A cross-sectional survey was undertaken to investigate the relationship between parental attitudes, alcohol consumption and adolescent consumption of alcohol. This involved distributing a questionnaire to our sample which consisted of fifth and sixth year students from the Kanturk-Mallow local electorate area. The survey was carried out during the second term of the academic year 2014-15. Topics included in this survey were: Alcohol use, self- reported height and weight, smoking status, mental health and well-being. Questions were taken from scientific surveys across the world.

Colásiste Treasa

Prey availability for hen harriers in managed farmland

Students: Michael Sheehan, Jack Murphy
Teacher : Mr Derry O' Donovan

Aim

The aim of the study was to investigate the optimal methods for monitoring prey for hen harriers in managed farmland.

Introduction

The hen harrier (*Circus cyaneus*) is an endangered species in Ireland and is amber-listed (medium conservation concern) by the EU Birds Directory due to a decline in the breeding population. There were approximately 108-157 breeding pairs left in Ireland in 2015, a 27% decline in populations since 2005. Over the past three decades, the population of hen harriers has declined by almost 50% (Irish Wildlife Manual, 2015). Ireland has one of the lowest breeding rates of any population in Europe (O'Donoghue, 2010). In the Republic of Ireland, six SPAs have been established for the protection of the hen harrier. These are located in the Slieve Bloom Mountains, Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle, Mullaghanish to Musheramore Mountains, Slievefelim to Silvermine Mountains, Slieve Beagh, and Slieve Aughty Mountains . A new Locally Led Agri-Environmental Scheme (LLAES) is being introduced in 2017 to try and help the conservation of hen harriers. This scheme is funded by the European Union with farmers receiving payments if they implement actions on their land which improve the foraging and nesting habitat for hen harriers. Monitoring to quantify the number of small mammals and birds is required to assess the quality of foraging habitat on farms. The purpose of this study was to test the best methods to monitor prey availability on land managed for hen harriers.

Table 1: Linear regression, designed using the bird transect data, to compare bird populations in different habitats.

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	1.2000	0.2828	4.243	0.000621 ***
Habitat: bog and scrub	-1.0000	0.4000	-2.500	0.023674 *
Habitat: combined wet dry heath	-1.0000	0.4000	-2.500	0.023674 *
Habitat: improved grassland	-1.0000	0.4000	-3.000	0.008479 **

Methods

We compared six different methods of assessing the quality of foraging habitat on farms. The results from this pilot study are intended to provide guidance on the best monitoring methods to utilise within the forthcoming Hen Harrier Locally Led Agri-Environmental Scheme. We trialled the following methods:

1. Small mammal trapping
2. Analysis of hen harrier pellets
3. Comparison of abundance of droppings in bait pots
4. DNA analysis of droppings left in bait pots
5. Bird transect
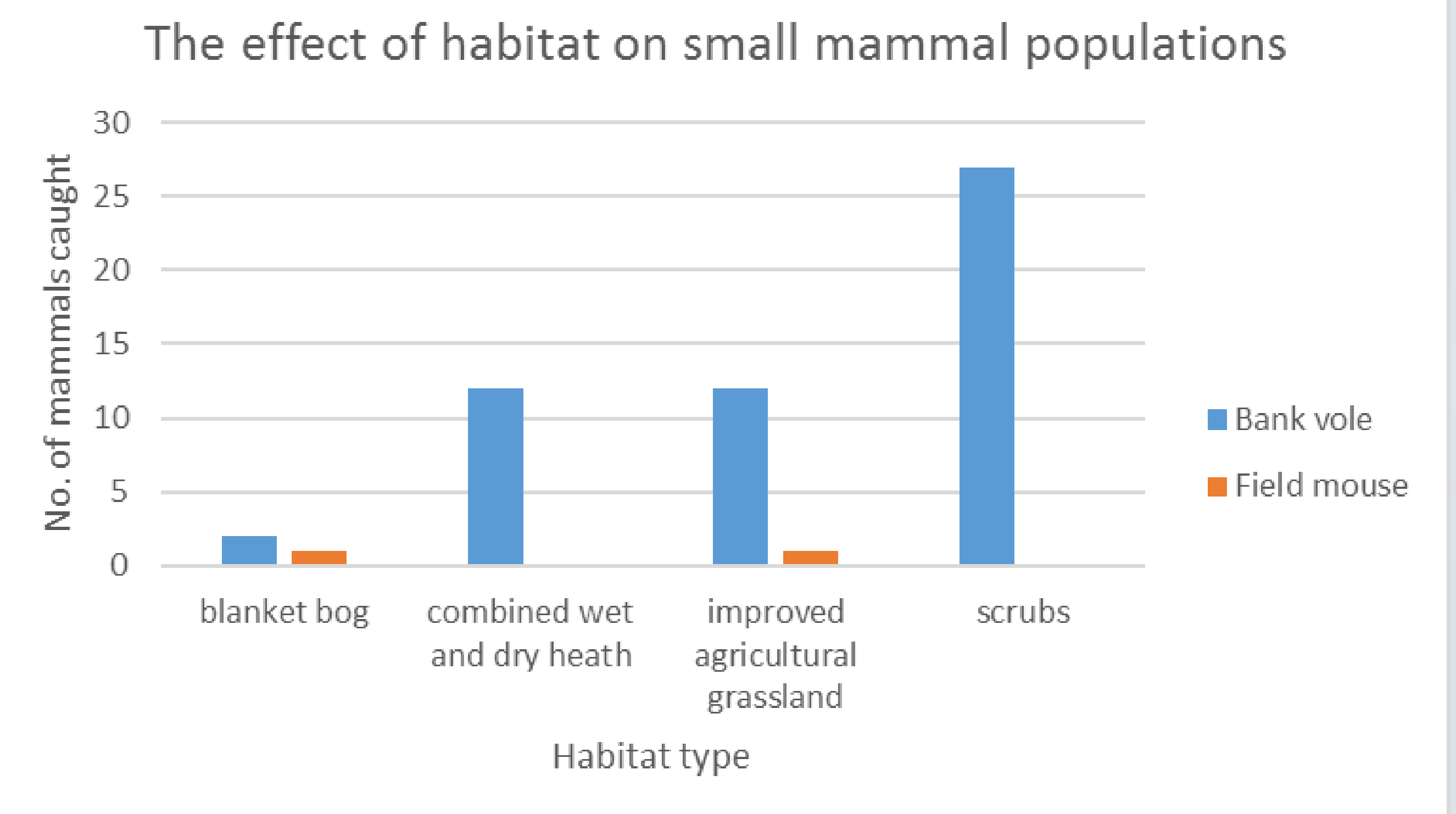6. Arc GIS to identify different habitat types in each site

Once all methods were completed the data from each method was then analysed. All data was entered into Microsoft excel and data exploration was carried out with the aid of pivot tables and graphs. All statistical tests were undertaken using the programme R (v3.1.2). Kruskal-Wallis and Chi-squared Tests were used to analyse the small-mammal trapping data and linear models were used to analyse the bird transect data.

Figure 1: Live bank vole ready for weighing and measuring.

Results

- Of 300 tube traps a total of 64 were closed, giving a capture rate of 21.33%. However, this rate of capture varied depending on each habitat type, (Kruskal-Wallis chi-squared = 26.161, df = 3, p-value < 0.05). Scrub appeared to be the optimal habitat for small mammals with a capture rate of 40%. Blanket bog was the least successful site with only 5.33% of traps closed.
- The analysis of hen harrier pellets indicates that small birds are the principal constituent of the hen harrier diet. The pellets also revealed evidence of small mammals, lizards and invertebrates, suggesting a varied diet.
- Two simple linear regressions were calculated to predict the numbers of skylarks and meadow pipits based on habitat and weather variables. A significant regression equation was found (F(3,16)= 3.667, p < 0.05) for skylarks, with an R^2 of 0.41. However, the regression equation was non-significant for meadow pipits
- Mapping of the habitat types revealed the SPA is dominated by forestry and woodland scrub. Peat bogs covered 20% of the SPA and pastures made up 15% of the SPA. Other habitats (pastures, other agricultural regions, discontinuous urban fabric, mineral extraction sites, complex cultivation patterns, coniferous forests, moors and heathlands and inland marshes) contribute to insignificant amounts of the SPA.

The effect of habitat on small mammal populations

Discussion

We can conclude that the best methods for monitoring prey in managed farmland are the bird transect and small mammal trapping. Mapping using Arc GIS has capabilities to be highly effective if conducted in conjunction with the bird transect and small mammal trapping. An estimate of total prey populations could be made using these three methods. The optimal habitat type for small mammals and birds could be discovered if these methods are used effectively in conjunction with each other. We recommend that small mammal trapping and bird transects are conducted within all habitats in each SPA in Ireland in the next number of years. We also recommend that farmers are remunerated for their work in monitoring prey populations on their land using small mammal trapping surveys and bird transects.