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

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 along 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.

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 other 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.

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 (61%) were not identified. Of the 23 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, 90% of the samples failed to identify species.

Results of DNA analysis of samples found in stalk-level pots

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest mouse</td>
<td>9</td>
</tr>
<tr>
<td>Wood mouse</td>
<td>5</td>
</tr>
<tr>
<td>Not identified</td>
<td>25</td>
</tr>
<tr>
<td>Harvest mouse and wood mouse mixed</td>
<td>7</td>
</tr>
</tbody>
</table>

Results of DNA analysis of samples found in ground-level pots

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest mouse</td>
<td>1</td>
</tr>
<tr>
<td>Wood mouse</td>
<td>1</td>
</tr>
<tr>
<td>Not determined</td>
<td>18</td>
</tr>
</tbody>
</table>

Ceri Morris,1 Catherine O’Reilly,2 Peter Turner,2 Liz Halliwell,1 Denise O’Meara1 & Edel Sheerin1
1 Natural Resources Wales, Moes y Ffynnon, Penrhosgarnedd, Bangor, N Wales, LL57 2DW.
2 Waterford Institute of Technology, Cork Rd, Waterford, Ireland.
Contact: ceri.morris@naturalresourceswales.gov.uk

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

Collecting faeces.
Photograph by Ceri Morris

Bait in collecting tunnel.
Photograph by Ceri Morris

Not determined 25%
Harvest mouse 47%
Wood mouse 12%
Harvest mouse and wood mouse mixed 12%

Not determined 66%
Wood mouse 5%
Harvest mouse 49%