

## Surveys of Scottish farmers and their vertebrate pests – case study from a long running dataset

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### Abstract

Data on perceived pests to farmers were collected annually since 1998, during predominantly face-to-face interviews with the farmer as an adjunct to routine pesticide usage surveys. During each year of the survey, particular farm types were selected for surveying, and data are presented for arable and grassland and fodder crop farms. A case study examines the impact of the withdrawal of strychnine, previously used as a method of mole (*Talpa europea*) control, on the pest status of the mole in Scotland. The paper also discusses the advantages and disadvantages of this long-running data set.

Keywords: agriculture, moles, pests, strychnine, surveys

### Introduction

Since 1998, as an adjunct to pesticide usage surveys, SASA has been interviewing farmers in Scotland to ask them about their vertebrate pest problems. This has yielded a long-term data set of the perceptions of farmers regarding those species they consider pests, the areas where problems most often occur, and their approach to control. While there are several limitations to this data set, there are some advantages, not least being the consistent approach to questioning and the time scale over which surveys have been conducted. This can allow an assessment of the changing pest status of a species over time, and has particular importance when a key method of control is lost.

Strychnine was once the main method of mole control in the UK. However, in September 2006 approval for the use of this pesticide was lost. This data set was used to assess changes in the perception of farmers to moles, both regionally and nationally, and also examines changes to the methods used to control moles as a consequence of the loss of strychnine.

### Materials and methods

Due to differences in the use of pesticides according to the farm type, biennial surveys of arable farmers were conducted since 1998, but only three surveys of grassland and fodder crop farmers conducted in 2002, 2005 and 2009. Farms were selected on a randomised-stratified design based on land-use region and size group. Farmers were presented with a list of mammalian and avian species and asked “which of these are a pest on your farm and why; which of these identified pests do you attempt to control, and what methods do you use?” Finally, farmers were asked to rank their top three worst pests. Regions were amalgamated into three super-regions to allow for small sample sizes. Logistic regression analysis for binomial data was applied to the number of farmers who reported a particular feature (e.g. those that applied mole control); the model has allowed for over-dispersion in the data.

### Results

There was no evidence of a widescale increase in the distribution of mole problems across the two farming sectors, either since the surveys began, or since the withdrawal of strychnine in 2006. There was weak evidence of an increase in the seriousness of mole problems within both farming sectors, although the role of strychnine withdrawal in this effect was equivocal. With respect to management methods, the use of fumigation and trapping increased substantially over recent years, although trapping was more popular than fumigation, especially among fodder crop farmers. There was also an increase in the proportion of farmers (in both sectors) with a mole problem, who chose not to control moles subsequent to the withdrawal of strychnine.

On average, more farmers in Central and Southern regions (East Fife, Lothian, Central Lowlands, Tweed Valley, Southern Uplands and Solway) reported mole problems than farmers from the other two regions. In Northern areas of Scotland (Highlands and Islands, Orkney and Caithness and Moray Firth) the

perception of mole problems by farmers was most variable, while in Eastern areas of Scotland (Aberdeenshire and Angus), fewer farmers on average reported mole problems in the period up to 2006. However, the number of farmers reporting mole problems increased dramatically in Eastern areas subsequent to the loss of strychnine.

### **Discussion**

The results from these surveys indicate the pest status of the mole based on the perception and experience of the farmer being interviewed. This opinion can reflect the economic importance of the mole, which along with the cost, availability and simplicity of control methods, will influence the farmers' decision to undertake control. However, the data should be interpreted with caution, since other factors can also play a role in forming opinions and the need to control a species.

It has been speculated that the withdrawal of strychnine would lead to an increase in mole problems, particularly since the alternative methods are either more expensive or more difficult to apply (Quy and Poole, 2004). However, there was no overwhelming evidence to support this in the current analysis, and farmers were recorded as increasing their use of traps, and to a lesser extent fumigation, as methods of control. Nonetheless, the greater number of farmers choosing not to control moles may indicate a reluctance or inability of farmers to make use of alternative, but more costly, management methods. In the long-term, the effects of reduced management may result in palpable evidence of an increase in the distribution and seriousness with which moles are perceived within key agricultural sectors.

There are several reasons that may explain the regional differences in reported mole problems across Scotland. Future surveys will allow an assessment of the long-term impacts of the loss of strychnine on mole management and on any changes to the importance of the mole as an agricultural pest, regionally and nationally.

### **References**

Quy R, Poole D 2004 A review of methods used within the European Union to control the European mole, *Talpa europaea*. Defra, York, UK