

Section E:

Supporting information for derogation licence

Impact of variation in habitat, prey availability & competition in conserving the Lesser Horseshoe Bat

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Information

Title:

Impact of variation in habitat, prey availability & competition in conserving the Lesser Horseshoe Bat

Project holders:

Dr. David Smyth and Dr. Allan McDevitt

Research Institute:

Marine and Freshwater Research Centre, Atlantic Technological University

Project Dates:

September 2023 – August 2027

Project Funders:

Research Ireland

Species:

Lesser Horseshoe Bat (*Rhinolophus hipposideros*)

Derogation: Roost Access

2. Introduction

A. Objectives:

The overall aim of this project is to gather data on what the dietary preferences of the Lesser Horseshoe Bat are in Ireland and what impact landscape and competition may have on this.

- *Method 1; Dietary Metabarcoding*
Using faecal samples collecting from roosts, we will use dietary metabarcoding to determine what prey species are detected and what variation exists over time and location.
- *Method 2; Bioacoustic Survey*
Static detectors will be deployed around roosts in distinct microhabitats to see how use of these points change over seasons. This work does not require a derogation
- *Method 3; Habitat Mapping*
Using landcover maps and GIS software, habitats in the Core Sustainance Zone of roost areas will be analysed for comparison of variation and potential impact to diet. This work does not require a derogation
- *Method 3; Invertebrate Sampling*
Using malaise traps, available prey species at distinct sample points in Core Sustainance Zone will be sampled to see if prey availability correlates to prey selection. This work does not require a derogation

B. Personnel:

David Smyth (Applicant):

BA (Hons) Natural Sciences Mod. Environmental Science, MSc Wildlife Conservation and Management. Experience in ecological surveys and previous derogation holder.

C. Qualifications:

This work will be carried out to collect faecal samples from Lesser Horseshoe Bat roosts in Ireland. While this work does not constitute as surveys as such, roost sites used for sample collection will be subject to potential disturbance.

David Smyth, MSc, lead applicant, has a BA (Hons) Natural Sciences Mod. Environmental Science, MSc Wildlife Conservation and Management, current PhD Candidate in Landscape Ecology. David Smyth has also completed the LAST wildlife training course, and the CIEEM 'Bat Ecology and Survey' training course.

3. Background

In order to understand the dietary preferences of Lesser Horseshoe bats and impact of landscape variation, biological samples (faecal) need to be sourced from extant, wild Irish populations. This is a non-invasive procedure with minimal disturbance to roosting individuals (Curran et al. 2022, Harrington et al., 2019)

At present, the roosts listed in Figure 1. show the roosts which are intended to be sampled from up until September 2026, but additional roosts and adhoc sampling may be required meaning that a licence for access to roosts across the entire range of distribution is required (See figure 2.).

BatSitecode	County sitecode	County	Location	National Grid	Discovery Map no	6" Map no	DCO
126	126	Clare	Glencurran Cave, Cahercommaun	R27413 96359	51	CL010	Sean Forde
194	18	Cork	"Flahive's Lodge", Skehil, Glengarriff	V90573 58039	85	CK090	Jay Cornish
204	28	Cork	Flahive's hibernacula, Skehil, Glengarriff	V90562 57991	85	CK090	Jay Cornish
226	15	Galway	Garryland Lodge, Coole Nature Reserve, Gort	M41225	52	GW122	Raymond Stephens
296	18	Kerry	Deenagh Lodge, Knockreer, Killarney	V95764 90698	78	KY066	Mary Sheehan
505	227	Kerry	Courtney's Cottage', Dromyrouk, Killarney	V97403 85727	78	KY074	Mary Sheehan
522	244	Kerry	William King, Caher, Kilgarvan	W035 741	79	KY085	Daniel Buckley
627	349	Kerry	Muckross Cave, Muckross, Killarney	V96144 86408	78	KY074	Mary Sheehan
684	19	Mayo	Moorehall, Muckloon, Ballyglass	W113008	38	MO100	Irene O'Brien
839		Galway	Garryland Hibernaculum, Coole Nature Reserve, Gort	M41225			Raymond Stephens
882		Kerry	Derrynane Shed, Derrynane	V529 588			Daniel Buckley

Figure 1. Primary roost sites to be sampled on a quarterly basis

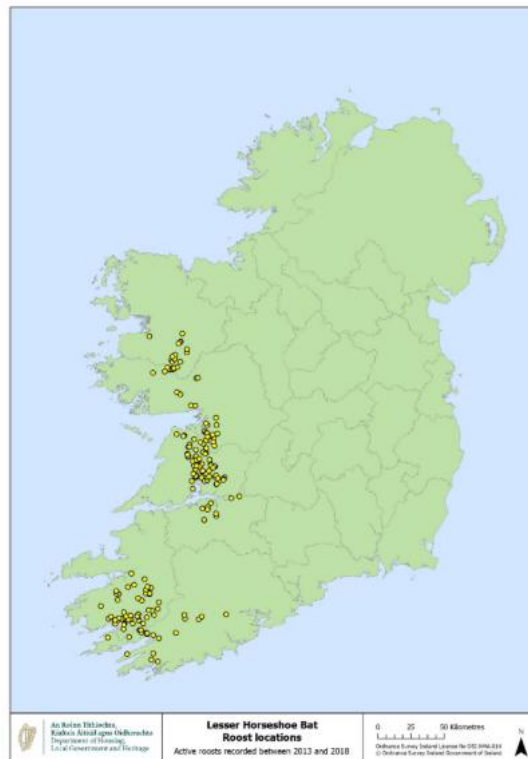


Figure 2. Lesser horseshoe bat distribution in Ireland. (source: NPWS database, 2021)

4. Details of proposed activity

Bat (*Rhinolophus hipposideros*) faecal samples will be captured using the following methods, requiring a derogation licence:

1. **Mat/Sheet deployment** is a widely used method for collecting bat faecal samples for research purposes, where sheets are left within known roost for a period of time to collect faecal samples. Mats will be placed in roost during roosting hours to not disturb bats. NPWS staff will be notified of access beforehand and time in roost will be minimal, due to processing samples outside of roost location.

5. Ecological survey and site assessment

NA- Not applicable to this application.

6. Evidence to support the derogation tests

Test 1:

To understand dietary preferences of the Lesser Horseshoe Bat and inform conservation plans, biological samples (faecal) need to be sourced from extant, wild Irish populations. This is a non-invasive procedure that requires no deliberate handling or disturbance of bats. Mats must be left within roosts to reduce contamination risk, DNA quality degradation and non-target species samples. Therefore, as no alternative to sample collection from extant bats is available, a derogation license is required.

Test 2:

Below highlights the alternative options considered as part of the project, including a ‘do-nothing’ approach

- **‘Do nothing’:** If the research doesn't go ahead, then we will have a gap in our knowledge on diet of Lesser horseshoe Bats in Ireland. This information is essential to inform conservation plans and help restore and expand populations.
- **Sampling outside roosts:** Placements of mats outside roosts was considered but due to weathering, non-target species collection and contamination risk, it was determined to be unfeasible

Test 3:

This derogation will have no adverse impact on the Conservation Status of Lesser Horseshoe Bat in Ireland as it is a non-invasive process.

7. Monitoring the impacts of the derogations

Section 3.4 of the Guidance document on the strict protection of animal species under the Habitats Directive states that national authorities must ‘*measure the impact of derogations (and the effectiveness of any compensation measures)*’. In this case, the derogation supports research into the Lesser Horseshoe Bat conservation, focusing on prey availability and prey selection. As no compensation measures are in place, monitoring will rely entirely on research outputs.

Data will be generated from samples collected under this derogation using genetic techniques to ascertain (but not limited to) species, prey selection and sex. Additional work such as hormone analysis, parasite analysis or more may be also carried out in future.

The results will be disseminated through scientific publications in peer reviewed journals

References

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