

**Johnswell National School
Co. Kilkenny
Bat Survey**

Report by

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12/11/2024

SUMMARY

Site:	National School
Structure and proposed work;	Single storey building with older and more modern sections. Metal roof (corrugated) on newer sections.
Grid reference:	GR IS 56156 61512
Bat species present:	Common Pipistrelle (<i>Pipistrellus pipistrellus</i>) C 10
Roost location:	Between corrugated metal and wall plates for Pipistrelles.
Bat access:	Corrugated gaps under metal roof.
Proposed work:	Fill gaps under roof and wall plate internally to prevent bat access into school hall..
Possible Alternative works?:	In the absence to this proposed work there is a health and safety issue with bat droppings present within a primary school environment.
Impact on bats:	None anticipated with mitigation measures.
Protected species present:	1: bats (<i>P. pipistrellus</i>)
Habitats present:	3: Buildings and Artificial Surfaces (BL3), Tree lines (WL2) Amenity Grassland (GA2)
Derogation licence reason:	Species Protection under Habitats Directive System of strict protections (Articles 12-16 of the Habitats Directive) Article 16 identifies the conditions under which a Member State can derogate from the strict protection provisions. 1. Provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, Member States may derogate from the provisions of Articles 12, 13, 14 and 15 (a) and (b): (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 beneficial consequences of primary importance for the environment;
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Introduction

Permission is sought for work to exclude bats from a national school premises. Location: Johnswell, Co. Kilkenny,. GR IS 56156 61512. Gerard Tobin BSc. MA. was asked to undertake a bat survey to ensure that any bats currently utilizing the site are protected during the proposed works.

Site location and access

The site is located in Johnswell, Co. Kilkenny and is accessed from the Kilkenny road into Johnswell.

Bat Survey

This report presents the results of a site visit by Gerard Tobin on 12th November 2024 during which the site and structures were inspected. The bat fauna occurring on the site are described and the likely impacts of the proposed works on the fauna are discussed with recommendations for mitigation measures if necessary.

Survey methodology

Survey of bat/bird fauna was carried out by means of a bat emergence/re-entry count and an inspection of the current infrastructure, and was carried out at dawn on 12th November 2024.

A vantage point within the area allowed coverage of all habitats and transect lines were walked from highest to lowest points within the site.

A thorough search was performed within the site. The roof and walls were inspected for bat use. Principally their signs, such as staining, lack of spider webs, feeding signs or droppings - indicate presence of bats though direct observations are also occasionally made. The nature and type of habitats present are also indicative of the species likely to be present.

The presence or absence of cavities in the building, suitable for bats, was used as an indicator of likely bat presence. Where suitable cavities were found a further visual examination of the area was undertaken using infra-red imaging equipment (Bresser Digital Nightvision NightSpyDIGI Pro HD) with a Parkside Thermal Imaging Camera and a Ciel Electronique CDB 301 HD/FD Bat detector and an Echo Meter Touch 2 (for Android) Bat detector with software app on Samsung Galaxy GT along with both a “V-Scope” flexible fibre borescope and a fibre optic video camera capable of looking into small cavities.

A Magellan Explorist handheld GPS unit was used to mark the location of items of interest on-site. Heavy tree cover may compromise the accuracy of GPS locations.

Digital cameras (Canon 1000D and Canon IXUS 185) were used to document items of interest.

Survey constraints

The survey was carried out by means of a thorough examination of the site. There were climatic constraints and seasonal constraints in regard to bat survey as it was undertaken outside the active bat season. Daytime temperatures reached 6° Celsius

and fell to -1°Celsius at dawn. There had been rain throughout the previous days. There was no rain during the survey field work.

Brief description of Johnswell N.S. from the perspective of bat/bird habitat

The buildings are situated in a semi-rural area, surrounded by hedgerows, gardens and trees. There are many domestic and agricultural buildings nearby. These habitats tend to be favourable to some species of bat. Bats have been entering the school hall especially during the Summer and Autumn periods.

Results of bat/bird survey

The buildings, potentially, offer opportunities for bat use, as there is available access to cavities above the wall plate. There is evidence of bat droppings in the school hall. No bats were recorded at dawn emerging and re-entering the buildings which indicates that no bats are currently present. No heat signatures were detected using thermal imaging or infra-red imaging equipment.

Indication of significance of site for bats/birds

There is evidence that bats have been present in school hall building. Bat droppings as well as visual confirmation by the school principal indicate Pipistrelles in the gaps between wall plate and metal roof over the hall. The quantity of droppings indicate that no more than C. 10 Pipistrelles have roosted under the metal roof. This is unlikely to be a maternity roost as there is little space between the metal roof and wall plate for lactating females and their pups.

Legal status and conservation issues – bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

All bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II.

Potential impacts of proposed works on bat/bird fauna

The proposed works should not adversely affect bats with the suggested mitigation measures.

Mitigation measures

As there are bats present in the building there is a requirement for mitigation measures and the timing of the works and some general mitigation measures are outlined to protect roosting of bats.

Application for a derogation licence

NB: Works on a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service before works can commence.

A licence is required in this instance. Species Protection under Habitats Directive

System of strict protections (Articles 12-16 of the Habitats Directive)

Derogations

Article 16 identifies the conditions under which a Member State can derogate from the strict protection provisions.

1. Provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, Member States may derogate from the provisions of Articles 12, 13, 14 and 15 (a) and (b):

(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 beneficial consequences of primary importance for the environment;

Johnswell N.S. should immediately contact NPWS to arrange this derogation licence.

There is no satisfactory alternative to the works proposed as the current situation are resulting in health and safety issues for the school. Bat boxes will be provided as alternative roost habitat..

Measure 1: timing of works

No work shall be undertaken until after November 10th when bat numbers are known to be lower in buildings and bats will be hibernating elsewhere.

Measure 2: timber treatments

Where chemical treatment of new roof timbers in the building is necessary then only bat safe compounds may be used and a list of suitable chemicals is given in the appendix.

Measure 3: demolition

Any demolition of the roofs shall be done carefully with the possibility that individual bats may be found. If discovered, the animals shall be retained in a box until dusk and released on site. A qualified ecologist shall be contacted and the NPWS wildlife ranger shall be notified.

Measure 4: enhancement of bat roosts in the renovated building assemblage

Four bat boxes (plans in the attachments) shall be erected in the vicinity of the current roost in the building.

Measure 5: roofing membranes

No membranes shall be used under roof. These can cause bats to become entangled and trapped. Bituminous felt may be used as it allows bats to grip. No netting shall be used on scaffolding.

Measure 6 : lighting

Lighting has increased dramatically over the last number of years as a result of many new developments. This includes aesthetic lighting of bridges, monuments and buildings, flood lighting of sports grounds, street and road lighting and security lighting of urban and rural areas to name but a few. Lighting can impact on bats' roosting sites, commuting routes and foraging areas. Contrary to common belief, bats are not blind. While bats tend to rely on a type of sonar, known as echolocation, for orientation and hunting during the hours of darkness, vision is still an important sense for bats. When bats emerge from roosts early in the evening, they tend not to echolocate but rely on eyesight to fly from the roost to adjoining treelines or hedgerows. Various studies have shown that bats' eyesight works best in dim light conditions. Where there is too much luminance, bats' vision can be reduced resulting in disorientation. While light sensitivity varies between species, bats tend to have a higher tolerance for red visual light than white light. Short wave frequency (UV) light is most disturbing for bats. This is due to the fact that bats have a higher proportion of rods in their retina compared to cones. The rods allow greater absorption of light in dim conditions. Too much luminance at bat roosts may cause bats to desert a roost. Light falling on a roost exit point can delay bats from emerging and miss peak levels of insect activity at dusk. Any delays of emergence can reduce feeding periods. Lighting can also disturb bats' feeding behaviour. Many night flying insects are attracted to lights especially those lamps that emit UV light. A single source of light in a dark area can cause local insect populations to congregate in concentrations around the light source. While some Irish bat species such as Leisler's bats will opportunistically feed on such insect gatherings, the majority of Irish bat species are too sensitive to such light sources and suffer from insect populations being reduced in traditional feeding areas. In addition, artificial lighting can increase the chances of bats being preyed on. Lighting can be particularly harmful to bat populations along river corridors, woodland edges, along hedgerows and treelines and at lake edges.

Measure 7: Types of light

Low Pressure Sodium (SOX) – this light (typically orange light) is emitted at a single wavelength with a very low amount of UV. Therefore very few insects are attracted to this light source and it has a minimal effect on bats. High Pressure Sodium (SON) – this light (typically pinkish-yellow light) is emitted over a slightly broader wavelength spectrum. It is a more intense light so attracts more insects and has a greater impact on bats. Metal Halide & Mercury vapour– these are white light sources that emits light at wavelengths across the colour spectrum and emits high levels of UV. These light types can attract high levels of insects and because it is a close match to daylight has a greater impact on bats. Metal halide typically comes in three types: Quartz arc tube; Ceramic arc tube and Cosmo

ceramic. Luminary (Light) accessories Shields – these can be mounted at the front or back of luminaire. Masking – by painting a section of the luminaire protectors, light will be blocked from penetrating through. Louvres – these can be either internal or external rows of slates angled to block light in a certain direction.

Avoid lighting along rivers, lakes and canals. Avoid lighting along important commuting routes. Avoid the use of mercury or metal halide lamps Minimise light spills using shields, masking & louvres Keep light columns as low as possible Restrict lights to ensure that there are dark areas Restrict lights to ensure that there are dark hours.

Measure 8. Sensor lighting to reduce energy wastage

Measure 9. Use of planting to reduce impacts of lighting

Measure 10. Use of demountable columns

Measure 11. Screening to reduce impacts of lighting

Measure 12. Assessment of lighting regime after installation

Measure 13. Greater use of the solar clock to control timing of lighting

Measure 14. No rodenticides will be used on site externally.

Measure 15. No insecticides will be used on surfaces or timber work in the buildings.

Measure 16. Filler and/or sealant. There are various substances that can be used to block-up bat access points. Silicone is good providing it is put on a clean surface as any dirt would make it ineffective. Polymastic has been used successfully as both a “glue” to fix excluders to walls/timber etc. and as a filler to fill access gaps. Expanding foam is not recommended as bats can get caught up in it. In addition, expanding foam is not stable in sunlight and may contract, leaving gaps which would allow bats back inside. All fillers will be inserted from inside the hall allowing any bats present to exit from the outside.

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Potential impact of work on bird fauna

Timing of the works until after November 10th will prevent negative impact on birds.

Predicted and Residual impact of the proposal

No major bat roosts should be lost due to the proposed works if the recommended mitigation measures are implemented.

The impact on avian species can be minimised if the recommended mitigation measures are followed.

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Appendices

Bat ecology – general

The bat is the only mammal that is capable of true flight. There are over 1,100 species worldwide, representing almost a quarter of all mammal species. There are 47 species in Europe - in Ireland, ten species of bat are currently known to exist, which are classified into two families, the Rhinolophidae (Horseshoe bats) and the Vespertilionidae (Common bats).

Prey

All the European bat species feed exclusively on insects. A Pipistrelle, weighing only 4 to 8 grammes, will eat up to 3000 insects every night, ensuring a build up of fat in the bat's body to allow it to survive the winter deep in hibernation.

Breeding and longevity

Irish bats can produce one young per year but, more usually, only one young is born every two years (Boyd & Stebbings, 1989). This slow rate of reproduction inhibits repopulation in areas of rapid decline. Although bats have been known to live for twenty or more years, this is rare as most die in their first and the average lifespan, in the wild, is four years.

Threats

All bat species are in decline as they face many threats to their highly developed and specialised lifestyles. Many bats succumb to poisons used as woodworm treatments within their roosting sites (Racey & Swift, 1986). Agricultural intensification, with the loss of hedgerows, treelines, woodlands and species-rich grasslands have impacted bat species also. Habitual roosting or hibernation sites in caves, mines, trees and disused buildings are also often lost to development. Summer roosts are prone to disturbance from vandals. Agricultural pesticides accumulate in their prey, reaching lethal doses (Jefferies, 1972). Chemical treatments in cattle production sterilise dung thus ensuring that no insects can breed within it to be fed upon by bats. Likewise, river pollution, from agricultural runoff, reduces the abundance of aquatic insects. Road building, with the resultant loss of foraging and roosting sites is a significant cause in the reduction of bat populations across Europe.

Extinction

As recently as 1992, the greater mouse-eared bat *Myotis myotis* became the first mammal to become extinct in Britain since the wolf in the 18th century.

Description of bat species known or expected from the area

Common pipistrelle *Pipistrellus pipistrellus*

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*, which is detailed below (Barratt *et al*, 1997). The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.

Soprano pipistrelle *Pipistrellus pygmaeus*

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer.

Nathusius' pipistrelle *Pipistrellus nathusii*

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down (Richardson, 2000) and also in Fermanagh, Longford and Cavan. It has also recently been recorded in Counties Cork and Kerry (Kelleher, 2005). However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

Leisler's bat *Nyctalus leisleri*

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddis-flies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

Brown long-eared bat *Plecotus auritus*

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings.

Natterer's bat *Myotis nattereri*

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddis-flies and spiders. Known roosts are usually in old stone buildings but

they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland.

Whiskered bat *Myotis mystacinus*

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

Brandt's bat *Myotis brandtii*

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005 (Kelleher, 2006b) and another in Tipperary in 2006 (Kelleher, 2006a). No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

List of Irish bat species and adjudged status on site

Bats		Status on site
<i>Chiroptera</i> ¹		
Common Pipistrelle ²	<i>Pipistrellus pipistrellus</i>	Present C.10
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	Potential
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	Potential
Brown Long-eared	<i>Plecotus auritus</i>	Unlikely
Leisler's	<i>Nyctalus leisleri</i>	Potential
Lesser Horseshoe	<i>Rhinolophus hipposideros</i>	Absent
Whiskered	<i>Myotis mystacinus</i>	Unlikely
Natterer's	<i>Myotis nattereri</i>	Unlikely
Daubenton's	<i>Myotis daubentonii</i>	Unlikely
Brandt's	<i>Myotis brandtii</i>	Unlikely

¹ Bat distribution records from O'Sullivan (1994) and Richardson (2000).

² Two common species of pipistrelle bat are present in Ireland, recent taxonomic revision. The species are identified by the frequency they use for echolocation (46Hz [Common] and 55Hz [Soprano]), and both occur in similar habitats. Roosts occur in buildings and trees.

Timber treatment list

Products suitable for use in a bat roost can be described in terms of the active ingredients (biocides) that they contain.

Any products containing active ingredients listed in the following Table 1 are suitable for use in a bat roost. Products intended for remedial timber treatment may also carry a British HSE number indicating that they have received approval under the UK Control of Pesticides Regulations (COPR) 1986, but decorative finishes usually contain such low levels of biocides that they are exempt from this requirement (in the UK).

Table 1: Insecticides and fungicides suitable for use in bat roosts

Insecticides	Permethrin Cypermethrin Boron compounds
Fungicides and decorative finishes	Tri(bexylene glycol) baborate Disodium octaborate Borester 7 Dodecylbenzyltrimethyl ammonium chloride Alkyl(benzyl)dimethylammonium chloride (= Benzalkonium chloride) Copper naphthenate Acypetacs copper Zinc naphthenate Acypetacs zinc Zinc octoate Sodium 2-phenylphenoxide Diclofluanid 3-iodo-2propynyl-N-butyl carbamate (Polyphase/IPBC) Propiconazole

Adapted from English Nature's Species Conservation Handbook

Photographic Record

Plate 1 Building. Corrugations visible on roof edge.



Plate 2 Roof void internally in hall showing locations where bats are entering under metal roof.



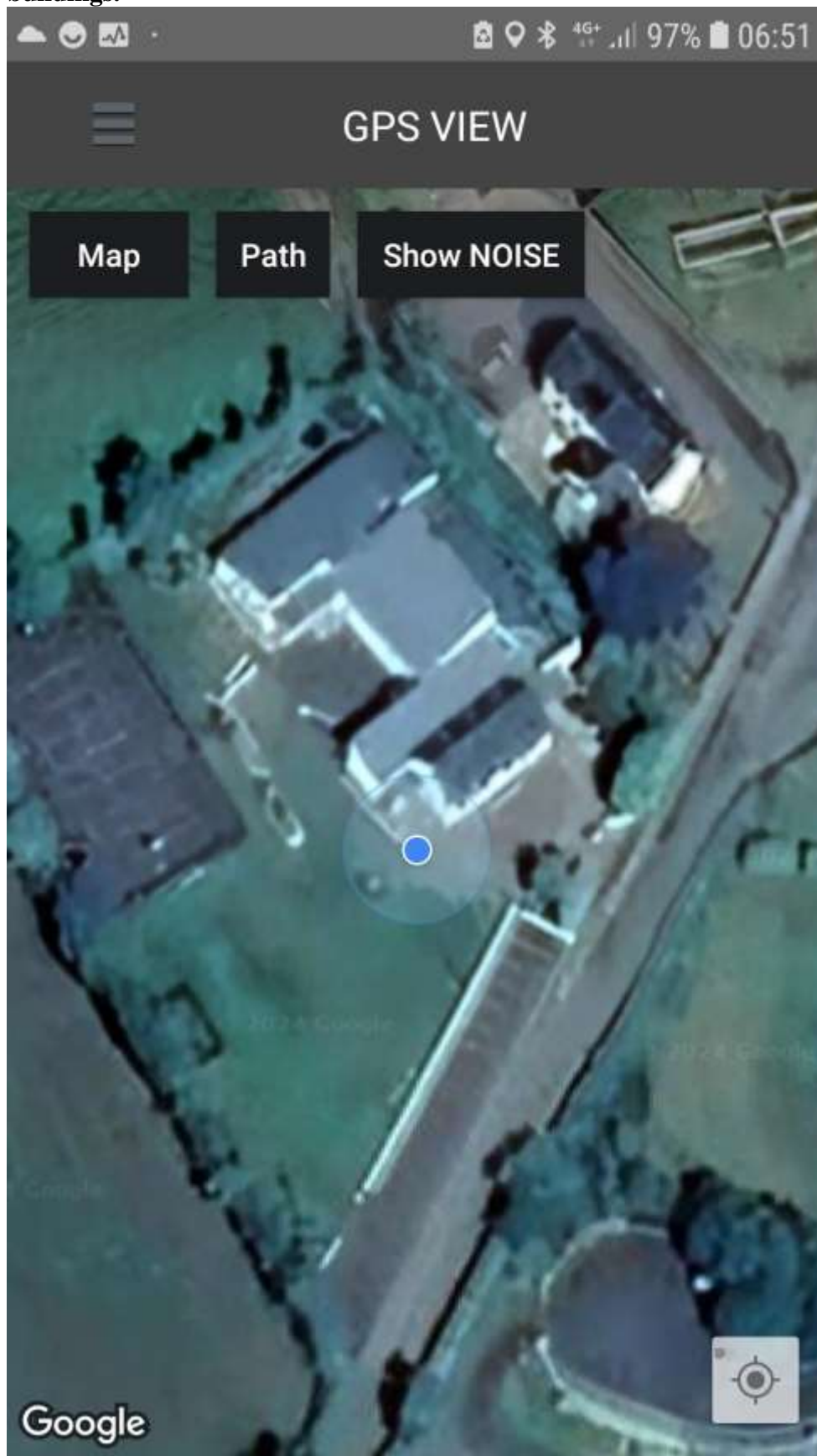
Plate 3 – Bat droppings on floor internally



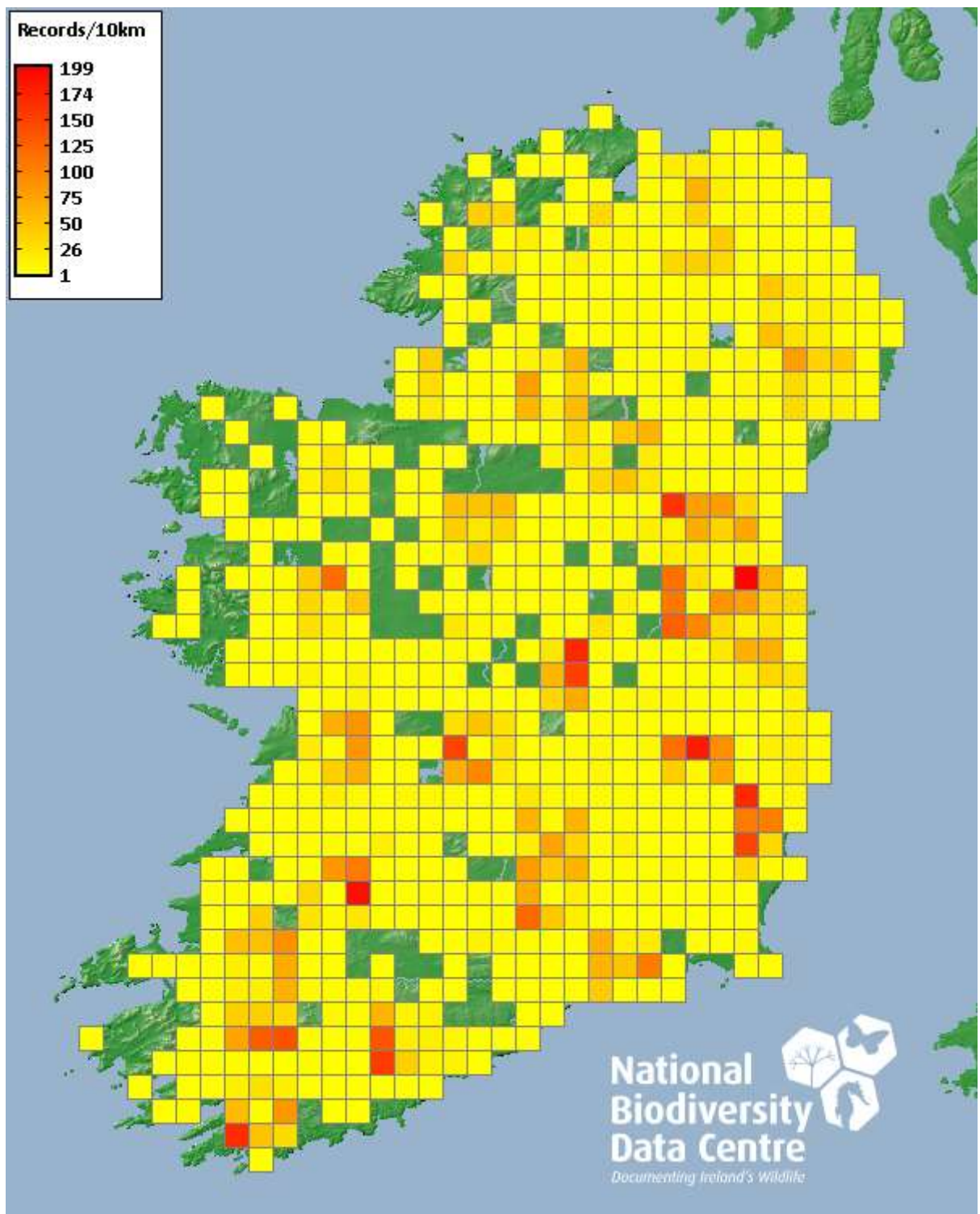
4 Hall externally



Plate 5 Buildings assemblage. Hall is centrally located between either end buildings.

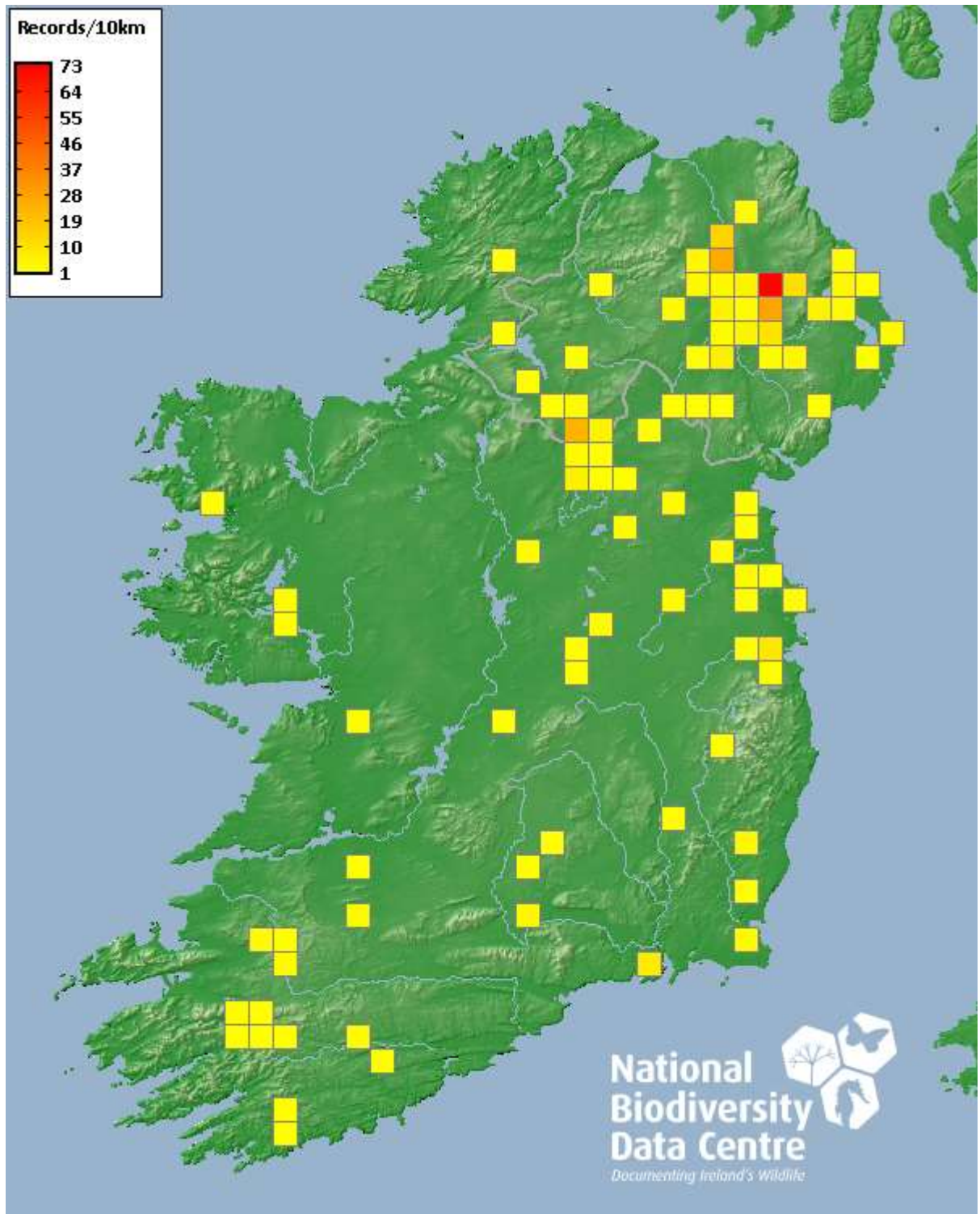


Pipistrellus pipistrellus



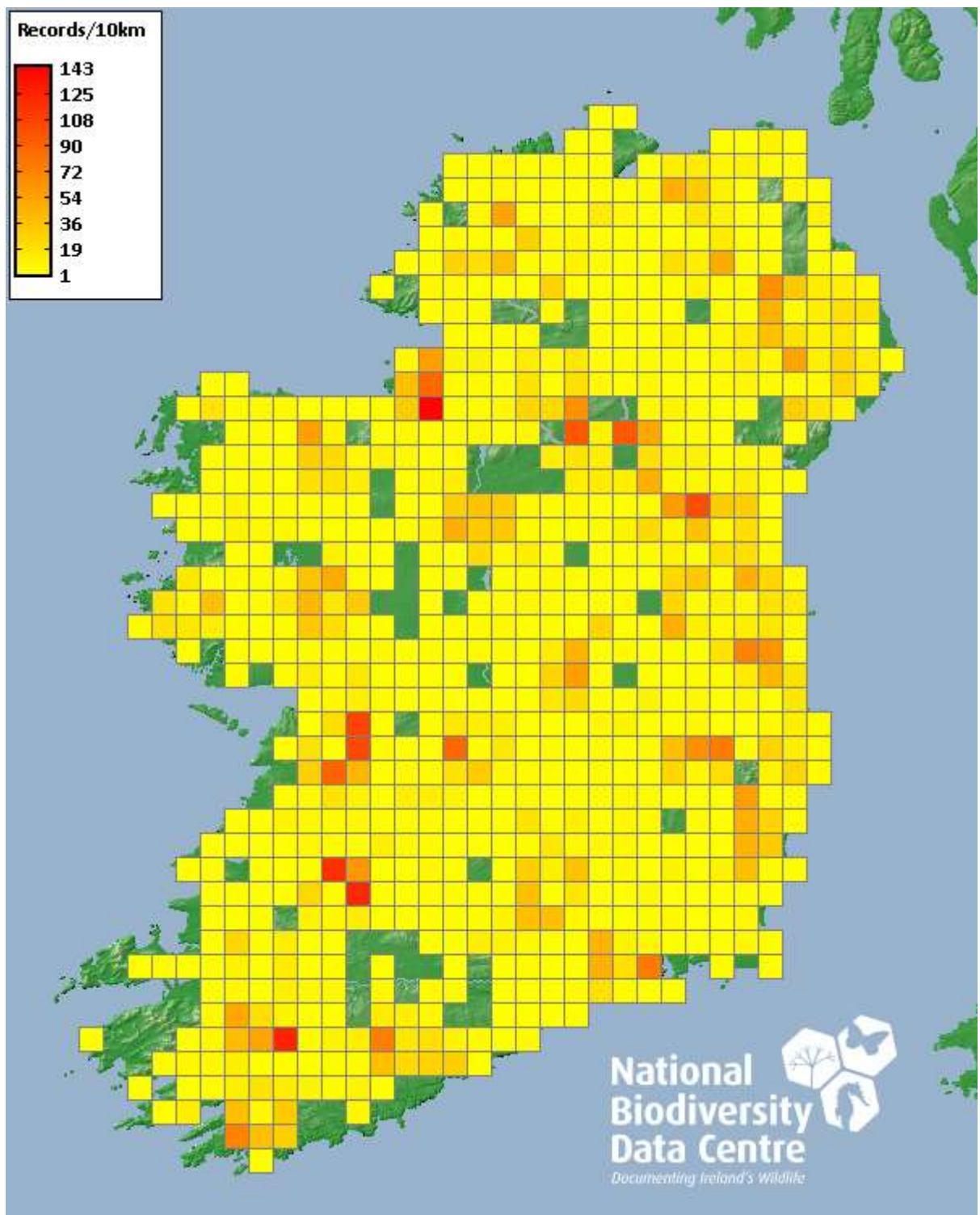
Citation: National Biodiversity Data Centre, Ireland, Pipistrelle (*Pipistrellus pipistrellus* sensu lato), image, accessed 24 July 2023,
<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119763>

Pipistrellus nathusii



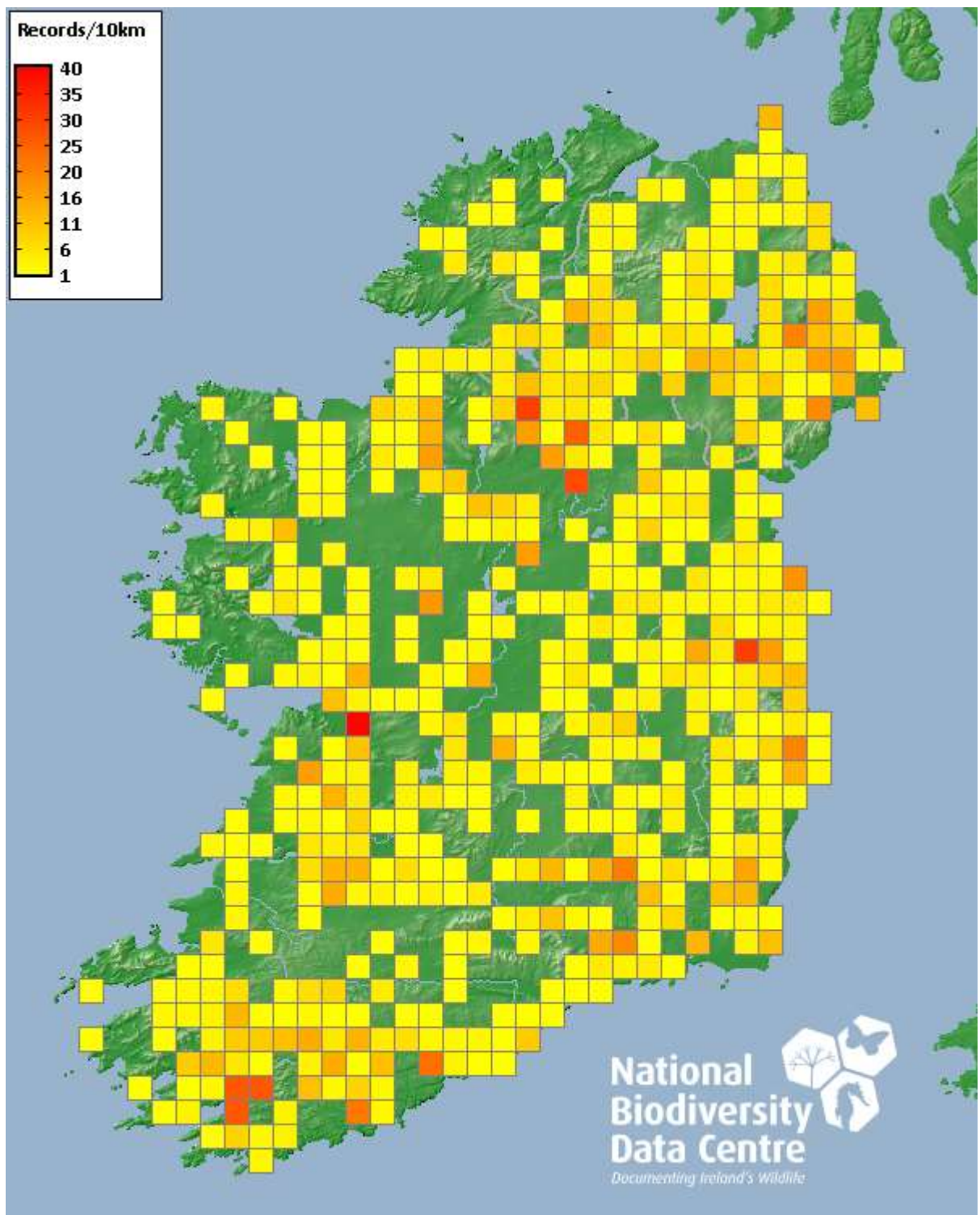
Citation: National Biodiversity Data Centre, Ireland, Nathusius's Pipistrelle (*Pipistrellus nathusii*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119466>>

Pipistrellus pygmaeus



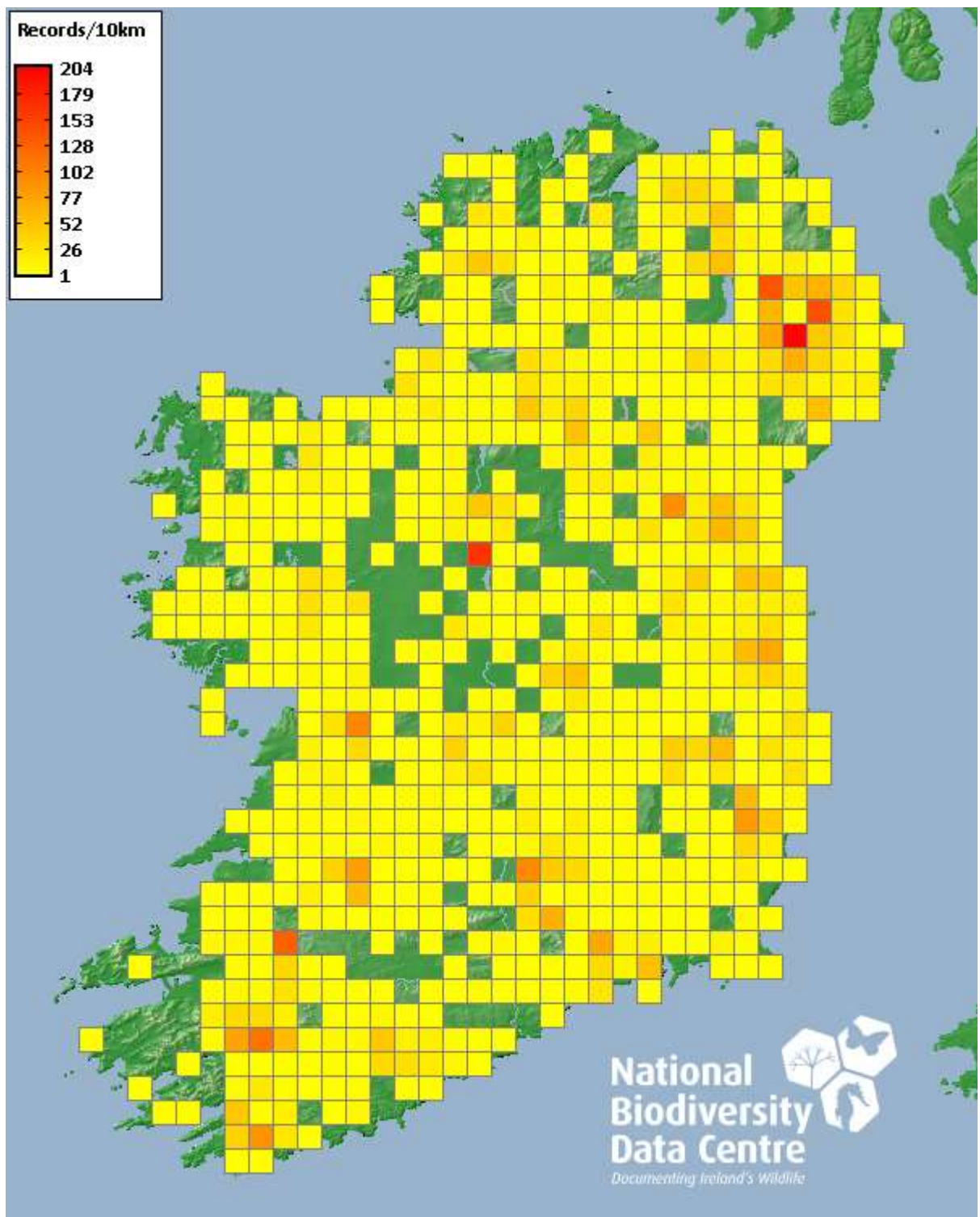
Citation: National Biodiversity Data Centre, Ireland, Soprano Pipistrelle (*Pipistrellus pygmaeus*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119441>>

Plecotus auritus



Citation: National Biodiversity Data Centre, Ireland, Brown Long-eared Bat (*Plecotus auritus*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119278>>

Nyctalus leisleri



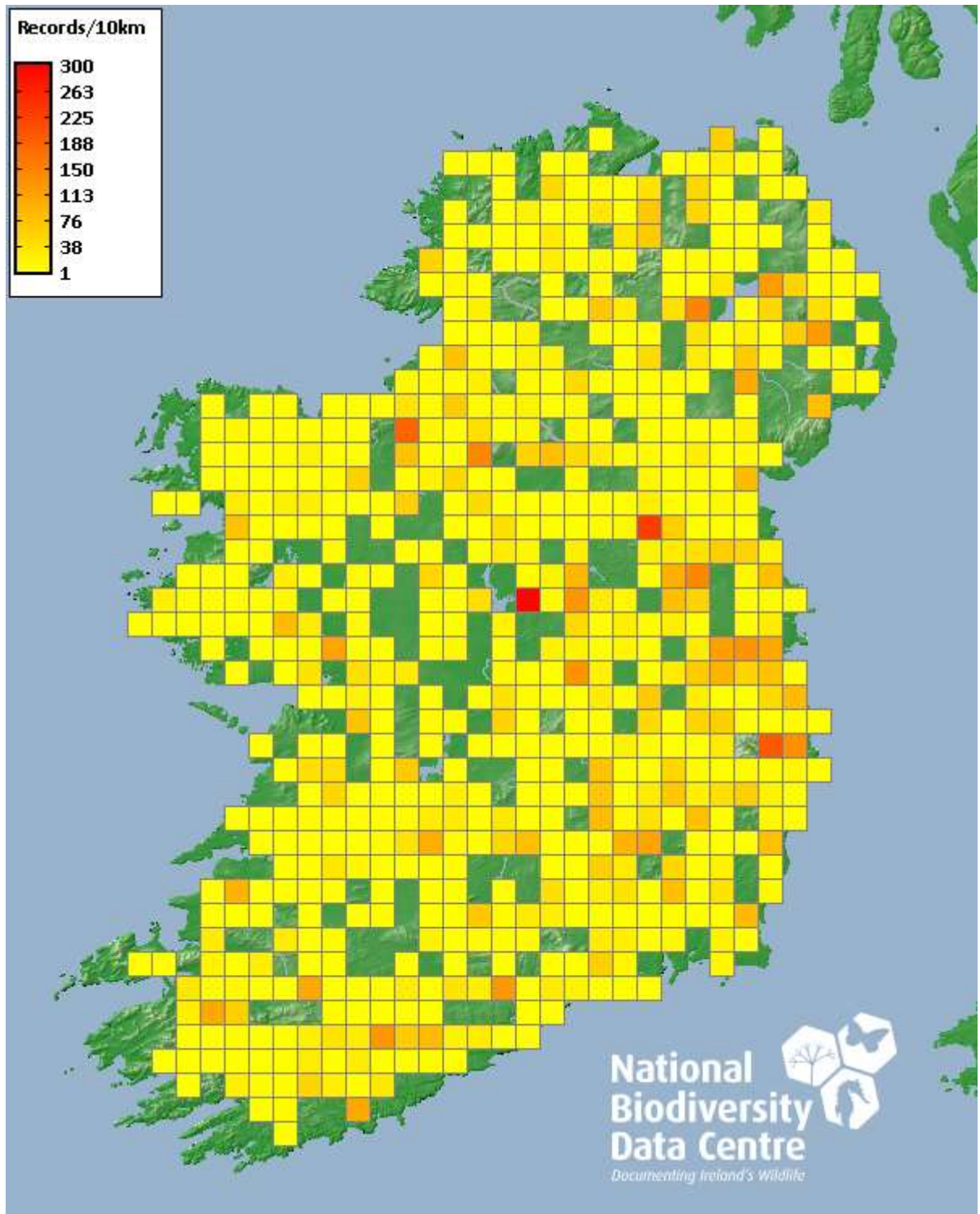
Citation: National Biodiversity Data Centre, Ireland, Lesser Noctule (*Nyctalus leisleri*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119464>>

Myotis brandtii



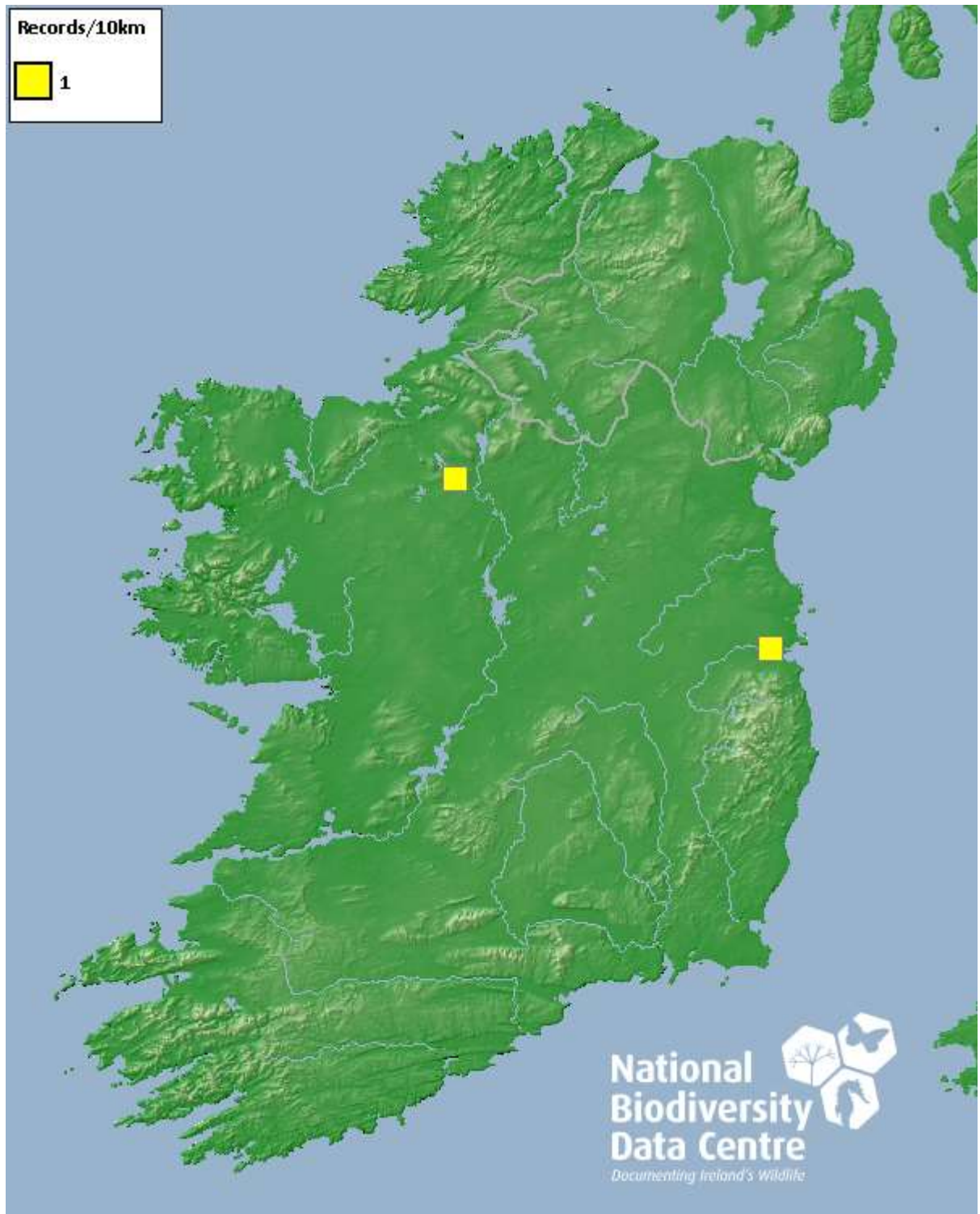
Citation: National Biodiversity Data Centre, Ireland, Brandt's Bat (*Myotis brandtii*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119729>>

Myotis daubentoni



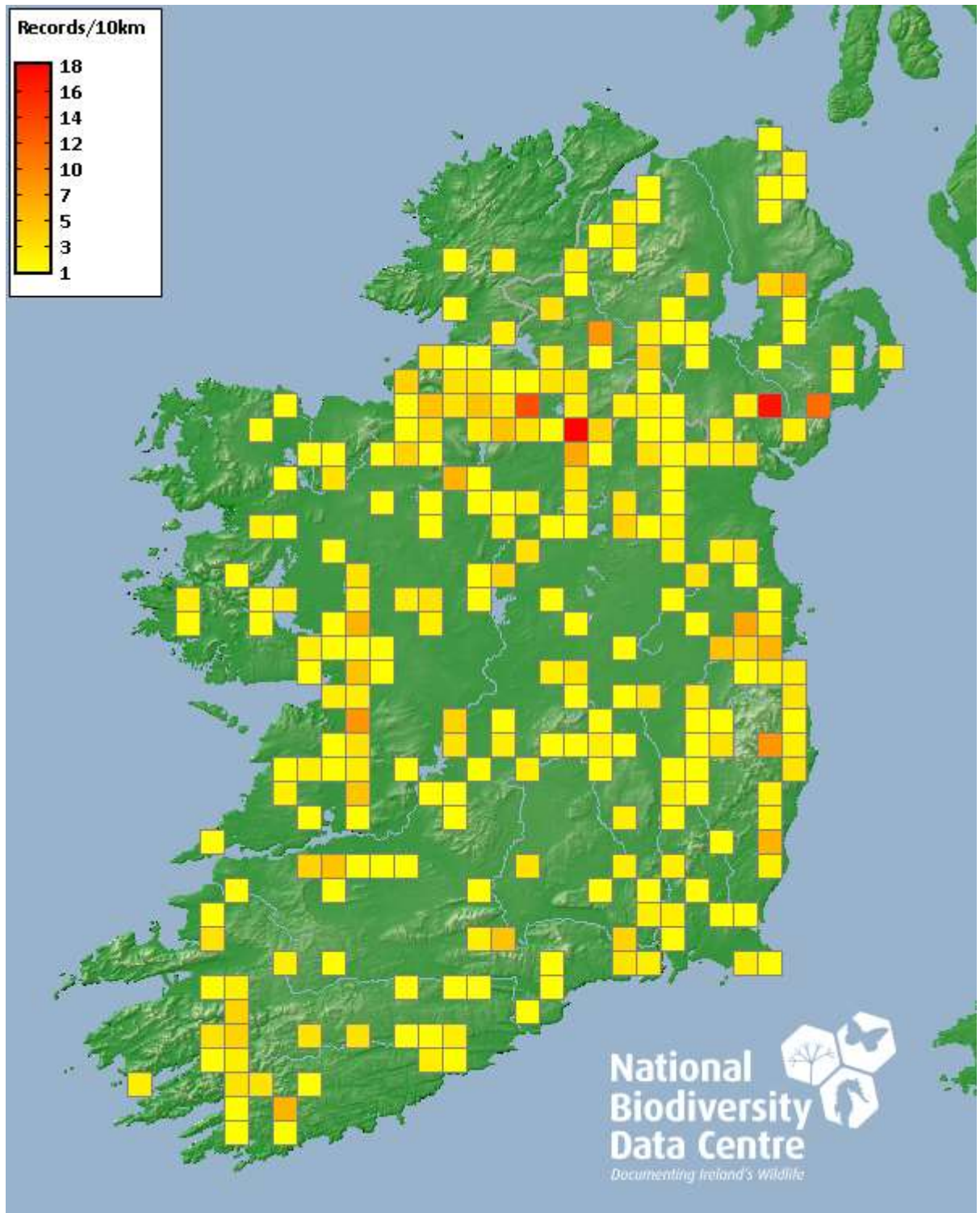
Citation: National Biodiversity Data Centre, Ireland, Daubenton's Bat (*Myotis daubentonii*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119730>>

Myotis mystacinus



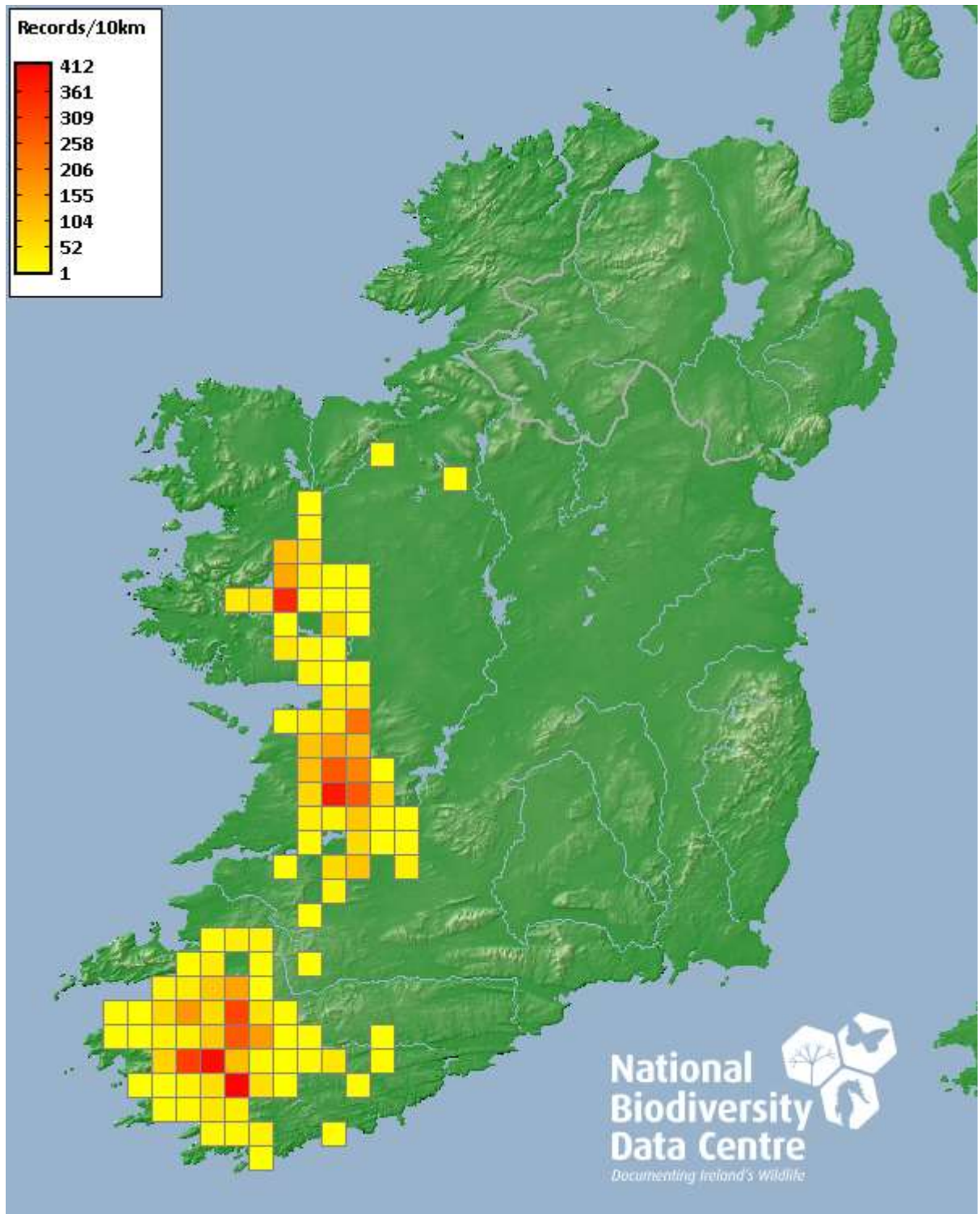
Citation: National Biodiversity Data Centre, Ireland, Whiskered Bat (*Myotis mystacinus*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119462>>

Myotis nattereri



Citation: National Biodiversity Data Centre, Ireland, Natterer's Bat (*Myotis nattereri*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119463>>

Rhinolophus hipposideros



Citation: National Biodiversity Data Centre, Ireland, Lesser Horseshoe Bat (*Rhinolophus hipposideros*), image, accessed 24 July 2023, <<https://maps.biodiversityireland.ie/Species/TerrestrialDistributionMapPrintSize/119456>>