Bowdun Offshore Wind Farm, Offshore EIA Report

Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review

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Contents

List of Figures ii
List of Tables ii
Glossary iii
Acronyms iv
Table of Units iv
1 Introduction 1
1.2 Proposed Development 1
2 Purpose of the Document 3
3 Offshore Bats Area of Search 4
4 Methodology 6
4.1 Data Sources 6
5 Data Review 7
5.2 Scottish Data Records 8
5.3 Danish Data Records 11
6 Literature Review 16
6.1 Nathusius' pipistrelle Pipistrellus nathusii 16
6.2 Leisler's bat Nyctalus leisleri 17
6.3 Noctule Nyctalus noctula 18
6.4 Parti-coloured bat *Vespertilio murinus* 19
7 Migratory Species Review 20
7.2 Nathusius' Pipistrelle 20
7.3 Leisler's bat 24
8 Conclusion 27
References 28
ANNEX A: RECORD SUMMARIES 31

List of Figures

Figure 1.1 Potential bi-directional migration corridors across the North Sea (Hooker et al., 2025) ... 2
Figure 3.1 Bat Area of Search ... 5
Figure 5.1 Scottish Bat Records Source Area ... 9
Figure 5.2 Danish Bat Records Source Area ... 11
Figure 5.3 Records of Nathusius' pipistrelle in Denmark between 2005 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025) ... 12
Figure 5.4 Records of Leisler's bat in Denmark between 2012 and 2019, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025) ... 13
Figure 5.5 Records of noctule in Denmark between 1977 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025) ... 14
Figure 5.6 Records of Parti-coloured bats in Denmark between 1982 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025) ... 15
Figure 7.1 Suitable Habitat Expansion for Nathusius' pipistrelle (Source Lundy *et al.*, 2010) ... 20
Figure 7.2 Nathusius' Pipistrelle captures April 2011 to October 2022 (BCT, 2025b) ... 21
Figure 7.3 Heat Map Displaying Regional Studies of Migratory Bats in the North Sea. Red – higher concentrations of studies and Blue – lower concentration of studies (Source: Hooker *et al.*, 2025) ... 23
Figure 7.4 Nathusius' pipistrelle Migratory Distribution (DBE&IS, 2022) ... 23
Figure 7.5 Bat Activity Indications by Sensitivity in Danish Waters (Source Brinkløv *et al.*, 2025b) ... 24
Figure 7.6 Suitable Habitat Predicted for Leisler's bat (Source: Boston *et al.*, 2015) ... 25
Figure 7.7 Known Leisler's bat Migration Pathways (Hutterer *et al.*, 2005) ... 26

List of Tables

Table 4.1 North East Scotland Biological Records Centre (NESBReC) bat count data ... 7
Table 4.2 Shetland Biological Records Centre (SBRC) bat count data ... 7
Table 4.3 Orkney Wildlife Information and Records Centre (OWIARC) ... 8
Table 4.4 Highland Biological Recording Group (HBRG) - National Biodiversity Network ... 8
Table 8.1 Summary of Migratory Bat Records in Aberdeenshire & the Highlands, Orkney and Shetland ... 31

Glossary

Defined term	Definition
Array Area	The Array Area means the area where the turbines will be within the limits of the Bowdun OWF development.
Environmental Impact Assessment (EIA)	Process for the assessment of likely significant environmental effects of a project on the physical, biological and human environment during construction, Operation and Maintenance (O&M) and decommissioning.
Impact	A change caused by an action that occurs during a project's lifetime.
Offshore Environmental Impact Assessment (EIA) Report	Document prepared to report the findings of the EIA for the Proposed Development and produced in accordance with the EIA Regulations. An Offshore EIA will be submitted to support the Offshore Application for the Proposed Development.
Offshore Export Cable	Subsea cables used to transmit electricity generated offshore by the wind turbines from the OSPs to shore. The Transition Joint Bay is the location where the Offshore Export Cable terminates, and the onshore cabling begins.
Offshore Generation Assets	The infrastructure required for the Proposed Development required to generate electricity comprising of the wind turbines, wind turbines foundations and associated infrastructure e.g. IACs.
Offshore Infrastructure	All of the Offshore Infrastructure associated with the Proposed Development that is located seaward of MHWS, comprising the Offshore Generation Assets and the Offshore Transmission Assets.
Site Boundary	The boundary within which all elements of the Proposed Development will be located. The Site Boundary comprises the Array Area and Export Cable Corridor which ends at MHWS.

Acronyms

Acronym	Definition
BCT	Bat Conservation Trust
EIA	Environmental Impact Assessment
HRBG	Highland Biological Recording Group
IUCN	International Union for Conservation of Nature
NBN	National Biodiversity Network
NESBReC	North East Scotland Biological Records Centre
OWF	Offshore Windfarm
OWIARC	Orkney Wildlife Information and Records Centre
PAM	Passive Acoustic Monitoring
SBRC	Shetland Biological Records Centre
UK	United Kingdom

Table of Units

Units	Definition
cm	Centimetre
g	Gram
kHz	Kilohertz
km	Kilometre
mm	Millimetre
nm	Nautical mile

1 Introduction

1.1.1 This literature and data review Technical Report has been prepared by ERM following advice from NatureScot in response to Scoping to consider migratory bats under Environmental Impact Assessment (EIA) for the offshore aspects of the Bowdun Offshore Wind Farm (OWF) Project (hereafter referred to as the Proposed Development).

1.2 Proposed Development

1.2.1 The Proposed Development covers the Option Lease Area that is located in the E3 Plan Option Area (POA), detailed in the Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020), and the Offshore Export Cable Corridor. The Array Area is located 38 km offshore at its closest point, covering an area of 187 km^2 and will comprise the Wind Turbines (fixed foundation), Inter-Array Cables (IACs), Offshore Substation Platforms (OSPs), Interconnector Cables and any necessary scour/cable protection. The Export Cable Corridor will include a maximum of three High Voltage Alternating Current (HVAC) Offshore Export Cables, each with a length of up to 70 km and will make landfall at Benholm, Aberdeenshire.

1.2.2 NatureScot noted that although there is limited knowledge of bat migration through Scotland and the North Sea, there is evidence of long-distance migratory pathways across the North Sea and sightings on offshore infrastructure. The migratory corridors across the central North Sea are generally lacking in research and cumulative literature reviews (See Figure 1.1) (Hooker *et al*., 2025).

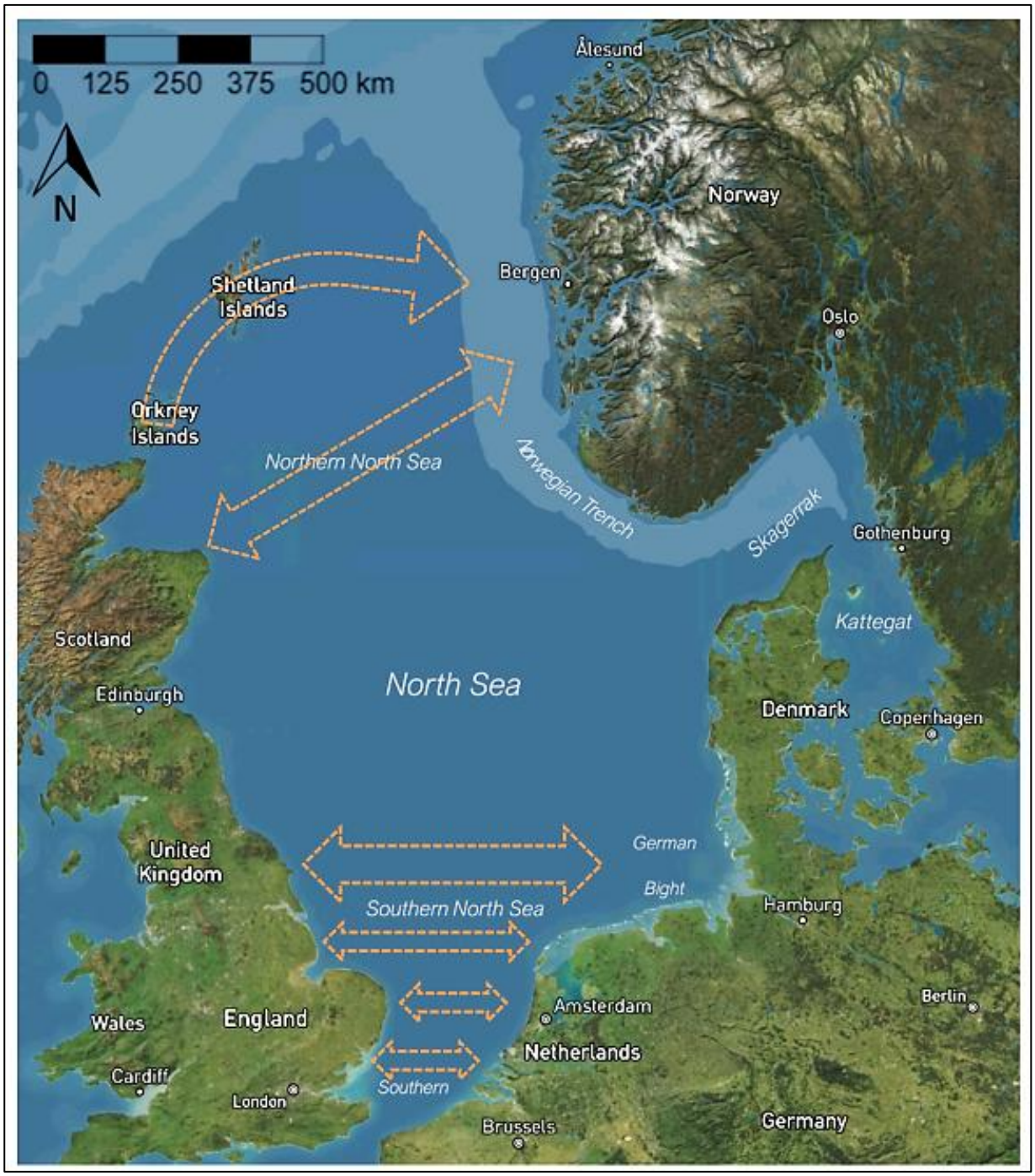

Figure 1.1 Potential bi-directional migration corridors across the North Sea (Hooker et al., 2025)

2 Purpose of the Document

2.1.1 In response to the Scoping Consultation for the Proposed Development, NatureScot provided the following advice:

"*Bats – in our post Scoping Workshop advice (issued 04 July 2024) we advised that Nathusius' pipistrelle bats should be considered under EIA for the Offshore Project. We noted that there is currently very little knowledge of bat migration in Scotland, however, recent evidence has shown Nathusius' pipistrelle bats flying through on migration. Further to this, there have also been additional sightings at oil and gas platforms in Scottish waters. It is likely that these sightings are an underestimate as they are incidental, rather than from active monitoring. We are aware of research proposals reviewing Nathusius' pipistrelle migration, which do migrate across the North Sea from the Baltic region.*"

2.1.2 In order to consider bats under the Offshore EIA Report for the Proposed Development, a review of literature and available data has been undertaken for migratory bat species in Scotland and the North Sea. This technical report presents the results of the literature and data review. This includes the species identified in literature, their distribution and migration, and records/counts of any species as recorded in available data. The migratory species identified within the technical report will be considered further within Volume 2, Chapter 12: Offshore Bats of the Offshore EIA Report for the Proposed Development.

3 Offshore Bats Area of Search

3.1.1 The Offshore Bats Area of Search (hereafter referred to as the Area of Search') used in this technical report is defined as northern Scotland, between Aberdeenshire, the Highlands, Orkney and Shetland, the North Sea, and the corresponding offshore corridor between Northern Scotland and Denmark (see Figure 3.1).

Figure 3.1 Bat Area of Search

4 Methodology

4.1 Data Sources

4.1.1 This report includes a review of available literature and data relating to bats, their distribution and migratory behaviours in Northern Scotland and the North Sea.

The literature and data sources used within this report include:

- Desk based review of literature and published scientific papers;
- Review of open-source information, such as Bat Conservation Trust (BCT) website;
- Naturbasen – Ten (Danish Records Website); and
- Data requests to relevant organisations.

Data requests

4.1.2 Data requests for available bat records were submitted to the following organisations:

- North East Scotland Biological Records Centre (NESBReC); Shetland Biological Records Centre (SBRC); Orkney Wildlife Information and Records Centre (OWIARC); Highland Biological Recording Group (HBRG) via the National Biodiversity Network (NBN) and Denmark's National Species Portal, and Danmarks Miljøportal (The Danish Environmental Portal).

Limitations

4.1.3 The Scottish data reviewed within this technical report have varying reporting parameters and methods, and are not derived from consistent monitoring or surveying. Therefore, this data is purely indicative of presence and does not provide a reliable estimate of species abundance.

4.1.4 The Danish data reviewed within this technical report is exclusively from onshore sightings due to the lack of monitoring and research in offshore areas, and therefore, does not provide a definitive estimate of offshore bat occurrences.

4.1.5 Due to the limited available data and research on this topic, it is not possible to draw any definitive conclusions on migratory behaviours of bats, therefore, this report has used the Precautionary Principle approach.

5 Data Review

5.1.1 A review of available data has been undertaken, identifying four migratory species of bats recorded within the Area of Search: Nathusius' pipistrelle *Pipistrellus nathusii*, Leisler's bat *Nyctalus leisleri*, noctule *Nyctalus noctula* and parti-coloured bat *Vespertilio murinus*. There was also a record of Kuhl's pipistrelle *Pipistrellus kuhlii* in Aberdeenshire, however, as this specimen was found in a shipping container and the species is a sedentary, non-migratory bat species, the Kuhl's pipistrelle has not been considered further in this report.

5.1.2 Bat datasets were obtained from NESBReC, which included records from 2015-2025. Table 5.1 summarises the number of records of each migratory species within this period.

Table 5.1 North East Scotland Biological Records Centre (NESBReC) bat count data

North East Scotland Biological Records Centre (NESBReC)			
Species	**Period**	**Records***	**Notes**
Nathusius' pipistrelle	2015-2025	322	Primarily detectors/recorders
Leisler's bat	2015-2024	37	Primarily detectors/recorders
Nyctalus Bat species	2022-2024	2	One record noted as possible Leisler's or noctule.
Noctule	2021	1	Recorded during surveys
Parti-coloured bat	2023	1	Found, later deceased.

*Number of entries in the dataset. For each entry, multiple specimens may have been recorded, therefore, the number of records does not equate to the number of individuals.

5.1.3 Bat datasets were obtained from SBRC, which included records from 2001-2023. Table 5.2 summarises the number of records of each migratory species within this period.

Table 5.2 Shetland Biological Records Centre (SBRC) bat count data

Shetland Biological Records Centre (SBRC)			
Species	**Period**	**Records***	**Notes**
Nathusius' pipistrelle	2001-2023	54	Primarily specimens, including alive and deceased. Fewer records of detections/recordings.
Leisler's bat	2002-2017	4	Primarily specimens.
Parti-coloured bat	2001-2021	8	All specimens, some deceased.

*Number of entries in the dataset. For each entry, multiple specimens may have been recorded, therefore, the number of records does not equate to the number of individuals.

5.1.4 Bat datasets were obtained from Orkney Wildlife Information and Records Centre (OWIARC), which included records from 1976-2019. Table 5.3 summarises the number of records of each migratory species within this period.

Table 5.3 Orkney Wildlife Information and Records Centre (OWIARC)

Orkney Wildlife Information and Records Centre (OWIARC)			
Species	**Period**	**Records***	**Notes**
Nathusius' pipistrelle	1995-2019	12	4x deceased, 2x deceased shortly after found. 6x alive, 1x with multiple records.
Noctule	1976-1998	3	All found alive. 1x pregnant, 1x later deceased.
Parti-coloured bat	2015-2019	3	2x deceased.

*Number of entries in the dataset, however, each Orkney data entry record specifies one individual per record.

5.1.5 Bat datasets were obtained from Highland Biological Recording Group (HBRG) via the National Biodiversity Network (NBN), which included records of bats in the Highlands, between 1934 and 2023 (HBRG, 2026). Table 5.4 summarises the number of records of each migratory species within this period.

Table 5.4 Highland Biological Recording Group (HBRG) - National Biodiversity Network

Highland Biological Recording Group (HBRG) - National Biodiversity Network (NBN)			
Species	**Period**	**Records***	**Notes**
Nathusius' pipistrelle	2010	1	3x individuals recorded via detector.
Nyctalus Bat species	1993-2019	5	2x records noted assumed *Nyctalus noctule* but *Nyctalus leisleri* not ruled out.
Noctule	2000-2006	3	Both visual and detector incidences. 1x record without abundance given.

*Number of entries in the dataset. For each entry, multiple specimens may have been recorded, therefore, the number of records does not equate to the number of individuals.

5.2 Scottish Data Records

5.2.1 The Area of Search for Scotland focuses on sites within proximity of the Array Area. These sites include Aberdeenshire, Orkney, Shetland and the Highlands (See Figure 5.1). The migratory species and their encounters are summarised above in Table 5.1 to Table 5.4, and full data records detailed in Table 0.1. Data records show increases in numbers of different species in recent years, assumed due to environmental factors or improved monitoring.

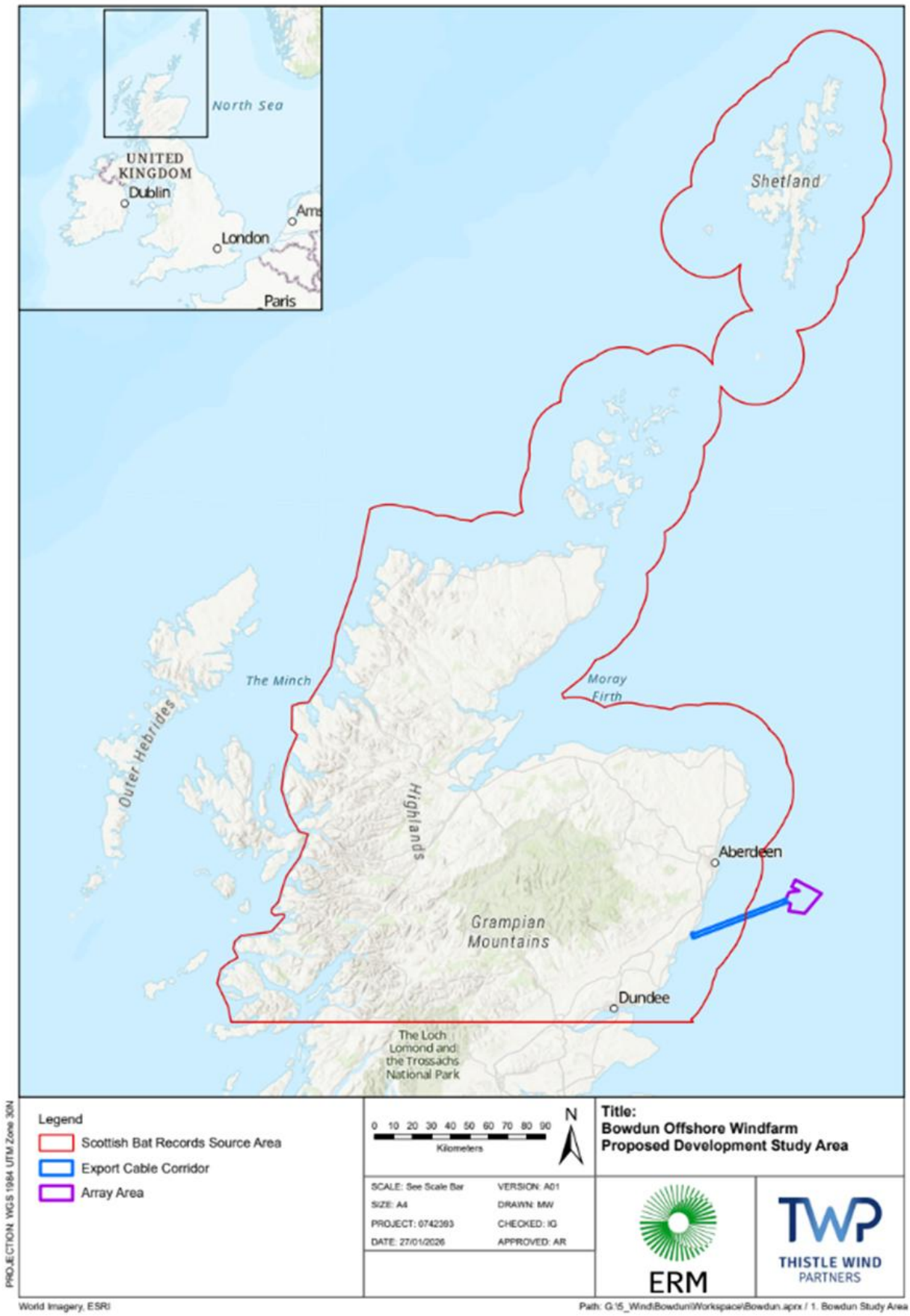

Figure 5.1 Scottish Bat Records Source Area

5.2.2 Nathusius' pipistrelle was recorded throughout Orkney, Shetland, Aberdeenshire and the Highlands. The Highlands, Orkney and Shetland had infrequent observations with the numbers not varying over the survey records. Aberdeenshire the highest numbers of observations in 2017 and 2021 with around 55 bats recorded each year. The observations remained highest of all species throughout the records and it can be concluded that Nathusius' pipistrelle are present in the Area of Search and may potentially migrate from Aberdeenshire, passing through the Proposed Development. Therefore, Nathusius' pipistrelle is described in more detail in Section 6 and its migration reviewed further in Section 7.

5.2.3 Leisler's bat were rarely seen in Shetland with sporadic records, and no records in the Highlands or Orkney. The frequency of the Leisler's bat has increased in Aberdeenshire with a large spike in the number of observed bats in 2021 (18 individuals) and moderate numbers observed the following years. These records suggest a moderate presence of Leisler's bat in Aberdeenshire and the Highlands and therefore, this species is described in more detail in Section 6 and its migration reviewed further in Section 7.

5.2.4 Noctule have been recorded in very low numbers in Aberdeenshire, the Highlands and Orkney, with no records of noctule in Shetland. Only one record of noctule was recorded in Aberdeenshire in 2021, although there are two additional records of Nyctalus spp., with one noted as a possible noctule or Leisler's bat. In the Highlands, a total of three noctules were recorded between 2000 and 2006, however, there were five additional records of Nyctalus spp., with two records noting the species assumed to be noctule but not ruling out Leisler's bat. These records suggest that noctule are most present in low numbers in mainland Scotland, with no records of this species further north in Orkney or Shetland. Due to the low number of records of noctule, this species is unlikely to be present at the Proposed Development. This species is described in more detail in Section 6.

5.2.5 Parti-coloured bats have increased in frequency between 2001 and 2023, with most records being present in Shetland and Orkney. There was only one record of a parti-coloured bat in Aberdeenshire with only a single individual observed, and no records of parti-coloured bats in the Highlands. As Orkney and Shetland are not in the direct foraging path to Denmark, parti-coloured bats are unlikely to be present at the Proposed Development. This species is described in more detail in Section 6.

5.3 Danish Data Records

5.3.1 The Area of Search for Denmark focuses on onshore Denmark and the offshore area within 12 nm of Denmark's shoreline (See Figure 5.2). Reviews of Danish online mapping tools (Naturbasen, 2025) demonstrate species sightings; however, it should be noted that these sightings are exclusively from onshore areas and that there are currently very few surveys focusing on offshore bats. The migratory species and their encounters are summarised in the following sections.

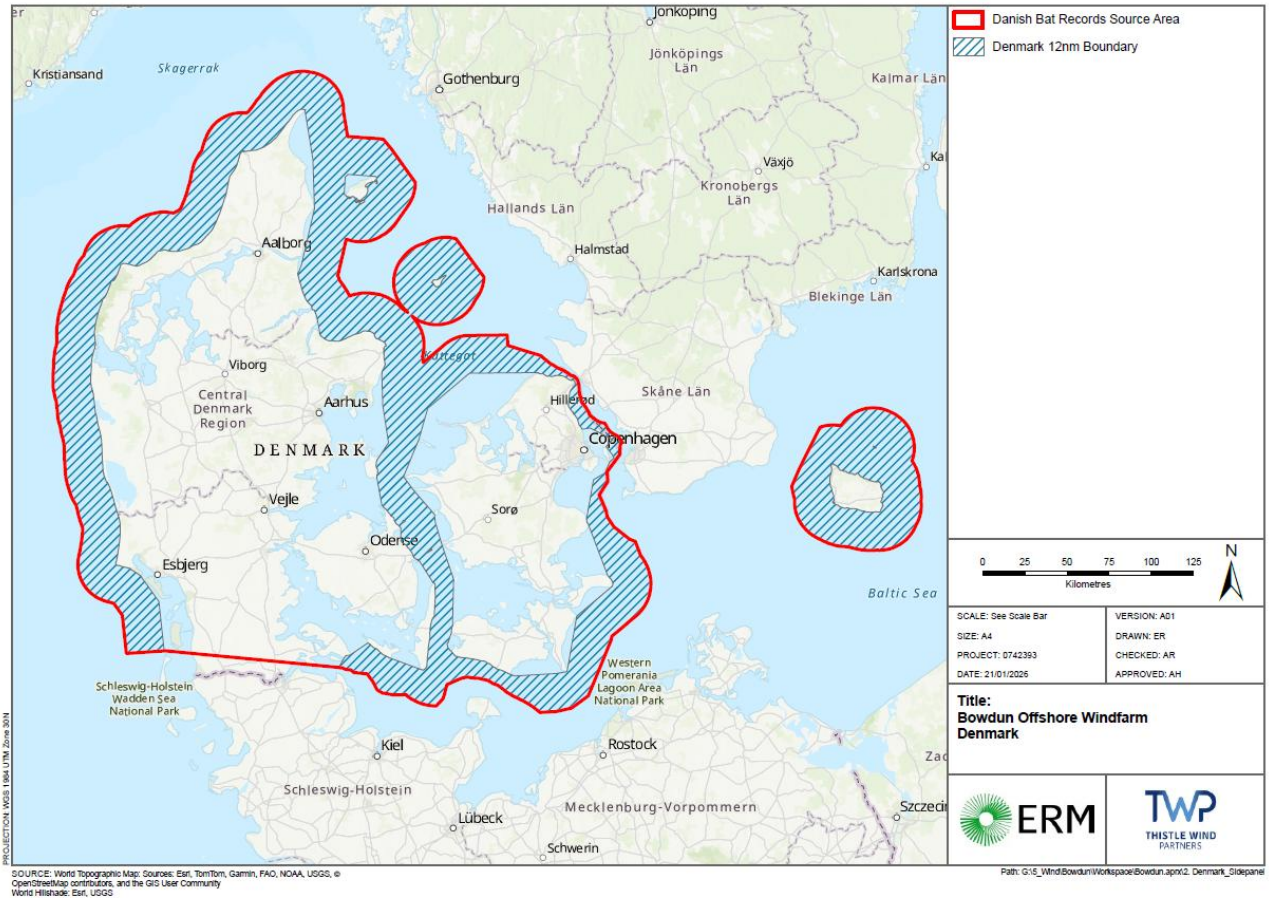

Figure 5.2 Danish Bat Records Source Area

5.3.2 Nathusius' pipistrelle has been reported throughout Denmark, between 2005 and 2025, as demonstrated in Figure 5.3 (Naturbasen, 2025). Data records show increases in numbers of Nathusius' pipistrelle after 2015, with most recordings in the summer months. The observations of Nathusius' pipistrelle in Denmark are one of the highest species recorded; therefore, it can be concluded that this species is present in the Area of Search and may potentially migrate from Denmark to Scotland, passing through the Site Boundary. Therefore, Nathusius' pipistrelle is described in more detail in Section 6 and its migration reviewed further in Section 7.

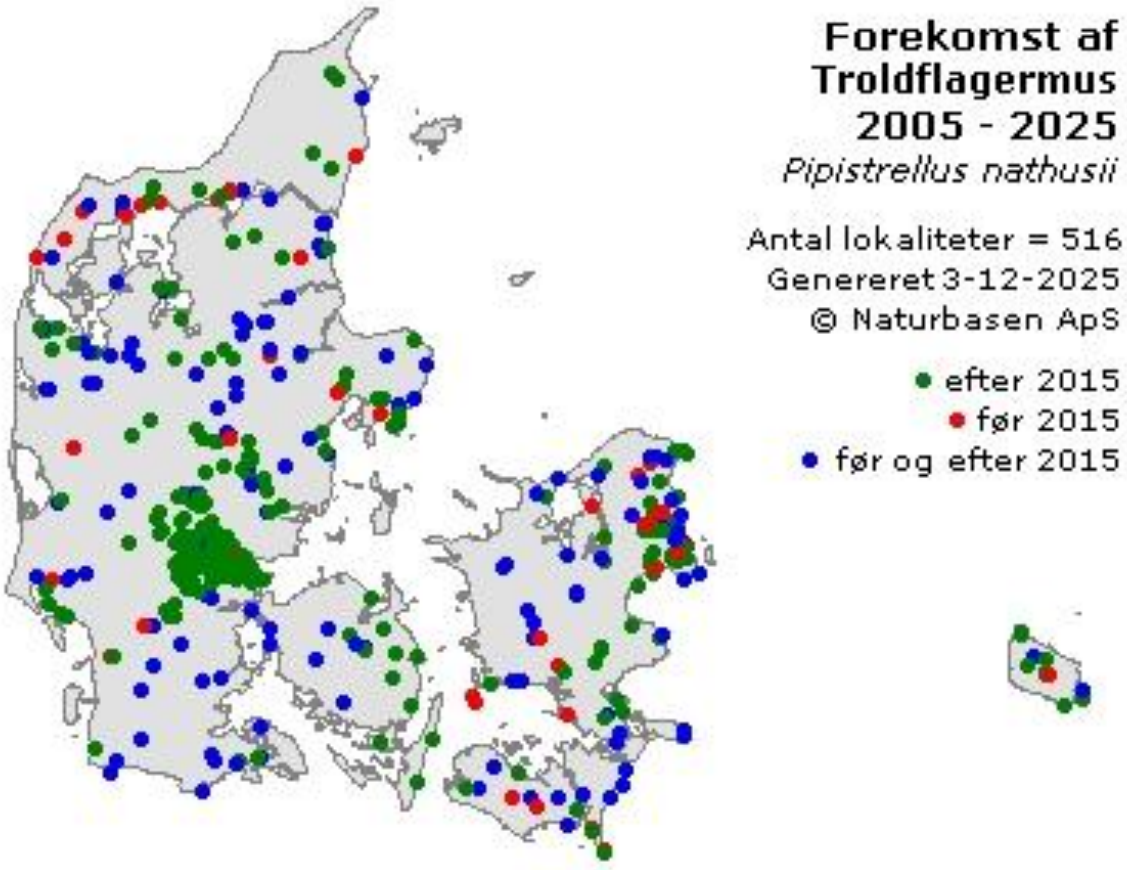

Figure 5.3 Records of Nathusius' pipistrelle in Denmark between 2005 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025)

5.3.3 Records of Leisler's bat are sparse and scattered across Denmark, indicating the rareness of this species in Denmark. All observations of Leisler's bat were recorded in the month of July. These low numbers of Leisler's bat were also seen on the Danmarks Miljøportal (2025). Figure 5.4 demonstrates the sparse records of Leisler's bat in Denmark, between 2012 and 2019. This species has been observed in Denmark and the wider Area of Search, therefore, it is described in more detail in Section 6 and its migration reviewed further in Section 7.

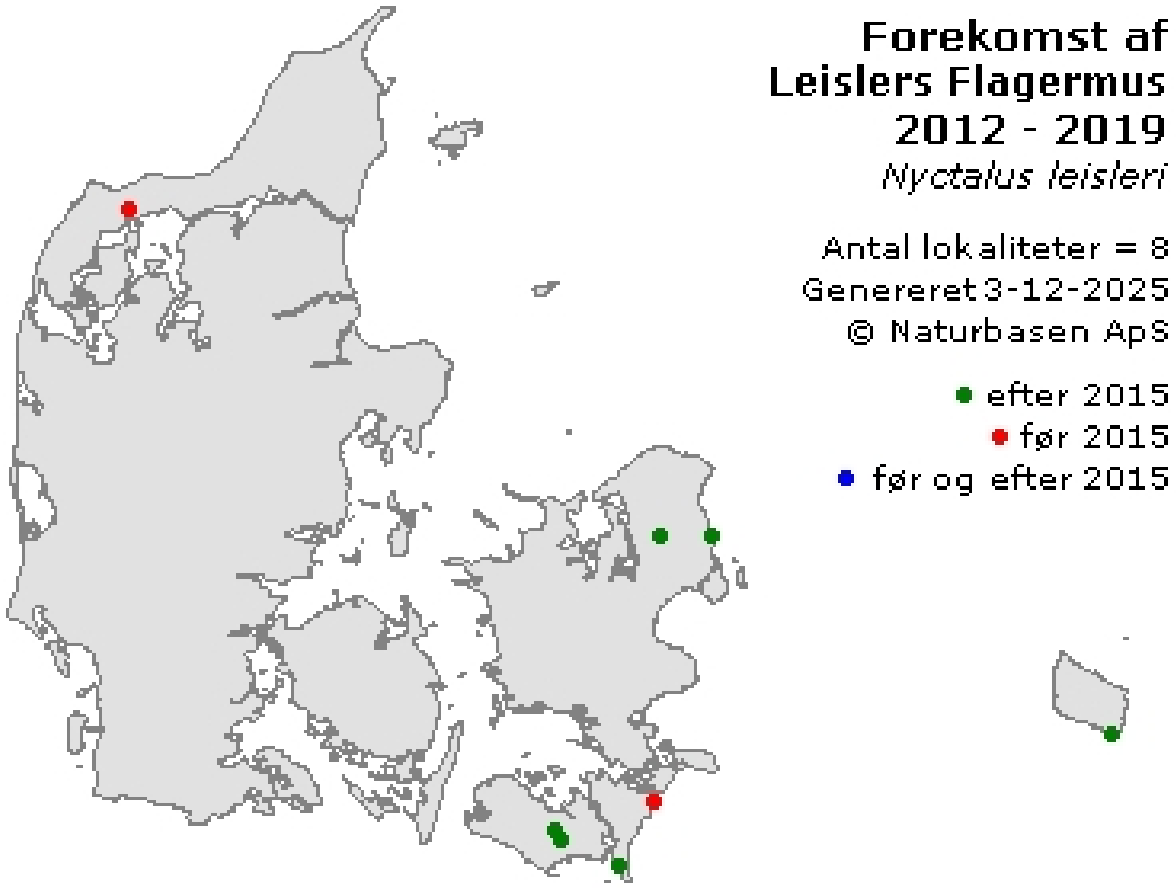

Figure 5.4 Records of Leisler's bat in Denmark between 2012 and 2019, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025)

5.3.4 There are recordings of noctule throughout Denmark, between 1977 and 2025, as demonstrated in Figure 5.5 (Naturbasen, 2025). These records show noctule to be found throughout the country and in proximity to the shore in the Baltic and North Sea, with concentrations in East Jutland and on the islands. There are increases in numbers of noctule recordings after 2015, with fewer records of noctule before 2015, and a moderate number of records before and after 2015. It can be concluded that this species is present in the Area of Search, however, offshore incidences are low, and migration typically occurs in a south-westerly direction. This species is described in more detail in Section 6.

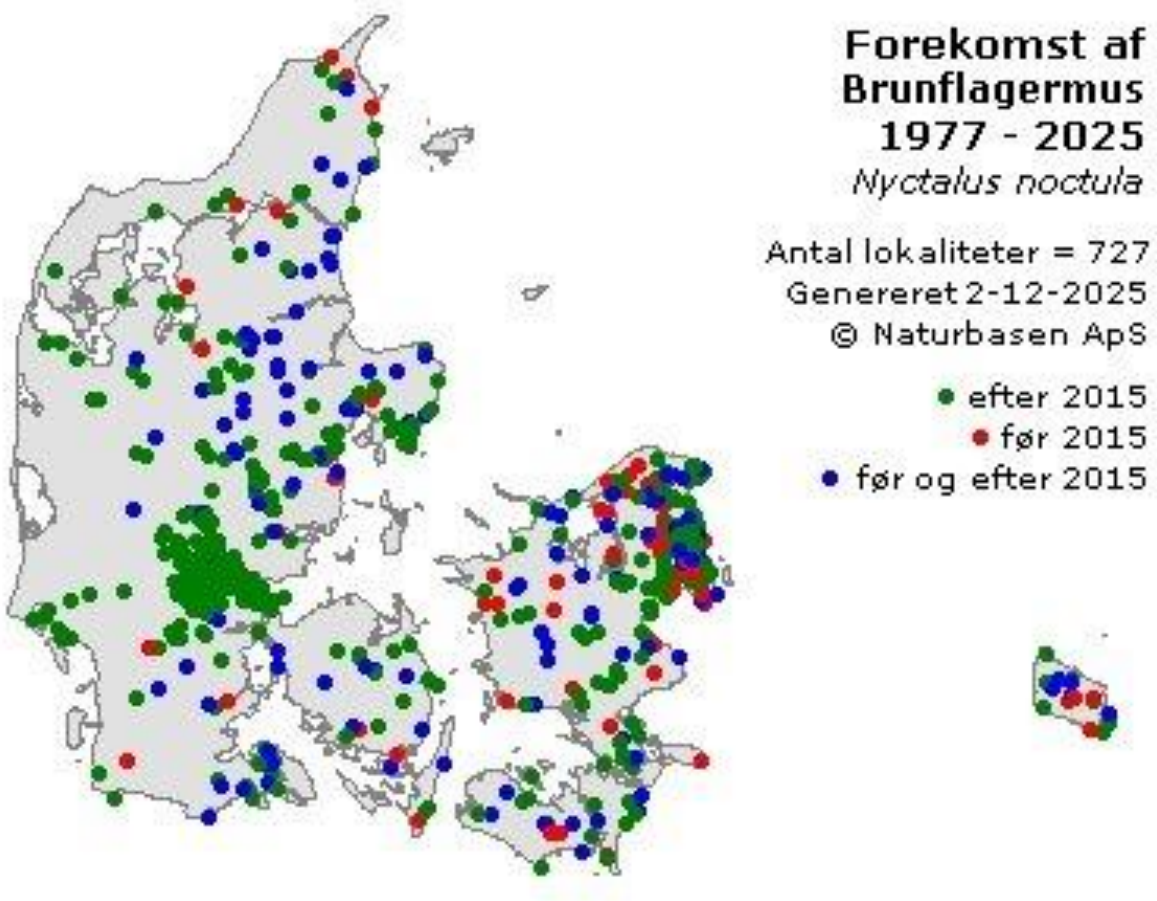

Figure 5.5 Records of noctule in Denmark between 1977 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025)

5.3.5 Parti-coloured bats are widely distributed across Denmark, with the highest concentration of records in Eastern Denmark (see Figure 5.6). Observations of parti-coloured bats have been recorded throughout the year, with highest numbers seen in the summer months of June-August, and in Autumn, between October and November. Although there are moderate numbers of parti-coloured bats across Denmark, due to the highest concentrations being recorded in Eastern Denmark, and there being an absence of records in Scotland, it is unlikely that this species migrates between Denmark and Scotland. This species is described in more detail in Section 6.

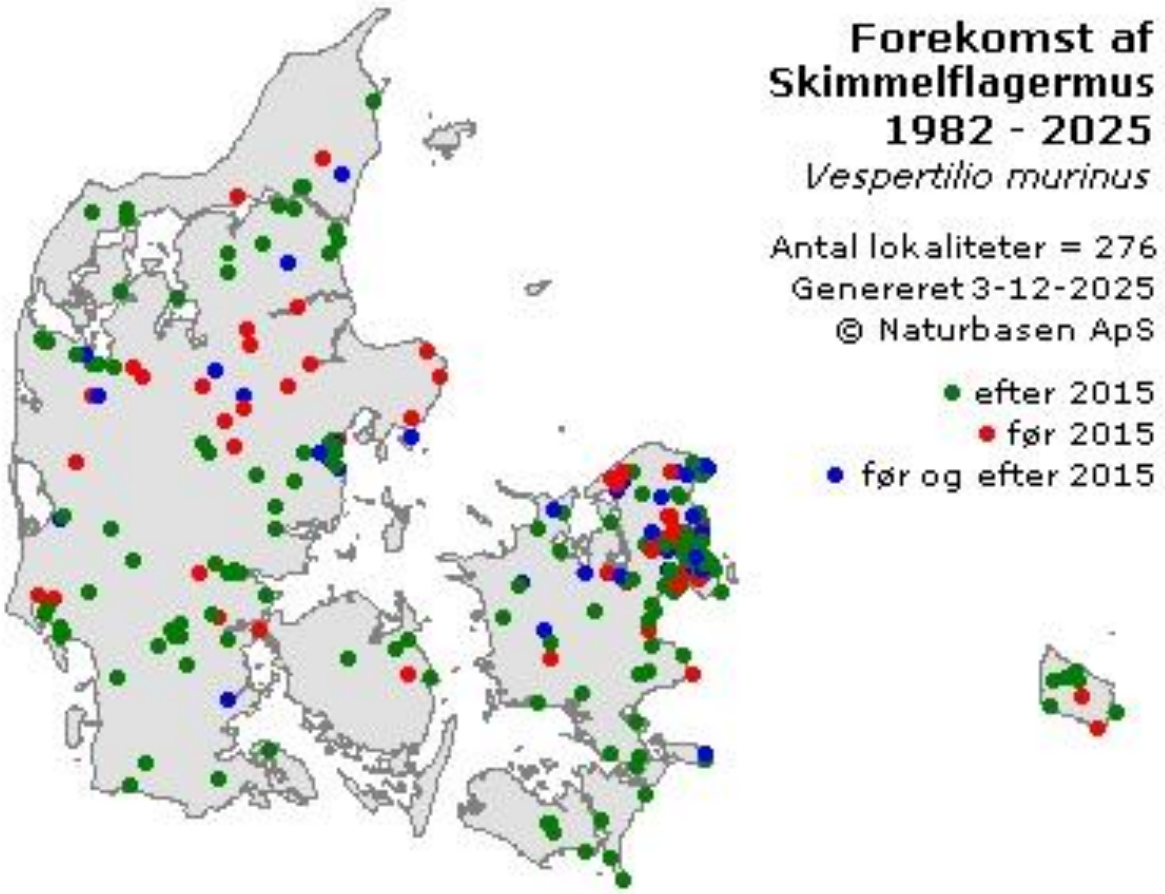

Figure 5.6 Records of Parti-coloured bats in Denmark between 1982 and 2025, Green – after 2015, Red – before 2015 and Blue - before and after 2015 (Naturbasen, 2025)

6 Literature Review

6.1 Nathusius' pipistrelle Pipistrellus nathusii

Species Description

6.1.1 Nathusius' pipistrelle is a small migratory bat species in the family Vespertilionidae, measuring 46–55 mm in body length, with a wingspan of 22–55 cm and weighing 6–15 g (BCT, 2025a; BCT 2025b). Its fur is reddish-brown above and paler below, with dark wings and face. Echolocation calls peak around 39–41 kHz, lower than most other pipistrelles species recorded as resident in the United Kingdom (UK) (BCT, 2025a).

Distribution

6.1.2 Nathusius' pipistrelle are widely distributed across Europe and western Asia, with increasing records in the UK, including Scotland (BCT, 2025a; BCT 2025b). It favours woodland near water bodies, roosting in tree cavities, building crevices, and occasionally bat boxes (Lundy *et al*., 2010). It is highly migratory, with seasonal movements between continental Europe and the British Isles (Lundy *et al*., 2010; BCT, 2025a; BCT, 2025b). Further distributions are discussed in Section 7.

Migration

6.1.3 Nathusius' pipistrelle undertakes long-distance seasonal migrations, often crossing large water bodies like the North Sea. Migration peaks in autumn and spring (Boshamer & Bekker, 2008; Lundy *et al*., 2010; Hüppop and Hill, 2016; DBE&IS, 2022). Individuals have been recorded migrating over 1,500 km (Baagøe & Bloch, 1993). Evidence suggests migratory routes between Scandinavia and the British Isles.

6.1.4 Evidence of bats recorded from offshore installations in the North Sea demonstrate Nathusius' pipistrelle as the species with the highest number of occurrences (Petersen, *et al.*, 2014; Christensen and Hansen, 2023).

Conservation Status

6.1.5 The Nathusius' pipistrelle is classified as Least Concern in the International Union for Conservation of Nature (IUCN) Red List's Global, Europe and Mediterranean assessments (Russo and Cistrone, 2023), but Near Threatened in Great Britain and Vulnerable in Scotland due to limited breeding populations and habitat pressures (BCT, 2025a). Key threats include habitat fragmentation on migration routes, loss and disturbance of roosts in buildings, loss of mature trees and changes in water quality affecting food supplies, however, these threats are believed to not be major (IUCN, 2026a).

6.2 Leisler's bat Nyctalus leisleri

Species Description

6.2.1 Leisler's bat, also known as the hairy-armed bat, is a medium-sized species with golden-tipped brown fur and a distinctive thick mane around the shoulders. It has a wingspan of 26–32 cm and weighs 12–20 g (BCT, 2025c). This species favours mature woodland but also roosts in buildings and bat boxes, emerging early at dusk to forage on moths, flies, and beetles in fast, high flight (BCT, 2025c).

Distribution

6.2.2 Leisler's bat distribution spans much of Europe and western Asia, with strongholds in Ireland and southern England. In the UK, it is most common in Ireland and parts of southern and central England, less frequent in Wales, and scarce in Scotland, where records are mainly from the south-west (e.g. Arran, Bute and Dumfries and Galloway). It is absent from the far north and most of the Highlands (Boston *et al.*, 2015; BCT, 2025c). They are the found offshore on the Azore Islands and Maderia (Baagøe & Bloch, 1993).

Migration

6.2.3 Leisler's bat are highly mobile and often move between roosts, sometimes sharing them with noctules and pipistrelles. They exhibit seasonal movements and, in some parts of Europe, undertake long-distance migrations to warmer hibernation grounds in Central and Southern Europe (Hutterer *et al.*, 2005). Evidence from ringing and offshore records indicates that individuals can travel hundreds of kilometres, with some documented movements exceeding 1,000 km (Hutterer *et al.*, 2005). Offshore sightings in the North Sea suggest that Leisler's bat may cross large water bodies during migration, similar to Nathusius' pipistrelle (Hutterer *et al.*, 2005). Evidence of bats recorded from offshore installations in the North Sea shows very low occurrences of Leisler's bat (Petersen, *et al.*, 2014; Christensen and Hansen, 2023).

6.2.4 In winter, they hibernate in tree holes, building cavities, and occasionally caves or tunnels, but in milder regions, some individuals remain active or migrate to areas with favourable conditions (BCT, 2025c).

Conservation Status

~~6.2.5~~ Leisler's bat conservation status is Nearly Threatened in Great Britain and Least Concerned globally, with threats including loss of old trees and collision risk with wind turbines (BCT, 2025c). The Leisler's bat is classified as Least Concern according to the IUCN Red List's Global, Europe and Mediterranean assessments (Juste and Paunović, 2016). The Leisler's bat is threatened by disturbance to and destruction of roosts in trees and buildings, and loss or degradation of foraging habitat; however, these are believed not to be major threats (IUCN, 2026b).

6.3 Noctule Nyctalus noctula

Species Description

6.3.1 The noctule is a medium-large sized species of bat, with a body length ranging between 60-82 mm, and a wingspan between 320-400 mm (BCT, 2026). This species is chocolate brown in colour, with broad, brown ears and a distinctive mushroom-shaped tragus.

6.3.2 Noctules have long, narrow wings and typically fly at high speeds in straight lines in open spaces, often at heights above tree-level. This species typically inhabits trees, rarely occurring in buildings.

Distribution

6.3.3 Noctules have a broad range in Britain, spanning across England, Wales and southwest Scotland, with an absence of data in the rest of Scotland (JNCC, 2019). Bat records show numbers to have declined in Britain, owing to modern agricultural practices and the resultant loss of suitable habitats (BCT, 2026).

6.3.4 Noctules are frequently seen across mainland Europe, where they often form larger aggregations during winter months, compared to smaller group sizes being more typical in the UK (BCT, 2026).

Migration

6.3.5 The noctule is known long-distance migrant, which commutes, forages and migrates at heights of over several hundred metres over land and up to heights of 1,000 m offshore (Brinkløv *et al.*, 2025a). Noctules may migrate over long distances of more than 1,000 km (Brinkløv *et al.*, 2025a; BSG, 2014; Hutterer *et al.*, 2005; Poerink *et al.*, 2013) and have been recorded at distances of 18 km offshore (Brinkløv *et al.*, 2025a) and at offshore platforms in the Dutch sector of the North Sea (Boshamer and Bekker, 2008). However, noctules are noted to favour platforms closer to the Dutch coast (Boshamer and Bekker, 2008) and have more frequent observations in the southern North Sea, near to the Dutch coastline (Leopold *et al.*, 2014).

6.3.6 On the European continent, including Denmark, migrating noctules often travel in a south-westerly direction to hibernate in more favourable climates (Ahlen *et al.*, 2007; Boshamer and Bekker, 2008; Hutterer *et al.*, 2005; Poerink *et al.*, 2013). This species regularly migrates over the Baltic Sea and Belt Sea, but less frequently over the North Sea (Brinkløv *et al.*, 2025a).

Conservation Status

6.3.7 The noctule is classified as Least Concern according to the IUCN Red List's Global, Europe and Mediterranean assessments (Csorba and Hutson, 2016). There are no reported major threats to the noctule, however, this species can be affected by loss of old trees with roosting holes (IUCN, 2026d).

6.4 Parti-coloured bat *Vespertilio murinus*

Species Description

6.4.1 The parti-coloured bat (*Vespertilio murinus*) is a medium-large sized species of bat, ranging from 48-64 mm in body length, with a wingspan of 270-310 mm (Bat Monitoring, 2025). The fur colouration of a parti-coloured bat is distinctive, with long, dark fur on its dorsal side, and significantly lighter fur on its ventral side.

6.4.2 Individuals and breeding colonies of this species favour roosting in rock crevices and anthropogenic structures, such as lofts and barns. Breeding colonies are typically made up of 20 to 60 females, although sometimes up to 200, and are usually occupied through the summer months, between May and August. Males form larger groups of up to 300 individuals, usually located away from breeding colonies.

Distribution

6.4.3 Parti-coloured bats are distributed throughout central and northern Europe, with limited distribution in the furthest northern areas (Bat Monitoring, 2025). This species typically feeds over water bodies or in open habitats, often targeting concentrations of insects gathered over water bodies.

Migration

6.4.4 Migratory behaviours differ by geographical location, with the majority of parti-coloured bats migrating long distances, including records of up to 1,747 km, whilst others in countries such as Denmark remaining relatively localised (Bat Monitoring, 2025). Evidence of bats recorded from offshore installations in the North Sea show small numbers of parti-coloured bats occurring (Petersen, *et al.*, 2014; Christensen and Hansen, 2023).

Conservation Status

6.4.5 The parti-coloured bat is classified as Least Concern according to the IUCN Red List's Global, Europe and Mediterranean assessments (Coroiu, 2016). There are no reported major threats to the parti-coloured bat, however, this species can be affected by disturbance to roosts in buildings (IUCN, 2026c).

7 Migratory Species Review

7.1.1 Following the data and literature review for both Scotland and Denmark, the migration of the following species has been considered further:

- Nathusius' pipistrelle; and
- Leisler's bat.

7.2 Nathusius' Pipistrelle

7.2.1 Distribution of Nathusius' pipistrelle has expanded since the 1980s. Aberdeenshire and the Highlands, specifically the woodland areas and small urbanised areas provide suitable habitat with the average annual increases in temperature and intermediate levels of rainfall (Lundy *et al.*, 2010). The peatland and heathland of the western highlands are not suitable habitats for Nathusius' pipistrelle, suggesting they are more predominant in the east coast of Scotland from Aberdeenshire and up to Caithness (Lundy *et al.*, 2010). Records of Nathusius' pipistrelle are recorded as far north as the Faroe Islands (Baagøe & Bloch, 1993). Predictions by Lundy *et al.* (2010) of Nathusius' pipistrelle distributions align with the Scottish records, suggesting that Aberdeenshire and the Highlands are suitable habitats for migrating Nathusius' pipistrelle. This can be seen in Figure 7.1.

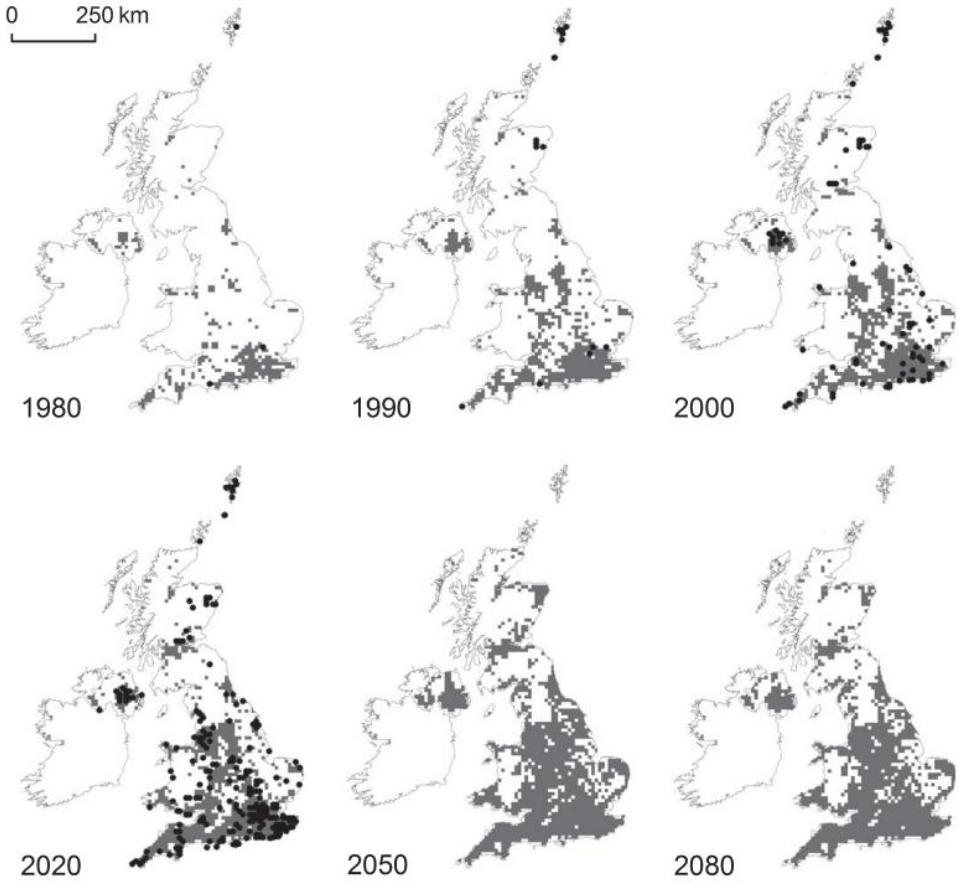

Figure 7.1 Suitable Habitat Expansion for Nathusius' pipistrelle (Source Lundy *et al.*, 2010)

7.2.2 The National Nathusius' Project ran between 2014 and 2023 to determine the resident and breeding status of Nathusius' pipistrelle. The records showed that the closest breeding population to the Proposed Development was in Northumberland with no records of breeding females in Scotland (BCT, 2025b). Only males were recorded in Central Scotland and Aberdeenshire (See Figure 7.2).

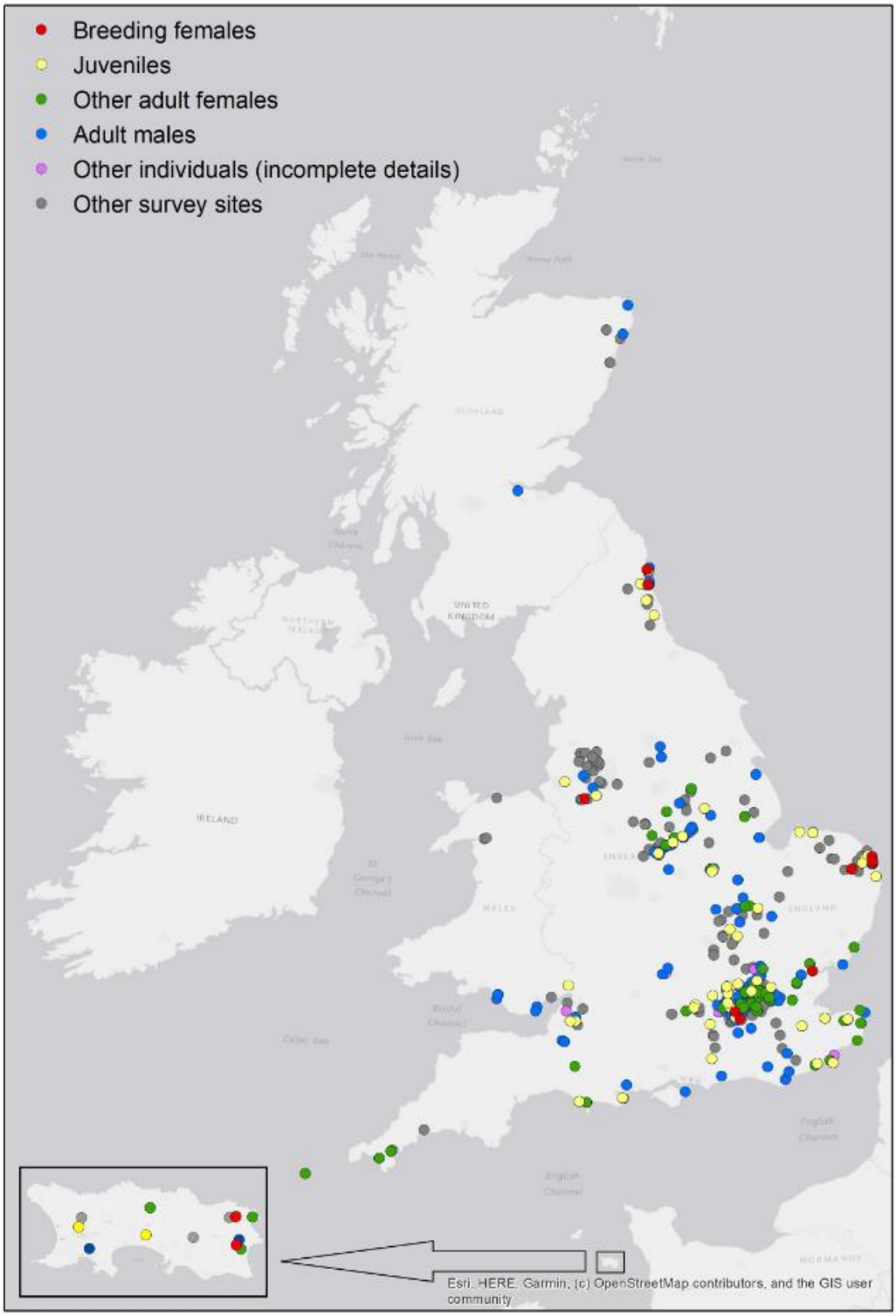

Figure 7.2 Nathusius' Pipistrelle captures April 2011 to October 2022 (BCT, 2025b)

7.2.3 The National Nathusius' Project also recorded the migratory pathways of ten bats which migrated over long distances from England to the Baltic countries. The records found a Nathusius' pipistrelle migrated from Northern England across the North Sea to Poland through Southern Denmark and Northern Germany. Static detectors recorded 23 Nathusius' pipistrelle many times during Spring and Autumn 45 km off the coast of Borkum Island at the Dutch/German border (Hüppop and Hill, 2016). This suggests that Nathusius' pipistrelle migrates directly across the North Sea from their summer habitat (BCT, 2025b).

7.2.4 Offshore observations on transiting ferries across the North Sea have recorded Nathusius' pipistrelle as far offshore as 106 km in May, September and October (BSG Ecology, 2014). Additional evidence includes observations of bats, including Nathusius' pipistrelle, on offshore platforms in the North Sea. A total of 34 individuals were observed between 1988 and 2007, with 26 of those records confirmed to be Nathusius' pipistrelle, suggesting this is an established migratory route for the species (Boshamer & Bekker, 2008).

7.2.5 Although records are shown in Northern Scotland during the migratory season this could be due to strong tailwinds blowing them off course such as patterns found in migrating birds. Shetland does not support summer populations of Nathusius' pipistrelle due to the lack of suitable habitat (Hooker *et al.*, 2025). Nathusius' pipistrelle is thought to migrate south westerly from Norway and Sweden to the UK.

7.2.6 Hooker *et al.* (2025) review of the literature suggests that bats flying on the Scotland to Norway migratory pathway are most likely to take the shortest route between landmasses through the Orkney or Shetland Islands or off the coast of Fraserburgh (See Figure 1.1). As the Proposed Development is further south in Aberdeenshire, it is likely there will be no interaction of Nathusius' pipistrelle on this pathway. Only the migratory route between northern Scotland and Denmark will be investigated as it holds the highest likelihood of interaction with migratory bats passing through the Site Boundary.

7.2.7 The direct migratory route has not been confirmed in primary literature as there are few recorded or regular monitoring of migratory pathways from offshore platforms or windfarms. There is a severe lack of data in the central North Sea which is the direct pathway between Northern Scotland, the Proposed Development and Denmark (See Figure 7.3) despite there being several OWFs within the flight path.

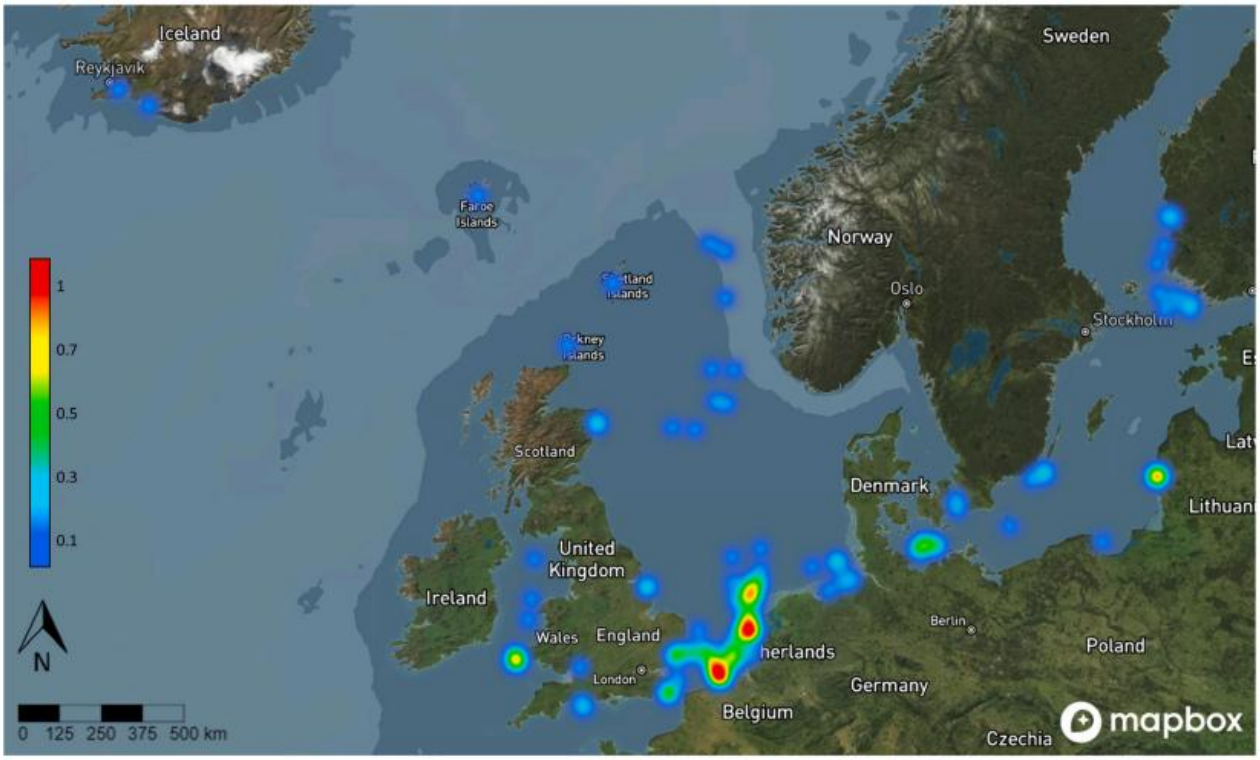

Figure 7.3 Heat Map Displaying Regional Studies of Migratory Bats in the North Sea. Red – higher concentrations of studies and Blue – lower concentration of studies (Source: Hooker *et al.*, 2025)

7.2.8 However, available evidence suggests there are established migratory routes between habitats in Scotland and Scandinavia (See Figure 7.4). There is likely a migratory pathway between Scotland and Denmark despite this area being only partially studied (DBE&IS, 2022).

Figure 7.4 Nathusius' pipistrelle Migratory Distribution (DBE&IS, 2022)

7.2.9 Denmark has five OWFs in the North Sea within their territorial waters which have conducted bat monitoring surveys within their Array Area. Nordsee OWF recorded Nathusius' pipistrelle in the Spring and Autumn of 2023 and 2024. Nathusius' pipistrelles were also recorded on Frederikshavn Havmøllepark, Kattegat II and Sæby OWF. The bats were on average 40 km off the coast of Denmark and one >80 km offshore (Brinkløv *et al.*, 2025b). The activity was predominantly around the migratory period as bats tended to forage closer to the coast during the summer period and were recorded less often (see Figure 7.5). This suggests a relationship between migrating bats to Denmark and potentially Scotland (Brinkløv *et al.*, 2025b).

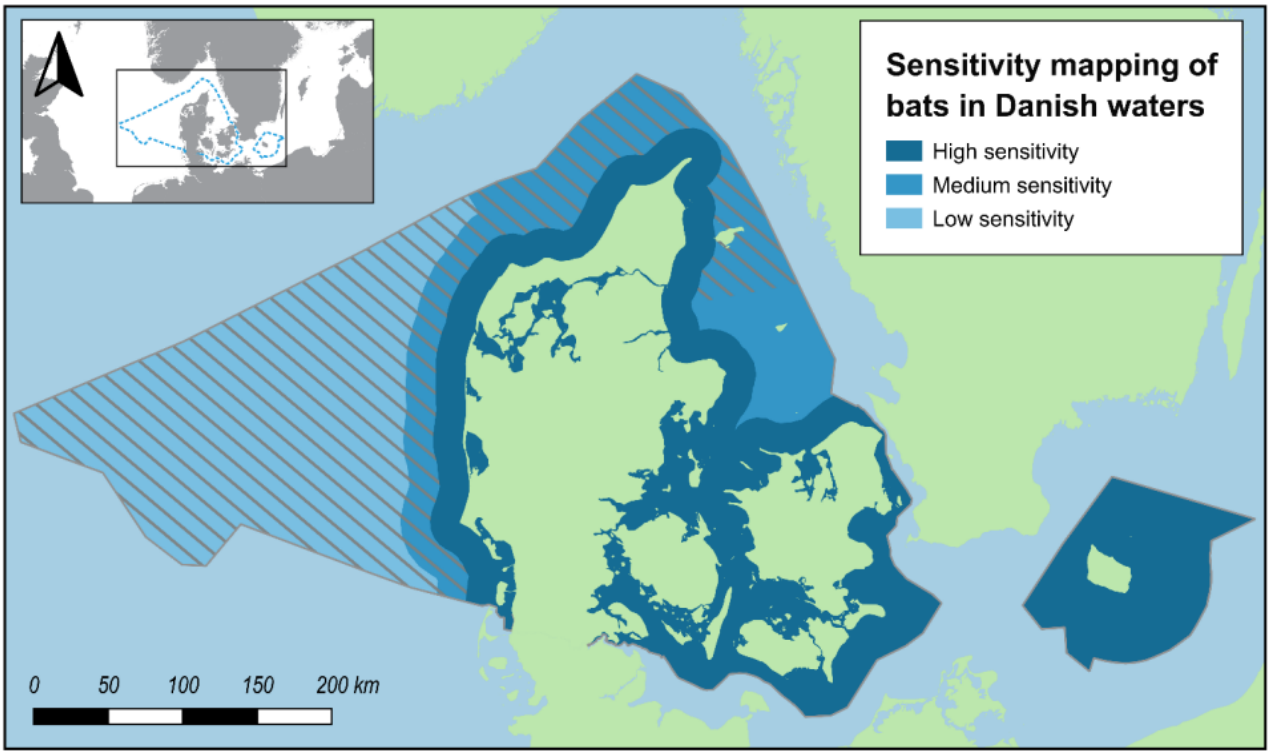

Figure 7.5 Bat Activity Indications by Sensitivity in Danish Waters (Source Brinkløv *et al.*, 2025b)

7.3 Leisler's bat

7.3.1 Leisler's bat are less frequently recorded on offshore platforms than Nathusius' pipistrelle. A known migratory species, Leisler's bat are more common in England than in Scotland. Climate change is driving temperature increases and changes in rainfall patterns which are creating more suitable habitat for Leisler's bat in the east coast of northern Scotland (Boston *et al.*, 2015). This is demonstrated by the increase in observations described in Section 5.

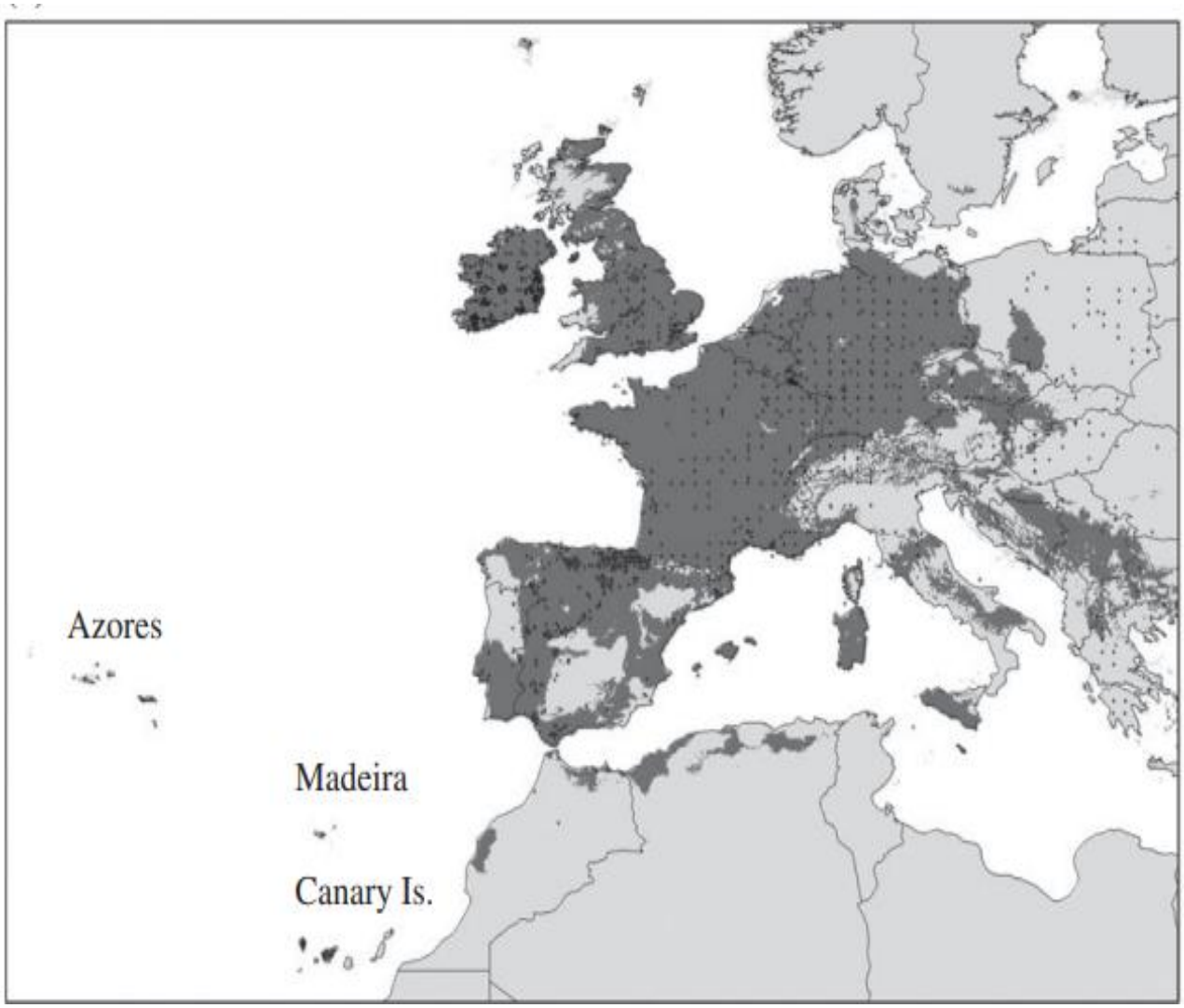

Figure 7.6 Suitable Habitat Predicted for Leisler's bat (Source: Boston *et al.*, 2015)

7.3.2 Leisler's bat migratory routes often follow the coast of European countries to their hibernation habitat (Boshamer & Bekker, 2008). There were no records prior to 2008 of Leisler's bat on offshore platforms, the UK only observed sparse records of migrating individuals along the coastline (Boshamer & Bekker, 2008).

7.3.3 A study with static detectors 45 km off the coast of Borkum Island between the Dutch/German sea border recorded two Leisler's bat around Spring or Autumn suggesting their movements were migratory (Hüppop and Hill, 2016). Leisler's bat were also recorded off the coast of the Netherlands only in September of 2015 which further supports the migratory evidence (Lagerveld *et al.*, 2017). These records could have been along the coastline but suggests they could have migrated across the North Sea from England as well.

7.3.4 Ahlen *et al*. (2009) recorded species present in the open sea between Sweden and Denmark recording 12 Leisler's bat individuals however these were more likely to be foraging or passage flights. Leisler's bat can travel 2,000 km during their migration with more evidence suggesting they travel to central and southern Europe (Hutterer *et al*., 2005).

Figure 7.7 Known Leisler's bat Migration Pathways (Hutterer *et al.*, 2005)

7.3.5 Hooker *et al.* (2025) summarised that Leisler's bat are unlikely to migrate through the North Sea corridor to Scandinavia due to seasonal patterns and north-east to south-west migration patterns. However, there is not enough evidence to rule out the corridor from the Northern UK to Scandinavia as a possible route of migration for this species (Hooker *et al.*, 2025).

7.3.6 Given the lack of research on the North Sea and the evidence of the migratory pathways being coastal and few recordings offshore compared to other cross water body migratory species. It seems unlikely that Leisler's bat will be migrating within the Area of Search. The observed species are more likely to follow the UK coastline and migrate south to the mainland of Europe rather than crossing to Denmark or Germany for hibernation or to migrate south from their landfall. Therefore, they will not be required to be assessed for the Proposed Development.

8 Conclusion

8.1.1 Following the data and literature review for both Scotland and Denmark, the two species identified as migrating across the North Sea are Nathusius' pipistrelle and Leisler's bat. The high number of records and distribution of the observations give strong evidence that there is a migratory pathway of Nathusius' pipistrelle which could potentially cross the Array Area. The evidence for Leisler's bat suggests they prefer to migrate along the coastline and their hibernation habitat is further south than Scandinavia, therefore, suggesting it is unlikely they will interact with the Array Area.

8.1.2 Therefore, only Nathusius' pipistrelle is assessed in Volume 2, Chapter 12: Offshore Bats.

References

Ahlen, I., Bach, L., Baagøe, H.J., Pettersson, J. (2007) Bats and offshore wind turbines studied in southern Scandinavia. Swedish Environmental Protection Agency.

Ahlen, I., Baagøe, H.J. and Bach, L. (2009). 'Behaviour of Scandinavian bats during migration and foraging at sea', Journal of Mammalogy. Available at: https://doi.org/10.1644/09-MAMM-S-223R.1

Baagøe, H. and Bloch, D., (1993). Bats (Chiroptera) in the Faroe Islands. Fróðskaparrit-Faroese Scientific Journal, pp.83-88.

Bat Conservation Trust (BCT) (2025a). Nathusius' pipistrelle Fact Sheet. Available at: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats/nathusius-pipistrelle (Accessed: December 2025).

Bat Conservation Trust (BCT) (2025b). National Nathusius' 'Pipistrelle Project. Available at: https://www.bats.org.uk/our-work/national-bat-monitoring-programme/surveys/national-nathusius-pipistrelle-survey (Accessed: December 2025).

Bat Conservation Trust (BCT) (2025c). Leisler's bat Fact Sheet. Available at: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats/leislers-bat (Accessed: December 2025).

Bat Conservation Trust (BCT) (2026). Noctule Fact Sheet. Available at: https://www.bats.org.uk/about-bats/what-are-bats/uk-bats/noctule (Accessed: February 2026)

Bat Monitoring (2025). Parti-coloured bat. Available at: https://www.batmonitoring.org/en/species/vespertilio-murinus/ (Accessed: December 2025).

Boshamer, J.P.C. and Bekker, J.P. (2008) 'Nathusius' pipistrelles (Pipistrellus nathusii) and other species of bats on offshore platforms in the Dutch sector of the North Sea', Lutra, 51(1), pp. 17-36.

Boston, E.S., Ian Montgomery, W., Hynes, R. and Prodöhl, P.A. (2015). New insights on postglacial colonization in western Europe: the phylogeography of the Leisler's bat (Nyctalus leisleri). Proceedings of the Royal Society B: Biological Sciences, 282(1804), p.20142605.

Brinkløv, S.; Smeele, S.; Uebel, A.; Grethen, K.; Fjederholt, E.; Elmeros, M. (2025a). Baseline surveys of Birds, Bats and Marine Mammals in areas for Offshore Wind Farms in the Danish North Sea (North Sea I): Bats – Baseline surveys 2023-2025 North Sea I (Report No. N5K5STKFDW43-1172207895-7469). Report by Aarhus University. Report for Energinet Eltransmission A/S.

Brinkløv, S., Uebel, A., Fjederholt, E. & Elmeros, M. (2025b). Sensitivity mapping of relative risks to bats from Danish offshore wind energy. Aarhus University, DCE – Danish Centre for Environment and Energy, 55 pp. Technical Report No. 332.

BSG Ecology (2014) Bat Migration Research Report: Stable Isotope Analysis of Nathusius' Pipistrelle Fur Samples. Available at: https://bsg-ecology.com

Christensen, M. & Hansen, B. (2023). Flagermus og havvind. Report for Danish Energy Agency.

Coroiu, I. (2016). Vespertilio murinus. The IUCN Red List of Threatened Species 2016: e.T22947A22071456. https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T22947A22071456.en.

Csorba, G. & Hutson, A.M. (2016). Nyctalus noctula. The IUCN Red List of Threatened Species 2016: e.T14920A22015682. https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T14920A22015682.en.

Danmarks Miljøportal (2025). The Danish Environmental Portal. https://naturdata.miljoeportal.dk/ (Accessed: December 2025)

Department for Business Energy & Industrial Strategy (DBE&IS) (2022) Appendix 1a.7 – Bats. Available at:

https://assets.publishing.service.gov.uk/media/62308e42d3bf7f5a8a6955b8/Appendix_1a.7_-_Bats.pdf

Highland Biological Recording Group (HBRG), 2026. Vertebrates (not Badger) Dataset. Occurrence dataset on the NBN Atlas. (Accessed: February 2026)

Hooker, J., Lintott, P., Boughey, K., Worledge, L., Park, K. and Collins, J., (2025) Impacts of offshore wind farms on migratory bats in British waters. Global Ecology and Conservation, 63(e0391), p.1.

Hüppop, O. and Hill, R. (2016) 'Migration phenology and behaviour of bats at a research platform in the south-eastern North Sea', Institute of Avian Research. Available at: https://www.researchgate.net/publication/Migration-phenology-and-behaviour-of-bats-at-a-research-platform-in-the-south-eastern-North-Sea.pdf

Hutterer, R., Ivanova, T., Meyer-Cords, C. and Rodrigues, L. (2005) Bat Migration in Europe – a review of banding data and literature. Federal Agency for Nature Conservation, Bonn.

IUCN (2026a). Nathusius' Pipistrelle IUCN Red List. Available at: https://www.iucnredlist.org/species/17316/22132621 (Accessed: January 2026)

IUCN (2026b). Leisler's Bat IUCN Red List. Available at: https://www.iucnredlist.org/species/14919/22016159 (Accessed: January 2026)

IUCN (2026c). Parti-coloured Bat IUCN Red List. Available at: https://www.iucnredlist.org/species/22947/22071456 (Accessed: January 2026)

IUCN (2026d). Noctule IUCN Red List. Available at: https://www.iucnredlist.org/species/14920/22015682 (Accessed: February 2026)

Joint Nature Conservation Committee (JNCC), (2019). Conservation status assessment for the species: S1312 - Noctule (Nyctalus noctula). Fourth Report by the United Kingdom under Article 17.

Juste, J. & Paunović, M. (2016). Nyctalus leisleri. The IUCN Red List of Threatened Species 2016: e.T14919A22016159. https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T14919A22016159.en.

Lagerveld, S., Gerla, D., van der Wal, J.T., de Vries, P., Brabant, R., Stienen, E., Deneudt, K., Manshanden, J. and Scholl, M. (2017) Spatial and temporal occurrence of bats in the southern North Sea area. Wageningen Marine Research (University & Research Centre), Wageningen Marine Research report C090/17; 52 pp.

Leopold, M.F.; Boonman, M.; Collier, M.P.; Davaasuren, N.; Fijn, R.C.; Gyimesi, A.; de Jong, J.; Jongbloed, R.H.; Jonge Poerink, B.; Kleyheeg-Hartman, J.C.; Krijgsveld, K.L.; Lagerveld, S.; Lensink, R.; Poot, M.J.M.; van der Wal. J.T.; Scholl, M. (2014). A first approach to deal with cumulative effects on birds and bats of offshore wind farms and other human activities in the Southern North Sea. IMARES Report C166/14

Lundy, M., Montgomery, I., and Russ, J. (2010). Climate change-linked range expansion of Nathusius' pipistrelle bat, Pipistrellus nathusii (Keyserling & Blasius, 1839). Journal of Biogeography, 37(12), pp.2232-2242.

Naturbasen (2025). Danmarks Nationale Artsportal. https://www.naturbasen.dk/ (Accessed: December 2025)

Petersen, A., Jensen, J., Jenkins, P. and Bloch, D. (2014) 'A review of the occurrence of bats (Chiroptera) on islands in the North East Atlantic and on North Sea installations', Acta Chiropterologica, 16(1), pp. 1-12.

Poerink, B.J., Lagerveld, S., Verdaat, H. (2013). Pilot study Bat activity in the Dutch offshore wind farm. OWEZ and PAWP IMARES report number C026/13 / tFC report number 20120402.

Russo, D. & Cistrone, L. (2023). Pipistrellus nathusii (Europe assessment). The IUCN Red List of Threatened Species 2023: e.T17316A216726467. https://dx.doi.org/10.2305/IUCN.UK.2016-2.RLTS.T17316A22132621.en.

ANNEX A: RECORD SUMMARIES

Table 0.1 Summary of Migratory Bat Records in Aberdeenshire & the Highlands, Orkney and Shetland

Location	Latin Name	Common Name	Year	Total Count
Aberdeenshire	*Nyctalus*	Nyctalus Bat species	2022	2
Aberdeenshire	*Nyctalus*	Nyctalus Bat species	2024	1
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2015	Not specified
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2016	3+
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2018	2+
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2020	7
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2021	18
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2022	1+
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2023	8+
Aberdeenshire	*Nyctalus leisleri*	Leisler's Bat	2024	2
Aberdeenshire	*Nyctalus noctula*	Noctule	2021	1
Aberdeenshire	*Pipistrellus kuhlii*	Kuhl's Pipistrelle	2015	1
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2015	2+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2016	10+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2017	54+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2018	32+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2019	13+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2020	26+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2021	55+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2022	4+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2023	8+
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2024	9
Aberdeenshire	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2025	2
Aberdeenshire	*Vespertilio murinus*	Parti-coloured Bat	2023	1
Orkney	*Nyctalus noctula*	Noctule	1976	1
Orkney	*Nyctalus noctula*	Noctule	1978	1
Orkney	*Nyctalus noctula*	Noctule	1998	1
Orkney	*Vespertilio murinus*	Parti-coloured Bat	2015	1
Orkney	*Vespertilio murinus*	Parti-coloured Bat	2017	1
Orkney	*Vespertilio murinus*	Parti-coloured Bat	2019	1
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	1995	1
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2002	1
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2006	1
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2010	2
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2014	1
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2015	2

Location	Latin Name	Common Name	Year	Total Count
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2018	2
Orkney	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2019	3
Shetland	*Nyctalus leisleri*	Leisler's bat	2002	1
Shetland	*Nyctalus leisleri*	Leisler's bat	2011	1
Shetland	*Nyctalus leisleri*	Leisler's bat	2012	1
Shetland	*Nyctalus leisleri*	Leisler's bat	2017	1
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2001	3
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2002	1
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2003	2
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2006	6
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2008	2
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2009	1
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2010	5
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2011	5
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2013	3
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2015	2
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2016	5
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2017	3
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2018	2
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2019	2
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2020	4
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2022	6
Shetland	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2023	3
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2001	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2003	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2009	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2011	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2013	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2015	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2018	1
Shetland	*Vespertilio murinus*	Parti-coloured Bat	2021	1
Highlands	*Nyctalus*	Nyctalus Bat species	1993	3
Highlands	*Nyctalus*	Nyctalus Bat species	2008	1
Highlands	*Nyctalus*	Nyctalus Bat species	2011	1
Highlands	*Nyctalus*	Nyctalus Bat species	2019	1
Highlands	*Nyctalus noctula*	Noctule	2000	Unknown
Highlands	*Nyctalus noctula*	Noctule	2005	1
Highlands	*Nyctalus noctula*	Noctule	2006	1
Highlands	*Pipistrellus nathusii*	Nathusius' Pipistrelle	2010	3