Bat Roost Assessment of Skerry Bridge, Mountmellick, Co. Laois

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Biodiversity Record Submission Policy:

It is the policy of Abbott Ecology to submit all bat records to Bat Conservation Ireland, directly or via the National Biodiversity Data Centre (NBDC) recording website, one year post-surveying. Records will automatically be submitted, unless otherwise requested.

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Summary

Abbott Ecology was commissioned by AtkinsRéalis, on behalf of Laois County Council, to conduct a Bat Roost Assessment of a single span stone masonry bridge, Skerry Bridge, c. 5 km southwest of Mountmellick, Co. Laois. The bridge carries the L2095 local road across the Murglash River at Lat. 53.100399, Long. -7.395913. The bridge is structurally unsound, and in need of urgent repair.

Bat surveys were conducted during the main bat active season in suitable weather conditions during July 2025. A variety of survey techniques were used, including desktop review, daytime visual assessments, a dusk emergence survey with infra-red camera filming, and two full consecutive nights of automated/passive acoustic bat detector monitoring from 23 - 25 July 2025.

Skerry Bridge offered highly suitable roosting opportunities to bats. Natterer's Bat (*Myotis nattereri*) and Whiskered Bat (*Myotis mystacinus*) were confirmed roosting singly in stone crevices in the apex of the bridge. These are two of the rarest of Ireland's nine resident bat species. Other bat species recorded incidentally flying in the area include Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Leisler's Bat (*Nyctalus leisleri*). As well as the confirmed roost spaces, there was a multitude of other suitable bat roosting cracks and crevices in the stonework of the arch of the bridge. However, the stonework of the bridge is in a state where it is gradually cracking and stones are falling out, so the existing roost spaces will not exist in a similar state indefinitely.

Minor summer day-roosts (and also likely a night-roost) of Natterer's Bat x 1 were confirmed in two stone crevices in Skerry Bridge on 23 July, 24 July, and 25 July 2025. One Natterer's Bat was filmed by infra-red camera emerging from one of these stone crevices at 64 minutes after sunset during a dusk emergence survey on 24 July 2025. The video section is emailed with this report. A minor summer day-roost (and also likely a night-roost) of Whiskered Bat x 1 was confirmed on 23 July 2025. There were at least 21 bat droppings visible inside the crevice where Whiskered Bat roosted. Automated acoustic monitoring provided further evidence that Whiskered Bat and Natterer's Bat roosted daily in the bridge, and also probably night-roosted there. A total of 97 registrations of Natterer's Bat, and 640 registrations of Whiskered Bat, were recorded in two nights of acoustic monitoring beneath the bridge, which is a relatively high level of activity. Feeding buzzes of Whiskered Bat, and social calling of Natterer's Bat were also recorded.

There was a Dipper (*Cinclus cinclus*) nest under the bridge (no eggs or chicks), and a Dipper was observed returning to roost in the bridge during the dusk survey on 24 July 2025. There were also two other bird nests, at least one of which was an old Grey Wagtail (*Motacilla cinerea*) nest. Nineteen Old Lady Moth (*Mormo maura*) were also counted roosting in groups or singly inside many of the stone crevices in the bridge on 23 July 2025, and these moths were also filmed emerging from the bridge during the dusk emergence survey on 24 July 2025.

All Irish bats are protected under national and EU legislation. Both the animals themselves and their roosts are protected and it is an offence to disturb or interfere with them without a licence. The proposed bridge repair works have the potential to kill and injure bats, and to disturb/destroy their roosts without appropriate bat mitigation measures in place. The confirmed presence of minor bat roosts of Natterer's Bat and Whiskered Bat in Skerry Bridge means that **a bat roost derogation license will need to be obtained from the National Parks and Wildlife Service in order to allow repair works to proceed lawfully**.

A bat roost exclusion is necessary to avoid killing/injuring bats during the proposed bridge repair works. There was evidence of minor summer bat roosts, and no evidence of summer maternity roosting. The bridge is also suitable for winter hibernation of bats. It may therefore be assumed that a small number of bats could be roosting inside the bridge at any time of the year. It is recommended that the bat roost exclusion and the bridge repair works would take place outside of the winter hibernation period, while bats are not in a state of torpor. Bat mitigation measures that can be included in an application for a bat roost derogation license are outlined in this report. Measures include bat roost exclusion, retaining suitable roosting crevices as much as possible, and providing bat boxes.

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1. Introduction

1.1 Background and Aims

Abbott Ecology was commissioned by AtkinsRéalis, on behalf of Laois County Council, to conduct a Bat Roost Assessment of a single span stone masonry bridge, Skerry Bridge, Mountmellick, Co. Laois. The bridge is structurally unsound and in need of urgent repair.

The aims of the bat survey were to assess the potential of the bridge to support bat roosts, to search for bats and/or signs of bat roosting, to identify the bat species and the type of roosting involved (e.g. minor bat roost or maternity bat roost, for example). The surveys aimed to assess whether there is a requirement for an application for a bat roost derogation license from the National Parks and Wildlife Service to allow bridge repair works to proceed lawfully.

1.2 Site Description and Proposed Works

Skerry Bridge (Plate 1) is a single span masonry arch bridge located at Lat. 53.100399, Long. -7.395913, approximately 5 km south-west of Mountmellick, Co. Laois (Figure 1). The stone arch has been widened with a rectangular concrete section on the north-eastern/downstream side. It carries the L2095 local road over Murglash River, a tributary of the River Barrow. The bridge forms the western boundary of the River Barrow and River Nore Special Area of Conservation (SAC) in this location (Figure 1). The surrounding landscape comprises mainly intensive agricultural fields with associated hedgerows, scattered rural houses and farmyards, and patches of coniferous and deciduous woodland. There has been a removal of a significant area of deciduous woodland cover in the vicinity of the bridge in recent years (see desktop review, Section 3.1).

A bridge inspection report by MMConsult to Laois Co. Co states that "*The original arch barrel structure is in a very poor state, the arch has two major diagonal cracks, associated dropped stonework at the crown and significant open horizontal joints all of which are indicative of abnormal movement and settlement of the supporting abutments. The abutments no longer provide adequate support to the arch barrel and has compromised the structure's ability to safely carry the required loading. The arch barrel is unfit for use in its current state*". The proposed works involve remedial works to the arch barrel to restore structural integrity and safety of the structure. The general work plan is outlined below (source: report by MMConsult to Laois Co. Co.). The finalised works plan will also take cognisance of the bat mitigation measures outlined as part of a bat roost derogation license from the National Parks and Wildlife Service, where granted. This bat survey report provides supporting information for an application for a bat license.

- Underpin the abutments and grout the fill material behind the abutment and arch barrel;
- Install stainless steel stitching bars;
- Pressure point all open cracks with pinning stones;
- Install a reinforced concrete saddle above the arch barrel;
- Relay the carriageway and install rubbing strips.
- Remove ivy from the parapets
- Repoint existing parapets and carry out localised concrete repair
- Repair of existing rock armour and additional rock armour
- Underpin wing walls

Plate 1. Skerry Bridge view from north-east (left) and south-west (right)

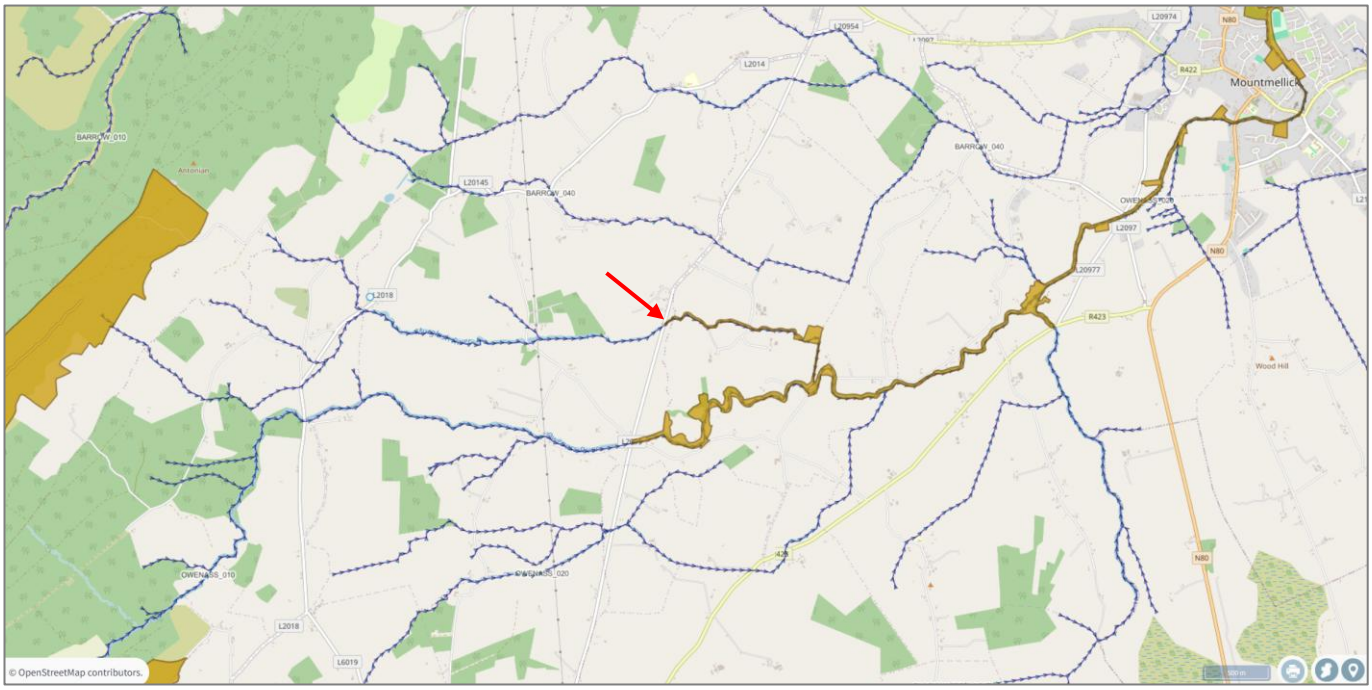


Figure 1. Location of Skerry Bridge, L2095 road, Mountmellick, Co. Laois (red arrow). Maps: epa.ie/Open Street Maps

1.2 Bats In Ireland

The nine confirmed resident bat species in Ireland are; Soprano Pipistrelle (*Pipistrellus pygmaeus)*, Common Pipistrelle (*Pipistrellus pipistrellus)*, Nathusius' Pipistrelle (*Pipistrellus nathusii)*, Leisler's Bat (*Nyctalus leisleri)*, Brown Long-eared Bat (*Plecotus auritus)*, Lesser Horseshoe Bat (*Rhinolophus hipposideros)* and three myotid species; Daubenton's Bat (*Myotis daubentonii)*, Natterer's Bat (*Myotis nattereri),* and Whiskered Bat (*Myotis mystacinus)*. Ireland hosts the world population stronghold for Leisler's Bat, and one of the world's population strongholds for Lesser Horseshoe Bat.

There have been confirmed records of a further two species, currently considered vagrant species; Brandt's Bat (*Myotis brandtii)* in Co. Wicklow in 2003 confirmed by DNA analysis (Mullen 2007), and Greater Horseshoe Bat (*Rhinolophus ferrumequinum)* has been confirmed by a single male in Co. Wexford in 2012/2013 (Roche *et al.* 2014), and more recently by acoustic recordings made during June and July 2020 in Glendalough, Co. Wicklow (source; Bat Conservation Ireland email, 17.7.2020). There have been a few other Irish records of Brandt's Bat, unconfirmed by DNA analysis, and it is possible that Brandt's Bat may have been overlooked because of its close similarity to Whiskered Bat. However, a 2008-2009 re-survey of known Irish sites for Whiskered Bat did not confirm any additional Brandt's Bat through DNA analysis, so it cannot at present be considered a resident species (Boston *et al.* 2010).

Table 1 details the conservation status and legal protection of Irish bat species with respect to; Red List of Terrestrial Mammals (Marnell, Looney & Lawton 2019), the latest assessment of EU protected habitats and species in Ireland (NPWS 2019), the European Communities (Birds and Natural Habitats) Regulations 2011-2021, and the Irish Wildlife Acts (1976 - 2021).

Table 1. Conservation status, population size estimate, and legal protection of Irish bat species

Bat species	Estimated population size*	Red List Status**	EU Protected Species Assessment***	Habitats Directive	Irish Wildlife Acts
Common Pipistrelle (*Pipistrellus pipistrellus*)	1.2 -2.8 million	Least Concern	Favourable	Annex IV	Yes
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	0.5-1.2 million	Least Concern	Favourable	Annex IV	Yes
Nathusius' Pipistrelle (*Pipistrellus nathusii*)	10,000 - 18,000	Least Concern	Unknown	Annex IV	Yes
Leisler's Bat (*Nyctalus leisleri*)	73,000 - 130,000	Least Concern	Favourable	Annex IV	Yes
Daubenton's Bat (*Myotis daubentonii*)	81,000 - 103,000	Least Concern	Favourable	Annex IV	Yes
Natterer's Bat (*Myotis nattereri*)	Unknown	Least Concern	Favourable	Annex IV	Yes
Whiskered Bat (*Myotis mystacinus*)	Unknown	Least Concern	Favourable	Annex IV	Yes
Brandt's Bat (*Myotis brandtii*)	Unknown	Data Deficient	Not included (vagrant)	Annex IV	Yes

Bat species	Estimated population size*	Red List Status**	EU Protected Species Assessment***	Habitats Directive	Irish Wildlife Acts
Brown Long-eared Bat (*Plecotus auritus*)	64,000 - 115,000	Least Concern	Favourable	Annex IV	Yes
Lesser Horseshoe Bat (*Rhinolophus hipposideros*)	14,000	Least Concern	Inadequate	Annex II and Annex IV	Yes
Greater Horseshoe Bat (*Rhinolophus ferrumequinum*)	Unknown, low number	Not included	Not included (vagrant)	Annex II and Annex IV	Yes

** After Roche et al. 2014. ** After Marnell et al. 2019. *** After NPWS 2019*

Bats use different types of roosts during different times of the year and phases of their life cycle (Plate 2) (see summary of roost types in Appendix A). For example, in early summer, pregnant females gather together to form maternity roosts where they give birth to pups and suckle them until they are weaned by late summer. The pups are flightless for a few weeks and are completely reliant on their mothers' milk. Bats spend the summer months mostly hunting for insect prey at night and sheltering by day. In winter when insect food becomes scarce due to low temperatures, bats seek out winter hibernation roosts where they enter into a torpor, reducing their metabolic requirements, thus surviving through the period of low food availability. They are vulnerable to disturbance in winter roosts, as waking up causes them to burn fat reserves that must last until spring, and they are vulnerable to injury when in a torpid state.

Bats also make use of roosts other than their daytime roost. During night-time foraging bouts, they may take temporary shelter from inclement weather or process and digest insect prey in what are called 'night roosts'. These often tend to be close to key foraging areas e.g. for Lesser Horseshoe (Knight & Jones 2009). Wherever a bat lives or rests is a bat roost. However bats need different roosting conditions at different times of the year, and they will often move around to find a roost that meets their needs. Summer maternity roosts, where females gather to give birth and rear pups, are of greater conservation significance than a night roost or an occasional roost used by a single or small number of bats (Marnell, Kelleher & Mullen 2022).

Each bat species tends to have its own particular roost requirements and preferences. For example, Lesser Horseshoe Bats cannot use their limbs to crawl into crevices like other species, and they must instead fly directly into a roost through an opening of sufficient size and hang by their specially adapted feet from a suitable perch. For this reason, this species will not use bat roost boxes like the other Irish bat species. Pipistrelle species on the other hand are crevice dwellers. They can land and crawl into very tight spaces through access holes as little as 1.2 x 2 cm. Their roosts can be concealed under ridge tiles, in wall cavities, or between slates and felt for example.

Bats, like other wildlife, tend to use habitat corridors with shelter of trees, hedgerows and woodland to move throughout the landscape. Such wildlife corridors provide connectivity between the various roosts, foraging, and mating sites that bats use during different seasons or phases of their life cycle (Plate 2, and see Appendix A for descriptions of roost types). Linear vegetated features such as tree lines, hedges, riverbanks, and woodland edges, are often important commuting and foraging habitats for bats. These landscape features provide concentrations of insect prey as well as shelter from wind, rain and predators. However, bats, like any other wildlife, will also move through less sheltered landscapes when exploring new roosting/foraging opportunities or migrating between areas e.g. moving between summer roosts and autumn mating sites or winter hibernation roosts. Loss of connective habitat patches/corridors can however impede bat movements and negatively impact bat populations (Voigt & Kingston 2016).

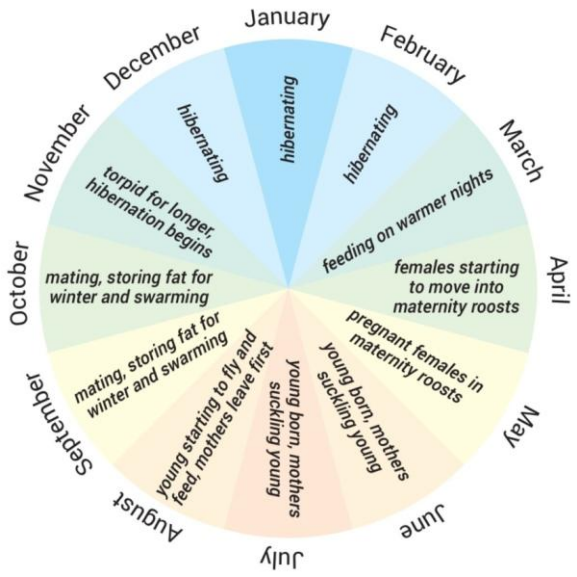


Plate 2. Generalised bat life cycle (from Bat Conservation Trust Survey Guidelines 2023)

1.3 Legal Protection of Bats

Bats comprise one of the most highly diverse mammalian groups. There are over 1,200 species of bat worldwide, with nine confirmed as resident in Ireland to date. Due to sharp declines in many bat populations in recent decades, all bat species in Europe are legally protected under the European Habitats Directive, 1992 (92/43/EEC). The Habitats Directive seeks to "*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community Interest*". It contains lists (in '*Annexes*') of habitats, plant species, and animal species, which are rare or declining on a European scale. It is built around two pillars;

- A **System of Strict Protection** for species of European importance, **including all bat species** (listed under Annex IV, Article 12 of the EU Habitats Directive). This provides protection to the bats themselves, and also prohibits deterioration/destruction of breeding sites and resting places.

- **The Natura 2000 Network of Protected Areas** (Special Areas of Conservation, SACs, and Special Protection Areas, SPAs) (Article 6 of the EU Habitats Directive). The Lesser Horseshoe Bat (*Rhinolophus hipposideros*) is the only Irish bat species listed under Annex II, and for which the Irish government is required to designate SACs. This species occurs almost exclusively in the Atlantic seaboard counties of Cork, Kerry, Limerick, Clare, Galway and Mayo, with sparse records in counties Tipperary, Roscommon, and Sligo.

The domestic legislation, the European Communities (Birds and Natural Habitats) Regulations 2011-2021, (S.I. No. 477 of 2011) ("the Habitats Regulations"), which implements this EU Directive, combined with the Wildlife Acts 1976-2021, ensures that individual bats and their breeding sites and resting places are fully protected in Ireland. A summary of the law in relation to bats in Ireland and the Europe is highlighted below.

Bats and the Law

As a result of the legislation outlined above, it is an offence to:

1. Deliberately capture, injure or kill a bat.
2. Deliberately disturb a bat, particularly during the period of breeding, hibernating or migrating.
3. Damage or destroy a breeding site or resting place of a bat.
4. Keep, transport, sell, exchange, offer for sale or offer for exchange any bat taken in the wild, other than those taken legally before the Habitats Directive was implemented.

Bat Roost Derogation Licenses

Both pillars, (i) the System of Strict Protection and (ii) the Natura 2000 network of SACs and SPAs, allow for exceptions or "derogations" from the protection regimes under Article 6 and Article 16 of the EU Habitats Directive. A person may apply to the Minister under Regulation 54 of the Habitats Regulations for a derogation license to carry out one or more of these prohibited activities. Firstly, a license can only be granted by the Minister via the NPWS only for the reasons which are specifically listed in Regulation 54 (*Text Box 2*). Secondly, the applicant must demonstrate that there is no satisfactory alternative, and thirdly, that the action will not adversely affect the favourable conservation status of bat species in their natural range. Each case is considered on its particular circumstances, and an application may be refused. Mitigation to reduce or compensate for any impact of development is generally a condition of the licence and should be proportionate to the impact. Mitigation measures may require particular timing of operations, protection of existing roosts or the creation of new roosts to replace ones being lost. Monitoring of the effect of the mitigation is usually required (Marnell *et al*., 2022).

Regulation 54 Derogation Reasons

(a) In the interests of protecting wild fauna and flora and conserving natural habitats
(b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property
(c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and the beneficial consequences of primary importance for the environment
(d) For the purpose of research and education, of repopulating and introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants
(e) To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of bats

2. Methods

2.1 Overview

Bat surveys were undertaken in accordance with current bat survey guidelines from the Bat Conservation Trust UK - 'Bat Surveys for the Professional Ecologist Good Practice Guidelines (4th edition)' (Collins 2023), and 'Bat Mitigation Guidelines for Ireland version 2 (Marnell et al. 2022). The overall schedule of site surveys, and relevant weather conditions during surveys, are shown in Table 2.

Table 2. Overall bat survey schedule

Date	Field Survey	Times	Weather Conditions	Surveyor*
23/7/2025	- Daytime visual survey to assess roost suitability and search for bats and bat signs. - Deploy automated bat detector under bridge.	N/A	Calm, dry, mild	IA
24/7/2025	- Daytime visual survey. - Mark up bat roosting crevices with paint. - Dusk Emergence Survey with infra-red camera filming. Spot check for Daubenton's Bat foraging.	Dusk survey: 21:20 - 23:07 Sunset: 21:37	Dusk survey: Temperature 17-15ºC; Wind F0, Cloud 4/8 Otkas, Precipitation None	IA & VB
25/7/2025	- Daytime visual survey. - Collect automated bat detector.	N/A	Calm, dry, mild	IA

** IA = Isobel Abbott, VB = Vincent Brennan*

2.2 Desktop Review

A desktop review of publicly available ecology/bat data for the development site and locality was undertaken (i.e. searching the maps of the National Biodiversity Data Centre NBDC). The NBDC online ecology database holds bat records from Bat Conservation Ireland's national bat database, and also a Model of Bat Landscapes examining the relative importance of landscape and habitat associations for bats across Ireland (as per Lundy *et al.* 2011). The surrounding habitats and landscape connectivity were reviewed from various online maps. A report on bat usage of selected bridges in counties Laois and Offaly was checked to see whether Skerry Bridge was among those surveyed (Keeley, 2007).

2.3 Daytime Visual Surveys

The cracks and crevices in the stonework of Skerry Bridge, and ivy cover, were visually searched during daylight hours. Visual surveys were assisted with directional torchlight and an endoscope as needed. Potential signs of bat roosting include, for example;

- Bats, dead or alive.
- Bat droppings: these can accumulate under established roosting and access locations.
- Feeding remains: discarded insects parts such as moth wings under feeding perches.
- Fur oil/grease staining: natural oils in bats' fur rubs onto regularly used surfaces.
- Urine staining, or splashes on windows.
- Scratch marks: from bats movements in and out of perching/roosting locations.
- Characteristic smells of bats may sometimes be detectable.
- Audible daytime roost bat chatter.

It is important to note that sometimes roosting bats leave few visible signs of their presence in bridges, as droppings fall into the waterway.

2.4 Dusk Emergence Survey

A dusk emergence survey was conducted on 24 July 2025. The surveys were conducted from 15 minutes before sunset until 1.5 hrs after sunset during suitable weather conditions as detailed in the survey schedule in Table 2. Bat detectors (Magenta Bat5, Wildlife Acoustics EM3+) were used to listen for bats in real time to aid observations during the surveys, and recordings were also made using static detectors (Wildlife Acoustics Song Meter SM4BATF with SMM U2 microphone) for later analyses. Recorded bat activity was manually analysed using Wildlife Acoustics Kaleidoscope Viewer Pro, specialist bat call analysis software.

Infra-red camera filming was also conducted during the dusk survey. A Delmodes 8k 64MP 60 frames per second video camera with infrared (IR) night vision, with two additional IR illuminators (2 x Lonnky IR illuminator 30 LEDs c. 15Watts at 850nm) were used to aid night-time observations during the survey, and to record video for subsequent analyses. A screenshot of IR video during the dusk survey is shown in Plate 12 in Section 3.4, showing a Natterer's Bat emerging from a roosting crevice identified earlier on that day during visual surveys. IR illumination is invisible to bat and human eyes, and the stone bridge only looks lit up when viewed through the IR camera. It is thus a non-invasive way of viewing bats that doesn't deter them from their typical behaviours. Normal illumination, on the other hand, would be a deterrent to bat species and disrupts their behaviour.

2.5 Automated/Passive Detector Monitoring

An automated bat detector (Wildlife Acoustics Song Meter SM4BATFS with SMM U2 microphone) was used to record all-night acoustic bat activity during two full consecutive nights from 23-25 July 2025, during suitable weather conditions. The detector microphone was located as shown by the red arrow in Plate 3, near confirmed bat roosting crevices in the arch (Section 3.2).

The detector was set to automatically record from half an hour before sunset until half an hour after sunrise. Passive monitoring involves leaving a suitable bat detector in position with no observer present, and bats which pass sufficiently close to the detector microphone are recorded and their calls are stored for later analysis. This passive monitoring allows a more long-term insight into bat activity and roosting patterns at a site, more than the 'snap-shot' of bat activity obtained during emergence surveys. It is effective for detecting night-roosting behaviour for instance. Furthermore, passive bat monitoring is an effective method to detect species that have low intensity echolocation calls, such as Natterer's Bat, Brown Long-eared Bat (see note on species' acoustic detectability in Section 2.6).

Recordings were made in full spectrum, retaining all amplitude and harmonic information from the original signal for subsequent analysis, and were stored in WAV format. Bat sonograms were manually analysed and identified to species level using specialist software, Wildlife Acoustics Kaleidoscope Viewer Pro, noting the time and date of bat registration files. Activity analysis of recorded bat echolocation was defined as registrations/contacts per species within a 15 s (maximum) file. Multiple passes/calls/pulses of the same species within a (maximum) 15 s file count as a single registration - two species within the same 15 s file count as two registrations. Feeding buzzes (indicating a prey capture attempt by a bat), and social calling of bats (used for communication rather than foraging or orientation) were also noted. A feeding buzz is a shortening of pulse durations and inter-pulse intervals as the bat homes in on prey.

Pipistrelle calls with an 'in-between' frequency of maximum energy, FMAXE, of c. 50kHz, cannot always be reliably assigned to either Common Pipistrelle (typical FMAXE of c. 45kHz) or Soprano Pipistrelle (typical FMAXE c. 55kHz), and were classified as '50kHz Pipistrelle'. The echolocation pulses of *Myotis* sp. (Daubenton's Bat, Natterer's Bat, Whiskered Bat) can be difficult to separate to species due to similarities in calls types, particularly if the pulses recorded are faint, only partially detected, or atypical. Where uncertain, these would be classified as *Myotis* sp.

Plate 3. Location of automated bat detector microphone near roost crevices in arch apex of Skerry Bridge 23-25 July 2025

2.6 Note on Differences in Bat Species' Acoustic Detectability

Some Irish bat species have much higher intensity of echolocation than others, and can thus be detected from greater distances, e.g. Leisler's Bat (by far the loudest of all the Irish bat species), followed by relatively intense echolocation of Common Pipistrelle and Soprano Pipistrelle, and the rarer Nathusius' Pipistrelle. Bat species with quieter echolocation, such as Brown Long-eared Bat and Natterer's Bat, must fly much closer to the microphone to be detected. Information taken from the UK Bat Conservation Trust's bat survey guidelines (Collins, 2023) indicates that Brown Long-eared Bat and Natterer's Bat are among the most difficult to detect bat species (Plate 3). These differences in acoustic detectability are important for interpreting the results of passive detector monitoring.

The differences in typical behaviour of bat species' also strongly influence the level of bat activity recorded by static bat detectors, and the number of bat registrations does not equal the number of bats flying past the microphone. For example, Leisler's Bat typically fly high and fast in the sky and will often fly over a study site briefly en route through the landscape,

occasionally foraging over the treetops, whereas the pipistrelle species will often repetitively forage back and forth at landscape features, thus generating more bat registrations. Bat species other than Leisler's Bat, Common Pipistrelle and Soprano Pipistrelle are more notable in the results, because of (1) having lower intensity echolocation, and (2) being less common in the landscape. Exceptions to this would include, for example, where the detector records lots of Daubenton's Bat at their typical foraging habitat over smooth waterways, or where detectors are positioned inside/near a bat roost.

Table 3.8 Number of surveys required to achieve 95% certainty of detection on walked transect surveys in woodland (Scott and Altringham, 2014).

Species	Number of surveys to achieve 95% certainty of detection for walked transect survey
Pipistrelle	1
Brandt's bat	2
Whiskered bat	2
Barbastelle	2
Horseshoe bat	4
Natterer's bat	5
Brown long-eared bat	Up to 9[a]
Bechstein's bat	4–6[b]
Alcathoe	2–3[b]

Plate 4. Bat species' acoustic detectability from Bat Conservation Trust UK Guidelines 2023

2.7 Survey Constraints

There were suitable weather conditions during these bat surveys, and surveys were completed during the main bat active season. Due to the low height of the bridge arch, it was possible to conduct close-up visual surveys of all of the potentially suitable roosting cracks and crevices in the stonework. Some of the crevices were deep and inaccessible, so the possibility of a bat being hidden out of view cannot be discounted. However, the additional survey techniques to supplement visual surveys mitigated this constraint.

3. Results

3.1 Desktop Review

NBDC biodiversity maps for the study area held the bat records shown in Table 3 for the 100 m, 1 km, 2 km and 10 km grid squares in which the site lies, as accessed on 28 July 2025. There are few bat records for the area, which can be more indicative of a lack of local bat surveys or data submission, rather than a paucity of bat fauna. The 'habitat suitability indices' from the Bat Landscapes GIS layer on the NBDC maps for the locality are shown in Table 4.

The site lies outside of the known range of Lesser Horseshoe Bat (Ireland's only Annex II bat species). The Geological Survey of Ireland Karst Landforms database indicates that there are no caves or underground sites which may be suitable for bat roosting close to the study site. Skerry Bridge was not included in 51 bridges surveyed for bats in Co. Laois, of which only six bridges had bats at the time of the assessment (Keeley, 2007). Natterer's Bat, Daubenton's Bat, and Brown Long-eared Bat were the species identified in bridges in Co. Laois. There were single individuals of Natterer's Bat present.

In a survey of bats' use of bridges in Co. Leitrim and Co. Sligo, Shiel (1999) surveyed a total of 174 bridges. 66 of these bridges (37.9%) had bats present. However, if only bridges with higher roost suitability grading were considered, 66 out of 98 bridges (67.3%) were positive for bats. Five species of bats were recorded roosting in bridges - Daubenton's, Natterer's, Whiskered, Long-eared and Pipistrelle. A total of 252 bats was recorded - 180 Daubenton's (71.4%), 66 Natterer's (26.2%), 3 Whiskered (1.2%), 1 Long-eared (0.4%), 1 Pipistrelle (0.4%) and 1 unidentified.

A desktop review of aerial imagery of the locality shows that there was relatively good cover of deciduous trees in the form of woodland patches and a network of hedgerows within a 1 km radius of the bridge, as viewed in online EPA maps. However, there has been significant removal of deciduous tree cover c. 0.5 km northeast of the site, as seen in more recent Google maps aerial imagery (Figure 2). This removal of hedgerow and woodland would have reduced bat habitat suitability, and had a negative impact on bats and other wildlife in the local area.

Table 3. Bat records from the National Biodiversity Data Centre database

Grid square	Scale	Species name	Record count	Date of last record
N405056	100 m	No bat records	N/A	N/A
N4005	1 km	No bat records	N/A	N/A
N40C	2 km	No bat records	N/A	N/A
N40	10 km	Brown Long-eared Bat Common Pipistrelle Daubenton's Bat Leisler's Bat Natterer's Bat Soprano Pipistrelle	5 8 24 3 1 8	30/5/2014 24/6/2022 27/8/2021 1/9/2021 1/8/2007 16/6/2008

Table 4. Habitat suitability indices from the Bat Landscapes GIS layer in NBDC mapping

Bat species/grouping	Habitat Suitability Index	Habitat Suitability Index graded into quintiles: 1. Low; 2.Low-moderate; 3.Moderate; 4.Moderate-high; 5. High
All Bats	30	Moderate-high
Soprano Pipistrelle	42	Moderate-high
Brown Long-eared Bat	37	Moderate
Common Pipistrelle	51	High
Lesser Horseshoe Bat	1	Low
Leisler's Bat	44	Moderate-high
Whiskered Bat	22	Moderate
Daubenton's Bat	29	Moderate
Nathusius' Pipistrelle	2	Low
Natterer's Bat	42	Moderate-high

Figure 2. Woodland removal evident in comparison of aerial imagery in online EPA maps (top) and Google 2025 (bottom).

3.2 Bat Roosting Overview and Visual Survey Results

Skerry Bridge had high bat roosting potential. There were many highly suitable crevices in the stonework of the arch for small numbers of bats (e.g. Plate 5), although the bridge may be lacking in spaces that are suitable for larger gatherings of bats into maternity colonies. The crevices are suitable for roosting bats at any time of year, including winter hibernation. Bats are often

found hibernating in such stone bridges during winter. However, the stonework of the bridge is in a state where it is gradually cracking and stones are falling out, so the existing roost spaces will not exist in a similar state indefinitely.

Minor summer day-roosts (and also likely a night-roost) of Natterer's Bat were confirmed in Skerry Bridge on 23 July, 24 July, and 25 July 2025, as detailed below. A minor summer day-roost (and also likely a night-roost) of Whiskered Bat was confirmed on 23 July 2025. Automated acoustic monitoring provided further evidence that Whiskered Bat and Natterer's Bat roosted daily in the bridge, as detailed in Section 5. A total of 97 registrations of Natterer's Bat, and 640 registrations of Whiskered Bat, were recorded in two nights of acoustic monitoring beneath the bridge, which is a relatively high level of activity. Feeding buzzes of Whiskered Bat, and social calling of Natterer's Bat were also recorded. A concise summary of the bat roosting evidence at Skerry Bridge is presented in Table 5, and details are further elaborated in each section of the results.

Plate 5. Skerry Bridge had a multitude of cracks and crevices that are suitable for roosting bats.

Table 5. Summary of bat roosting evidence of Natterer's Bat and Whiskered Bat at Skerry Bridge

Date and survey technique	Species summary notes on roosting evidence
23 July 2025: - Daytime visual check. - Sunset acoustic recordings.	**Natterer's Bat** x 1 visually confirmed day-roosting. **Natterer's Bat** acoustically recorded within roost emergence timeframe. **Whiskered Bat** x 1 visually confirmed day-roosting **Whiskered Bat** acoustically recorded within roost emergence timeframe.
23-24 July 2025. - Middle of the night acoustic recordings	**Natterer's Bat** and **Whiskered Bat** both recorded acoustically during the middle of the night, with night-roosting in the bridge likely. Two Natterer's Bat, and Natterer's Bat social calling recorded. (Section 3.5). **Whiskered Bat** foraging activity (feeding buzzes) under the bridge recorded.
24 July 2025: - Sunrise acoustic recordings.	**Natterer's Bat** acoustically recorded within morning roost return timeframe. **Whiskered Bat** acoustically recorded within morning roost return timeframe.
24 July 2025: - Daytime visual check. - Dusk emergence survey. - Sunset acoustic recordings.	**Natterer's Bat** x 1 visually confirmed day-roosting in different crevice to 23 July 2025, and species confirmed by infra-red camera and acoustic recordings during dusk survey. **Whiskered Bat** confirmed flying underneath bridge by infra-red camera and acoustic recordings within roost emergence timeframe.
24-25 July 2025. - Middle of the night acoustic recordings.	**Natterer's Bat** and **Whiskered Bat** both recorded acoustically during the middle of the night, with night-roosting in the bridge likely (Section 3.5). **Whiskered Bat** foraging activity (feeding buzzes) under the bridge recorded.
25 July 2025: - Sunrise acoustic recordings. - Daytime visual check.	**Natterer's Bat** x 1 visually observed in daytime inside the same crevice as 24 July 2025. **Natterer's Bat** acoustically recorded within morning roost return timeframe. **Whiskered Bat** acoustically recorded within morning roost return timeframe.

Natterer's Bat roosting details:

Natterer's Bat x 1 was confirmed to be day-roosting in two separate crevices, with one present during the daytime on all three survey dates. There was one Natterer's Bat in the stone crevice shown in Plate 6 on 23 July 2024. It was visually identifiable to species by its pinkish bare face, pale/whitish belly furry, and relatively long ears and tragus. The stone crevice is located in the apex of the arch towards the north-east bridge opening, c. 1 m in from where the stone section and concrete section meet. The crevice was marked with white paint on 24 July 2025 (Plate 6). There were no bats in the same crevice on 24 and 25 July, and there was one in another crevice as described below.

Plate 6. Natterer's Bat x 1 in this stone crevice on 23 July 2025. Crevice empty on 24 and 25 July 2025.

There was one Natterer's Bat on each of 24 and 25 July 2025 in a different stone crevice, as shown in Plate 7. The bat's body was folded tightly, and very well tucked into a deep crevice on both dates. Its species identity was confirmed by a combination of infra-red camera recording and dusk survey observations on 24 July 2025, and automated acoustic monitoring (Sections 3.4 and 3.5). There was just one bat dropping visible, caught on the spider web which was stretched below the crevice (Plate 7). The crevice is located in the apex of the arch, towards the north-east bridge opening, c. 2.75 m in from where the stone section and concrete section meet. The crevice was marked with white paint on 24 July 2025 (Plate 7).

Although there was only one Natterer's Bat and Whiskered Bat seen day-roosting at any one time, the acoustic monitoring data showed that there were at least two Natterer's Bat under the bridge at night (probably night-roosting), and Whiskered Bat was also very active flying and foraging underneath the bridge - details in Section 3.5.

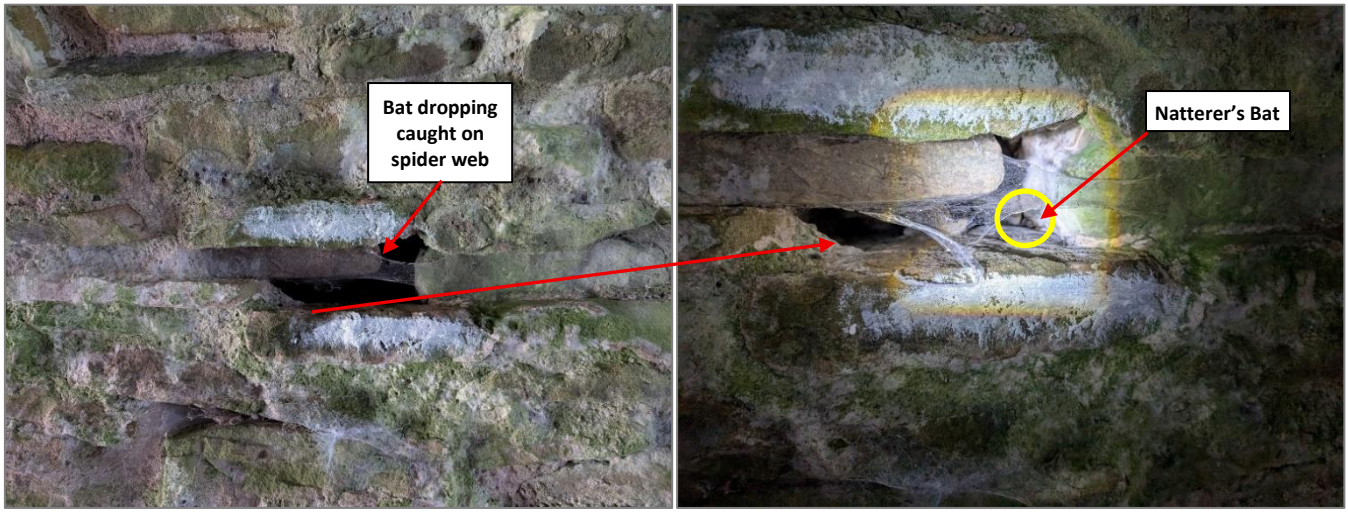


Plate 7. Natterer's Bat x 1 day-roosting in this crevice on both 24 and 25 July 2025. Empty on 23 July 2025.

Whiskered Bat roosting details:

Whiskered Bat x 1 was confirmed day-roosting deep inside another crevice on 23 July 2025, as indicated in Plate 8 below. Its species identity was established by acoustic monitoring data (Section 3.5), and by its fur, which appeared different to that of Natterer's Bat. Acoustic recordings indicated that Whiskered Bat roosted daily in the bridge (Section 3.5), but it was not visible in the same crevice on 24 or 25 July 2025, and was not filmed emerging by infra-red camera during the dusk survey on 24 July 2025. Whiskered bat was filmed flying under the bridge at 44 minutes past sunset, and the exact location of another likely Whiskered Bat roost crevice remains unknown. There were at least 21 bat droppings in the crevice where Whiskered Bat roosted (some of which are visible in Plate 8). Whiskered Bat was recorded foraging at the bridge during the night, while Daubenton's Bat was not (Section 3.5).

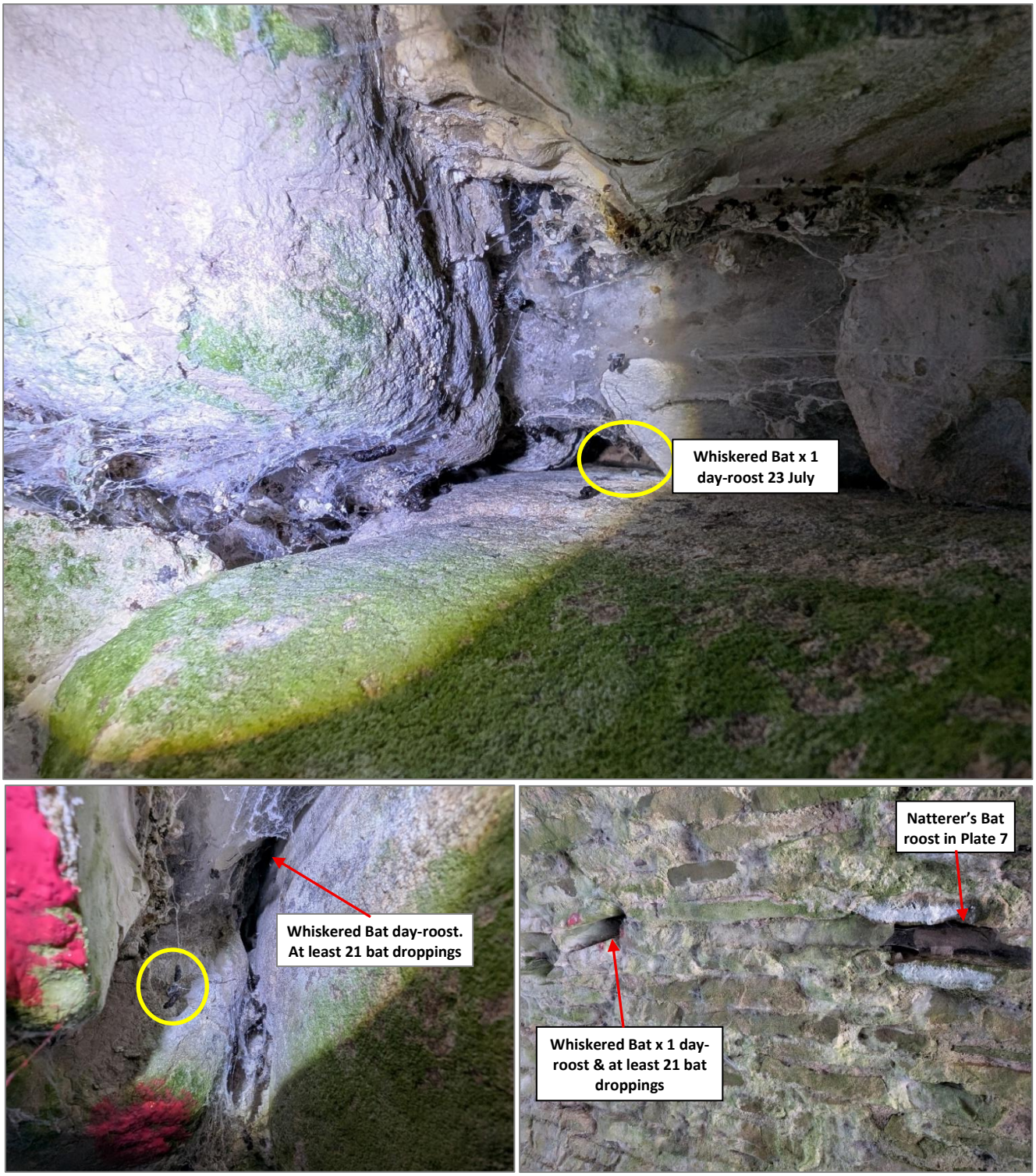


Plate 8. Whiskered Bat x 1 day roost 23 July 2025, and at least 21 bat droppings in this stone crevice.

Other roosting details:

A small number of old bat droppings (unknown species) were observed in another different crevice towards the south-west bridge opening (Plate 9), indicating that a fourth crevice had been used as a bat roost at other times, outside of the current survey period. The crack/crevice is located c. 3 m back from the south-west bridge opening, on the southern wall, and was also marked with pink paint (Plate 9).

Plate 9. Old bat droppings in a crack in the bridge wall towards the south-west opening, marked with pink paint.

3.3 Other Ecology of Note at Skerry Bridge

There was a Dipper (*Cinclus cinclus*) nest (Plate 10), and two other nests, at least one of which was a Grey Wagtail (*Motacilla cinerea*) nest, built on stone ledges/crevices under Skerry Bridge. The Dipper nest had no eggs or chicks in it, but an adult Dipper was observed returning to the bridge during the dusk survey on 24 July 2025, first arriving at 20:30. Nineteen Old Lady Moth (*Mormo maura*) were also counted roosting in groups or singly inside many of the stone crevices in the bridge on 23 July 2025. These are large dark-winged moths (Plate 11), and they were also filmed with infra-red camera emerging from the bridge during the dusk emergence survey on 24 July 2025 (Section 3.4).

Plate 10. Dipper nest and Dipper bird before dusk survey at Skerry Bridge on 24 July 2025

Plate 11. Nineteen Old Lady Moths were counted in various stone crevices in Skerry Bridge. They emerged after sunset.

3.4 Dusk Emergence Survey

The dusk survey on 24.7.2025 was conducted from underneath the bridge. The infra-red camera and acoustic detector equipment was set up to monitor the locations where single Natterer's Bat and Whiskered Bat had been observed on 23.7.2025 (Section 3.2). Those roost locations are shown in the daytime photograph in Plate 8 (bottom right), and in the screenshot of the infra-red video recording during the dusk survey, shown in Plate 12 below (Natterer's Bat roost crevice marked with yellow circle, Whiskered bat roost crevice marked with pink circle).

One Natterer's Bat was filmed emerging from its roost crevice at 22:40:34 on 24 July 2025, 64 minutes after sunset, as shown one second after emergence in the screenshot from the IR camera recording in Plate 12 below. Prior to this, another Natterer's Bat had flown from NE to SW through the tunnel at 59 minutes past sunset. The video section with these bats is emailed with this report.

No Whiskered Bat were observed emerging from the crevice where one had been the day before. There were however Whiskered Bat filmed flying from NE to SW inside the tunnel at 44 minutes after sunset during the typical roost emergence timeframe, suggesting that there is another unknown Whiskered Bat roosting crevice in the bridge, towards the north-east end. However, this species sometime emerges quite early from roosts, and may have arrived from a roost elsewhere by that time. The details of the observations during the dusk emergence survey are included in an analysis of the IR video recordings in Table 6 below. It can be seen that Dipper and Old Lady Moths (Section 3.3) also were active under Skerry Bridge during the dusk survey.

There were no Daubenton's Bats recorded foraging at the Murglash River during the dusk emergence survey, and during a check following the dusk survey. This species was also not detected by the automated acoustic monitoring (Section 3.5). Daubenton's Bat tends to favour wider waterways with smooth surfaces, where it flies low over the water, sometimes skimming insects from the surface. The Murglash River at Skerry Bridge is perhaps narrower, with more rocks and riffle, than would typically be favoured by foraging Daubenton's Bat.

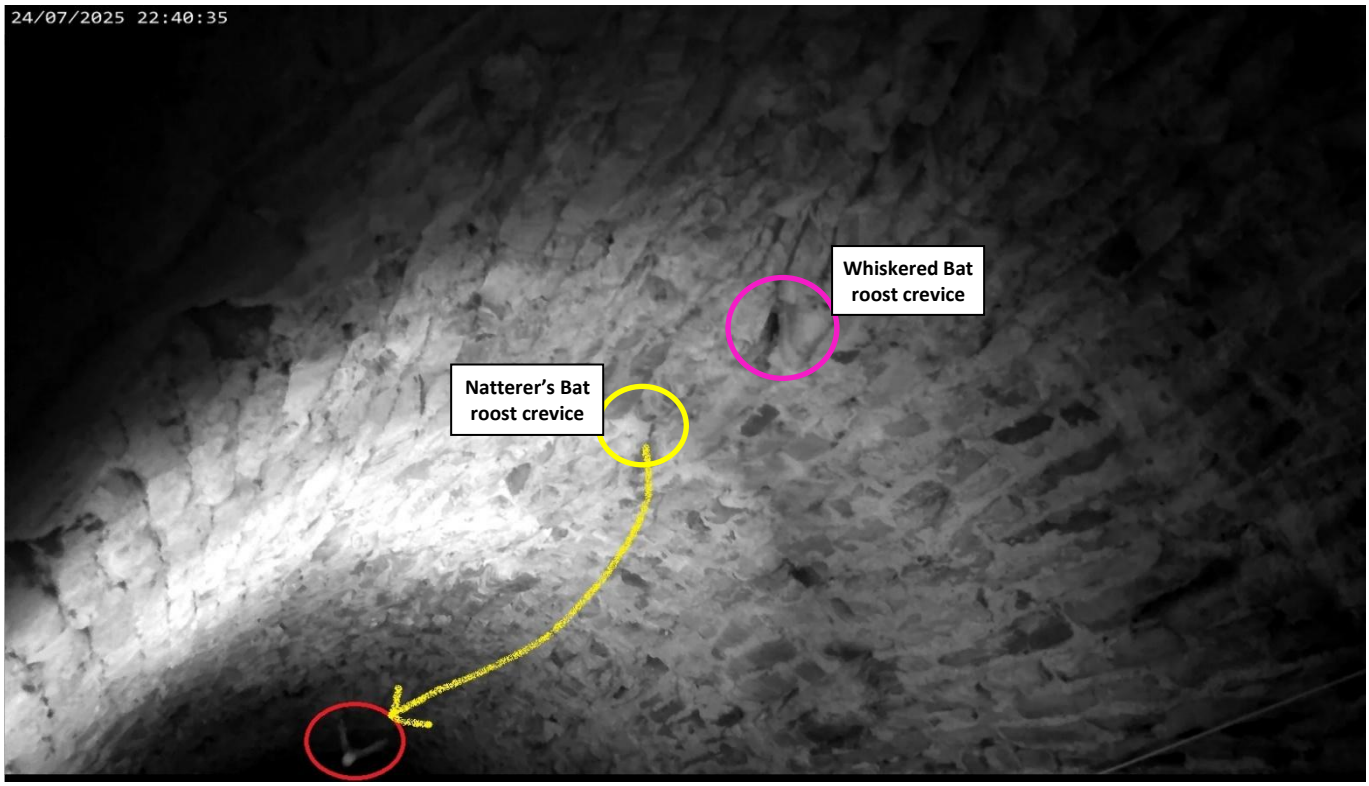


Plate 12. Screenshot from IR video camera recording showing Natterer's Bat emerging on 24 July 2025
The red circle shows Natterer's Bat 1 s after emerging from crevice in apex of arch, shown by start of yellow arrow.
The pink circle indicates Whiskered Bat and 21 bat droppings crevice (Plate 8), and no bats emerged from there on 24th.

Table 6. Analyses of infra-red video recordings during the dusk emergence survey at Skerry Bridge on 24.7.2025

Date	Video section	Timestamp on video	Minutes after sunset	Species	Notes
24-Jul-25	0	-	Sunset 21:36	-	Before sunset
24-Jul-25	1	21:52:25	16 mins	Old Lady Moth (*Mormo maura*)	Old Lady Moths (Plate 11) begin emerging from their roosts in the bridge
24-Jul-25	2	21:52:58	16 mins	Dipper (*Cinclus cinclus*)	Moved the camera angle temporarily to get the Dipper on film. It flies up from large rock in stream into a crack in the barrel arch of the bridge near SW opening (left of screen).

Date	Video section	Timestamp on video	Minutes after sunset	Species	Notes
24-Jul-25	2	-	-	Old Lady Moth	Lots of these moths starting to emerge and fly and flutter around stone crevices - not bats
24-Jul-25	3	-	-	Old Lady Moth	Still some old lady moth activity, not bats
24-Jul-25	4	-	-	Old Lady Moth	Still some old lady moth activity, not bats
24-Jul-25	5	22:15:12	39 minutes, sunset 21:36	Dipper	Briefly flies to same spot in crack of barrel arch, bottom left of screen.
24-Jul-25	5	22:16:06	40 mins	Dipper	Fluttering briefly around same area
24-Jul-25	5	22:16:31	40 mins	Dipper	Flying at top of arch around same area
24-Jul-25	5	22:17:06	41 mins	Dipper	Fluttering around same area
24-Jul-25	5	22:17:42	41 mins	Dipper	Fluttering around same area
24-Jul-25	5	22:18:27	42 mins	Dipper	Fluttering around same area. Relevant because *Myotis* sp. (probably Whiskered Bat) was acoustically detected (faintly) also at 42 mins after sunset, but the bat does not appear in the IR camera view.
24-Jul-25	5	22:19:18	43 min	Dipper	Same area
24-Jul-25	5	22:19:35	43 mins	Dipper	Goes into/settles in crack this time. Bottom left of screen.
24-Jul-25	5	22:19:56	43 mins	Old Lady Moth	Relevant because close to bat acoustic recording, but not bat
24-Jul-25	**5**	**22:20:04**	**44 minutes, sunset 21:36**	**Whiskered Bat flies through**	**Bat flies under arch, coming from concrete culvert side/north-east (right of screen). Whiskered Bat on acoustic recordings.**
24-Jul-25	**5**	**22:20:36**	**44 minutes**	**Whiskered Bat flies through.**	**Whiskered Bat on acoustic recordings. Same bat coming back the other way maybe. Towards bottom of camera view.**
24-Jul-25	6	22:22:45	46 mins	Grey Heron (*Ardea cinerea*)	Calling in flight outside the bridge
24-Jul-25	7	-	-	-	Old Lady Moth still flying under bridge occasionally
24-Jul-25	**8**	**22:35:40**	**59 minutes, sunset 21:36**	**Natterer's Bat (flies through)**	**Natterer's Bat filmed by IR camera and acoustically recorded flying underneath bridge from north-east/concrete culvert side. If emerged from tunnel, not in view of IR camera.**
24-Jul-25	**8**	**22:40:34**	**64 minutes after sunset 21:36**	**Natterer's Bat emerges from day-roost**	**Natterer's Bat filmed by IR camera and acoustically recorded emerging from the crevice where it was seen earlier in the day (Plate 7). Flies towards south-west side (screenshot Plate 12) and turns back to north-east direction, a couple of seconds only.**
24-Jul-25	9	-	-	-	Old Lady Moth still flying under bridge occasionally
24-Jul-25	10	-	-	-	Old Lady Moth still flying under bridge occasionally
24-Jul-25	11	-	-	-	Old Lady Moth still flying under bridge occasionally
24-Jul-25	12	-	-	-	Old Lady Moth still flying under bridge occasionally

3.5 Automated Bat Detector Acoustic Monitoring

In total, 1,111 bat registrations were detected, comprising five of the nine resident bat species in Ireland; Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat, Natterer's Bat, and Whiskered Bat. The total combined number of bat registrations of each bat species or species group (and percentages) for each night are shown in Table 7.

As mentioned in Section 2.6, Leisler's Bat, Common Pipistrelle and Soprano Pipistrelle have much higher sound intensity of their echolocation, compared to Brown Long-eared Bat, Natterer's Bat, and Whiskered Bat. Thus, details on Common Pipistrelle, Soprano Pipistrelle, and Leisler's Bat registrations are not included in the rest of the results/discussion, because they were detected from bats flying nearby to the bridge, and not flying or roosting underneath the bridge. In contrast, a total of 97 registrations of Natterer's Bat, and 640 registrations of Whiskered Bat, were recorded in two nights of acoustic monitoring beneath the bridge, which is a relatively high level of activity. Feeding buzzes of Whiskered Bat, and social calling of Natterer's Bat were also recorded (see Table 8). These are two of Ireland's rarer bat species.

Table 7. Total bat registrations per bat species/group recorded by passive detector during 23-25 July 2025

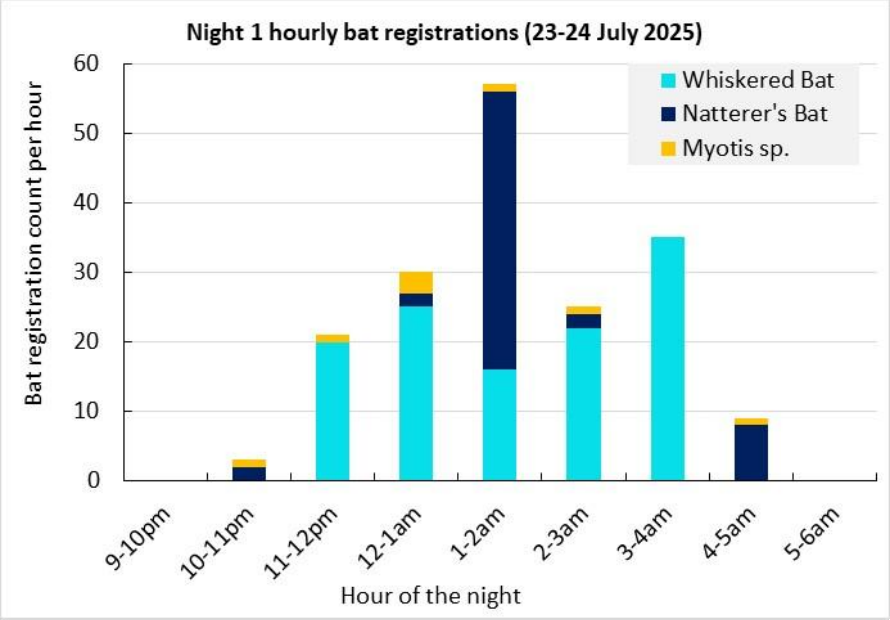
	Night 1 (23-24 July 2025)		Night 2 (24-25 July 2025)	
Species	**Total**	**Percentage**	**Total**	**Percentage**
*Common Pipistrelle**	*45**	*15.8%**	*166**	*20.1%**
*Soprano Pipistrelle**	*59**	*20.8%**	*82**	*9.9%**
*'50kHz Pipistrelle'**	*0**	*0%**	*9**	*1.1%**
*Leisler's Bat**	*0**	*0%**	*3**	*0.4%**
Natterer's Bat	54	19.0%	43	5.2%
Whiskered Bat	118	41.5%	522	63.1%
Myotis sp. (faintly detected pulses, but all of these are likely Whiskered Bat)	8	2.8%	2	0.2%
Totals	**284**	**100.0%**	**827**	**100.0%**

** Detected mainly from bats flying nearby to, rather than under, the bridge (louder echolocating bat species)*

Figure 3 shows the hourly total bat registrations on each night for Natterer's Bat and Whiskered Bat (and *Myotis* sp. where the pulses were not clearly enough recorded to assign to species with certainty, but all of these were likely Whiskered Bat). It can be seen that there were relatively high levels of activity of Natterer's Bat and Whiskered Bat beneath Skerry Bridge, during all

hours of the night. Natterer's Bat, for example, was recorded many times between 1 am and 2 am during night 1 (23-24 July 2025). Natterer's Bat was emitting social calls, and there were two individuals under the bridge on that occasion, as presented in the acoustic analyses data sub-set in Table 8 below.

There were 640 Whiskered Bat registrations in two nights, and so they are not all presented in a Table 8 due to the volume of data. The numbers of Whiskered Bat registrations omitted from each time period are shown in Table 8. There were many feeding buzzes emitted by Whiskered Bat, and this shows that it spent time foraging underneath Skerry Bridge. It is also likely to night-roost there. The relatively high number of registrations of Whiskered Bat was probably generated by a single or low number of individuals repetitively foraging to and fro underneath the bridge, rather than by a larger number of bats.



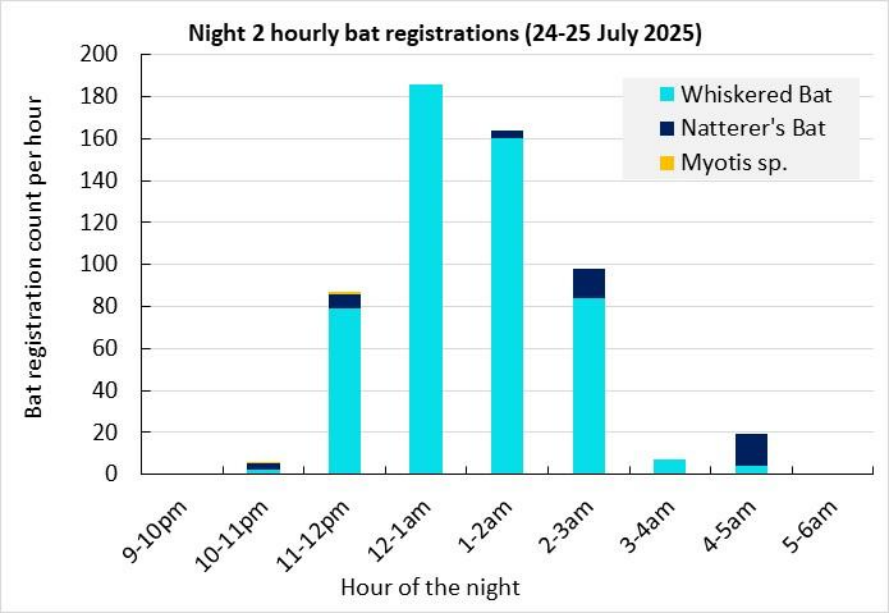


Figure 3. Hourly bat registrations of Whiskered Bat and Natterer's Bat recorded under Skerry Bridge 23-25 July 2025

Table 8. Subset of analyses of Natterer's Bat and Whiskered Bat acoustic recordings

Date	Time	Hr	Species	Notes	Overlap	Overlap species*	Night
23/07/2025	22:36:41	22	*Myotis* sp.	58 minutes after sunset 21:38. Faintly detected, probably Whiskered Bat and not Natterer's Bat.			1
23/07/2025	22:59:23	22	Natterer's Bat	1 hr 21 mins after sunset 21:38			1
23/07/2025	22:59:34	22	Natterer's Bat				1
23/07/2025	23:10:04	23	Whiskered Bat				1
Whiskered Bat registrations x 12 here (not listed to save space in Table)							
23/07/2025	23:50:52	23	*Myotis* sp.	Whiskered likely but not fully detected			1
Whiskered Bat registrations x 14 here (not listed to save space in Table)							
24/07/2025	00:20:30	0	*Myotis* sp.	Whiskered likely but not fully detected			1
24/07/2025	00:26:44	0	Whiskered Bat	Pulses in groups, maybe a social calling type situation			1
24/07/2025	00:26:57	0	*Myotis* sp.	Faint			1
Whiskered Bat registrations x 5 here (not listed to save space in Table)							
24/07/2025	00:35:07	0	Natterer's Bat	Low end frequencies			1

Date	Time	Hr	Species	Notes	Overlap	Overlap species*	Night
24/07/2025	00:36:35	0	Natterer's Bat	Long sequence of rapid pulses			1
24/07/2025	00:37:20	0	Whiskered Bat	Back to clearly contrasting Whiskered pulses			1
Whiskered Bat registrations x 8 here (not listed to save space in Table)							
24/07/2025	00:49:42	0	Whiskered Bat				1
24/07/2025	00:50:12	0	Myotis sp.	Faintly detected	y	c	1
24/07/2025	00:51:49	0	Whiskered Bat				1
24/07/2025	00:52:09	0	Whiskered Bat				1
24/07/2025	01:02:54	1	Natterer's Bat	Broadband, long sequence. Good example.			1
24/07/2025	01:03:12	1	Natterer's Bat	Two individuals			1
24/07/2025	01:03:30	1	Natterer's Bat	Two individuals			1
24/07/2025	01:03:51	1	Natterer's Bat	Two individuals			1
24/07/2025	01:04:26	1	Natterer's Bat	Deep V social call too, but not very clearly detected			1
24/07/2025	01:04:47	1	Myotis sp.		y	c	1
24/07/2025	01:06:49	1	Natterer's Bat	Faintly detected with Common Pipistrelle also, but deep V Natterer's Bat social call also faintly detected	y	c	1
24/07/2025	01:07:11	1	Natterer's Bat	Faintly detected, but deep V Natterer's Bat social calls also faintly detected			1
24/07/2025	01:07:47	1	Natterer's Bat	Deep wavy social calls of Natterer's Bat			1
24/07/2025	01:08:08	1	Natterer's Bat	Very clear long sequence of steep broadband calls			1
24/07/2025	01:08:16	1	Natterer's Bat	Deep wavy social calls of Natterer's Bat			1
24/07/2025	01:08:23	1	Natterer's Bat				1
24/07/2025	01:08:41	1	Natterer's Bat	Dense pulses, two individuals, deep V social call of Natterer's Bat			1
24/07/2025	**01:08:55**	**1**	**Natterer's Bat**	**Dense sequence of pulses, varying pulse rate**			**1**
24/07/2025	01:09:10	1	Natterer's Bat	Deep wavy social calls of Natterer's Bat			1
24/07/2025	01:09:43	1	Natterer's Bat	With Natterer's Bat social calls	y	c	1
24/07/2025	01:09:56	1	Natterer's Bat				1
24/07/2025	01:10:20	1	Natterer's Bat	Deep wavy social calls of Natterer's Bat			1
24/07/2025	01:11:09	1	Natterer's Bat				1
24/07/2025	01:12:23	1	Natterer's Bat				1
24/07/2025	01:13:03	1	Natterer's Bat				1
24/07/2025	**01:13:18**	**1**	**Natterer's Bat**	**Social calls of Natterer's Bat - deep wavy ones**			**1**
24/07/2025	01:13:36	1	Natterer's Bat	With Natterer's Bat social calls			1
24/07/2025	01:13:50	1	Natterer's Bat				1
24/07/2025	01:13:59	1	Natterer's Bat	Dense pulses			1
24/07/2025	01:14:17	1	Natterer's Bat				1
24/07/2025	01:15:05	1	Natterer's Bat				1
24/07/2025	01:15:57	1	Whiskered Bat	Obvious contrast with Natterer's Bat			1
24/07/2025	01:19:18	1	Natterer's Bat				1
24/07/2025	01:20:28	1	Natterer's Bat				1
24/07/2025	01:20:41	1	Natterer's Bat				1
24/07/2025	01:20:53	1	Natterer's Bat				1
24/07/2025	01:21:25	1	Natterer's Bat				1
24/07/2025	01:21:48	1	Natterer's Bat	Deep wavy social calls of Natterer's Bat			1
24/07/2025	01:22:08	1	Natterer's Bat				1
24/07/2025	01:22:48	1	Natterer's Bat				1
24/07/2025	01:27:45	1	Natterer's Bat				1
24/07/2025	01:27:57	1	Natterer's Bat				1
24/07/2025	01:28:03	1	Natterer's Bat				1
24/07/2025	01:28:16	1	Natterer's Bat				1
24/07/2025	01:32:19	1	Natterer's Bat		y	c	1
24/07/2025	01:35:48	1	Natterer's Bat	Both Natterer's and Whiskered faintly detected	y	w	1
24/07/2025	01:35:48	1	Whiskered Bat	Both Natterer's and Whiskered faintly detected	y	n	1
Whiskered Bat registrations x 19 here (not listed to save space in Table)							
24/07/2025	02:48:17	2	Natterer's Bat		y	c	1
24/07/2025	02:48:36	2	Natterer's Bat		y	c	1
Whiskered Bat registrations x 16 here (not listed to save space in Table)							
24/07/2025	02:57:15	2	Whiskered Bat				1
24/07/2025	02:57:42	2	Myotis sp.	Whiskered likely but not fully detected			1
Whiskered Bat registrations x 35 here (not listed to save space in Table)							
24/07/2025	04:05:18	4	Natterer's Bat	Obvious contrast with Whiskered Bat			1
24/07/2025	04:05:51	4	Natterer's Bat				1
24/07/2025	04:06:32	4	Natterer's Bat				1
24/07/2025	04:06:42	4	Natterer's Bat		y	s	1
24/07/2025	04:07:00	4	Natterer's Bat				1
24/07/2025	04:07:06	4	Natterer's Bat				1
24/07/2025	04:07:20	4	Natterer's Bat				1
24/07/2025	04:19:02	4	Natterer's Bat	75 minutes before 5:34 sunrise			1
24/07/2025	04:42:36	4	Myotis sp.	54 minutes before sunrise 5:34. Likely day-roosting. Faintly detected, but more Whiskered-like			1
24/07/2025	22:18:17	22	Myotis sp.	42 minutes after sunset 21:36. Whiskered Bat probably, though faintly detected.	y	s	2
24/07/2025	22:20:07	22	Whiskered Bat	44 minutes after sunset 21:36. IR camera got bat flying through from NE to SW	y	s	2

Date	Time	Hr	Species	Notes	Overlap	Overlap species*	Night
24/07/2025	22:20:36	22	Whiskered Bat	Clear. 44 minutes after sunset 21:36. On IR camera recordings			2
24/07/2025	22:35:38	22	Natterer's Bat	59 minutes after sunset 21:36. IR camera got bat flying through from NE to SW			2
24/07/2025	22:40:33	22	Natterer's Bat	64 minutes after sunset 21:36. Filmed emerging by IR camera at 64 minutes past sunset. Flies NE to SW and then turns around again to NE	y	c	2
24/07/2025	22:40:44	22	Natterer's Bat	64 minutes after sunset 21:36. Filmed emerging by IR camera at 64 minutes past sunset. Flies NE to SW and then turns around again to NE	y	c	2
Whiskered Bat registrations x 28 here (not listed to save space in Table)							
24/07/2025	23:37:16	23	Natterer's Bat				2
24/07/2025	23:37:56	23	Natterer's Bat				2
24/07/2025	23:38:03	23	Natterer's Bat		y	s	2
24/07/2025	23:38:39	23	Natterer's Bat				2
24/07/2025	23:39:38	23	Natterer's Bat				2
24/07/2025	23:39:48	23	Natterer's Bat	Clear and broadband			2
24/07/2025	23:40:09	23	Natterer's Bat	All these are very obviously Natterer's and contrasting with Whiskered Bat			2
24/07/2025	23:48:41	23	Myotis sp.	Faint			2
Whiskered Bat registrations x 346 here (not listed to save space in Table)							
25/07/2025	01:30:00	1	Whiskered Bat	Simultaneously with Natterer's Bat	y	n	2
25/07/2025	01:30:00	1	Natterer's Bat	Simultaneously with Whiskered Bat	y	w	2
25/07/2025	01:30:14	1	Natterer's Bat	Simultaneously with faint Whiskered Bat	y	w	2
25/07/2025	01:30:14	1	Whiskered Bat	Faint only. Natt also	y	n	2
25/07/2025	01:42:09	1	Natterer's Bat				2
25/07/2025	01:43:53	1	Natterer's Bat				2
Whiskered Bat registrations x 63 here (not listed to save space in Table)							
25/07/2025	02:03:13	2	Whiskered Bat	Simultaneously with Natterer's Bat	y	n	2
25/07/2025	02:03:13	2	Natterer's Bat	Simultaneously with Whiskered Bat	y	w	2
25/07/2025	02:03:47	2	Natterer's Bat		y	s	2
25/07/2025	02:03:54	2	Natterer's Bat				2
25/07/2025	02:07:11	2	Natterer's Bat				2
25/07/2025	02:07:41	2	Natterer's Bat	Good example steep broadband pulses			2
25/07/2025	02:08:09	2	Natterer's Bat				2
25/07/2025	02:09:17	2	Natterer's Bat		y	c	2
25/07/2025	02:09:30	2	Natterer's Bat				2
25/07/2025	02:11:53	2	Natterer's Bat				2
25/07/2025	02:12:37	2	Natterer's Bat				2
25/07/2025	02:14:33	2	Whiskered Bat				2
25/07/2025	02:14:57	2	Whiskered Bat				2
25/07/2025	02:15:05	2	Whiskered Bat				2
25/07/2025	02:15:18	2	Whiskered Bat				2
25/07/2025	02:15:26	2	Whiskered Bat	Faint Natterer's coming in at end of file	y	n	2
25/07/2025	02:15:26	2	Natterer's Bat	Faint only. Whiskered Bat also	y	w	2
25/07/2025	02:15:40	2	Whiskered Bat				2
25/07/2025	02:15:53	2	Natterer's Bat	Simultaneously with Whiskered Bat	y	w	2
25/07/2025	02:15:53	2	Whiskered Bat	Simultaneously with Natterer's Bat	y	n	2
25/07/2025	02:16:21	2	Natterer's Bat	Simultaneously with Whiskered Bat	y	w	2
25/07/2025	02:16:21	2	Whiskered Bat	Simultaneously with Natterer's Bat	y	n	2
Whiskered Bat registrations x 42 here (not listed to save space in Table)							
25/07/2025	02:34:54	2	Natterer's Bat	Simultaneously with faint Whiskered Bat	y	w	2
Whiskered Bat registrations x 26 here (not listed to save space in Table)							
25/07/2025	04:01:59	4	Natterer's Bat	Faint	y	s	2
25/07/2025	04:02:37	4	Natterer's Bat	Clearer			2
25/07/2025	04:02:53	4	Natterer's Bat				2
25/07/2025	04:15:27	4	Natterer's Bat				2
25/07/2025	04:15:49	4	Natterer's Bat	Dense rapid pulses			2
25/07/2025	04:16:09	4	Natterer's Bat				2
25/07/2025	04:17:56	4	Whiskered Bat				2
25/07/2025	04:18:05	4	Whiskered Bat				2
25/07/2025	04:21:54	4	Natterer's Bat				2
25/07/2025	04:22:24	4	Natterer's Bat				2
25/07/2025	04:22:32	4	Natterer's Bat	Long pulse sequence, broadband			2
25/07/2025	04:22:46	4	Natterer's Bat	Long pulse sequence, broadband			2
25/07/2025	04:23:10	4	Natterer's Bat	Long pulse sequence, broadband			2
25/07/2025	04:37:46	4	Natterer's Bat	59 minutes before sunrise 5:36. Day-roosting. Long pulse sequence, broadband	y	c	2
25/07/2025	04:38:13	4	Natterer's Bat	58 minutes before sunrise 5:36. Day-roosting.			2
25/07/2025	04:42:47	4	Whiskered Bat	54 minutes before sunrise 5:36			2
25/07/2025	04:47:43	4	Whiskered Bat	49 minutes before sunrise 5:36. Day-roosting	y	c,s	2
25/07/2025	04:50:50	4	Natterer's Bat	46 minutes before sunrise 5:36. Day-roosting. Faint, but definite	y	c	2
25/07/2025	04:51:45	4	Natterer's Bat	45 minutes before sunrise 5:36. Day-roosting. Faint, but definite	y	s	2

** Overlap bat species are other species recorded in the same sound file: c = Common Pipistrelle, s = Soprano Pipistrelle, n = Natterer's Bat, w = Whiskered Bat*

3.6 Observations on Existing Levels of Artificial Light at Night

Skerry Bridge and its surroundings are in darkness at night at present, with no influence of Artificial Light at Night (ALAN).

4. Conclusions and Recommendations

Minor summer day roosts (and also likely night roosts) of both Natterer's Bat and Whiskered Bat were confirmed in Skerry Bridge. These are some of Ireland's rarest bat species, but are known to favour roosting in old stone bridges. All Irish bats are protected under national and EU legislation. Both the animals themselves and their roosts are protected and it is an offence to disturb or interfere with them without a licence. The proposed bridge repair works have the potential to kill or injure bats and to disturb/destroy their roosts without appropriate bat mitigation measures in place. Even with bat mitigation measures, the necessary repair works will likely result in disturbance and destruction of some bat roost crevices. The confirmed presence of bat roosts of Natterer's Bat and Whiskered Bat in Skerry Bridge means that **a bat roost derogation license will need to be obtained from the National Parks and Wildlife Service in order to allow repair works to proceed lawfully**.

A bat roost exclusion is necessary in order to avoid killing/injuring bats during the proposed bridge repair works. The potential and confirmed roosting crevices at Skerry Bridge are also suitable for winter hibernation of bats. There was evidence of minor bat roosts, and no evidence of summer maternity roosting. **It may therefore be assumed that a small number of bats could be roosting inside the bridge at any time of the year.** It is recommended to conduct the bat roost exclusion and the repair works **outside of the winter months**, because bats are vulnerable to disturbance during hibernation, as disturbance burns valuable winter energy reserves, and it is difficult for them to find adequate insect prey, drinking water, and alternative roost sites during cold/wet weather.

The bat roost crevices in Skerry Bridge were too deep and narrow to allow capture of bats by hand (under appropriate NPWS bat capture license). Bats will need to be excluded unharmed by allowing them to fly out from the bridge at night, and then preventing them from returning to roost in crevices. This exclusion should be done outside of the winter hibernation period, in the days preceding the commencement of works. Tarpaulins can be lowered over the bridge openings to prevent bats returning to roost, and crevices can be temporarily blocked with hessian or bubble wrap, after ensuring the crevices are not occupied. Bat roosting crevices should be marked with paint and reflective tape so that they can easily be located, and visible on infra-red camera video recordings. Visual checks, automated acoustic recording, and infra-red camera filming can all be used to confirm that bats are successfully excluded before the bridge repair works commence. As presented in the survey results, both Natterer's Bat and Whiskered Bat come back to the bridge during all hours of the night after they have emerged, and so extra caution is needed to make sure they are not roosting during bridge repair work. It is also important to make sure that Dipper does not get trapped under the bridge during works. A licensed bat ecologist is recommended to supervise works, and be on site to capture/handle bats under license if necessary. The bat ecologist should give a bat toolbox talk to the bridge repair team on the necessary bat roost mitigation actions.

To conserve bat roosting spaces in the bridge after repair works are complete, as many as possible of the roosting crevices in the stonework should be left in place (not filled in). This will require liaison between the bat ecologist and a structural engineer, as it will not be possible to retain all suitable cracks and crevices while making the bridge structurally sound. The agreed crevices to be retained should be clearly marked. Installation of suitable bat boxes, and Dipper nest boxes, are also recommended, with installation supervised by an ecologist.

Ivy removal from the bridge parapets also needs to proceed with care under supervision of a bat ecologist. It may be a good idea to cut the stems at the base so that it starts dying off gradually, rather than sudden physical removal, or via the use of biocides. There should be no lighting installed near the bridge, apart from temporary lighting needed during repair works.

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Appendices

Appendix A: Roost Types Used by Bats

Text adapted from (Hundt 2012)

Transitional Roost (generally April-September/October)

On waking from hibernation or in the period prior to hibernation, bats search for roosts in which they stay for only a few days or on some occasions several weeks. These transitional roosts can be occupied by a few individuals or occasionally small groups. The transitional roosts used prior to hibernation are generally cool and thus may allow bats to reduce their energy requirements before going into hibernation.

Maternity Roost (generally May-August)

Breeding females gather together around the beginning of May to form nursery colonies. During this period gestation begins with births typically occurring between June and July. The females and their young remain within the maternity roost until the young are weaned and independent (late July-August). These roosts tend to break up between August and September. Adult males are rarely found within these colonies. However, the adult males of long-eared bats, Daubenton's, Natterer's and Lesser Horseshoe Bats can be found roosting within maternity colonies with their numbers increasing throughout the active season.

Satellite Roost (generally May-August)

Breeding females may have alternative roost sites in close proximity to the main nursery colony. These are referred to as 'satellite roosts'. The number of bats using these roosts can vary greatly, from a few individuals, to small groups.

Mating Roost (generally September-November)

All Irish bats are polygynous i.e. males mate with several females. Mating generally takes place from late summer and can continue through the winter. A number of different mating strategies are used by bats, though males of some species establish mating roosts, whereby they defend territory and display/call to females to mate.

Hibernation Roost (generally October-March)

Depending on the weather and food availability, bats tend to move to hibernation sites from October. Hibernation roosts can vary greatly in terms of the number of individuals and the diversity of species that occupy them. However, they tend to have a constant cool temperature and high humidity, which allows the bats to use less energy regulating their temperature. Bats will wake occasionally during hibernation to drink and feed.

Night Roost (generally March-November)

Bats may use roosts other than traditional day roosting sites to rest in during the night. These roosts vary in their conservation significance. Night roosts may be used by a single individual on occasion or they could be used regularly by the whole colony. Studies have shown that night roosts may be of particular importance to some species such as the lesser horseshoe bat, providing key resting places within core foraging areas.

Day Roost (generally March-November)

These roosts are used during the day to rest in. Males of most Irish species spend the summer roosting alone or in small groups with other males in such roosts. Bats may regularly use a number of day roosts, switching between them on a daily basis, though conversely they may occupy the same roosting site for several weeks.

Feeding Roost (generally May-November)

These roosts can be occupied by a single animal or a few individuals throughout the active season. They vary in their significance as they may be used by the whole colony or just a few individuals to feed, to shelter from the weather or to rest temporarily. Feeding roosts are often used by *Plecotus* and *Rhinolophus* species.

Swarming Sites

Swarming takes place between August and November, whereby large numbers of bats from several species gather, generally around caves and mines. They are often dominated by the *Myotis* species and appear to be important mating sites with some bats travelling tens of kilometres to reach these areas. A proportion of the bats that travel to these sites will remain to hibernate.