Mammal Surveillance and Monitoring in Northern Ireland

Record of the Workshop held by Environment and Heritage Service and Tracking Mammals Partnership, Wednesday 3 November 2004.

1 Introduction

The Tracking Mammals Partnership (TMP) consists of 24 organisations that are working together to provide data on changes in distribution and abundance of all UK resident terrestrial mammal species. Setting up the TMP has been an ongoing process since 2000, led by the Joint Nature Conservation Committee (JNCC), and the name and website www.trackingmammals.org were launched in July 2003. The Environment and Heritage Service (EHS) is a member of the TMP and is the largest Agency within the Northern Ireland Department of the Environment, with approximately 600 staff. EHS aims to protect and conserve the natural and built environment and to promote its appreciation for the benefit of present and future generations.

Many of the organisations in the TMP, individually or in partnership with other organisations, run or fund surveillance schemes, which provide population trend and distribution information on mammals and engage large numbers of volunteers to collect the data. The TMP aims to report on changes in mammal populations at UK level, but also at regional levels, including country, Government Office Region in England, and the more biologically meaningful level of Environmental Zones across the UK. However, the majority of organisations within the Partnership are based in mainland Great Britain (GB) and the majority of volunteers participating in the surveys are also based in GB. As a result some difficulties have been encountered with setting-up and running surveys in Northern Ireland (NI).

Surveys on individual species have been carried out in Northern Ireland (e.g. Irish hare, red squirrel, and otter) and good coverage and sample sizes achieved. The results of these surveys are available and are included in the First Report by the TMP (Battersby *et al*., 2005). However, at present it is not possible to report on population trends for mammal species in NI using data from the surveys operating at UK level. This is because survey coverage in NI is sparse and sample sizes are very small, making it difficult to analyze the data separately for NI. Links with surveys covering mainland GB need to be improved and better coverage achieved in NI, particularly for the more common and widespread species, and this was the main reason for conducting the workshop.

2. The objectives of the workshop

Several objectives were identified for the workshop:

1. To help NI organisations and those in the Republic of Ireland (ROI) dealing with mammals to develop a better understanding of the work of the TMP.
2. To help organisations based in GB to develop a better understanding of the mammal surveillance work being carried out in NI and the ROI.
3. To bring together organisations that are based in GB and those from NI and the ROI, to share expertise, experience and knowledge on mammal surveillance.
4. To explore ways to improve data collection and coverage in mammal surveys in NI and the Republic.

The workshop commenced with a series of talks from GB based organisations running surveillance schemes, either across the whole of the UK or for GB. This was followed by talks on surveys conducted in NI and the Republic of Ireland from organisations based there. Below is a summary of the main points from the talks. Full transcripts of most talks are provided in the Appendix to this record.

3 Summary of Talks on GB based surveys

The National Bat Monitoring Programme (NBMP). (Colin Catto, Bat Conservation Trust)

- Monitoring is undertaken to inform policy. The UK has a statutory responsibility to monitor European protected species –a role that is also important for the Republic, thus providing an area of common interest. We need to assess the Favourable Conservation Status of species, and once attained ensure it is maintained.
- There are other reasons to monitor bat populations. For example, the presence of European Bat Lyssavirus (EBLV) in the UK means that bats, especially Daubenton's bat (a species known to be infected with EBLV in GB), need to be monitored.
- BCT runs several surveys under the umbrella of the NBMP requiring varying degrees of skill and time commitment in order to participate. Within the suite of surveys it is possible to accommodate all levels of expertise, and in this way the NBMP allows everyone who wishes to take part to do so.
- The NBMP is a UK wide programme, but coverage in NI has always been problematic with small sample sizes obtained for most surveys.
- Recommendation: Have a TMP co-ordinator in NI to oversee recruitment and generic training and host a 'one-stop shop' for specific training from each of the societies running the surveys under the TMP umbrella.

Overview of Mammals on Roads and Living with Mammals (Clare Bowen/David Wembridge. PTES/MTUK)

- Low volunteer numbers are an issue for NI.
- For Mammals on Roads there is also the issue of geo-coding the data, currently the software to do this for NI is not available.
- Survey forms should make it clear that there is a different composition of mammal fauna in NI compared to GB, to ensure NI volunteers are fully engaged.
- Providing good feedback to volunteers and websites for further information is very important, as is good publicity to recruit new people.
- PTES/MTUK recognises there is a gap in information for NI and are keen to get volunteers to fill it.

A representative from Queen's University, Belfast suggested that PTES gets in touch with people who work at Queen's to undertake schemes such as Mammals on Roads, because many people drive long distances from all over NI to get to work.

Garden BirdWatch (Mike Toms, British Trust for Ornithology)

- Garden BirdWatch (GBW) is classified as a 'Citizen Science' scheme.
- It is also a self funding scheme as everyone who takes part is asked to pay a subscription towards the cost of running the scheme (there are also people who pay, supporting the scheme, but wish not to take part).
- In NI there are 84 volunteers supplying information about birds in their gardens. If this could be increased to 100 then sample sizes would be sufficient to allow some reliable statistical analysis.
- The principle aim of the scheme is to record how birds utilise gardens. The recording of mammals was a 'bolt-on' survey that started because of the demand from volunteers.
- So far the analysis of mammal data shows that GBW has the statistical power to detect population changes for 13 mammal species.
- The main point is that it is possible to make a self-sustaining survey provided there is good volunteer management and feedback.

BTO Breeding Bird Survey (Mike Raven, British Trust for Ornithology)

- The BBS is a survey designed to collect information on common bird species in the wider countryside. As with GBW, the recording of mammals was a bolt-on survey at the request of volunteers.
- Survey forms have been redesigned to allow better recording of mammals and their signs.
- The BBS relies on a network of volunteer regional organisers (one for each county), some of which are also BTO Regional Representatives.
- The importance of local knowledge when recording at a local level should not be underestimated. Asking people to survey in their local area helps maintain volunteer loyalty to the survey (particularly when asked to re-survey the same site over a number of years).
- Currently, 40-45 volunteer surveyors count mammals on 50-55 1-km squares each year, with an additional 50 squares surveyed each year by professional fieldworkers funded by E&HS.
- The NI sample size is currently too small for analysis
- Regional organisers in NI are vital and need to be fully supported.
- The key step forward for BBS in NI would be to improve methods of recruitment in NI, which need to be more targeted and perhaps personalised.

The Mammal Society Surveys (Phoebe Carter, The Mammal Society)

- The Mammal Society (TMS) has run a number of surveys, but there have been very low numbers of volunteers in NI.
- Need to ensure surveys and survey forms are designed with NI in mind, consider the different species composition and target the 'audience'.
- TMS are now looking to deal with the problem of low volunteer numbers by having more training courses in NI in 2005, specifically with the intention of bringing more members and volunteers into the Society.

- TMS are also planning to hold their annual conference for 2006 in Belfast, to raise general awareness about mammals in NI.

4. Summary of talks on NI and Republic of Ireland based surveys

General overview of the surveys undertaken in NI to date (John Milburne, EHS)

- Otters. (1980/81 and 2001) The first was an all Ireland survey, where 80 out of 131 sites were recorded positive for otter. The 2001 survey also covered 441 new sites, the results of which will be published shortly.
- Badgers (3 year all Ireland study in 1994) estimated 38,000 badgers in NI (based on extrapolations from land class and density of badger populations). It is thought that number is continuing to rise.
- Irish Hare. In 1997 a 3yr PhD estimated the Irish Hare population to be 8,250 – 21,000. A survey carried out by Queen's University, Belfast in 2002, estimated the population density to be 1 per km^2. Re-survey in 2004 gave a re-estimated of 5-6 hares per km^2. These estimates were calculated using night driven transects and Distance sampling, which was found to be a very good method for repeat surveys. The plan is to repeat the survey periodically.
- Red and Grey Squirrels. In 1997 a PhD study recorded red squirrels in 261 woodlands in the majority of the red squirrel range. A resurvey in 2002 found only 80 of those sites with red squirrels still present, and concurrently grey squirrels have undergone a large range expansion. It is thought East Antrim may be one of the few sites where red squirrels can survive, because the area is relatively isolated from grey squirrel incursion.
- Bats. A survey in 1999 provided the first estimate of bat numbers in NI.
- Deer. Populations are expanding, mostly due to deer farm releases into the wild when farming is no longer economically viable. As in the rest of the UK, sika and red deer hybridisation is an issue.
- All these surveys have been commissioned and have been largely funded by the government. In the future there needs to be a shift in emphasis towards volunteer effort in order to carry out more frequent and better coverage surveys.

Surveys in the Republic of Ireland (Ferdia Marnell, National Parks and Wildlife Service, Republic of Ireland)

The National Parks and Wildlife Service (NPWS) has 100 regional staff with specialist skills who undertake much of the survey work, which is concentrated on the species listed on the Annexes to the Habitats Directive.

Ongoing and recent surveys include:

- Otters. Surveyed in 1980/81, 1990/91 and 2004. The 2004 survey started in the summer with a modified design compared to the last two surveys. The report is expected in autumn 2005.
- Bats. Annual counts of lesser horseshoe bats (Annex II) summer and winter roosts by NPWS staff. Work is underway looking at developing a broader bat monitoring programme for all Annex IV species. A pilot car transect survey has been carried out by BCT, but now handed over to Bat Conservation Ireland, with BCT undertaking the statistical analysis. Only 3 species are being detected in sufficient numbers so far to provide population trend information.

- A badger survey carried out 10 years ago by NPWS staff provided good habitat information for 879 km^2 (incl. 144 squares in NI).
- An Irish Hare survey may be undertaken soon, re-surveying a sample of the badger squares.
- Seals – Harbour Seal survey, again no volunteers, just NPWS staff and ecological consultants, also working with the Sea Mammal Research Unit (St Andrews) on aerial thermal imaging surveys.
- The Irish Whale and Dolphin Group and their members co-ordinate continuous collection of cetacean records across all Ireland.

Ian Montgomery (Queen's University, Belfast)

- NI has a unique situation compared with the rest of the UK, because of its physical isolation from GB and its political relationship with the RoI.
- Work needs to be done to investigate why mammals are important to the NI public, genetically distinct species and races.
- The Badger survey in 1994, based on methods used in the GB surveys and carried out on an all Ireland basis, is one of the only reliable estimates of a mammal species in Ireland.
- The survey methods used for brown hare in GB do not work for the Irish Hare in Ireland.
- Surveys need to be designed with NI/all Ireland in mind, with a requirement for a random stratified sampling method in order to attain unbiased reliable data and full coverage of all habitat types.
- Distance sampling to extrapolate the population estimate is a good cost effective way of re-sampling,
- However there is still a need for baseline population estimates for NI mammal species against which to make comparisons of survey results in the future.

Work of the Centre for Environmental Data and Recording (CEDaR): mammal recording in Northern Ireland, 1997-2000. Damian McFerran (CEDaR).

- There is a general move away from the 10km record collection towards site based records.
- CEDaR is equivalent to a Local Records Centre in GB, e.g. Hampshire LRC or SERC.
- The majority of mammal records in NI have been collected using EHS funding, plus additional records from conservationists and NGOs etc. in NI.
- There are people interested in nature conservation in NI, 220 recorders have submitted mammal records to CEDaR (information can be found on the NI Mammals, Amphibians and Reptiles website www.habitas.org.uk/nimars/).
- Recorder 6 and the National Biodiversity Network (NBN) are the tools used to get information out to the general public, volunteers and developers, but there is potential to develop these facilities further.
- CEDaR is hoping to undertake a NI wildlife/mammal initiative to gather more information and include datasets for other surveys to build a comprehensive biological records dataset.

5. Outcome of discussion on objective 4: To explore ways to improve data collection and coverage in mammal surveys in NI and the Republic.

The general feeling was that it should be possible to conduct volunteer based surveys in NI – the skills and willingness exist. However, it was felt that volunteering is not as well developed in

Ireland (both NI and RoI), as it is in the rest of GB. There are very few amateur naturalist groups, but there may be an untapped pool of volunteers and there is a need to develop ways of contacting them.

The branding of surveys was considered to be one of the main issues. It was felt that monitoring should be tailored towards NI participation and the suite of mammal species present in the country, which would encourage a more local focus. This may also appeal more to volunteers rather than giving the impression that they were an afterthought to the GB schemes.

There was general agreement that, if possible, NI and RoI should be treated as one geographic region. Survey schemes could be specifically designed and run from a Northern Ireland or all Ireland basis, rather than having GB experts and could be publicised as NI (all Ireland) based. The same frameworks and methodologies as the GB based schemes could be applied and data collected could be supplied to provide a UK overview. The application of this approach was dependant on a number of issues, such as funding and different political priorities in the two countries, but the approach has worked in other areas, for example combined (All Ireland) population indices have been produced from the NI BBS data and data from the CBS (RoI, Countryside Bird Survey).

It was felt that GB-based NGOs, especially membership organisations, were not well placed to run surveys in NI because they have few members, hence it was not surprising that volunteer uptake for the surveys was low.

Funding was also thought to be an important issue for setting up surveillance schemes in NI. It has proved difficult for GB schemes to get started in NI, because of additional costs.

There was general agreement that a good approach would be to have a volunteer network co-ordinator/development post in NI, perhaps with some additional professional surveyor input.

Technical aspects such as having a different national grid system or different landscape type were not felt to be insurmountable, e.g. there were similar considerations in Scotland. However, greater effort was required to accommodate the differences.

There was agreement that it would be useful to develop best practice guidance for mammal surveillance/monitoring (a set of generic guidelines for the best surveys for different species or groups of species); this would aid local volunteer groups to set up and establish themselves as providers of useful data.

List of attendees:

Name	**Organisation**	**Interest in monitoring**	**Contact details**
Jessa Battersby	JNCC	Tracking Mammals Partnership Co-ordinator	Jessa.battersby@jncc.gov.uk
Clare Bowen	Mammals Trust UK	Monitoring of all mammals	clare@mtuk.org
Kieran Breen	EHS	Bats, Irish Hare in the past	kieran.breen@doeni.gov.uk
Tom Brown	British Deer Society,	Deer welfare and	tom@woodstoves-ireland.com

	NI Branch	related subjects	
Alyn Cairns	Belfast Zoo	Increasing awareness for all interests by people in NI for local wildlife	cairnsa@belfastcity.gov.uk
Phoebe Carter	The Mammal Society	Mammals monitoring and surveillance	pcarter@mammal.org.uk
Colin Catto	Bat Conservation Trust	Bats	ccatto@bats.org.uk
Mark Challis	Belfast Zoo		
Keith Day	University of Ulster		
Gavin Duffy	EHS	Mammal monitoring	gavin.duffy@doeni.org.uk
Jenny Fuller	EHS	Mammals – all NI sp.	jenny.fuller@doeni.gov.uk
John Griffin	Forest Service	Red squirrel monitoring	john.griffin@dardni.gov.uk
Melanie Hardie	JNCC	Mammal specialist	melanie.hardie@ncc.gov.uk
Adriene Jameson	Belfast Zoo	Increasing interest in biodiversity through Zoo	gifueroaa@belfastcity.gov.uk
Declan Looney	EHS	Mammals Monitoring (Gov)	Declan.looney@doeni.gov.uk
Matthew Lundy	QUB	Cross species biodiversity surveys	m.lundy@qub.ac.uk
Deirdre Lynn	NPWS, Ireland	Monitoring	dlynn@duchas.ie
Onla Maguire	Belfast City Council	Bats, other mammals	biodiversity@belfastcity.gov.uk
Marcus Malley	Craigavon B. Council	Biodiversity Action Plan Monitoring	marcus.malley@craigavon.gov.uk
Ferdia Marnell	NPWS	Mammal monitoring	fmarnell@duchas.ie
John McCundy	NI Deer Society	Surveillance	jmac9@btinternet.com
Robbie McDonald	Queen's University, Belfast	Quercus – mammal surveillance	r.a.mcdonald@qub.ac.uk
Damian McFerran	Ulster Museum	Biological recording activities in N. Ireland	damian.mcferran.um@nics.gov.uk
Michael Meharg	EHS	Mammals surveys, hares, badgers, mice, seals and record cards	mike.meharg@doeni.gov.uk
John Milburne	EHS	Mammal monitoring; surveillance	johnmilburne@doeni.org.uk
Ian Montgomery	Queen's University, Belfast		
Declan O'Mahony	Environmental Consultant	Monitoring	Declan.omahony@ecomgt.com
Mike Raven	BTO	Volunteer Management	mike.raven@bto.org
Angela Ross	Ulster Museum	Bats and other mammals	angela.ross.vm@nics.gov.uk
Richard Schaible	Forest Service	Red squirrels; deer; certification	richard.schaible@dardni.gov.uk
Georgette	The Mammal Society	Monitoring	gshearer@mammal.org.uk

Shearer			
Doreen Swan	NI Bat Group		d.swan@ntlworld.co.uk
Matthew Tickner	RSPB	Bird monitoring	Matthew.tickner@RSPB.org.uk
Mike Toms	BTO Garden Birdwatch	Mammal monitoring in gardens	Michael.toms@bto.org
David Wembridge	Mammals Trust UK	Volunteer surveys	david@mtuk.org

Tracking Mammals Partnership member organisations

Bat Conservation Trust
Bristol University
British Association for Shooting and Conservation
British Trust for Ornithology
British Deer Society
Central Science Laboratory
Countryside Council for Wales
Deer Commission for Scotland
Deer Initiative
Defra
English Nature
Environment Agency
Environment and Heritage Service
Forestry Commission
Game Conservancy Trust
Joint Nature Conservation Committee
The Mammal Society
People's Trust for Endangered Species
Queen's University, Belfast
Royal Holloway University of London
Scottish Natural Heritage
Welsh Assembly Government
The Wildlife Trusts
Wildlife Conservation Research Unit, University of Oxford

References

Battersby, J. (Ed.) & Tracking Mammals Partnership. 2005. *UK Mammals: Species Status and Population Trends. First Report by the Tracking Mammals Partnership*. JNCC/Tracking Mammals Partnership, Peterborough

Appendix – Transcript of Talks

1. The Bat Conservation Trust National Bat Monitoring Programme. Presented by Colin Catto

Why Monitor?
Results inform the UK's bat conservation policy, including BAP reporting
Bat monitoring data is a fundamental obligation of the EUROBATS Agreement for the UK
Results will contribute to assessment of 'Favourable Conservation Status' under the 'Habitats' Directive

Species Coverage

Statistical surveillance data – 10 species	**Additional data – 5 species**
Greater & lesser horseshoe bats	Bechstein's
Daubenton's	Nathusius' pipistrelle
Natterer's	Leisler's
Whiskered / Brandt's	Barbastelle
Common & soprano pipistrelle	Grey long-eared
Serotine	
Noctule	
Brown long-eared	

General Method
Clear survey protocols
Surveys implemented by volunteers, co-ordinated centrally
Same (random where possible) sites surveyed annually
Appropriate statistics to infer trends in whole population

Colony Counts
Sites selected by volunteers
Two evening counts of bats emerging from roosts during a 20-day period in June
Lesser horseshoe, Natterer's, Pipistrelle sp, Serotine, Brown long-eared

Colony Counts
Distribution of Colonies
– All species

Les horse = 195

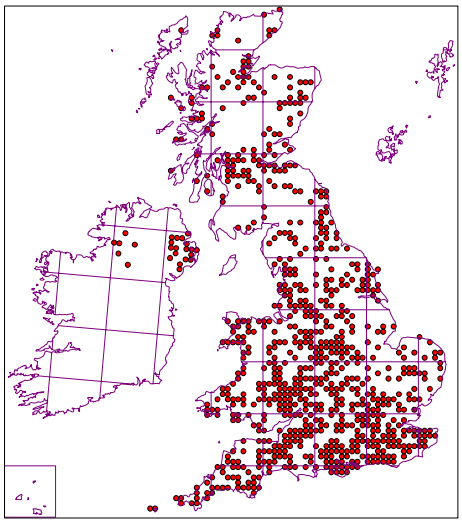
Natterer's = 64

Pip sp = 994

Serotine = 103

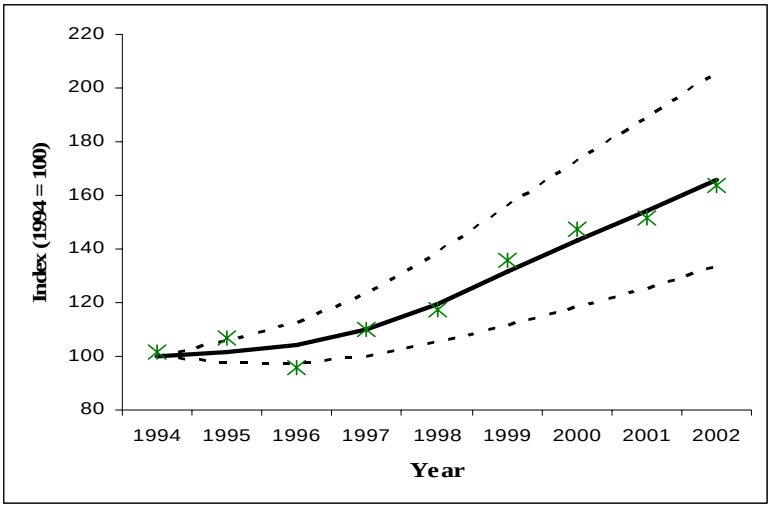
BLE = 87

TOTAL = 1443



Colony Counts

Lesser horseshoe colony size trend. Lesser horseshoe bat colonies have increased significantly by 79% since 1994 in the UK. Estimated increase of 6.7% annually

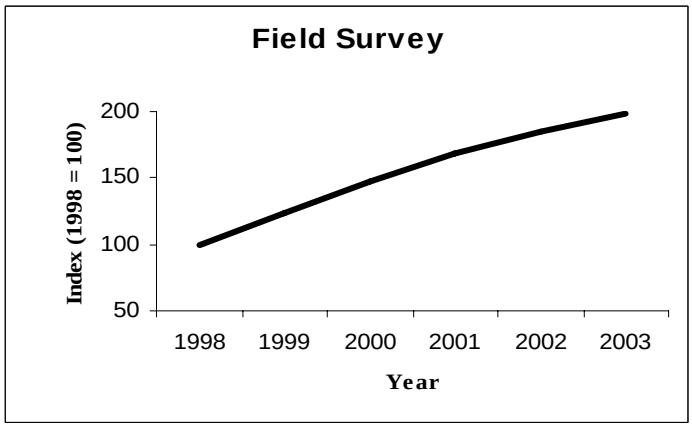


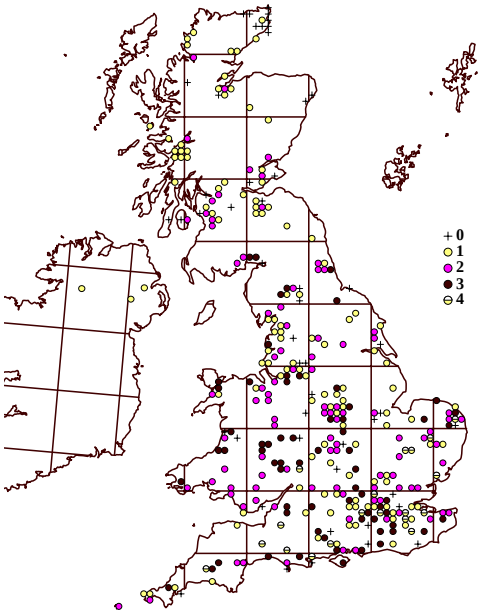
Field Survey

Random 1km2 allocated to volunteers
Combining transect and spot counts in 1km2
Two evening bat surveys completed in July
Noctule, Serotine, **Common pip**, **Soprano pip**

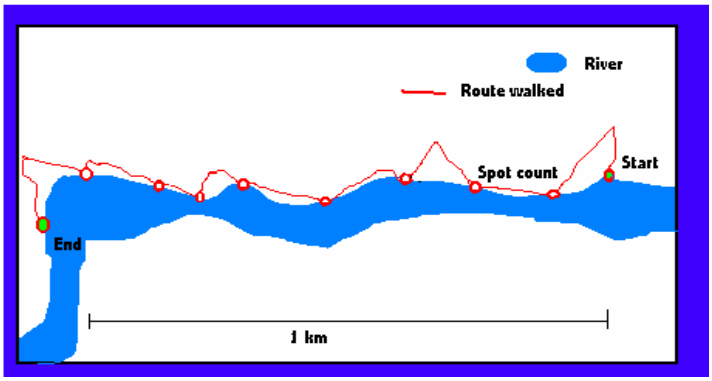
503 sites surveyed since 1998

Common pipistrelle results:
Significant increase estimated at 14.4% annually

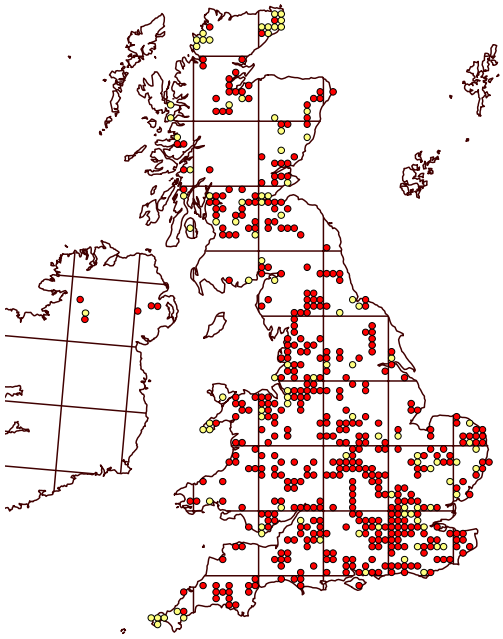




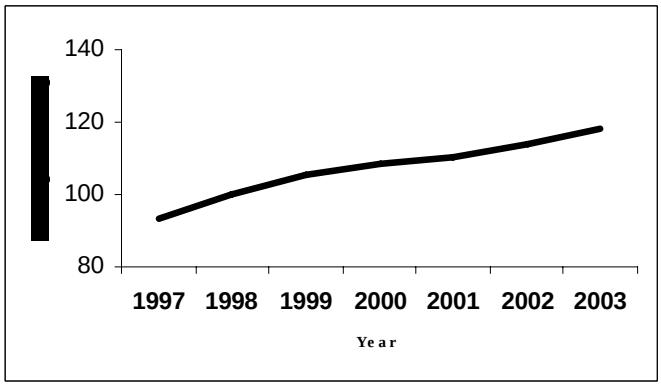
Daubenton's bat -Waterways Survey
Spot counts along a 1km stretch of waterway
Collaboration with River Habitat Survey (EA)
Two evening bat surveys in August



874 sites surveyed since 1997



Increase estimated at 4.4% annually,
but not significant at 5% level



Car-based roadside survey
Use of broadband detector attached to car allows involvement of new volunteers
Delivers country and regional monitoring with few volunteers
Projects with ROI and HMG BG 03 & 04
Delivers robust monitoring data for *Pipistrellus*, *Nyctalus*. Surveys for rarer species

Woodland Survey (Barbastelle bats)
Pilot project with DUET detector in woodland around 3 known roosts – barbastelle calls recorded
Surveys for all detectable woodland species
Encourage more volunteers to take part in 2005

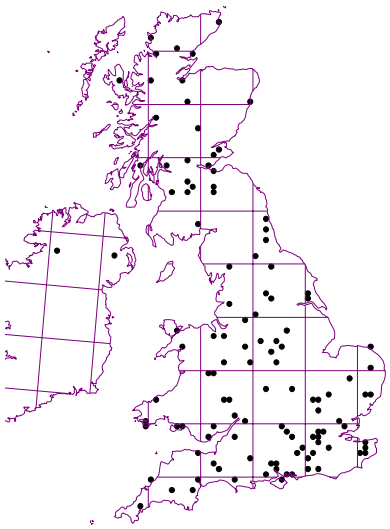
Surveyor Involvement 1997 - 2003

	Volunteers					Network	Visits
	Total	Eng	Scot	Wales	**NI**		
Colony	853	522	116	44	**26**	1,299	6,784
Field	617	273	60	19	**3**	1,343	4,305
Hibernation	83	403	87	29	**5**	395	3,333
TOTAL	1,553	1,198	263	92	**34**	3,037	14,386

Training 1997-2004

Over 120 Workshops

Training workshop leaders to deliver regional bat detector training
Ten Regional Trainers trained to date and 7 additional workshops run by new trainers
More workshops will be delivered in 2005



Proposed Bat Monitoring Framework in N. Ireland

Roadside Survey to monitor *Pipistrellus* and *Nyctalus* and additional data on other species
Waterway Survey to monitor *M. daubentonii* and additional data on other species
Woodland/historic site Survey to monitor *Myotis* and additional data on other species
Mist netting survey stratified by woodland to confirm *Myotis* to species and monitor for long-eared bats
Where possible, collect systematic data on other mammals/night birds simultaneously

	Car	Water	Wood Detector	Wood Netting
Com pip	Π	Π	Π	Π
Sop pip	Π	Π	Π	Π
Nath pip	(Π)	(Π)	(Π)	(Π)
Leisler's	Π	Π	Π	(Π)
Daub	((Π))	Π	((Π))	Π
Natterer's	((Π))	((Π))	((Π))	Π
Whi/bran?	((Π))	((Π))	((Π))	Π
BLE				Π

( ) = likely insufficient encounter for statistical monitoring
(( )) = Identification not 100% - mostly grouped as *Myotis*

Statistical Monitoring Targets

Roadside Survey – 100 sites / yr * 2 nights annually July/Aug
Waterway Survey – 50 sites / yr * 2 nights annually August
Woodland Survey – 50 sites / yr * 2 nights annually July
Woodland Netting – 25 sites / yr * 2 nights annually June - Sept

How many volunteers required?
25 volunteers (8 evenings) to implement Waterway and Woodland Survey
2 volunteers to implement car survey (5 evenings)
Total = 27 *committed* volunteers on 110 evenings
Additional time for mist netting / sonograms

Outputs/Requirements?
Output = Statistical monitoring for all bat species with trends for N.I. Full contribution to UK trends
Professional N.I. volunteer co-ordinator would help to deliver new volunteers to deliver monitoring framework

TM Volunteer co-ordinator
Excellent volunteer manager working for all 'Tracking Mammals' groups
Recruit/manage N.I. volunteers – one stop shop for 'TM' volunteers. Generic training *e.g.* map reading
Volunteers provided with training and survey protocols by specialist organisations
Cost-effective, shared approach that delivers well trained and motivated 'TM' volunteers

Summary
BCT/JNCC partnership delivers bat population trends at UK level
Framework outlined to deliver population trends for N. I.
BCT has invested in N.I. through delivering training workshops but more investment required
Shared TM volunteer co-ordinator in N.I. would be cost-effective resource for TM partnership

2. Mammal Surveillance and Monitoring in Northern Ireland. The Mammal Society. Presented by Phoebe Carter

The Mammal Society
The voice for British mammals and the only organisation solely dedicated to the study and conservation of all British mammals.

We work to protect British mammals, halt the decline of threatened species and advise on all issues affecting British mammals. We study mammals, identify the problems they face and promote conservation and other policies based on sound science.

Surveys, Training, Membership, Publications, Mammal recording, Conferences, Local mammal groups, Public events

The Mammal Society and Northern Ireland
Membership
England 84.5%
Scotland 7.4%
Wales 5.7%
NI 1.0%
RoI 1.4%

Past surveys

Survey	Year	Number of volunteers taking part					
		Antrim	Armagh	Coleraine	Derry	Down	Fermanagh
Roads survey	2000-2001	1	0	0	0	1	0
Fox Mange Survey	2001	2	1	0	0	2	0
Winter Mammal Monitoring	2001-2004	3	0	0	1	5	1
Mammals in Your Garden?	2002	0	0	1	1	1	0

Species Lists
Seven carnivores, two insectivores, six rodents, four artiodactyls, 3 lagomorphs, eight chiroptera. Many fewer species than in GB and fewer than the RoI. For example the National Water Shrew Survey is not applicable in NI

National Owl Pellet Survey
2 volunteers supplying owl pellets from Co. Kerry and Co. Derry
Different small mammal fauna in N. Ireland and the Republic means the results have to be analysed separately from GB
Limited records at present
Owl pellets need to be collected on a monthly basis and sent for analysis
The results from each batch of owl pellets will be sent to the volunteer

Reasons for low rates of participation
Surveys not tailored to the mammal fauna
Less publicity of surveys than in Great Britain
Fewer contacts and fewer members than in Great Britain

Increasing participation in surveys
Tailoring national surveys (where possible) to the mammal fauna of Northern Ireland and the Republic of Ireland.

Increasing publicity and developing more contacts in Northern Ireland
Training**,** current projects**,** attending public events**,** conferences

Training courses in Northern Ireland
2003 – The Mammal Society and EHS held a meeting designed to:
Increase the profile of mammal work in N. Ireland
Recruit volunteers for surveys
Increase training available to mammal workers
Schedule training courses to “Train the Trainers”

Training courses
Mammal Identification Course 2004
(accredited by The Mammal Society and the Field Studies Council)
Derrygonnelly FSC Centre, Co. Fermanagh 23-25th April 2004
20 participants and 2 trainers
Course funded by EHS

4 student places subsidised by EHS
All 20 participants passed with distinction!

Future Training Courses
All to be held at the Field Studies Centre, Derrygonnelly, Co. Fermanagh
Mammal Identification - 15-17th April and 12-14th August 2005.
Mammal Ecology and Conservation - 24-26th June 2005.
Small Mammal Ecology and Survey Techniques - 6th August 2005.

Current Projects
Provides:
Details of mammal projects taking place around the UK
Name and contact details of all the project organisers
Information on which projects are looking for volunteers to help out

Public Events
Book stall at the Animal Magic fair - Castle Espie, Co. Down
28-29th June, 2003, 26-27th June, 2004
The Mammal Society stand:
Answers queries and offers advice on all aspects of mammal biology
Publications on a range of mammal species
Highlighting appropriate surveys
Membership

Unearthing Mammals - Workshops for children - Peatlands Country Park, Co. Armagh
10-11th July, 2004
And in 2005
Workshops for children aged 8-12
Exploring the ways that scientists study mammals
Over 500 children and adults attended one of the workshops over the course of the weekend

The Mammal Society Conference
Regular attendance at, and presentations given by, mammal workers from both Northern and Southern Ireland.
2006 Conference to be held in Belfast

Future plans
Tailor surveys to the mammal fauna of Ireland
Increase publicity about forthcoming surveys
Continue developing training courses
Continue attendance at public events
2006 Conference in Belfast

Resulting in:
Increased numbers of volunteers taking part in our surveys
Enhanced understanding of the status of Irish mammals
Increased dissemination of current mammal research being undertaken in N. Ireland and the Republic of Ireland
Increased mammal records in N. Ireland and the Republic of Ireland

3. Mammals Trust UK Wildlife Surveys: Mammals on Roads, Living with Mammals. Presented by Clare Bowen.

Mammals Trust UK Surveys
MTUK currently runs two volunteer-based, UK wide wildlife surveys
Over 1100 volunteers take part in the surveys each year
They are both pilot schemes under the Tracking Mammals Partnership
Both surveys are carried out in collaboration with scientists from Royal Holloway, University of London, who analyse and assess the data collected

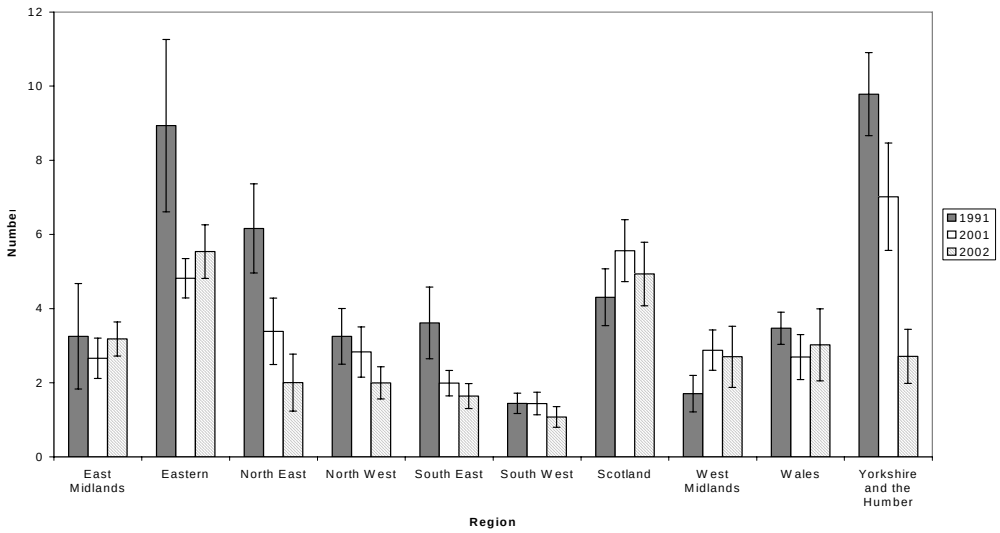
Mammals on Roads Overview
Four year pilot scheme 2001-2004, ongoing
Entirely volunteer based
Participants required to record mammal road kills
Results provide annual
estimates of
abundance in different
regions and landscape
types in the UK

Survey Methods
The survey is run between 1st July and 30th September every year
Road casualties and live sightings on routes of over 20 miles are recorded
Participants select their own journeys and must not resurvey the same route within 30 days
Route details are also carefully noted

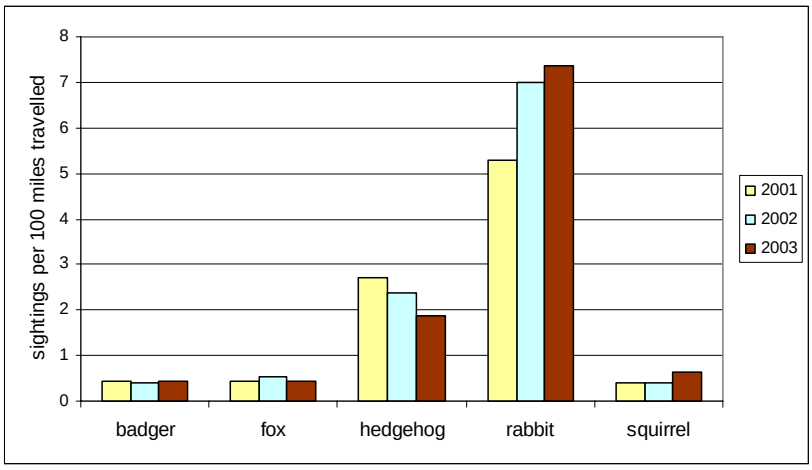
Data Handling and Report Production
All the data is inputted into a database at the MTUK offices, then geocoded and analysed
Feedback sent to all volunteers yearly
Full four year report due in summer 2005

Results for 2003 - UK coverage
44,125 miles of road surveyed
No journeys took place in NI in 2003 (30 in 2001-02)
Over 5,000 mammals sighted

Regional analyses for the hedgehog in 2002



Species Numbers over 3 years



Feedback to Volunteers
Four-page newsletter sent to all volunteers in June each year

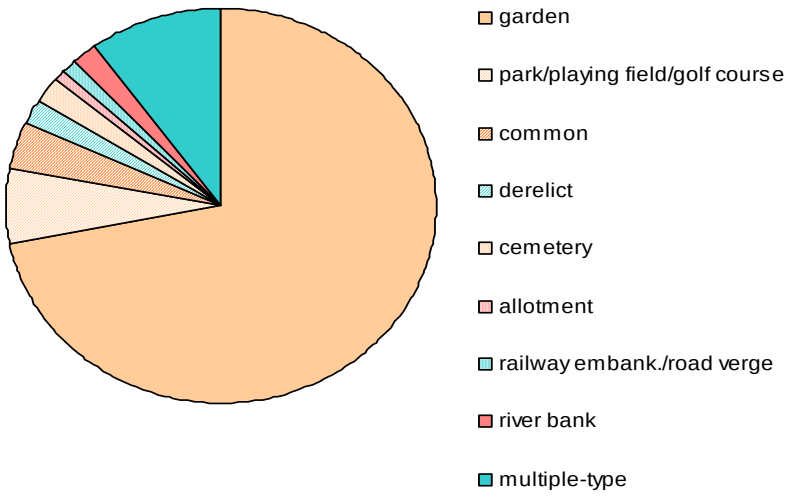
Living with Mammals Overview
Currently in its second year and planned to be ongoing
Entirely volunteer-based
Designed to produce effort-based indices of mammal abundance
Surveys green spaces within the built environment, not just gardens
Surveyors sent a full colour, 34 page mammal identification booklet as well as machine readable survey forms

Survey Methods
Runs for 13 weeks, from 1st April to 30th June
Volunteers must survey for a minimum of 8 weeks
Survey sites:
Any green space within 200m of buildings
E.g. gardens, parks, cemeteries, derelict ground, etc.
Survey information gathered:
Site features and nearby habitat
Time spent recording at dawn, day, dusk and night
Sightings – maximum number seen together
Field-signs

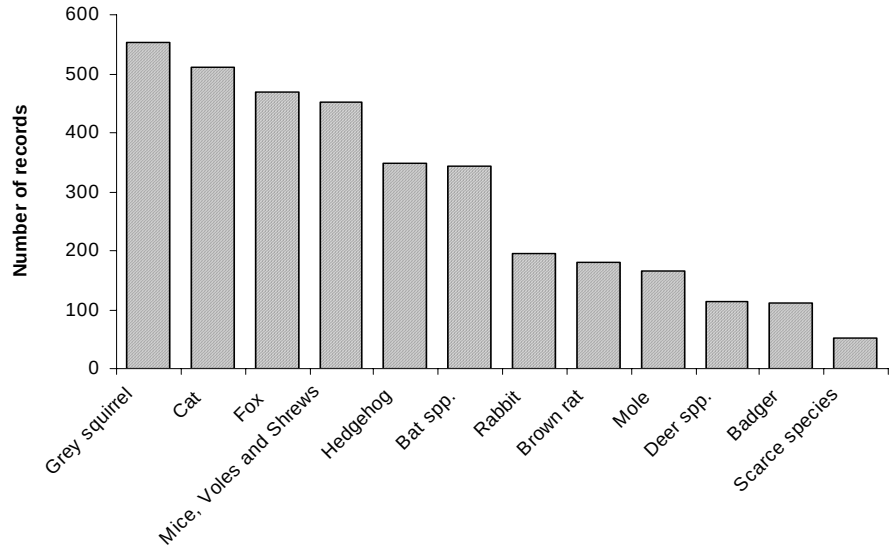
Data Handling and Report Production
All data electronically scanned
Entered into Access database and analysed
Four page feedback newsletter sent to all participants in December each year

Summary of Results in 2003 (and 2004)
808 returns in 2003 with a good geographic spread (784 returns in 2004)
But only 5 from NI in 2003, 0.6% of total! (3 from Belfast in 2004)
72% of sites surveyed were gardens (75% in 2004)

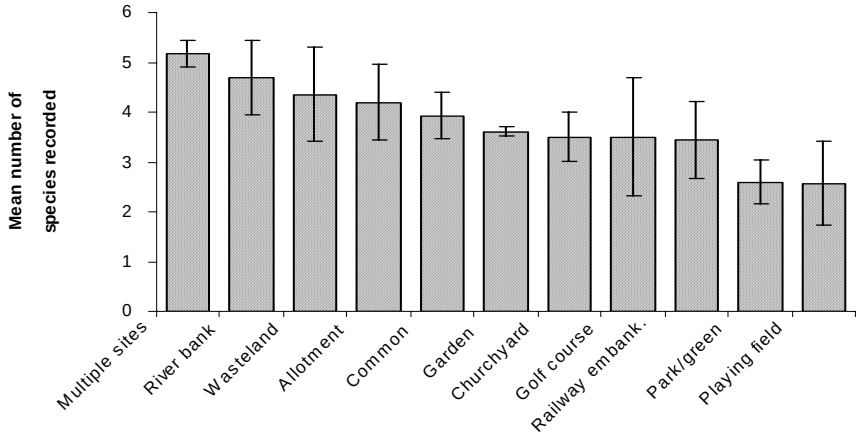
2003 Results – Types of Survey Sites



2003 Results – Species Recorded



2003 Results - Mean number of species recorded per site type



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Four page newsletter sent to all participants in December each year

Summary of Survey Designs

	Mammals on Roads	***Living with Mammals***
area of coverage	UK	UK
history	2001-2004 (annual; July – September) ongoing	2003-2004 (annual; April – June) ongoing
number of records	25000 (2001-2003); 5000 surveyed routes. 2004: 0 NI	800 sites/yr. 2004: 3 NI sites
data attributes	information about the route (start-, end- and way-points, road number) sp; location of sighting (mileage, road number, nearest town); time of sighting	maximum number of each sp seen together each week; field signs time spent recording at dawn, day, dusk and night
methodology	volunteer survey; surveyed routes of 20 miles or more; duplicated route segments are excluded from analyses aims to establish mammal road casualty and sighting indices in relation to biases (e.g. corpse half-life, road types, etc..)	volunteer survey; sites are green spaces within 200 m of buildings; sightings and fresh signs are recorded aims to produce effort-based indices of (pre-breeding) sp abundance.
reliability of data	unknown	unknown – probably good for common spp or spp groups (bats, deer etc.)
data owned by	PTES	PTES
data passed elsewhere?	will be publicly available in 2005	

Current Volunteer Recruitment
General Publicity
All PTES and MTUK supporters encouraged to take part on several occasions in appeals, newsletters and magazines
Local wildlife trusts and other wildlife organisations
Publicity in national and local press
Press releases to News Agencies, e.g. PA Press, Advance Media Information, Foresight, Reuters and DeHavilland. This is the way that a great deal of the media gets its stories.
Featured on various radio stations - e.g. BBC Radio 5 Live, BBC gardening shows, etc
BBC News online features the stories

Volunteer Recruitment
Focus on Northern Ireland
Contact with Ulster Wildlife Trust, who have circulated the survey information to their key staff and put leaflets in their visitor centres.
Press releases sent to regional press - Cool FM, Downtown Radio, Derry Journal Series, Q102.9FM, The Sentinel Series...
Contact with Ulster Museum who put leaflets on display

The Importance of Surveying in Ireland
Variation in species type, habitat, abundance and yearly trends?
Comparable environmental pressures / threats?

Involving the Republic of Ireland would be very valuable too as well as wildlife does not respect borders and there is a need to see the bigger picture!

Inspired Conclusion…
Encouraging Irish volunteers to take part has not been easy.
But the importance of encouraging volunteers and gathering mammal data from Northern Ireland as well as RoI has been recognised.
Need to forge links with Wildlife Trusts, Universities and other wildlife organisations as well as press.

4. Mammal Surveillance and Monitoring in Northern Ireland. Presented by John Milburne (EHS)

OTTER SURVEY OF IRELAND 1980-81
Peter and Linda Chapman carried out this survey for the Vincent Wildlife Trust
Alternate 50km squares were surveyed.
329 sites were surveyed in Northern Ireland.
Otter activity was recorded in 78% of sites.

OTTER SURVEY OF NORTHERN IRELAND 2001
EHS commissioned Aquatic and Terrestrial Environmental Consultants to carry out this survey.
131 of the Chapman's 258 positive sites were surveyed + 50 sites the Chapmans found to be negative.
441 new sites not looked at by the Chapmans were also surveyed.
The results of the 2001 survey will be published in the very near future.

THE DISTRIBUTION AND ABUNDANCE OF THE BADGER IN NORTHERN IRELAND 1994
This was a 3 year PhD study carried out by Sarah Feore
A total of 445 setts were found in the 133 x 1km squares surveyed.
Cage trapping and bait marking exercises were carried out in three separate areas to establish variations in group and territory sizes
Using this information + the NI land classification Feore estimated that there was a total of approximately 38,000 badgers in Northern Ireland

THE ECOLOGY AND DISTRIBUTION OF THE IRISH HARE
Karina Dingerkus carried out this 3 year PhD study reporting in 1997
A total of 150 randomly sampled 1km squares were chosen across the 23 land classes in Northern Ireland.
A daytime walked squares transect system was used to estimate the abundance of Irish hares.
The population of hares was estimated to be between 8,250 and 21,000 or between 1 and 2 per Square kilometre.

THE IRISH HARE SURVEY 2002
Queen's University were commissioned by EHS to carry out this survey and also to compare the day walked transect method with spotlight night driven transects. Night driven transects had been used previously by Queens to estimate fox abundance.
This study estimated an abundance of 1 hare per kilometre square

THE IRISH HARE SURVEY 2004
Queens were commissioned to carry out a survey using spotlight night driven transects repeating exactly the 2002 survey.
This survey estimated the density of hares to be between 5 and 6 per square kilometre.
Hare surveys will be carried out at regular intervals until at least 2010.

THE DISTRIBUTION AND ECOLOGY OF THE RED AND GREY SQUIRREL IN NORTHERN IRELAND
This PhD study by Dennis Tangney reported in 1997 involved the surveying of all woodlands of 15 hectares or more in Northern Ireland.
Presence or absence of both species was assessed in 261 woodlands using sightings, feeding evidence, presence of dreys and bark stripping.
West Tyrone and Londonderry, upland Fermanagh and the Antrim Coastal escarpment including adjacent coniferous plantations incorporated the majority of the range of the red squirrel.

THE DISTRIBUTION OF THE RED AND GREY SQUIRREL IN NORTHERN IRELAND 2002
EHS commissioned Queens University to revisit 80 of the sites surveyed by Tangney to update the current status of the Red Squirrel and to examine the range expansion of the Grey Squirrel.
The survey concluded that Grey Squirrels have undergone rapid and continuing range expansion replacing Red Squirrels in many woodlands and the largest concentration of "Red Squirrel only" woodlands are now in East Antrim.

COMMUNITY STRUCTURE AND RESOURCE DIVISION IN BATS
As part of this PhD study which reported in 1999, Jonathan Russ conducted night driven transects using a time expansion bat detector to estimate the abundance of each species of bat in Northern Ireland.

5. Mammal surveys in NI. Presented by Prof W.I.Montgomery, The Queen's University of Belfast

Outline of talk
Why monitor mammals in NI?
What are the unique problems?
What studies have been undertaken?
What lessons can be learned?
What will be the future?
Acknowledgements

Why monitor mammals in NI?
Mammals are ecologically important
Mammal community of Ireland is impoverished but unique
EU/UK legislative requirements of jurisdiction
Species of conservation interest
Species of agricultural/fisheries/animal welfare interest
Ecological impact of invasive species

What are the unique problems?
Large blocks of landscape but heterogeneous and fine grained
Survey design critical

Regional isolation within UK
Irish biogeography in two jurisdictions
Inadequate finance/resources
Inadequate supply of volunteers

What studies have been undertaken?
Badger - based on GB km2 sett survey, all Ireland, NILC used to extrapolate to unsurveyed areas, variation in group size used in estimate of population
Squirrel - 15ha+ woodland site based, all sites covered in daytime survey, 'joined' with RoI, repeated on edge of Grey expansion

What studies have been undertaken?
Irish hare - daytime, stratified random km2 based on NILC, extrapolation to unsurveyed areas
GB survey methods for Brown hare not appropriate due to low densities
Irish hare - night, driven transects, distance sampling, transects in all counties and representative of NILC
Similar results but quicker, can detect change in abundance

What studies have been undertaken?
Red fox - night, driven transects, two upland and two lowland, distance sampling
Bats - sound, night, stratified random km2 throughout NI, random points in each square
Bats - sound, night driven transect, relative abundance, habitat and seasonal variation, potential to use distance sampling
Common seal - site, boat based
Otter/mink - daytime, stratified random 600m

What studies have been undertaken?
Common seal - DOE/EHS, site, boat based at haul-outs, Co Down coast/Strangford, monthly, long term, tracking change in abundance and distribution
Otter - originally surveyed in non random manner during 1980s, limited value due to methodology
Sites resurveyed afford estimate of change
Otter/mink - daytime, stratified random based on NILC, each site 600m

What lessons can be learned?
Survey objectives and timing are critical
Site based surveys must cover all available habitat
Stratified random methods enable extrapolation to unsurveyed areas, non-random site selection does not
Distance sampling can be representative and cost effective

What lessons can be learned?
Resurveys must be based on random selection of previous sample sites
Details of methods can affect interpretation and may not appear in publications or reports
Limited number of experienced fieldworkers produce consistent surveys
Only just establishing baseline data for most species

What will be the future?
Less piecemeal, ad hoc surveys
More experienced fieldworkers
Establishing baseline data for all critical species

Implementation of monitoring programmes capable of detecting change at an appropriate scale in a cost effective manner
Comparability and integration with UK and RoI
Differentiation of monitoring and research

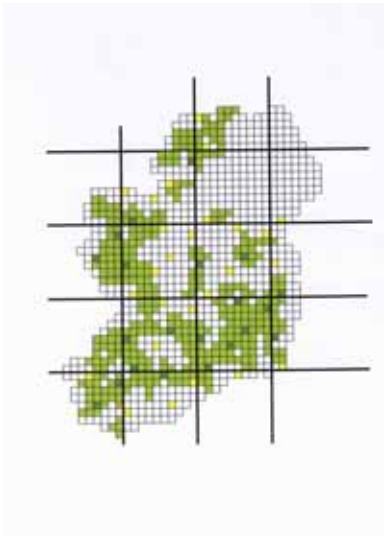
Acknowledgements -
Badgers – Feore, Sadlier
Squirrels – Tangney, O'Neill
Hares – Dingerkus, Tosh, Reid
Bats – Russ
Foxes –Looney, O'Mahony
Seals – Montgomery-Watson
Otters/mink – Preston, Aughey, Lundy
Generally – EHS, DARD, Portig, McDonald

6. Review of methodologies and practicalities of recent and ongoing mammal surveys in the Republic of Ireland. Presented by Ferdia Marnell and Deirdre Lynn (National Parks and Wildlife Service, Department of Environment, Heritage and Local Government)

Ongoing and recent mammal surveys
Otter, Bats, Badger [Hares], Seals, Cetaceans.

Otter
New National Otter survey started summer 2004
Detailed spec prepared in house with some modifications to methodology of 1980/81 and 1990/91 surveys.
Project assigned following invited tender and interviews.
Trinity College team managing survey and doing most of the field work with some field input from NPWS staff.
Training course for NPWS staff.
Data are being stored on Recorder.

Map of initial 10km survey squares = 500 sites.



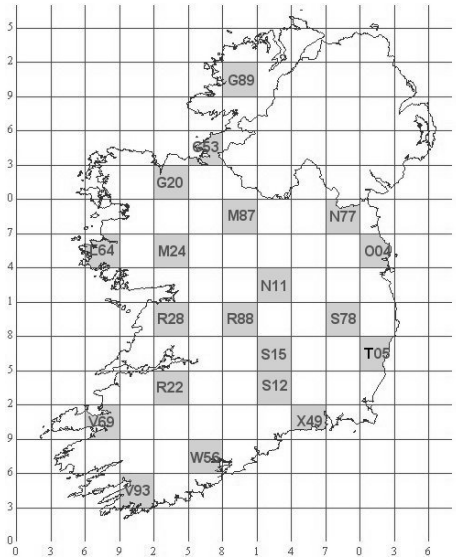
Bats
Annual counts of lesser horseshoe [Habitats Directive: Annex II] summer and winter roosts by NPWS staff
Access database maintained centrally.
Because of Annex IV listing of all bats (9 spp. in Ireland) we're looking at developing a broader bat monitoring programme.

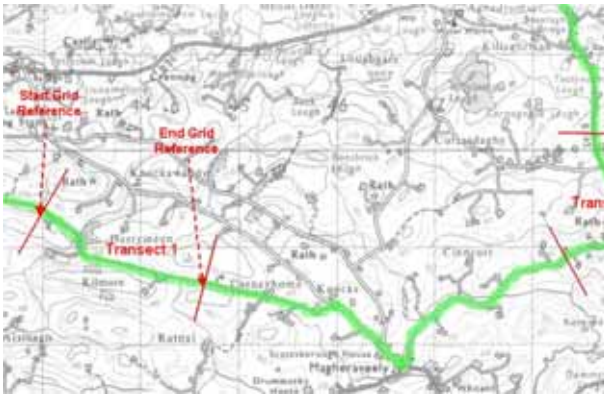
Car transect survey for bats

Pilot study initiated by Heritage Council in 2003.
Pilot study extended for second year in 2004 with 50/50 funding NPWS / HC.
Project devised and managed initially by BCT; handed over to Bat Conservation Ireland in 2004.
BCT continue to do statistical analysis.

Methodology

30km squares randomly selected. Surveyed, by volunteers, in 2003 17 in 2004, 9 by NPWS
20 * 1.6 km monitoring transects within each survey route, spaced 3.2 km apart
Data collected via bat detector onto mini-disk
Sonogram analysis followed by statistical analysis
Target: At minimum, meet IUCN-defined Red Alerts:
Red 'Alert' - 50% population loss after 25 years equivalent to 2.73% annual decline
Amber 'Alert' - 25% loss after 25 years equivalent to 1.14% annual decline
Only 3 spp. being picked up in sufficient nos.





Next up… a hare survey

A badger survey carried out 10 years ago produced detailed habitat information for 879 1km sq. (including 144 in the North).
An ecological consultant managed project.
Most of the fieldwork done by NPWS.
Hoping to re-survey sample of these squares as part of a national hare survey.

Harbour seal survey - partnership

NPWS - Overall project leaders
Collation of data from NPWS personnel in the Republic of Ireland
Ground-counts at selected harbour seal colonies
Coastal and Marine Resource Centre (UCC) - Principal researchers
Ground-counts at selected harbour seal colonies
Aerial survey co-ordination and operation
Data analysis
Report-writing

NATURA Environment Consultants
Co-ordination of ground-counts

Design of datasheets and collation of all data
Ground-counts at selected harbour seal colonies
Report-writing

Sea Mammal Research Unit (St. Andrews)
Aerial survey planning and operation
Assistance with data analysis

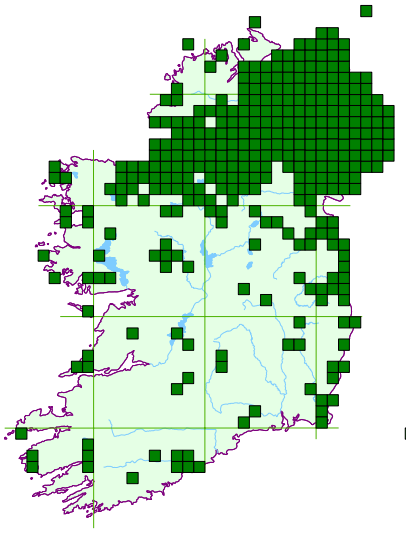
Other
NUI, Galway conducted some ground-counts
EHS provided additional advice

Grey seal counts by NPW staff, on ad hoc basis since 1978
Further details and results in Irish Wildlife Manuals No. 13 & 14 on www.npws.ie

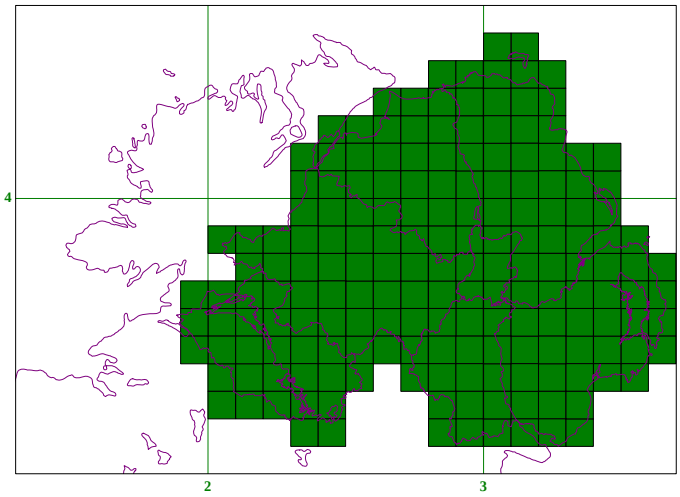
Cetacean surveillance
Continuous collection: sightings and strandings
Co-ordinated by the Irish Whale and Dolphin Group
Funded by Heritage Council and NPW
Carried out by IWDG members, the general public and the Irish Air Corps
Data stored in an interactive internet database - www.iwdg.ie

7. NI Mammal Database: The Centre for Environmental Data and Recording (CEDaR). Presented by Damian McFerran

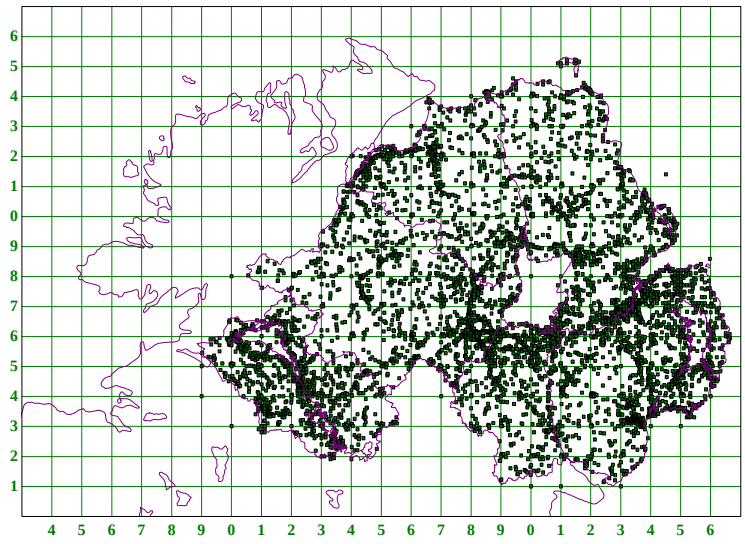
The facts
Total number of Records - 16,425
Total number of NI Recs – 14,911



10km square Distribution



Site Distribution



NI Data set

Period	Recs
Pre 1997	8,803 *(8,605 collated 1997-2000)
1997 – 2000	5,042
2000 -	1,066
Total	**14,911**

NI Mammal Survey (1997-2000)
5,042 records collated
Simple letter – dead mammals on the road
Simple recording card (A4: site name, grid, date, recorder, abd., comment)
220 recorders
Map feedback
Collate historical records (C.D. Deane, Museum)
NI Mammal Amphibian & Reptile (NI MARS) web site

The Future
Recorder 6 – Seal Count Import Wizard
Updating of mammal web pages
Urban wildlife/mammals initiative
Data sets yet to be added
Otter & incidental mammal recs QUERCUS
Current/future recording schemes