



CLAVERTON DOWN CAMPUS, UNIVERSITY OF BATH

Horseshoe Bat Activity Surveys

Date of Report: October 2017

Report Expiry date: October 2018



Horseshoe Bat Activity Surveys

Client: University of Bath

Reference: J006306

Company Registration Number: 372 4176

VAT Number: 601216305

Issue:	Date:	Written by:	Reviewed by:	Amended by:	Approved by:
Interim	17 October 2017	EZ	SK	EZ	SK
One		-	-	EZ	-
Two	19 July 2018	-	-	SB	SK

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NON-TECHNICAL SUMMARY

Site location and size	Claverton Down Campus, University of Bath; ST 77083 64651; 74.5ha.
Scope and purpose of works	Horseshoe Bat Activity Surveys The purpose of the survey is to inform the proposed masterplan for the south-eastern area of the campus.
Dates of site visits and names of surveyors	Bat surveys were undertaken between April and October 2017 led by Emma Zeale MRes, Frances Bennett, Hayley Cox and Rebecca Booley.
Overview	<p>Low levels of bat activity were recorded throughout the site. Bat activity was highest along the southern and eastern boundaries, within the central green belt and along The Avenue through the site.</p> <p>Eight species were recorded on site, including common pipistrelle, soprano pipistrelle, noctule, <i>Nyctalus/Eptesicus</i> species, <i>Plecotus</i> species, <i>Myotis</i> species, and two Annex II species: lesser horseshoe and greater horseshoe.</p> <p>Greater and lesser horseshoe were recorded using the site during activity surveys. Activity was recorded along the north-east and west of the survey area (central areas of the campus). Activity was located around boundary hedgerows and woodland and mature trees within green areas on site.</p>
Action required for planning and/or legal compliance	<p>Boundary habitats should be retained with an appropriate buffer. Woodland habitats should have a 10m buffer and hedgerows should have a 5m buffer. Areas of mature trees around the lake and green finger on site should be retained.</p> <p>Retained habitats should be maintained as dark corridors to ensure continued use by bats. Lighting levels should not exceed current levels. A sensitive lighting scheme is required for the site with measures to maintain dark corridors for bats and reduce light spill onto adjacent and retained habitats.</p>
Recommendations for ecological enhancement (Site ecological enhancement is required under current planning policy)	The landscaping scheme for the site will incorporate retained habitat and include planting of native species which are beneficial to wildlife. This should include night-scented species and fruit and nut-bearing species.

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1 INTRODUCTION

1.1 In April 2017, Ecosulis was commissioned by the University of Bath to undertake horseshoe bat activity surveys of land at Claverton Down Campus, University of Bath. The south-eastern area of the campus was surveyed under these works.

1.2 The purpose of the survey is to inform the proposed masterplan for the south-eastern area of the campus.

1.3 Ecologists from Ecosulis visited the site between April and October 2017 to undertake the survey. Access was provided by the landowner.

Objectives of Study

1.4 The objectives of this study are: to provide information on the existing ecological conditions at the site with regards to bats; to identify potential constraints and opportunities that bats may pose to the development plans; and to identify further ecological studies that may be required to ensure that bats are fully considered within the proposals.

General Description of Site

1.5 The site is dominated by buildings, hard-standing and amenity grassland, which form the main campus on site. The buildings dominate the northern and north-central part of the site. Amenity grassland, largely in the form of sports fields, dominates the southern and eastern parts of the site. A lake is present within the centre of the site surrounded by amenity grassland and mature trees.

1.6 At the northern and south-eastern edges of the site are areas of semi-natural broadleaved woodland and there is an area of scattered broadleaved trees in the north-west of the site. Other borders include intact native species-rich hedges to the east and south-east of the site.

Previous Ecological Surveys

1.7 Ecosulis has been undertaking ecological surveys at Claverton Down Campus, University of Bath, since 2006. Surveys to date have included Extended Phase 1 Habitat, badger, hedgerow, great crested newt, Preliminary Ecological Appraisal and horseshoe bat activity surveys. Ecosulis undertook horseshoe bat activity surveys in 2008 and partial surveys in 2016. Common species were recorded throughout the site and activity was highest along site boundaries. Horseshoe bats were recorded along the northern and eastern boundaries and within Lime Kiln Fields in the south-eastern corner of the site.

Nomenclature

1.8 The common name only of flora and fauna species is given in the main text of this report; however, Latin names are used for species where no common name is available. A full list of all species recorded on site during the surveys is given in

Appendix I with their Latin names. All plant names follow the nomenclature of Stace (2010).

2 METHODS

Bat Activity Transect Surveys

- 2.1 Evening bat activity transect surveys were undertaken on the dates shown in Table 1 below. All surveys were undertaken in accordance with the Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Bat Conservation Trust, 2016).

Table 1: Bat Activity Transect Survey Dates

Date	Surveyor	Start	End	Weather
19 April 2017	Emma Zeale and Hayley Cox	20:14	23:13	Calm and dry Start: 10% cloud cover, 11°C End: 90% cloud cover, 9°C
23 May 2017	Emma Zeale and Sara King	21:06	00:06	Calm and dry Start: 5% cloud cover, 20°C End: 0% cloud cover, 14°C
12 June 2017	Frances Bennett and Hayley Cox	21:26	00:26	Calm and dry Start: 5% cloud cover, 16°C End: 5% cloud cover, 12°C
10 July 2017	Emma Zeale and Hayley Cox	21:24	00:23	Calm and dry Start: 90% cloud cover, 17°C End: 10% cloud cover, 14°C
24 July 2017	Hayley Cox and Becky Booley	21:07	00:07	Calm and dry Start: 90% cloud cover, 19°C End: 20% cloud cover, 16°C
24 August 2017	Hayley Cox and Will Silkstone	20:12	23:12	Calm and dry Start: 20% cloud cover, 16°C End: 20% cloud cover, 14°C
29 August 2017	Hayley Cox and Roberto Fernando	20:02	23:02	Calm and dry Start: 100% cloud cover, 18°C End: 100% cloud cover, 13°C
18 September 2017	Rebecca Booley and Jamie Kingscott-Edmunds	19:35	22:35	Calm and dry Start: 0% cloud cover, 18°C End: 0% cloud cover, 13°C
25 September 2017	Hayley Cox and Sophia Leroy	19:01	22:00	Calm and dry Start: 100% cloud cover, 16°C End: 100% cloud cover, 16°C
10 October 2017	Hayley Cox and Jamie Kingscott-Edmunds	18:29	21:29	Calm and dry Start: 50% cloud cover, 15°C End: 50% cloud cover, 12°C

- 2.2 A transect was identified for the purpose of the activity surveys which covered the southern half of the university campus (Figure 1). The start location was alternated between surveys. Each activity survey commenced at sunset and continued for

three hours. Elekon Batlogger M bat detectors were used to record the calls and locations of bat passes with their flight lines and foraging areas were recorded on a survey form. Recordings were later analysed manually by an expert using Elekon BatExplorer computer software.

Static Bat Detector Surveys

- 2.3 Anabat Express static bat detectors were deployed on the site between April and November 2017 for a total of seven nights of survey effort per detector per month of deployment. Locations of the detectors within this deployment are shown on Figure 1.
- 2.4 Data collected by these static detectors was later analysed by an expert using Analook software to identify target species.

Table 2: Bat Static Survey Dates

Month	Dates	Locations
May	21–28 May 2017 (8 nights)	A and B
June	14–21 June 2017 (8 nights)	A
July	13–28 July 2017 (8 nights)	A and B
August	22–29 August 2017 (8 nights)	C and D
September	1–8 September 2017 (8 nights)	C and D
October	18 – 28 October 2017	D

3 RESULTS

Bat Activity Transect Surveys

- 3.1 Bat activity was present at low levels throughout the site during the transect surveys. Species recorded include common pipistrelle, soprano pipistrelle, noctule, *Nyctalus/Eptesicus* species, *Myotis* species, greater horseshoe bat, lesser horseshoe bat and long-eared species. Areas of moderate activity included woodland habitats on The Avenue in the site and along the southern boundary of the site. Woodland habitats on the boundaries of the site support good levels of bat activity, and act as good wildlife corridors for bats. Figure 2 summarises the results of the transect surveys and full results are shown on Figure 3. The majority of activity across the site was *Pipistrelle* species and comprised 84% of total calls.
- 3.2 Common species were recorded foraging and commuting throughout the site. Annex II species, including lesser horseshoe and greater horseshoe, were recorded at multiple locations on site during the activity surveys (Figure 2). Twenty-two lesser horseshoe calls and two greater horseshoe calls were detected during the activity surveys. Lesser horseshoe bats were predominately recorded commuting along the boundaries of the site. Low occasional passes of greater horseshoe bats were recorded within the central green landscape area. These have not been recorded in this area of the campus previously, although they are only using the area occasionally for commuting.

Table 3: Bat Activity Transect Results

Month	<i>Pipistrelle</i> species	Greater horseshoe	Lesser horseshoe	<i>Myotis</i> species	<i>Nyctalus</i> / <i>Eptesicus</i>	<i>Plecotus</i> species
April (1 survey)	56	0	2	1	8	0
May (1 survey)	90	1	1	0	0	0
June (1 survey)	62	1	0	0	0	0
July (2 surveys)	323	0	12	0	11	1
August (2 surveys)	250	0	3	3	14	1
September (2 surveys)	100	0	4	2	11	1
October (1 survey)	50	0	2	0	7	0
Total per species	881	2	22	6	44	3

Static Bat Detector Survey

- 3.3 Two static detectors were deployed at four locations throughout the survey season. Common species were identified at each static location. Annex II species, lesser horseshoe and greater horseshoe, were detected on the statics. Greater horseshoe were detected on all four static locations and lesser horseshoe were recorded on all locations except C. Total numbers detected for each static are shown in Table 4.

Table 4: Static Bat Detector Survey Results

Static	Month	<i>Pipistrelle</i> species	Greater horseshoe	Lesser horseshoe	<i>Myotis</i> species	<i>Nyctalus/Eptesicus</i>	<i>Plecotus</i> species
A	April	59	2	0	10	13	0
	May	6	0	0	1	3	0
	June	-	-	-	-	-	-
	July	432	0	3	7	17	21
	Totals	497	2	3	18	33	21
B	April	19	0	8	9	20	0
	May	225	9	20	4	31	0
	June	71	4	1	31	20	0
	July	343	5	4	183	7	0
	Totals	658	18	33	227	78	0
C	August	7	0	0	13	3	0
	September	48	2	0	2	0	0
	Totals	55	2	0	15	3	0
D	August	1082	13	10	125	55	2
	September	399	2	6	19	21	1
	October	50	0	0	17	25	0

Static	Month	<i>Pipistrelle</i> species	Greater horseshoe	Lesser horseshoe	<i>Myotis</i> species	<i>Nyctalus/</i> <i>Eptesicus</i>	<i>Plecotus</i> species
	Totals	1531	15	16	161	101	3

4 ASSESSMENT

- 4.1 In total, eight species were recorded on site, including two Annex II species. This number may be higher as calls of some *Myotis* species and some *Nyctalus* and *Eptesicus* species were grouped together due to difficulties in identifying them to species level by call analysis. There is a chance that Bechstein's, another Annex II species, may be present on site, however similarities in calls make distinguishing this species difficult.
- 4.2 Bats were recorded throughout the site at a low level of activity, with some areas of higher activity present. The majority of bat activity was along the southern and eastern boundaries, within the green parkland in the centre of the campus, and along The Avenue through the site.
- 4.3 The majority of bat activity on site was from *Pipistrelle* species, which accounted for 84% of activity during the transect surveys.
- 4.4 Greater and lesser horseshoe bats, Annex II species, were recorded on the site in low numbers during activity surveys. Greater horseshoe bats were recorded in the north-west and north-east of the surveyed area (central and eastern areas of campus). Lesser horseshoe bats were recorded throughout the east and south eastern areas of the campus and survey transect, which is dominated by playing fields with boundary woodland and hedgerow habitats. Greater horseshoe bats were detected on all four static locations and lesser horseshoe were detected on all locations except Static C.
- 4.5 The results of the static detectors indicate that the boundary habitats, including woodland edge and hedgerows, and green areas on site are used by low numbers of Annex II species, with the numbers detected during the deployment period averaging less than one pass a night. The highest numbers of greater and lesser horseshoe were detected on Static B located along the eastern boundary of the site, close to the proposed site of new residential accommodation.

5 ECOLOGICAL CONSIDERATIONS AND RECOMMENDATIONS

- 5.1 This section provides considerations in relation to the ecology of the site and any adjacent habitats that should be considered within development proposals to ensure that impacts on ecology are avoided and/or mitigated within the scheme.

Bats

- 5.2 All British species of bat and their place of shelter are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 from deliberate capture, injury and killing, intentional or reckless disturbance, intentional or reckless obstruction of access to any structure or place which any such animal uses for shelter or protection, and deliberate damage or destruction of a breeding site or resting place. This includes buildings and trees and applies throughout the year, whether bats are present or not at the time of survey or work being carried out.
- 5.3 Although foraging areas and commuting routes are not legally protected, the effects of development proposals on these are a material consideration when assessing the impact of the proposal on the maintenance of favourable conservation status (NPPF).
- 5.4 Low levels of bat activity were recorded across the site during the survey. The results of the survey indicate that the woodland and hedgerow along the boundaries of the site and areas of mature trees and green areas within the site are used by multiple bat species, including two Annex II species. Bat activity was highest along the southern and eastern boundaries, within the central green parkland and along The Avenue through the site. As such the boundary habitats consisting of hedgerows and woodland should be retained with a 5–10m buffer respectively. The buffers along the boundary habitats should be planted with suitable native species of benefit to wildlife where possible.
- 5.5 Areas of mature trees present within the green areas on site should be retained where possible, especially around the lake and through the central green parkland where Static C was located. This is to maintain connectivity through the site for commuting bats.
- 5.6 A lighting plan must also be included within the new masterplan for the site and be designed to retain dark corridors for foraging and commuting bats. In particular, boundary habitats and the woodland along The Avenue should be maintained as dark corridors to ensure its continued usage by horseshoe bats. Areas of mature trees around the lake and central green parkland should also be maintained as dark corridors as records of greater horseshoe bats indicate that they are using this area. Light levels within dark corridors should not be increased beyond current levels.

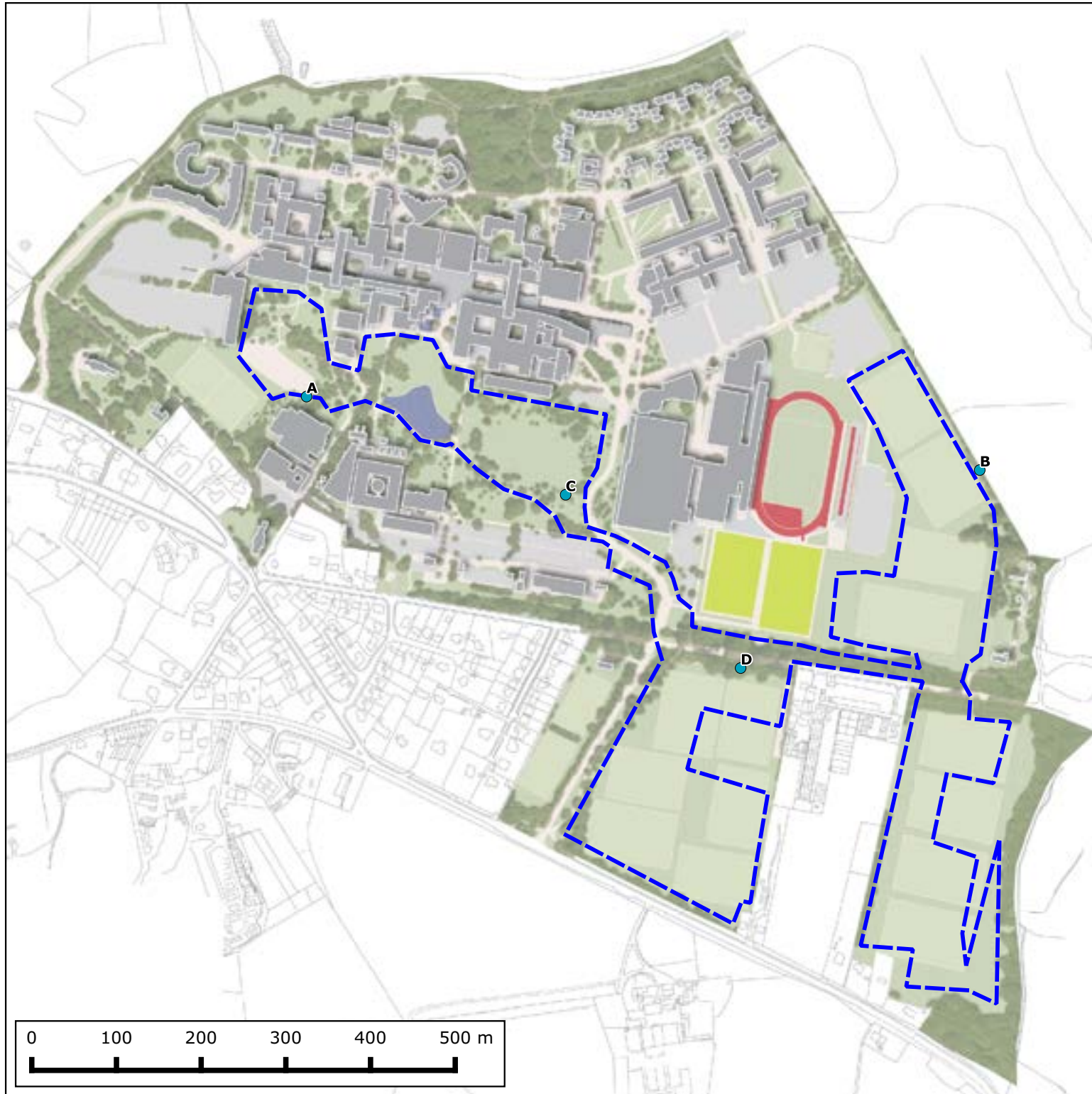
Ecological Opportunities

- 5.7 Any lighting required within the scheme should be kept to a minimum and carefully consider bats (BCT, 2008).
- 5.8 Further enhancement of the site for bat species should include the planting of night-scented flowers within the landscape scheme for the site. Night-scented flowers attract moths and other invertebrates which form the diet of UK bat species. Suitable plant species include honeysuckle, dog-rose, ivy, evening primrose and night-scented catchfly. More information can be found in the Bat Conservation Trust's 'Landscape and Urban Design for Bats and Biodiversity' document.
- 5.9 Future management should aim to enhance the value of the site for wildlife whilst maintaining amenity function, such as leaving longer edge grassland zones (adjacent to boundaries and around the trees, for example) and rotational management of new planting.

6 LIMITATIONS OF SURVEY AND REPORT

- 6.1 This report records wildlife found during the survey and anecdotal evidence of sightings. It does not record any plants or animals that may appear at other times of the year and were therefore not evident at the time of visit. Some species that might use the site or be apparent at other times of year, or only in certain years, would not have been detected.
- 6.2 A national standard has not been adopted for minimum survey effort for bats since the extent of surveys required is dependent upon species present and site-specific factors. Natural England will not comment on survey effort and they expect this decision to be made by the ecological consultant. There is also some difference in opinion from local authorities across the UK as to what constitutes sufficient survey effort. The recommended level of survey within this report is based upon extensive experience of surveying and assessment for similar sites and the Bat Conservation Trust survey guidelines 2016.
- 6.3 This report provides provisional ecological baseline for the site and should not be considered to be conclusive until the ecological considerations have been undertaken and all necessary further surveys completed. Likewise, the ecological considerations at this stage are not necessarily final and may be subject to change or additional proposals made following the results of further surveys and detailed development plans.
- 6.4 The behaviour of animals can be unpredictable and may not conform to standard patterns recorded in current scientific literature. This report therefore cannot predict with absolute certainty that animal species will occur in apparently suitable locations or habitats or that they will not occur in locations or habitats that appear unsuitable.
- 6.5 The Elekon Batlogger M bat detector uses a standard GPS system combined with GLONASS – Global Navigation Satellite System. The precision of the GPS receiver in this unit produces an accuracy of 2.37–4.65m for bat recordings. There is, however, always the potential for the range of accuracy of GPS units to decrease due to atmospheric and local weather conditions (cloud, static) and the structural nature of the habitat (i.e. dense woodland). All efforts are taken during surveys to ensure the accuracy and quality of captured data. This unit has a bat call detection range of 50m. Thus, bat calls can be recorded from outside the development site boundary. Whilst not always directly relevant to the habitats present on site, these recordings provide valuable context and species information regarding the importance of the site in relation to the surrounding habitats and landscape for bats.
- 6.6 The advice contained in this report relates primarily to factual survey results and general guidance only. On all legal matters you are advised to take legal advice.

FIGURE 1



Key

- Transect Route
- Static Detector Location



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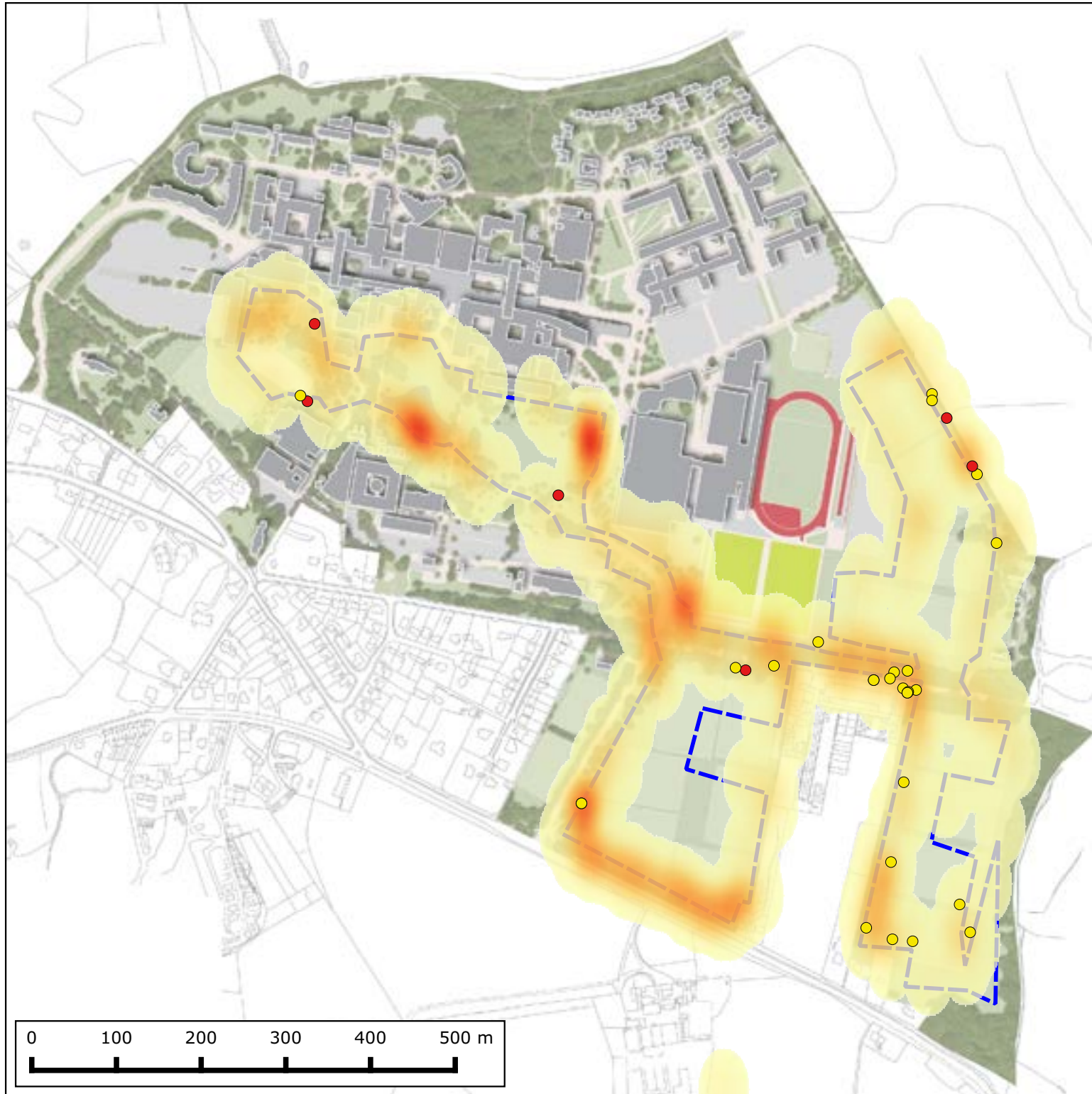
Title: Bat Activity Survey Route

October 2017

Figure 1

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FIGURE 2



Key

— Transect Route

Annex II Species

● Greater horseshoe

● Lesser horseshoe

Activity Levels

Low levels of activity



Moderate levels of activity



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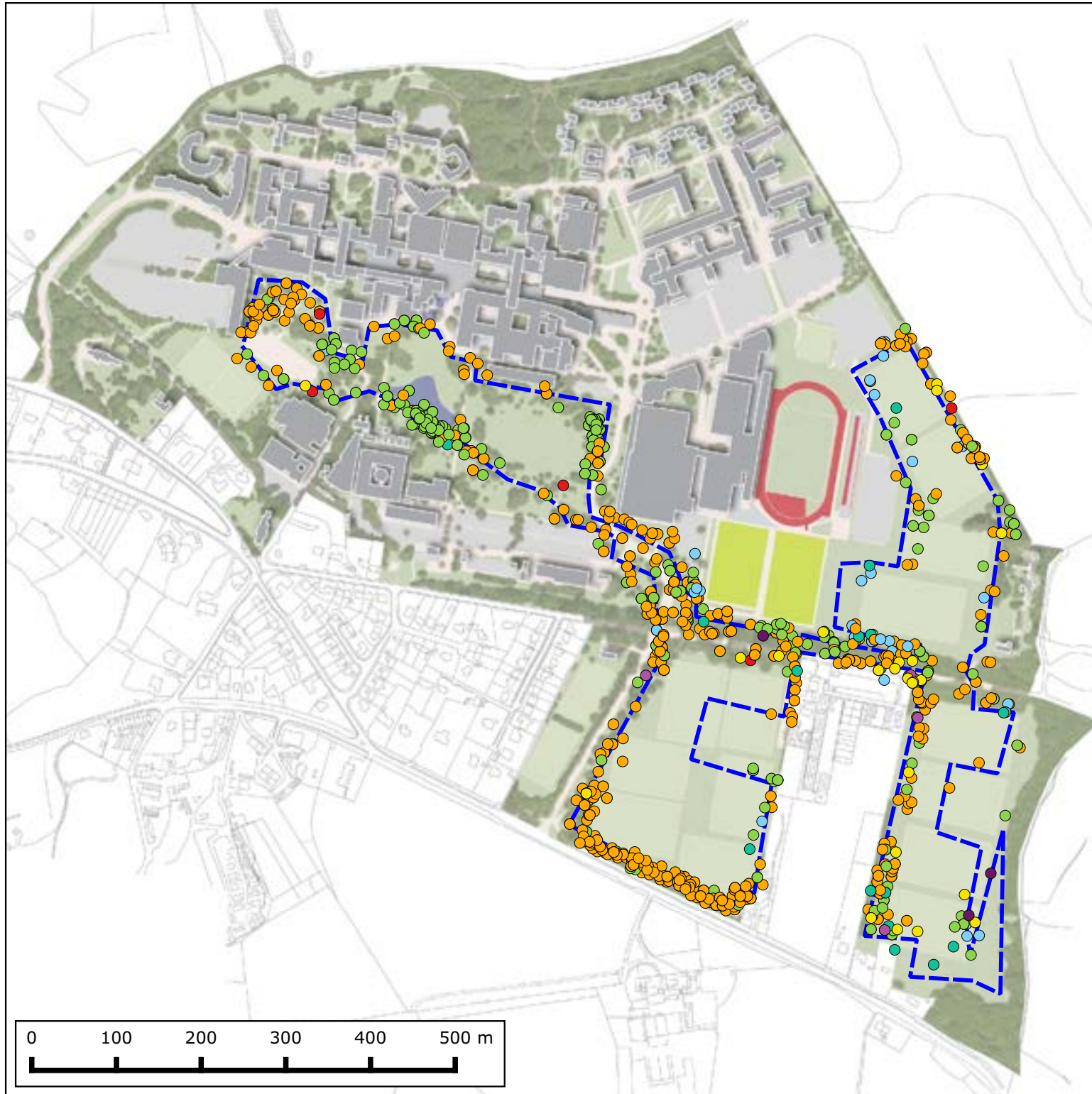
Title: Bat Activity Results

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Figure 2

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FIGURE 3



Key

— Transect Route

Bat Species

- Myotis species
- Soprano pipistrelle
- Common pipistrelle
- Noctule
- Nyctalus/Eptesicus species
- Long-eared species
- Greater horseshoe
- Lesser horseshoe



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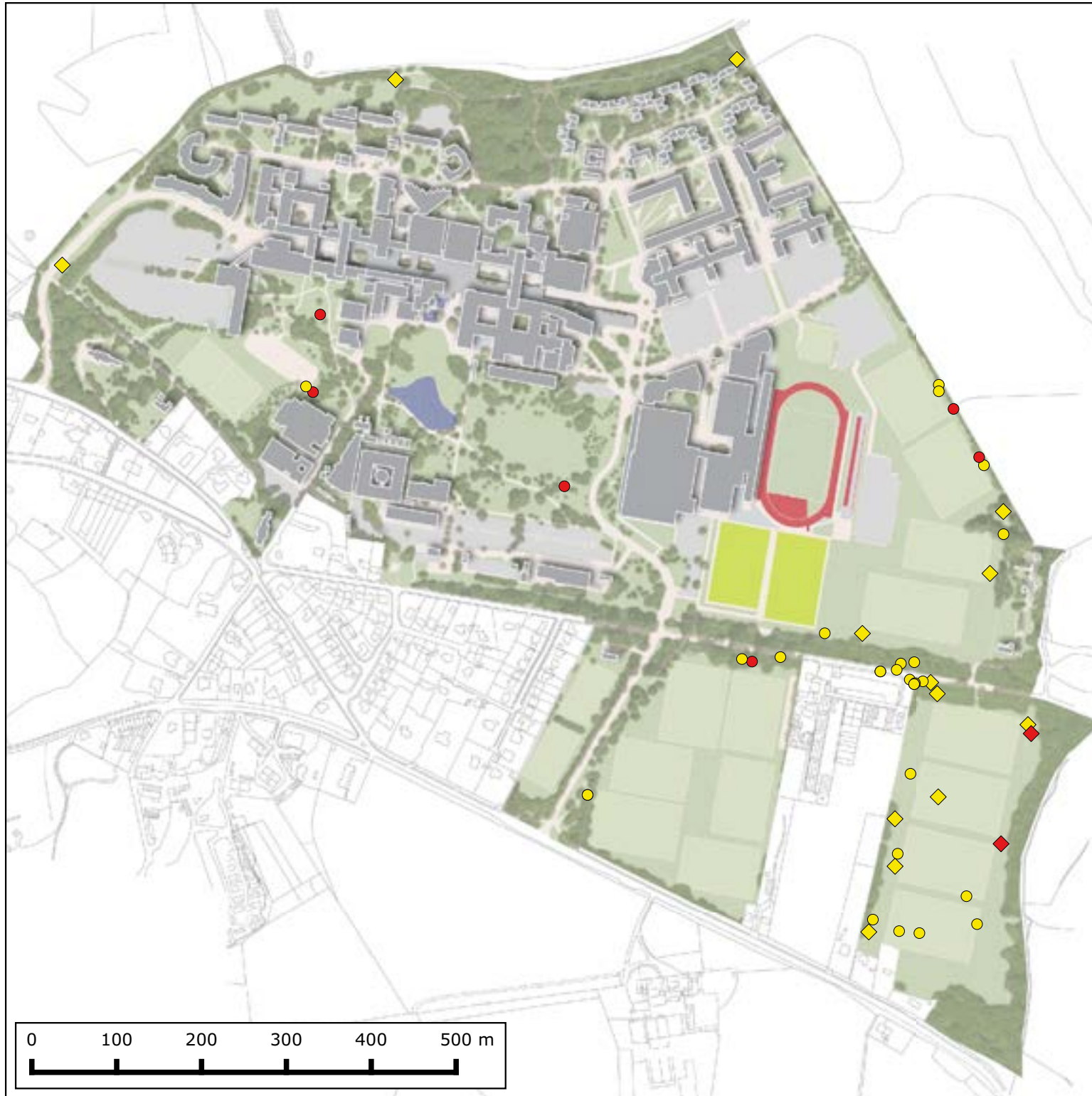
Title: Bat Activity - Full Results

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Figure 3

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FIGURE 4



Key

— Transect Route

Annex II Species - 2017

● Greater horseshoe

● Lesser horseshoe

Annex II Species - Historic records

◆ Greater horseshoe

◆ Lesser horseshoe



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Project: Claverton Down Campus

Title: Annex II Species Records

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Figure 4

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Appendix I: SPECIES LIST

Fauna	
Common Name	Latin Name
Common pipistrelle	<i>Pipistrellus pipistrellus</i>
<i>Eptesicus/Nyctalus</i> species	<i>Eptesicus/Nyctalus sp.</i>
Greater horseshoe	<i>Rhinolophus ferrumequimum</i>
Lesser horseshoe	<i>Rhinolophus hipposideros</i>
<i>Myotis</i> species	<i>Myotis sp.</i>
Noctule	<i>Nyctalus noctula</i>
<i>Plecotus</i> species	<i>Plecotus sp.</i>
Soprano pipistrelle	<i>Pipistrellus pygaemus</i>