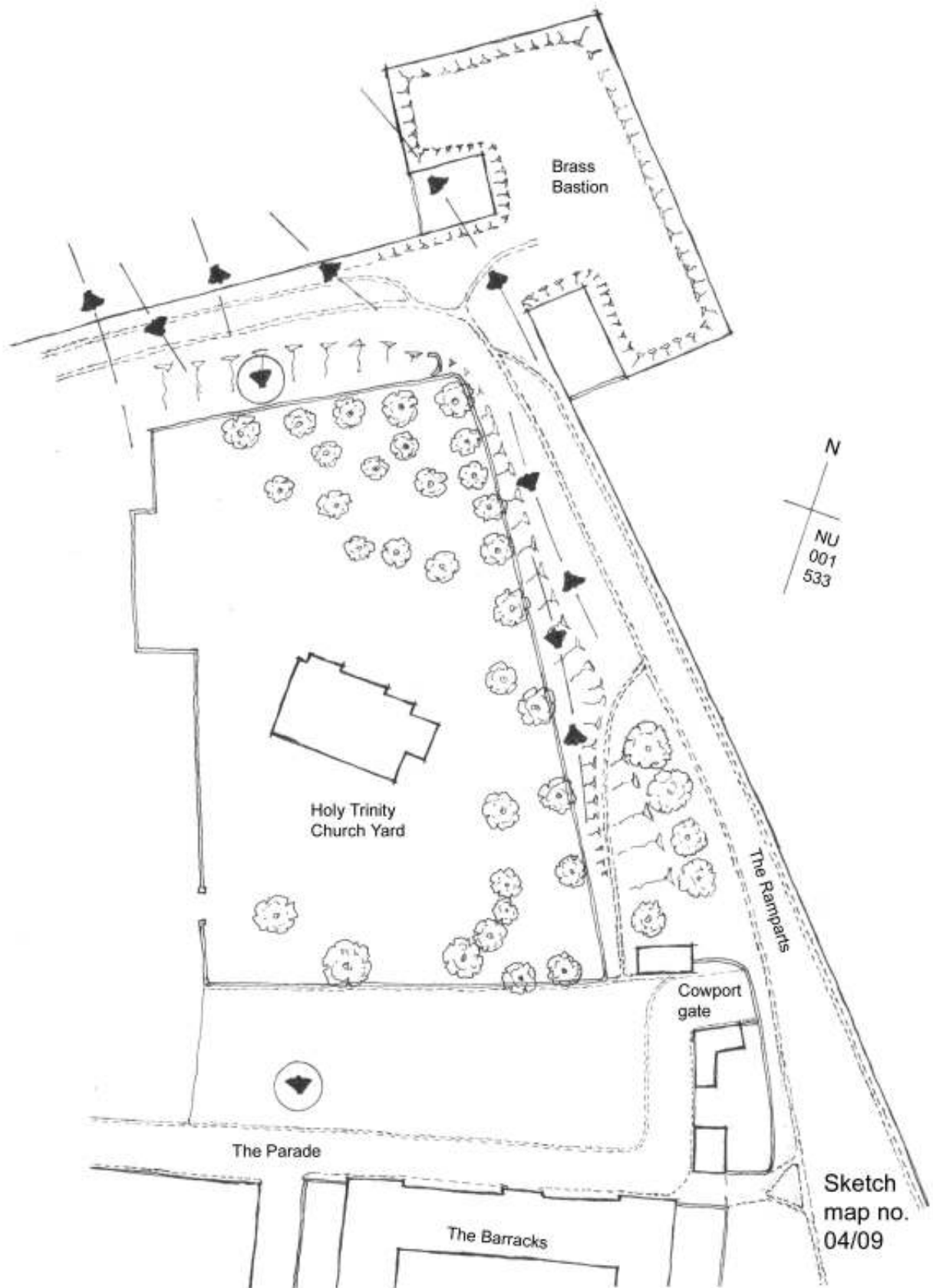
Sketch map no. 01/09



Sketch map no. 02/09



Sketch map no. 03/09



ANALYSIS OF RESULTS AND FIVE YEAR OVERVIEW OF BAT SURVEYS

From its formation in 2004 Berwick Wildlife Group has instituted a number of annual surveys on a variety of fauna and flora within the natural environment: such surveys are normally located within the geographical area extending from the Scottish Border in the north to Scremerston in the south and are within the enclosure formed by the A1 route, Berwick Bypass, and the coast.

The first bat surveys commenced in 2005 with a walk around the Ramparts from The Parade to The Avenue and included a circuit of Palace Green in the lower part of the town. The experience of much bat activity, particularly in The Avenue and in the Governor's Garden, encouraged the planning of a programme of surveys to map the distribution of bats throughout the town and to acquire as much information as possible on the ecology of the local bat population.

The Avenue / Governor's Garden and Palace Green

The bat surveys in this area of the town, including part of the adjacent Ramparts from Kipper Hill to the Old Whaling House, showed a very strong bat presence during visits in 2005, 2006 and 2008. Although a bat roost has not yet been discovered, the importance to bats of the Governor's Garden as a feeding area was quite apparent. When it was learned that redevelopment of the garden ground for housing and flats was proposed, the Group was concerned that the local authority should be immediately made aware of its importance and a letter was sent in 2006 to the Chief Planning Officer of Berwick-upon-Tweed Borough Council detailing the survey findings. Unfortunately, planning consent was granted, although under conditions that should have limited the loss to bats of the feeding area for possibly not more than two breeding seasons. A report in the local newspaper, earlier this year, of an application by the developer to amend or delete these planning conditions was an unwelcome development. If consent were to be granted it could have made worse an already less than satisfactory outcome as it could have left the site in a derelict condition for a longer period. In 2006, the Group had not completed sufficient surveys in this part of the town to make informed comment as to the effect of the original consent on bat feeding sites, but it was felt that loss of no more than two breeding seasons, during construction work, and replacement of the present unkempt shrub habitat by small, landscaped 'green' areas, could perhaps be tolerated by the local bat population. Instead, the prospect from this later application with an unlimited period between demolition work being carried out and building operations commencing could have seriously affected the viability of the bat colony in that vicinity. Of course the bats could have access to, and probably would have used other sites for feeding, but selection of feeding area depends very much on wind conditions and hence insect concentrations each night, so a good choice of

feeding sites is always required. The problem would be that by reducing the bats' total feeding area indefinitely, the bat population in this part of the town might not have been able to sustain its current number.

As bat populations throughout the country have been declining over many years, in some cases as a consequence of development unsympathetic to their presence, consent for this particular application could have been a very serious outcome. However, it has been learned that when the application to change the conditions of consent came before a planning meeting on 29th October, it was refused. Berwick Wildlife Group did make a strong representation against the granting of any amendment to the conditions of consent.

A delay in the beginning of the actual work on site in the Governor's Garden can provide an opportunity for the Group's surveyors to gain more information on the bats' feeding patterns, and to acquire a fuller understanding of the consequences for bats when the development is completed.

Ravensdowne / The Parade / Holy Trinity Churchyard

Bat surveys have been conducted in at least some part of this whole area in the years 2006 – 2009. Each time the presence of bats has been detected although with considerable variation in the number of passes recorded. The results appear to show a continuous linkage between the sites suggesting that the feeding bats may originate from the same roost. No evidence has been found of bats commuting from this area to the Governor's Garden area, nor in the reverse direction; the status of the allotments as a feeding site needs to be investigated.

The significance of weather conditions in this part of the town for feeding bats was immediately apparent in 2006: whenever brisk, cool westerly breezes were being experienced, those areas sheltered from the breeze, namely the sunken way between the Ramparts footway and the gardens to the rear of houses on Ravensdowne, and the span of the Ramparts from the Cowport Gate to Brass Bastion were sure to host feeding bats. Under settled conditions bats were found to exploit the feeding potential of other parts of this territory.

In 2007, a considerable amount of activity was noted around the Drill Hall at the top of Ravensdowne that encouraged a belief that there may be a nearby bat roost. Subsequent surveys in June and August of 2008 dismissed this hope as each recorded very poor results when compared with the previous year.

A re-think of surveying strategy mid-way through this season (2009) led to surveyors surrounding the Holy Trinity Churchyard in an endeavour to discover the direction from which the bats came to feed in this area. The outcome (see

Survey Results) suggested that bats may well come from outwith the walled part of the town rather than from a nearby roost.

Bell Tower / Lord's Mount & Magdalene Fields House

The Governor's Garden and the perimeter of Holy Trinity Churchyard are the currently known 'hotspots' in terms of concentration of numbers of feeding bats. In this first survey here, the conjunction of the Lord's Mount Fortification with Fields House showed a similar pattern of feeding intensity but, with previous experience of equally brisk activity recorded only once beside the Drill Hall, more surveys will be required to confirm that this too is not an isolated instance. Certainly the two later surveys did not record the same number of passes as the first, but very cool conditions could have been responsible for this variation. On one of these surveys it was possible to plot the direction from which bats came to the site which, interestingly, was from the direction of a locality only recently brought to the Groups' attention as having a bat presence – the Brucegate.

Bankhill and Love Lane Tweed Street and Castle Vale Summerhill Terrace and North Road

The presence of a small number of bats has been recorded at each of these locations: Castle Vale is near a reputed bat roost and three bat boxes have now been erected in the wooded grounds; because of the very small number of bat calls, Bankhill and Love Lane may be a remote feeding station for bats from a distant roost. The Summerhill Terrace ('Green Triangle') parkland has the benefit of tree lined borders and access to other nearby woodland, and it is tempting to speculate that given its proximity to the Bell Tower / Fields House location it may be a feeding outlier for bats from the same roost: more survey work is required here.

Tweedmouth, Spittal and East Ord

To date, the surveys in Tweedmouth have located the presence of bats at either extremity of the built-up area; the first at Riverdene, off the West End and next to the Royal Border Bridge, was surveyed in 2005 and again this year. On each occasion bats were located feeding to the rear of the houses next to the bridge. The other site, from Mount Road to the locally named 'Goodypatchy' area, which is divided by the boundary with Spittal, may again be a remote feeding station for bats that exhibit greater activity in that section of the 'Goody patchy' within the bounds of Spittal near Howick and Falloden Terraces.

The distribution of bat feeding areas from the middle of Spittal to its eastern end is of such close proximity that these, at the Spa Well, Cow Road, Seaview Farm and St. Helen's Terrace could together be serving a single bat roost.

Survey work in Ord House Country Park, in 2006, 2007 and this year (2009) has confirmed that it is used as a feeding area by bats from the one known roost across the boundary wall in Cornwall Avenue. A full bat count for this roost remains to be completed.

Two groups of bat boxes were erected in Ord House Country Park in 2008; to date there is no evidence of these having been used by bats.

Norham Castle (2008)

Cantys Brig to New Mills (2007 & 2008)

Longridge Towers School (2009)

Holy Island (Lindisfarne – 2009)

Individual survey/visits to sites beyond the bounds of the Group's study area have so far enjoyed the double benefit of attracting non-members to experience the excitement of discovering bats, hearing their calls and learning some bat ecology, and at the same time has enabled Group members to monitor the continuing viability of known roosts, as at Norham Castle and Longridge Towers School: Cantys Brig and New Mills had the added distinction of having two different species of bats and Group members were given instruction on bat call identification by two trainers from the Northumberland Bat Group.

The Holy Island 'bio-blitz' provided an opportunity for the Group's surveyors to work with surveyors from other parts of the County, as did two occasions on which assistance was provided to bat consultants.

BAT SPECIES

The bat species identified during the course of surveys in the last five years has been predominantly the most common British bat, the common pipistrelle with one record of its cryptic 'cousin', the soprano pipistrelle: also identified were Daubenton's bats at two riverside locations

Common pipistrelle (*Pipistrellus pipistrellus*)
Soprano pipistrelle (*Pipistrellus pygmaeus*)

The common and soprano pipistrelles, apart from the former sometimes having a black facemask and the latter being of lighter colouration, have no differing morphological characteristics and identification rests with differences in their respective echo-location calls. DNA studies have identified biological differences between the species but these can only be confirmed by laboratory analysis. It is also suggested that there is a divergence in prey species taken, and in their respective feeding habitat preferences.

Both species of pipistrelle are the smallest bats found in Britain. Each has a combined head and body length of 35 – 45 mm, a wing span of 190 – 250 mm and weighs some 3 – 6 grams.

Mating takes place in the autumn and in spring the females, after emerging from hibernation, immediately seek suitable locations for maternity roosts for the birth of their young – usually one but occasionally twins – from early June to mid-July. Buildings and trees are used as roost sites with more modern buildings being favoured because these can provide a clean, dry and warm environment.

Food species consist of midges, caddisflies, mosquitoes, mayflies, lacewings and small moths, and these are taken over water, marshes, in open woodland, woodland edges, farmland, along hedgerows, suburban gardens and suburban spaces.

Echolocation calls for both species are generally within the 40 – 60 kHz range, with peak intensities being close to 45kHz for the common pipistrelle and 55kHz for the soprano pipistrelle.

(Reference: Roberts, G.M. and Hutson, A.M., 2003, *Pipistrelle*, British Bats, 6. Bat Conservation Trust)

Daubenton's bat (*Myotis daubentonii*)

Daubenton's bat is a medium-sized species having a combined head and body length of 44 – 55 mm, a wingspan of 240 – 275 mm and a weight of 7–12 grams. Fur is red/brown, pale underneath and it has a pinkish face, bare around eyes.

Daubenton's bats mate in autumn and throughout the winter, and maternity roosts are established in late spring: one young is born, June to early July, and is weaned at six weeks.

Colonies are generally smaller than for pipistrelles, at 20 – 50, but can reach 200. Summer roosts are to be found in trees, tunnels, bridges, caves, mines, cellars and occasionally stone buildings. Winter roosts are to be found in caves, mines and other underground sites.

Feeding normally takes place over lakes, rivers and ponds, and food species are small flies (especially chironomid midges), caddisflies and mayflies.

Echolocation calls range from 38 – 85 kHz, peaking between 40 – 50 kHz.

(Reference: Roberts, G.M. and Hutson, A.M., 1999, *Daubenton's Bat*, British Bats, 3. Bat Conservation Trust)