

Waterford Bat Hibernation Site Survey, 2013

Preliminary Report

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Partially flooded cave passage, Co. Waterford (A. Harrington).

Introduction

Bat hibernation sites have been extensively surveyed and studied in certain parts of Ireland, although to the best of the author's knowledge, few bat hibernation sites are known from County Waterford. The county mostly lacks the type of extensive cave systems present in areas of limestone bedrock in the West and North-West of Ireland which have been extensively surveyed, especially where they coincide with the range of lesser horseshoe bats (*Rhinolophus hipposideros*). However, parts of the county do consist of limestone bedrock and certain caves in Waterford have been surveyed for the presence of hibernating bats (K. McAney & D. Buckley, pers. comm.), with evidence of their presence being found in a small number of sites.

Bats in Ireland typically hibernate between the months of October and March, but will remain activate later into the year or emerge earlier if the weather is mild, and may wake up and emerge to feed at any time during the winter if temperatures are mild enough. During hibernation bats retreat to roosts where the temperature remains at a low and stable temperature, usually somewhere between 5 and 10°C. Such conditions can often be found in underground sites (caves, mines, tunnels), certain disused buildings and deep rot-holes in old, mature trees. Different species have preferences for different hibernation roost types, for example Leisler's bats (*Nyctalus leisleri*) are usually thought to prefer to hibernate within old trees, whereas lesser horseshoe bats and *Myotis* bats (e.g. Daubenton's bat, *Myotis daubentonii*) are often found hibernating in underground sites.

The aim of this survey was to expand on previous work on bat hibernation sites in Waterford, in particular a similar survey of several cave sites carried out by D. Buckley et al. (pers. comm.) in early 2012.

Method

For this survey, sites that could potentially be by used bats for hibernation were identified using aerial photography, modern OSI maps and 19th Century OS maps (1840s and 1890s editions), Waterford County Council records, County Geological Heritage Survey, and the Archaeological Survey of Ireland, which were collated using GIS software. Structures that were targeted consisted particularly of underground sites such as caves, mines, tunnels, ice houses and souterrains, but also included several other structure types such as old corn mills and factories, lime kilns and castles. See Table 1 for a summary of the number of each type of structure identified. This should not be considered to be a comprehensive list of such sites, and it is probable that many are in fact either unsuitable for hibernating bats, have become completely ruined or have been demolished over time.

For the survey, a small subset of these possible sites was chosen, the majority of them underground sites, and site visits were carried out to inspect their potential for containing bats as well as to examine access and safety. Ten survey sites were selected, including limestone caves, lime kilns and manmade tunnels (see table 2 and figure 1 for details of the survey sites).

These sites were subsequently visited by 12 people, mostly Irish and Welsh MISE staff and a small number of volunteers (including experienced and licensed bat surveyors) on the 8th and 9th of February 2013 to look for signs of hibernating bats. Surveyors looked for bats hibernating in crevices in brickwork and stone, and for signs of bats including droppings, dead bats, moth wings, scratch marks and grease and urine stains.

Site type	No. of sites
Caves or cave systems	17
Road or rail tunnels	1
Mines or mine complexes	8
Souterrains	4
Lime kilns	170
Brick kilns	2
Former mills, factories or other industrial sites	26
Ice houses	11
Castles	20
Other abandoned buildings	3
Total	262

Table 1. Summary of potential bat hibernation sites in County Waterford by structure type.

Precautions were taken to avoid disturbance to any bats present and to prevent the possible spread of white-nose syndrome, and we also searched for possible signs of WNS on bats at these sites. Evidence of other animals present in the caves was also noted.

Several caves in close proximity to sites 4- 7 had been surveyed for bat activity the previous year (D. Buckley, pers. comm.), so were not included in this survey.

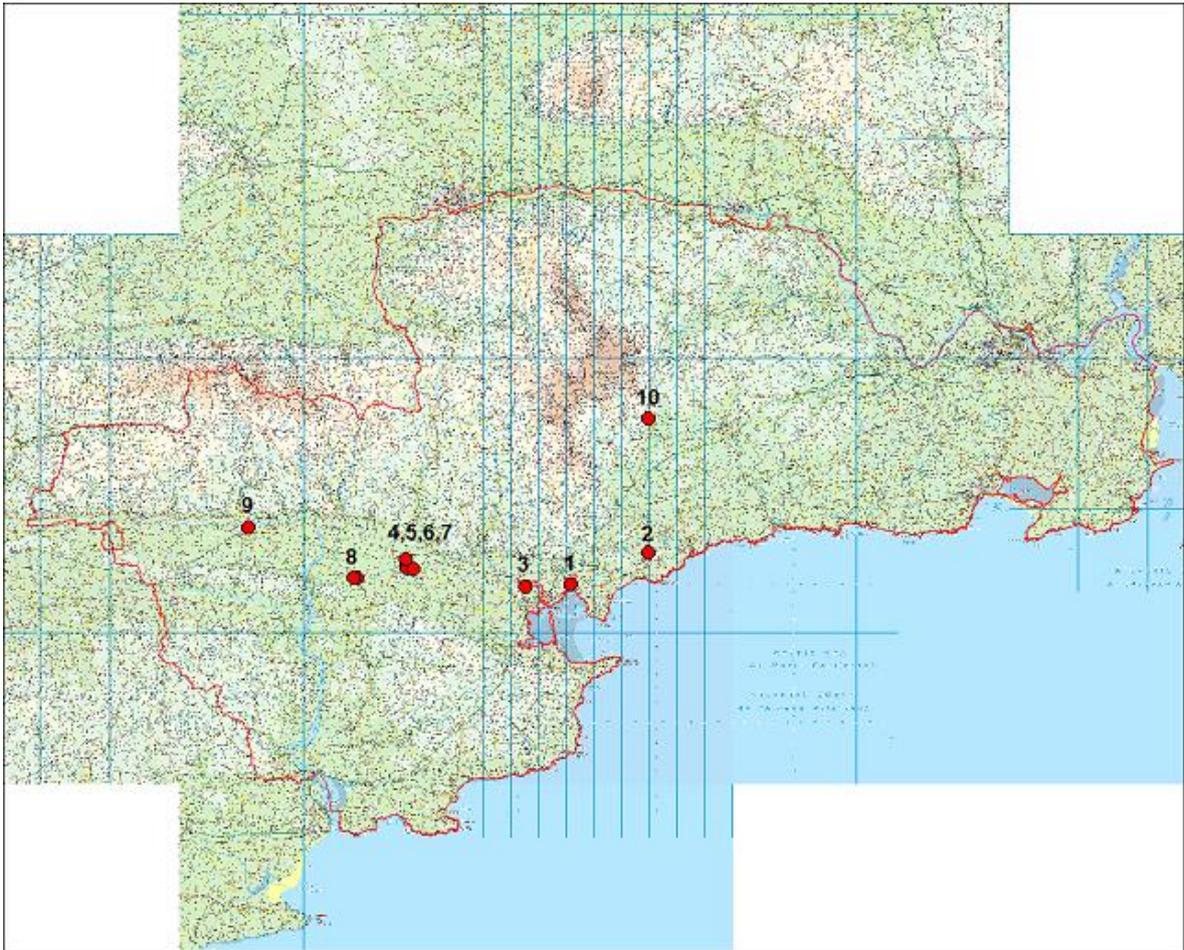


Figure 1. Position of sites surveyed within County Waterford.



Figure 2. Surveyor searching for bat droppings in interior of cave at site 5.

Results

On the 8th and 9th of February, only six of the nine survey sites were visited due to time constraints (sites 1, 2, 5, 7, 8, 9). The remaining sites (3, 4, 6 and 10) were surveyed at different times between the 10th of February and 5th of March.

At site 2, a large disused man-made tunnel, a single Natterer's bat (*Myotis nattereri*) was found hibernating in a crevice in masonry c. 10m from the entrance at the north end of the tunnel, and moth wings were found scattered on the floor of a nearby alcove in the tunnel, indicating possible bat feeding activity. However, no other signs of bats could be found.

No signs of bats were found in the cave system at site 8, consisting of a network of relatively small caves. This site had been surveyed for bats in early 1997 (K. McAney, pers. comm.), when a small amount of bat droppings were found, but no bats were visible at the time. This site was re-surveyed to see if there still evidence of use by bats after sixteen years, but most of the caves appeared to have recently been flooded by the nearby River Finisk, some to a very high level as indicated by mud and vegetation left high up on the cave walls. At site 7, possible bat droppings were found at the very end of a blind passage at the far northern end of this large cave system. Bat droppings were found in several parts of the cave at site 5 (Figure 2), and in one place at the back of the small cave at site 9. Site 10, which consisted of a manmade tunnel beneath a 19th Century sawmill building, bat droppings were found in several places on the floor of the tunnel. Bats could not be seen in any of these sites.

No bats or signs of bat activity were found at sites 1, 3, 4 and 6.

No.	Site type	Location	Bat signs
1	Lime kiln (disused)	Dungarvan	None
2	Manmade tunnel (disused)	Stradbally	Hibernating bat
3	Limestone cave	Dungarvan	None
4	Limestone cave	Whitechurch	None
5	Limestone cave	Whitechurch	Bat droppings
6	Limestone cave	Whitechurch	None
7	Limestone cave	Whitechurch	Bat droppings?
8	Limestone cave	Whitechurch	None
9	Limestone cave	Lismore	Bat droppings
10	Manmade tunnel (disused)	Kilrossanty	Bat droppings

Table 2: Sites selected for this bat hibernation survey in Co. Waterford, with results.

Discussion

Hibernating bats or signs of bats were found in a significant number of the sites visited, although the total number of sites visited during this survey in proportion to the number of potential sites in County Waterford was very small. There is only unequivocal evidence of bat hibernation at one site (site 2), as the dropping samples collected at the other sites remain to be DNA tested to confirm which bat species (if any) they originated from.

Several of the underground sites showed potential for use by bats as swarming sites, which are often used by *Myotis* species in particular for mating in the autumn before entering hibernation. These sites have relatively large, open and sheltered areas close to the entrances to underground passages and could be monitored in the future to establish if any are used for swarming.

Judging from this initial bat hibernation roost survey, there is the potential to uncover more such sites in County Waterford, especially given the large number of other possible hibernation sites that have been identified (Table 1) and have yet to be surveyed. These sites also have the potential to be surveyed at other times of the year for summer roosts and swarming sites.

Acknowledgements

I would like to thank Daniel Buckley, Kate McAney, Henry Schofield and Sam Dyer for their advice and help in planning and/or carrying out this survey, and I would also like to thank Edel Sheerin, Rory Turner, David Bavin, and Bridgit Simmons for volunteering their time to help with this survey. Finally, I would also like give special thanks to the landowners of these sites, without whose permission this survey would not have been possible.