# **Brue Valley Big Bat Survey 2016**







# **CONTENTS**

	Page number
SUMMARY	4
ACKNOWLEDGEMENTS	5
1. INTRODUCTION	6
2. METHOD	7
2.1 Survey	7
2.2 Sound Analysis	8
2.3 Limitations of the Survey	8
3. RESULTS AND SOUND ANALYSIS	9
3.1 Overall summary	9
3.2 Pipistrelle species	10
3.3 Myotis species	10
3.4 Horseshoe bats	11
3.5 Serotines	11
3.6 Noctules	11
3.7 Leisler's bats	12
3.7 Barbastelle	12
3.8 Long-eared bat	12
4. ACTIVITY MAPS PER SPECIES OVER THE SURVEY AREA	12
5. BAT PASSES RECORDED ALONG EACH TRANSECT ROUTE	18
5.1 Transect 1: Gold Corner	18
5.2 Transect 2: Burtle	20
5.3 Transect 3: Tealham Moor	22
5.4 Transect 4: Catcott Heath	24
5.5 Transect 5: Shapwick Heath	26
5.6 Transect 6: Westhay Village	26
5.7 Transect 7: Westhay Moor	29
5.8 Transect 8: Meare	30
5.9 Transect 9: Ham Wall and Walton Heath	32
5.10 Transect 10: Yeaps Bridge	34
5.11 Transect 11: East Backwear	34

5.12 Transect 12: Fenny Castle	35
5.13 Transect 13: Long and Short Drove	35
5.14 Transect 14: West North Wooton	36
5.15 Transect 15: Hulk Moor	37
5.16 Transect 16: South Moor	37
5.17 Transect 17: Church Moor	38

### **SUMMARY**

The first Brue Valley Big Bat Survey took place in 2013 and this is the fourth year of the project. Funding has kindly been provided by Wessex Watermark. The survey assessed bat activity over specified transect routes with predefined stops and walk sections. Seventeen routes were defined in 2013 but only a selection of these have been surveyed each year (fifteen transects in 2013, nine transects in 2014, eleven transects in 2015 and ten in 2016); the reasons for this are partly to ensure a minimum of three surveyors per team and partly to increase coverage of the survey area. The routes were walked in 'normal' and 'reverse' directions in alternate years. Thus, in 2013 and 2015, the transect began at walk 1 and finished at point 6; in 2014 and 2016 the transect began at point 6 and finished at walk 1 This makes little difference to the middle hours of the survey but the earliest and latest sections vary year on year.

Bat activity was recorded as the number of bat passes. For eight transects walked each year there is four years of data available with two years of 'normal' direction transect data and two of 'reverse' direction transect data. There are three years data for two further transect, two years for another and five transects have been surveyed only once.

2016 saw the greatest number of bat passes in total for any of the four years even though fewer transect were walked but comparing each year's total dataset is likely to be less relevant than comparing data from those transects surveyed for each of the four years. This is due to the high degree of unknown variation that will be present between transects, thus meaning that data from different transects will not be directly comparable with one another. However, these differences will become less significant over a larger dataset.

Eleven species of bats and seven genera of bats were recorded.

In 2016, 36 participants volunteered their time for the survey. Although lower than other Big Bat Surveys in the Mendip Hills and Blackdown Hills, the enthusiasm for surveying the Brue Valley is high and the results of the surveys are showing some unexpected distribution patterns, and are adding greatly to our knowledge of rare bats throughout the county.

### **ACKNOWLEDGEMENTS**

Somerset Bat Group (SBG) ran the fourth Brue Valley Big Bat Survey which was kindly funded by Wessex Watermark.

The survey depended on the enthusiasm and expertise of local volunteers devoting their time to walk transects, mapping and describing the results and spending hours analysing the sound recordings. This has given an opportunity to build on the findings of the previous surveys and provide more data of a kind that could not be recorded in any other way.

Seventeen transects were designed prior to the initial survey in 2013 by Cath Shellswell, Dave Cottle and the late Lou Pickersgill. A selection of these seventeen have been surveyed each year that the project has run, therefore some transects have been surveyed each year, others only once or twice.

The administration and organisation of the survey was largely by Alex Marshall and Paula Hewitson of the Somerset Environmental Records Centre. The essential task of manning HQ on the night was carried out by Adel Avery of the Somerset Bat Group. The sound analysis was carried out by the Edward Wells and Cath Shellswell and the maps and tables in this report by Paula Hewitson

Special thanks to:

### The recorders:

Sarah Ayling, Pete Banfield, Greg Colthorpe, David Cottle, Paul Kennedy, Jeremy Cuff, Tony Serjeant, Ellie Frew, Cath Shellswell and Helen Wells.

All the volunteers that took part in the surveys:

Adel Avery, Tony Serjeant, Nick Bentley, Carol Clarke, Rhianna Clarke, Ellie Drew, Sue McInness, Neil McInnes, James McInnes, Jeremy Cuff, Tim Cuff, Jenny Clare, Paul Kennedy, Sarah Todd, Chris Todd, Helen Wells, Edward Wells, Alan Keith, Greg Colthorpe, David Izzard Melitta Izzard, Sarah Ayling, Rebecca Woodgate, Andrew Wade, Matty Wade, David Cottle, John Mahon, Becky Brooke, Cath Shellswell, Leighann Briggs, Stuart Holden, Rachael Holden, Pete Banfield, Colin Banfield, Carol Howe and Paul Smith.

All the land holders that allowed the survey to take place around their holdings.

Cover photograph: Brue Valley Bat survey participants © Adel Avery

Report Authors: Edward Wells, Cath Shellswell and Paula Hewitson

### 1. INTRODUCTION

The Somerset Big Bat Surveys were first conceived for the Mendip Hills Living Landscape and ran from 2007 and 2012. A second survey for the Blackdown Hills has been run between 2011 and 2016. The Brue Valley Big Bat Survey is a landscape survey to collect comparable data across an area of the Somerset Levels with a methodology derived from the Somerset Big Bat Surveys.

The first Brue Valley Big Bat Survey was undertaken in 2013, and has now been repeated three times in 2014, 2015 and 2016. The surveys have received national attention and acclaim following presentations at various conferences including the Bat Conservation Trust SW Regional Conference and the National Bat Conference. On average, the Brue Valley Big Bat Survey is well attended with approximately 30 participants each year. In 2016, funding was kindly provided by Wessex Watermark.

The Brue Valley was chosen as the focus as it considerably differs from both the Mendip Hills and the Blackdown Hills. Those are regions of un-intensively managed pasture and woodland with relatively little standing water. The moors and levels of the Brue Valley are low-lying very wet pasture, at and even below sea level. Except for the conservation managed swathe of the Avalon Marshes there is little woodland. The fields are stocked with cattle and much of the grassland has been agriculturally improved and is much lusher and less species-rich than on the shallow limestone of the Mendip Hills or the leached uplands of the Blackdown Hills. Over the years of this survey it has become clear that whereas in the Blackdown Hills Common Pipistrelles (*Pipistrellus pipistrellus*) were very much more recorded than any other species, the dominant species in the Brue Valley was the Soprano Pipistrelle (*P. pygmaeus*), a bat believed to be more often associated with open water. In addition, there have been recordings of Nathusius' Pipistrelle (*P. nathusii*), a particularly rare bat in the UK, and the wet open areas have been identified as prime foraging areas for this species. As a result of these surveys it now appears probable that the Brue Valley plays a part in this resource and that Nathusius' pipistrelles are regular visitors or possibly resident.

As in previous surveys the main purpose was to obtain data by using a repeatable method and specifically to obtain flight records that could inform and improve our understanding of how bats use the landscape. Most flight records are by their nature anecdotal and often hard to verify or interpret. By recording the bat passes both on a form and on a recording device it was possible to collect evidence of activity that was capable of being analysed objectively. Some roosts on or near transects are known and it may be possible to relate some of the activity to those populations but there are a great many more bats whose day roosts are not known at all and the data collected in this survey may help us to know where we should be looking.

There are 17 species of bat known to breed in Britain and 16 of them are known to be breeding in Somerset. Some of the data from other surveys has been used successfully to support and direct agri-environment schemes enhancing conservation and providing a source of funding for landowners. In the new agri-environment scheme, Countryside Stewardship, launched in January 2015, Horseshoe Bats (*Rhinolophus* spp.) are target species for management options and increase the likelihood of land managers with these bats to enter the scheme if they are willing to carry out management options beneficial for these species. This would have a knock-on effect for other bat species associated with wet landscapes such as Daubenton's Bat (*Myotis daubentonii*) and Soprano Pipistrelle. Therefore those who own and manage the land included in the survey transects can learn and profit from the findings of such surveys.

Bats are highly mobile, opportunistic feeders and the presence of bats is in itself an indication of the insect abundance and diversity of an area. The National Bat Monitoring Programme is now regarded as part of National Statistics, and although the Big Bat Surveys are not combined with this data, it does emphasise the importance of bats regarding their place in the ecosystem and as an ecosystem service. By repeating such surveys it may be possible to identify changes from year to year, and that in itself may give early warning of a less favourable condition of the land from a wildlife perspective.

Another reason for such a survey is to give non-expert local people a chance to help do something positive but very different for their local wildlife and to give them an experience of the wild world which is not usually available to them. The huge popularity of the Big Bat Surveys and of the bat walks that SBG has run for some years with Natural England at Shapwick Heath are an indication of how special the experience is for people. There is a magic in glimpsing the world of the creatures of the night and even hardened bat workers can still feel a thrill at hearing a species they did not expect.

### 2. METHOD

### 2.1 Survey

Prior to commencement of the first Brue Valley Big Bat Survey in 2013, seventeen predetermined routes were mapped and planned for surveying (Figure 1). These transect routes were designed to be walked simultaneously and comprised of a series of six walking sections and six stationary points.

The transects are designed to take between 1.5 and 2 hours to complete and to use public rights of way. For safety reasons they normally avoid busy roads. As far as possible each transect traverses a variety of habitats including water, woodland and pasture. Many are wholly or in part across land in conservation management.

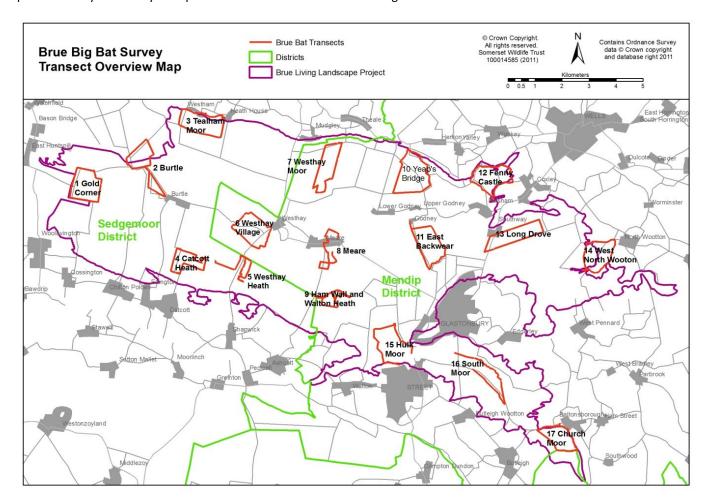


Figure 1: Map of the bat transects undertaken as part of the Brue Valley Big Bat Survey

The transects are designed to be walked in a reverse direction in alternate years in order to decrease data inconsistencies caused by different species of bat being active at different times of night. For example, if a species is active only at a particular point along a transect at a particular time, it will be missed if the survey team at a different location along the transect at that time. Therefore in 2013 and 2015 transects were walked in the 'normal' direction, in 2014 and 2016 they were walked in the 'reverse' direction.

The survey took place on 5th August 2016. Ten of the seventeen transects were surveyed nine in their entirety by teams of a minimum of three volunteers. One was only partially completed. Each transect consisted of six stops of five minutes and six walk sections lasting an average of about ten minutes. The stops were located where there were potentially significant landscape features and the walks were mainly along established footpaths for the comfort and safety of the volunteers. All landowners along each transect were asked for permission to access their land.

Before starting the surveys, the volunteers met for a brief health and safety talk and then travelled to the beginning of their transect. Four to six individuals with a mixture of bat experience from beginner to very experienced were assigned to each group.

The volunteers were provided with maps of the transect which they were surveying, a risk assessment and asked to walk the route in daylight for safety prior to the survey. Further information that was provided to volunteers is available from the Somerset Environmental Records Centre.

The surveys started at 21:00 and finished at approximately 22:30. The teams listened to bats using heterodyne, time expansion or frequency division bat detectors and listed what they heard in each section.

One person in each group recorded the route continuously using a wave recorder and a frequency division Batbox Duet Bat Detector. The recordings were assigned to separate tracks for each section and analysed to count the number of bat passes in each section and, so far as possible, assign those passes to species.

One member from each group took the recordings and survey forms back to the Lifelong Learning Centre at the Avalon Marshes Centre.

### 2.2 Sound Analysis

Each transect's recordings were analysed using BatSound software. The number of bat passes made by each species or genus was counted to provide a measure of bat activity along each walk section and stop section.

A bat pass is a continuous stream of echolocation calls indicating a bat flying past. A sequence of calls interrupted by a feeding buzz (a rapid accelerating set of calls indicating the capture or attempted capture of prey) was treated as two passes. The number of bat passes is therefore best understood as an index of bat activity rather than the absolute number of bats in the area. Except for the bats of the genus *Myotis* or the genus *Plecotus* (Long-eared Bats), each species has a spectrogram which is usually distinctive.

### 2.3 Limitations of the Survey

There are several factors that may affect the results and comparison between the routes:

- Differences in the range of individual bat detectors. Individual detectors of the same type can vary in range depending on factors such as local environmental conditions and battery strength. The latter can be partially compensated for by using new batteries at the start of each survey, although makes and models of batteries still vary.
- Changes in some factors, such as daylight length and different levels of activity at different times in the breeding season, can be partially compensated for by carrying out the surveys at the same time on the same night each year.
- However, less predictable variables such as temperature, wind speed and direction, and levels of precipitation before, during and after the survey, all of which will affect invertebrate activity and thus bat activity are less easy to compensate for and thus may affect the results.
- Human error in misidentifying bat passes and counting the number of bat passes. Although the standard procedure for
  counting bat passes was followed, there is scope for error if more than one bat of the same species / genus is passing
  the bat detector at one time. There is also the potential to misidentify species, particularly if the call is faint.
- Human error in relation to use of or failure of equipment, or misinterpretation of maps or instructions. This was largely removed by ensuring that each team had at least one very experienced team member.
- Inconsistencies caused by using different equipment on different transects: There is a greater danger of inaccuracies in identifying species from bat passes from heterodyne recordings, and individual bat passes are more difficult to distinguish if more than one bat is flying past the bat detector at the same time, resulting in counting errors. There is also a greater risk that bat species echolocating at different frequencies may be missed. For example, heterodyne detectors are unlikely to pick-up both a Noctule Bat pass and a Lesser Horseshoe Bat pass at the same time as the difference in frequency is too large if the detector is tuned to either the lower or higher end of the spectrum.
- Differences in range of bat echolocation calls. Certain bat species may echolocate particularly quietly, for example Barbastelle Bat, or may not echolocate at all and use passive hearing, for example Long-eared Bats. Other species have a particularly high echolocation frequency which may not travel as far as lower frequencies, for example Horseshoe Bats. This affects the capacity of the detector to pick-up and record bat passes unless the bat is close, and as a consequence some species may be recorded less frequently than other species and there will be errors in estimating the proportions of different species present.
- Misidentification of faint recordings. Occasionally the echolocation recording may be too faint to identify the bat species. Faint recordings also make it difficult to extract a peak frequency for the echolocation calls of pipistrelle species. Where the genus of bat was uncertain the recording is marked in the report as "bat species" and where there

- is sufficient confidence to assign a recording to the genus *Pipistrellus* but not to a species the recording is marked as "Pipistrelle species".
- Species missed due to the differences in activity of different species at different times of night. Reversing the transects year on year is an attempt to reduce this potential impact on the results but is unlikely to completely remove the possible effect of this.

### 3. RESULTS AND SOUND ANALYSIS

#### 3.1 Overall summary

Over the four years of the survey to date, different transects have been surveyed in different years which affects what conclusions can be gleaned from analysis of the data. Analysis of the total results (in particular, numbers of each species recorded) will not give an accurate indication of changes over time, as it is not a comparison of like with like.

Eight transects have been surveyed in all four years, therefore comparison of numbers of species and numbers per species looking at just these eight transects will give a more representative indication of changes over time. Two transects have been surveyed three times, one twice and five transects once. It must be borne in mind that there have been no statistical analyses carried out on the survey results therefore these analyses are solely related to overall impressions. The total numbers of species for all transects surveyed, regardless of whether they've been surveyed once, twice or three times, can still give a good picture of activity of different species of bat over the Brue Valley as a whole, but not an accurate indication of changes over time.

As in 2014 and 2015, eleven species of bats and seven genera of bats were recorded. As the calls of the echolocation of the two Long-eared species are indistinguishable and the similarity in the call structure of the six Myotis cannot differentiated, it is therefore possible that up to 17 species were present but about 13 is more likely.

Table 1: Total passes over all trans	ects and pro	portion of	bat passes f	or each sp	ecies/grou	р		
Species/Species Group	2013 Bat Passes	2013 total (%)	2014 Bat Passes	2014 total (%)	2015 Bat Passes	2015 total (%)	2016 Bat Passes	2016 total (%)
Greater horseshoe	4	0.1	3	0.1	5	0.2	4	0.1
Lesser horseshoe	10	0.3	14	0.5	3	0.1	3	0.1
Common pipistrelle	783	26.9	861	30.9	811	26.9	1374	31.9
Soprano pipistrelle	1280	43.8	1386	49.8	1618	53.6	2171	50.4
Nathusius' pipistrelle	0	0	8	0.3	10	0.3	19	0.4
Pipistrelle sp	95	3.3	21	0.7	15	0.4	14	0.3
Serotine	62	2.1	74	2.6	123	4.0	188	4.4
Noctule	97	3.3	3	0.1	5	0.2	31	0.7
Leisler's	0	0	3	0.1	14	0.4	7	0.2
Myotis sp	510	17.5	380	13.7	333	11.4	452	10.5
Long-eared bat/Plecotus sp	4	0.1	7	0.3	5	0.2	3	0.1
Barbastelle	0	0	1	<0.1	12	0.4	2	<0.1
Unidentified bat species	75	2.6	24	0.9	60	1.9	42	1.0
TOTAL	2916	100	2782	100	3014	100	4310	100

The survey took place in weather conditions that were perfect for feeding bats - warm, windless and humid. It is therefore unsurprising that the total of passes recorded was higher than ever, but the margin is remarkable bearing in mind that fewer transects were surveyed than in previous years. Once again there were more Soprano Pipistrelles than any other species and the percentages of calls of the two most common pipistrelle species to the total are satisfyingly consistent. Soprano Pipistrelles account for 43 - 51% of passes and Common Pipistrelles 26 - 31%. There seems to be very little difference in totals when the direction walked is reversed and any variation is well within what can be expected with different conditions on the various nights.

It is more reliable in seeking to establish any trends or identify 'hot spots' to compare those transects where there are data for all four years so that one is comparing like with like.

Table 2: Passes for transects w			-		1	1	1	1
Species/Species Group	2013 Bat	2013	2014 Bat	2014	2015	2015	2016	2016
	Passes	total	Passes	total	Bat	total (%)	Bat	total
		(%)		(%)	Passes		Passes	(%)
Greater horseshoe	3	0.2	3	0.1	1	<0.1	3	0.1
Lesser horseshoe	6	0.4	13	0.5	3	0.1	3	0.1
Common pipistrelle	320	19.0	725	30.1	556	25.7	1148	31.6
Soprano pipistrelle	924	55.0	1213	50.4	1131	52.2	1850	50.9
Nathusius' pipistrelle	0	<0.1	6	0.2	10	0.5	19	0.5
Pipistrelle sp	9	0.5	14	0.6	4	0.2	10	0.3
Serotine	22	1.3	45	1.9	113	5.2	108	3.0
Noctule	13	0.8	3	0.1	5	0.2	17	0.5
Leisler's	0	0.0	3	0.1	1	<0.1	7	0.2
Myotis sp	341	20.3	360	15.0	286	13.2	426	11.7
Long-eared bat/Plecotus sp	4	0.2	7	0.3	3	0.1	2	0.1
Barbastelle	0	<0.1	1	<0.1	7	0.3	2	0.1
Unidentified bat species	39	2.3	15	0.6	47	2.2	38	1.0
TOTAL	1681	100	2408	100	2167	100	3633	100

That comparison shows a greater number of passes in the two 'reverse' years. That is attributable to the numbers of pipistrelles but those passes are sufficiently well spread over the transects that the increase cannot be a matter of timing and it is probably that those two years were simply more active.

### 3.2 Pipistrelle species

The greatest number of bat passes through all four years of the surveys, regardless of how data is analysed, is by Soprano Pipistrelles comprising 50% or more of the total numbers of passes. The Brue Valley is indeed a stronghold for this species which is often associated with wetland landscapes and the total at Ham Wall is outstanding.

The Common Pipistrelle was recorded more times than the soprano species in some transects and these are mostly those with less open water and might be at a slightly higher altitude. The Common Pipistrelle is the commonest species throughout Western Europe but not, it seems, in the Brue Valley. There is ongoing research into the inter-relationship between Soprano and Common Pipistrelles and whether there is competition for the best foraging locations.

Nathusius' Pipistrelle was recorded at three transects, Catcott Heath as in 2015, Meare where it had not been heard before and Ham Wall with no less than 17 passes. In the 2015 report we posed the question of whether these are migrating bats or residents. Further study is needed, but at Ham Wall in particular the possibility of breeding should not be dismissed. They are known to breed in North Somerset and have been recorded throughout the summer elsewhere in Somerset itself. The stronghold of Nathusius Pipistrelles is in Scandinavia and many of those bats over-winter in South West France. The males are believed to leave the breeding area first and set up territories along the routes that the females will follow later. Mating may very well take place in Southern England even if the pups are born in Sweden. Listening for the distinctive "social calls" of the males in the Brue Valley would be instructive, but trapping earlier in the summer might confirm the presence of lactating females which would prove the point.

# 3.3 Myotis species

This category may include a number of different species. Whiskered Bats have been trapped in the Brue Valley. Natterers Bats appear in bat boxes at Catcott and the levels are a stronghold of the water-loving Daubenton's Bat. The decline in Myotis passes when seen as a percentage pf all passes has continued over all four years. In previous reports we have surmised that the level of change was compatible with annual variation and four years is still a small data set on which to express alarm. Nonetheless, the percentages of 20.3% in 2013, 15% in 2014, 13.2% in 2015 followed by 11.7% in 2016 is worrying. In absolute totals, there were

more Myotis passes in 2016 than ever, but that is on a particularly good night for all species. The low numbers at Catcott Heath may be significant. A lot of conservation work has been done at that reserve and it is possible that conditions need some time to settle down for the bats to return It would be interesting to compare insect populations over the last two or three years.

Table 3: Number of Myotis sp. passes recorded per year in transects surveyed for three years.

Site Surveyed	2013 Bat Passes	2014 Bat Passes	2015 Bat Passes	2016 Bat Passes
Tealham Moor	1	9	1	13
Catcott Heath	34	73	13	44
Shapwick Heath	78	50	29	126
Westhay Moor	6	91	24	43
Meare	47	18	15	29
Ham Wall and Walton Heath	16	31	31	46
West Norton Wooten	145	39	148	13
Church Moor	14	49	38	112
Total	341	360	299	426

#### 3.4 Horseshoe bats

Both Greater Horseshoe Bat (Rhinolophus ferrumequinum) and Lesser Horseshoe Bat (R. hipposideros) were recorded again and roosts for both species are known in this area.

Lesser Horseshoe Bat numbers were comparable with the years in which the transects were walked in the 'normal' direction (2013 and 2015) and the higher number of passes in 2014 was not repeated ruling out any effect of timing by reversing the direction of travel. The 2014 figure does seem to be unusually high.

The numbers of both species of Horseshoe Bats is low, as typical throughout the Brue Valley. The changes in numbers are therefore also low and could well be within typical annual variation parameters although there are a number of variables that may affect numbers. The high frequencies at which these bats echolocate 82kHz for Greater Horseshoe Bat and 112kHz for Lesser Horseshoe Bat, mean that they need to be quite close to the recorder to be detected and some activity may well be missed.

# 3.5 Serotines

Serotine Bats (Eptesicus serotinus) have had two poor years followed by two good ones. There could be a number of reasons for this. Serotines are big bats and highly mobile. They can and do fly considerable distances to feed. They eat large moths and beetles and are particularly associated with grazing animals. In all the Big Bat Surveys there has been a tendency to find Serotines where cattle have been present. In windy weather, they are less likely to be in open country and tend to follow woodland edges. It is therefore unwise to regard these data as evidence of an increase the abundance of Serotines in the survey area, but they are encouraging when it is remembered that this species seems to be in rapid decline in South East England.

### 3.6 Noctules

The number of passes of Noctule Bat (*Nyctalus noctula*) was more impressive than in 2014 and 2015 whilst still very low compared with 97 in 2013. The concern expressed in the last report that they may be in decline appears to have been allayed. 79 of those 97 passes in 2013 were recorded at one point in Transect 15, a transect that has not been surveyed in any other year and would warrant surveying again to find out whether this was an anomaly or a regular occurrence.

It is still the case that there are fewer signs of noctules than one might reasonably expect and that is of concern, not least because it is a species whose day roosts are notoriously hard to locate.

## 3.7 Leisler's bats

Leisler's bats (*Nyctalus leisleri*) were recorded at Tealham Moor, North Wootton and for the first time at Church Moor. This species has only recently been confirmed to be present in Somerset and a breeding colony confirmed in Taunton Deane. Its presence in widely separated parts of the valley is encouraging.

### 3.8 Barbastelle

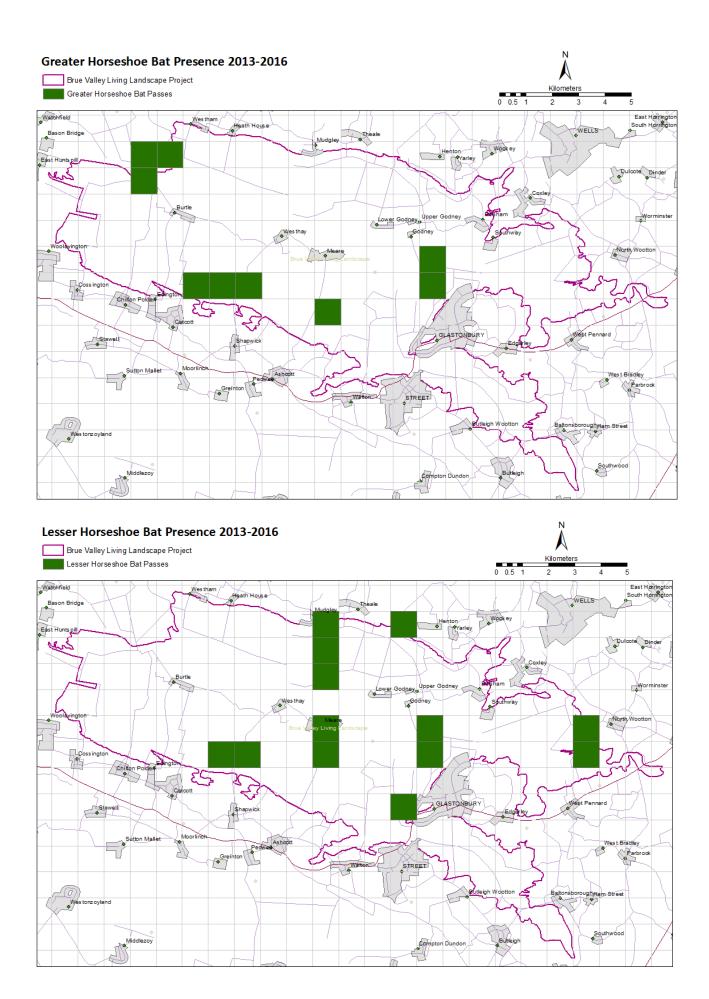
After being recorded in a number of transects in 2015 it is surprising that in 2016 there was only one transect where it was noted. That was however a transect in which Barbastelles had not been recorded before. This is another species which can travel long distances to optimal feeding areas and is also not always easy to identify from recordings. It is never likely to be common on the moors and levels as it breeds in mature woodlands in broken or split branches of ancient trees. There are relatively few such trees in the survey area.

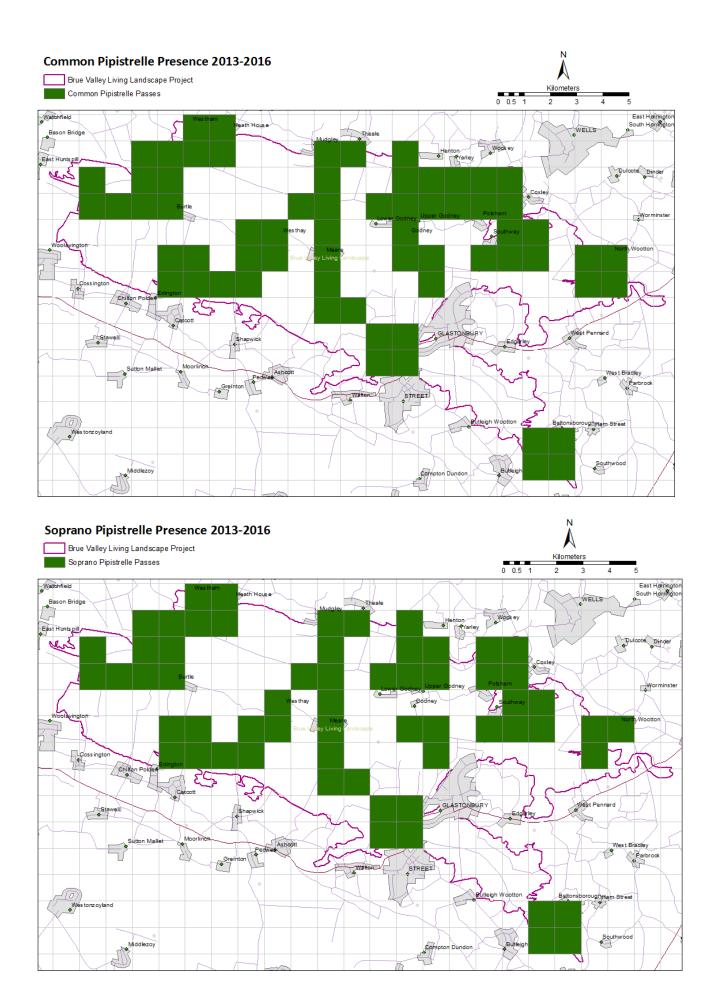
### 3.9 Long-eared bats

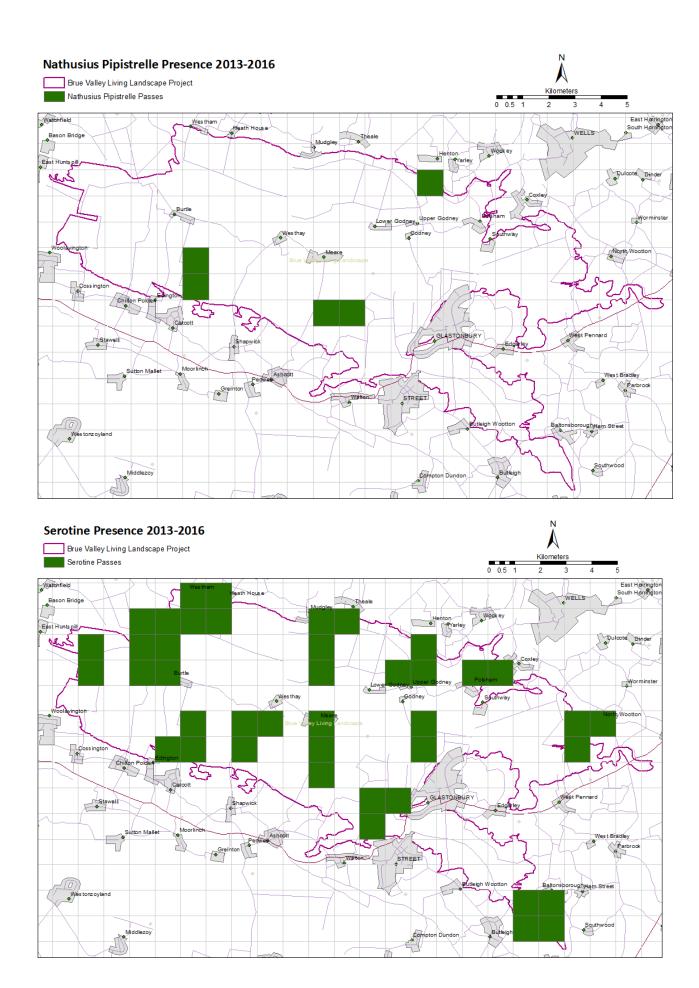
The number of long-eared bat passes has remained fairly consistent through the four years of the surveys. This genus is notoriously hard to record as it has very low volume calls and may not use echolocation to catch its prey. The methodology used in the Big Bat Surveys is likely to under-record this genus and there is also a danger of assigning some *Plecotus* calls to the genus Myotis particularly with frequency division recordings.

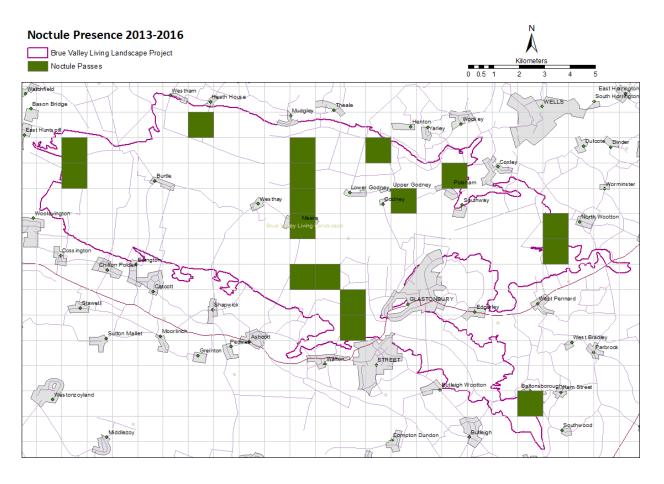
### 4. ACTIVITY MAPS PER SPECIES OVER THE SURVEY AREA

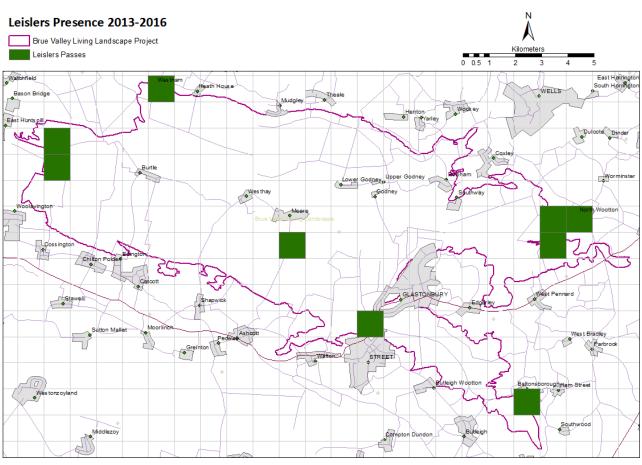
The following maps show the presence of species recorded across the survey area. The results only show presence of bats identified from the recordings and cannot indicate the absence of a particular species as the survey does not cover the entirety of each square kilometre and, consequently, there is the possibility that species may have been missed.

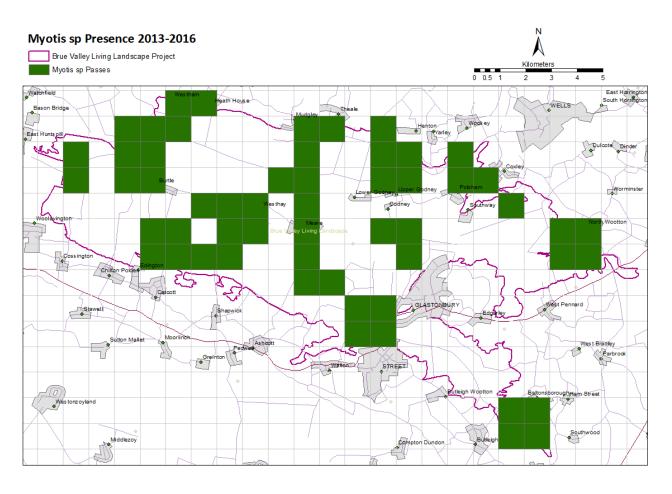


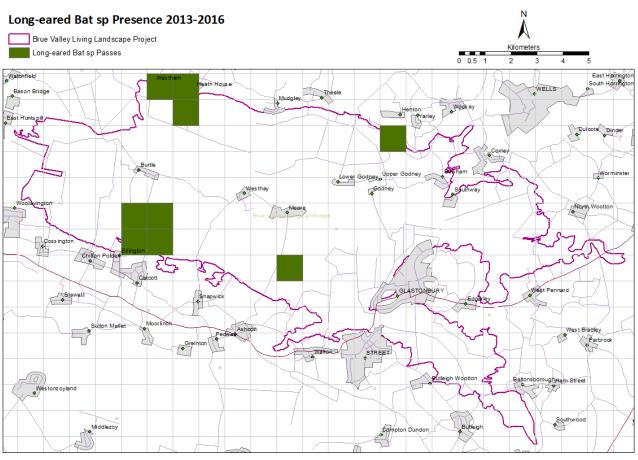


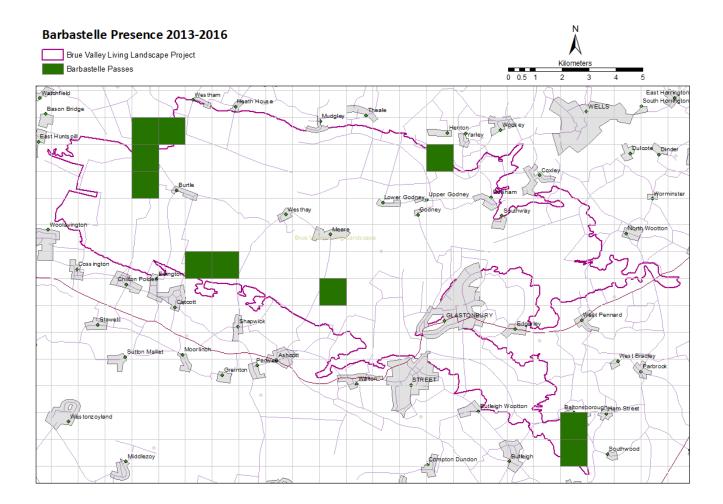












# 5. BAT PASSES RECORDED ALONG EACH TRANSECT ROUTE

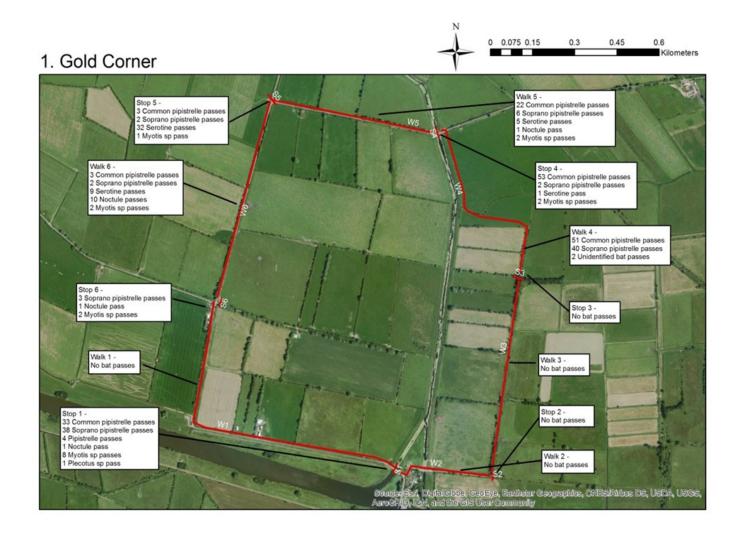
The recordings from each transect were analysed separately and divided into the walk and stop sections shown in the following tables and maps.

### 5.1 Transect 1: Gold Corner

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013						TI	nis route w	as not surv	eyed in 20	13				
2014						TI	nis route w	as not surv	eyed in 20	14				
2015	Common 45 pipistrelle		1	L	7	2				1	. 3	24	1	. 39
	Soprano 55 pipistrelle		8	3 2	. 9	14	1				1	76	7	118
	Pipistrelle sp				3							4		7
	Serotine							1						1
	Leisler's		13	3										13
2016*	Common 45 pipistrelle		33	3				51	53	22	. 3	3		165
	Soprano 55 pipistrelle		38	3				40	2	6	2	2	. 3	93
	Pipistrelle sp		4	1										4
	Serotine								1	5	32	g		47
	Noctule		1	L						1		10	1	. 13
	Myotis sp		8	3					2	2	1	2	. 2	. 17
	Plecotus sp		1	L										1
	Unidentified bat sp							2						2

<sup>\*</sup> The 2016 survey was completed in reverse starting at Stop 6 and finishing at Walk 1.

This transect has only been done once before in 2015. On this occasion it was not fully completed for safety reasons and there are limited data on which to make any observations, most of which are confusing. In 2015 there were three times as many Soprano Pipistrelle passes as those of Common Pipistrelle. In 2016 there were one and three quarters as many Common Pipistrelle passes as Soprano. In 2015 there were no Noctules recorded and only one Serotine but this year showed 32 Serotine passes at one stop point alone and 13 Noctule passes. This might be a factor of undertaking the transect in one direction in 2015 and reverse in 2016 but clearly more information is needed to understand whether this holds true in future years.

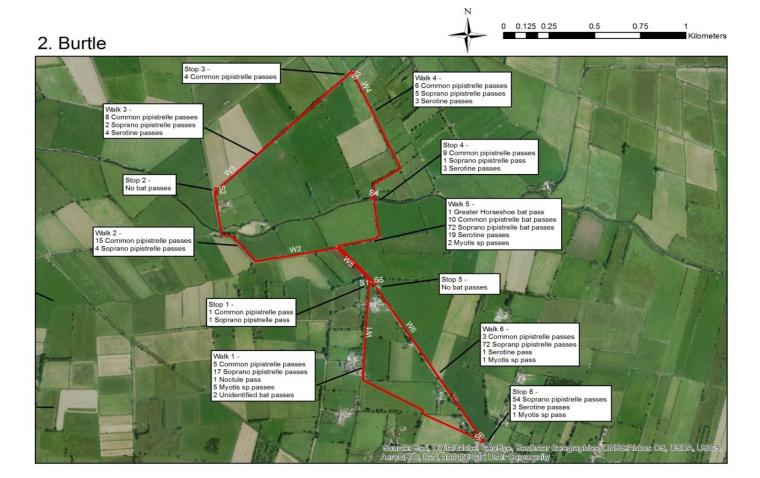


### 5.2 Transect 2: Burtle

Year	Bat species	Transect s	ection											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Lesser horseshoe bat							1	L					1
	Common pipistrelle	10	1	10	1	16		8	3 9	2	. 1	13		71
	Soprano pipistrelle	7	1	8	3	5		1	1 2	1		15	3	46
	Pipistrelle sp			1										1
	Myotis sp			1		1		1	1	5		1		10
	Serotine					10	2						1	13
	Noctule										1			1
	Unidentified bat passes		1					2	2 2					5
2014						Tł	nis route w	as not sur	veyed in 20	14				
2015	Greater horseshoe bat				1			3	3					4
	Common pipistrelle	16		3		45	2	14	1 48	1		8	1	138
	Soprano pipistrelle	18		1		13		8	3 25	18		5		88
	Pipistrelle sp					2				2				4
	Serotine	2		5	6	2	2	2	2					19
	Myotis sp	4						4	1 1			1		10
	Barbastelle	1						1	L					2
	Unidentified bat passes					1	3	2	2					6
2016*	Greater horseshoe bat									1				1
	Common pipistrelle	5	1	15		8	4	. 6	5 9	10		3		61
	Soprano pipistrelle	17	1	4		2		ŗ	5 1	72		72	54	228
	Serotine					4		3	3	19		1	3	33
	Noctule	1												1
	Myotis sp	5								2		1	1	9
	Unidentified bat passes	2												2

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

2016 was the third year for this transect. In contrast with Gold Corner, the transect at Burtle in previous years had twice as many Common Pipistrelle passes as Soprano Pipistrelle, but in 2016 there were 228 Soprano Pipistrelle, and only 61 Common Pipistrelle passes. Most of these were at the start (Stop 6 to Walk 5) and in 2015 most of the pipistrelles were at Walk 3 to Stop 4 so it is possible that there is a difference associated with the time at which those points are reached. There were 33 Serotine passes, 19 of them at Walk 5, which is far more than in previous years and may be related to where livestock was present or had been feeding and dunging. This transect does not seem to have many Myotis bats and it is difficult to see why this should be so. For the second year a Greater Horseshoe Bat was recorded.

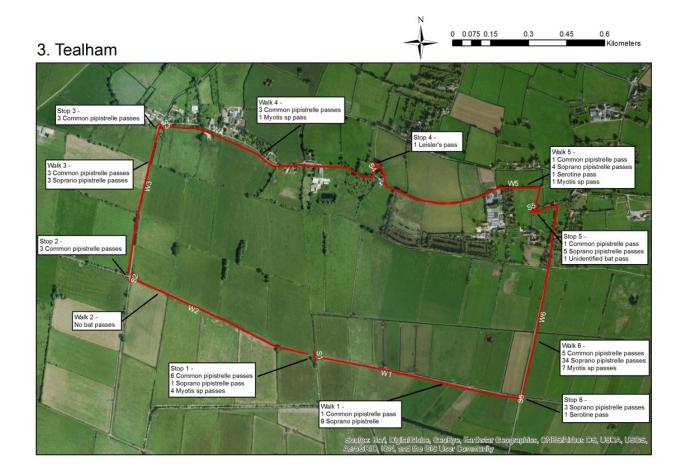


### 5.3 Transect 3: Tealham Moor

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle							3	3 2		2	. 3		10
	Soprano pipistrelle				50	11	1					6	1	69
	Myotis sp					1								1
	Serotine					2						1		3
	Long-eared bat							1				1		2
	Unidentified bat passes				4									4
2014*	Common pipistrelle	2	2 1	. 1		4	10	9	)	1	1			29
	Soprano pipistrelle	3	3 10	1		3	11	. 4	Į.		1	21		54
	Myotis sp			2	. 2	1		1	. 1	. 2				9
	Serotine							2	2	2				4
	Leisler's								1					1
	Unidentified bat passes				1									1
2015	Common pipistrelle			3		1		7	'			1		12
	Soprano pipistrelle			2	1			1		1	2	. 3	1	11
	Myotis sp				1									1
	Serotine			6			1	1	. 1					9
	Long-eared bat											1		1
2016*	Common pipistrelle	1	1 6	5	3	3	3	3	3	1	1	. 5		26
	Soprano pipistrelle	g	9 1			3				4	5	34	3	59
	Serotine									1			1	2
	Myotis sp		4	ı.				1		1		7		13
	Leisler's								1					1
	Unidentified bat passes										1			1

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

We now have 4 years of data. In 2015, remarkably few Soprano Pipistrelles were recorded, but the 59 passes this year is much more like the level of activity present for the other years. The change noted in the 2015 report is not therefore permanent and the question remains of where these bats went to in 2015. For example, was there a slight change in nearby roosts so the bats were not frequenting their usual feeding locations? Here, as well as elsewhere, there were very few recordings of Myotis bats, but there was a Leisler's Bat as there had been in 2014. Only two Serotine passes is a little surprising in a landscape which is cattle grazed.



### 5.4 Transect 4: Catcott Heath

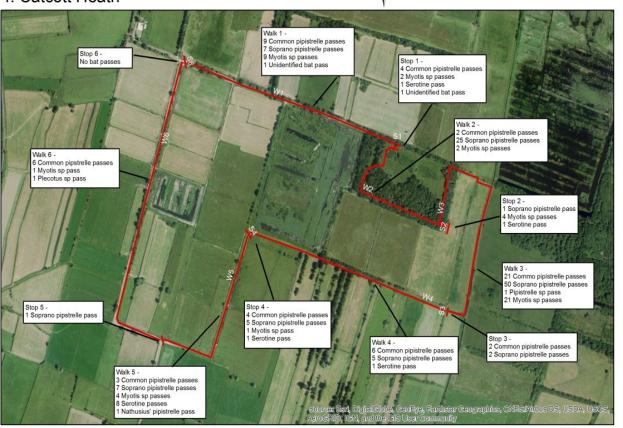
Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Greater horseshoe bat					1								1
	Common pipistrelle					17	11	. 3	2	. 7		4	1	44
	Soprano pipistrelle		1	18	3	16					2			37
	Myotis sp					29				2		3	3	34
	Serotine							1		2				(1)
	Long-eared bat											2	2	2
	Unidentified bat passes				1									1
2014*	Common pipistrelle	ŗ	5 1	. 5	10	8	2	4	. 9	4				48
	Soprano pipistrelle	7	7 3	10	4	. 9		8	4	. 8		1	L	54
	Myotis sp	1	ι 2	2 10	45	3		5	3	4				73
	Serotine			9				1		2				12
	Barbastelle						1							1
	Long-eared bat				1	. 6								7
	Unidentified bat passes				1	. 1								2
2015	Common pipistrelle	1	L		1	10		2				2	2	16
	Soprano pipistrelle	16	13	26	i		3					2	2	60
	Myotis sp				5	2	3	2					1	1 13
	Serotine			1					1	. 20				22
	Long-eared bat												1	<u>l</u> 1
	Nathusius' pipistrelle					1								1
	Unidentified bat passes			1				1			2		1	L 5
2016*	Common pipistrelle	g	) 4	1 2		21	. 2	. 6	4	. 3		6	5	57
	Soprano pipistrelle		7	25	1	. 50	2	. 5	5	7	1			103
	Pipistrelle sp					1								1
	Myotis sp	9	9 2	2 2	4	21			1	. 4		1	L	4/
	Serotine		1	L	1			1	1	. 8				12
	Plecotus sp											1	L	1
	Nathusius' pipistrelle									1				1
	Unidentified bat passes	1	1	L					2					

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

At this transect as at Tealham Moor there was a decline in Common Pipistrelle passes in 2015 which has not continued in 2016. The similarity with the Tealham Moor results raises a number of questions. One pipistrelle which did re-appear in 2015 and 2016 is the much rarer Nathusius Pipistrelle. The low figure for Myotis passes in the previous year was not repeated with 44 passes comparing well with 2013 although 21 of that total were in one section. The anomalous year seems to be 2014 with a total of 73 passes 45 of them at one stop. The commonest of the Myotis species in wetlands, Daubenton's Bat, is not normally thought of as a bat which changes its feeding sites readily so why are these inconsistencies occurring?

# 4. Catcott Heath



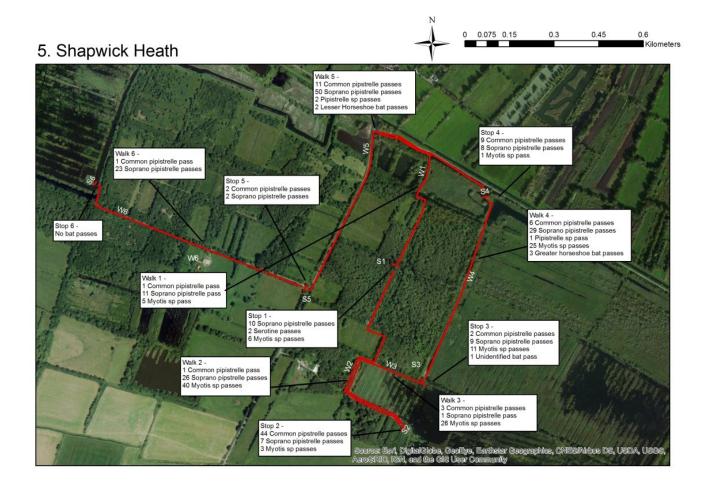


### 5.5 Transect 5: Shapwick Heath

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Greater Horseshoe bat											1		1
	Lesser horseshoe bat			3										3
	Common pipistrelle			4	1	4		22	1	1	1	. 7	8	49
	Soprano pipistrelle		3	71	18	26	12	40	66	12	4	28	52	332
	Pipistrelle sp					1			1		1			3
	Myotis sp			14	3	1	15	30	1			12	2	78
	Unidentified bat passes			6		1	3	3				2	1	16
2014*	Greater Horseshoe bat		3											3
	Lesser horseshoe bat	1				1						1		3
	Common pipistrelle	5		2		2		4	3					16
	Soprano pipistrelle		2	13	37	12	13	4	3	11		14		109
	Myotis sp	7	7	8	3	3	2	17		3				50
	Serotine							1		1				2
	Unidentified bat passes	1		2	2									5
2015	Lesser horseshoe bat											1		1
	Common pipistrelle							2		1	1	2	6	
	Soprano pipistrelle	11	. 1	19	68	6	1	9	1	13		11	39	179
	Pipistrelle sp				2	1								3
	Serotine										1			1
	Myotis sp				2	2		12		2		11		29
	Barbastelle											1		1
	Nathusius' pipistrelle					2								2
	Unidentified bat passes				1		1				1	1		4
2016*	Common pipistrelle	1		1	44	3	2	6	9	11	2	1		80
	Soprano pipistrelle	11	. 10	26	7	1	9	29	8	50	2	23		176
	Pipistrelle sp							1		2				3
	Serotine		2											2
	Myotis sp	5	6	40	3	26	11	25	1			9		126
	Noctule											1		1
	Greater Horseshoe bat							3						3
	Lesser horseshoe bat									2				2
	Unidentified bat passes						1							1

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

This transect is always very rich in bat activity and whilst 176 Soprano Pipistrelle passes is not quite the 332 there were in 2013 it is a typically high figure. What was higher this time was the activity of Common Pipistrelles at over 80 passes. Both Horseshoe species were recorded, but no Nathusius Pipistrelles or Barbastelles in 2016. The large amount of open water on this transect is likely to account for the consistently high number of Myotis passes but 126 was particularly high. There is a noticeable consistency in where these bats are with a concentration of passes in Walk 2 to Walk 4 and at Walk 6. Myotis passes were low in 2015 but that has not proved of any lasting significance and could be a factor of being an alternate year. Perhaps this is a transect of unusually high pulses of bat activity shown by Soprano Pipistrelles in 2013 and Myotis passes in 2016.



# 5.6 Transect 6: Westhay Village

Year	Bat species	Transect s												
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle			12	5	32	5	5	3		4	5	11	82
	Soprano pipistrelle								1		2		14	17
	Pipistrelle sp										4			4
	Myotis sp		2		1	2			3	18				26
	Serotine											1	1	2
	Unidentified bat passes			1	2	1		4		1		2	1	12
2014			•	•	•	Th	nis route w	as not surv	eyed in 20	14	•	•	•	
2015			•	•		Tł	nis route w	as not surv	eyed in 20	15				
2016						Т	his route v	vas not sur	vyed in 20:	16				

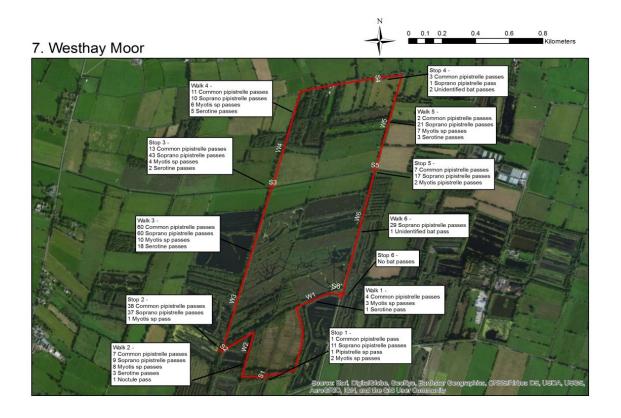
Sadly it has not proved possible to repeat this transect since the initial survey in 2013.

### 5.7 Transect 7: Westhay Moor

Year	Bat species	Transect s	ection											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle	3		2		6	2	. 9		2	1	. 3	1	29
	Soprano pipistrelle		12	17	17	29				4	1	18	2	100
	Pipistrelle sp		1			1						2		4
	Myotis sp			1		4					1			6
	Serotine						1	1						2
	Unidentified bat passes						1	1	1	. 2				5
2014*	Lesser horseshoe bat		2				1	. 2			1			6
	Common pipistrelle	4	27	64	24	82	1	. 3	2	6	4	. 3		220
	Soprano pipistrelle	46	114	132	38	89	3	5		3	13	43		486
	Pipistrelle sp			3		3	1							7
	Myotis sp	18	4	12	3	21	1	18	1	. 9	2	. 2		91
	Serotine			1				4		1				6
	Noctule					1								1
2015	Common pipistrelle			1	19	15	3	5	1	. 2	38	17	4	105
	Soprano pipistrelle	5	11	49	59	60	13	3		7	49	23	6	285
	Myotis sp		1	3		2	4	6			5	3		24
	Serotine			1		1		2		1			1	6
	Unidentified bat passes			2			3			1			1	7
2016*	Common pipistrelle	4	1	7	38	60	13	11	3	2	7			146
	Soprano pipistrelle		11	9	37	60	43	10	1	21	17	29		238
	Pipistrelle sp		1											1
	Myotis sp	3	2	8	1	10	4	6		7	2			43
	Serotine	1		3		18	2	. 5		3				32
	Noctule			1										1
	Unidentified bat passes							1	2			1		4

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

Common Pipistrelles were back to the sort of level of activity one might expect from the 2014 and 2015 surveys. Why there were only 4 passes in 2013 remains a mystery, but at least we can now confirm that that year was an anomaly. There are, as always, a great many more Soprano Pipistrelle passes than anything else but 32 Serotine passes was exceptional and Myotis bats recorded their best year to date.

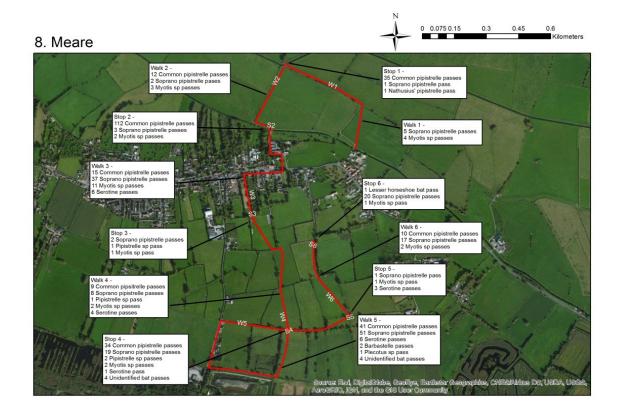


### 5.8 Transect 8: Meare

Year	Bat species	Transect s	ection											
	,	Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle					13	3	3	1	5	1		1	24
	Soprano pipistrelle				3	8	5	5		1			2	19
	Myotis sp				3	26	5	10	)	2		1		47
	Serotine					5								5
	Noctule					3								3
	Unidentified bat passes					6				1				7
2014*	Lesser horseshoe bat						2	2		2				4
	Common pipistrelle	12	. 3	18	10	5				21				69
	Soprano pipistrelle	6	8	6	5	3	2	2	2	52	4		4	92
	Pipistrelle sp		1											1
	Myotis sp	1				1			2	13	1			18
	Serotine				5	7		1		3				16
	Noctule	1												1
	Leisler's									1				1
	Unidentified bat passes									3				3
2015	Common pipistrelle			2	. 2	9		7	,	1	. 4	. 7		32
	Soprano pipistrelle				20		1		1	1	. 5	2	1	31
	Pipistrelle sp					1								1
	Serotine			2		14			1	1		1		19
	Myotis sp				9	3		1		1			1	15
	Unidentified bat passes			2	. 1									3
2016*	Lesser horseshoe bat												1	1
	Common pipistrelle		35	12	112	15		9	34	41		10		268
	Soprano pipistrelle	5	1	. 2	. 3	37	2	2 8	19	51	. 1	. 17	20	166
	Pipistrelle sp						1	. 1	. 2					4
	Myotis sp	4		3	2	11	1	. 2	2		1	. 2	1	29
	Serotine					6		4	1	6	3			20
	Barbastrelle									2				2
	Plecotus sp									1				1
	Nathusius' pipistrelle		1											1
	Unidentified bat passes					1			4	4				9

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

These results show a huge increase in bat activity over all previous years with no less than 268 Common Pipistrelle passes, 166 Soprano Pipistrelle passes and 28 passes by Myotis species. It was a particularly warm and humid night with a lot of insects on the wing. The large number of Soprano Pipistrelle passes at Walk 5 was repeated and this looks very like a timing issue as we surmised in the 2015 report. In 'reverse years' the bats are there early on but have gone elsewhere before that point is reached in 'normal' years. However, the presence of Lesser Horseshoe Bats in even years but not odd ones is unlikely to be the same syndrome as they appear in the middle of the transect. The Nathusius Pipistrelle is a useful record for this site, but on this occasion no Leisler's Bats were found.

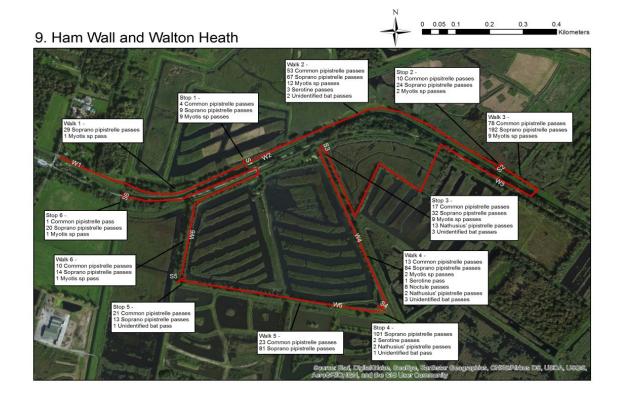


### 5.9 Transect 9: Ham Wall and Walton Heath

Year	Bat species	Transect s	ection											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Greater horseshoe bat									1				1
	Common pipistrelle								1	3	7	4	2	17
	Soprano pipistrelle			7		27	7	18	15	34	32	54	2	196
	Myotis sp								1	5	7	3		16
	Serotine						1							1
	Noctule								7	1	1			9
	Unidentified bat passes						1				3			4
2014*	Common pipistrelle	5	7	11	4	11	10	7		1				56
	Soprano pipistrelle	21	7	40	6	59	8	22	4	51	11	48	2	279
	Nathusius' pipistrelle		1		1	4								6
	Myotis sp	1	1	13	2	2	2	. 4		1	3	2		31
	Unidentified bat passes						1				2			3
2015	Greater horseshoe bat							1						1
	Common pipistrelle			1	1	4	1	. 19	16	10	31	50	1	134
	Soprano pipistrelle		1	17	3	27	3	30	22	63	41	123	7	337
	Nathusius' pipistrelle										5	2		7
	Serotine			1					1	1	1			4
	Noctule				1	1								2
	Myotis sp			1			1	. 3	9	5	5	6	1	31
	Long-eared bat sp							1						1
	Barbastelle										2			2
	Unidentified bat passes	2		1			1		1		2		2	9
2016*	Common pipistrelle		4	53	10	78	17	13		23	21	10	1	230
	Soprano pipistrelle	29	9	67	24	192	32	84	101	81	13	14	20	666
	Myotis sp	1	9	12	2	9	9	2				1	. 1	46
	Serotine			3				1	. 2					6
	Noctule							8						8
	Nathusius' pipistrelle						13	2	. 2					17
	Unidentified bat passes			2			3	3	1		1			10

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

Walk 1 failed to record in frequency division and we have had to rely on the written form for that part of the transect. The management of this reserve for birds by the RSPB has clearly had a very beneficial effect for bats as well. This is surely the home of Soprano Pipistrelles in Somerset with 196 passes in 2013, 279 in 2014, 337 in 2015 and a staggering 666 in 2016. This apparent increase does not appear to be at the expense of other small bat species with over 200 Common Pipistrelle passes and 46 Myotis ones. It is also an excellent place to find Nathusius Pipistrelles with 17 passes in 2016.



# 5.10 Transect 10: Yeaps Bridge

Year	Bat species	Transect s	ection											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle			6	4	9	1	1	. 2			10	36	69
	Soprano pipistrelle	3	4	72		13	1		1			6	1	101
	Pipistrelle sp											2	3	5
	Myotis sp					3		8	2				6	19
	Serotine					3		1						4
	Noctule		1											1
	Unidentified bat passes			1		5			1					7
2014*	Lesser horseshoe bat											1		1
	Common pipistrelle	17	1	31	1	6		32	32	14	1	1		136
	Soprano pipistrelle	10	4	20		8		17	73	3	29	9		173
	Nathusius' pipistrelle									2				2
	Pipistrelle sp	1								5				6
	Myotis sp	1	. 1			5		7	5		1			20
	Serotine									29				29
	Unidentified bat passes			1		2		3	3	2		1		9
2015	Common pipistrelle	1	. 2	12		2	1	52	2 4	. 2	1		1	78
	Soprano pipistrelle	33	89	52		2	1	10	59	2	2	30	1	281
	Serotine			3										3
	Myotis sp	5		8		2		4	4					23
	Long-eared bat sp									2				2
	Barbastelle								3					3
	Unidentified bat passes	2		3					1			1		7
2016						Th	is route w	as not surv	veyed in 20	)16				

<sup>\*</sup> The 2014 survey was completed in reverse starting at Stop 6 and finishing at Walk 1.

# 5.11 Transect 11: East Backwear

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Greater horseshoe bat									1				1
	Lesser horseshoe bat							2						2
	Common pipistrelle				2	2		5		1		32	. 1	41
	Soprano pipistrelle				1	. 11	. 1	10				3	3	26
	Pipistrelle sp					2		1				2	2	5
	Myotis sp							9	2	2 1	1 2	2 21		35
	Serotine				1			1						2
	Noctule		1	1										1
	Unidentified bat passes			:	1 1									2
2014						TI	nis route w	as not sur	eyed in 20	014				
2015			This route was not surveyed in 2015											
2016			This route was not surveyed in 2016											

Sadly it has not proved possible to repeat this transect since the initial survey in 2013.

# 5.12 Transect 12: Fenny Castle

Year	Bat species	Transect s	ection											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle	3	2	38	2	7	3	2		2	1	. 65	20	145
	Soprano pipistrelle			14	1	1	1					28	8	53
	Myotis sp			9			2		7			18	3	39
	Serotine			3								6	2	11
	Noctule	1												1
	Unidentified bat passes					1								1
2014			This route was not surveyed in 2014											
2015			This route was not surveyed in 2015											
2016		This route was not surveyed in 2016												

Sadly it has not proved possible to repeat this transect since the initial survey in 2013.

# 5.13 Transect 13: Long and Short Drove

Year	Bat species	Transect s	ection												
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total	
2013	Pipistrelle sp			22	3	6	8	2	2	15	2	. 5	6	71	
	Myotis sp		5											5	
	Unidentified bat passes		1 3 2											6	
2014						Th	nis route w	as not surv	eyed in 20	)14					
2015			This route was not surveyed in 2015												
2016			This route was not surveyed in 2015  This route was not surveyed in 2016												

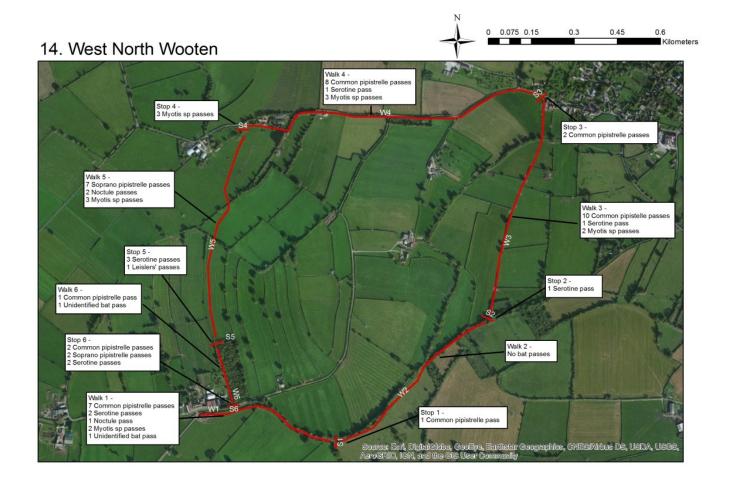
Sadly it has not proved possible to repeat this transect since the initial survey in 2013.

### 5.14 Transect 14: West North Wooton

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Lesser horsehsoe bat			1	1 2									3
	Soprano pipistrelle							2	1	. 2	1	. 1		7
	Pipistrelle sp									2				2
	Myotis sp	2	2	31	43	14	6	11	25		3	9	1	145
	Serotine							1	1					2
	Noctule			1	L									1
2014*	Common pipistrelle					6	3	4	. 2	1		3		19
	Soprano pipistrelle			2	2	1		2		4		3		12
	Pipistrelle sp								6					6
	Myotis sp			18	3 7	2		9	2	1				39
	Serotine						1		1					2
	Noctule									1				1
	Leislers'					1								1
2015	Lesser horsehsoe bat			1	L			1						2
	Common pipistrelle	3	3 4	2	2 3	1	4	26		30		4	1	78
	Soprano pipistrelle	13	3 4	8	3			5	4	. 9	22			65
	Serotine		3	7	7	1		2		1				14
	Noctule	3	3											3
	Leislers'							1						1
	Myotis sp	1	1 10	96	5 1			5	1	11		5	18	148
	Unidentified bat passes									1				1
2016*	Common pipistrelle	7	7 1			10	2	8				1	2	31
	Soprano pipistrelle									7			2	9
	Serotine	2	2		1	. 1		1			3		2	10
	Noctule	1	l							2				3
	Myotis sp	2	2			2		3	3	3				13
	Leislers'										1			1
	Unidentified bat passes	1	ι									1		2

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

This transect is perhaps one of the most puzzling. In odd years, we record about 140 Myotis passes and in even ones fewer than 40. In the excellent batting conditions of 2016, one might expect this pattern to break down but it did not and only 13 passes were recorded. It cannot be a feature of the time at which the choicest points are reached because these bats are spread across all parts of the transect. 2014 was a poorer year than 2013 and 2015 for all species but 2016 was certainly not. Leisler's Bats were recorded again and the activity of Serotines is consistent. That only makes the violent fluctuations in Myotis passes all the more puzzling.



# 5.15 Transect 15: Hulk Moor

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Lesser horseshoe bat									1				1
	Common pipistrelle					14	. 8	17		5		8	3	55
	Soprano pipistrelle					41	. 22	33	6	5	1	5		113
	Myotis sp					11	. 4	7	1	3	2	7	'	35
	Serotine					7			1					8
	Noctule					79							1	. 80
	Unidentified bat passes							3						3
2014			This route was not surveyed in 2014											
2015			This route was not surveyed in 2015											
2016			This route was not surveyed in 2016											

Sadly it has not been possible to repeat these transects since the initial survey in 2013.

### 5.16 Transect 16: South Moor

Year	Bat species	Transect	section													
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total		
2013			This route was not surveyed in 2013													
2014			This route was not surveyed in 2014													
2015			This route was not surveyed in 2015													
2016			This route was not surveyed in 2016													

This transect has been set up since the start of the surveys in 2013 but has not yet been included.

### 5.17 Transect 17: Church Moor

Year	Bat species	Transect	section											
		Walk 1	Stop 1	Walk 2	Stop 2	Walk 3	Stop 3	Walk 4	Stop 4	Walk 5	Stop 5	Walk 6	Stop 6	Total
2013	Common pipistrelle					3	37	29	57	11	3	5	2	147
	Soprano pipistrelle			7	43	24	38	14	35	1	1	1		164
	Myotis sp						6	1			4	. 3	3	14
	Serotine			2						1	3			6
	Unidentified bat passes					1				1				2
2014*	Common pipistrelle		4	15	40	64	20	78	2		24	21		268
	Soprano pipistrelle	22	41	4		10	12	29		1	5	2	. 1	127
	Myotis sp		3	1		1	1	7		1	30	5	5	49
	Serotine	1		2										3
	Unidentified bat passes											1		1
2015	Common pipistrelle	3	2	2	3	38	16	15	59	15	6	6	5 2	167
	Soprano pipistrelle	46	44	10		23	3	1	. 33	2		1		163
	Myotis sp					15	1	3		2	1	1	. 2	25
	Serotine		21	7				1	. 2		5	1	. 1	38
	Barbastelle			4										4
	Unidentified bat passes	1	. 1	1		2			8				5	18
2016*	Common pipistrelle	39	31	29	5	139	30	27				10	)	310
	Soprano pipistrelle	19	45	58	87	138	19	47	2		10	8	3	433
	Pipistrelle sp											1		1
	Serotine	3	3	9	1	. 5	2	2		1	1			24
	Noctule									2	1		1	4
	Myotis sp			19	2	. 9	50	13		3	10	2	2	112
	Leislers'	3	3							2				5
	Unidentified bat passes		2				1	2			2			7

<sup>\*</sup> The 2014 and 2016 surveys were completed in reverse starting at Stop 6 and finishing at Walk 1.

This site, somewhat removed from the conservation corridor of the Avalon Marshes, has none the less proved very good for bats and the totals of passes for the two common pipistrelle species at 310 and 433 for Common and Soprano respectively are outstanding. In complete contrast to North Wootton this transect has a sudden fluctuation in Myotis figures in the opposite direction, with 14 passes in 2013, 49 and 38 in the next two years and in 2016 a total of 112 passes. There were no Barbastelles recorded but Leisler's Bats were recorded for the first time and in two different parts of this transect.

