

UK Mammals

Update 2009

The Tracking Mammals Partnership (TMP) aims to provide up-to-date and reliable information about the status and population trends of UK land mammals

This is the fourth annual update following the first major report on UK mammals' status and trends, published in 2005. Detailed information on species trends can be found on the TMP website www.trackingmammals.org.

It provides a summary of current trends for all mammals covered in the TMP schemes, information on progress with improving species coverage, and explains more about the uses of the information collected by volunteers.

The TMP is currently reporting annual trends for 35 terrestrial mammals, 54% of our land mammal fauna. Of the species that have trend information, 14 species (40%) show a statistically significant increase, 12 species (34%) are considered stable or do not show a statistically significant change and seven species (20%) show a statistically significant decline. For two species the trend is unclear. Unfortunately, four of the increasing species – common rat, grey squirrel, sika deer and Reeve's muntjac are non-natives that cause problems for our native fauna.



TMP projects in 2008

Widespread bat species show stable trends

The *National Bat Monitoring Programme* (NBMP), run by the Bat Conservation Trust (BCT) monitors and delivers long-term trends for 11 of the UK's 16 resident bat species using a network of volunteers. Monitoring results indicate that populations of widespread bat species have been relatively stable during the last decade, with the overall trend weakly positive.

The Bechstein's project has now completed its first year. Five bat groups surveyed 47 target woodlands using new monitoring techniques to establish the distribution of Bechstein's, a rare and difficult to survey bat. 2008 was a very poor year for the Bechstein's bat in terms of weather and prey availability and in 2009 three of the counties will be resurveyed, in addition to three new counties.

Small mammals surveillance under development

Small mammals are the main source of food for many species of Britain's rarer carnivores and birds and are important indicators of environmental change, but accurate assessments of their conservation status are not possible because of lack of information.

The Mammal Society, with support from the Joint Nature Conservation Committee (JNCC), commenced a two-year pilot scheme in 2006.



Water shrew *Neomys fodiens* © Rob Strachan

Power analysis using these pilot data showed that sample sizes of several hundred transects would be needed to detect declines of 20% over ten years for the rarer species. However, smaller declines in the more common species could be detected with only one hundred transects, using certain methods. The Mammal Society is intending to launch a National Small Mammal Monitoring Programme in 2009 based on the findings of this project.

In 2008, The Mammal Society and the Wildlife Conservation Research Unit, in collaboration with the Waterford Institute of Technology, began a three-phase study into the distribution and status of harvest mice in the UK. Phase I, funded by Mammals Trust UK and Natural England, involves building a stakeholder network and trialling and refining monitoring methodologies in the field that are effective for this elusive species.

In particular, DNA analysis of faeces might allow the presence of harvest mice to be recorded without the need for trapping or identification of field signs. Phases II and III of the project will include national, volunteer-based surveys and farm-scale research projects into the behavioural ecology and habitat requirements of Britain's smallest rodent. Further information about the project can be found on the Mammal Society's website www.mammal.org.uk.

Surveying the built environment

The People's Trust for Endangered Species' (PTES) *Living with Mammals* (LwM) survey has recorded sightings and signs of mammals in urban green spaces since 2003, involving the efforts of hundreds of volunteers each year.

An analysis of the data up to 2007 carried out last year sought to identify those features of sites

that were associated with a greater abundance of mammal species. Over 1,900 separate locations were surveyed, each one characterised as a particular type of site and scored for the number of species that were present and the abundance of each species (see figure 1 below).

Gardens and derelict or waste land had the highest abundance of wild species among typically urban sites, while parks and churchyards had relatively low scores. Given that gardens make up between a third and half of the green space in urban areas, their potential to support a number of mammal species makes clear their importance in urban biodiversity plans.

The areas over which animals forage each day typically might extend across many gardens, and maintaining the 'connectivity' of sites, ensuring that animals can move from one to another, is vital if urban habitats are going to be used by wild mammals.

Bird surveys continue to deliver information on mammals

The British Trust for Ornithology (BTO)/JNCC/Royal Society for the Protection of Birds (RSPB) *Breeding Bird Survey* (BBS) continues to deliver information on the presence of mammals detected each year on more than 2,800 1-km squares across the UK, with 44 terrestrial species

recorded in 2007. Population trends for 15 widespread and easily detected species, including rabbit, brown hare, mountain hare, grey squirrel, fox, roe deer, red deer, fallow deer and Reeve's muntjac, are calculated and reported annually.

The BTO/Environment Agency (EA) *Waterways Breeding Bird Survey* (WBBS), currently covering about 300 sites annually, also provides data on more than 20 mammal species, and results of both surveys are combined to provide trends in the presence of otter, water vole and mink. Additional information on mammals, using BBS methods, is collated by surveyors in special surveys of uplands, woodlands and lowland farmland.

Since first piloting the recording of mammals as part of its systematic weekly recording in 2003, the BTO *Garden BirdWatch* (GBW) database now holds 661,287 records of some 38 mammal species. Most of the 15,000 participants in the project collect mammal records as part of their weekly recording. The GBW has sufficient power to detect changes in the use of gardens of between 5% and 40% at the national level for 20 of the mammal species covered. Change in the use of gardens may reflect either changes in mammal population size or changes in behaviour and, as such, trends in garden use should be viewed alongside data collected from other habitats.

With funding from Defra, a small consortium of conservation organisations have started on a new project – the *Non-Native Surveillance Scheme* – to collate information on the presence and spread of non-native species that have the potential to cause negative effects on Britain's native flora and fauna or human health. Focal species include the rapidly spreading grey squirrel, Reeve's muntjac and mink, as well as much scarcer species such as red-necked wallaby and fat dormouse.

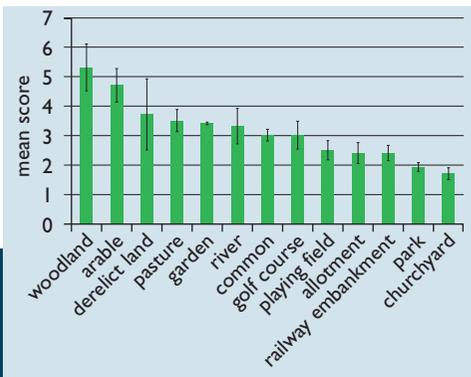


Figure 1. Mean score (a function of the number of species and the abundance of each species) at different types of sites in the Living with Mammals survey (2003-2007). Means +/- SE are shown.

Table 1. UK Population Trends for Mammals in TMP Surveillance Schemes to 2007

Species	25 year trend (% change)	10 year trend (% change)*	Comments
Hedgehog	Decline (-44)	No statistically significant change (-23)	A long-term decrease over last 25 years, but with no statistically significant change over the last 10 years. There is a significant decline in Wales over 1997-2008
Mole	Unsure	Increase?	Possible increase. Plots suggest increase until 2000 followed by a decline. Percentage change not available because of data analysis method
Greater horseshoe bat	No available data	Increase (32)	Significant increase from Colony Counts since 1999, however caution required in interpreting trend. No significant trend from Hibernation Survey
Lesser horseshoe bat	No available data	Increase (41)	Significant increase in last eight years in both Colony Count and Hibernation Survey
Whiskered bat	No available data	Stable (20)	The Hibernation Survey trend has remained fairly stable since 1999 although confidence intervals are quite wide
Brandt's bat	No available data	Stable (20)	The Hibernation Survey trend has remained fairly stable since 1999 although confidence intervals are quite wide
Natterer's bat	No available data	Increase (65)	Increasing populations in last eight years from Hibernation survey. No significant trends from Colony Counts
Daubenton's bat	No available data	Stable (11)	Moderate increase in populations from Waterway and Hibernation Surveys, but neither is quite statistically significant
Serotine	No available data	No statistically significant change (27)	The Colony Count and the Field Survey show level trends. The latter has wide confidence intervals
Noctule	No available data	No statistically significant change (30)	The index has risen sharply in the last year but confidence intervals are wide and this result should be treated with caution at present
Common pipistrelle	No available data	Increase (65)	Significantly increasing populations over last eight years recorded in the Field Survey. Colony Counts indicate a significant decline of 40%, but Field Survey more robust because of behaviour of the species
Soprano pipistrelle	No available data	Stable (-16)	Field Survey indicates fairly stable populations. Significant decline of 31% from Colony Counts should be treated with caution due to colony mobility. Data from Field Survey considered more robust
Brown long-eared bat	No available data	Stable (6)	Hibernation Survey indicates fairly stable populations over last eight years. Marginally significant increase from Colony Count which should be treated with caution at present
Rabbit	Increase (140)	Decline (-31 to -38)	A long-term increase over 25 years, but with significant declines recorded over the last 10 years, especially in Scotland (-79 to -64)
Brown hare	Increase (37)	No statistically significant change (19 to 3)	Unclear trend. Both the 25-year and the 10-year UK trends are not statistically significant
Mountain hare	Increase/cycling (34)	Decline (-18 to -56)	No long-term significant changes detected in this species in NGC, due to cycling populations. However, 10 year trend shows a non-significant decline in BBS

Irish hare	Decline	No statistically significant change	Trends (2002-2009) indicate stable but fluctuating populations
Grey squirrel	Increase (122)	Increase (49)	Long-term increase over last 25 years, with a more rapid increase over the last 10 years
Water vole	Decline	Decline	Long-term decline has continued in last ten years. Percentage change not known at present
House mouse	Decline/Stable	No statistically significant change	Stable populations in England indicated by the English House Condition Survey results
Common rat	Increase (88)	Increase (95)	A long-term increase over last 25 years and continuing more rapidly over last 10 years
Hazel dormouse	Decline	Decline (-24)	Indications of a continued decline
Fox	Increase (71)	Increase (6)/ Decrease (-26)	Unclear trend. NGC indicates a long-term increase over last 25 years has stabilised over last 10 years, but BBS records a non-significant decline
Stoat	Increase (38)	Increase (17)	A long-term increase over last 25 years, with continued increase over the last 10 years
Weasel	Increase (24)	Increase (39)	A long-term increase over last 25 years, with continued increase over the last 10 years
Polecat	No statistically significant change (-12)	No statistically significant change (6)	No significant 10-year trend at a UK level. There are indications of increasing distribution and populations across England between 1992 and 2007
American mink	Decline (-48)	Decline (-37)	Historic increases have changed to declines over the last 25 years that have continued over the last 10 years
Badger	Increase	Increase	Increase over the last 10 years. Plots suggest increase until 2004 followed by a decrease. Percentage change not available because of data analysis method
Otter	Increase	Increase	Continual increase over the past 25 years, increase in the last ten years. Otters continue to expand their range into the few areas in England where they are rare or absent and the populations continue to increase to carrying capacity.
Feral/domestic cat	Decline (-24)	Decline (-16)	A decline over last 25 years, with continued increase over the last 10 years
Red deer	Increase (50)	No statistically significant change (4)	A long-term increase over last 25 years, but with no statistically significant change over the last 10 years
Sika deer	Increase (86)	Increase (37)	Long-term increase in last 20 years (25 year trends not available). Ten year trend indicates continued increase
Fallow deer	Increase (90)	No statistically significant change (23 to 50)	A long-term increase over last 25 years, but with no statistically significant change over the last 10 years
Roe deer	Increase (96)	Increase (27 to 49)	A long-term increase over last 25 years, with continued increase over the last 10 years
Reeve's Muntjac	Increase (1183)	Increase (130)	A long-term increase over last 25 years, with continued increase over the last 10 years

KEY

Green = native; Blue = non-native; Bold indicates statistically significant changes (variation in percentage change between surveys in brackets); *sometimes more than one survey result is given, where results differ markedly.

Trend information from: National Gamebag Census (NGC) report: 2008, run by the Game and Wildlife Conservation Trust with additional funding from JNCC; The State of UK's Bats, 2008, with data from the National Bat Monitoring Programme (NBMP), run by the Bat Conservation Trust/JNCC Partnership; Breeding Bird Survey (BBS) Mammal Data report 2008. BBS run by BTO/JNCC/RSPB Partnership, and National Dormouse Monitoring Programme run by PTES/Natural England Partnership. All reports available to download from TMP website, www.trackingmammals.org

Better outlook for dormice?

The *National Dormouse Monitoring Programme* (NDMP) is one of the longest-running national terrestrial mammal monitoring programmes in the world. It began in 1988 with 384 dormice from five sites in two UK counties. In 2007, 189 sites returned data with 151 of these positive for dormice. There are currently 214 people registered as Dormouse Monitors with the programme. Since 1999, the NDMP has been managed by People's Trust for Endangered Species.

The scheme recorded a significant, approximately linear, decline in dormice numbers between 1991 and 2002. The dormouse population appears to level off between 2002 and 2007.

From 2005 the population estimate exhibits oscillations of up to 25%. The 2007 population has a strong influence on the analysis, so the 2008 results will help determine if the population is stabilising, suggesting that conservation efforts to improve dormouse woodland habitat may be having a positive effect. However, the recent fluctuation in dormice numbers means they are still vulnerable and continued monitoring remains vital before a clearer picture of the trend can emerge.

The NDMP has its biannual newsletter, the *Dormouse Monitor* which reports annually on the data collected. The year 2007 saw the development of an online forum for monitors to exchange their experiences. In 2009 PTES launched an online data entry system for monitors to use.



Hazel dormouse *Muscardinus avellanarius* © Kate Merry

Gamebag data continues to provide mammal information

Bag records have been studied for decades as a surrogate for detailed population surveys. The *National Gamebag Census* (NGC), maintained by the Game & Wildlife Conservation Trust (GWCT), was set up in 1961 as a central repository of records from shoots across the UK. It consists of annual numbers of shot game animals and predators from a self-selecting sample of estates (average 636 estates per year since 1961, currently some 900). Many estates are long-term contributors, and some data series extend back to 1900 or earlier through the incorporation of historical records. The NGC contains extensive mammalian and avian data and has unique historical coverage, and relates to around 10% of the UK land area.

The relationships between game or predator bags and the populations from which they are taken are complex and reflect many unmeasured factors. Despite this it has recently been shown, under TMP stimulus, that species trends over time in NGC bag data for recent decades match those from other schemes that record live mammals or birds. The NGC is therefore a valuable barometer, and for a few species that are difficult to survey such as small mustelids, provides the only source of information on trends. Exploring the way changes in bags relate to changes in the source population is the subject of ongoing research by GWCT, and may lead to improved interpretation of trends in bags.

National water vole database and mapping project

The *National Water Vole Database and Mapping Project* was launched in January 2008 and is funded by the EA, Royal Society of Wildlife Trusts, PTES and Scottish Natural Heritage.

During 2008, the project officer contacted a range of data holders nationally to request water vole and mink data in order to compile a national database for both species. Over 38,000 water vole records were received from 61 data suppliers, and over 10,000 mink records from 40 data suppliers. The datasets and mapping produced using the 2008 datasets were used in the 2008 BARS reporting round.

Additional funding has been secured for the project to continue into 2009 and an update of the databases is currently underway. So far, an additional 6,600 water vole and 1,400 mink records have been received. The 2009 updated national water vole and mink database will be used to produce alert mapping for local and regional key areas to inform water vole officers and planners of water vole presence. They will be used to highlight areas where more information will need to be sought before development or capital works can take place.

How is the information used?

Making data available through the NBN

The participation of thousands of volunteers in mammal and other surveys means that organisations across the UK running surveys hold a vast quantity of species records. Such data is much more useful if made publicly available and the National Biodiversity Network (NBN) Gateway now provides access to nearly 34 million records on species distribution. The NBN Gateway has mammal data from the *National Otter*

Surveys, the NDMP, the BCT/MTUK car survey, the BBS and WBBS, and the NBMP Daubenton's Waterway Survey. Datasets from the NBMP Field Survey, Colony Counts and Hibernation Survey, as well as datasets from the LwM survey and *Mammals on Roads* will be available on the NBN Gateway in 2009.

Bats adopted as a UK Biodiversity Indicator

The Bat Conservation Trust (BCT) has recently been exploring the potential uses of bat surveillance data in biodiversity indicators for public and policymaker audiences. BCT used NBMP data to develop a composite species index "populations of widespread bats", which was adopted as a UK Biodiversity Indicator in May 2008.

Bat populations are a good indicator of the broad state of wildlife and environmental quality because they are sensitive to pressures experienced by many other taxa. In 2008 BCT undertook a contract for the European Environment Agency (EEA) to assess the rationale and potential for using bats as European indicator species.

The assessment revealed an unexpectedly high volume of information on different monitoring schemes, and a sufficient number of countries had schemes meeting the criteria to develop a pilot indicator. A pan-European workshop will be implemented to bring together country organisers of bat surveillance schemes, policy makers and statistical specialists to agree methodology of the indicator and the weighting approach. Links built during this work may benefit both the potential production of a European indicator in the future and also the NBMP by increasing direct links between the programme and its European counterparts.



Soprano pipistrelle *Pipistrellus pygmaeus* © Bat Conservation Trust



The organisations in the TMP extend their grateful thanks to all the volunteers for their generously given time and expertise. We really appreciate and need your continued support to maintain and develop the information base on UK mammals.

The Tracking Mammals Partnership is 25 organisations with a variety of interests in mammals. **UK Mammals: Species Status and Population Trends, First Report by the Tracking Mammals Partnership**, published in 2005, can be obtained from Natural History Book Services www.nhbs.com or from the TMP website www.trackingmammals.org.

Surveys that you can participate in and the organisations that run them:

Bat Conservation Trust: **National Bat Monitoring Programme** www.bats.org.uk

British Deer Society: **Great British Deer Survey** www.bds.org.uk

British Trust for Ornithology: **Breeding Bird Survey;**

Waterways Breeding Bird Survey & Garden BirdWatch. www.bto.org

(BTO surveys collect data on mammals as well as birds)

The Game and Wildlife Conservation Trust: **National Gamebag Census.** www.gwct.org.uk

People's Trust for Endangered Species/Mammals Trust UK:

National Dormouse Monitoring Programme;

Mammals on Roads; Living with Mammals & MoleWatch www.ptes.org

The Mammal Society: **National Owl Pellet Survey** www.mammal.org.uk

Other organisations participating in TMP:

Bristol University www.bris.ac.uk

British Association for Shooting and Conservation www.basc.org.uk

Countryside Council for Wales www.ccw.gov.uk

Defence Estates www.defence-estates.mod.uk

Deer Commission for Scotland www.dcs.gov.uk

Deer Initiative www.thedeerinitiative.co.uk

Department for Environment, Food and Rural Affairs (Defra) www.defra.gov.uk

Environment Agency www.environment-agency.gov.uk

Food and Environment Research Agency www.fera.defra.gov.uk

Forestry Commission www.forestry.gov.uk

Joint Nature Conservation Committee www.jncc.gov.uk

Natural England www.naturalengland.org.uk

Northern Ireland Environment Agency www.ni-environment.gov.uk

Queens University, Belfast www.qub.ac.uk

Royal Holloway University of London www.rhul.ac.uk

Scottish Natural Heritage www.snh.gov.uk

Welsh Assembly Government www.wales.gov.uk

The Wildlife Trusts www.wildlifetrusts.org

Wildlife Conservation Research Unit, (University of Oxford) www.wildcru.org

Also participating:

Biological Records Centre www.brc.ac.uk

National Biodiversity Network Trust www.nbn.org.uk

Vincent Wildlife Trust www.vwt.org.uk

Front page photographs left to right:

Hedgehog *Erinaceus europaeus* © Nida Al-Fulaj – Harvest mouse *Micromys minutus* © Derek Crawley

– Brown Long-eared bat *Plecotus auritus* © Bat Conservation Trust.

All are now BAP priority species.

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