ALDERNEY WILDLIFE TRUST LTD

BATS OF ALDERNEY 2019 REPORT

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Bats in Alderney

This document describes the bat surveys done in 2019 and summarises what is currently known about the bat population in Alderney.

1. Past records

- Common pipistrelle (*Pipistrellus pipistrellus*)
  - the most common bat species in Alderney
  - plenty of acoustic and trapping records
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
  - acoustic records
- Nathusius' pipistrelle (*Pipistrellus nathusii*)
  - acoustic records for Longis Nature Reserve by Struan Robertson 2007 and an acoustic record during FAB work in 2016
- Grey long-eared bat (*Plecotus austriacus*)
  - sightings of injured individuals (though the only written record is a single specimen identified in 1982)
- Brown long-eared bat (*Plecotus auritus*)
  - a record of a dead individual in 2017
- Natterer's bat (*Myotis nattereri*)
  - a single individual seen during a hibernation survey in Essex Tunnel in 2017
- Small *Myotis* sp. species
  - two small *Myotis* bats were seen during a hibernation survey in Essex Tunnel in 2017. It was not possible to identify whether they were whiskered bats (*Myotis mystacinus*) or Brandt's bats (*Myotis brandtii*).
  - a record of a whiskered bat in 2016 (though it's uncertain whether it was reliably confirmed that the individual was a whiskered bat and not a Brandt's bat)
- Barbastelle (*Barbastella barbastellus*)
  - confirmed sighting near the Nunnery in March 2019. Most likely a single individual which got blown to Alderney by heavy winds.

2. Bat surveys in 2019

2.1. Winter activity survey

Bats' winter activity was recorded over 54 nights between 22nd December 2018 and 21st March 2019. The acoustic recorder was placed by the entrance of East Tunnel at Waterlane. Total of 2751 bat recordings were obtained during the survey period. 2709 were identified as common pipistrelle (*Pipistrellus pipistrellus*) and 17 as Nathusius' pipistrelle (*Pipistrellus nathusii*). Also Myotis (*Myotis* sp.) and long-eared bat (*Plecotus* sp.) activity was recorded during the winter.

Due to the fact that 98% of the recordings were common pipistrelle recordings, the further analysis focused solely on common pipistrelle. Common pipistrelle activity was detected throughout the winter. The activity was lowest in January, when common pipistrelle activity was detected on 55% of the nights surveyed. In December common pipistrelle activity was detected on 80% of the nights surveyed, in February on 84% of the nights, and in March on 65% of the nights. On the nights, that common pipistrelle activity was detected, on average 8 recordings per night were recorded in January. In February, on average 70 recordings per night were recorded and in March 108 recordings.

The results, that indicate that bats stay somewhat active throughout the winter, are in line with other studies done in similar temparate climates. The vesper and horseshoe bats in temperate regions use torpor to survive winter when temperatures are low and insects, their food source, are not available or are very scarce. Bats entering torpor allow their body temperature to fall below its active level to save energy. Hibernation is an extended form of torpor, lasting for days, weeks, or months. Several studies have shown that temperate bats don't usually spend the winter in continuous hibernation. The bats will go into torpor more often, and for longer periods in the winter. However, they will arouse to feed, to drink, and to move to another hibernation site. The time between arousals can vary from a day to many weeks. In maritime climates bats have been detected to be more or less active throughout mild winters (Altringham 2011).

More detailed description of the results of the winter activity survey can be found on a separate document.

2.2. Nathusius' pipistrelle spring migration study

In spring 2019, AWT assisted Adrian Bicker in his large scale study of Nathusius' pipistrelle spring migration. Nathusius pipistrelles are known to migrate from their hibernation areas in south-west Europe to their breeding areas in north-eastern Europe. The main aim of the study was to see if Nathusius' pipistrelles, on their spring migration back to their breeding areas in the Baltics, arrive along south coast of England from France. AudioMoths were used to monitor the activity levels of Nathusius' pipistrelle across the whole survey area, from the Brittany coast, through the Channel

Islands and on across the Isle of Wight. Two AudioMoths were placed on Alderney, one near Essex castle and one at Chateau a L'Etoc. Monitoring was done between 1st April and 5th June.

The initial results of the study described by Adrian Bicker in his email:

- There was a peak in activity levels between 17th to 23rd April in Brittany and on the Isle of Wight. There were faint echoes of this in Alderney and Guernsey.
- There was also a less distinct pattern of activity on the Brittany coast between 17th and 22nd May. There was matching activity in Jersey, Guernsey and a hint on Alderney. The Isle of Wight did not reflect this activity.
- The most intense pulse of activity on the Brittany coast was between 29th of May and 3rd of June. Jersey had a lot of activity at White Rock on 30th May. In Guernsey, the activity stretched from 30th May through to 6th June. Just a faint hint in Alderney. Over the same period at the end of May, there was plenty of activity on the Isle of Wight too.

2.3. Spring/summer surveys

2.3.1. Acoustic monitoring

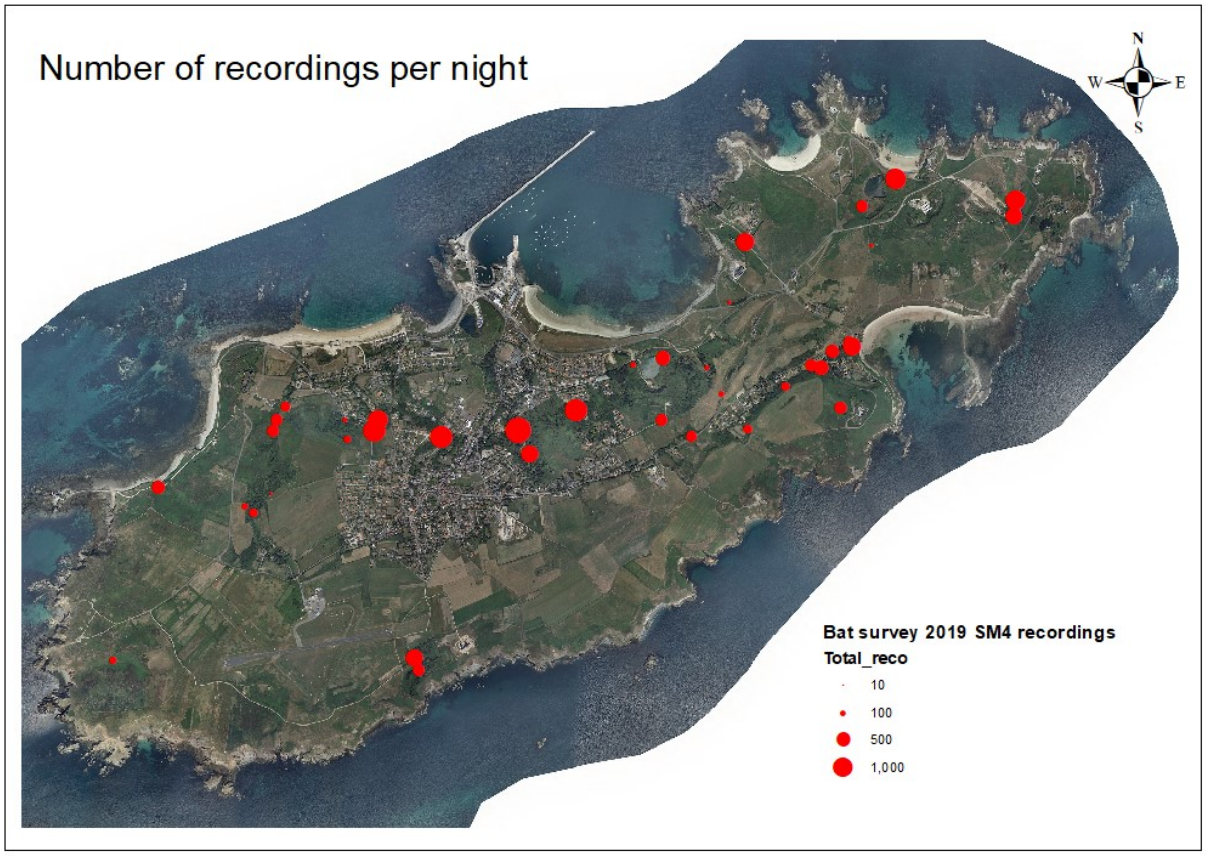
Both acoustic monitoring and transect walks were used to survey Alderney's bat population in spring and summer 2019. For the acoustic monitoring, Wildlife Acoustics' Song Meter SM4 was used. The aim was 1) to get an idea of the bat activity throughout the island, 2) to identify the species present on Alderney and their distribution.

Acoustic surveys cannot be used to quantify numbers of bats in an area, since it is not possible to distinguish between a single individual making several passes over a bat detector and several individuals each making a single pass. According to Kunz and Parsons (2009) there is no evidence, that higher levels of activity quantified by acoustic detectors reflect higher bat abundance. Instead, acoustic monitoring data should be used to assess the relative amount of bat use of an area. That enables making comparisons between sites and among the same site over time (Kunz and Parsons 2009). It should also be noted that the detectability of bats differs between species, since the call intensity and frequency vary among species. Call intensity is a main determinant of echolocation range (the distance from a bat where objects reflect echoes intense enough for detection). The more intense the call, the further sound travels and the further it can be picked up by the detector. For example the echolocation calls of the grey long-eared bat are extremely quiet and can only be detected within 5m of the individual (Russ 2012). Very high frequency sounds are rapidly attenuated and don't travel very far in air. Due to these reasons interspecific comparisons in activity levels using acoustic monitoring data are generally not valid (Kunz and Parsons 2009).

The SM4 acoustic recorder was used throughout the island between 6th April and 29th July. The further analysis is based on data from 39 different locations. In each of these locations, the acoustic recorder was left over night for two nights (the nights were not necessarily two consecutive nights) in relatively good weather conditions (no heavy rain or strong winds).

Picture 1 shows the amount of bat activity across the island. The size of the circle reflects the number of bat recordings per night recorded by the SM4 acoustic recorder. Each location was

surveyed for two nights. Out of the two nights, the night with more bat recordings was used to produce the map. The areas with highest number of bat recordings were Ladysmith, La Vallee, Waterlane, the bottom of Val Longis, Nunnery area, Fort Albert, Corblets Quarry and Mannez pond.

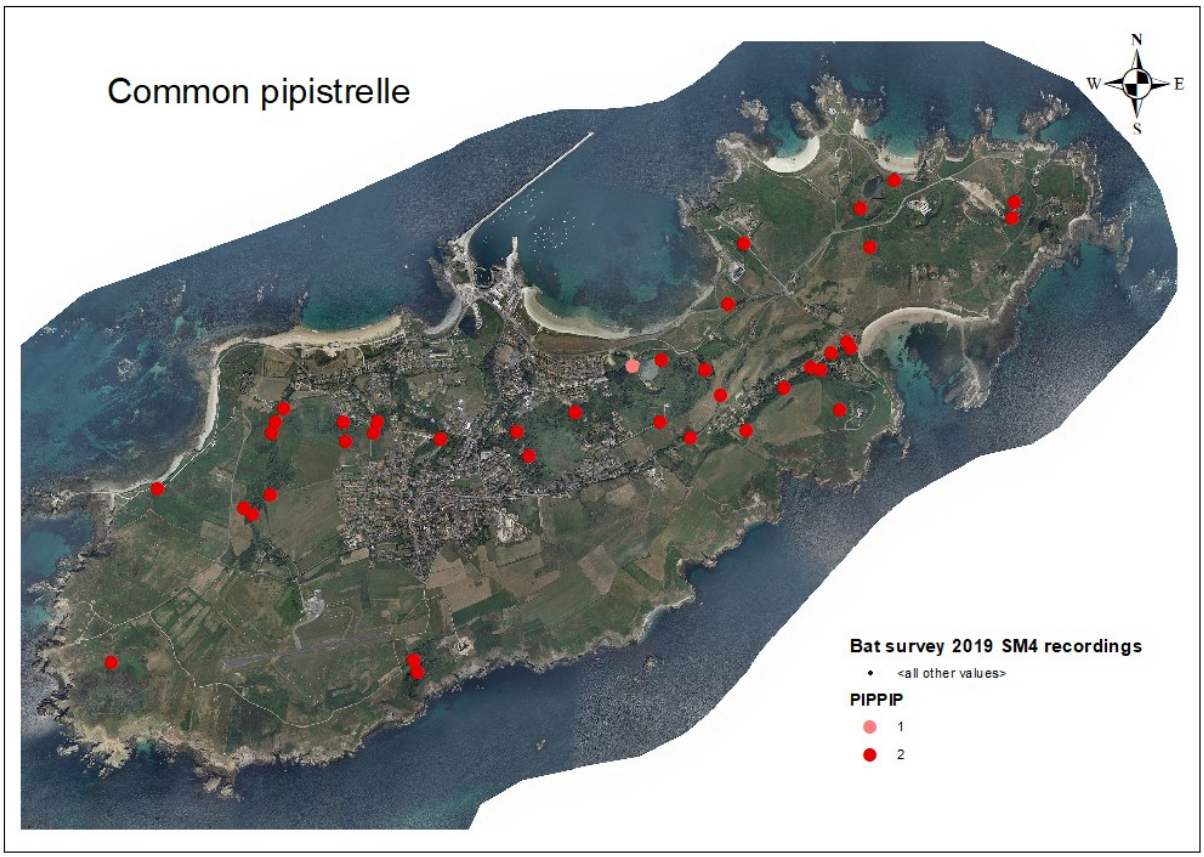


Picture 1. The amount of bat activity across the island. The larger the circle, the more bat recordings were recorded per night.

Distribution maps were created for each species/species group: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, *Plecotus* sp. and *Myotis* sp. 39 locations across the island were surveyed for 2 nights. In the distribution maps red circle means that the species/species group activity was recorded on both nights (2/2 nights). Pink circle means that the species/species group activity was recorded on one night out of the two nights (1/2 nights). White circle means that the species/species group activity was not recorded at that location (0/2 nights).

Common pipistrelle

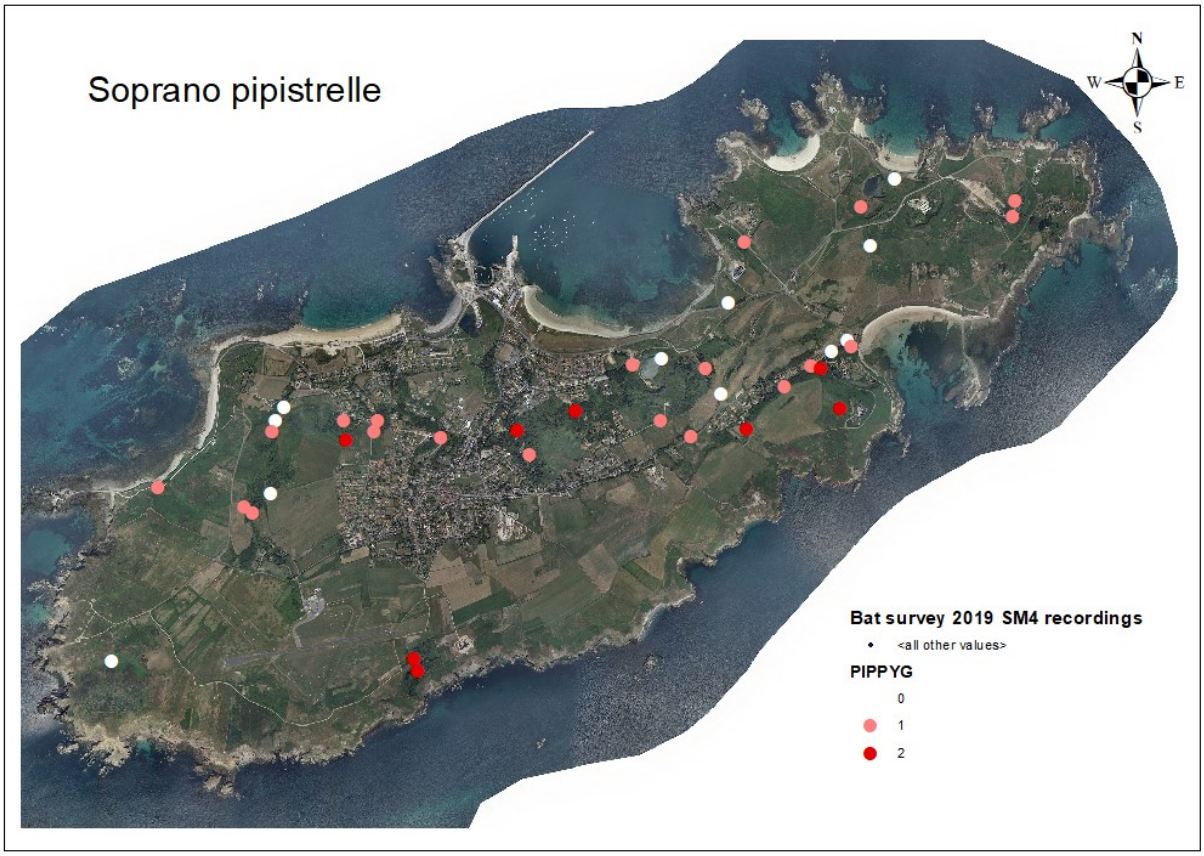
Common pipipstrelle (*Pipistrellus pipistrellus*) is the most common bat species in Alderney. Common pipistrelle activity was recorded throughout the island (Picture 2). There was only one survey night at Alderney Community Woodland near Battery Quarry when common pipistrelle activity was not recorded.



Picture 2. The distribution of common pipipstrelle (*Pipistrellus pipistrellus*) recordings. The colour of the circle shows whether common pipistrelle activity was recorded 2/2 nights (red circle), 1/2 nights (pink cirle), or 0/2 nights (white circle).

Soprano pipistrelle

There were significantly less soprano pipistrelle (*Pipistrellus pygmaeus*) recordings compared to common pipistrelle recordings. Soprano pipistrelle activity was not recorded in 11 out of 39 locations. However, soprano pipistrelles were still recorded more or less throughout the island. Visiting bat experts have done trapping in various locations across the island in 2017 and in 2019. During the trappings only common pipistrelles have been caught. No soprano pipistrelles have been caught. The soprano pipistrelle population in Alderney is likely to be significantly smaller than the common pipistrelle population.



Picture 3. The distribution of soprano pipipstrelle (*Pipistrellus pygmaeus*) recordings. The colour of the circle shows whether soprano pipistrelle activity was recorded 2/2 nights (red circle), 1/2 nights (pink cirle), or 0/2 nights (white circle).

Nathusius' pipistrelle

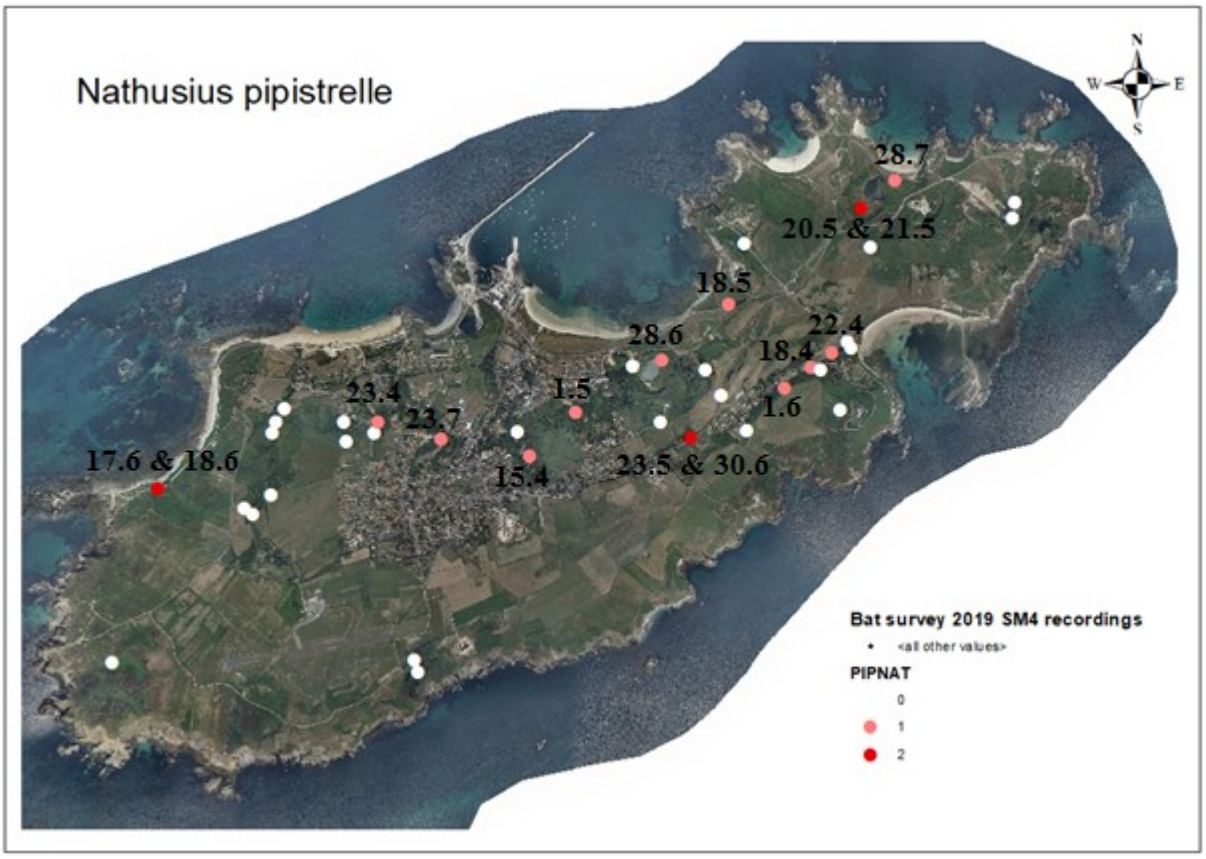
Nathusius' pipistrelle (*Pipistrellus nathusii*) is a migratory species. It travels from its hibernation areas in south-west Europe to its breeding grounds in north-eastern Europe. Only females return to their breeding areas. Males usually stay in mating roosts along migration routes or in hibernation areas. Nathusius' pipistrelles were recorded during the winter activity survey at the entrance of East Tunnel at Waterlane. So there are some Nathusius' pipistrelles hibernating in Alderney.

Nathusius' pipistrelle spring migration study gave evidence to support the hypothesis that some Nathusius' pipistrelles pass through Alderney on their spring migration back to their breeding areas. Dates, when Nathusius' pipistrelles were recorded, were added to the distribution map (Picture 4). These dates were compared with the results of Adrian Bicker's spring migration study. Most of the Nathusius' pipistrelle recordings coincide with the peaks in activity levels recorded on the Brittany coast during the spring migration study.

- 1st peak in activity levels between 17th to 23rd April on the Brittany coast
    - Barrackmasters Lane 18.4. (place and date of SM4 recording)
    - Nunnery 22.4.
    - Ladysmith 23.4.

- 2nd peak in activity levels between 17th to 22nd May on the Brittany coast
    - Fort Albert 18.5.
    - Corblets Quarry 20.5. and 21.5.
- 3rd peak in activity levels between 29th May to 3rd June on the Brittany coast
    - Barrackmasters Lane 1.6.

During the acoustic monitoring, Nathusius' pipistrelles were also recorded on 17th and 18th June at Clonque, 28th and 30th June at Community Woodland, 23rd July at La Vallee and 28th July at Corblets Quarry. These recordings can't be explained by migrating Nathusius' pipistrelles. So at least a Nathusius' pipistrelle or few Nathusius' pipistrelles seem to stay in Alderney during the summer. However, if there was a reasonable size resident breeding population in Alderney, more recordings would have been obtained during the acoustic monitoring.

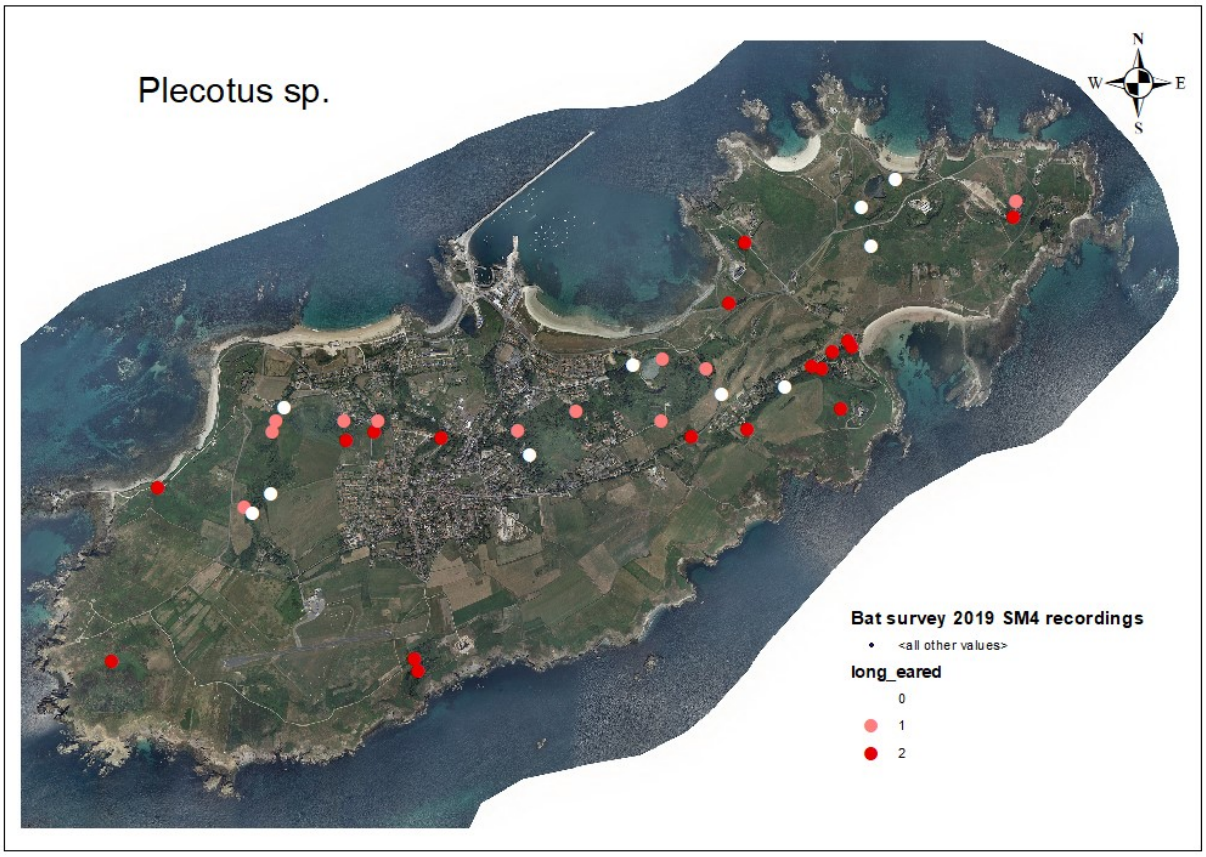


Picture 4. The distribution of Nathusius' pipipstrelle (*Pipistrellus nathusii*) recordings. The colour of the circle shows whether Nathusius' pipistrelle activity was recorded 2/2 nights (red circle), 1/2 nights (pink cirle), or 0/2 nights (white circle). Dates, when Nathusius' pipistrelles were recorded, were added to the distribution map.

Plecotus sp.

Long-eared bat (*Plecotus* sp.) activity was recorded more or less throughout the island. Long-eared bats have very quiet echolocation calls, and thus are only recorded when they are close to the acoustic recorder. The amount of long-eared bat recordings was a surprise as well as the fact that they were recorded throughout the island. The findings suggest that there is a reasonable size long-eared bat population in Alderney.

During the Bat Week 2019, a brown long-eared bat (*Plecotus auritus*) was caught in a trap. Before that the only confirmed record of the brown long-eared bat was a dead individual found in 2017. There has been sightings of injured grey long-eared bats (*Plecotus austriacus*), though the only written record that could be found is a single specimen identified in 1982. Whether the long-eared bat population in Alderney still consists of both browns and greys is unknown.

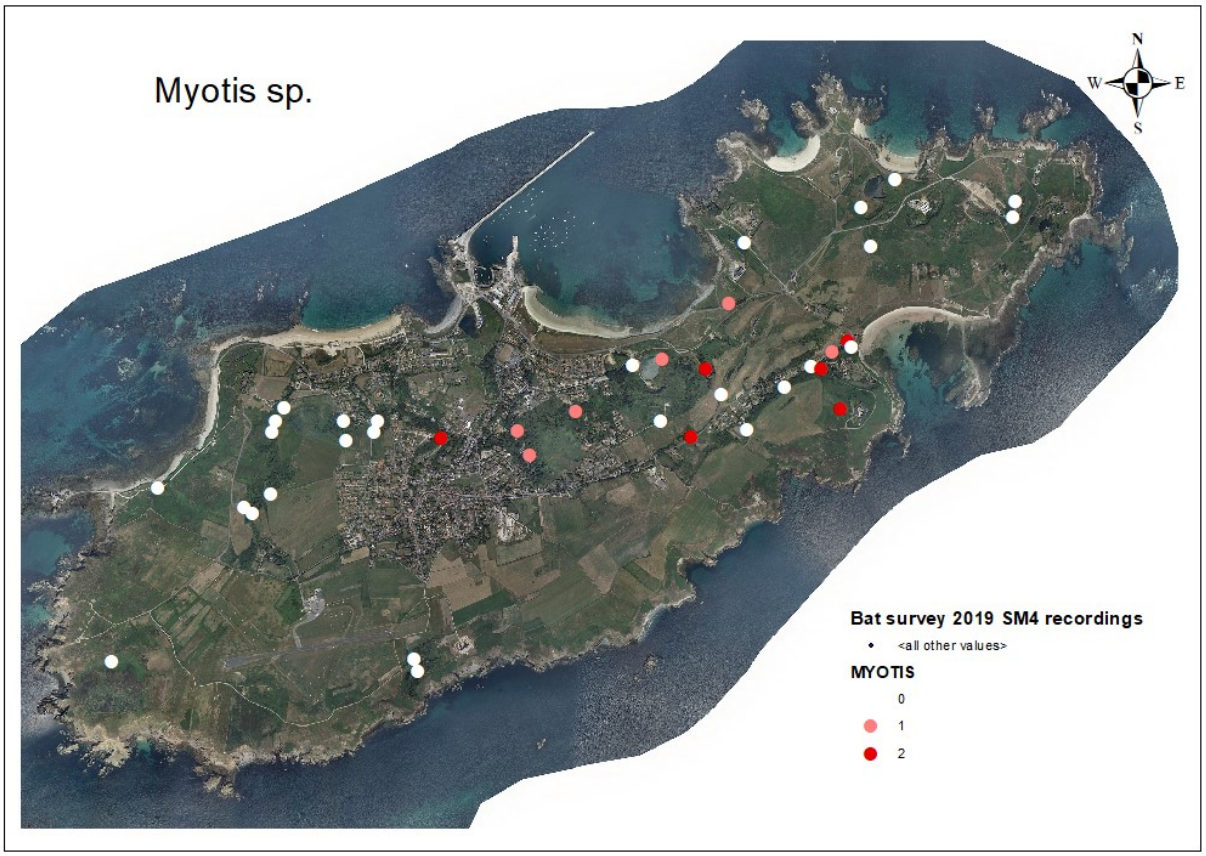


Picture 5. The distribution of long-eared bat (*Plecotus* sp.) recordings. The colour of the circle shows whether long-eared bat activity was recorded 2/2 nights (red circle), 1/2 nights (pink cirle), or 0/2 nights (white circle).

Myotis sp.

Myotis species were only recorded in the middle of the island from Nunnery and Essex castle to La Vallee. If there was a reasonable size *Myotis* sp. population in Alderney, more recordings would have been obtained during the acoustic monitoring. During the Bat Week 2019, a Natterer's bat (*Myotis nattereri*) was caught with a hand net inside Essex Tunnel. During 2017 hibernation survey a Natterer's bat was seen in the same spot. The bat, that was caught, was a male that had bred at some point in his life. It's possible that the bat used to live and breed elsewhere and then flew or got blown by the winds to Alderney. It's also possible that there is a small Natterer's bat population on the island.

Two small *Myotis* bats were seen during a hibernation survey in Essex Tunnel in 2017. It was not possible to identify whether they were whiskered bats (*Myotis mystacinus*) or Brandt's bats (*Myotis brandtii*). There is also a record of a small *Myotis* species from 2016. As mentioned earlier, **i**f there was a reasonable size *Myotis* sp. population in Alderney, more recordings would have been obtained during the acoustic monitoring. However, it's possible that there is a small whiskered or Brandt's bat population in Alderney.

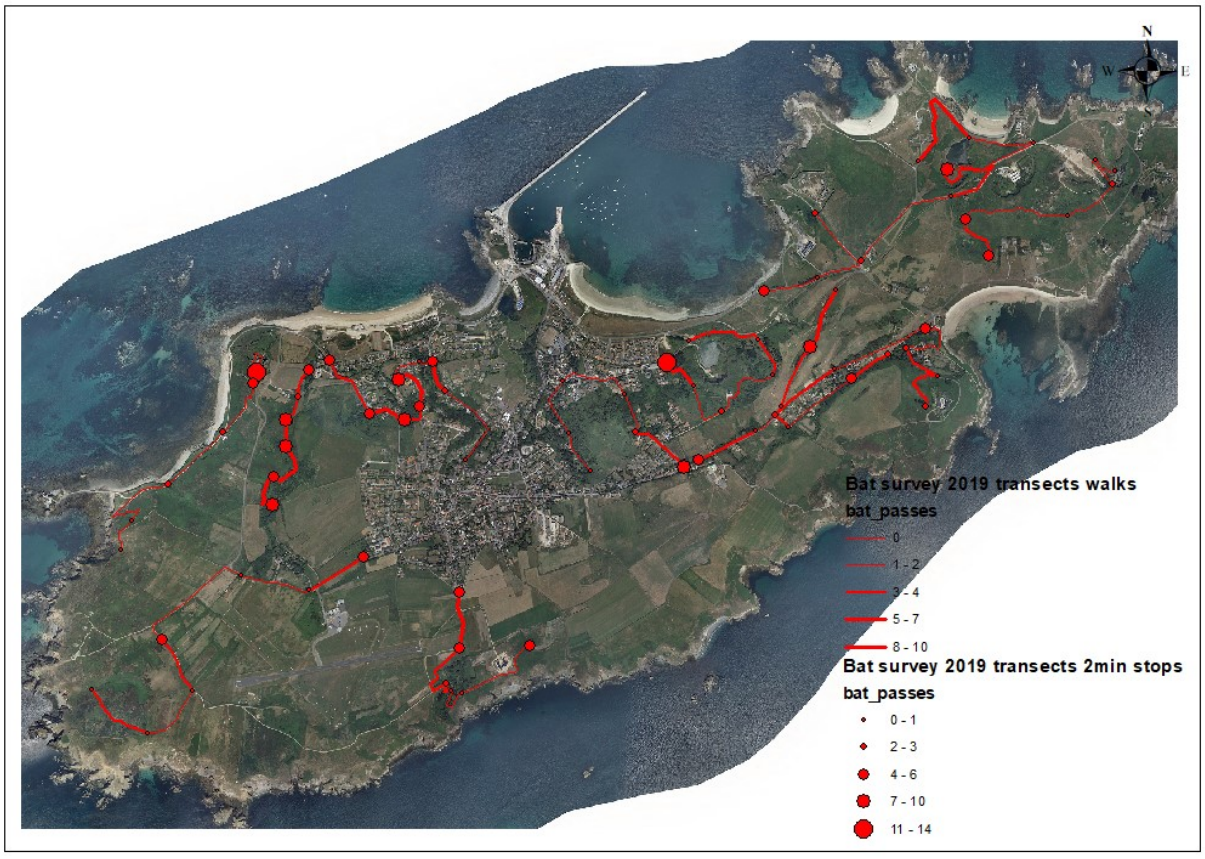


Picture 6. The distribution of *Myotis* sp. recordings. The colour of the circle shows whether *Myotis* sp. activity was recorded 2/2 nights (red circle), 1/2 nights (pink cirle), or 0/2 nights (white circle).

2.3.2. Transect walks

In addition to acoustic monitoring, transect walks were used to survey the bat population. The aim of the transects was to get an idea of 1) the bat activity throughout the island and 2) how bats use the habitats.

11 transect were surveyed: 1) Tourgis/Clonque, 2) Bonne Terre, 3) Petit Val/Ladysmith/La Vallee, 4) Val Longis/Waterlane, 5) Alderney Community Woodland, 6) Fort Albert and ACW roads, 7) Barrackmaster/Nunnery/Essex castle, 8) Campsite/Corblets, 9) Longis/Mannez, 10) Vau du Saou, and 11) Airport/Trois Vaux. Each transect was walked once in good weather conditions (no rain or strong winds) in July. The transects consisted of 2 min stops and walks between the stops. The transects started and ended with a 2 min stop. The amount of bat passes was recorded during each stop and walk. The detailed results of the transects can be found on a separate excel file.



Picture 7. The results of the transects. The size of the circle and the thickness of the line reflect the amount of bat passes recorded during each 2 min stop and walk.

The bat activity focused on the sheltered areas. Overall, the highest number of bat passes was recorded in the valley in Bonne Terre. There were lots of bats feeding in Bonne Terre. Other sheltered areas with lots of feeding activity were Ladysmith, inner courtyard of Fort Tourgis, near cemetery along Longis Road, Nunnery area and Corblets Quarry. While surveying the transect at

Waterlane only two bat passes were recorded. However, during a different visit at least 8 bats were seen at the upper parts of Waterlane shortly after sunset. High number of bat passes was recorded at the bottom of Alderney Community Woodland, again shortly after sunset. There is most likely a bat roost in some of the houses near the woodland edge. Other areas, where bats were recorded feeding, included Barrackmasters Lane, Vau du Saou and the valley east of Vau du Saou, Trois Vaux, La Vallee, the hillside near Essex castle, and the edge of mature trees/scrub/reedbed near Longis pond.

During the surveys many bats were seen flying from the town to the sheltered feeding areas shortly after sunset. On a separate visit, 16 bats were recorded flying from the houses at Route de Picaterre to the lower parts of Bonne Terre along the hedgerow. Bats were also recorded flying from the town to the upper parts of Bonne Terre along La Grand Val and to Vau du Saou. This suggests that many of the bat roosts are located in the town. Bats were recorded commuting and feeding along the mature pines next to the golf course as well.

2.4. Bat Week 2019

2.4.1. Trapping data

Rose Farm, 22nd July

- 4 common pipistrelles (both juveniles and adults)

Essex Tunnel/path between Old Barn and Barrackmasters Lane, 23rd July

- 10 common pipistrelles (adults)
- 1 Natterer's bat (male, ringed by Ani Binet, ring number J7487)
- 1 brown long-eared bat (male, ringed by Ani Binet, ring number J09712)

Ladysmith, 25th July

- 2 common pipistrelles (adults)

2.4.2. Emergence surveys

Chateau a L'Etoc, 21st July

- 2 common pipistrelles emerged from the newly renovated part of the castle

Rose Farm, 22nd July

- 9 common pipistrelles emerged from the spot marked in the Picture 8
- likely to be a maternity roost since both juveniles and adults were caught in a trap nearby
- probably another roost nearby because there was so much bat activity

Nunnery, 23rd July

- there were no bats observed using the main Nunnery building during the emergence survey, but at least 5 bats were observed emerging from the ringing hut in the south-west corner

Picture 8. The location of the maternity roost at Rose Farm.

3. Alderney's bat population according to current knowledge

- Common pipistrelle (*Pipistrellus pipistrellus*)
  - the most common bat species in Alderney
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
  - resident population
  - the population significantly smaller than the common pipistrelle population
- Nathusius' pipistrelle (*Pipistrellus nathusii*)
  - the status of the population unknown
  - there are hibernating Nathusius' pipistrelles in Alderney
  - there seems to be at least one or few individuals that stay in Alderney in the summer
  - during spring migration some Nathusius' pipistrelles pass through Alderney on their way to their breeding areas
- Long-eared bats (*Plecotus* sp.)
  - reasonable size population?
  - brown long-eared bat (*Plecotus auritus*): one individual caught in a trap during the Bat Week 2019 and a record of a dead individual in 2017
  - grey long-eared bat (*Plecotus austriacus*): sightings of injured individuals (though the only written record is a single specimen identified in 1982)

    - whether the long-eared bat population in Alderney still consists of both browns and greys is unknown
    - long-eared bat roost in the barn at Essex Farm? Long-eared bat droppings were found during the Bat Week 2019.
- Natterer's bat (*Myotis nattereri*)
    - a single male or a small population?
    - a Natterer's bat was caught with a hand net inside Essex Tunnel during the Bat Week 2019
- Small *Myotis* sp. species
    - possibly a small whiskered bat (*Myotis mystacinus*) or Brandt's bat (*Myotis brandtii*) population?
    - two small *Myotis* bats were seen during a hibernation survey in Essex Tunnel in 2017. It was not possible to identify whether they were whiskered bats or Brandt's bats.
    - a record of a small *Myotis* bat in 2016
- Barbastelle (*Barbastella barbastellus*)
    - confirmed sighting near the Nunnery in March 2019. Most likely a single individual which got blown to Alderney by heavy winds.

4. Recommendations for future survey/monitoring work

After the Bat Week 2019, Ani Binet recommended that in the future the emphasis should be on finding roost sites, so that there would be a record of the most important roost sites. Yearly emergence surveys and roost counts could be done at the Nunnery and at Rose Farm, since they are the two known maternity roosts. Echo Meter Touch 2 Pro can be used to identify the bat species during the emergence surveys.

It would be good to monitor Essex Tunnel once in every season (spring, summer, autumn and winter) or at least once during hibernation period and once in the summer. The monitoring should be done properly by checking all the holes and not just by walking through the tunnel. Local volunteers could be used for this monitoring. Since all the *Myotis* sp. sightings are from Essex Tunnel, it would make sense to include it in the monitoring program.

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