



Waterford Institute of Technology



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Mammals in a Sustainable Environment

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Title: Small mammals in school yards – a report for schools

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Introduction

After two successful pilot school visits during the last school year, we launched a new MISE initiative called “Mammals in Schools”. For the initial phase of the project, letters of invitation were sent to all primary schools in East Co. Waterford. The response from schools was very positive. The schools we visited are outlined in Table 1. Each visit got underway by introducing the children to Irish mammals. We used a series of slides that contained various pictures of mammals, native, invasive and recently introduced into Ireland. Many of the children already knew and recognised many of the mammals. This was followed by a short presentation on survey methods used in Waterford Institute of Technology (WIT) to survey mammals non-invasively. Special reference was made to the pine marten and red squirrel that WIT researchers have been studying locally in the woods of Gardenmorris, Crough, Portlaw, Brownswood and Guilcagh, and otters that have been studied in rivers across the county. This was followed by a short run through some of the non-invasive survey methods used in WIT for DNA analysis and some video clips taken with a remote camera at various schools.

Secondly, we spoke to the pupils about the survey we planned to conduct on the school grounds. This involved the use of small mammal bait pots or a jam pot baited with peanut butter. The pupils shared the responsibility of baiting the pots and choosing the locations to place the pots.

Materials and Methods

Bait pots

Jam pots were distributed on the school grounds in areas of cover such as hedgerows, bushes and walls. The pots were baited with peanut butter and left overnight. The pots were placed at least 30m apart, left overnight and were then collected the following day and examined for faeces (Fig. 1). The pots were shown to the pupils and it was explained that the faeces would be analysed in WIT using DNA methods to detect small mammal species.



Fig. 1: An example of a bait pot which has been collected after having been left out in the grounds of a school overnight. Small mammal faeces are visible at the bottom of the pot.

Footprint tunnels

At two schools, we trialled footprint tunnels, which have been developed and successfully piloted by researchers from the Mammal Society in the UK as a survey method for hedgehogs (Fig. 2). The tunnels consisted of a folded large sheet of posterboard (corrugated plastic) formed into a tunnel with a triangular cross-section. Two blank sheets of white paper were fixed onto the floor of the tunnel with cellotape, one at either entrance. Inside the paper, a small pad of absorbent material (e.g. a j-cloth) was painted with non-toxic poster paint or ink on either side of the tunnel. The innermost section of the tunnel was baited with hot dogs and peanut butter to attract hedgehogs and other small mammals, and the tunnel was closed with cable ties. The tunnel was left overnight, next to or close to a hedgerow. When a hedgehog or other animal entered the tunnel to get the bait, the feet were covered in paint and footprints were left behind on the sheet of paper, which were examined the following morning.



Fig. 2: A fully assembled hedgehog footprint tunnel, in place next to a hedgerow. (Photo: The Mammal Society).

Results

Bait pots

A total of 15 schools were visited by the MISE team during 2011 (Table 1). Bait pot surveys were conducted in all schools and 10 schools had small mammals present (Table 2). The species present included pygmy shrew, wood mouse, brown rat and bank vole. The most common species present was the bank vole followed by brown rat, wood mouse and pygmy shrew. The distribution of the species was also mapped (Fig. 3). We found no indication of greater white toothed shrew or house mouse. It should be noted that in the schools at Seafield and Knockmahon, a number of pots were moved, some of them were recovered but it was clear that the pots had been moved by a mammal such as a fox as there were teeth marks on recovered pots. We found video evidence of a fox in Fethard moving a pot.

Footprint tunnels

At the two schools we trialled the footprint tunnels (Dunmore East- one tunnel; Kilrossanty- two tunnels), all of the tunnels were visited by hedgehogs. One of the tunnels at Kilrossanty was also visited by another small mammal species, but the footprints were not clear enough to identify what species it was.

Table 1: A list of the schools visited. List of abbreviations: CoWd = Co. Waterford, Wd = Waterford city, CoT = Co. Tipperary

Date	School	Location	Grid reference	Urban or rural (U/R)*
8/04/11	Fethard	CoT	S 205 352	R
30/05/11	Portlaw	CoWd	S 467 156	R
12/09/11	Knockmahon	CoWd	X 444 992	R
14/09/11	Seafield	CoWd	S 419 004	R
16/09/11	Fews	CoWd	S 370 076	R
21/09/11	Stradbally	CoWd	X 371 981	R
13/10/11	Dunmore East	CoWd	X 686 997	R
14/10/11	Newtown Jr.	Wd		U
26/10/11	Kilrossanty	CoWd	S 311 029	R
07/11/11	St. Declans, Water St.	Wd		U
18/10/11	Ferrybank	Wd	S 612 130	U
17/10/11	Passage East	CoWd	S 697 090	R
21/11/11	Kill	CoWd	S 455 029	R
29/11/11	Dunhill	CoWd	S 504 023	R
30/11/11	Ballyduff Upper	CoWd	W 963 991	R

*Urban is defined as being in a town or city

Table 2: DNA test results for small mammals on school grounds. (+) present, (-) absent

School	Pygmy shrew	Wood mouse	Brown rat	Greater White toothed shrew	Bank vole	House mouse
Fethard	-	+	+	-	+	-
Portlaw	-	-	+	-	-	-
Knockmahon	-	+	-	-	-	-
Seafield	-	-	-	-	-	-
Fews	+	+	-	-	-	-
Stradbally	-	-	-	-	-	-
Dunmore East	-	-	+	-	+	-
Newtown Jr.	-	-	-	-	-	-
Kilrossanty	-	-	-	-	+	-
St. Declans	-	-	-	-	-	-
Ferrybank	-	+	-	-	-	-
Passage East	-	-	+	-	+	-
Kill	-	-	-	-	+	-
Dunhill	-	-	-	-	-	-
Ballyduff Upper	-	-	+	-	+	-
Total	1	4	5	0	6	0

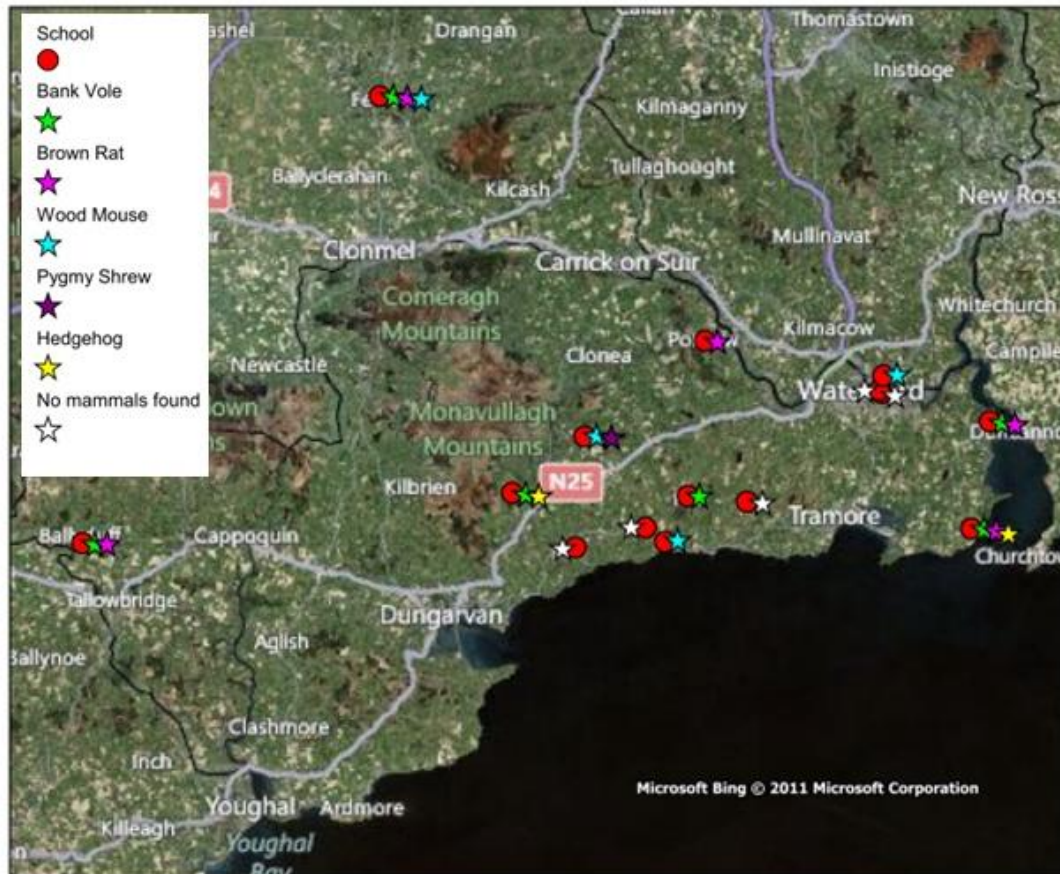


Figure 3: A map of south-east Ireland mapping the distribution of small mammal species that have been recorded in the schools that we visited.

Discussion

In some schools we did not get any results from the small mammal bait pots. This might have been due to another animal such as a fox licking the bait from the pot. On other occasions, we did not get adequate DNA from the sample to conduct a species test. This may have been due to degradation of the DNA.

The small mammals in schools initiative has proven to be very popular project, with teachers, parents and students praising the work. The benefits of the project are that students are introduced to mammals present in their environment and get the opportunity to participate in a non-invasive survey. This introduces the children to research at a younger age and brings a new discipline to schools currently not taught at primary school level.

This method has also been useful from a survey perspective as new locations and records for mammals have now been recorded. The results can be reported and added to the Atlas of Mammals in Ireland, which is currently being compiled by the National Biodiversity Data Centre.

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Additional information about the small mammals and their distributions in Ireland

National Biodiversity Data Centre www.biodiversityireland.ie

Bank vole <http://eol.org/pages/1179604/overview>

Wood mouse <http://eol.org/pages/1178950/overview>

Brown rat <http://eol.org/pages/328448/overview>

Pygmy shrew <http://eol.org/pages/323672/overview>

Greater white tailed shrew <http://eol.org/pages/1178862/overview>

House mouse <http://eol.org/pages/328450/overview>

Hedgehog <http://eol.org/pages/1178684/overview>