Appendix 12-D Mammals

12-D.1 Bats

Introduction

Background

12-D.1.1 Bat surveys were carried out by ECOSA (Ecological Survey & Assessment) in 2005 and 2006.

Legislation

12-D.1.2 Bats are protected by European and National legislation. The legislative background to Bats is given in Appendix 11-2A.

Methods

12-D.1.3 This section outlines the methodology used during the bat surveys carried out during August and September 2005 and between May and August 2006.

Bat Survey Methodology

Tree Survey

12-D.1.4 A Phase I tree survey was carried out on 30 March 2006. During the course of the survey all trees along the route of the Scheme and the Greenway were examined and assessed for their bat roost potential.

12-D.1.5 The trees most likely to support bat roosts are mature, with features such as splits, loose bark, holes and deep crevices. Bats tend to prefer trees that occur within a stand of other trees and linked to the wider countryside via hedgerows, water courses or woodland edge, as opposed to trees that are isolated within fields. The close proximity of good foraging habitat may also increase the potential for a tree to support a Bat roost. Trees suitable for bats were graded according to their considered bat potential. The following grading criteria was used:

- **High Potential** where trees had loose bark, splits and holes suitable for roosting Bats;
- **Medium Potential** where trees had some interest for roosting Bats such as broken snags, some flaking bark, a covering of Ivy or shallow holes.

12-D.1.6 During the bat surveys carried out between June and August 2006 all trees that were assessed as being of high bat potential were subject to emergence checks using Bat detectors.

Building Investigations

12-D.1.7 During the 2005 surveys, all buildings that lie within 50m of the Scheme were surveyed for bats with the exception of those in Bexhill i.e. from Glover's Farm southwards. Largely this consisted of emergence checks using bat detectors whereby surveyors positioned themselves beside buildings at dusk to determine whether any bats emerged. In addition, the barns immediately to the east of Adam's Farm and all tunnels alongside the disused railway line were

investigated for the presence of bat roosts. These investigations consisted of an examination of crevices for the presence of bats, and the recording of any bat activity evidence such as the presence of droppings or urine stains.

12-D.1.8 On 27 June 2006 all buildings that are proposed for demolition alongside London Road in Bexhill were investigated for their potential to support bats. This consisted of a slow and methodical survey of all roof spaces for bats and evidence of Bat activity. The external faces of all buildings were assessed for potential bat roosting locations, which include features such as loose fascia boards, gaps in soffit boxes, hanging tiles etc. The exceptions to this were the fish and chip shop on the junction of London Road and Little Common Road and the workshops to the north of the chip shop. These buildings were not assessed as since access was not granted. In addition, the roof space of the nursery school was not entered.

Transect Surveys

12-D.1.9 During 2005 Bat transects were walked on 9, 10, 11, 12, 16 and 17 August along the route of the Scheme. In 2006 transects were walked on 8 and 9 May, 11 and 12 June, 6 and 7 July and 12 and 13 August.

12-D.1.10 On each occasion two surveyors walked the transect route which extended along the entire route of the Scheme. In addition, the surveyors walked along any hedgerows and watercourses that bisect or were in the immediate vicinity of the Scheme. The bisecting watercourses and hedgerows were walked for approximate 50m away from the Scheme.

12-D.1.11 The surveyors used either Pettersson D240x time expansion or Duet frequency division bat detectors with any registrations recorded on Sony Mini-disc recorders (Duet detectors were used in 2005 and Pettersson detectors were used in 2006 only). The recordings were then analysed using the latest version of Batsound (version 3.31). Sonograms produced by Batsound are presented in the results section of this report.

12-D.1.12 Modern Bat detectors such as Pettersson D240x time expansion detectors slow down the echolocation made by Bats (usually by 10x), this can then be recorded using an external recorder and fed into a piece of analysing software (Batsound). Once the recording is opened within the software it is displayed as a sonogram (Sonograms 1–3). The sonograms presented highlight the difference in echolocation between different bat species. The top window shows the amplitude, this indicates the level of the sound being fed into the software. The lower window (spectogram) indicates the frequency of the call (y axis) plotted against the time (x axis), the variation in colour indicates the power of the call. From this it is possible to analyse parameters of the echolocation such as its peak frequency, duration and time between calls, allowing species identification.

12-D.1.13 The surveys were only carried out when the weather conditions were suitable for high levels of bat activity (i.e. calm and warm), in an attempt to gather the largest amount of data.

Limitations

12-D.1.14 At the western end of the transect route it was difficult to walk the route of the Scheme since the disused railway track has developed an

impenetrable stand of bramble and sycamore scrub. As a result, all areas to the south of the ESCC depot off Ninfield Road were surveyed from roads and footways that cross the disused railway.

12-D.1.15 During the 2005 surveys access to Glover's Farm was denied and as a result it was not possible to follow the exact route of the Scheme. Instead a route around the farm fields along a public footpath and disused railway line was followed. This route was located approximately 50-200m to the east of the route of the Scheme. Similarly, in 2006 access to Adam's Farm was denied and no surveys were carried out.

12-D.1.16 During the 2006 surveys the route of the Scheme was surveyed through Glovers Farm. Although, as the Farm fields were under rape crop, the transect followed a farm track running alongside the fields through which the route of the Scheme passes.

Results

Introduction

12-D.1.17 This section details the results of the surveys carried out during 2005 and 2006. Reference should be made to Figure 12.5A which shows the location of bat activity and Figure 12.5B shows the location of the Target Note areas.

12-D.1.18 The results presented below details of the level of activity for each Bat species recorded along the route of the Scheme.

Bat Activity

12-D.1.19 Eight species of Bat were confirmed during the course of the transect surveys. The five species recorded were *S*erotine (*Eptesicus serotinus),* Noctule (*Nyctalus noctula),* Common Pipistrelle (*Pipistrellus pipistrellus),* Soprano Pipistrelle (*Pipistrellus pygmaeus),* Long-eared Bat (*Plecotus sp) (*probably Brown Long-eared Bat *Plecotus auritus)*, Natterer's Bat (*Myotis nattereri)*, Whiskered/Brandt's Bat (*Myotis mystacinus/brandtii)* and Daubenton's Bat (*Myotis daubentonii)*.

Natterer's Bat

12-D.1.20 This species was the commonest *Myotis* Bat species recorded. Records were widely scattered, although all were associated with well wooded areas of the Scheme. Regular records came from the following locations:

- Crowhurst Lane to the north of Upper Wilting Farm;
- the disused railway line to the east of Adam's Farm;
- along the mature hedgerows to the north of Acton's Farm;
- along the wooded footpath to the south of Acton's Farm, where up to three Bats were recorded as present; and,
- along the railway cutting to the west of Glover's Farm.

12-D.1.21 The Natterer's Bat roosts in a range of sites, however are most frequently present in older buildings and in tree holes in well wooded habitats.

Two *Myotis* bats considered to be Natterer's were seen to roost in one of the buildings at Hillcroft Farm during August 2005.

Daubenton's Bat

12-D.1.22 The only records of this species from the route of the Scheme were from Decoy Farm Pond where up to three bats were regularly present in 2005 and 2006. The species is closely associated with water and roosts are typically in trees, bridges or buildings close to water.

Whiskered and Brandt's Bats

12-D.1.23 Whiskered Bat and Brandt's Bat are very difficult to distinguish unless in the hand and as a result these species have been considered together for the purpose of this survey. A total of three registrations of this species pair were obtained. A single bat was recorded in the flood plain to the south of Hillcroft Farm and two further records were obtained in the vicinity of Adam's Farm. These two species roost in a range of buildings and in tree holes and are typically associated with well wooded habitats.

Serotine

12-D.1.24 Activity of this species was low with a total of nine registrations along the route of the Scheme. Foraging Bats were recorded from the wooded railway corridor to the east of Upper Wilting Farm, along Crowhurst Lane to the north of Upper Wilting Farm and around the Decoy Farm Pond area. Commuting bats were regularly recorded between the disused railway at Adam's Farm west to Acton's Farm. The species typically forages in well wooded landscapes, along woodland edge, hedgerow etc. The species primarily roosts in older buildings with high access points. It is probable that the animals recorded during the surveys roost in neighbouring farms.

Noctule

12-D.1.25 A total of 18 registrations were made along the route of the Scheme. There are five notable concentrations of registrations for this species which include the following areas:

- in the vicinity of Upper Wilting Farm single bats were recorded to the west and to the east of the railway line;
- in the vicinity of Decoy Farm Pond 1-2 bats were recorded foraging over adjacent pasture and alder woodland;
- there were two records of bats foraging over grassland in the floodplain;
- there were records around mature hedgerows and pasture in the vicinity of Acton's Farm; and,
- 2-3 bats were recorded foraging along the disused railway corridor to the north-east of Glover's Farm.

12-D.1.26 The Noctule forages over a wide range of habitats and is a high and fast flier. As a result it is capable of foraging long distances from roosting sites.

The species roosts almost exclusively in trees, although building roosts have been recorded.

Common Pipistrelle

12-D.1.27 This species was by far the most common along the route of the Scheme with approximately 103 registrations during the survey period. The species was present throughout the route of the Scheme. Population densities were highest in the vicinity of Upper Wilting Farm, and Acton's Farm suggesting that roosts may be present here. During August 2005 a single Common Pipistrelle was seen to roost in one of the barns at Adam's Farm. A roost of this species is reported to be present at Adam's Farm but due to access difficulties this was not investigated.

12-D.1.28 The species is the most abundant bat in Britain and is found in a wide range of habitats. However, woodland edge and mature hedgerows are particularly favoured foraging habitats. Maternity roosts are usually located in buildings, although smaller roosts within trees are common.

Soprano Pipistrelle

12-D.1.29 A total of 47 registrations of this species were obtained during the survey period. This species has a preference for more aquatic habitats, when compared to the Common Pipistrelle and is typically found foraging along watercourses or over lakes and ponds. Consequently, many records of the species were from watercourses, however foraging bats were also recorded along hedgerows. The species was widely scattered through the route of the Scheme with a concentration of records between the floodplain and Acton's Farm. Notable concentrations of the species were recorded over Decoy Farm Pond where up to six bats were present and along the main drainage channel where up to 26 bats were present in 2005, although in 2006 the level of activity fell here with a peak of only six animals present.

Long-eared Bat

12-D.1.30 This species is inherently difficult to survey because of their feeding habits, Long-eared Bats use a method called gleaning, where they fly close to leaves listening for prey. Their echolocation is very quiet and is only registered by a Bat detector when the Bat is very close to the surveyor. Long-eared Bats are often overlooked in bat surveys, which may explain why there were only eight registrations of the species on all surveys. Of these eight registrations, three records were associated with a roost site at Upper Wilting Farm where up to six bats were recorded departing from a building lying adjacent to the main road. Additional records included up to two bats recorded on several occasions foraging in the vicinity of Adam's Farm, and up to two bats foraging along the footpath to the south, south of Acton's Farm. Since Long-eared Bats usually forage close to their roosting sites this would indicate that roosts are probably present at these farms. A single bat was seen to go to roost at Hillcroft Farm in August 2005. A roost of this species is reported to be present at Adam's Farm but due to access difficulties this was not investigated.

12-D.1.31 Long-eared Bats typically forage in well wooded habitats such as following the line of mature hedgerows and within woodland.

Bat Habitat Assessment – Target Note Areas

12-D.1.32 Target note areas are shown on Figure 12.5B.

Target Note 1

12-D.1.33 This area is sparsely wooded with several trees that offer potential for roosting Bats. The key trees include a mature oak *(Quercus sp)* (Photograph 1) with several holes, splits and loose bark and a Silver Birch (*Betula pendula)* with several holes present. These trees are considered to have **High Bat Potential**.

Target Note 2

12-D.1.34 This area comprises of the hedgerow bordering the eastern side of the railway and consists of several small and medium sized oak and Ash (*Fraxinus* sp) trees which are Ivy (*Hedera helix)* covered and offer low potential. However, a number of mature oak trees (Photograph 2) are present which have many holes splits and cracks offering ample Bat roost potential. These trees are considered to have **High Bat Potential**.

Target Note 3

12-D.1.35 This area comprises the woodland bordering the western side of the railway, there are several potential trees present as follows:

- a large standard oak with several splits and cracks offering **High Bat Potential**;
- a mature oak with several splits and cracks with some ivy covering offering **High Bat Potential**; and,
- a number of oak and Ash trees present, some of which are Ivy covered with some splits and holes, offering **Medium-High Bat Potential**.

Target Note 4

12-D.1.36 This area consists of the east side of Crowhurst Road and comprises of a number of Ivy-covered Oak and Ash trees with some holes and splits present. These trees are considered to be of **High Bat Potential**.

Target Note 5

12-D.1.37 This area comprises of the western side of Crowhurst Road and the adjacent copse. There are several mature oak and Ash trees present with varying degrees of Ivy covering and splits present (Photograph 3). These trees are considered to be of **High Bat Potential**.

Target Note 6

12-D.1.38 This area consists of the northern boundary of the Upper Wilting Farm field which has the route of the Scheme running through it. There are four different species of trees within the woodland strip, several of which have standing dead wood, splits, cracks and holes offering Bat roosting potential. These trees are considered to be of **High Bat Potential**.

Target Note 7

12-D.1.39 This area consists of the stream bordering the western boundary of the land owned by Upper Wilting Farm. The area has a number of mature trees with standing dead wood, splits and holes which offer potential bat roosting opportunities (Photograph 4). Adjoining this area is an Alder (*Alnus glutinosa*) copse that has many trees featuring standing dead wood, splits and cracks. In addition this area offers suitable bat foraging habitat and is considered to be of **High Bat Potential**.

Target Note 8

12-D.1.40 This woodland strip is a continuation of Target Note 7 which follows the line of the stream and is linked to Decoy Pond Wood at its southern end. There are several trees with varying amounts of Ivy cover, splits and cracks that offer good Bat roosting potential (Photograph 5). This are is within close proximity to ponds and offers suitable commuting, foraging and roosting habitat and as a result it is considered to be of **High Bat Potential**.

Target Note 9

12-D.1.41 A line of medium-sized oak trees with a few splits and cracks and a small amount of standing dead wood. This area is considered to be of **Medium Bat Potential**.

Target Note 10

12-D.1.42 This area consists of two mature Oak trees with several holes (Photograph 6), splits and cracks offering ample opportunity for Bats to roost. These trees are considered to offer **High Bat Potential**.

Target Note 11

12-D.1.43 This area consists of mature Oak trees with holes and splits (Photograph 7) providing ample opportunity for bats. The adjacent hedgerow has a few medium-sized Ivy-covered oak trees offering low bat roosting potential, however this hedgerow has good bat foraging and commuting potential. This area is considered to offer **High Bat Potential**.

Target Note 12

12-D.1.44 This area consists of the tunnel running through the disused railway embankment. The western elevation of the tunnel and the archway appear to be in a good state of repair and as a result offer low bat potential. The eastern elevation of the tunnel has some raised top stones and some large cracks which offer excellent roosting potential. This eastern area is considered to have **High Bat Potential**.

Target Note 13

12-D.1.45 Six mature oaks in this area offer ample opportunity for roosting Bats, and a result this area is considered to be of **High Bat Potential.**

Target Note 14

12-D.1.46 This area consists of a hedgerow containing mature Ash and oak trees. These trees have a number of splits and cracks which could offer bat roosting potential. This area is considered to be of **High Bat Potential.**

Target Note 15

12-D.1.47 Target Note 15 comprises a mature oak located in the field to the south of Adams Farm. This tree has several holes, splits and cracks. This tree is therefore considered to be of **High Bat Potential**.

Target Note 16

12-D.1.48 This area comprises three medium sized ivy covered oak trees (Photograph 11-4A.8) offering some roosting potential for bats. This area is considered to be of **Medium Bat Potential.**

Target Note 17

12-D.1.49 This area comprises of a split willow with a number of cracks present. This tree is considered to be of **Medium Bat Potential**.

Target Note 18

12-D.1.50 This area consists of a mature Hawthorn hedgerow (Photograph.9) with some dense Ivy covering over much of it. The thicker areas of Ivy covering the tree are considered to offer **Medium Bat Potential**.

Target Note 19

12-D.1.51 This area of woodland is located to the west of the Scheme. There are many mature trees with splits and cracks offering excellent potential for roosting bats (Photograph 10). In addition, the hedgerow running from east to west from the woodland is used as a commuting route by bats. This area is considered to be of **High Bat Potential.**

Target Note 20

12-D.1.52 The hedgerow situated within this area has an oak with standing dead wood (Photograph 11) and a densely Ivy covered Ash tree. This area is considered to be of **High Bat Potential**.

Target Note 21

12-D.1.53 This area consists of a small copse (Photograph 11-4A.12) with several Ivy covered trees, and many trees with suitable splits and cracks that offer suitable Bat roosting potential. This area is considered to be of **High Bat Potential.**

Target Note 22

12-D.1.54 This area consists of a small copse (Photograph 11-4A.13) with many Ivy covered trees offering good foraging and roosting potential. This area is considered to be of **High Bat Potential**.

Target Note 23

12-D.1.55 This area consists of a bridge located along the line of the disused railway (Photograph 14). The bridge appears in good condition with no obvious cracks in the brickwork. Some Ivy covering is present, which could offer some Bat potential. The bridge is considered to be of **Medium Bat Potential**.

Target Note 24

12-D.1.56 This area consists of the disused railway line, which runs south to meet the A269. There is extensive tree growth within this area, consisting mainly of young Ash trees, a number of which have extensive Ivy covering. There are a number of brick built bridges crossing the line. An inspection of these bridges revealed that they appear to offer low bat potential. This area contains a number of split, cracked and Ivy covered trees and it is therefore considered that this area is of **High Bat Potential**.

Target Note 25

12-D.1.57 This area comprises the disused railway building located to the south of the A269. The building is generally open and drafty. However, the buildings open access could potentially allow bat roosts to form within. Because of the building open condition, it is considered that any roosts present would be of low status, however further investigation is required. This area is considered to be of **Medium Bat Potential**.

Bat Habitat Assessment - London Road Buildings

12-D.1.58 The buildings at London Road consist of a row of terraced buildings, an ESCC depot, a single residential property adjacent to the depot, a nursery school, a workshop and a fish and chip shop. During the surveys all were investigated to Phase I level except the workshop and the fish and chip shop where access was not permitted.

12-D.1.59 The depot consists of a series of flat roofed workshops and machinery stores the majority of which are in constant use (Photograph 15). The buildings are largely of brick construction with flat felt clad roofs. The felt cladding overlaps the fascia area of these buildings but generally this area is well fitted and there are no gaps that would provide Bat roosting opportunities. On the eastern side of the site is a building with a wooden clad water tower this tower was investigated but was found to be rotten and letting in water, as a result it was considered unsuitable for bats. In the west of the site a workshop building has wooden fascias with some gaps, these gaps were investigated and found to extend for a short distance into the back of the fascia area. Investigation of these areas failed to produce any evidence that bats were utilising these fascias. A single asbestolux barn is present on the site, this is utilised as a machinery workshop. Along the south side of the building is an asbestolux fascia area there is a gap between the fascia and the wall that could potentially provide bat roosting opportunities, however, detailed investigation failed to produce any evidence of bats. Generally, these buildings are considered to offer no or very limited bat roosting potential.

12-D.1.60 On the northern boundary of the depot is a residential property (Photograph 16). This building is in a moderate state of repair and there are generally few areas that would allow bat access to the building. On the west and north elevations a number of gaps were noted in the soffit area and there were a number of gaps around the ridge tiles on the south elevation which could allow bat access into the building. Inspection of the roof space revealed many mouse and rat droppings, however, despite gaps around the eves on the north elevation and a suitable internal roof structure there was no evidence that bats use this building.

12-D.1.61 The London Road buildings consist of 16 terraced houses, most of these buildings are unoccupied but at the time of the survey 3 were occupied. All buildings are in a state of disrepair, the eastern elevations that front the London Road (Photograph 17) have numerous gaps around the soffit and fascia areas whereas the western elevations (Photograph 18) at the rear of the buildings are generally well maintained. The roofs of these buildings are a combination of pan tiles and slates, all roofs are generally well maintained and there are relatively few potential access points for bats. All roof spaces of these buildings were inspected internally and all are typical trussed roof designs. Along the eastern side of these buildings there were extensive gaps that would allow bats access to the roof void. However, despite the potential for roosting that these buildings offer there was no evidence that any were being utilised at the time of the survey by bats for roosting. There were no droppings present within roof voids and there was no evidence that Bats were entering these buildings. Bat activity surveys carried out along London Road and along the disused railway line to the west produced a very low level of bat activity with just 1 record of a foraging common pipistrelle in the vicinity. It is considered that the urban location of these buildings and low level of bat activity in the area would mean that these buildings would not be used by bats on a regular basis.

12-D.1.62 The nursery school (Photograph 19) was subject to an external examination but access was not gained to the roof void. The school has a combination of asbestolux and slate roofs, these are generally well maintained and roofing materials well fitting. The porch on the northern elevation of the building has a number of loose slates and a single Bat dropping was located on the roof. This Bat dropping probably belonged to a pipistrelle. The soffits and fascia areas of the buildings are generally well maintained and there appear to be few potential access areas for bats.

12-D.1.63 To the north of the nursery and on the southern boundary of the Council depot lies a brick tower (Photograph 20). This tower has a two level flat roof and access doors on the second storey. The only potential bat access to this building appeared to be above the wooden access doors and into the cavity vents, however, there was no evidence that bats are entering this building.

Discussion

12-D.1.64 This section discusses the levels of bat activity located along the Scheme and the potential for Target Note areas and buildings to support roosting bats.

Summary of Bat Activity Along the Route of the Scheme

London Road to Glovers Farm

12-D.1.65 Bat activity in this area was low particularly to the south of the area, however, due to the impenetrable nature of the vegetation access to carry out bat surveys was very difficult. As a result much of the transect was conducted from roads and footbridges over the disused railway line. Where access was gained low numbers of foraging Common Pipistrelle were recorded. Natterer's Bat was recorded close to Glover's Farm. The disused railway line and area adjacent to the railway line has numerous potential bat roosting sites including bridges, trees and residential houses. However, despite extensive surveys no bat roosts have been identified in this area. No regularly used commuting routes were located within this area although the railway line may function as a dispersal corridor.

Glover's Farm to Acton's Farm

12-D.1.66 Bat activity was very high in this area with five species recorded. Bat foraging activity was recorded along all of the hedgerows in this area, with particularly high levels of activity along the wooded footpath that extends south from Acton's Farm and along the disused railway line. These two areas function as important foraging and commuting areas for Long-eared, Common Pipistrelle, Natterer's and Noctule Bats. The densely vegetated footpath running south to southeast from Acton's Farm produced high levels of activity on each occasion it was surveyed, clearly this is an important foraging area/commuting route. In addition, the hedgerow that extends from the disused railway line west towards the small copse is utilised by commuting Common Pipistrelle; this hedge is to be bisected by the Scheme. It appears that bats roosting within the building complex at Acton's Farm, the kennels and potentially within trees in Hanging Wood use these hedgerows as commuting routes between different foraging areas. No bat roosts have been confirmed in this area but given the high level of Bat activity at Acton's Farm it is considered that roosts of Common Pipistrelle, Brown Long-eared and Natterer's Bat maybe present within the building complex.

Acton's Farm to Adam's Farm

12-D.1.67 Bat activity in this area was high. The mature hedgerow extending to the north of Acton's Farm forms a particularly important foraging and commuting area. From the northern end of this mature hedgerow Bats commute westwards towards Hanging Wood along hedgerows that are to be bisected by the Scheme.

12-D.1.68 The floodplain area had a lower density of bats than the area around Acton's Farm, however, there was still a great deal of bat activity with high numbers of Soprano Pipistrelle and moderate numbers of Noctule. Most of the ditches bisected by the Scheme were utilised to some extent by commuting bats with Common and Soprano Pipistrelle, Noctule and Natterer's Bat all use these features. There was very little activity over the floodplain grassland even when cows were present (the presence of cows attracts Bats due to the invertebrates associated with them).

12-D.1.69 Adam's Farm also produced good numbers of bats with Common Pipistrelle, Brown Long-eared and Whiskered/Brandt's all recorded in the vicinity of the Farm. Brown Long-eared and Common Pipistrelle are reported to roost within Adam's Farm but due to access restrictions in 2006 this was not investigated. Brown Long-eared Bat droppings were regularly encountered in the barn at Adam's Farm during 2005 and it is suspected that a roost is present here, however, due to access restrictions in 2006 this was not investigated further.

Adam's Farm to Queensway

12-D.1.70 In this area there are three main concentrations of bat activity. The disused railway to the east of Adam's Farm produced regular records of commuting Common Pipistrelle and Natterer's Bat with up to three of the former present; which may have originated from a roost at Adam's Farm. The area around Decoy Farm Pond held the greatest diversity of species of anywhere along the Scheme. This area held Daubenton's, Whiskered/Brandt's, Common and Soprano Pipistrelle, Serotine and Noctule. The juxtaposition of the pond, wet woodland, streams and wet grassland provides a high biomass and diversity of invertebrates subsequently proving attractive to bats. The wooded watercourse between Decoy Pond Wood and Little Bog was used by most of these species for foraging. This area is to be bisected by the Scheme and a significant impact on Bats is anticipated.

12-D.1.71 Finally, the area around Upper Wilting Farm had a high level of bat activity with foraging and commuting Brown Long-eared, Serotine, Common Pipistrelle, Noctule and Natterer's Bat. The wooded corridor of Crowhurst Road was particularly well used by foraging and commuting Bats as was the railway line to the east of Crowhurst Road.

Conclusion and Recommendations for Further Survey Work

12-D.1.72 In conclusion, there are a number of key areas of bat activity that will be impacted on should the development of the Scheme proceed, these are:

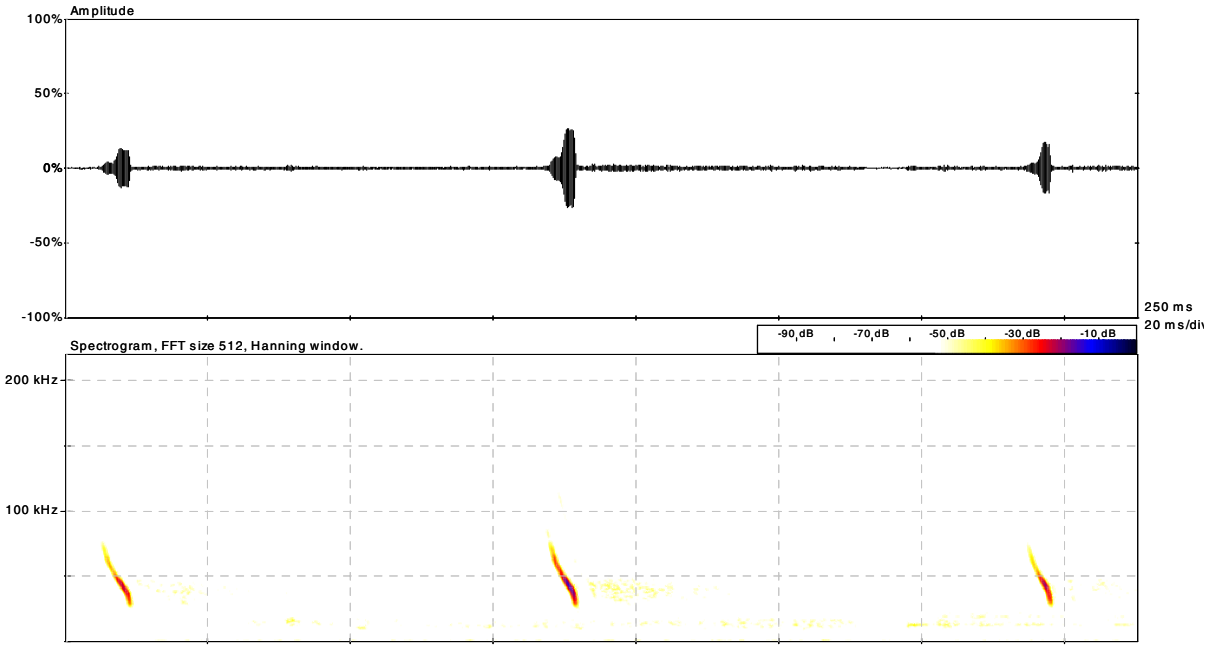
- Bisection of the hedgerow commuting route leading from the southern section of disused railway west to the copse at TQ 745 097;
- Bisection of three key hedgerow commuting routes extending east from Hanging Wood to hedgerow extending north from Acton's Farm;
- Bisection of watercourses across the flood plain which function as foraging and commuting routes;
- Loss of barns at Adam's Farm that probably support Long-eared Bat roosts;
- Bisection of commuting route and foraging area along disused railway line to east of Adam's Farm;
- Loss and bisection of key foraging areas and commuting routes in the Decoy Farm Wood area; and,
- Bisection of hedgerows in the vicinity of Upper Wilting Farm that function as key foraging and commuting habitat.

12-D.1.73 In addition there is likely to be an impact from increased light levels throughout this area on the key features listed above.

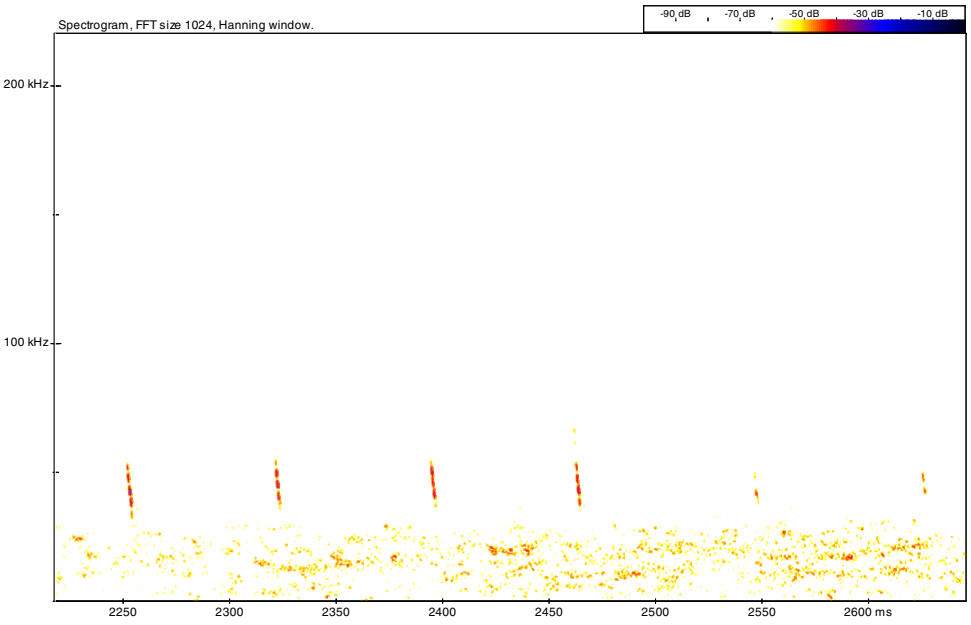
12-D.1.74 Additional survey work at the site should include more detailed survey of Acton's Farm, Adam's Farm and the Nursery School on London Road. All these buildings may support Bat roosts and have not been fully investigated due to access being denied. In addition, the surveying of bat transects should be continued annually so that the impact of the Scheme on bats can be fully assessed should the development receive consent. Investigation of all buildings and higher bat interest trees along the route should be carried out in advance of any demolition works in order to determine the need for obtaining a Natural

England licence; this work will need to be carried out in the summer prior to any development.

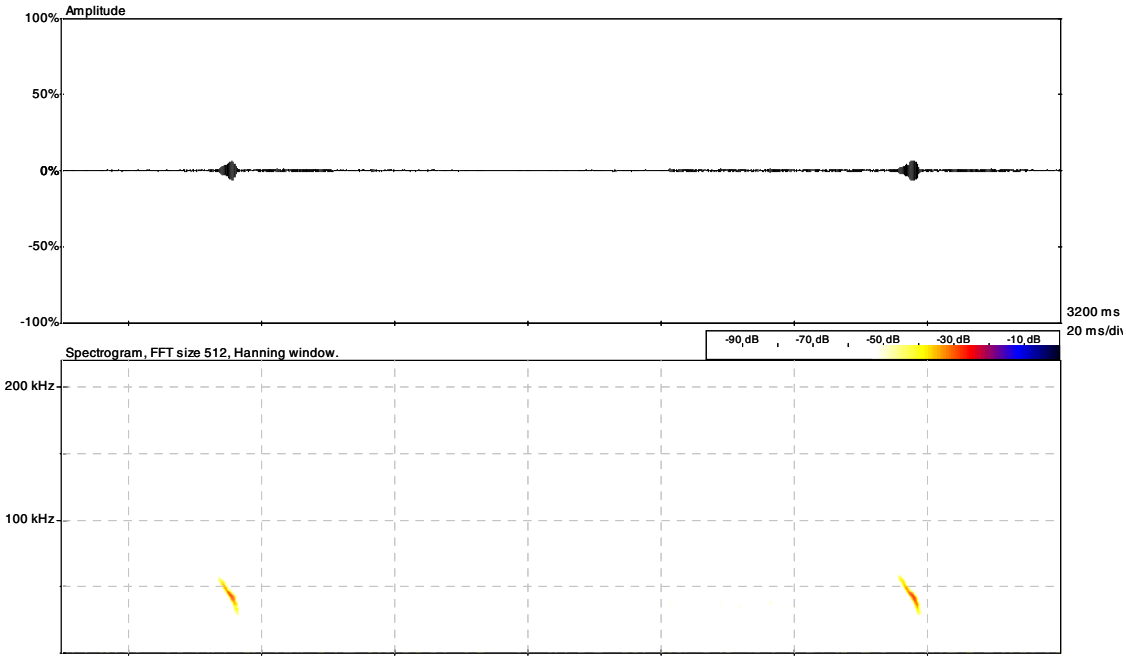
Sonograms



Sonogram 1 Recording of a Bat Considered to be Natterer's from Upper Wilting Farm, July 2005



Sonogram 2 Echolocation of Daubenton's Bat recorded at Decoy Farm Pond. The amplitude contrast of this call has been increased to make it more visible, however, this has introduced much noise along the lower part of the spectrogram.



Sonogram 3 Recording of Bat Considered to be of Whiskered/Brandt's from Decoy Farm Pond, July 2005

Photographs

Photograph 1 Bat Potential Tree at Target Note 1

Photograph 2 Bat Potential Tree from Target Note Area 2

Photograph 3 Potential Bat Roosting Trees with Splits and Holes Located at Target Note 5

Photograph 4 Potential Bat Potential Trees with Splits and Holes Located at Target Note Area 7

Photograph 5 Ivy Covered Trees and Standing Dead Wood with Bat Potential within Target Note Area 8

Photograph 6 Two Trees located at Target Note 10 Showing Potential Bat Roost Holes

Photograph 7 Single Oak located at Target Note 11 showing the broken branch with splits and cracks

Photograph 8 An oak located in Target Note 16

Photograph 9 Hedgerow located at Target Note 18

Photograph 10: Tree with Splits Located at Target Note 19

Photograph 11: Mature Oak Located at Target Note 20

Photograph 12: Small Copse located at Target Note 21

Photograph 13 Ivy Covered Trees located at Target Note 22

Photograph 14: Bridge Located at Target Note 23 Showing Covering of Ivy

Photograph 15
Council Depot on London Road

Photograph 16
Residential Property adjacent to Council Depot

Photograph 17 East Elevation of London Road Buildings

Photograph 18 West Elevation of London Road Buildings

Photograph 19 Nursery School

Photograph 20 Brick Tower to North of Nursery School

12-D.2 Dormice

Introduction

Background

12-D.2.1 This Dormouse survey was carried out by ECOSA (Ecological Survey & Assessment) in 2005. Another survey was carried out by Martin Newcombe in 2004; this identified locations across a large area of land between Bexhill and Hastings that contained Dormice. The survey also provided an evaluation of the suitability of hedgerows in the area to support dormice.

Objectives

12-D.2.2 The current survey was aimed at examining in more detail those hedgerows and woodland strips that are to be bisected by the route of the BHLR. The survey was aimed at identifying the presence or absence of Dormice in these woodlands and hedgerows.

Legislation

12-D.2.3 Dormice are protected by European and National legislation. The legislative background to Dormice is given in Appendix 11-2A.

Methods

Introduction

12-D.2.4 This section outlines the methodology used during the survey carried out between August and October 2005.

12-D.2.5 In June 2005 a total of 220 dormouse tubes and 45 dormouse boxes were distributed in many hedgerows and woodland strips along the route of the BHLR; the location of these is shown in Figure 11-4B.1. These tubes and boxes were erected in lines of between 5-20, often using a mix of tubes and boxes. Each line was given a site number (see Figure 11-B.1) and each box within this line was given a number to enable the boxes and tubes to be found again with ease. These were erected in line with standard procedure, i.e. approximately 10 m apart, at chest height etc. The tubes were checked on the 14th August, 22nd September and 19th October 2005 to look for evidence of nesting material or the presence of live animals.

12-D.2.6 During October 2005, the areas where boxes were erected were searched for evidence of foraging Dormice. Attention was paid to all fruiting hazel looking for signs of the distinctive markings and access hole that the species leaves after feeding on the nuts. These were examined with a 10x magnifying glass to verify the species that had opened the nut.

Limitations

12-D.2.7 Ideally boxes and tubes should be erected in March so that animals are able to locate and utilise boxes prior to the breeding season. The erection of boxes in June may have been a little late in the season for a high rate of usage.

12-D.2.8 During the survey large numbers of Wood Mice (*Apodemus sylvaticus*) were found to be utilising the boxes and tubes; these may evict Dormice or prevent them from utilising the boxes and tubes.

Results

Introduction

12-D.2.9 This sections details the results of the surveys carried out during the 2005. Reference should be made to Figures 11-4B.1 and 11-4B.2.

Dormouse

12-D.2.10 The presence of Dormouse was confirmed over wide areas of the site with many of the hedgerows to be bisected by the BHLR containing the species. However, during the course of the survey few boxes or tubes were utilised by the species, most evidence of the species came was as a result of locating nuts nibbled by the species. The following evidence of the presence of Dormouse was recorded:

- ***Site 1 Disused Railway:*** Evidence was found throughout this area. One tube contained a deserted Dormouse nest.

- ***Site 2 OA535:*** None of the tubes or boxes was occupied by Dormice although Wood Mice were present. Several nuts nibbled by Dormice were found at the east edge of the wood and in the hedgerow.

- ***Site 3 H59:*** No evidence was found in this hedgerow but the north end of the adjacent connecting hedgerow has them, so they may be present here.

- ***Site 4 OA507:*** None of the tubes was used by Dormice but many were used by Wood Mice. Nibbled Hazel nuts were found within the west and south arms of the hedgerow but not the north.

- ***Site 5 H55:*** No evidence.

- ***Site 6 OA510/11:*** None of the tubes was used by Dormice but use by Wood Mice was again high. Nibbled Hazel nuts were found throughout the hedgerow.

- ***Site 7 OA517:*** No evidence.

- ***Site 8 W37:*** No evidence of Dormouse was found in the scrubby south part of this hedgerow. But in the north a number of nibbled nuts were found and one box contained a deserted nest.

- ***Site 9 Disused Railway:*** None of the boxes was used by Dormice but use by Wood Mice was high. Nibbled hazel nuts were found throughout this area.

- **Site 10 OA520**: No evidence.

- ***Site 11 OA521:*** None of the tubes was used by Dormice but use by Wood Mice was high. Nibbled hazel nuts were scattered through this hedgerow.

- ***Site 12 OA521:*** Decoy Pond Shaw One box contained a deserted Dormouse nest. A number of nuts along the north part were found to have been nibbled. No evidence was found in the south section of hedgerow.

- ***Site 13 Chapel Wood:*** None of the tubes along the edge of this woodland had been used by Dormice, but nuts nibbled by Dormice were found throughout the wood.

- ***Site 14 Crowhurst Lane:*** None of the tubes at the edge of this wood was used by Dormice, but nibbled nuts were found beneath one Hazel.

- ***Site 15 W26 West:*** No evidence of Dormice was found, but since they are present to the east of the railway line it is likely they are also present here.

- ***Site 16 W26 East:*** None of the tubes located along the edge of this woodland was used by Dormice, but nibbled nuts were scattered throughout.

- **Site 17 G20.9**: No evidence.

- **Site 18 W8**: Dormice found in this woodland bordering the railway cutting adjacent to Glovers Farm. Evidence from Hazel Nuts showing the distinctive feeding remains left by the species.

- **Site 19 Cutting between Glovers Farm and Council Depot (Ref?)**: Single deserted Dormouse nest found within the Dormouse tubes left.

- **Site 20 Railway Cutting to east of site (Ref?)**: Dormice were found to be present in good numbers during 2006. It is likely that Dormice are present in good numbers along much of the railway cutting and in hedgerows and woodland strips linked to the cutting.

Discussion

12-D.2.11 Both the survey carried out by Martin Newcombe in 2004 and by ECOSA in 2005 confirmed the presence of a widespread population of Dormouse in the area. The current survey has shown that the BHLR will bisect a number of woodland strips and hedgerows supporting the species.

12-D.2.12 Since the Dormouse is protected under European Legislation it will be necessary to apply for a Defra licence for the proposed works. The granting of a Defra licence will require that planning permission has been granted and that adequate mitigation and compensation has been put in place. This mitigation is likely to involve the translocation of animals from hedgerows to be removed, the maintenance of hedgerow linkage where possible, the planting of replacement hedgerows rich in plants used by foraging dormice and the improvement of existing hedgerows through supplementary planting. Typical food sources for the species and those that should be planted and a moderate density include Hazel, Bramble, Honeysuckle, Hawthorn, Blackthorn, and Field Maple.

12-D.2.13 Since there will be a requirement to provide up to date survey information as part of the Defra licence application it will be essential to update the present survey through the summer prior to the submission of a planning application for the proposed work. This will allow a Defra licence to be applied for shortly after planning permission has been granted. In addition, although it is inevitable that dormice breed on the site this has not been proven, this

information will be required for the Defra licence application additional survey should aim at proving this. The additional survey should consist of;

- Erection of additional boxes and tubes during March
- Regular inspection of boxes and tubes between June and October.

12-D.2.14 The 2004 and 2005 surveys study confirmed the presence of a widespread population of Dormice in the area. The 2005 survey shown that the route would cut through several shaws and hedgerows that supporting them. However, as the survey demonstrates, any hedge or woodland with a significant woody structure has the potential to contain Dormice.

12-D.2.15 The habitat loss can be mitigated by the planting of replacement hedgerows and scrub and woodland edges rich in plants used by foraging Dormice, the improvement of existing hedgerows through supplementary planting and the implementing of the hedgerow strategy described above. Typical food sources for Dormice are Hazel, Bramble, Honeysuckle, Hawthorn, Blackthorn, and Field Maple.

12-D.2.16 Because the hedgerows affected are narrow it is proposed to remove the Dormice that may be present by destructive searches. Since it would be necessary to provide up-to-date survey information as part of the Defra licence application that would be made if planning permission is obtained, it will be necessary to update the present survey through the summer prior to the proposed start of the works. In addition, although it is the evidence shows that Dormice breed in the study area this has been established from indirect evidence and direct evidence is normally required for a Defra licence. The additional survey would therefore consist of:

- Erection of additional boxes and tubes during March;
- Regular inspection of boxes and tubes between June and October.

12-D.3 Water Voles

Introduction

Background

12-D.3.1 This Water Vole (*Arvicola terrestris*) Survey was carried out by Ecological Survey & Assessment (ECOSA). The survey was conducted during August and September 2005 to assess the presence of Water Vole along the route of the Scheme.

Objectives

12-D.3.2 At this stage of the planning process the aim of the survey was to provide an indication of presence or absence of the species within the survey area.

Legislation

12-D.3.3 The Water Vole is included on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) but only in respect of Section 9(4). This section affords protection to 'any structure or place which any wild animal included in Schedule 5 uses for shelter or protection' but does not protect the Voles themselves. There is also no provision for licensing the intentional destruction of Vole burrows for development or maintenance operations. Further information is included in the Legislation Appendix (Appendix 12-B.1) of the ES.

Survey Methods

Methods

12-D.3.4 The site was surveyed for Water Vole by searching for field signs such as the presence of latrines, feeding remains, burrows and runways. For the route of the Scheme, each watercourse was surveyed for 100m either side of the point where the Scheme crosses it.

Limitations

12-D.3.5 The dense nature of the vegetation alongside many ditches and the steep nature of the banks meant that many areas were difficult to survey for Water Vole.

Results

12-D.3.6 The survey found no evidence of Water Vole along the Scheme

Discussion

12-D.3.7 Although the habitat appears suitable for Water Vole across the site, the presence of Mink (*Mustela vison*) may well mean that populations have become extinct and are confined to small pockets within the catchment.

12-D.3.8 It is not considered necessary to carry out additional survey work for this species at this stage but a survey should be carried out in the summer prior to development should permission be granted. This would allow any modification of mitigation proposals to be made.

12-D.4 Water Shrews

Introduction

Background

12-D.4.1 This Water Shrew (*Neomys fodiens*) Survey was carried out by Ecological Survey & Assessment (ECOSA). The survey was conducted during August and September 2005 to assess the presence of Water Shrew along the route of the Scheme.

Objectives

12-D.4.2 At this stage of the planning process the aim of the survey was to provide an indication of presence or absence of the species within the survey area.

Legislation

12-D.4.3 In common with other Shrew species, Water Shrews are protected under Schedule 6 of the Wildlife and Countryside Act (1981). This permits shrews to be captured only by those in possession of a licence. Further information is included in the Protected Species Appendix (Appendix 11-2A) of the ES.

Survey Methods

Methods

12-D.4.4 The survey was conducted during August and September 2005 to assess the presence of Water Shrew along the route of the Scheme. The survey consisted of the laying of 80 baited tubes at nine different locations along water courses across the site. These tubes consisted of 20cm long plastic tubes baited with blow-fly pupae and with muslin at one end as used by the Mammal Society. Small mammals leave droppings when they enter the tubes to feed on the larvae; these are then collected and identified. These were left in situ for two weeks later the tubes before being collected. The samples from each tube were then sent to the Mammal Society for identification by a specialist.

Limitations

12-D.4.5 Between placing the Shrew tubes and returning to collect them, some of the ditches had been cleared in order to improve drainage during the winter. This meant that some tubes were never re-located.

12-D.4.6 The presence of other rodents on the site increased the likelihood that the bait from the tubes would be removed prior to any Water Shrews discovering it.

12-D.4.7 Each tube was covered at one end to allow access in to the tube via other end, however, some tubes had the muslin chewed open meaning that animals did not need to enter the tubes which meant that no droppings were left for identification.

Results

12-D.4.8 The results of the Water Shrew survey are shown in Table 12-D.1 and Figure 12.7 shows the location of each site surveyed. As can be seen from the results, Water Shrews were found to be present at two of the nine survey sites, terrestrial shrews were present at six sites and a nil return was gained from one site.

Table 12-D.1 Results of Water Shrew

Site Number	Site Grid Ref	Number of Tubes	Results
WS1	TQ 74818 10024	5	Terrestrial shrews
WS2	TQ 75370 10589	10	Nil return
WS3	TQ 75568 10577	5	Water shrews
WS4	TQ 75942 10639	10	Terrestrial shrews
WS5	TQ 76040 10631	10	Terrestrial shrews
WS6	TQ 76177 10646	10	Water shrews
WS7	TQ 76766 10830	10	Terrestrial shrews
WS8	TQ 76726 10810	10	Terrestrial shrews
WS9	TQ 76644 10882	10	Terrestrial shrews

12-D.4.9 Two of the sites with a positive result fall along the course of the Scheme (WS3 and WS6) and due to the close proximity of all the sites it is highly probable that this species does in fact occur at most of them. In addition it is probable that the species would be found to occur through many of the wet grassland and reed bed areas across the site.

Discussion

12-D.4.10 Water Shrews have now been confirmed from the site. The Water Shrew was found at two of nine survey locations, but it is considered that it would eventually be found to be present along the majority of watercourses and wet grasslands in the area of the proposed route of the Scheme.

12-D.4.11 It is not considered necessary to carry out additional survey work for this species at this stage but updating surveys should be carried out in the summer prior to development should permission be granted. This would allow any modification of mitigation proposals to be made.