

EMERGENCE AND DAWN BAT SURVEY AT KILPATRICK CHURCH, JULY 2025



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Executive Summary

Kilpatrick Church and Graveyard are located approximately 10km North East of Mullingar Co. Westmeath. Surrounded by pastureland, access is via metal gates which form part of the surrounding boundary wall. A Conservation Plan to stabilise the structure is currently being implemented. Kilpatrick Church is in a ruinous state and requires urgent conservation/restoration works in order to preserve this historic structure. The church plan is square in shape, with surviving stone walls, several window opes and a high vaulted ceiling. There was a tower with spiral stairs, but the tower and stairs have partially collapsed, and both are overgrown with heavy vegetation. The church is directly south west of a quarry hole in the limestone rich area. There are remains of a Medieval road way in curving earth work to the north of the site. This road was thought to connect to the main road and facilitated horse and carts leaving the site with quarried stone. It is thought that the quarry also provided the stone for the church. It is estimated that there has been a structure on site since 1391.

Repair and restoration works are required at Kilpatrick Church in order to prevent the further deterioration of the structure. During an initial assessment of ecological constraints, it was identified that the structure may be suitable for use by bats as a hibernation and/or maternity roosting site.

A hibernation survey (2023/2024 season) having indicated that a small number of bats do utilise the structure during the winter season, an emergence and dawn survey was undertaken during the peak of the 2025 maternity season (mid-July) in order to ascertain if the structure is utilised as a maternity roost.

While a small degree of foraging/commuting activity of Common pipistrelle, Soprano pipistrelle, Leisler's Bat and Daubenton's Bat were observed in the general vicinity of Kilpatrick Church and Graveyard, there was no evidence observed during the 2025 emergence or dawn surveys to indicate use of the structure as a summer roosting site.

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1 Introduction

1.1 FERS Ltd. Company background

Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, holds a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) a Diploma in Environmental and Planning Law (King's Inn), a M.Sc. in Geographical Information Systems (University of Ulster, Coleraine) and a M.Sc. in Environmental and Climate Law (UCD). Patrick has in excess of 25 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, senior ecologist with FERS holds a 1st class honours degree in Botany, and a Ph.D. in Botany. Emma has in excess of 15 years of experience in undertaking ecological surveys on an academic and professional basis. Ciarán Byrne, a senior ecologist with FERS holds a 1st class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC). Ciarán has in excess of 10 years in undertaking ecological surveys on both an academic and a professional basis. Senan Clynch joined FERS as a junior ecologist in March 2024. Senan holds a 1st Class Honours Degree in Environmental Science from Trinity College Dublin, graduating in 2022.

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, various County Councils, the Heritage Council, Teagasc, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the Office of Public Works and Coillte in addition to numerous private individuals and companies.

Dr Moran has in excess of 15 years of experience in carrying out bat assessments, utilising heterodyne, frequency division, time expansion and real-time techniques. Patrick holds an A-graded certificate in Bat Acoustics Analysis. FERS specialise in long-term monitoring of bat populations.

1.2 Legislation and bats in Ireland

There are currently nine (possibly ten) species of bat known to breed in Ireland. All species and their roost sites are strictly protected under both Domestic and European legislation including:

1.2.1 The Wildlife Act 1976 (as Amended)

All Irish species of bat are protected under this, Ireland's primary domestic legislation for the protection of wildlife. Under the Wildlife Act, it is a criminal offence to intentionally harm or disturb a bat in its place of rest.

1.2.2 The EU Habitats Directive, Council Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992.

All Irish bat species are listed on Annex IV of the EU Habitats Directive and, as such, must be strictly protected wherever they occur.

2 Conservation status of Irish bat species

In the cooler climate of Ireland and many other temperate countries, bats eat exclusively invertebrates (insects, spiders, etc.), which they actively hunt by catching them in flight or plucking them from foliage or off the ground/water. Different species of bat may specialise in catching different types of invertebrates (for example the relatively large Leisler’s Bat (*Nyctalus leisleri*) feeds on larger invertebrates while the Common Pipistrelle (*Pipistrellus pipistrellus*) concentrates on smaller prey, such as midges). Bats gather to feed wherever there are large invertebrate populations. During the winter in Ireland, when there are few invertebrates available for feeding bats, they hibernate. Under Irish law (the Wildlife Act 1976 and Wildlife (amendment) Act 2000) it is a criminal offence to harm or disturb a bat in its place of rest.

Bats are at their most vulnerable when roosting and form different roost types at different times of the year (see Figure 1, taken from Irish Wildlife Manuals No. 25, Bat Mitigation Guidelines for Ireland). Owing to their metabolic and social requirements, which vary throughout the year, most bats will utilise a variety of roost types depending on the time of year.

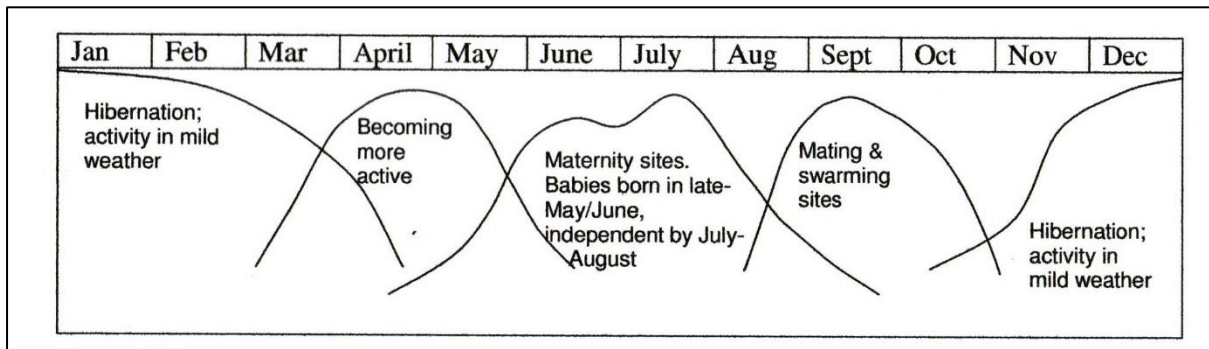


Figure 1: The "Bat Year"

The conservation status of the nine resident Irish bat species (taken from the NPWS 2019 document "The status of EU protected habitats and species in Ireland") is outlined below:

2.1.1 Lesser Horseshoe Bat, *Rhinolophus hipposideros* [1303]

The lesser horseshoe bat (*Rhinolophus hipposideros*) is widely distributed through western, central and southern Europe and as far east as Kashmir, northern Africa and Arabia. Ireland represents the most north-westerly limit of the species' distribution and here it is confined to six west coast counties: Mayo, Galway, Clare, Limerick, Cork and Kerry. Lesser horseshoe bats are faithful to their roosts and will return to the same site each year. Summer roosts are often in the attics of old or derelict buildings. Hibernation sites are typically in caves, souterrains, cellars and icehouses. Lesser horseshoes rely on linear landscape features (e.g., treelines, stone walls and hedgerows) to navigate and commute from

roosts to feeding sites and seldom fly out in the open. This species forages on flying insects predominantly in deciduous woodland and riparian vegetation, normally within a few kilometres of their roosts. The lesser horseshoe bat has been extensively surveyed in Ireland over the last 30 years. That said, new roosts are occasionally found and there are certainly hibernation sites that are still unknown. There is also a network of night roosts which individual or small numbers of bats may occasionally use, and these have not been comprehensively surveyed or documented. The population overall is doing well; monitoring has demonstrated significant increases in numbers in the core areas. Over much of its distribution, both range and the area of suitable habitat have remained stable. In Limerick and North Kerry, however, worrying declines in habitat, and consequently in range, have been observed. These are considered likely to continue without significant intervention. For these reasons, Habitat, Range and their associated Future prospects, which were all considered to be Favourable in the last report, are now considered Inadequate, and the Overall Status of this species is assessed as Inadequate and declining.

2.1.2 Common Pipistrelle, *Pipistrellus pipistrellus*, (1309)

The common pipistrelle (*Pipistrellus pipistrellus*) is one of Ireland's smallest mammals. It is widespread throughout the country and commonly encountered during bat surveys, although it may be less common or even absent from some parts of the western fringes. It is very general in its habitat preference, foraging in woodland, riparian habitats and parkland, along linear features in farmland, and in towns and cities. Some association with broadleaved woodland and riparian habitats at a local scale have been identified, while mixed forestry may be more important at a wider scale in the landscape. Only areas of bog, marsh and heath appear to be avoided. Maternity roosts of this species are often in buildings, typically in the attics of dwelling houses, although it is occasionally found roosting under bridges and in trees. Bats normally disperse in autumn and hibernate over winter. This species has rarely been found hibernating in Ireland, but the available records for bats in winter are from modern dwelling houses. This species has a very wide distribution across the island including some off-shore islands and there is no evidence of any decline in range or in habitat. The most recent estimates suggest a population size in the order of 1-2 million animals, making it one of the most common mammals in Ireland. Ongoing car-based bat monitoring indicates that the population is increasing. Furthermore, there is no indication of any major pressures currently impacting populations and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

2.1.3 Soprano Pipistrelle, *Pipistrellus pygmaeus*, (5009)

The soprano pipistrelle (*Pipistrellus pygmaeus*) is present across much of central Europe and into southern Scandinavia and Greece but may be absent from parts of France and southern Italy. It is the most widespread bat species on the island of Ireland, occurring in all counties including the extreme north, west and south. It is the second most commonly encountered species in the national bat monitoring programme, although its abundance is variable across the island with no particular north-south or east-west pattern apparent. Summer roosts are usually in buildings, including modern suburban houses, old abandoned mansions, churches, amenity buildings and farm sheds. Bat boxes are also used. Soprano pipistrelles normally roost in very confined spaces, such as behind window sashes, under tiles and weather-boards, behind fascia and soffits, and within the cavities of flat roofs. Roosts of more than 1,500 individuals are known. The species is thought to hibernate in buildings and trees but has seldom been recorded in winter. Although this bat is known to forage in a broad range of habitats, it shows some preference for aquatic habitats – riparian woodland, rivers and lakes. The most recent estimates put the population of the species at between 500,000 and 1,200,000 individuals. There is no indication of any significant pressures impacting on the species, and numbers appear to be increasing. The Overall Status of the species is therefore assessed as Favourable and improving, the same conclusion as the previous assessment.

2.1.4 Nathusius' Pipistrelle, *Pipistrellus nathusii*, (1317)

The Nathusius' pipistrelle (*Pipistrellus nathusii*) was recognised as a resident bat species on the island of Ireland following the discovery in 1997 of a maternity colony of 150 bats in Northern Ireland. The first bat detector records from the Republic of Ireland were made in 1997 and 1998. The initial rapid expansion of this bat across Ireland was captured by annual car transect surveys, but more recent years of this survey suggest the species has not gone on to consolidate its range here; Nathusius' pipistrelle remains rare in the Republic of Ireland, its range is disjunct and its modelled core area of habitat is relatively small. This is typically a migrant species, found in eastern Europe in summertime and in south-western Europe in the winter. Ireland and the UK appear to lie in a transitional region, with resident bats being supplemented during winter by the migratory individuals returning from the north-east of the species range. An expansion is predicted in the area of suitable habitat for the species up to 2050 with increasing temperatures. To date, however, despite extensive survey work, there has been no maternity roost recorded in the Republic of Ireland; nor have there been any confirmed hibernation records for the species in the Republic of Ireland. The population of Nathusius' pipistrelle in Ireland is cautiously estimated to be 3,000-5,000 individuals. It remains unclear whether the species is successfully reproducing here and what level of population would be required to ensure long-term

viability. No pressures appear to be acting on the species, and there are many buildings similar to those used by nursery colonies in Northern Ireland, so suitable habitat does not appear to be a limiting factor. However, given the uncertainty about range and population, the Overall Status is assessed as Unknown, unchanged since the last assessment.

2.1.5 Natterer's Bat, *Myotis nattereri*, (1322)

The Natterer's bat (*Myotis nattereri*) is widespread across Europe and found from Portugal and north-west Africa to the Urals and the near East. It is widely distributed in Ireland, though records are relatively scarce. Summer roosts are normally in old stone buildings or masonry bridges. Usually only small numbers of bats are present, often hidden in narrow spaces where they are difficult to locate. A few larger roosts (>50 bats) have been found in Church of Ireland churches. A number of important autumnal swarming sites have been identified. This species is seldom recorded in winter, but occasionally individuals have been observed in bridges, mines and caves. Detector records are limited due to the difficulty of distinguishing the *Myotis* species. This bat gleans most of its prey (spiders, beetles, caterpillars, moths) from foliage, rather than catching it in the air. Woodland habitats, river corridors and pastures appear to be favoured for foraging. Building renovation and loss of foraging habitat are potential threats for this species but are not considered to be significant. There is no monitoring scheme in place for this species, but the most recent Red Data List for Irish Mammals lists Natterer's bat as Least Concern and the Overall Status has been assessed as Favourable, as in the last two assessments.

2.1.6 Daubenton's Bat, *Myotis daubentonii*, (1314)

The Daubenton's bat (*Myotis daubentonii*) is found throughout Ireland. It forages over water and is particularly associated with slow-moving rivers and with lakes. It favours waterways with riparian vegetation, particularly broadleaf woodlands, and is positively associated with good water quality and invertebrate diversity. It is less likely to be present where there are streetlights. It also tends to avoid areas of peatland and is negatively associated with increasing altitudes. This species forages over the surface of water bodies, gaffing aquatic insects, such as non-biting midges, caddis-flies and mayflies, with its large feet. The majority of roosts known for this species are in masonry bridges and old stone buildings such as castles and mills. Confirmed hibernacula for the species are extremely rare in Ireland. Several cave locations have been confirmed as autumnal swarming sites for the species, but it is unknown whether these sites also function as hibernation roosts. Recent estimates for this species suggest a population size in the order to 57,000- 79,000 animals. Ongoing monitoring indicates that the population is stable or even slightly increasing and there is no evidence of decline in suitable

habitat. Although some pressures/threats have been noted, there is no indication of any major pressures currently impacting on the species and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

2.1.7 Whiskered Bat, *Myotis mystacinus* (1330)

The whiskered bat (*Myotis mystacinus*) is widespread across much of Europe, although it is absent from northern Scotland and northern Scandinavia. There are records from throughout Ireland, from Donegal to Wexford, but the species is not common, and its distribution appears to be naturally dispersed and disjunct. Summer roosts are normally in old stone buildings. Typically, only small numbers of bats are present, often between rafters and felt and in other narrow spaces where they are difficult to locate. Bridge roosts have also been recorded. A number of important autumnal swarming sites have been identified, and small numbers of wintering animals have been recorded in caves. Detector records are limited due to the difficulty of distinguishing the *Myotis* species. This bat is a woodland specialist, foraging selectively in broadleaved and mixed woodland as well as riparian corridors. In Ireland farmland pasture and wet grassland are also used for foraging. Building renovation and loss of foraging habitat are potential threats for this species but are not considered to be significant. There is no monitoring scheme in place for this species, but the most recent Red Data List for Irish Mammals lists whiskered bat as Least Concern and the Overall Status is assessed as Favourable, unchanged over the last two reporting periods.

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

The brown long-eared bat (*Plecotus auritus*) is widely distributed in Ireland and across Europe. Its slow flight limits the distance that this species can travel at night-time and studies have found that almost all bats will forage within 1.5km of the roost. However, its manoeuvrability means that it can access cluttered habitats, and flightless arthropod prey make up a large proportion of its diet, confirming the importance of gleaning as a foraging strategy for the species. Modelling indicates that the brown long-eared bat selects areas with broadleaf woodland and riparian habitats on a local scale, while the presence of mixed woodland at a wider landscape level is also important. It can cope with low levels of urbanisation, but habitats such as bog, marsh and heath are avoided. Brown long-eared bats rely heavily on man-made structures for roosting. Most of the roosts recorded in Ireland are in buildings, with very small numbers in bridges, trees and bat boxes, although the natural summer roost of this species across Europe is tree holes. Brown long-eared bats show a high degree of roost fidelity and will often use traditional roosts for generations. While the species has been found in a range of building types, from old mills to bungalows, churches and large mansions typically support the largest

numbers. Recent estimates put the Irish population of brown long-eared bats at 60,000- 100,000 animals. Monitoring data suggest 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. The Overall Status is assessed as Favourable and the overall trend is demonstrating an ongoing increase.

2.1.9 Leisler's Bat, *Nyctalus leisleri* (1331)

Leisler's bat (*Nyctalus leisleri*) has been described as a 'typically Irish bat' due to its abundance in Ireland compared to the rest of Europe, where it is uncommon or absent. Its abundance in Ireland has been attributed to the absence of larger competing species, such as the closely related noctule (*N. noctula*). On continental Europe, Leisler's bat is considered a tree-dwelling species across most of its distribution. The majority of known roosts of this species in Ireland, however, have been found in buildings, although roost records from trees and bat boxes are also known. Of all the Irish bat species Leisler's has the most specific maternity roosting habitat requirements. They select sites with adjacent woodland and freshwater and avoid areas of arable land and coniferous woodland. Surveys and modelling of foraging preferences indicate that woodlands, riparian habitats and small amounts of urbanisation are favoured while peatlands and areas of dense urbanisation are avoided. Leisler's bat is widespread across Ireland, but monitoring indicates it is more abundant in the east and south of the country. The most recent estimates for this species suggest a population size of 60,000-110,000 animals, with monitoring over the last 12 years indicating an increasing trend. Two threats/pressures have been identified and need to be investigated further: wind energy, and the impact on roosts associated with deliberate/accidental exclusion from houses. However, there is no evidence of decline in range or habitat and future prospects are considered good. The Overall Status is assessed as Favourable and the overall trend is demonstrating an on-going increase.

3 Receiving Environment

It is thought that there has been a structure on site as long ago as 1391. The approximate location of the Kilpatrick Church and Graveyard is indicated in Figure 2, Figure 3, Figure 4 and Figure 5.



Figure 2: Approximate location of Kilpatrick Church (1:50,000)

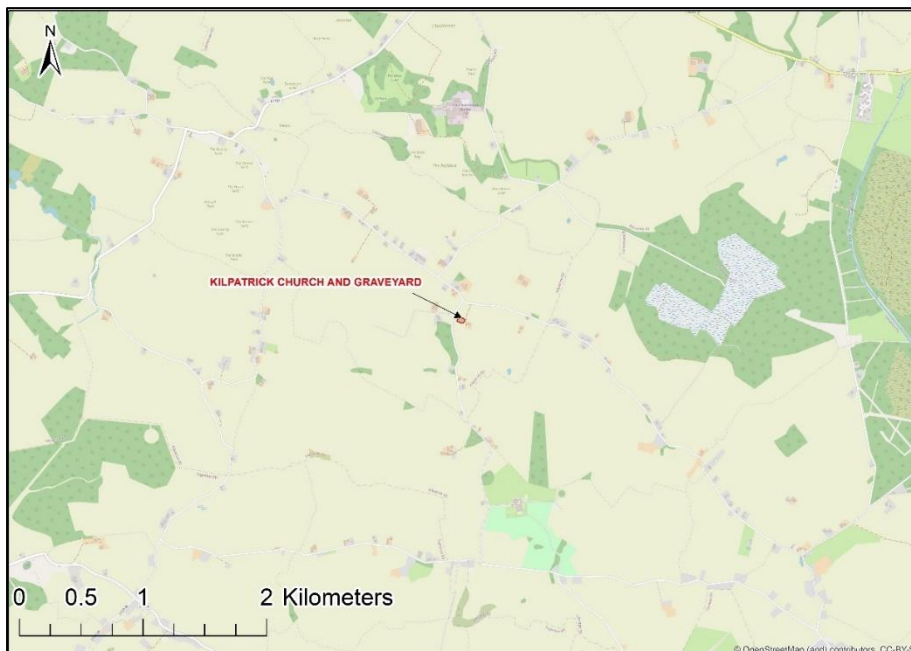


Figure 3: Approximate location of Kilpatrick Church (1:25,000)

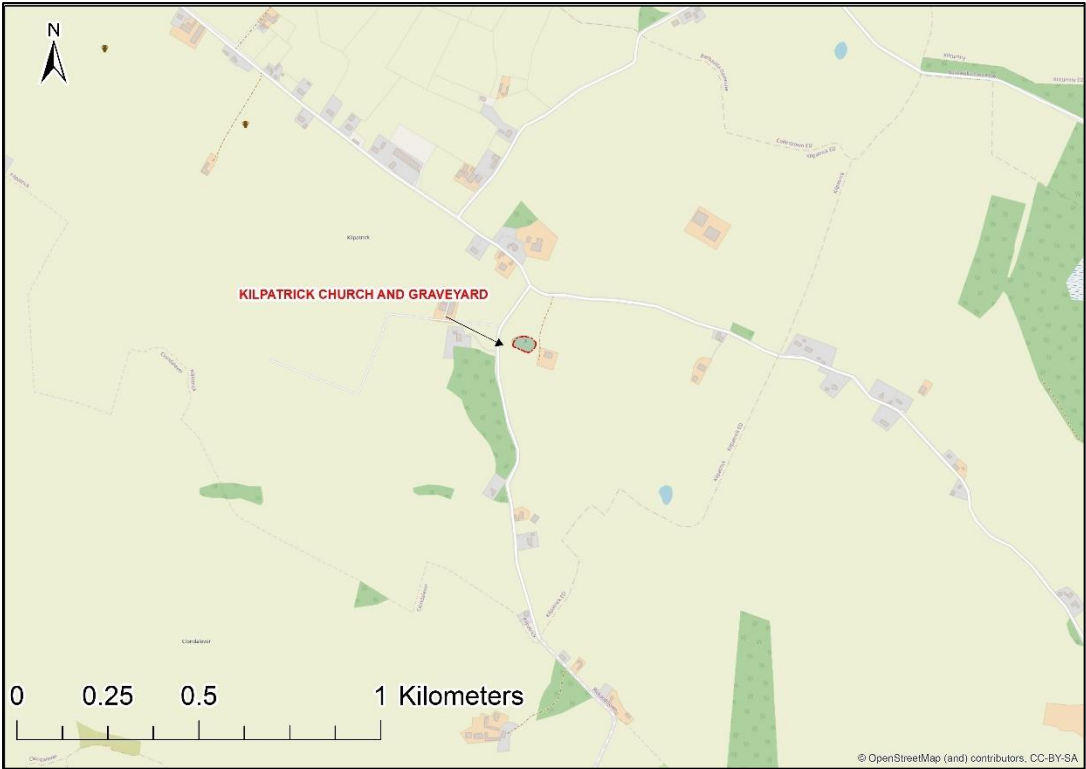


Figure 4: Approximate location of Kilpatrick Church (1:10,000)



Figure 5: Approximate location of Kilpatrick Church and Graveyard overlain on satellite imagery (1:5,000)

Photographs of habitats occurring are illustrated in Figure 6 and Figure 7



Figure 6: Interior of structure



Figure 7: Aerial overview of habitats present

4 Methodology

4.1 Activity assessment

Bat activity throughout the night/early morning of the 17th/18th of July 2025 was assessed by deploying a Passive Ultrasound Monitor onsite. A Pettersson D500x unit was deployed adjacent the structure and recorded throughout the night, programmed to record all bat activity between 30 minutes pre-sunset and 10 minutes post-sunrise. The recording settings utilised were:

- Input Gain – 45;
- Trigger Level – 30; and
- Interval – 5.

4.2 Emergence/dawn survey

On the night/morning of the 17th/18th of July 2025, an emergence/dawn survey of Kilpatrick Church was undertaken by Dr Emma Reeves and Senan Clynch, utilising Anabat Walkabout (X 2), Pettersson D500x (X1) and hand-held thermal imaging monocular (FLIR Scion X 2). The emergence survey commenced at 21:15 and finished at 23:15, with some light rain occurring intermittently. The dawn survey commenced at 04:00 and finished at 06:00, with some light rain occurring intermittently.

5 Findings

5.1 Activity survey – Passive survey

In order to assess activity throughout the night of the 17th/18th July 2025, a Pettersson D500x Passive Ultrasound Monitor was deployed immediately adjacent to Kilpatrick Church in order to assess activity throughout the night. A total of 40 bat passes of four species were recorded:

- Common pipistrelle (26);
- Soprano pipistrelle (6);
- Leisler's Bat (6); and
- Daubenton's Bat (2)

The vast majority of bat passes comprised of the three most commonly encountered species in Ireland, Common pipistrelle, Soprano pipistrelle and Leisler Bat (making up 38 of 40 bat passes). Two bat passes of Daubenton's Bat were recorded (at 23:35 and 03:37) indicative of an individual commuting. The timing and activity levels, combined with the low levels of social calls indicate that there is not a roost in the immediate vicinity.

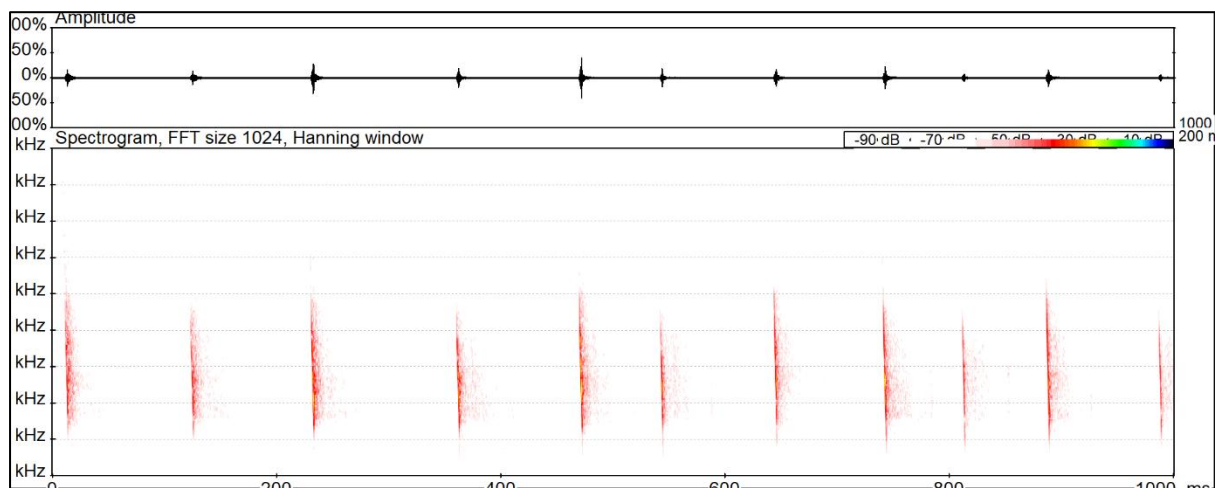


Figure 8: Sonogram and oscillogram of Daubenton's Bat recorded on D500x (23:35 and 03:37)

5.2 Emergence/dawn survey

The emergence survey commenced at 21:15. The first bat (a Leisler's Bat) was not observed until 22:12, passing over the site. A Common pipistrelle was observed at 22:29, which foraged in the vicinity of Kilpatrick Church and Graveyard. At 22:31 a Soprano pipistrelle was observed, which also foraged in the vicinity of Kilpatrick Church and Graveyard. Both bats foraged in the vicinity until 22:39. At 22:42,

two Soprano pipistrelle were observed feeding in the vicinity of a large Ash tree on site, foraging in circles around the tree until 22:46. There were six further bat passes recorded at greater distance with three Common pipistrelle (22:49, 22:50, 22:51), two Soprano pipistrelle (22:48 and 22:52) and one Leisler's Bat passing overhead (22:52). No further activity was detected before the survey finished at 23:15.

The dawn survey commenced at 04:00 and finished at 06:00. No bat activity was observed during the dawn survey.

At no stage during the emergence/dawn survey was there any indication of any roosting activity at Kilpatrick Church.

6 Conclusions

There was limited foraging activity of Common pipistrelle, Soprano pipistrelle and Leisler's Bat observed in the general vicinity of Kilpatrick Church and Graveyard during the emergence survey. Two passes of Daubenton's Bat were recorded on the Pettersson D500x unit deployed over-night indicative of an individual commuting. There was no evidence observed during the 2025 emergence/dawn survey to indicate use of the Kilpatrick Church/*environs* as roosting site.

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