Craitnag chrou veg
Lesser Horseshoe Bat *Rhinolophus hipposideros*
Cummey Yannoo Beiyn-Feie Biodiversity Action Plan

Description

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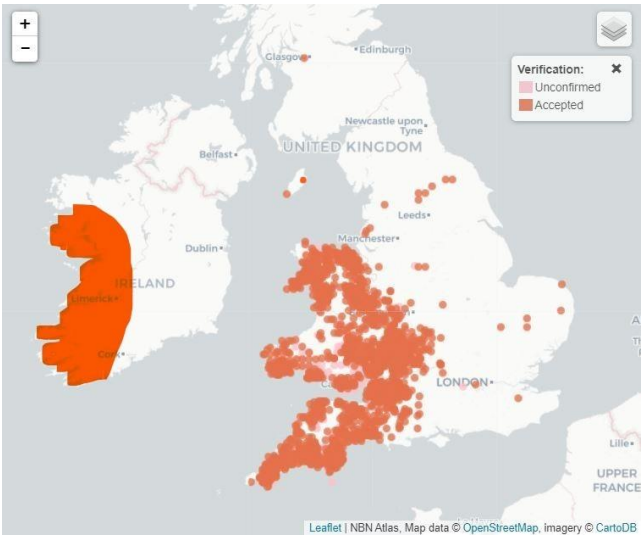
Lesser horseshoe bats weigh between 4 – 9 grams and have a wingspan of 225 to 250mm. They have a distinctive nose-leaf used to project sound in a narrow frequency. The forearm length is 34.4. to 42.5mm which separates them from the much larger greater horseshoe bat *Rhinolophus ferrumequimum*. When roosting they hang by their legs and wrap their wings around their body. Maximum recorded age in Europe is 21 years but on average they live for 4 years.

Distribution



Internationally, the species is widespread and found throughout southern Europe and north Africa and as far east as Turkestan and Kashmir. However, there has been a considerable decline towards the northern edge of its range, with it becoming extinct in many areas. The stronghold for lesser horseshoes is western Europe and the south-west of the British Isles is the northern limit of their range.

In the early 1900's lesser horseshoe bats were found as far north as Yorkshire and along the south coast of England as far east as Kent but the population declined and retracted in the 20th century. In recent decades the population has recovered strongly and is now estimated to be 50,000. The population in Ireland is estimated to be between 9,000 and 10,000 and is restricted to the mid-west and south-west. There are about 230 known summer (or all year) and 480 known hibernation roosts in the UK[1].

In Ireland, genetic studies indicate that this species now consists of four distinct sub-populations that have developed due to habitat fragmentation caused by agricultural intensification and urbanisation, with the water bodies of Lough Corrib and the Shannon Estuary possibly posing additional barriers to movement (Dool et al. 2013[2], McAney, K 2014[3] Harrington 2018[4], NPWS & VWT 2022[5]).

[1] https://www.vwt.org.uk/species/lesser-horseshoe-bat/

[2] Dool S. E., Puechmaille S. J., Dietz C., Juste J., Ibáñez C., Hulva P., Roué S. G., Petit E. J., Jones G., Russo D., Toffoli R., Viglino A., Martinoli A., Rossiter S. J. & Teeling E., 2013: Phylogeography and postglacial recolonization of Europe by *Rhinolophus hipposideros*: evidence from multiple genetic markers. Molecular Ecology, 22: 4044–4070.

[3] McAney, K (2014) An overview *of Rhinolophus hipposideros* in Ireland Vespertillo 17: 115-125

[4] Harrington, A. (2018) The development of non-invasive genetic methods for bats of the British Isles. Unpublished PhD thesis, Waterford Institute of Technology.

[5] NPWS & VWT (2022) Lesser Horseshoe Bat Species Action Plan 20222026. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland).

Manx Distribution

The existence of lesser horseshoe bats on the Isle of Man prior to 2006 is unknown, however there are several reliable reports from approximately 50 years ago of bats hanging in sea caves on the east and west coast. Williamson and Cowin (1945)[6] state in their editorial to Peregrine that a search had been made for greater horseshoes *Rhinolophus ferrumequinum*, as 'a colony, perhaps of this species, is reputed to exist in a cave on the Santon coast'. The first confirmed record came on the 7th November 2006 when a grounded lesser horseshoe bat was found at Glen Chass on the south-west coast[7]. Thirteen years later, in August 2019, a home owner reported a single bat hanging in their cellar and DNA analysis of the droppings confirmed a lesser horseshoe bat. Following this a concerted effort has been undertaken by Manx Bat Group members to identify areas used by lesser horseshoe bats on the south-west coast using remote acoustic recording devices and an additional two locations have been identified as being used. Figure 1 shows the months lesser horseshoes have been recorded at these locations.

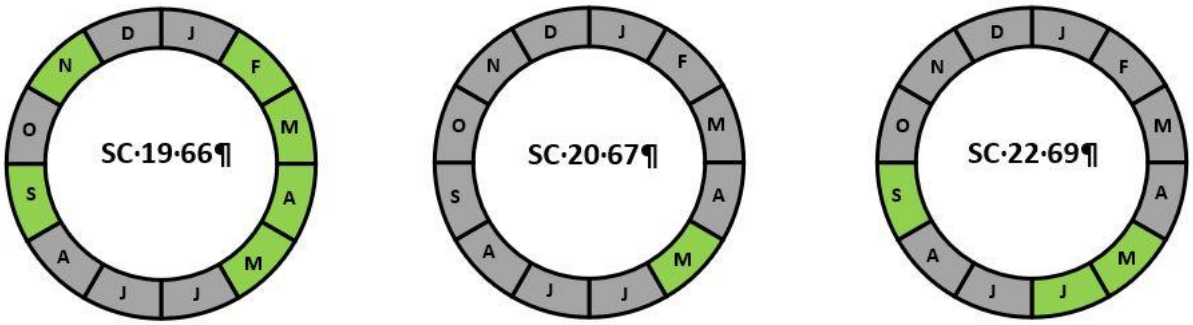


Figure 1 1km² in the south-west of the Isle of Man where lesser horseshoe bats have been recorded and the months (in green) when acoustic records were detected.

Our knowledge of lesser horseshoe up until January 2025 was of a small population occurring on the south-west coast between Kentraugh and the Chasms (4.25km (2.6 miles) in a straight line across the sea or 6.2km (3.85 miles) following the coastline). In February 2025 DNA analysis of droppings collected from a coastal location in the parish of Maughold confirmed the presence of a lesser horseshoe bat and this has extended their range by 30km (18.6 miles).

Abundance and Monitoring Constraints

The cone shape of the lesser horseshoe nose means their calls are very directional, in addition, the constant frequency of their echolocation calls is very quiet and so the detection distance with bat acoustic monitoring equipment is estimated to be no more than 5m (Dietz and Kiefer 2016[8]). Furthermore, lesser horseshoe bats will forage high up in the canopy of trees beyond the range of bat monitoring equipment that is generally deployed a couple of metres off the ground.

Given the low detection rate of lesser horseshoe bats using bat acoustic monitoring equipment and the number of lesser horseshoe bat records that have been collected by members of the Manx Bat Group over the past 5 years, it seems reasonable to suggest that a small colony exists on the south-west coast. Monitoring at the chasms over a mild week in November revealed multiple acoustic records for lesser horseshoe. The very recent discovery of lesser horseshoe bats 30km to the north-east from this location potentially means that lesser horseshoe bats may occur anywhere in suitable habitat between these locations and beyond.

[6] Williamson, K & W S Cowin (1945). Editorial. Peregrine Vol. 1:3.
[7] Selman, R. (2014) A lesser horse-shoe grounded at Glen Chass, Peregrine Vol. 10 No. 2
[8] Dietz, C. & Kiefer, A. (2016) Bats of Britain and Europe. Bloomsbury Publishing Plc

Habitat

Current opinion, is that their preferred habitat is deciduous woodland particularly those with rivers and ponds and marshy grassland is used for feeding[9][10]. They require shelterbelts of vegetation to be connected to their roosts[11]. The Chasms are very exposed and potentially vegetated sea cliffs and sea caves are important for the Manx population. Roosts are in disused buildings, cellars, chimneys, attics, caves, mines and tunnels. They require warm areas for their maternity roosts (optimum 30^{o}C) and cool roosts with a stable temperature for hibernation. They need to be able to fly in and out of their roosts and fly directly to their roosting positions, but are highly manoeuvrable and can fly along very narrow passages. In the British Isles both maternity and hibernation roosts can hold several hundred lesser horseshoe bats. Winter hibernation roosts are usually within 5km (3 miles) of the maternity roosts but can be as far as 22km (13.6 miles). Like other bats they are site faithful to their roosts.

Commuting

Current opinion shows lesser horseshoe bats don't like travelling in the open, and if forced to do so will fly very low bringing them into the reach of predators, therefore, unbroken hedgerows and tree lines known as travel corridors are important. However, on the Isle of Man they have been recorded many times at the Chasms which is open and exposed. Additionally, they are particularly light adverse avoiding lit areas and choosing to fly in dark corridors.

Feeding

Lesser horseshoe bats fly in and out of the roost prior to emerging and this is not related to light levels. They emerge 30 minutes after sunset to hunt flies and small moths that they catch on the wing or by gleaning. Night perches are important for eating larger moths and for hawking, particularly for heavily pregnant females. In summer on average, they forage 2.5km (1.5 miles) from their roost but have been recorded travelling more than 4km (2.5 miles) to feed. In winter they forage between 1.2km (¾ mile) and 2.1km (1.3 miles) from the hibernacula.

Breeding

Mating occurs between September and April, pregnancy lasts 28 days and peak birthing time of a single pup is 20th July to the 10th August, although they can pup from mid-June onwards depending on the roost temperature. Young bats can fly at 23 days and lactation ceases around this time. A warm constant temperature in the maternity roost is important for productivity. In some years up to 40% of young have died; this could be related to poor weather and the females being unable to feed.

Legal protection

- They are on Appendix II of the Bonn Convention on the Conservation of Migratory Species of Wild Animals, under which signatories are encouraged to draw up agreements to restore/maintain species' conservation status through management and other appropriate measures. The Isle of Man is Party to this Convention and the Eurobat Agreement stemmed from this Convention.
- Lesser horseshoe bats are listed on Schedule 5 of the Wildlife Act 1990 and it is an offence to intentionally or recklessly kill, injure or take a lesser horseshoe bat. In addition, it is an offence to damage, destroy, or obstruct, or disturb lesser horseshoes while they are occupying a structure or place which it uses for shelter or protection. Penalties can be imposed of £10,000 per offence.

[9] Bontadina, F., Schofield, H., & Naef-Daenzer, B. (2002). Radio-tracking reveals that lesser horseshoe bats (Rhinolophus hipposideros) forage in woodland. *Journal of Zoology, 258*(3), 281-290. doi:10.1017/S0952836902001401

[10] Billington, G., Rawlinson, M.D. 2006. A Review of horseshoe bat flight lines and foraging areas. CCW Science Report No: 755, 23pp, CCW, Bangor

[11] Reiter, G., Pölzer, E., Mixanig, H., Bontadina, F., Hüttmeir, U., 2013. Impact of landscape fragmentation on a specialised woodland bat, Rhinolophus hipposideros. Mammalian Biology 78, 283-289.

Threats

- Lack of knowledge to effectively protect roosts and feeding areas.
- Disturbance at their roosts.
- Loss of or damage to maternity roosts - mainly due to the deterioration and unsympathetic renovation of old buildings.
- Loss of or damage to hibernation roosts - through entrances to underground sites such as mines and caves being blocked for safety reasons, and increased recreational use of such sites.
- Obstruction of roost access.
- Artificial lighting.
- Toxic chemicals - particularly those used in the treatment of roof timbers.
- Loss, damage and fragmentation of foraging habitat - particularly woodland, old hedgerows and tree lines.
- Reduced insect prey abundance - due to the intensification of farming, increased grazing of woodlands and water's edge habitats, and the increased use of pesticides.
- Toxic effect of persistent insecticides in the food chain.
- Avermectins - these are antiparasitic drugs that also kill insects feeding on the dung of treated livestock.
- Lighting – lesser horseshoe bats are extremely sensitive to artificial light, avoiding brightly lit areas.
- Climate change with unpredictable severe weather events.

Reason for BAP

Recent discovery suggesting low population density, combined with unknown population status and the threats listed.

Aims

- Education and engagement
- Identify roost locations and colony size
- Establish current population and range
- Maintain the current population and range
- Expand the current range through natural colonisation and landscape enhancement in suitable areas
- Establishing purpose-built roosts to safeguard the population, maximise breeding success and aid dispersal to new areas. This will also enable monitoring and research.

Linked BAPS

Habitats

- Deciduous woodland
- Riparian habitat
- Hedgerows
- Open water bodies
- Urban/Industrial
- Hard cliffs

Delivery Options	Active	Challenges
○ Continue to monitor and work towards confirming and identifying roost locations	Yes	Limited detection range Resources for better equipment Access permissions
○ Funded research project to identify roosts, population size and significant feeding areas on the IoM	No	Resources
○ Enhanced protection under the Wildlife Act 1990	No	Resources Requires Political Agreement
○ ASSI designation of significant lesser horseshoe bat roosts and feeding areas where appropriate	No	Identification of significant roosts Resources Requires Political Agreement
○ Improved habitat connectivity/travel corridors in the range of known roosts to enable extension of range. Delivered through AES.	No	Willingness of farmers/landowners Insufficient financial incentives
○ Non-avermectin farming in the feeding range of known roosts. Delivered through AES.	No	Willingness of farmers/landowners Insufficient financial incentives
○ Increasing prey availability in the feeding range through farming without pesticides and creating strips of insect rich habitat in sheltered areas. Delivered through AES.	Partial	Willingness of farmers/landowners Insufficient financial incentives
○ Hedgerow management (cutting less regularly allows the hedgerow to flower and fruit and this increases the associated invertebrates). Delivered through AES.	No	Willingness of farmers/landowners Insufficient financial incentives
○ Enhancement of existing roosts	No	Insufficient information could be delivered with willing owners.
○ Creation of purpose-built roosts	No	Land/property availability Resources
○ Creation of suitable roosts within known existing range	No	Land/property availability Resources
○ Genetic analysis of north and south population	No	Resources
○ Monitor changes in artificial light within the known range	No	Resources
○ Targeted publicity campaign for sea kayakers to report any sightings of bats in sea caves immediately with accurate grid references	No	Achievable
○ MBG to liaise with Laxey Mines Research Group to enable research into the use of mines and adits by bats	No	Achievable
○ Monitor and respond to planning applications	Yes	
○ Annual review and update of this document	By 1/1/2025	

Delivery Plan	
Action	**Lead**
Form a Steering Group to action this BAP between Manx Bat Group and DEFA's Agri-Environment Scheme delivery partner (MWT).	MBG
Investigate options for landscape enhancement for lesser horseshoe bats through the Agri-Environment Scheme with willing farmers and land managers and implement where appropriate.	Steering Group and MWT/DEFA
Create suitable roosts within the dispersal area of the current known area of distribution.	Steering Group and MBG
Train and engage volunteers to assist with researching the distribution and population size of LHS. Additional static bat detectors required and individuals trained to analyse calls.	Steering Group and MBG
When opportunities arise engage British Isles and UKOST based bat groups to assist in investigating the distribution and population size of LHS	Steering Group and MBG
Investigate the options available for a dedicated funded research project	Steering Group