

# Winter Mammal Monitoring

## Title

Winter Mammal Monitoring 2001/02-2003/04

## Description and Summary of Results

In principle mammals should be monitored for the same reasons as birds: to determine abundance, distribution and most importantly population change. Some species are thought to have declined, others to have increased, and some can be considered economically important because of the damage they do to crops and woodland. Mammals, however, do not receive the same amount of attention as birds, predominantly because they are less easy to observe and more difficult to identify. As a result, and with different methods required for different species, there has been no national approach for multi-species monitoring of mammals across Britain.

In an attempt to find such, the Government, through its agencies, commissioned two reports to suggest ways in which such monitoring could be developed. The first of these was produced by researchers based at Oxford University, and the second became a joint project of the BTO and The Mammal Society, Winter Mammal Monitoring (WMM). (The BTO was specifically not looking to become involved in independent mammal monitoring in the longer term, but was asked to use its experience of survey design and the use of volunteer fieldworkers, in collaboration with The Mammal Society, to help set the scene for future mammal monitoring across Britain.)

Over three field seasons, 907 volunteers carried out at least one survey, and rather over half carried out at least one of each type. Sightings were recorded in 1043 and field signs on 890 sites (overall total 1121 sites) with both methods used on 612. The majority were in England (885), with fewer in Scotland (132), Wales (98), the Isle of Man (2) and Northern Ireland (4).

Although site (1-km square) allocation included a random element to minimise bias towards preferred sites, there was unequal coverage across regions and landscape types with lowland arable land over-represented, and such as upland, montane and coastal landscapes under-represented. There was also a high turnover rate for both survey types between winters -- only 15% were surveyed for sightings, and 17% for field signs, in all three years. Excluding records of non-specifics (eg 'voles'), domestic animals, feral cats and free-roaming dogs, 29 species were recorded during the sightings survey. Rabbit was by far the most widespread species recorded, followed by Grey Squirrel, Brown Hare, Roe Deer and Fox; and only 11 species were seen on at least 10 sites. Species such as Red Squirrel, Badger, Stoat, Weasel and smaller mammals were sighted at very low rates.

For the field signs component, the original target species were Badger, Fox, Mole, Rabbit, squirrels, and Hedgehog. (Field signs are important for many species because nocturnal mammals (eg Badgers and Foxes) and burrowing species (eg Moles) are unlikely to be seen even when abundant.) However Hedgehog was dropped after the first winter as it is not generally active in the winter, and three (Brown Rat, Field Vole and Harvest Mouse) were added. Results showed that Brown Rat and Field Vole could be monitored but that Harvest Mouse signs were detected at too low frequencies. In the first year the recording of

squirrel dreys, deer slots and hazelnuts chewed by Dormice was tried but then dropped, the first two because they were non-specific, and the last because of very low rates of detection.

Since 1995 most (85%) of Breeding Bird Survey surveyors have also recorded mammal sightings and signs during their summer surveys. Of the species counted, absolute numbers of Rabbits and Brown Hares were significantly higher during the BBS than during the WMM surveys, whereas numbers of Grey Squirrel and Roe Deer were higher during the winter compared to at least one of the BBS visits (early or late). None of the other species showed any significant differences. However, using field signs, Rabbit, Brown Rat, Fox (all years) and Mole (year 2 only) were detected more frequently during the winter than the summer, most likely due to the dedicated effort to search for field signs on WMM surveys.

There were no significant differences in the between year rates of change between WMM and either early or late visits for BBS for the seven species that could be compared by sightings (Rabbit, Brown Hare, Fox, Fallow Deer, Muntjac, Roe Deer and Grey Squirrel), and only the last showed a consistent pattern (increase) across surveys. However, because of small sample sizes and high variance, the capacity to detect differences was low for most species. Analysis of the association of mammals and various spatial and habitat features broadly just confirmed existing knowledge.

Overall it was found that field signs provided significantly more information than sightings data, although a smaller range of species could be reliably monitored using this method (Mole, Fox, Badger, Field Vole, Rabbit, Brown Rat and Harvest Mouse). Sightings were the more important for the other species.

### **Methods of Data Capture**

The protocol was very similar to that of the Breeding Bird Survey. Participants were randomly allocated a 1-km square within 10km of their home address and asked to choose a transect route which crossed the square twice, and which was therefore approximately 2km long. Ideally the route would follow linear features such as tracks, footpaths, hedgerows and field margins, and would be walked on three occasions during the winter period (October-March). On one visit details of the habitat on either side of the transect route were recorded using a standard coding system. On a second visit, participants were asked to record the identity and number of all wild mammal species they saw and map their location. This visit was made soon after daybreak to coincide with a period of relatively high mammal activity. Finally, observers were asked to record the presence of a standard set of field signs along, and immediately adjacent to, their transect route.

During the first year, sighting surveys were carried out between October and December, and field sign surveys between January and March. In the following years, both surveys were carried out between October and March (with few exceptions).

Volunteers were provided with information on how to identify the target mammal species (eg Roe Deer, Fallow Deer) by sight, and the field signs of the target species (eg Badger latrines, molehills).

**Purpose of Data Capture**

A pilot trial over three winters to determine whether monitoring of mammals in the winter by volunteers could provide useful data for general monitoring.

**Geographic Coverage**

Random 1-km squares were selected from all over the UK.

**Temporal Coverage**

The winters 2001/02-2003/04. Three visits were requested: 1) to identify habitats present; 2) to count live mammals (to be done October to December); 3) to look for field signs of a specified range of species (to be done January to March).

**Other Interested parties**

Winter Mammal Monitoring was a joint project of The Mammal Society and the BTO and funded by Defra.

Both WMM and the mammal component of the Breeding Bird Survey are part of the Tracking Mammals Partnership which is a collaborative initiative, involving 23 organisations with a variety of interests in UK mammals.

**Organiser(s)**

Dave Leech

**Current Staff Contact**

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**Publications**

The main report of the project is:

Noble, D., Carter, P., Harris, S., Leech, D., Poulton, S. & Shearer, G. 2005. Winter Mammal Monitoring - a pilot study. *BTO Research Report* no. 410 (and The Mammal Society Research Report 5). BTO, Thetford and The Mammal Society, London.

The survey was noticed in *BTO News* numbers 235, 239, 246, 249 and 256.

**Available from NBN?**

No.

**Computer data -- location**

An MS Access database on the BTO Windows network personal space.

## **Computer data -- outline contents**

## **Computer data -- description of contents**

### **Information held in BTO Archives**

2 Archive Boxes containing the data forms.

### **Notes on Access and Use**

### **Other information needed**

### **Notes on Survey Design**

The survey was specifically to investigate the practicalities of different means of monitoring mammals and to compare to any existing measures. Hence two different main winter survey methods were tried out and compared to the existing (summer) Breeding Bird Survey.

### **Specific Issues for Analysis**

The crucial question was whether WMM would be able to provide information on changes in abundance of the target mammal species that could be used in conservation assessments (eg red listings, species of conservation concern) and with sufficient confidence in the measured changes. The assessment of capacity to monitor each species was based on power analyses and carried out on both a matched dataset (where there were repeated visits to the same site) and an unmatched dataset (treating years as independent samples), yielding a series of graphs from which the minimum detectable change for a range of sample sizes could be extracted. Various specific results of which species and by which method change can be detected are presented in the report. Results also showed that signs required smaller sample sizes than sightings and that a strategy of repeat visits to the same sites was preferable to selecting new ones each year.