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**THE LAUNCH OF MaMoNet • WARWICKSHIRE DORMICE • OHDEER!
CAMERA TRAPS • DIVERSE WHALE AND DOLPHIN POPULATIONS**

A novel non-invasive method for detecting the Harvest Mouse (*Micromys minutus*)



MISE harvest mouse. Photograph by Ceri Morris

Introduction

The status of the harvest mouse (*Micromys minutus*) in Wales is largely unknown. The species is elusive, and the traditional survey method relies on finding nests during the winter when vegetation dies back. Baited tubes at ground level have previously been used to detect harvest mice droppings through DNA analysis. The Mammals in a Sustainable Environment (MISE) Project trialled a novel method for detecting harvest mice in the stalk level of tall vegetation thus minimising the likelihood of other species dominating the survey.

MISE Project

The project aims to survey and conserve native mammal species in Ireland and Wales, with the help of innovative genetic techniques, while engaging volunteers in activities to increase skills and raise awareness.



Harvest mouse nest Chester 2012. Photograph by Paul Roberts

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Methods

The survey method was trialled in September 2012 at a site in Cheshire (owned by Chester Zoo) where harvest mice were released in 2002 and 2003. Fresh nests were found during the trial, confirming the species' presence. The habitat is wet reed bed and mixed grasses.

Pairs of plastic pots were attached horizontally to bamboo canes, with one pot at ground level and another 1 m high among the vegetation at stalk level, and baited with a millet seed mix. The canes were arranged in two parallel 100 m transects of 10 canes each, with a total of 40 baited pots.



Bait in collecting tunnel. Photograph by Ceri Morris



Collected faeces. Photograph by Ceri Morris

After 2 days the pots were checked for small mammal droppings. All faeces were collected as a single sample into plastic-capped tubes and stored frozen before transportation to the laboratory.

All faecal material present was sampled. DNA extracted from faecal pellets was tested using species-specific primers for harvest mouse (*M. minutus*), wood mouse (*Apodemus sylvaticus*) and field vole (*Microtus agrestis*), in an SYBR Green based quantitative PCR (qPCR) assay.

Discussion

All of the harvest mouse positive samples were found in the stalk-level pots. The large proportion of unidentified samples in the ground-level pots could either be attributed to another species not included in the test, or due to poor quality samples. The ground-level pots had become wet, which may have degraded the samples, while the stalk-level pots were relatively dry. In the future it would be more efficient to use one pot per cane at stalk level.

This method proves an effective technique in detecting the presence of harvest mice, although efficacy with low density populations needs to be established. It is a relatively cheap and easy technique which can be used by volunteers.

A survey pack is being developed to encourage use by groups across Wales. By targeting sites with historical records of harvest mice, as well as those with favourable habitat, the MISE Project hopes to improve our knowledge of this species' status in Wales.

Setting up. Photograph by Ceri Morris



Results

Of the 40 sample pots, 36 contained small mammal droppings. Harvest mouse DNA was identified in 10 samples (28%), while 5 (14%) contained wood mouse DNA. The remaining 23 samples (64%) were not identified. One hundred per cent of the harvest mouse samples were found in the stalk-level pots, with wood mouse DNA found at both levels. Two samples showed both species in the same pot. Field vole was not detected. Of the ground-level pots, 95% of the samples failed to identify species.

