A bat and bird assessment of the traditional farm building of Thomas Cusack, Killymeehan, Stradone, Co Cavan H12AN28

Grid Ref H 51293 03043

By Wildlife Surveys Ireland Ltd

Donna Mullen M.P.P.M D.E.N.V.S. P

Brian Keeley BSc Hons in Zool

Maio, Tierworker, Kells Co Meath

Date June 2024

www.wildlifesurveys.net

Summary of report

This site is very important for bats.

This site is a maternity roost of brown long eared bats and Natterer's bats are also roosting within the building. A derogation licence will be required before any work commences on the building. Daubenton's bats, common pipistrelles, soprano pipistrelles and Leisler's bats were also recorded commuting at the site. Two nests were found but both are unoccupied.

Bat species found roosting

Brown long eared bat	*Plecotus auritus*
Natterer's bat	*Myotis nattereri*

Bat species found feeding and commuting

Common pipistrelle –	*Pipistrellus pipistrellus* -
Soprano pipistrelle –	*Pipistrellus pygmaeus* –
Leisler's bat –	*Nyctalus leisleri*
Daubenton's bat -	*Myotis daubentonii*
Natterer's bat	*Myotis nattereri*
Brown long eared bat –	*Plecotus auritus*

Bird species nesting in/near the TFB.

Old nests were seen but are not active.

Other birds seen/recorded.

Wren – *Troglodytes troglodytes*

Robin- *Erithacus rubecula*

Goldcrest- *Regulus ignicapillus*

Chaffinch - *Fringilla coelebs*

Jackdaw- *Corvus monedula*

Blackbird – *Turdus merula*

Wood pigeon – *Columba palumbus*

Chiffchaff - *Phylloscopus collybita*

Recommendations

Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.

(1)The internal walls must not be repointed. At least 10 small deep crevices must be retained in the exterior walls of the barn so bats can roost in the building. Alternatively, three bat tubes can be built into the walls – they can be purchased from **https://www.veldshop.nl/en/ans-6-bat-box.html**

The retention of gaps in stonework and the use of bat tubes has been successful in Gubalaun Abbey, Rossinver, Leitrim.

Any crevices should be carefully checked for bats, using a torch, before repointing. Repointing must be kept to a minimum.

(2) This is a maternity roost of long-eared bats. Natterer's bats are also roosting here. A derogation licence must be applied for and granted before work commences on this building. Work must not take place from May 1st until Sept 1st, and the wildlife ranger must be contacted before the commencement of work.

(3)If timber treatment is used in the building, it must be bat friendly. Borax based products are usually best. The artificial permethrin products are safe for bats. These products can be purchased from Ecological Building Systems in Athboy, Co Meath. See https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them

http://webarchive.nationalarchives.gov.uk/20150902191829/http://publications.naturalengland.org.uk/publication/31005

(4)If bats are found at any stage of the building work, work must cease and the author and NPWS ranger must be contacted.

(5)Lighting in the area must be kept to a minimum with the use of sensor lights or lighting on timer systems if lighting is used outdoors.

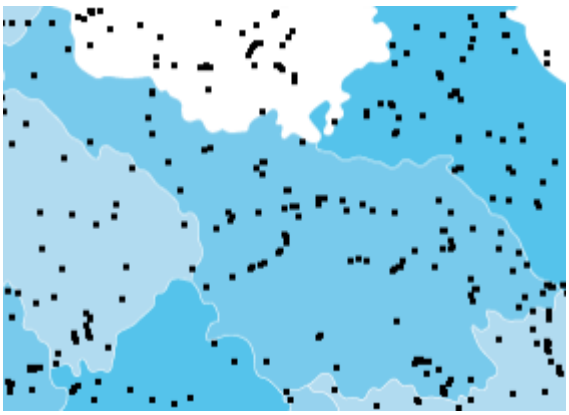
(6)Bats are roosting under the additional timbers along the ridge. This timber pattern should be retained. Alternatively, timbers can be placed in parallel lines 15-18mm apart to provide roosting areas for bats. These are used successfully in Golashane Nature Reserve, Meath. These timbers must be untreated with preservative.

Desktop Survey of the existing environment

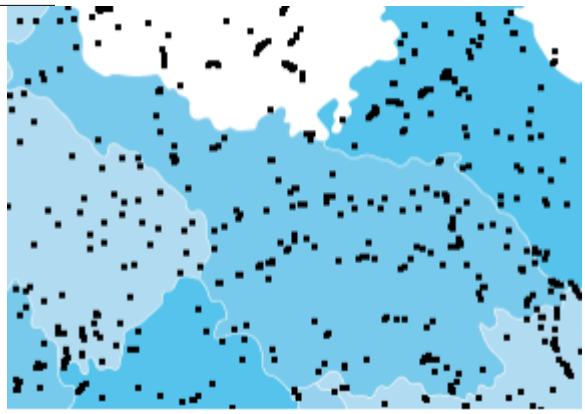
Thanks to Bat Conservation Ireland for their data .All data from this report will be placed on their database.

Distribution data

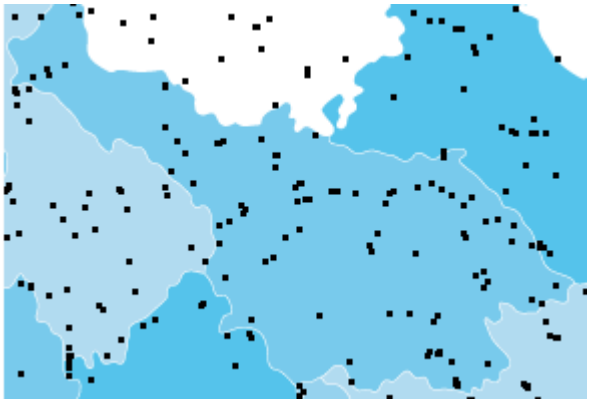
Common pipistrelle distribution data in Cavan



Leisler's bat distribution in Cavan



Soprano pipistrelle distribution in Cavan



Daubenton's bat distribution in Cavan

Natterer's bat distribution in Cavan

Brown long eared bat distribution in Cavan

Bat data within 1km of the site

BCIreland data: search results 2 Jul 2024					
Search parameters: Roosts Transects Ad-hoc observation sites with observations of all species within 1000m of H5129303043					
Roosts					
Name	Grid reference	Grid ref easting	Grid ref northing	Address	Species observed
Thomas Cooney	H5171903563	251719	303563	, Drumminick, Cavan Eircode H12 H290	Pipistrellus pygmaeus
Traditional farm building	H5125903459	251259	303459	Druminik, Co Cavan	Plecotus auritus
Transects					

Name	Grid reference start	Grid ref easting start	Grid ref northing start	Species observed	
H40 (3) 2006-	H515023	251500	302300	Pipistrellus pipistrellus (45kHz),Pipistrellus spp. (45kHz/55kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis spp.	
Ad-hoc observations					
Survey	Grid reference	Grid ref easting	Grid ref northing	Date	Species observed

See Appendix III for bat data within 10km of the site

Habitat Classification (Fossitt 2000)

WL2 (Treelines) semi- mature and mature trees

WL1 (Hedgerow)

GAI (Grassland)

BA3 (Buildings)

WD2 (Mixed broadleaf/conifer woodland)

FW1(Upland rivers)

Date June 25, 2024

Sunrise/ Sunset – 22.12, 4.54

Temperature and weather conditions -13C to 5C Foggy at dawn

Lux levels – O lux

Complexity of lands and ability to cover ground during surveys

All areas were accessible.

Description of proposed project

Re roofing and repointing

Survey constraints

(1) Mobility of bats – Bat species are mobile and can move from roost to roost, depending on roost availability, feeding availability and weather conditions. They may move to roosts which have not been identified in this report in order to hibernate or create mating or feeding perches. A bat survey is a snapshot of bat activity over the survey time.

(2) Identification of bats- It can be difficult to differentiate *Myotis* species. For this reason, sound files are included within the report. Brown long eared bats are very quiet, and their presence can be overlooked in bat surveys as they may not register on bat detectors.

(3) Timing of survey. Bat surveys generally take place when the bats are active – May – September. A bat survey which takes place outside these dates may miss roosting activity.

Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.

This derogation facilitates the restoration of the barn.

Methodology

Bat Survey - Equipment

Exide Lamps

Head torch

One Song Meter Mini Bat remote detector with Kaleidoscope Pro sound analysis

One thermal imager

One ladder

One handheld Anabat Walkabout detector

Surveys are designed with reference to the recognised documents below:

- Heritage Council's Bat Survey Guidelines for the Traditional Farm Buildings Scheme
- National Parks and Wildlife's Bat Mitigation Guidelines for Ireland
- Bat Surveys: Surveying Buildings (Including Bat Identification) Developed on behalf of the Bat Conservation Trust
- English Nature's Bat Mitigation Guidelines
- - Bat surveys for Professional Ecologists - good practice guidelines; fourth edition (2023); Bat Conservation Trust; London.
- - A conservation plan for Irish Vesper Bats , Irish Wildlife Manual No. 20; National Parks and Wildlife Service; Department of Environment, Heritage and Local Government. - The status of E.C. Protected Habitats and Species in Ireland - Conservation status in Ireland of habitats and species listed in the European Council directories on Conservation of Habitats; Flora and Fauna 92/43/EFC. (Department of Environment, Heritage and Local Government) –
- Bat Mitigation Guidelines for Ireland (Irish Wildlife Manual no.25) Department of Environment, Heritage and Local Government.

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Survey

Preliminary Ecological Appraisal
Daytime Assessment/ Preliminary Roost Appraisal

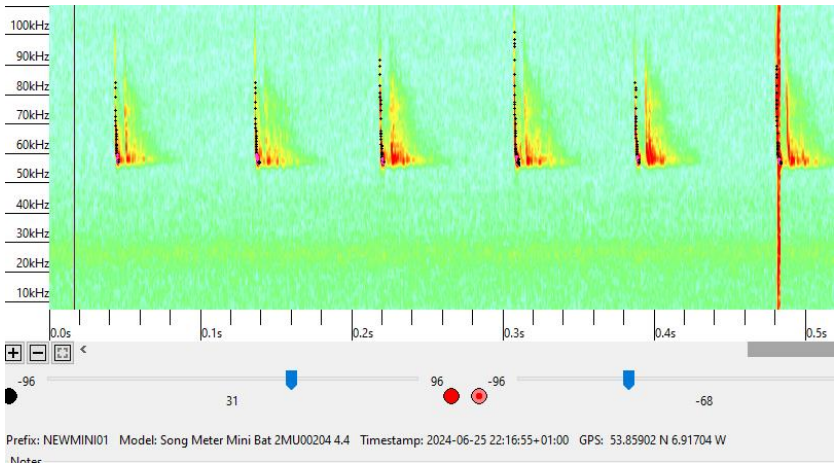
The building was surveyed in daytime. It has a tin roof with gaps in the stonework which are very suitable for bat usage. One unused swallow's nest was seen in the roof and a second unused nest was in the window.

Unused swallow's nest

Nighttime assessment

The building was checked for signs of bats, droppings, squeaking, etc. None were seen. A remote song meter mini detector was placed overnight in the building.

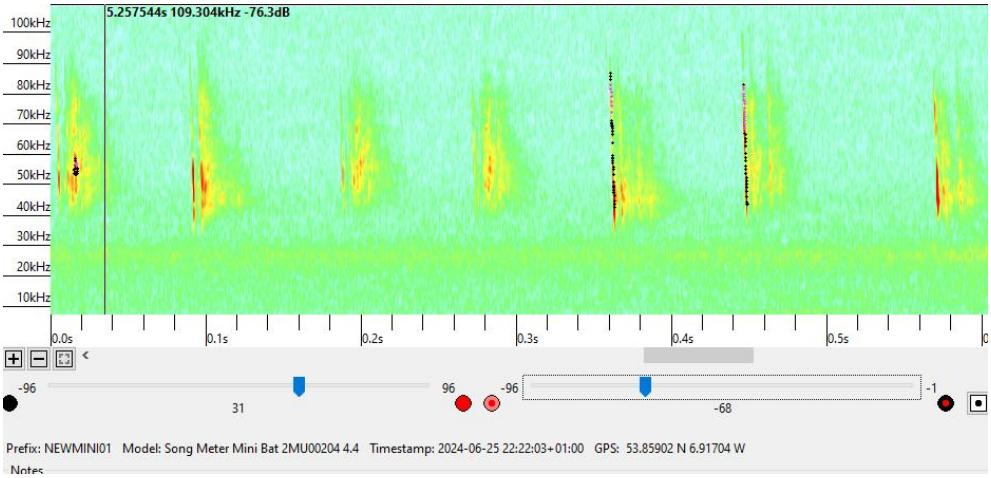
At 22.16 a soprano pipistrelle flew over the barn. It fed at intervals around the barn throughout the night.



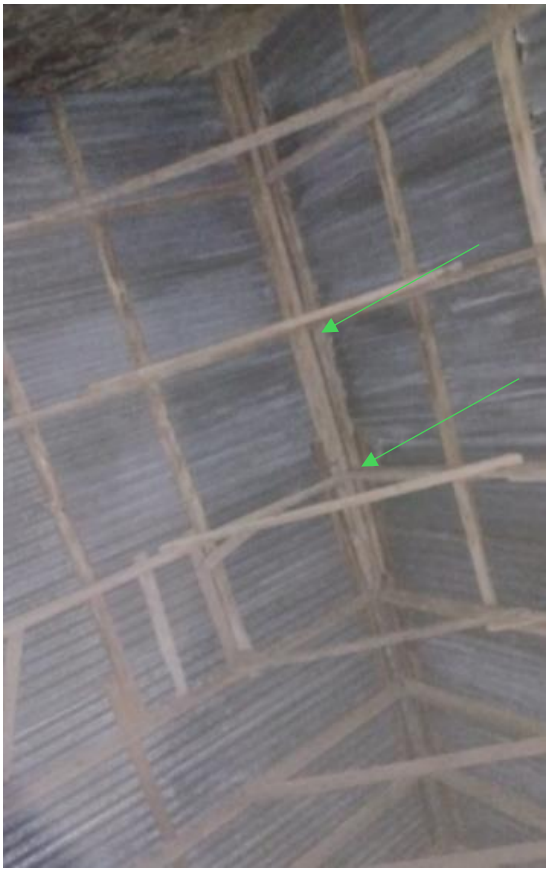
Soprano pipistrelle

At 22.22 a myotis (probably a Natterer's bat) emerged from the stonework above the honey storeroom. Two brown long eared bats also came from this area, and five further brown long eared bats emerged from under the timbers at the roof. They could clearly be seen with the thermal imager, swarming and light sampling within

the building. Three further myotis (Natterer's bats) emerged from the wall of the building at 22.55.



Natterer's bat 22.22

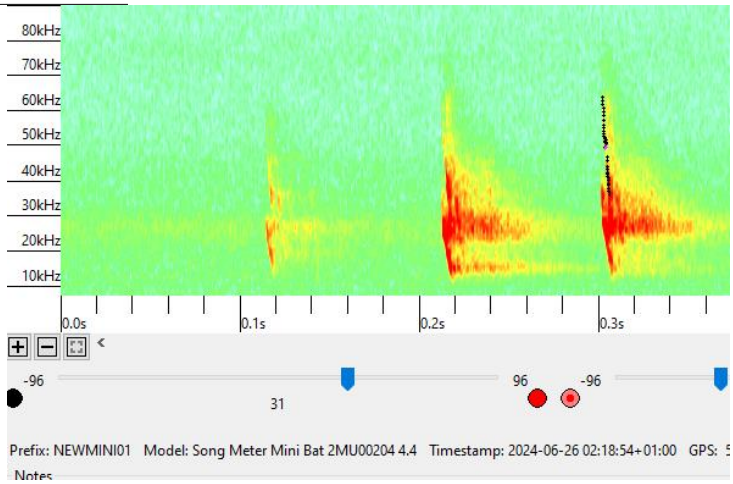


Brown long eared bats emerging from this area

Myotis bats- Natterer's emerging from gaps in the stonework in this wall

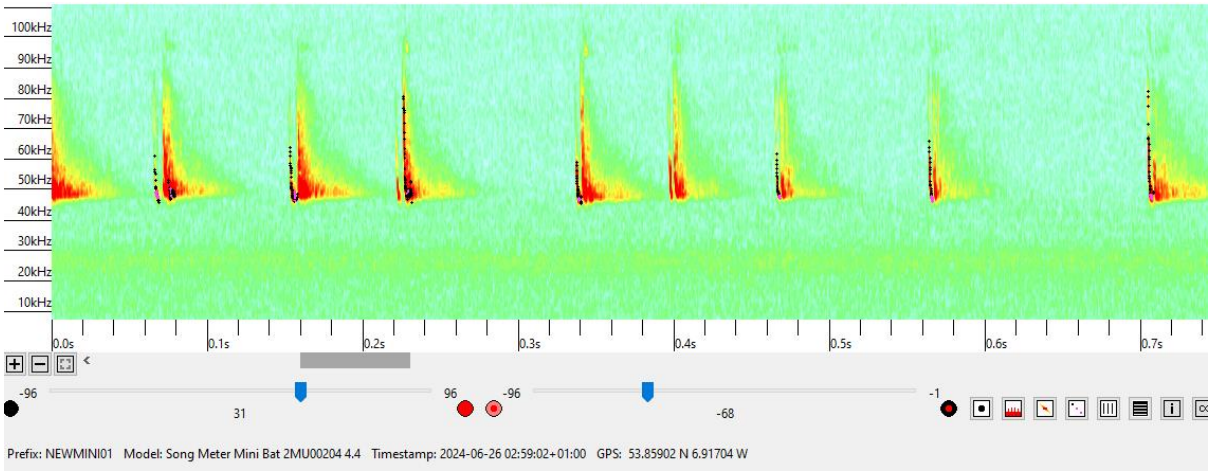
At 23.10 a common pipistrelle flew in front of the building, and at 23.19, one brown long eared bat re-entered the roost. It is likely that this is a maternity roost, and the brown long eared bats are returning early to feed their young.

At 2.30 am a Daubenton's bat was recorded within the building.



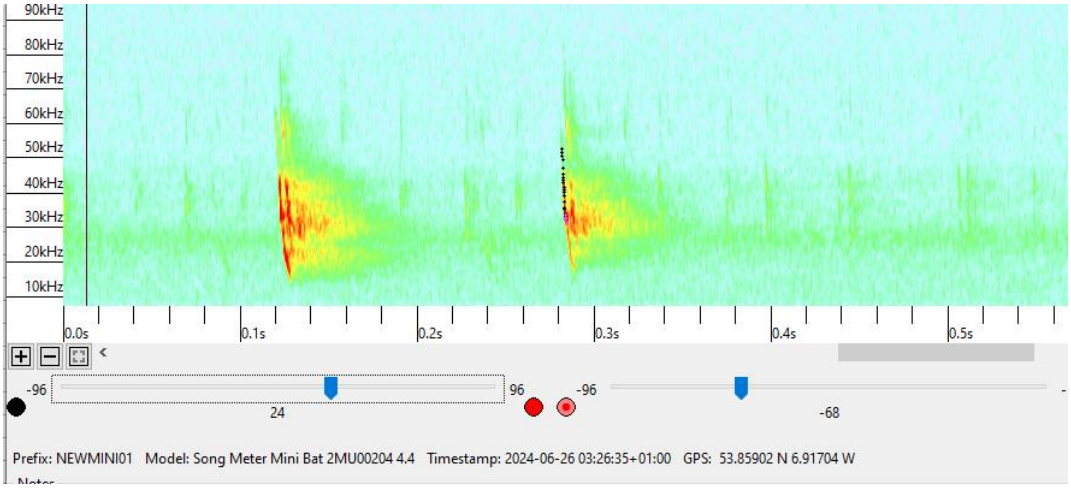
Daubenton's bat within the barn 2.18

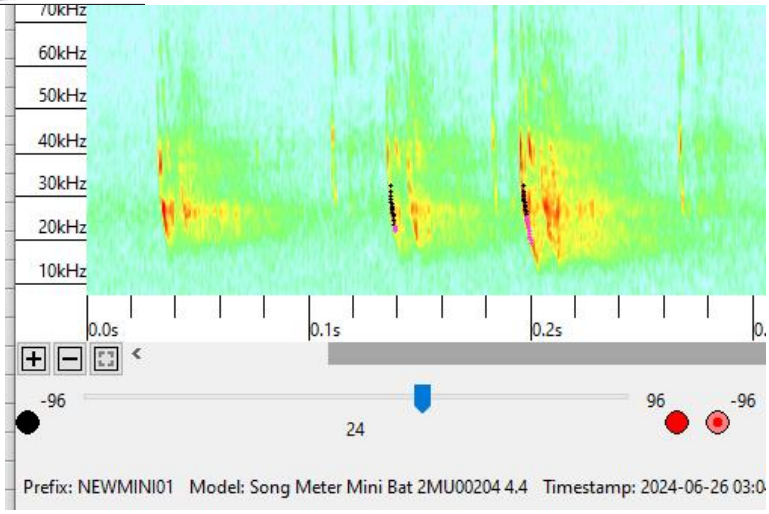
A common pipistrelle flew within the barn at 2.59. It fed in the area until 3.47



Common pipistrelle

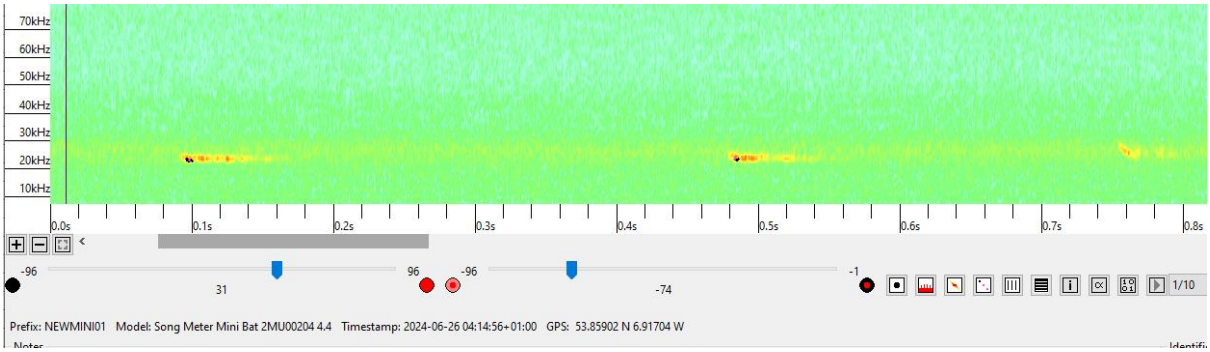
A brown long eared bat returned to the roost at 3.26





Brown long eared bat calls

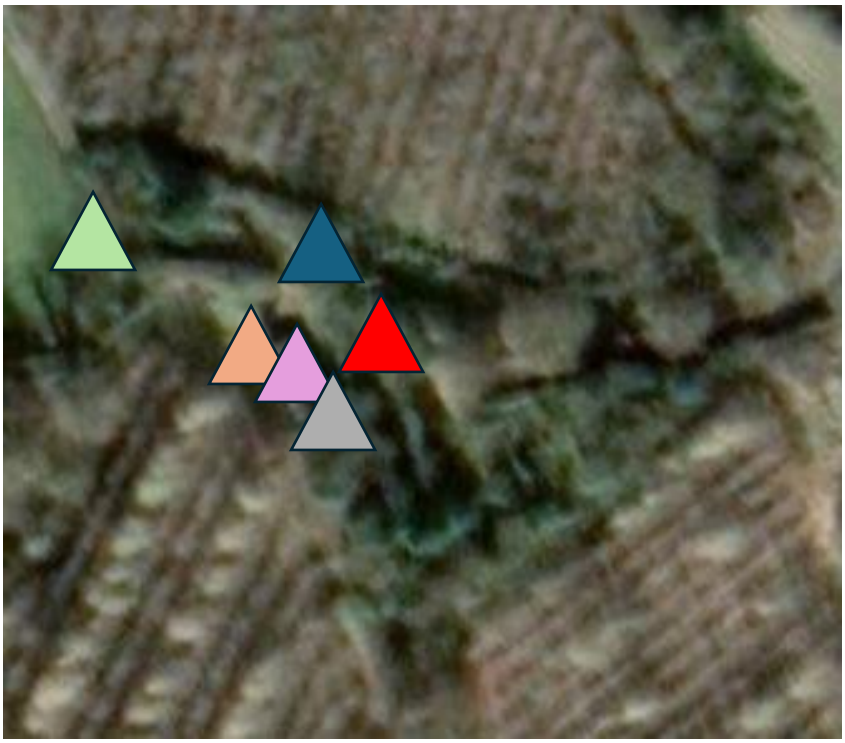
At 4.15 a Leisler's bat flew outside the barn



Leisler's bat

The survey recommenced 1.5 hours before dawn. At 3.48 a natterer's bat was seen to the front of the building. And at 4.05 a soprano pipistrelle fed between the front of the house and the field, along the laneway. At 4.07 a Leisler's bat flew past the building.

Map of main bat activity



Blue triangle – Common pipistrelle

Grey triangle- Daubenton's bat

Brown triangle – Brown long eared bat

Pink Triangle – Daubenton's bat

Green triangle – Soprano pipistrelle

Red triangle – Leisler's bat

Results

This site is very important for bats.

This site is a maternity roost of brown long eared bats and Natterer's bats are also roosting within the building. A derogation licence will be required before any work commences on the building. Daubenton's bats, common pipistrelles, soprano pipistrelles and Leisler's bats were also recorded commuting at the site. Two nests were found but both are unoccupied.

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Bat between parallel timbers in Meath

Evidence that actions permitted by a derogation licence will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.

Data from The Status of EU Protected Habitats and Species in Ireland SPECIES ASSESSMENTS Volume 3 2019

Brown long eared bat

5 Range within the biogeographical/marine region concerned.

5.1 Surface area 62,200 km²

5.2 Short-term trend Period 2007–2018

5.3 Short-term trend Direction stable

8.3 Additional information -As this bat regularly roosts in old buildings (e.g., churches) it can come into conflict with roost owners. The loss of roosts in mature trees due to felling, light pollution and the absence of data on swarming and winter sites are also concerns. However, there is no evidence that any of these issues are impacting on distribution or population and hence they are not listed as medium or important threats for this species.

10 Future prospects		
10.1 Future prospects of parameters	**a) Range**	***Good*** */ Poor / Bad / Unknown*
	b) Population	***Good*** */ Poor / Bad / Unknown*
	c) Habitat of the species	***Good*** */ Poor / Bad / Unknown*
10.2 Additional information *Optional*	The dedicated roost-based monitoring programme provides evidence of a significant increase in the population; there is no evidence of any decline in Range or Habitat. In general the Future prospects of these parameters are considered to be good.	

11 Conclusions	
Assessment of conservation status at end of reporting period	
11.1 Range	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*
11.2 Population	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*
11.3 Habitat for the species	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*
11.4 Future prospects	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*

Article 17 report format 2013-2018

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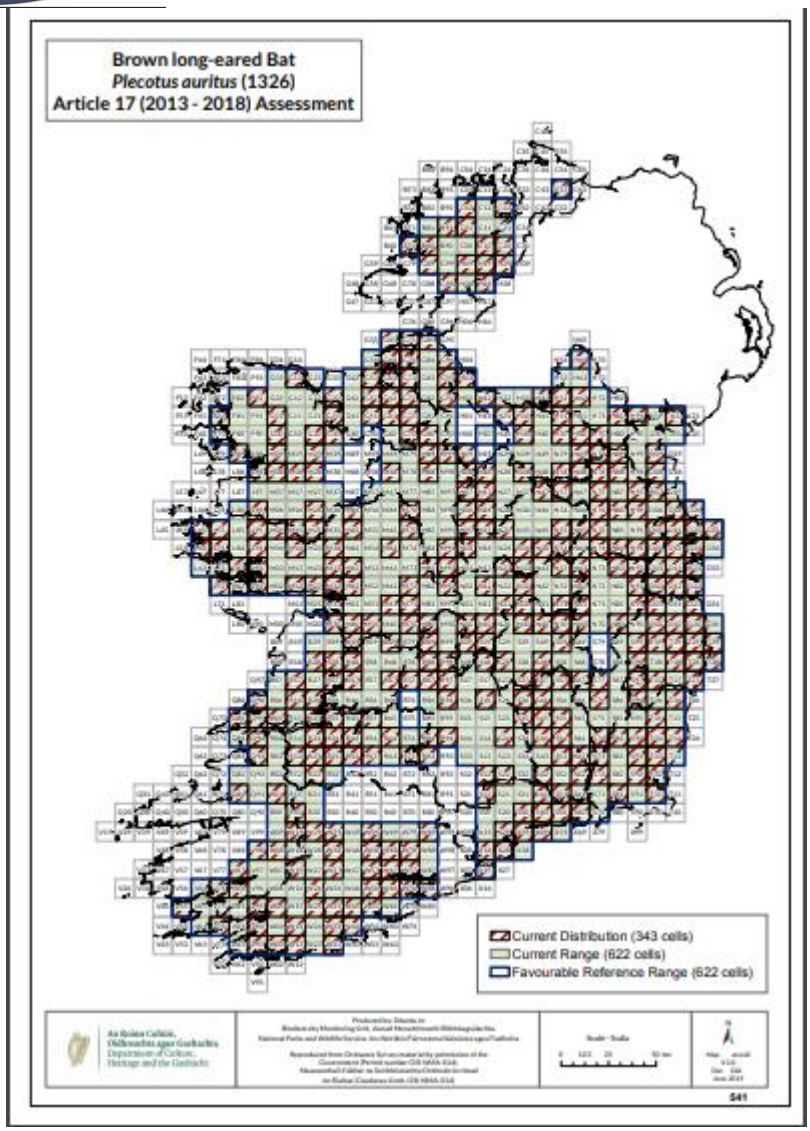
1326 Brown Long-eared Bat (*Plecotus auritus*)

11.5 Overall assessment of Conservation Status	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*
11.6 Overall trend in Conservation Status	*Indicate the trend (qualifier) for FV, U1 and U2:* ***improving*** */ deteriorating /* stable */ unknown*

11.8 Additional information - Recent estimates put the Irish population of brown long-eared bats at 60,000-100,000 animals. Monitoring data suggests a recent significant increase in numbers and both Range and Habitat are considered to be stable and Favourable. There is no indication of any major pressures currently impacting the population and Future prospects are considered good. Overall, the species is assessed as Favourable, and the overall trend is demonstrating an on-going increase. There were no qualifiers for Favourable assessments in 2013.



Natterer's bat

5.1 -Range - Surface area 46,400 km²

5.2 Short-term trend Period 2007–2018

5.3 Short-term trend Direction stable

8.3 Additional information -Pressures impacting on Natterer's bats can be divided into those affecting roosts and those reducing the quality of their foraging habitat. The former include the renovation/demolition/disturbance of buildings used as summer roosts. The repair of road bridges over rivers is also a potential concern, as this species will roost in the crevices of masonry bridges. Mixed woodlands provide important foraging habitat for these bats; unsympathetic forest management

practices can have negative impacts. Although these pressures are noted here for completeness, none of them is considered to be having a significant impact on the Natterer's bat population in Ireland. This is due in part to an effective system of legal protection and in particular a widespread understanding among local authorities of the licensing requirements in relation to bat roost disturbance.

11.8 Additional information -The Range of the species is assessed as Favourable and stable. The current population is equal to the Favourable Reference Population and the habitats used by this bat are stable or increasing. Building renovation and loss of foraging habitat are potential threats for this species but are not considered to be significant. The most recent Red Data List for Irish Mammals (Marnell et al., 2009) lists Natterer's bat as least concern and, overall, the conservation status of this species has been assessed as Favourable.

10 Future prospects		
10.1 Future prospects of parameters	**a) Range**	***Good*** */ Poor / Bad / Unknown*
	b) Population	***Good*** */ Poor / Bad / Unknown*

11 Conclusions			
Assessment of conservation status at end of reporting period			
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11.2 Population	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*		
11.3 Habitat for the species	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*		
11.4 Future prospects	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*		
11.5 Overall assessment of Conservation Status	***Favourable (FV)*** */ Inadequate (U1) / Bad (U2) / Unknown (XX)*		
11.6 Overall trend in Conservation Status	*Indicate the trend (qualifier) for FV, U1 and U2:* *improving / deteriorating /* ***stable*** */ unknown*		
11.7 Change and reasons for change in conservation status and conservation status trend	*Indicate whether there is a change from the previous reporting round and (if yes) the nature of that change. More than one option (b to e) can be chosen.*		
		Overall assessment of conservation status (11.5)	***Overall trend in conservation status (11.6)***
	a) no, there is no difference	*YES/****NO***	*YES/****NO***

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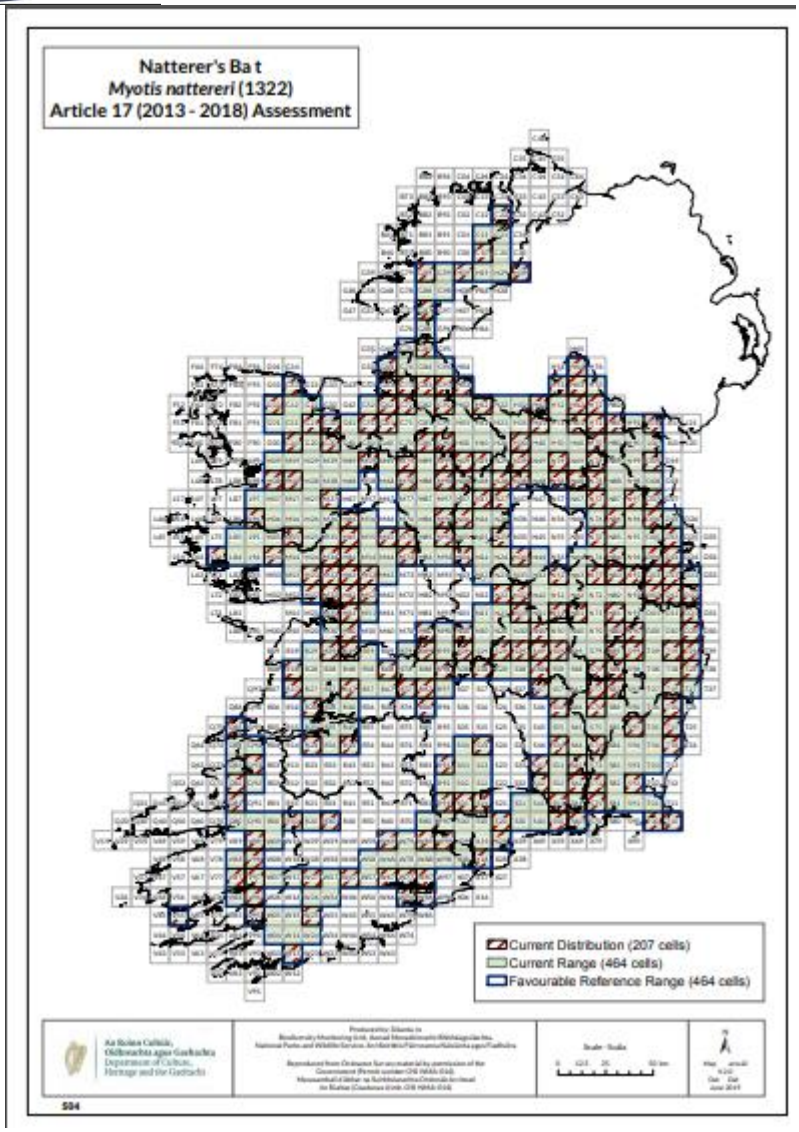

Legislation

Bats are protected under the 1996 Wildlife Act, the 2000 Wildlife (Amendment) Act, Stat Ist 94 of 1997, Stat Ist 378 of 2005, The Habitats Directive, The Bonn and Bern Convention, and the Euro bats agreement.

The European Community (Natural Habitats) Regulations S.I. No 94 of 1997 states:

23(1) The Minister shall take the requisite measures to establish a system of strict protection for the fauna consisting of the animal species set out in Part 1 of the First Schedule prohibiting –

a) All forms of deliberate capture or killing of specimens of those species in the wild.

1. The deterioration or destruction of breeding sites or resting places of those species.

The EU Habitats Directive

Article 12(1) of the 'Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (Habitats Directive) states:

"Member States shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV(a) and their natural range, prohibiting:

a) all forms of deliberate capture or killing of specimens of these species in the wild.

b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation, and migration.

c) deliberate destruction or taking of eggs from the wild.

d. deterioration or destruction of breeding sites or resting places."

The EU Habitats Directive (92/43/EEC) lists all Irish bat species in Annex IV and one Irish species, the lesser horseshoe bat (Rhinolophus hipposideros), in Annex II. Annex II includes animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs) because they are endangered, rare, vulnerable, or endemic. Annex IV includes various species that require strict protection. Article 11 of the Habitats Directive requires member states to monitor all species listed in the Habitats Directive and Article 17 requires States to report to the EU on the findings of monitoring schemes.

The Bern and Bonn Conventions

Ireland is also a signatory to a number of conservation agreements pertaining to bats such as the Bern and Bonn Conventions. The European Bats Agreement (EUROBATS) is an agreement under the Bonn Convention. Ireland and the UK are two of the 31 signatories. The Agreement has an Action Plan with priorities for implementation. Devising strategies for monitoring of populations of selected bat species in Europe is among the resolutions of EUROBATS.

1.3.1 The Bern Convention

Article 6 of the "Convention on the Conservation of European Wildlife and Natural Habitats' (Bern Convention) reads:

"Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The following will in particular be prohibited for these species:

a) all forms of deliberate capture and keeping and deliberate killing.

b) the deliberate damage to or destruction of breeding or resting sites.

c) the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention; ...

Appendix II lists strictly protected fauna species and this list includes "Microchiroptera, all species except Pipistrellus pipistrelles".

The EUROBATS Agreement

The 'Agreement on the Conservation of Populations of European Bats' (EUROBATS) was negotiated under the 'Convention for the Conservation of Migratory Wild Species' (Bonn Convention) and came into force in January 1994. The legal protection of bats and their habitats are given in Article III as fundamental obligations:

"1. Each Party shall prohibit the deliberate capture, keeping or killing of bats except under permit from its competent authority.

2. Each Party shall identify those sites within its own area of jurisdiction which are important for the conservation status, including for the shelter and protection, of bats. It shall, taking into account as necessary economic and social considerations, protect such sites from damage or disturbance. In addition, each Party shall endeavour to identify and protect important feeding areas for bats from damage or disturbance."

The Agreement covers all European bat species.

Bat Biology

Female bats gather in groups known as maternity roosts in summer to have their young. They generally have one baby each year, so are slow to reproduce, and disturbance of a maternity roost can be catastrophic.

In winter bats move to old stonework, trees, and caves to hibernate. They are also found in modern buildings during building work or demolition. They are especially vulnerable here as they are slow to awaken, and if tree felling is carried out without checking for bats, they can easily be killed.

Contact Details: I can be contacted at 087 7454233. My email is donnamullen@wildlifesurveys.net and web site is www.wildlifesurveys.net

Appendix I

Data from the song meter mini with Kaleidoscope software placed overnight inside the barn.

C:\Users\donna\OneDrive\Documents\New folder (8)\id.csv

File Help

	FOLDER	IN FILE	OUT FILE FS	OUT FILE ZC	AUTO ID	PULSES	MATCHING	MATCH RATIO	MANUAL ID
1		NEWMINI01_20240626_021854.wav	NEWMINI01_20240626_021854_000.wav		MYODAU	6	5	0.833000	
2		NEWMINI01_20240626_012658.wav	NEWMINI01_20240626_012658_000.wav		MYODAU	5	4	0.800000	
3		NEWMINI01_20240626_041456.wav	NEWMINI01_20240626_041456_000.wav		NYCLEI	6	6	1.000000	NYCLEI
4		NEWMINI01_20240625_224027.wav	NEWMINI01_20240625_224027_000.wav		NYCLEI	2	2	1.000000	Noise
5		NEWMINI01_20240625_232250.wav	NEWMINI01_20240625_232250_000.wav		NYCLEI	2	2	1.000000	NYCLEI
6		NEWMINI01_20240626_043835.wav	NEWMINI01_20240626_043835_000.wav		NYCLEI	2	2	1.000000	Noise
7		NEWMINI01_20240625_220255.wav	NEWMINI01_20240625_220255_000.wav		NoID	2	0	0.000000	Noise
8		NEWMINI01_20240625_222203.wav	NEWMINI01_20240625_222203_000.wav		NoID	20	0	0.000000	MYOTIS
9		NEWMINI01_20240625_223717.wav	NEWMINI01_20240625_223717_000.wav		NoID	2	0	0.000000	Noise
10		NEWMINI01_20240625_223937.wav	NEWMINI01_20240625_223937_000.wav		NoID	4	0	0.000000	Noise
11		NEWMINI01_20240625_224426.wav	NEWMINI01_20240625_224426_000.wav		NoID	5	0	0.000000	PIP
12		NEWMINI01_20240625_224644.wav	NEWMINI01_20240625_224644_000.wav		NoID	36	0	0.000000	MYOTIS
13		NEWMINI01_20240626_004917.wav	NEWMINI01_20240626_004917_000.wav		NoID	3	0	0.000000	MYOTIS
14		NEWMINI01_20240626_012611.wav	NEWMINI01_20240626_012611_000.wav		NoID	2	0	0.000000	MYOTIS
15		NEWMINI01_20240626_012618.wav	NEWMINI01_20240626_012618_000.wav		NoID	2	0	0.000000	MYOTIS
16		NEWMINI01_20240626_024956.wav	NEWMINI01_20240626_024956_000.wav		NoID	2	0	0.000000	
17		NEWMINI01_20240626_024836.wav	NEWMINI01_20240626_024836_000.wav		NoID	2	0	0.000000	

File Help

	FOLDER	IN FILE	OUT FILE FS	OUT FILE ZC	AUTO ID	PULSES	MATCHING	MATCH RATIO	MANU
159		NEWMINI01_20240626_052742.wav	NEWMINI01_20240626_052742_000.wav		Noise				
160		NEWMINI01_20240626_025902.wav	NEWMINI01_20240626_025902_000.wav		PIPPIP	126	111	0.881000	PIPPIP
161		NEWMINI01_20240626_025917.wav	NEWMINI01_20240626_025917_000.wav		PIPPIP	40	40	1.000000	PIPPIP
162		NEWMINI01_20240626_025846.wav	NEWMINI01_20240626_025846_000.wav		PIPPIP	40	40	1.000000	PIPPIP
163		NEWMINI01_20240625_224614.wav	NEWMINI01_20240625_224614_000.wav		PIPPIP	24	19	0.792000	PIPPIP
164		NEWMINI01_20240626_004753.wav	NEWMINI01_20240626_004753_000.wav		PIPPIP	10	10	1.000000	PIPPIP
165		NEWMINI01_20240626_033421.wav	NEWMINI01_20240626_033421_000.wav		PIPPIP	9	9	1.000000	PIPPIP
166		NEWMINI01_20240626_032947.wav	NEWMINI01_20240626_032947_000.wav		PIPPIP	8	8	1.000000	PIPPIP
167		NEWMINI01_20240626_034831.wav	NEWMINI01_20240626_034831_000.wav		PIPPIP	8	8	1.000000	PIPPIP
168		NEWMINI01_20240626_034726.wav	NEWMINI01_20240626_034726_000.wav		PIPPIP	10	8	0.800000	PIPPIP
169		NEWMINI01_20240626_033439.wav	NEWMINI01_20240626_033439_000.wav		PIPPIP	5	5	1.000000	PIPPIP
170		NEWMINI01_20240626_022204.wav	NEWMINI01_20240626_022204_000.wav		PIPPIP	6	5	0.833000	PIPPIP
171		NEWMINI01_20240625_233257.wav	NEWMINI01_20240625_233257_000.wav		PIPPIP	4	4	1.000000	PIPPIP
172		NEWMINI01_20240626_004239.wav	NEWMINI01_20240626_004239_000.wav		PIPPIP	3	3	1.000000	PIPPIP
173		NEWMINI01_20240626_040032.wav	NEWMINI01_20240626_040032_000.wav		PIPPIP	2	2	1.000000	PIPPIP
174		NEWMINI01_20240625_221655.wav	NEWMINI01_20240625_221655_000.wav		PIPPYG	71	71	1.000000	PIPPYG
175		NEWMINI01_20240626_025448.wav	NEWMINI01_20240626_025448_000.wav		PIPPYG	72	70	0.972000	PIPPYG
176		NEWMINI01_20240626_014011.wav	NEWMINI01_20240626_014011_000.wav		PIPPYG	56	48	0.857000	PIPPYG
177		NEWMINI01_20240626_012230.wav	NEWMINI01_20240626_012230_000.wav		PIPPYG	53	41	0.774000	PIPPYG
178		NEWMINI01_20240626_025527.wav	NEWMINI01_20240626_025527_000.wav		PIPPYG	34	34	1.000000	PIPPYG
179		NEWMINI01_20240626_025542.wav	NEWMINI01_20240626_025542_000.wav		PIPPYG	33	33	1.000000	PIPPYG
180		NEWMINI01_20240626_012220.wav	NEWMINI01_20240626_012220_000.wav		PIPPYG	40	32	0.800000	PIPPYG
181		NEWMINI01_20240626_025503.wav	NEWMINI01_20240626_025503_000.wav		PIPPYG	30	30	1.000000	PIPPYG
182		NEWMINI01_20240625_221710.wav	NEWMINI01_20240625_221710_000.wav		PIPPYG	21	20	0.952000	PIPPYG
183		NEWMINI01_20240626_025519.wav	NEWMINI01_20240626_025519_000.wav		PIPPYG	13	13	1.000000	PIPPYG
184		NEWMINI01_20240626_042030.wav	NEWMINI01_20240626_042030_000.wav		PIPPYG	13	13	1.000000	PIPPYG
185		NEWMINI01_20240625_223149.wav	NEWMINI01_20240625_223149_000.wav		PIPPYG	12	11	0.917000	PIPPYG
186		NEWMINI01_20240626_024950.wav	NEWMINI01_20240626_024950_000.wav		PIPPYG	10	10	1.000000	PIPPYG
187		NEWMINI01_20240625_224629.wav	NEWMINI01_20240625_224629_000.wav		PIPPYG	29	10	0.345000	PIPPYG
188		NEWMINI01_20240625_224733.wav	NEWMINI01_20240625_224733_000.wav		PIPPYG	9	9	1.000000	PIPPYG
189		NEWMINI01_20240626_025140.wav	NEWMINI01_20240626_025140_000.wav		PIPPYG	9	9	1.000000	PIPPYG
190		NEWMINI01_20240626_004348.wav	NEWMINI01_20240626_004348_000.wav		PIPPYG	8	8	1.000000	PIPPYG
191		NEWMINI01_20240626_025559.wav	NEWMINI01_20240626_025559_000.wav		PIPPYG	8	8	1.000000	PIPPYG
192		NEWMINI01_20240626_035408.wav	NEWMINI01_20240626_035408_000.wav		PIPPYG	7	7	1.000000	PIPPYG
193		NEWMINI01_20240625_223519.wav	NEWMINI01_20240625_223519_000.wav		PIPPYG	6	6	1.000000	PIPPYG
194		NEWMINI01_20240625_223802.wav	NEWMINI01_20240625_223802_000.wav		PIPPYG	6	6	1.000000	Noise
195		NEWMINI01_20240626_001045.wav	NEWMINI01_20240626_001045_000.wav		PIPPYG	6	6	1.000000	PIPPYG
196		NEWMINI01_20240626_001052.wav	NEWMINI01_20240626_001052_000.wav		PIPPYG	6	6	1.000000	PIPPYG
197		NEWMINI01_20240626_020249.wav	NEWMINI01_20240626_020249_000.wav		PIPPYG	6	6	1.000000	PIPPYG
198		NEWMINI01_20240626_042012.wav	NEWMINI01_20240626_042012_000.wav		PIPPYG	6	6	1.000000	PIPPYG

	FOLDER	IN FILE	OUT FILE FS	OUT FILE ZC	AUTO ID	PULSES	MATCHING	MATCH RATIO	MANUAL
196		NEWMINI01_20240626_001052.wav	NEWMINI01_20240626_001052_000.wav		PIPPYG	6	6	1.000000	PIPPYG
197		NEWMINI01_20240626_020249.wav	NEWMINI01_20240626_020249_000.wav		PIPPYG	6	6	1.000000	PIPPYG
198		NEWMINI01_20240626_042012.wav	NEWMINI01_20240626_042012_000.wav		PIPPYG	6	6	1.000000	PIPPYG
199		NEWMINI01_20240625_224156.wav	NEWMINI01_20240625_224156_000.wav		PIPPYG	5	5	1.000000	Noise
200		NEWMINI01_20240625_231059.wav	NEWMINI01_20240625_231059_000.wav		PIPPYG	5	5	1.000000	PIPPYG
201		NEWMINI01_20240626_024454.wav	NEWMINI01_20240626_024454_000.wav		PIPPYG	4	4	1.000000	PIPPYG
202		NEWMINI01_20240626_025228.wav	NEWMINI01_20240626_025228_000.wav		PIPPYG	4	4	1.000000	Noise
203		NEWMINI01_20240626_025427.wav	NEWMINI01_20240626_025427_000.wav		PIPPYG	4	4	1.000000	PIPPYG
204		NEWMINI01_20240625_224700.wav	NEWMINI01_20240625_224700_000.wav		PIPPYG	5	4	0.800000	PIPPYG
205		NEWMINI01_20240625_223843.wav	NEWMINI01_20240625_223843_000.wav		PIPPYG	3	3	1.000000	PIPPYG
206		NEWMINI01_20240626_001048.wav	NEWMINI01_20240626_001048_000.wav		PIPPYG	3	3	1.000000	PIPPYG
207		NEWMINI01_20240626_004131.wav	NEWMINI01_20240626_004131_000.wav		PIPPYG	3	3	1.000000	PIPPYG
208		NEWMINI01_20240626_031503.wav	NEWMINI01_20240626_031503_000.wav		PIPPYG	3	3	1.000000	PIPPYG
209		NEWMINI01_20240625_223322.wav	NEWMINI01_20240625_223322_000.wav		PIPPYG	2	2	1.000000	PIPPYG
210		NEWMINI01_20240626_013525.wav	NEWMINI01_20240626_013525_000.wav		PIPPYG	2	2	1.000000	
211		NEWMINI01_20240626_013938.wav	NEWMINI01_20240626_013938_000.wav		PIPPYG	2	2	1.000000	
212		NEWMINI01_20240626_024542.wav	NEWMINI01_20240626_024542_000.wav		PIPPYG	2	2	1.000000	
213		NEWMINI01_20240626_030036.wav	NEWMINI01_20240626_030036_000.wav		PLEAUR	25	17	0.680000	PLEAUR
214		NEWMINI01_20240626_030614.wav	NEWMINI01_20240626_030614_000.wav		PLEAUR	16	10	0.625000	PLEAUR
215		NEWMINI01_20240626_030021.wav	NEWMINI01_20240626_030021_000.wav		PLEAUR	12	8	0.667000	PLEAUR
216		NEWMINI01_20240626_032635.wav	NEWMINI01_20240626_032635_000.wav		PLEAUR	16	8	0.500000	PLEAUR
217		NEWMINI01_20240626_033933.wav	NEWMINI01_20240626_033933_000.wav		PLEAUR	7	6	0.857000	PLEAUR
218		NEWMINI01_20240626_042737.wav	NEWMINI01_20240626_042737_000.wav		PLEAUR	5	5	1.000000	PLEAUR
219		NEWMINI01_20240626_013157.wav	NEWMINI01_20240626_013157_000.wav		PLEAUR	4	4	1.000000	PLEAUR
220		NEWMINI01_20240626_042846.wav	NEWMINI01_20240626_042846_000.wav		PLEAUR	5	4	0.800000	PLEAUR
221		NEWMINI01_20240626_042212.wav	NEWMINI01_20240626_042212_000.wav		PLEAUR	7	4	0.571000	PLEAUR
222		NEWMINI01_20240626_030509.wav	NEWMINI01_20240626_030509_000.wav		PLEAUR	3	3	1.000000	PLEAUR
223		NEWMINI01_20240626_042653.wav	NEWMINI01_20240626_042653_000.wav		PLEAUR	3	3	1.000000	PLEAUR
224		NEWMINI01_20240626_030629.wav	NEWMINI01_20240626_030629_000.wav		PLEAUR	5	3	0.600000	PLEAUR
225		NEWMINI01_20240626_013240.wav	NEWMINI01_20240626_013240_000.wav		PLEAUR	2	2	1.000000	PLEAUR
226		NEWMINI01_20240626_024802.wav	NEWMINI01_20240626_024802_000.wav		PLEAUR	2	2	1.000000	PLEAUR
227		NEWMINI01_20240626_030434.wav	NEWMINI01_20240626_030434_000.wav		PLEAUR	2	2	1.000000	
228		NEWMINI01_20240626_030439.wav	NEWMINI01_20240626_030439_000.wav		PLEAUR	2	2	1.000000	
229		NEWMINI01_20240626_031121.wav	NEWMINI01_20240626_031121_000.wav		PLEAUR	2	2	1.000000	
230		NEWMINI01_20240626_042613.wav	NEWMINI01_20240626_042613_000.wav		PLEAUR	2	2	1.000000	
231		NEWMINI01_20240626_012556.wav	NEWMINI01_20240626_012556_000.wav		PLEAUR	4	2	0.500000	
232		NEWMINI01_20240626_033927.wav	NEWMINI01_20240626_033927_000.wav		PLEAUR	4	2	0.500000	
233		NEWMINI01_20240626_030831.wav	NEWMINI01_20240626_030831_000.wav		PLEAUR	2	1	0.500000	
234		NEWMINI01_20240626_042509.wav	NEWMINI01_20240626_042509_000.wav		PLEAUR	2	1	0.500000	
235		NEWMINI01_20240626_025635.wav	NEWMINI01_20240626_025635_000.wav		PLEAUR	3	1	0.333000	

Appendix II

Recordings form Anabat walkabout with Kaleidoscope sound analysis handheld by Donna Mullen

File Help

	FOLDER	IN FILE	OUT FILE FS	OUT FILE ZC	AUTO ID	PULSES	MATCHING	MATCH RATIO	MANUAL ID
1		2024-06-25 22-47-19.wav	2024-06-25 22-47-19_00000_000.wav		MYOMYS	35	13	0.371000	MYOTIS
2		2024-06-25 22-47-04.wav	2024-06-25 22-47-04_00000_000.wav		MYOMYS	29	5	0.172000	MYOTIS
3		2024-06-25 22-22-30.wav	2024-06-25 22-22-30_00000_000.wav		MYONAT	6	5	0.833000	MYONAT
4		2024-06-26 05-15-31.wav	2024-06-26 05-15-31_00000_000.wav		NYCLEI	14	13	0.929000	NYCLEI
5		2024-06-25 22-23-15.wav	2024-06-25 22-23-15_00000_000.wav		NoID	2	0	0.000000	
6		2024-06-25 23-01-44.wav	2024-06-25 23-01-44_00000_000.wav		NoID	2	0	0.000000	
7		2024-06-25 22-20-21.wav	2024-06-25 22-20-21_00000_000.wav		Noise				
8		2024-06-25 22-21-07.wav	2024-06-25 22-21-07_00000_000.wav		Noise				
9		2024-06-25 22-23-30.wav	2024-06-25 22-23-30_00000_000.wav		Noise				
10		2024-06-25 22-20-09.wav	2024-06-25 22-20-09_00000_000.wav		Noise				
426		2024-06-26 05-37-11.wav	2024-06-26 05-37-11_00000_000.wav		Noise				
427		2024-06-26 05-35-41.wav	2024-06-26 05-35-41_00000_000.wav		Noise				
428		2024-06-26 05-36-22.wav	2024-06-26 05-36-22_00000_000.wav		Noise				
429		2024-06-26 05-37-22.wav	2024-06-26 05-37-22_00000_000.wav		Noise				
430		2024-06-26 03-48-17.wav	2024-06-26 03-48-17_00000_000.wav		PIPPIP	14	13	0.929000	
431		2024-06-26 03-50-34.wav	2024-06-26 03-50-34_00000_000.wav		PIPPIP	14	13	0.929000	
432		2024-06-25 22-46-54.wav	2024-06-25 22-46-54_00000_000.wav		PIPPIP	16	9	0.563000	
433		2024-06-26 00-33-30.wav	2024-06-26 00-33-30_00000_000.wav		PIPPIP	9	8	0.889000	
434		2024-06-25 22-41-46.wav	2024-06-25 22-41-46_00000_000.wav		PIPPIP	4	4	1.000000	
435		2024-06-26 00-22-55.wav	2024-06-26 00-22-55_00000_000.wav		PIPPIP	3	3	1.000000	
436		2024-06-26 03-48-43.wav	2024-06-26 03-48-43_00000_000.wav		PIPPIP	2	2	1.000000	
437		2024-06-26 05-20-09.wav	2024-06-26 05-20-09_00000_000.wav		PIPPYG	33	33	1.000000	
438		2024-06-26 05-19-17.wav	2024-06-26 05-19-17_00000_000.wav		PIPPYG	20	20	1.000000	
439		2024-06-26 05-08-38.wav	2024-06-26 05-08-38_00000_000.wav		PIPPYG	16	16	1.000000	
440		2024-06-26 05-20-03.wav	2024-06-26 05-20-03_00000_000.wav		PIPPYG	16	16	1.000000	
441		2024-06-26 05-20-30.wav	2024-06-26 05-20-30_00000_000.wav		PIPPYG	10	10	1.000000	
442		2024-06-26 05-06-47.wav	2024-06-26 05-06-47_00000_000.wav		PIPPYG	6	6	1.000000	
443		2024-06-26 05-19-46.wav	2024-06-26 05-19-46_00000_000.wav		PIPPYG	4	4	1.000000	
444		2024-06-26 05-19-50.wav	2024-06-26 05-19-50_00000_000.wav		PIPPYG	3	3	1.000000	
445		2024-06-26 05-20-36.wav	2024-06-26 05-20-36_00000_000.wav		PIPPYG	2	2	1.000000	

Appendix III

Bat data from within 10km of the site

BCIreland data: search results 2 Jul 2024					
Search parameters: Roosts Transects Ad-hoc observation sites with observations of all species within 10000m of H5129303043					
Roosts					
Name	Grid reference	Grid ref	Grid ref	Address	Species observed

		easting	northing		
Corravahan House	H486098	248600	309800	Drung, County Cavan	Pipistrellus pygmaeus,Nyctalus leisleri
Drung Catholic Church	H5086510577	250865	310577	Drung, Co. Cavan	Plecotus auritus
Killeen Castle	N549933	254900	293300	Dunshaughlin, County Meath	Myotis natterreri,Plecotus auritus
Knockatudor Mill	H5229606548	252296	306548	KnockatudorMillTullcoe,Stradone,Co Cavan	Myotis mystacinus
Thomas Cooney	H5171903563	251719	303563	, Drumminick, Cavan Eircode H12 H290	Pipistrellus pygmaeus
Traditional farm building	H5125903459	251259	303459	Druminik, Co Cavan	Plecotus auritus
Transects					
Name	Grid reference start	Grid ref easting start	Grid ref northing start	Species observed	
H40 (1) 2006-	H445019	244500	301900	Pipistrellus pipistrellus (45kHz),Pipistrellus nathusii,Pipistrellus spp. (45kHz/55kHz),Pipistrellus pygmaeus	
H40 (18) 2006-2008	H443105	244300	310500	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Pipistrellus spp. (45kHz/55kHz),Nyctalus leisleri	
H40 (19) 2006-2008	H414089	241400	308900	Nyctalus leisleri,Pipistrellus spp. (45kHz/55kHz)	
H40 (2) 2006-	H492022	249200	302200	Unidentified bat,Pipistrellus spp. (45kHz/55kHz),Pipistrellus pygmaeus,Pipistrellus pipistrellus (45kHz),Nyctalus leisleri,Myotis spp.	
H40 (20) 2006-2008	H423034	242300	303400		
H40 (3) 2006-	H515023	251500	302300	Myotis spp.,Nyctalus leisleri,Pipistrellus pygmaeus,Pipistrellus spp. (45kHz/55kHz),Pipistrellus pipistrellus (45kHz)	
H40 (4) 2006-	H555008	255500	300800	Pipistrellus spp. (45kHz/55kHz),Myotis spp.,Pipistrellus pygmaeus,Pipistrellus nathusii,Nyctalus leisleri,Pipistrellus pipistrellus (45kHz)	

H40 (5) 2006-	H587037	258700	303700	Pipistrellus pygmaeus,Pipistrellus spp. (45kHz/55kHz),Unidentified bat,Nyctalus leisleri,Pipistrellus pipistrellus (45kHz)	
Rathkenny Bridge Transect	H5350011600	253500	311600	Myotis daubentonii,Unidentified bat	
Ad-hoc observations					
Survey	Grid reference	Grid ref easting	Grid ref northing	Date	Species observed
Bat Eco Services	H4342206221	243422	306221	8/23/2022	Pipistrellus pipistrellus (45kHz),Nyctalus leisleri,Pipistrellus pygmaeus
BATLAS 2010	N560935	256000	293500	9/20/2009	Pipistrellus pipistrellus (45kHz)
BATLAS 2010	N532934	253200	293400	9/20/2009	Pipistrellus pygmaeus,Myotis spp.
BATLAS 2020	N5316993302	253169	293302	6/10/2018	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Myotis daubentonii
BATLAS 2020	N5612093365	256120	293365	6/10/2018	Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii
BATLAS 2020	H5681602274	256816	302274	8/31/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii,Plecotus auritus,Myotis natterreri
BATLAS 2020	H5021202515	250212	302515	6/20/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii
BATLAS 2020	H4990003459	249900	303459	9/15/2016	Pipistrellus pipistrellus (45kHz),Myotis daubentonii
BATLAS 2020	H4257203990	242572	303990	9/15/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
BATLAS 2020	H5785903999	257859	303999	8/31/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
BATLAS 2020	H5069404646	250694	304646	9/13/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
BATLAS 2020	H5139305229	251393	305229	9/13/2016	Pipistrellus pipistrellus (45kHz),Myotis daubentonii
BATLAS 2020	H4143405274	241434	305274	6/19/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
BATLAS 2020	H5584609410	255846	309410	9/13/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus

					pygmaeus,Nyctalus leisleri,Plecotus auritus
BATLAS 2020	H5234309781	252343	309781	9/13/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii
BATLAS 2020	H5809809792	258098	309792	9/13/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
BATLAS 2020	H5086510577	250865	310577	8/29/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri
BATLAS 2020	H4800111211	248001	311211	6/19/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii,Unidentified bat
BATLAS 2020	H5305611306	253056	311306	8/13/2016	Pipistrellus pygmaeus,Myotis daubentonii
BATLAS 2020	H4519511609	245195	311609	6/19/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii
BATLAS 2020	H4437611651	244376	311651	6/19/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Myotis daubentonii
BATLAS 2020	H6078511833	260785	311833	7/6/2018	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Myotis daubentonii,Myotis natterreri
BATLAS 2020	H5720612262	257206	312262	9/13/2016	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Myotis daubentonii,Plecotus auritus
BATLAS 2020	H5927112895	259271	312895	9/13/2016	Pipistrellus pygmaeus,Myotis daubentonii,Plecotus auritus
EIS surveys - Brian Keeley	H4650008700	246500	308700	4/2/2005	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus
EIS Surveys - Niamh Roche	N549933	254900	293300	1997-08-00	Pipistrellus pygmaeus,Pipistrellus pipistrellus (45kHz)
Nathusius Pipistrelle Co.	H5731302923	257313	302923	8/11/2022	Pipistrellus pipistrellus (45kHz),Pipistrellus pygmaeus,Nyctalus leisleri,Plecotus auritus,Myotis daubentonii,Myotis

Cavan Project					natterreri,Myotis mystacinus,Pipistrellus nathusii
National Biodiversity Data Centre Bat Records	H425041	242500	304100	7/13/2022	Pipistrellus spp. (45kHz/55kHz)
National Biodiversity Data Centre Bat Records	H412081	241200	308100	8/8/2021	Plecotus auritus
National Biodiversity Data Centre Bat Records	H423028	242300	302800	4/6/2020	Pipistrellus spp. (45kHz/55kHz)
Wildlife Surveys Ireland Surveys	H4292506704	242925	306704	9/19/2023	Pipistrellus pygmaeus,Nyctalus leisleri,Pipistrellus pipistrellus (45kHz)