NORTH MERSEYSIDE LOCAL WILDLIFE SITES (LWS)

2022 MONITORING RESULTS IN RELATION TO BATS

1.0 Introduction

1.1 In North Merseyside (Knowsley, Liverpool, St. Helens and Sefton) Local Wildlife Sites (LWS) are designated using the North Merseyside Local Sites designation guidelines. (LWSG) However, within these guidelines bats have traditionally been attributed very little attention; which is due largely to a lack of systematic records and monitoring of the LWS's. Furthermore, the North Mersey Biodiversity Action Plan (NMBAP) included a section for bats; it was published in September 2001 by the Merseyside Biodiversity Group, which is chaired by Merseyside Environmental Advisory Services (MEAS) & reviewed in 2008. Notwithstanding the publication of this document very little has been achieved in context with its aims and objectives with regards to bats. This lack of success has largely been due to a shortage of volunteers who were able to fully enact the contents of the NMBAP, however at limited sites monitoring has been undertaken, which has provided a degree of baseline data.

1.2 A total of 265 LWS are listed in North Merseyside, out of that figure there are only five that include bats; this is significantly disproportionate, despite many of the sites containing suitable habitat for foraging or/and commuting activity. The "health" of a LWS could, arguably be assessed on its ability to support "indicator species"[1], one of which being bats. (*Chiroptera*) It may therefore be useful to take into consideration the presence of "indicator species" at a LWS in conjunction with and not only the species or habitats that they have been designated for.

1.3 The LWSG is now subject of a review process which will investigate the way in which LWS are assessed and designated. The Merseyside & West Lancashire Bat Group (MWLBG) are the organisation that historically gathered and collated bat records for Merseyside; however, in recent years Merseyside BioBank have taken over the role off data collation.

2.0 Current and Proposed Monitoring

2.1 Clearly the degree and level of LWS's monitoring, in respect to bats, will invariably depend on a sufficient number of volunteers being capable of undertaking regular and systematic monitoring surveys, which will require a sufficient number of years on which to base sound and robust conclusions. However, by default, monitoring of bat activity ether at roost sites or habitats presents its own challenges, notably due the nocturnal lifestyle of bats and their mobile and transient characteristics.

2.2 Similar to general LWS monitoring, very little bat data has been gathered in order to ascertain any population bat trends within the Merseyside Region or to evaluate the value of LWS's in respect to bats. Fortunately, within Merseyside two sites i.e., a hibernacula & bat box scheme has provided some data that could be used in conjunction with future LWS monitoring. Equally so the results could be compared to national trends that are being gathered by the long running National Bat Monitoring Programme (NBMP) [2]

2.3 Given the potentially limited number of volunteers that are able to commit to regular and ongoing surveys it stands to reason that in terms of monitoring/assessing LWS's are initially targeted in respect to the ease of 1) land owner consent 2) unrestricted access 3) nature of the terrain 4) the ability to undertake repeatable surveys. With regards to attaining a sufficient and meaningful level of data it is anticipated that a continual five-year term of monitoring is required to obtain a realistic and sustainable approach to achieving that objective.

---

[1] Indicator species are single species or groups of species used to represent other species or aspects of the environment that are too difficult, inconvenient, or expensive to monitor directly (Landres et al. 1988).

[2] Bat Conservation Trust: The National Bat Monitoring Programme has been running since 1996. It gives BCT and government, the information needed to help inform bat conservation.

2.4 The first-year monitoring surveys (2022) attracted a sufficient level of interest that allowed a selection eight locations which incorporated habitat, roost, or a combination of both in varying geographical locations and are shown below: -

SITE	LOCATION	FEATURE	LWS
Carr Mill Dam	St Helens	Habitat	Yes
Lunt Meadows	Sefton	Habitat	No
Ince Blundell	Sefton	Habitat & Roost	Yes
Speke Hall	Liverpool	Habitat & Roost	Yes
Croxteth Hall	Liverpool	Habitat &Roost	Yes
Tarbock	Knowsley	Habitat	No
Knowsley Park	Knowsley	Habitat & Roost	Yes
Dibbinsdale	Wirral	Habitat & Roost	Yes

3.0 Monitoring Methodology

3.1 Following site selection teams were allocated to a specific site following which, and where necessary, a daytime visit was conducted to familiarise the terrain and configure the survey route along with the identification of any limitations or hazards. In addition, a generic risk assessment was produced for all participants. The objectives of the surveys were to record bat activity and where possible identify species using walked transect methodology and at previously identified "stopping points" record the number of "bat passes"[3]. It should be noted however that the number of passes does not necessarily give an indication of bat numbers but provides a sample of bat activity at a given location; the individual transect routes and results are shown in Appendix 1.

3.2 In context with roost observations surveyors adopted positions that allowed full coverage of the potential roost feature/s (PRF's). The timing of the surveys took place within the main active period of bats, at a time when maternity colonies have formed / returned to summer roosts and bats are in a highly active and social stage. The detection of bats was aided with electronic bat detectors that enable the locating and recording of the high frequency calls that are emitted by bats; echolocation calls were subsequently analysed using computer software to verify field observations. Additionally at some sites, particularly where the presence of late emerging bat species was possible, night vision equipment was deployed.

4.0 Summary of Results

4.1 Generally the surveys were undertaken without any significant problems and as such the initial monitoring surveys can be considered as being successful in achieving the objectives. As anticipated the highest number of bat recordings was attributed to the Common Pipistrelle (*Pipistrellus pipistrellus*) which is the most frequently encountered species in rural and urban connotations. Two of the sites; namely Lunt Meadows and Ince Blundell recorded the most variation of species; not surprisingly the habitat at both sites provides a range of suitable features with regards to the presence of invertebrates; the sole prey of UK bats. It was surprising that at Dibbinsdale species diversity and bat passes were low, despite the fact that it exhibits what can be considered as being high value foraging/commuting habitat. It should be noted however that two survey nights at any given site, in context with the number of nights that bats are active, is significantly low. Carr Mill Dam appears to have the highest concentration of bats but limited species; Soprano pipistrelle was most frequently encountered which ties in with this species tendency to prefer riparian habitat.

[3] A bat pass can be defined as the occurrence of a single or several bat calls during a 5-s interval (Kerbiriou et al., 2019a;Millon et al., 2015).

4.2 At three sites i.e. Knowsley Safari Park, Croxteth Hall Old Stables and Ince Blundell Old Hall, Brown long eared roosts were recorded in buildings where they have previously been located; at Croxteth numbers appear to be stable, at Knowsley Safari Park numbers have fluctuated over the years e.g. 10-39. Pipistrelle bats frequently change roosts and typically at one KSP roost bats were absent over the two survey dates. Ince Blundell survey revealed similar BLE numbers to that from previous years. Within the Ince Blundell estate four buildings are used by this species including a maternity colony, clearly the estate provides not only high value roost opportunities but also high value woodland foraging habitat; the presence of these two factors is clearly productive for the Brown long eared bat. The probable presence of Natterers bat is of value as this species is rare in Merseyside. Whilst during the Carr Mill Dam survey bat passes were not specifically recorded at all stopping points the level of bat activity was considered to be constant with several species recorded.

4.3 Between survey teams there were some minor recording differentials in the survey methodology, however it is feasible that this can be adequately addressed for the 2023 survey season to ensure more consistency. The current methodology i.e. transects, recording bat passes and roost counts probably represents the most consistent way to look at trends in localised bat populations in Merseyside.

5.0 Future & Alternative Monitoring Methods

5.1 For sites that are used by Brown long eared bats the use of night vision equipment, if not already being used, should increase the emergence detection of this late emerging species. It is acknowledged that the monitoring of LWS's in respect to bats faces challenges, notably in terms of the number of nocturnal surveys that can be attained, the mobile and transient nature of bats; consequently monitoring will always be limited to some degree. Following the five-year monitoring of the current sites the protocol would logically be to select a different set of locations. However, in the interim and future period a different approach needs to be adopted which is repeatable and sufficiently robust on which to base the sound conclusions relative to favourable condition of a LWS in context with bats. To this end the following bullet points could be utilised that would include a daytime visit to the LWS as an alternative to dusk surveys and the aim would be to establish: -

- Value and diversity of habitat in relation to bats
- Known or potential roost/s close to the site e.g., built structures or trees
- Known/potential roost opportunities e.g., built structures or trees on the site
- Characteristics of built structures or trees
- Species known to be present in the locality
- Potential presence of species to be present in a locality based on habitat features & geographical range
- Distance of potential roost features close to an existing LWS or potential LWS
- Connectivity from potential roost features to an existing LWS or potential LWS

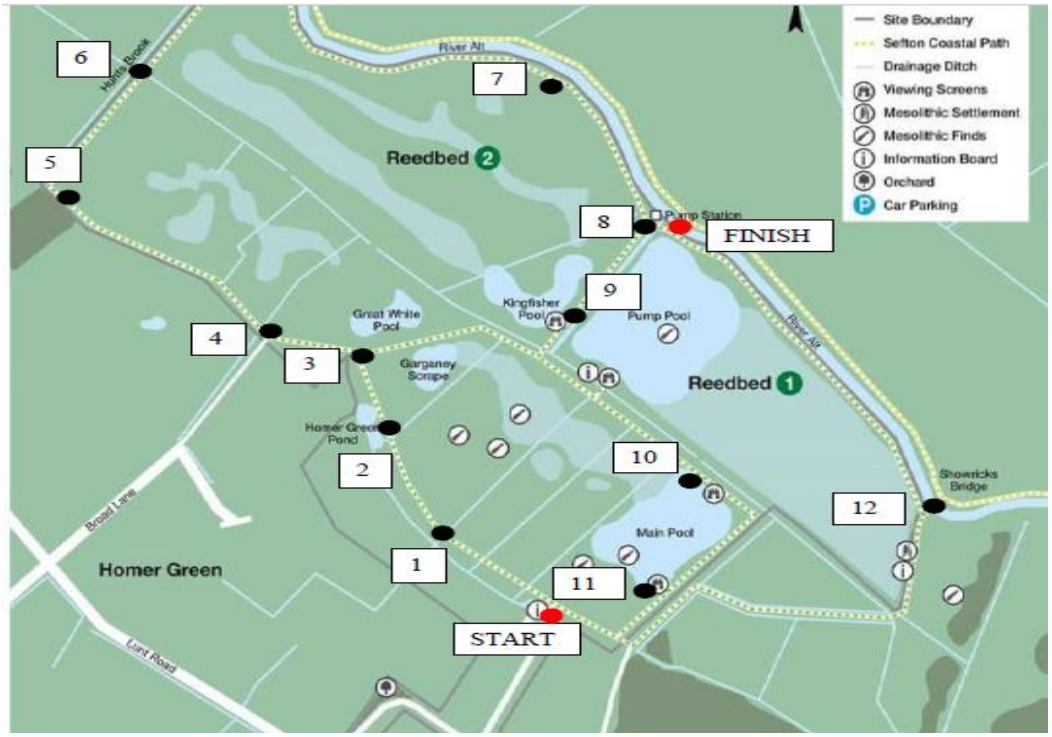
5.2 During and following the site visit a points system could be attributed to each of the above features with a target number to achieve the inclusion of bats as a species within the LWS designated criteria. This would be a similar approach to that of "Valuing Bats in Ecological Impact Assessment"[4] (CIEEM) Alternatively the inclusion criteria could be based purely on the presence of suitable bat habitat features.

[4] CIEEM In Practice December 2010: *Stephanie Wray CEnv FIEEM*, David Wells CEnv MIEEM**, Emma Long MIEEM* and Tony Mitchell-Jones MIEEM*** *Cresswell Associates**David Wells Ecology ***Natural England*

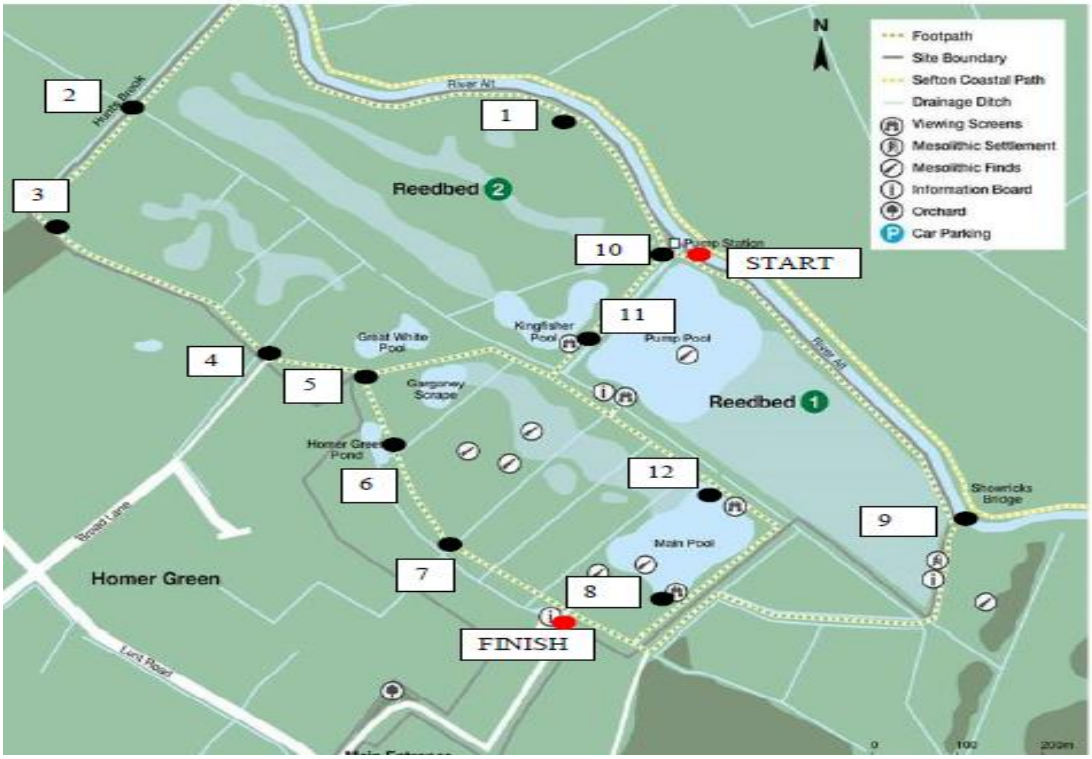
Appendix 1: Survey Results

2022 Merseyside Local Wildlife Monitoring

Lunt Meadows: Transect Routes



Transect 1



Transect Route 2

Transect 1 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
11.6.2022	21:40	23:57	Dry	4	16C	15C	21:40
Surveyors: Des Ney, Daniel Finegan, Liam Quarton							

STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1	8	Noctule	Foraging
2	3	Noctule	Foraging
3	2	Noctule	Foraging
4	0	-	-
5	4	P45	Foraging
	8	Noctule	Foraging
6	5	P55	Foraging
7	0	-	-
8	4	P45	Foraging
9	1	P55	Foraging
10	3	P45	Foraging
	1	P55	Foraging
11	0	-	-
12	1	P45	Foraging
	1	Noctule	Foraging

Total C Pipistrelle:	12
Total S Pipistrelle:	7
Total Noctule:	22
Total passes:	**41**

Transect 2: Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
7.8.2022	21:00	22:40	Dry	1	18C	16C	20:53
Surveyors: Stan Irwin**,** Des Ney, Daniel Finegan							

STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1	1	Noctule	Foraging
2	3	Noctule	Foraging
2	2	P45	Foraging
3	2	Noctule	Foraging
3	3	P45	Foraging
4	2	Noctule	Foraging
5	1 2	Noctule Whiskered/Brandt's	Foraging Foraging
6	2	P55	Foraging
	1	P45	Foraging
7	1	Noctule	Foraging
8	Continuous	P45	Foraging
	1	Noctule	Foraging
	2 2	P55 Daubenton's	Foraging Foraging
9	1	P55	Foraging
10	-	-	Foraging
11	-	-	-
12	1	P45	Foraging

Total C Pipistrelle:	7 + Continuous C.Pipistrelle at SP 8
Total S Pipistrelle:	5
Total Noctule:	10
Total Daubenton's	2
Total WB	2
Total passes:	**26 + Continuous C.Pipistrelle at SP 8**

Dibbinsdale: Transect Routes 1 & 2

Transect 1 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
11.6.2022	21:35	2230	15% Dry	2	15C	15C	21:40
Surveyors: Emily Clark, Joe Whittick							

STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1	1	P55	Brief pass
2	0	Noctule	Foraging
3	0	Noctule	Foraging
4	0	-	-
5	0	-	-
6	1	Daubenton's	Foraging over water
7	1	P45	Brief pass
8	1	Myotis	Foraging
9	1	P45	Foraging
10	0	-	-
11	1	P55	Foraging
12	0	-	-

Total C Pipistrelle:	2
Total S Pipistrelle:	2
Total Daubenton's:	1
Total Myotis:	1
Total Passes:	6

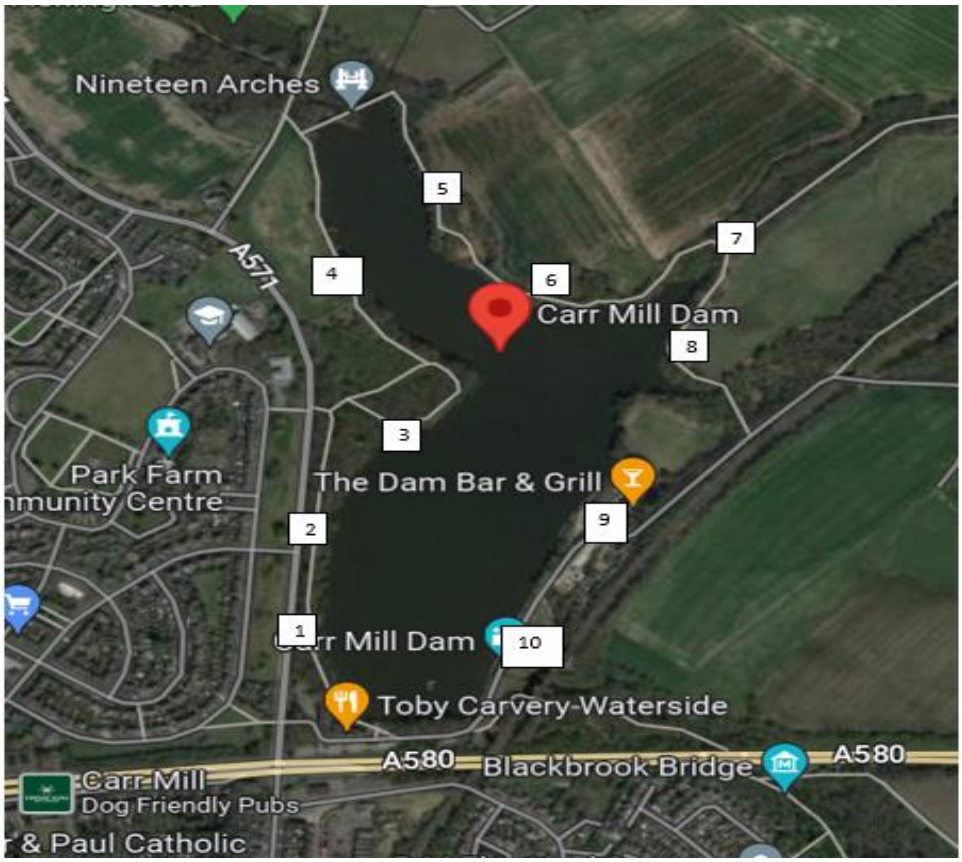
Transect 2: Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
20.7.2022	21:30	2300	15% Dry,	2	17C	17C	21:30
Surveyors: Emily Clark, Joe Whittick, Jennifer Manley							

STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1	0		
2	0		
3	0		
4	0		
5	0		
6	1	P45	Foraging over water
7	0		
8	0		
9	0		
10	0		
11	0		
12	0		

Total C Pipistrelle:	1
Total Passes:	1

Carr Mill Dam: Transect Routes



Transect 1

Transect 2

Carr Mill Dam: Transect Results

Transect 1 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
21.6.2022	21:30	2330	Clear Dry	0	19C	19C	21:45
Surveyors: Charlie Liggett & Rachael Rhodes							

STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1	2	Common pipistrelle	Foraging
2	2	Soprano pipistrelle	Foraging
3	0	Noctule	Foraging
4	0	-	-
3	1	Soprano pipistrelle	Foraging
4	Continuous	Soprano pipistrelle, Noctule	Foraging
5	Continuous	Soprano pipistrelle	Foraging
6	Continuous	Soprano pipistrelle,	Foraging
7	Continuous	Noctule, Soprano pipistrelle, Daubenton's	Foraging
8	Continuous	Noctule, Soprano pipistrelle	Foraging
9	Continuous	Soprano pipistrelle, Noctule	Foraging
10	0		
11	0		
12	0		

Bat activity recorded continually after Stopping Point 2 as opposed to spot counts

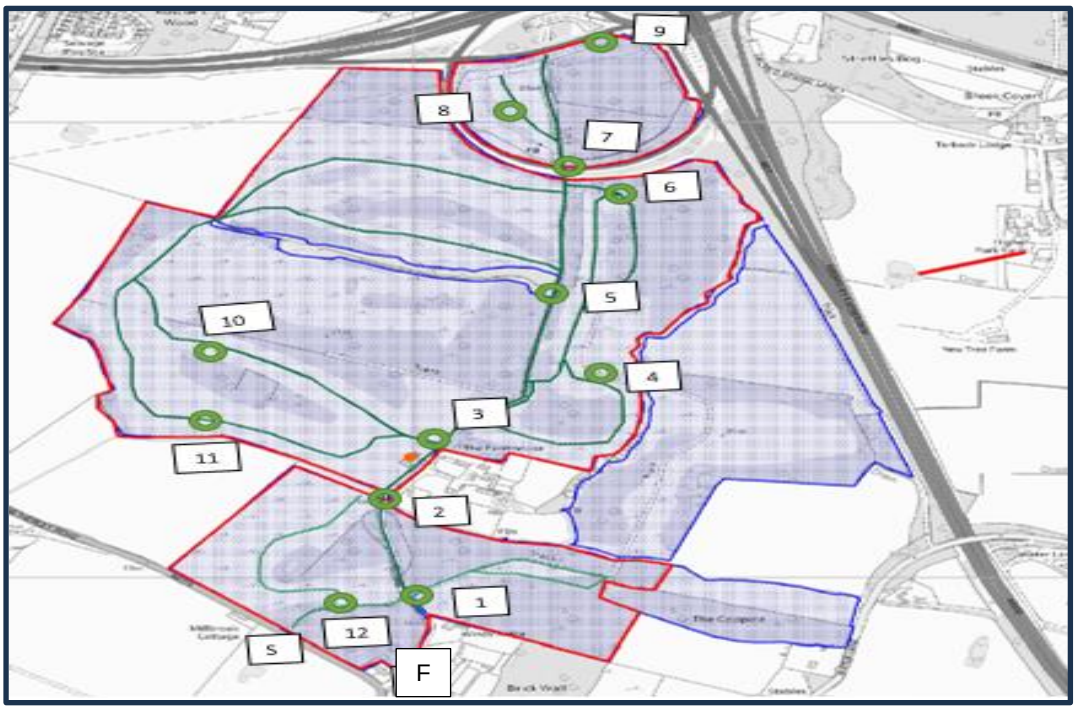
Transect 2 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
04.07.2022	21:30	2330	Clear Dry	0	17C	17C	21:35
Surveyors: Charlie Liggett & Rachael Rhodes							

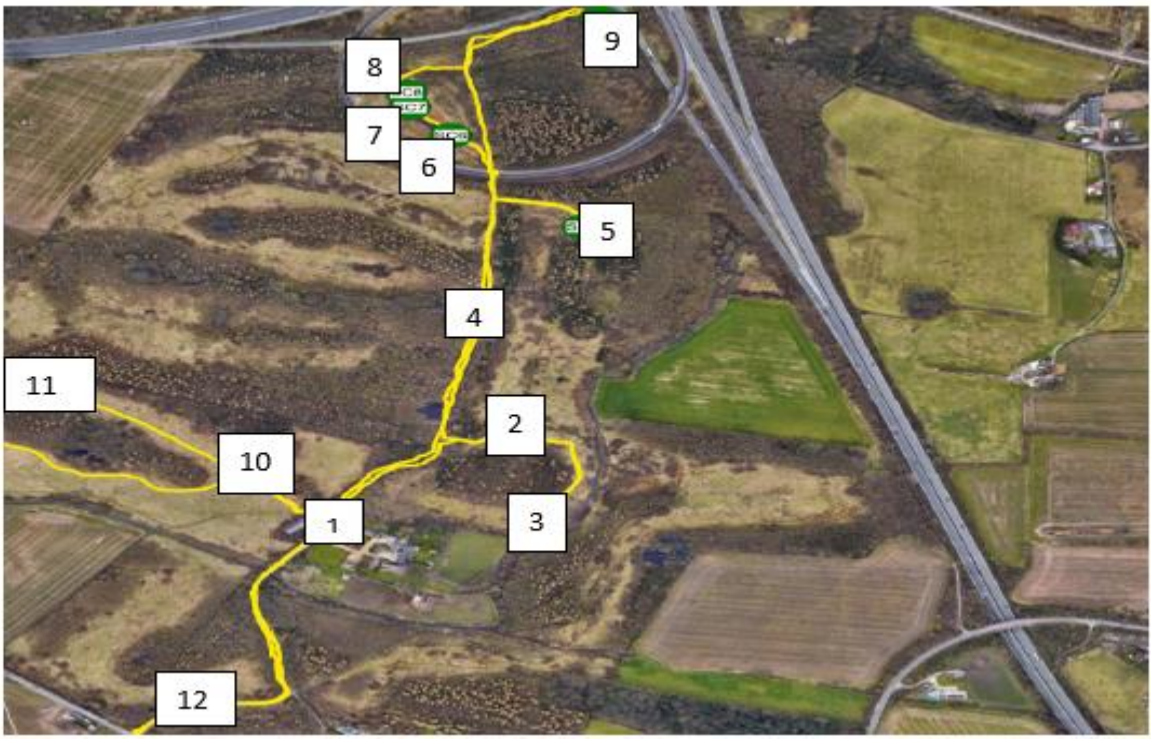
STOPPING POINT	NO OF PASSES	SPECIES	ACTIVITY (if seen)
1			
2			
3			
4			
3			
4			
5			
6			
7	Continuous	Noctule	Foraging
8	Continuous	Soprano pipistrelle, myotis sp, noctule	
9	Continuous	Soprano pipistrelle, myotis sp, Noctule	Foraging
10	Continuous	Soprano pipistrelle, Common pipistrelle	Foraging

Bat activity recorded continually as opposed to spot counts

Tarbock: Transect Routes



Transect 1



Transect 2

Transect 1 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
19.06.2022	2145	00.30	No details	No details	No details	No details	2143
Surveyors: Andrew Clark, Bruce Shortland & Anthony Nickson							

STOPPING POINT	NO OF BAT PASSES	SPECIES (IF KNOWN)	ACTIVITY
1	No details	Common Pipistrelle Noctule	No details
2	No details	Common Pipistrelle Pipistrelle *sp*	No details
3	No details	Common/Soprano Pipistrelle	No details
4	No details	None	No details
5	No details	None	No details
6	No details	Common Pipistrelle	No details
7	No details	Common Pipistrelle	No details
8	No details	Common Pipistrelle	No details
9	No details	Common Pipistrelle	No details
10	No details	None	No details
11	No details	None	No details
12	No details	None	No details

Recorded Species
Common Pipistrelle
Noctule
Soprano Pipistrelle

Transect 2 Results

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
31.07.2022	21:14	23:40	Dry,10% cloud	2	17C	15C	21:09
Andrew Clark, Bruce Shortland & Anthony Nickson							

STOPPING POINT	NO OF BAT PASSES	SPECIES (IF KNOWN)	ACTIVITY
1	4	Common Pipistrelle	Commuting bats along pathway from east of stopping point
2	-	-	Missed
3	1	Soprano Pipistrelle	Commuting bat
4	0	None	-
5	6	Soprano Pipistrelle	Foraging above canopy
6	0	None	-
7	-	-	Illuminated underpass
8	CONSTANT	Soprano Pipistrelle	Constant foraging over pond
9	0	None	-
10	0	none	-
11	0	None	-
12	1	Common Pipistrelle	Foraging,

Total C Pipistrelle: 5
Total S Pipistrelle: 7
+ Continuous at SP 8
Total passes: 12 +
Continuous at SP 8

ROOST EMERGENCE RESULTS

Dibbinsdale

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
20.6.2022	21:30	2300	1% Dry,	2	17C	17C	21:44
Surveyors: Emily Clark, Joe Whittick Night vision used to aid survey							

SPECIES	TIME	EMERGENCE/OTHER COMMENTS
Common Pipistrelle x 1	2152	Emergence from tunnel entrance
Myotis x 5	2215-2230	Emergence from tunnel entrance
Common Pipistrelle		Foraging in close proximity
Soprano Pipistrelle		Foraging in close proximity
Myotis		Foraging in close proximity

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
27.7.2022	20:40	2215	100% Dry,	2	16C	16C	21:16
Surveyors: Emily Clark, Joe Whittick, Jennifer Manley Night vision used to aid survey							

SPECIES	TIME	EMERGENCE/OTHER COMMENTS
Myotis x 10	21:26- 21:48	Emergence from tunnel entrance
Common Pipistrelle		Foraging in close proximity
Soprano Pipistrelle		Foraging in close proximity
Myotis		Foraging in close proximity
Noctule		Foraging in close proximity

INCE BLUNDELL – OLD HALL & FORMER STABLES

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
24.7.2022	21:00	2300	50% Dry	1	19C	18C	21:20
Surveyors: Des Ney, Stan Irwin, Daniel Finegan Night vision used to aid survey on north west elevation							

SPECIES	TIME	EMERGENCE/OTHER COMMENTS
Common Pipistrelle x 2-3	2130 - 2230	Foraging in close proximity to Old Hall
Whiskered/Brandt's x 1	2150	Emergence from eaves on north west elevation of Old Hall
Noctule bat x1	2155	Commuting overhead of Old Hall
Brown Long Eared x2	2155-2230	Flying inside ground floor of Old Hall

Date	Start Time	End Time	Cloud / Weather	Wind	Temp	Temp(end)	Sunset
14.8.2022	20:25	2145	96% Dry	1	22C	20C	20:45
Surveyors Des Ney, Stan Irwin, Daniel Finegan, Bruce Shortland, Rachel Brown Night vision used to aid survey on south east elevation							

SPECIES	TIME	EMERGENCE/OTHER COMMENTS
Combination of Soprano & Common Pipistrelle x 18	2045-2106	Emergence from open window on south east elevation at Old Hall
Noctule bat x 2-3	2057-2100	Frequent foraging overhead in close proximity to Old Hall
Common Pipistrelle x 2-3	2058-2123	Frequent foraging in close proximity at former stables
Soprano Pipistrelle x 1	2106 & 2133	Occasional foraging in close proximity at former stables
Whiskered/Brandt's x 1	2115	Emergence from open window on south east elevation at Old Hall
Common Pipistrelle x1	2123	Emergence from open window at former stables
Whiskered/Brandt's x 1	2125	Occasional foraging in close proximity to former stables
Common Pipistrelle, Whiskered/Brandt's Probable Natterer's	During survey	Occasional contacts in close proximity to Old Hall north west elevation
Brown Long Eared x 1	2134	Observed flying from north elevation at former stables in a southerly direction
Brown Long Eared x 5	2140-2155	Emergence from open window on south east elevation at Old Hall

ROOST SURVEYS: CROXTETH HALL OLD STABLES

Data appears not to have been recorded although Brown long eared bats emerged on both surveys (c40 & c54) from their traditional exit point via a window on the north elevation; numbers are similar to previous years but not to maximum numbers previously recorded i.e. 60.

Knowsley Safari Park: Roost Results

Surveyors: Naomi Davies, Andrew Clark

Site	Date	Weather/Wind	Temperature	Sunset
Park Farm	8.6 2022	Dry, Clear, Calm	14C	2135
Trap Wood Cottage	8.6 2022	Dry, Clear, Calm	14C	2135
Trap Wood Cottage	24.6.2022	Light rain, light-moderate wind	18C	2144
Cybertill	8.6 2022	Dry, Clear, Calm	14C	2135
Cybertill	24.6.2022	Light rain, light-moderate wind	18C	2144

SPECIES KNOWN TO BE PRESENT	EMERGENCE ACTIVITY
Park Farm:	
Brown long eared & Pipistrelle *sp*	8.6 2022: Brown long eared x10 & Pipistrelle *sp* x 17
Trap Wood Cottage:	
Pipistrelle *sp*	8.6 2022: Absent
Pipistrelle *sp*	24.6.2022: Absent
Cybertill	
Soprano pipistrelle	8.6 2022:34 Soprano pipistrelle
Soprano pipistrelle	24.6.2022: 78 Soprano pipistrelle