THE Mammal SOCIETY

MAMMAL NEWS

www.mammal.org.uk

Autumn 2012 • Issue 164

PINE MARTEN - CAPERCAILLIE CONFLICT • DNA TECHNIQUES ON SQUIRRELS
REHAB FOR OTTERS • NEWP • BISON IN BRITAIN • BADGERS AND PEOPLE

Mammals in the News

Geoffroy's bat discovered, in the UK, for the first time by a Mammal Society member

A species of bat normally found in continental Europe – the Geoffroy's bat – has been identified in the UK for the first time ever on National Trust land in West Sussex.
Mammal Society member and Ecologist Daniel Whitby was conducting surveys in early September when he caught a male Geoffroy's bat (*Myotis emarginatus*), a small species which weighs from 6-9 g and has woolly fur with a foxy red tint to it.
Daniel said: "It was a real surprise to catch this bat. Geoffroy's bat is nicknamed the Notch-eared bat because it has a distinctive notch in the top part of its ear. From this and other identification features; I quickly realized what an interesting bat I was holding".

Muntjac. Photograph by Chris Knights @ Mail Online

Scotland's Most Wanted

In July, Scottish Natural Heritage's Wildlife Operation Unit responded swiftly to a report of 2 Muntjac deer seen in a forest plantation near Sanguhar. Despite 4 weeks monitoring, using night vision binoculars and remotely operated trail cameras, no further sightings occurred. Muntjac deer have spread rapidly across England and Wales over the past 40 years and caused extensive crop, and road safety problems. They are one of the most destructive pests in Britain and have a highly detrimental effect on young trees and coppiced woodland. These small deer are now expanding northward, but so far they have not become established in Scotland. If Scotland did have to manage an established Munjtac population, SNH has estimated the costs would be up to £2 million a year. SNH's Wildlife Management office continues to ask land owners and deer managers to remain vigilant and shoot any Muntjac deer on sight. Muntjac, as a non-native species, are not subject to statutory seasons set out within the Deer (Scotland) Act 1996. Deer managers are now required by law to report any sightings to the SNH Wildlife Operations Unit as soon as they occur. Anyone with any information on Muntjac deer in Scotland may contact SNH on **01463 725365** or e-mail **WILDLIFEOPS@snh.gov.uk**.

Human-Seal Conflict

Common seal, *phoca vitulina*. Photograph: Rex Features @The Guardian

On the 7th June, staff arriving at the Dingle Wildlife and Seal Sanctuary discovered heads of a common seal and a grey seal nailed to the entrance. This came in the wake of fishermen's claims of increasing damage caused by seals. This sad event may be the action of a single person or small group but will have a negative impact on the wider area and economy. Dingle is internationally famous as the home of Fungie, the bottlenose dolphin and the DWSS is a major tourist attraction.
The Irish Seal Sanctuary is working with the Industry and scientists in attempting to resolve conflicts between fishermen and seals. While still seeking a reduction in seal numbers the Irish Fish Producers Organisation have condemned this illegal action as totally irresponsible as it only brings the fishing industry into disrepute.

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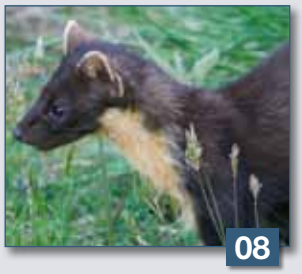

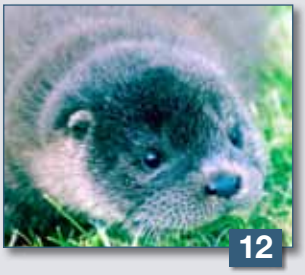

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Mammal Matters

Marina Pacheco
CEO, The Mammal Society,
mpacheco@themammalsociety.org

> The aim of Mammal Notes is to disseminate short articles of useful research on new techniques and observations on mammals.

Those of you who visit our web pages regularly will hopefully have seen quite a change recently. We've been updating the site, to be able to provide more for our members. The site content is still being finalised so if you find some things are missing, don't worry they will be back shortly. We are also experimenting with new ways of laying out information to make it easier, hopefully, to find what you are looking for. Please do let us know what you think of the website and where we can improve.

I would like to thank Dawn Scott for all the great work she's done establishing Mammal Notes and acting as its first editor. Dawn is now stepping down from this role and I am delighted to announce that John Gurnell has agreed to become the new editor, welcome aboard John. We'll be relaunching Mammal Notes shortly with new guidance and possibly a new name. The aim of Mammal Notes is to disseminate short articles of useful research on new techniques and observations on mammals. Could you come up with a more catchy or descriptive name than Mammal Notes? If so, then please let us know.

The Mammal Atlas is progressing well, we now have verifiers covering most of the country, but do have a few gaps so are searching for Mammal Recorders. If you haven't heard from us, and you are a Mammal Recorder, it means we haven't got your contact details, so please do get in touch. We are also working to have online maps with the records that have come in available for anyone to see. At the moment people can only see the map once they've entered a record which is somewhat limiting.

For those of you who prefer your information in a paper based format, I'm pleased to announce the publication of two new books, Squirrels by Gurnell, Lurtz and Wauters updating all we know about squirrels in Europe, and BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation (more on page 22) a useful publication for anyone carrying out surveys on these BAP mammals; be that for research or as a consultant. Having said they're in a paper form, you can already get The Hedgehog by Pat Morris on Kindle, and BAP Mammals and Squirrels will soon follow. Our new social media and publications intern be working on getting the rest of our back catalogue onto both Kindle and iBooks.

Note from The Editor

I am hoping that when you receive this issue we are enjoying a bit of an Indian summer after such a wet start. You will see some changes have been made to the design and magazine layout. I would very much like to receive your thoughts and suggestions on the changes. Please send them to the editor's email.

Correction: Some of you may be wondering about the "new" species mentioned in last issue, in the Spring Conference Review. However, Ian Montgomery was discussing the greater white-toothed shrew and not as we stated, a greater white tailed shew.

Hilary Conlan
Editor
The Mammal Society
editor@themammalsociety.org.uk

New Mammal Atlas:

Focus on **Fallow Deer** *Dama dama*

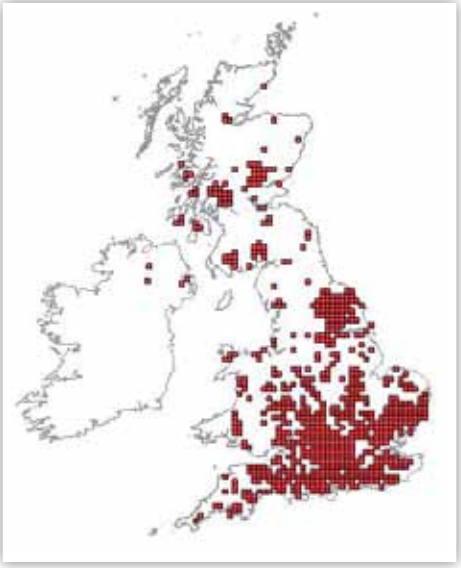
All the deer have been expanding their ranges since the 1993 atlas was published and comparing the two maps here provides some indication of this. Where there were very few deer in Wales then (Fallow were in about 31 hectads, Roe in 7, Red in 4, Sika absent), Fallow Deer are now close to ubiquitous. However, the recent map suggests a retreat in South West England, Yorkshire and, especially, in Scotland, which is surely a matter of records not being entered, rather than Fallow Deer not being present. So there is plenty to attract the attention of active recorders. The map published by Alastair Ward in 2005 (*Mammal Review* 35:168) highlighted the expansion of range in North Wales, East Midlands and parts of Scotland (Perthshire, Argyll, Galloway), which has probably continued. We need to prove it.

This is a species where sightings are needed, but at dusk or dawn Fallow Deer are usually reasonably easy to spot. Signs are questionable. Both slots and droppings may indicate that deer are present, but being certain that they are Fallow Deer, rather than the similar-sized Sika, is always difficult to establish confidently. Even sightings can be uncertain – dark morph Fallow Deer, seen briefly, can look like winter Sika, and the spotted coats of both in summer can also cause confusion if the deer are poorly seen. With regular sightings, of course, they are easy to distinguish, not only by sight but also, in autumn, by the very different sounds that rutting bucks produce. Both the grunting of a Fallow buck and the whistle of a Sika are very memorable.

If Fallow Deer are not recorded for your local hectads, check the boundaries of woodland for tracks of them leaving to feed in adjacent farmland in the evening, and returning to lie up in the woodland at dawn. Revisit promising areas towards dusk, in the hope of seeing them doing so. Make contact with local estate workers or foresters. Especially, make sure the records get into the local (county?) recorder and are passed on to NBN.

Good hunting!

D. W. Yalden



Records for Fallow deer (*Dama dama*) in Great Britain and Ireland between 1960 and 1999.

10km squares with records for *Dama dama* (Fallow deer) in Great Britain and Ireland, 2000 to 2012

This map is courtesy of the NBN Gateway and includes information from a large number of data providers. The full list of data providers is too long to list here, but can be found on the NBN Gateway at the following link **http://data.nbn.org.uk/gridMap/gridMap.jsp?allDs=1&srchSpKey=NHMSYS0000080207*** The NBN and its data contributors bear no responsibility for the further analysis or interpretation of this material, data and/or information.

Mammals are desperately under-recorded in the British Isles. Through the National Mammal Atlas Project (NMAP), we are working with county mammal recorders and local record centres to verify records and collate data for the first national mammal atlas in over 20 years. But importantly we need you to submit mammal records to the project, either online at **www.mammal.org.uk/nmap** or via your county recorder.

Louise Sleeman, Atlas Intern, atlas@themammalsociety.org.

Fallow deer. Photograph by Brian Phipps

The Mammal Society

Survey Programme Updates

This year the Mammal Society has begun exciting new developments to our surveys programme, to not only increase participation, but the range of surveys we run and the mammals we survey, to help fill the gaps in our knowledge of mammals.

On the 1st of September, our Mini Mammal Monitoring Scheme started again, with September's survey being Low Density Live Trapping. October's survey is the Bait Tube Survey and DNA Kits are now available in the online shop at **www.mammal.org.uk/shop**.

The scheme, which began in 2009, has been a success for the Society with volunteers collecting valuable population and distribution data for small mammals across the country. We have sustained a small core of committed volunteers since the beginning of the programme and are continuing to look for new volunteers to join us. This year we have extended our coverage of volunteers across the country, confirming new tetrads in northern Scotland and the south west of Wales.

We appreciate that volunteers give up their valuable time to help this project and we would like to make the scheme easier and more accessible to as many people as possible. To that end, we have simplified how sites are allocated, so instead of having to choose one of three random sites, anywhere up to 10km away from their location of choice, the volunteer can choose sites adjacent to their original focus for site selection.

Survey strategy into the future

The Mammal Society is currently looking at developing a full calendar of surveys that includes all terrestrial mammals. We would like to create a more thorough survey programme, developing methodologies for riparian, woodland and farmland mammals, at different times of the year, giving the volunteers a fantastic opportunity to survey a wide range of species. These surveys also have an overarching aim of substantially increasing the amount of information available on mammal populations, which will support our National Mammal Atlas Project in creating a mammal atlas for the first time in over 20 years.

Richard Austin, Surveys Intern
surveys@themammalsociety.org

Welcome to our new Media & Publications Intern Anna

My love for the outdoors began at an early age when eating mud, rock pooling and making holes in my clothes! At the age of 21 this has now matured into a genuine passion for global environmental issues and species conservation. I have recently graduated from Exeter University where I spent 3 years studying Conservation Biology and Ecology. During my degree I was lucky enough to explore the Cornish coast, Northern Scotland, the Isles of Scilly and South Africa where I learnt first hand about some incredible habitats and ecosystems. As well as gaining an appreciation for wildlife, I have also become increasingly aware of the value of people within conservation. I am determined to help increase public awareness and engage people from all backgrounds about the worth of our natural world. As the new media intern for The Mammal Society my role is to help increase our online profile on social media platforms such as Twitter and Facebook. For the next 6 months I will be helping to develop the charity's communications strategy and assist with the marketing of its publications. I have lots of projects to get stuck into and I am already thoroughly enjoying working within a busy team of mammal enthusiasts!

Anna Rogers, Media & Publications Intern
media@themammalsociety.org

Events News

The Mammal Society's

Autumn Regional Seminar 2012

11th November, Newbattle Abbey College, Dalkeith, Midlothian, EH22 3LL

There are still spaces available for this event in the beautiful surroundings of Newbattle Abbey College, delivered in conjunction with Lothian and Borders Mammal Group. The day will include talks from Andy Riches of Scottish Badgers, Roisin Campbell-Palmer of RZSS and Johnny Birks covering topics such as dealing with wildlife crime, Red Squirrels, Pine Martens and the Scottish Beaver Trial and much, much more.

Lothians and Borders Mammal Group (LaBMaG)

Prices: Non member £30 / Mammal Society member £25 / All students £20

Please note, these prices include tea/coffees and lunch but not accommodation.

Book your place now at **www.mammal.org.uk/shop** or call us on **023 8023 7874**

Hurry - Only 4 weeks left to book!

11th International Mammalogical Congress

Queen's University, Belfast, 11th-16th August 2013

IMC is held every four years and attracts over 1000 mammalogists working in universities and research institutes and for government and conservation bodies from around the world. The provisional programme of IMC11 comprises 6 plenary speakers, and over 40 symposia and workshops. Each symposium will be made up of 10 or more spoken papers on a theme which may be process based, e.g. reproductive strategies, or deal with a particular issue e.g. wildlife-dog interactions, or taxonomic group, e.g. rodent social behaviour. Symposia will be supported by poster sessions.

The scientific programme is the responsibility of the Scientific Committee made up of well known researchers from throughout the world but primarily the UK, Ireland and the rest of Europe. The Scientific Committee is chaired by Tim Clutton-Brock, Cambridge. The responsibility of delivering IMC falls on the Local Organising Committee, chaired by Ian Montgomery based at Queen's. Catherine O'Reilly is the Mammal Society representative of the LOC.

The event has four 'working' days with a half and one day tours on the middle day to allow more informal networking and opportunities to visit areas of interest e.g. Giant's Causeway and Bushmills distillery. This is the first time the congress has been held in Europe since 1989. IMC11 will be held at Queen's University of Belfast but the host society is The Mammal Society and both the UK and Ireland are the host countries.

Queen's University was originally a college of the University of Ireland founded in 1845 with Cork and Galway. IMC11 will be based around the central site of Queen's making use of the Lanyon Building. We have over 12 lecture theatres and rooms (60-250 seats) around this site, a 1200 seater auditorium and various additional space which will add greatly to IMC11. For example, we hope to run a photographic competition in the MacNaughton Gallery and to make use of the Queen's Film Theatre to show mammalogical blockbusters.

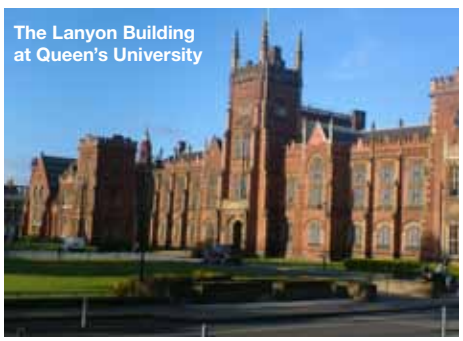
The logo of IMC11 is a stylised Irish hare against a background of a lunula, a thin, crescent-shaped, golden plate worn by an elite stratum of society during Neolithic times in parts of Europe and especially Ireland. This reflects the theme of human and wild mammal interactions which occur throughout the scientific programme. The Irish hare has been in Ireland since before the last glacial maximum, and is distinct from Scottish or other mountain hares. It is strongly influenced by agricultural intensification and also climatic change and has a complex relationships with people at once revered in Irish culture, but also used in hare coursing.

It is hoped that IMC11 will be the largest and most diverse ever with regard to subject matter and origin of delegates. We encourage all those with interests in the biology of mammals, and their conservation and management, to visit the IMC11 website.

We will be posting information about plenary speakers and symposia etc from now on but details of accommodation and registration will require a little longer to finalise. Calls for papers and posters and registration will be early in 2013.

We would also like to hear from postgraduate students working on mammals from any institution in the UK and Ireland, who would be willing to assist at the registration desk and in the lecture rooms at Queen's during the event. We are particularly keen to see a strong turnout among early career mammalogists who would benefit from making international contacts with potential collaborators and identifying possible career opportunities. We are hoping to provide around 40 student volunteers with the opportunity of participating fully in the congress at an affordable rate. Contact **i.montgomery@qub.ac.uk** to record your interest and we will keep you informed about what may be on offer with respect to financial support in return for helping to run IMC11.

(Above) IMC11 Logo designed by MJ Montgomery



The Lanyon Building at Queen's University

The Mammal Society's

Spring Conference 2013

XFI Building – The University of Exeter, 20th-21st April 2013

Our Spring Conference, this year supported by Devon Mammal Group, acts as a forum where mammal experts and enthusiasts can meet in a friendly and relaxed atmosphere, hear the results of new research and conservation work, and discuss issues. We will have a keynote lecture on both days of the conference this year.

Due to the limited number of spaces available, we are restricting bookings to members only until 31st October 2012. Additionally, we can only guarantee accommodation for bookings made before 20th December, after which it will be available on a first come first served basis. As a result, we strongly advise booking as early as you can onto the event.

The Cranbrook Lecture, which is free and open to the public, will take place on Friday 19th April at the same venue and will be delivered by Dr Pat Morris.

Devon Mammal Group

Member Prices:

Saturday day – including Teas & Coffees and Lunch - £85

Sunday day – including Teas & Coffees and Lunch - £85

Conference Dinner and Entertainment – £35

Full conference package inc. Saturday night accommodation - £185

Additional night's accommodation:

On Friday 19th and Sunday 22nd April – £40 per night

To assist members in spreading the cost of attendance, we are offering the option to pay for attendance over 3 monthly payments (the final payment being in March). Please call the office on 023 80237874 to arrange this.

Call for Papers:

The deadline for submission of abstracts for papers or posters is 31st October 2012. Further information on submission requirements, the format for abstracts, student bursaries and prizes are available at **www.mammal.org.uk/conference**.

Alternatively, you can contact Liz Chadwick, the Scientific Programme Coordinator, for more information via **abstracts@themammalsociety.org** or **02920 874046**.

Notice of the

59th Annual General Meeting

of The Mammal Society – 20th April 2013

The Annual General Meeting will be held on Saturday 20th April 2013 at 2.15pm in The XFI Building, The University of Exeter, Streatham Court, Rennes Drive, Exeter EX4 4ST.

Any members wishing to have an item on the agenda for the AGM are requested to notify the Honorary Secretary in writing no later than 9th March 2013.

Nomination for Council Members for the Mammal Society

Officers of Council: The President and all officers must retire each annual meeting. All are offering themselves for immediate re-election.

Ordinary members of Council: 2 members of Council are due to retire in April 2013. Both have offered themselves for re-election.

A reminder for The Mammal Society Articles of Association "Any two members (of The Mammal Society) shall be at liberty to nominate any other full member to serve as a member of the Council. The proposer shall ascertain that the person nominated by him is willing to be so nominated.

The name of each full member so nominated, together with the names of his proposer and seconder, shall be sent in writing to the Secretary of the Society at least fourteen days before the Annual General Meeting".

Nominations for Officer of Council duly proposed and seconded in writing and countersigned by nominee should be sent to:
The Honorary Secretary, The Mammal Society, 3 The Carronades, New Road, Southampton, SO14 0AA.
Or emailed to **info@themammalsociety.org**.

Pine Marten-Capercaillie Conflict

Should pine martens in Scotland be culled?

Dr Fiona Mathews, University of Exeter

The pine marten *Martes martes* is one Britain's rarest and most elusive mammals. After years of persecution and progressive loss of its woodland habitat, the species came near to extinction in the early 1900s, clinging on primarily in the remote Highlands of north-west Scotland. Recognising its perilous state, strong protection is now given to the pine marten under both British and European law. Over recent years, it has begun to make a slow comeback. The best populations remain in the traditional Highland strongholds, but there is evidence of some recolonisation of other parts of its former range: anecdotal reports of its spread in Scotland have been supported by this summer's pine marten survey by The Vincent Wildlife Trust and Scottish Natural Heritage. Small populations exist in England and Wales, and there has been a successful reintroduction to Galloway Forest in south-west Scotland.

The pine marten is a natural predator of the eggs and chicks of the charismatic capercaillie *Tetrao urogallus*. This ground-nesting bird, the largest member of the grouse family, is, like the pine marten, of great conservation concern. Again like the pine marten, it is legally protected in Britain, and is a UK Biodiversity Action Plan (BAP) species. Unlike the pine marten, which seems to be in the early stages of recovery, capercaillie populations are in steady decline. Proposals have therefore been made by the Scottish Gamekeepers' Association for licensed culls of pine martens in selected areas in order to promote capercaillie conservation. In view of the pine marten's peripheral role in the capercaillie's decline, The Mammal Society is extremely concerned about these proposals and is urging other conservation organisations to join with us in opposing them.

The capercaillie in Britain

The capercaillie is a cold-adapted, ground-nesting bird of the boreal forest zone and mountain ranges of northern and north-eastern Eurasia. It is dependent on conifer forests with an open canopy, a rich internal structure and a dense ground cover in which *Vaccinium* shrubs are abundant. Pine martens and capercaillie have co-existed across northern Europe for 12,000 years; across its range, capercaillie populations breed successfully in the presence of pine martens and a range of other predators. However, the conservation status of the capercaillie in Britain is particularly poor. Following its extinction in Britain and Ireland in about 1770 (probably due to the combined effects of deforestation and over-hunting), the capercaillie was reintroduced to Scotland in 1837, using Swedish stock. It thrived in central, north and north-east Scotland until the mid-1970s, but then began a sustained decline that now threatens the survival of the capercaillie in Britain for the second time. A survey in Scotland in 2009 suggested that the population had fallen to 1,268 birds; this is 36% lower than the previous estimate in 2003/04. Currently, about three-quarters of the capercaillie population is found in forests in Badenoch and Strathspey in north-east Scotland.

> This survey found no evidence to suggest that pine martens are impacting upon capercaillie breeding success

The survival, breeding success and productivity of capercaillie populations are influenced by many factors. Of these, the most important appear to be habitat and weather. Woodlands that are small and fragmented, and those with shrub layers heavily browsed by deer, may not support successful breeding attempts. In addition, wetter Junes, part of a long-term weather trend in Scotland, adversely affect the survival of chicks. It is also thought that winter disturbance by skiers and hill walkers may affect adult survival. Mortality has also been caused by collisions with deer fences (many of which were installed in an attempt to reduce deer browsing which was degrading capercaillie habitat). Finally, predation of eggs and chicks by foxes, corvids and other predators influences breeding success. Substantial effort has been invested by land managers in habitat management and predator control (especially of foxes and crows) to conserve the capercaillie population in north-east Scotland.

Pine marten conservation

The pine marten is a native carnivore that mainly occupies wooded habitats, where it takes a wide range of food including small rodents, birds, invertebrates and fruit. The animals are long-lived and solitary; they breed slowly (two or three kits is a typical litter size in Scotland), and live at low population densities. These characteristics make it difficult for pine marten populations to sustain any additional mortality, and they struggle to recover from local extinctions. The pine marten has a highly restricted distribution in Britain following a historical contraction in its range due to deforestation and predator control. In the mid 1990s, the population in Scotland was estimated to be just 3,500 animals. While the estimate needs to be revised in the light of new information on patterns of distribution and abundance, it remains rare, and the species has certainly not yet recolonised more than 15% of its historical British range. The pine marten's ability to climb and its tendency to predate game birds means that it is not popular on some sporting estates in Scotland; it has been suggested that predator control may have restricted the pine marten's recolonisation of some areas such as north-east Scotland.

Recent studies of pine marten predation and capercaillie in Scotland

A series of research projects has sought to inform decisions about the role of pine marten predation in capercaillie conservation. A 1995 study in 14 forests found no link between capercaillie breeding success and a pine marten abundance/activity index. A study in Abernethy Forest, where pine martens are particularly abundant, revealed that 39% of capercaillie nests were predated (where other predators were controlled, around a third of nests were lost to pine martens); this level of nest loss was close to the mid-range among other studies in Scotland and in Europe. A recent study of the impacts of various predators on capercaillie in north-east Scotland confirmed that signs of pine martens were more abundant than in 1995. However, no evidence was found of a relationship between pine marten abundance and any of the three measures of capercaillie breeding success, leading to the conclusion that: 'This survey found no evidence to suggest that martens are impacting upon capercaillie breeding success'. A multivariate analysis of long-term capercaillie brood count data confirmed that breeding success is strongly influenced by weather. When the effects of weather and predator variables were considered together, some measures of capercaillie breeding success varied negatively with an index of marten abundance.

Would removing pine martens help the capercaillie?

Pine marten predation is peripheral among the factors influencing the success of capercaillie populations. A high profile focus upon the predation issue would create the misleading impression that a complex ecological problem (the capercaillie's decline in Scotland) can be simply resolved by removing a scarce, protected predator; and it would inevitably deflect attention away from more fundamental factors.

Strong evidence is available that martens have no net negative impact across Scotland on capercallie populations. Pine marten predation of capercaillie nests is a natural process; the two species have co-evolved in a predator-prey relationship that has persisted across northern Europe for 12,000 years; outside Scotland capercaillie populations thrive in the presence of pine martens and other predators. Despite a substantial input of conservation effort, the Scottish capercaillie population is in the late stages of a steep decline that began in the 1970s; the pine marten's role in this process is peripheral at most. In this context, proposals to remove the pine marten to 'save the capercaillie' appear strategically flawed.

What other issues have to be considered?

If one accepts that the removal of pine martens may bring some benefits to capercaillie conservation, there are additional issues that must be considered before any change in current policy should be considered. The 'pilot' scale at which a cull could be conducted without potentially compromising the conservation status of pine martens would not allow statistically-robust conclusions to be drawn, and would therefore not provide the evidence required. If we imagine the very optimistic scenario where controlling martens increased the average number of chicks raised per hen from the current level of 0.4 to 0.6 (based on what might be expected if all predation were avoided and all eggs hatch), then it would take a study of 198 trial nest sites where predation is controlled and another 198 control nests sites just to be confident the change really was due to marten removal and not just chance fluctuation. Culls on such a scale are unquestionably outside the range that could be considered without seriously compromising pine marten conservation. Smaller studies would simply provide anecdotal evidence and could not be used to justify policy decisions. The recent government U-turn on buzzard removal to benefit pheasant stocks, and the rumbling controversy over how to interpret the badger removal trial, must surely indicate that such serious changes in policy should only be contemplated on the basis of the highest quality of evidence.

Summary

The capercaillie population in Scotland, which is derived from non-native stock, is in long-term decline. This decline is due mainly to altered weather patterns and the lack of suitable habitat. Although there is no evidence to suggest that predation by pine martens is an influential factor in the capercaillie's decline, The Mammal Society accepts that, in the final stages of that decline, normal levels of predation by pine martens could become an additional pressure. However, given the peripheral nature of its role, and recognising that the pine marten is a scarce, protected mammal still recolonising its former range, The Mammal Society does not accept that the removal of pine martens is justified by the questionable benefits to capercaillie conservation. Furthermore, a focus on pine marten removal would inevitably deflect attention away from the fundamental causes of the capercaillie's decline.

The Mammal Society's Position

- The evidence to suggest that pine marten predation is an important factor influencing capercaillie breeding success is very poor.
- The success of capercaillie populations is influenced by a complex suite of interacting factors, both natural and human, that affect breeding success. Predation is just one of these factors.
- A proposal to remove one protected native species (the pine marten) to protect another (the capercaillie) is highly questionable.
- Removing, even temporarily, the protection for a species which is likely to be highly persecuted because of its tendency to predate game birds, sets a precedent for future culling and for culling outside the selected areas.
- Even setting aside ethical concerns, the proposed 'trials' would lack the sample size to produce statistically rigorous results. It would therefore not be possible to conclude from them whether culling could contribute usefully to capercallie conservation or not.

DNA Toolbox

for squirrel surveys

Red squirrel in Avimore.
Photo by Davide Scridel

There are two species of squirrels found in the British Isles, the native Eurasian red squirrel (*Sciurus vulgaris*) and an introduced North American competitor, the grey squirrel (*Sciurus carolinensis*). The grey squirrel competes with the red squirrel for resources.

The decline of the red squirrel has also been linked to the persistence of the squirrel pox virus of the grey squirrel which can be lethal to the red squirrel, but that has only recently been documented in Ireland. The grey squirrel was brought to Castleforbes, County Longford, Ireland in 1911. It is reported that a basket of six squirrels were brought as a gift. Needless to say, once the basket was opened, the squirrels escaped and set about populating Ireland. Just over 100 years later, the grey squirrel now inhabits much of the east of Ireland, with a number of red squirrel strongholds remaining in isolated areas. The west of Ireland remains grey squirrel free with a relatively healthy red squirrel population in forested areas. In Britain, the situation is far worse, as the red squirrel is now absent from most of the south, with a few isolated pockets remaining in Northern England and Wales. However, many parts of Scotland remain as a red squirrel stronghold for now. The disappearance of the native red squirrel from many areas has prompted, along with the creation of red squirrel conservation groups, a lot of research, especially in the area of surveying, which can be surprisingly difficult for the secretive little red squirrel.

Unseen individuals identified through developing DNA techniques

The area of non-invasive genetics has become a popular tool in recent years to aid the surveying of mammals and other species, without ever capturing or disturbing the animal. In the Molecular Ecology group at Waterford Institute of Technology, Ireland, various projects have looked at developing DNA techniques to help survey some of our most elusive species. The pine marten has been the pioneering species in the group's establishment in this field and genetic methods were developed to identify pine marten from scats (faeces) and hair. This work was further developed to determine the sex of the sample and finally methods were optimised to identify the individual, building a DNA toolbox that can be used to census individuals in a woodland, without ever seeing a single pine marten. This work can be read in a paper by Jacinta Mullins and co-authors in her 2010 paper entitled "Remotely plucked hair genotyping: a reliable and non-invasive method for censusing pine marten (*Martes martes*, L. 1758) populations", published in the European Journal of Wildlife Research.

One of the most popular ways that squirrels can be surveyed involves the use of baited hair-tubes, first described by John Gurnell in his 2001 paper describing, "Practical

techniques for surveying and monitoring squirrels" published by the Forestry Commission. We have adapted this tube technique to capture squirrel hairs remotely, using sticky patches. One of the problems incurred using this method is that the hairs from both species have similar colour variations. Indeed, additional microscopic analysis is needed to ensure the correct species identification. To overcome this, we developed a DNA test that relies on real-time PCR assays that can reliably and unambiguously identify both species. The tests are applied to DNA that has been extracted from the hair that we collect using hair-tubes. The technique can be applied to samples across the British Isles. We recently published this method in *Conservation Genetic Resources* in a paper entitled "TaqMan assays for the species identification of the red squirrel (*Sciurus vulgaris*) and the grey squirrel (*Sciurus carolinensis*). O'Meara *et al*. 2012. Conservation Genetic Resources)."

Red squirrel, Emo Court, County Laois, Ireland. Photo by Paul Whitley

Genetic information collected by volunteer groups

We have also developed a DNA method to resolve the mitochondrial DNA haplotype and optimised a set of previously published microsatellite markers to identify individuals (genotyping). The mitochondrial DNA haplotype can be used to gain an insight into the population's history and can tell us about past movements, geographical isolation and habitat isolation or continuity. The addition of the microsatellite data, while identifying the individuals, can also be used to infer contemporary genetic diversity and structure. All of this information can be gained remotely, which could be a useful technique for volunteer groups as no trapping or handling is required. The genetic information can be used to inform reintroduction studies such as the successful red squirrel reintroduction programme that took place in Anglesey, Wales or the red squirrel translocation that took place in the west of Ireland. Such detailed genetic analysis is now a recommendation by the IUCN (International Union for Conservation of Nature) guidelines when considering red squirrel translocation or reintroduction programmes, that can help halt the loss of the red squirrel.

> *In the Molecular Ecology group at Waterford Institute of Technology, Ireland, various projects have looked at developing DNA techniques to help survey some of our most elusive species*

The species identification methods developed in this study and others for small mammals, described by Siobhan Moran and co-authors in a 2008 paper in Molecular Ecology Resources called "Non-invasive genetic identification of small mammal species using real-time polymerase chain reaction", have recently been used in a collaborative study with a number of people. Some of them include Emma Sheehy of the Woodland Mammal Research Group, NUI Galway, who is working on a pine marten, red squirrel and grey squirrel interaction study and Declan O'Mahony who recently, along with his co-authors, published the findings of the national all Ireland pine marten survey in Mammalian Biology. The work we have been doing, has involved applying our DNA species identification techniques to DNA extracted from pine marten scats to detect squirrels and small mammals in the diet. The method relies on our DNA extraction method, which along with the pine marten DNA, also extracts DNA from items the pine marten have been eating such as mice, voles and shrews. It is hoped that such collaborative projects will help increase the information that is learned from individual research questions.

While some non-invasive genetic studies prove to be more useful and successful than others, it remains clear that there is a growing demand for such genetic tools from conservation managers, volunteers and groups. Most recently, the techniques developed in this study have been applied to a new project led by WIT called "Mammals in a Sustainable Environment (MISE)". The project is an INTERREG IVA project, part funded by the European Development Fund and includes partners in both Ireland (Waterford County Council and the National Biodiversity Data Centre) and partners in Wales (Countryside Council for Wales, The Vincent Wildlife Trust and Snowdonia National Park). The project is aimed at involving members of the community in mammal conservation and value is added to mammal surveys by using the DNA analysis tools available in WIT. For more information visit **www.miseproject.ie** and be sure to check out our Facebook page.

Irish red squirrel from Emo Court, County Laois, Ireland. Photo by Paul Whitley

Denise B. O'Meara, Peter D. Turner, Lee Coffey, David O'Neill, Andrew Harrington and Catherine O'Reilly

Mammals in a Sustainable Environment (MISE) Project, Molecular Ecology Research Group, Waterford Institute of Technology (WIT), Cork Road, Waterford, Ireland.

Email: domeara@wit.ie

Ottiga. Photo by IOSF

Otters

Born to be wild – rehab to release

Grace M Yoxon, International Otter Survival Fund,
Black Park, Broadford, Isle of Skye, IV49 9DE, Scotland, UK
Website: www.otter.org **email:** Grace@otter.org

Most baby mammals are cute, but I think everyone will agree that an otter cub really does have the "ah" factor! However, beneath this veneer of cuteness lies a simple fact – it will grow up into a wild carnivore and one of the biggest we have in this country.

So if we are going to raise an orphan we have to think what we are going to do when it grows up! Gavin Maxwell did a lot for otter conservation by raising awareness but he also had them as pets tempting others to think this is acceptable. On the contrary, the best place for an otter is in the wild, and there is a legal obligation to ensure rearing orphaned otters is geared toward successful release. So human contact must be kept to a minimum and there should be no contact with domestic animals. Imprinting or taming would compromise potential release and endanger the animal.

In rehab for any species it is necessary to know as much as possible about the animal in the wild – its food, behaviour, any territoriality, nesting/den requirements, and basic ecology, to ensure that the care given is also aimed at preparation of post release life skills.

Bottle-feeding while in rehab. Photo by IOSF

While we take in some injured adults and juveniles, most otters which come into our hospital are cubs. Like many young wild animals, cubs may appear to be abandoned and it is important to give the mother a chance to return. So we always advise people not to touch but watch quietly and hope Mum comes back. If not, only then do we have to step in.

Otter cubs are born at more or less any time of the year and so, unlike other rehab units which have a "baby season", a cub can arrive at any time. They are usually around 10-12 weeks of age, the time they first venture out of the holt. They are often cold, wet and dehydrated, and so first aid treatment with warmth and liquids is vital.

Our cub-rearing process has three parts:

Indoors, nursery pens and croft pens. All new cubs are first kept indoors in special heated cub units and at this stage they don't need a pool, only a bowl of drinking water. Young cubs often don't like the water anyway and sometimes in the wild the mother even has to drag them screaming into the water for their first swim! It is hard to imagine this when the otter becomes so graceful and strong in the water as an adult. Whenever possible we rear two cubs together, even if they aren't related. They not only provide company for each other but will develop otter behaviour with sibling rivalry and will cuddle together for natural warmth. They also teach each other and if one is reluctant to swim it will often be encouraged into the water by the other.

> They are great escape artists and can not only dig but climb!

If the cub is very young it will need milk and, as otters cannot tolerate lactose, we import a special formula from America. Usually they take to a bottle easily but sometimes they

Otter cubs in rehab. Photo by IOSF

can be fussy and it is like trying to bottle-feed a furry eel! When deciding on the solid diet it is important to consider what they would be eating in the wild. We have heard of various diets but we stick to fish as this is by far the biggest part of their prey. First they take small pieces of white fish and then small whole fish. Once they are feeding themselves we stop all handling – this is again to keep them wild but anyway they do start to nip and can easily draw blood!

Nursery pens

Next they move to our outside nursery pens which have a heated byre and small pools so they can learn to swim. The final stage is in pens on our croft, which are basically 25 metre square areas of fenced natural moorland. Each pen has a natural pool and sleeping box and here they have as close to their natural habitat as possible. Otters will always keep you on your toes by doing the unexpected! They are great escape artists and can not only dig but climb! So our fences are 2 m high with an overhang and they are buried to

Otter croft pens. Photo by IOSF

0.5 m. As they near release, they start to dig more and so the fence is regularly inspected to make sure they can't get out.

Croft pens

Otter cubs naturally stay with their mother for about 13-14 months and so we release them at that age. However, if this falls in winter we will keep them until the following spring so they can have a start in the wild once the weather is better. This long process makes it even more important to keep human contact to minimum. After all this time and effort it is important to be careful in choosing the release site. It is generally accepted policy now that cubs must be released in the same geographical area in which they were found unless there are problems associated with this. In the past we used a soft release where the otter is put in a temporary pen for a few days so that it can get used to its new surroundings whilst still being fed. However, we found that this does cause stress to the animal and so now we find a site with suitable shelter for a holt and then release it by that. Some disappear inside straight away whilst others go straight into the water and begin hunting.

Post-release

Post-release monitoring is important and we have used different methods over the years. Coastal otters tend to be diurnal so then simple visual identification can be used but we have also used radio-tracking. It seems that hunting is a natural instinct. Of course, in the wild they learn by following their mother but we have watched many of our released otters catching their own food within 30 minutes of freedom.

The International Otter Survival Fund has been caring for injured and orphaned otters for over 20 years and has treated otters from all over the UK and Ireland. Although we are dealing with the Eurasian Otter (*Lutra lutra*), we also provide help and advice for people all over the world doing a similar job: at present we are working with missionaries in the Democratic Republic of Congo who are caring for a rare Congo clawless cub (*Aonyx congicus*).

Visit **www.otter.org** for more information.

Releasing otters. Photo by IOSF

Release site and new home. Photo by IOSF

NEWP

The Natural Environment White Paper, Outline and Progress

Marina Pacheo, CEO, The Mammal Society
Email: mpacheco@themammalsociety.org.uk

In June 2011 the Government published its Natural Environment White Paper (NEWP), the first major statement of policy on the natural environment for 20 years. The white paper, titled *The Natural Choice: securing the value of nature*, sets out, "92 commitments to achieve a healthy natural environment to be the foundation of sustained economic growth, prospering communities and personal well being. The commitments also have the aim of harnessing and supporting the enthusiasm that people have for protecting and enjoying the natural environment." (DEFRA)

The White Paper can be broken into the following wide ranging but interconnected commitments.

- Protecting and Improving the Natural Environment
- Growing a Green Economy
- Reconnecting People and Nature
- International and EU Leadership

Protecting and Improving the Natural Environment

This commitment is the most relevant to The Mammal Society with its aim to arrest the decline in habitats and species and the degradation of landscapes. This should be achieved through the development of a new Biodiversity Strategy, and the "establishment of coherent ecological networks, with more and better places for nature for the benefit of wildlife and people" (DEFRA). Natural England published the Biodiversity Strategy in August 2011. *Biodiversity 2020: a strategy for England's wildlife and ecosystem services* attempted to add detail to how biodiversity loss would be reversed in England. This is a monumental task, which has not been achieved by any previous government (we didn't even come close to meeting our Biodiversity 2010 commitments) sadly Biodiversity 2020 gives little indication on how this ambitious task will be achieved.

One of the key commitments in the NEWP is the formation of Local Nature Partnerships. These groupings of local authorities, businesses, farmers and conservation groups will be able to operate across administrative boundaries to raise awareness about the services and benefits of a healthy natural environment. How these partnerships will work isn't clear yet, but around fifty Local Nature Partnerships are expected to be announced shortly. Many of the LNPs putting themselves forward are headed up by local authorities but a fair number of them are being put together by local Wildlife Trusts.

A network of fifty Natural Value Ambassadors were also to be established. These ambassadors are meant to engage with key decision makers and opinion formers using the latest evidence and materials available to help people halt the loss of biodiversity. As yet these ambassadors don't seem to have made an appearance and searching DEFRA and Natural England's websites indicates no movement on this idea since publication of the White Paper.

The key promise of the White paper is the establishment of Nature Improvement Areas. These will be partnerships of local authorities, local communities and landowners which will restore and connect nature on a landscape scale. This is a significant change as it moves nature conservation from conservation sites such as National Parks and Sites of Special Scientific Interest and attempts to link conservation, both within the conservation sites and beyond, into agricultural areas and urban areas. The seemingly large sum of £7.5 million over three years was promised to support these Nature Improvement Areas. But as it is divided amongst the 12 Nature Improvement Areas already announced the sum going to each project starts looking quite small and it will be challenging to make a large impact with such a small investment.

The planning system is one of the most effective ways to control impacts on nature conservation. There has always been a requirement for the planning system to take account of economic, social and environmental factors and sustainable development has been a cornerstone (if not a very well supported one) of the planning system. This White Paper reiterates the importance of the planning system in protecting and enhancing the environment. We have to guard, however, against sustainable development being interpreted as sustained development, especially when there is such a determined push to undermine the planning system to enable ever more development to boost economic growth.

Another area of concern for conservation is the concept of biodiversity offsets. The idea is that developers can take part in a voluntary system of offsetting the impact of development on biodiversity, by creating new biodiverse areas if wildlife rich places are lost to development. There are a number of difficulties with this proposal. It is difficult to demonstrate that a biodiverse area that has been destroyed in one area can be recreated in another area as if biodiversity can be treated as a like for like, interchangeable good. At one point in discussion of the Severn Barrage it was suggested that wetland loss around the Severn could be offset by enhancement of wetland sites on the east coast of the country. It's a kind of manufacturer's viewpoint

> *Policies are the basic principles by which a government is guided. While law can compel or prohibit behaviours, policy merely guides actions towards those that are most likely to achieve a desired outcome.*
> (Wikipedia)

of the world that each piece of 'nature' is exactly like the other. I am also concerned that prime biodiverse areas will be offset in less optimal areas and finally I am worried that whilst developers may promise to undertake biodiversity offsetting at the start of a project, it may not come to pass once planning permission has been obtained. The planning system is notorious for not following up on developer promises for amelioration work and developers are well known for letting expensive but non essential parts of new developments slide.

A number of additional aims in the white paper include; planning for low carbon infrastructure; getting the best value from agricultural land; protecting and improving woodland and forests; creating diverse and living landscapes by involving local communities in landscape planning; safeguarding soils; restoring nature in water bodies; restoring nature in our towns and cities and managing the marine environment, all of which are positive but lack detail on how they will actually be implemented or funded.

Growing a Green Economy

The most controversial part of the White Paper is the section on growing a green economy. Much hinges on whether you think it is acceptable to put a price on what the environment provides or not. The prevailing view of environmental scientists and conservation charities seems to be that to achieve protection of the environment we need to speak the language of economists. It is in this way that we will be able to convince them that nature is worth saving. To that end every service that nature provides from clean water and air to soil fertility and flood prevention is to be given a monetary value. I worry that putting a price on something gives the impression that it belongs to someone, and can easily be traded and replicated – a dangerous precedent to set.

However, the White paper will aim to capture the value of nature in our nation's account by putting natural capital, the term they use for nature, at the heart of Government accounting. Research still has to be carried out to ascribe monetary value to natural services and this is being worked on by government working in partnership with the Office of National Statistics.

Government will involve business in conservation by setting up a Green Economy Council with leading businesses. They will also try to provide business opportunities that pay back to nature. This will be developed through the business-led Ecosystem Markets Task Force.

Reconnecting people and nature

These aims attempt to get more people out into the countryside and raise the awareness of nature and our impact on the environment within the general public. It is approaching this via connecting through nature's health service. It is generally accepted that time spent in green space is beneficial for people's physical and mental wellbeing. The Government will therefore be encouraging Local Nature Partnerships and Health and Wellbeing Boards to engage in each other's work. The Government will also work on a diverse range of environmental improvements including getting people more active and eating healthily through to Low Emission Zones.

They will attempt to connect people to the environment through better neighbourhood access to nature through new Green Areas Designations in urban areas, supporting the Green Flag award, working with Keep Britain Tidy and identifying and protecting urban quiet zones amongst other measures. They will also attempt to increase volunteer activities in green spaces in both the countryside and towns which they see as being good for us and good for nature.

International and EU Leadership

This is potentially the least controversial part of the White Paper with the stated aims of; achieving environmentally and socially sustainable economic growth together with food, water and climate and energy security around the world but working particularly within the European Union to affect change.

The Mammal Society View

In summary, it is useful for the government to have produced an Environmental White Paper as it lays out its environmental credentials and highlights the areas of greatest conservation concern and how they mean to tackle them. We welcome the realisation within government that conservation should be addressed at a landscape scale. We also welcome their attempts to engage the wider community, especially the corporate world, in conserving biodiversity although we have reservations on the monetisation of nature. We would urge the government, across all their departments, to make sure that all their initiatives have the focus and support they need to be truly effective.

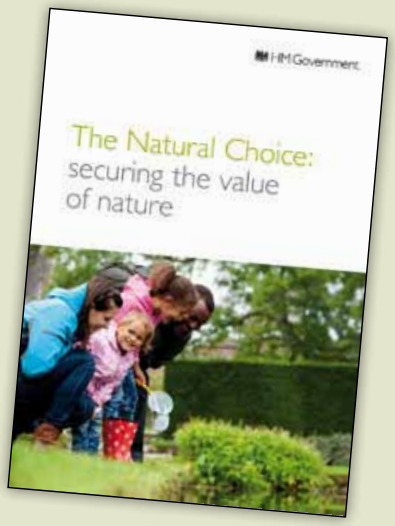
Key documents that informed the Natural Environment White Paper:

The UK National Ecosystem Assessment (NEA): this examined the benefits that nature provides, how they have changed over the past, the prospects for the future and their value to our society.

The Lawton Review, Making Space for Nature: called for "a step change in nature conservation... a new restorative approach which rebuilds nature and creates a more resilient natural environment for the benefit of wildlife and ourselves". It summarised what needed to be done as: "more, bigger, better and joined".

The Climate Change Act 2008: which emphasised the need for our society to develop a better understanding about when and where to invest in environmental protection in the face of climate change impacts.

The Economics of Ecosystems and Biodiversity study (TEEB): which demonstrated that the economic benefits of protecting biodiversity and ecosystems greatly outweighs the cost of doing so.



European Bison. Both photos by INS New Forest

Bison in Britain

(Wisent) King of the New Forest

Jason Palmer, New Forest Wildlife Park

It wasn't until one very bright misty February morning that I truly began to understand why I thought that our latest animal arrivals at New Forest Wildlife Park were so special, so majestic and seemingly so very ancient, almost prehistoric.

Our three male European bison, *Bison bonasus bonasus* (Linnaeus 1758) or lowland bison, are kept in a large paddock, with adjoining mixed conifer and deciduous woodland; approximately five acres in total.

It was a bright, sunny morning with the last of the mist burning off from the dip. Janek, Wotjek and Leszek (they came with Polish names) all lumbered over. The image of 3 of Europe's largest living ungulates moving slowly and purposefully towards me through the mist, without any sight of fences, just a small grassy plain between me and them, stirred something inside me. The thought that this sight hasn't been seen for thousands of years on these shores was almost overwhelming. All I could think of were our prehistoric ancestors far removed from me, as well as how lucky we are to be able to host these magnificent beasts where so many other species have been consigned to extinction.

Historically bison would have once been native to large parts of Western, Central and South-eastern Europe, as well as into inner Asia.

As far as I can find out no actual evidence of *Bison bonasus* has been found in fossil form in the UK, however, dredging in the North Sea has resulted in fossil finds and Bison fossils of a related species *Bison priscus* has been found in the UK.

During successive ice ages and over evolutionary time many bison species have come and gone in both Europe and North America. Europe was left with possibly three types of bison, the Lowland, *Bison bonasus bonasus*, the Caucasian bison, *Bison bonasus caucasicus* and the Carpathian or Hungarian bison, *Bison bonasus hungarorum*.

During successive ice ages and over evolutionary time many bison species have come and gone in both Europe and North America

Decline

Numbers of all these were drastically reduced during the Middle Ages, for meat, sport, hides and drinking vessels from their horns. By the end of the 19th C only two wild populations remained, the protected hunting rights of the Russian Czars and the Polish kings ironically saving them from complete extinction.

By 1919 the last remaining population of Lowland bison, in the Bialowieza primeval forest that straddles the border between Byelorussia and Poland, was exterminated. This left one remaining wild population of the Caucasian bison, which was extirpated by 1927, leading to the sad appellation of 'Extinct in the Wild'. The final nail in the wild populations' coffin was the First World War. Without the protection of Royal hunting grounds in the forests, the bison became tempting prey for hungry people suffering from the devastation the war brought with it.

Revival

It is believed that this left just 54 individuals, of Lowland and Caucasian bison combined, alive in zoos, collections and private hands. One notable saviour was the German zookeeper Dr Heinz Heck. He created the first studbook for a non domestic species, choosing the European bison. The first studbook was just a simple card index from 1923 containing the

details of bison location and relationships, with a full list being published in 1932. From then on numbers have increased gradually, with a large drop in numbers during the Second World War from 160 in 1943 to just 93 in 1946 (Pucek *et al*. 2004 European Bison Status Survey and Conservation Action Plan).

Since then, as a result of concerted efforts of captive breeding, wild reintroductions, protected habitats and careful management, the current estimations from the Large Herbivore Network (LHN) estimates a world population of 4231, with 2701 free roaming and 1530 captive. Of these, 400 animals now live semi-wild in Bialowieza forest each side of the border, with other populations in Belarus, Lithuania, Slovakia and Ukraine (LHN).Captive populations can be seen in 30 different countries worldwide (Pucek *et al* 2004).

> The genetically viable breeding population of any species is much lower than the actual number of animals that actually exists

Recognising a bottleneck

Out of the 54 original animals left, only four bulls and three cows went on to found the surviving pure bred population and of those alive today all originate from just one bull, with 90% of their genes coming from two founders (Tokarska *et al*. 2011. *Mammal Review*). Now, despite numbers increasing, there is still some concern about the massive genetic bottleneck suffered during the early 20th C. A recent report in the Biological Journal of the Linnaean Society estimates that the wild herd in Poland/ Russia could contain an effective population of as few as 25 viable genetic individuals.

The genetically viable breeding population of any species is much lower than the actual number of animals that actually exists because of non breeding individuals, an unbalanced sex ratio or genetic identity of close relatives. When a species' numbers get as low as the European bison did in the 1920s, then the estimated number of 50 genetically pure individuals thought necessary to provide enough genetic variation becomes seriously violated. However, they are recovering and increasing with the help of a good European/ Worldwide effort. Recently bison have been released on Denmark's Bornholm Island in the Baltic Sea.

Dual purpose for bison in Britian

So where do our three males come into all this? Our bison are acting as a separate and safe genetic 'bank', as well as ambassadors for their species. We were chosen to have these particular animals by the current European bison studbook keeper, Wanda Olech, with help and coordination from the Highland Wildlife Park. Many collections and institutions do valuable work in holding bachelor groups of animals so we can swap around and alter pairings in the future if needed. Two of our bison are six years old and one is five, so they still have a year or two to attain full maturity. European bison live in all male herds as well as mixed groups so they are in a natural situation.

Adult animals can be nearly 3m long, stand 2m at shoulder height and weigh up to 1000kg. We estimate ours to be around 800kg at the heaviest. They could potentially live up to 25-30 years, with females being known still to produce offspring at 20 years of age. Male bison can reach sexual maturity at the ages of 15-20 months, although this is probably very early, and most males mature at 4 or 5 years of age. Older bulls of 12 or so will keep younger males away from the females. We haven't seen any major rutting behaviour during August through to October, the natural rutting season.

A potential plan includes breeding with unrelated females and returning the offspring to the wild population in Europe. Although most people know of the bison as an American species roaming the prairies and being hunted by Native Americans and European settlers, few are aware of the European bison. People are usually quite surprised when we tell them that these huge, massive beasts are native to our European forests and much more likely to be found in mixed woodland and forests than on open plains and prairies. Not only are our own European bison part of the genetic bank, but they are doing an important PR job by introducing the public to this species' valuable contribution to habitat and ecosystems.

Badgers & People:

current conflicts and a troubled history

Dr. Angela Cassidy, Imperial College London

Foraging badgers. Photo by Sue Searle

The problem of what to do about badgers and bovine TB (bTB) has been rumbling along now since the early 1970s, when veterinarians first made a link between infections in the two species. Until quite recently, this debate has been mostly confined to specialist media such as the farming press and 'environment' sections of newspapers, but is now receiving more attention as it moves up political agendas.

Badger. Photo by Sue Searle

For the past four years I've been researching badger/bTB as a case study of 'public scientific controversy': analysing how the British national press have covered the issue; talking to the people involved to get behind the headlines; and tracing its long-term development. Over fifteen years since (now Lord) John Krebs argued that not enough was known about the effects of culling wild badgers on bTB in domestic cattle, we seem no closer to finding sustainable policy solutions to this rapidly worsening problem. Despite the monumental efforts of the Randomised Badger Culling Trial to provide adequate evidence to shape bTB policy, advocates both for and against badger culling argue that their positions are supported by 'sound science'; as have the bewildering variety of policies adopted across the devolved regions of the UK.

> *In my analysis of the UK press coverage (from 1995 to 2010), the first thing that stood out was quite how much time journalists seemed to spend quoting* Wind in the Willows

While this case certainly raises important questions about the ongoing relationships between science, policy and politics in the UK, here I will focus on the animal at the centre of this controversy: the badger. The European badger (*Meles meles*) is a member of the Mustelidae, although historically it was often thought to be a kind of bear. Including subspecies, its range extends all the way from the Iberian Peninsula to Iran in the east, and up to Scandinavia in the north. Bovine TB is of course a global disease problem, infecting cattle, humans and a range of wild mammals: despite the rarity of clinical disease in the UK, in the Global South bTB is still a serious human and animal health problem. However, it is only in the UK and Republic of Ireland that the two have been linked; and only in England and Wales that badger/bTB has been a source of serious controversy. Whether considered from ecological, epidemiological, veterinary, societal or historical perspectives, this raises the question of why does this controversy only happen in

this particular tiny corner of Northern Europe, and nowhere else? My research seeks to assess the societal and historical aspects of this, whilst taking into account our developing biological knowledge of the relationship between badgers and bTB.

Good Badger and Bad Badger

In my analysis of the UK press coverage (from 1995 to 2010), the first thing that stood out was quite how much time journalists seemed to spend quoting *Wind in the Willows*. Alongside the more conventional issues of how bTB is spreading across the country; the multiplying economic costs; the scientific evidence for and against badger culling; and the political implications of each twist and turn in policy, most articles discussed badgers and what people thought of them. I found two characters looming large: not the Environment Secretary, the president of NFU, or even Brian May, but Good Badger and Bad Badger. Good Badger is the more familiar of the two and is liked because he "keeps himself to himself"; looks after his family (who are very cute); has lived in the Wild Wood for generations; eats worms and gives us a sense of connection with 'Nature' when we do encounter him. However, Bad Badger appeared more often: as well as spreading disease, he is a violent predatory pest, causing trouble by digging under fields and foundations, destroying crops and eating hedgehogs. These 'framings', or ways of portraying the animal, were pervasive: while each version was strategically used by the 'pro' and 'anti' side of the debate, I also found that journalists used both in opposition as a way of structuring their articles and making them more interesting. This need for relevance explains the preponderance of cultural references – not only to Kenneth Grahame's classic novel, but a range of other fictional and poetic sources – when writing about a notoriously complex policy debate.

Cultural origins

Going beyond today's media, I traced the origins of these characters in British culture. The oldest reference to the 'Good Badger' I found was in an 11th century Anglo-Saxon 'riddle poem', in which an unnamed animal bravely defends his family from attackers who are digging into his home inside a hill. We also see badgers appearing in many place-names and occasionally in coats of arms. Historically, it seems that 'Bad Badger' was highly influential: badgers were legally designated 'vermin' by the Tudors, with a high bounty of 1/- offered as a reward. Badgers were at times eaten and their fat used to make liniments: they were also routinely killed by gamekeepers as they were believed to take ground-nesting birds. Despite the outlawing of badger baiting (staged fighting) in 1835, badger digging (hunting with dogs) remained a popular sport until well into the 20th century, and forms of both continue illegally even today. Some insight into this antipathy can be found in Beatrix Potter's *The Tale of Mr Tod*, published in 1912. This is a grim tale about predation: the badger, Tommy Brock, uses guile to kidnap a nest of baby rabbits, who are in turn stolen by the fox, Mr Tod. Tommy Brock is a deeply unpleasant character, who as well as being sly and predatory is smelly, dirty, uncouth, and working class, particularly in contrast to the 'gentleman' Mr Tod. However, it seems that 'Mr Badger' from *Wind in the Willows* (1913) then set the tone for the rest of the 20th century. Mr. Badger acts as a father figure to the other characters in the novel, but is also antisocial, intelligent, wise, and fearsome to friends and enemies alike. We can see versions of the same character in the work of many authors including C.S. Lewis, T.H.White, and more recently in the *Animals of Farthing Wood* series. Badgers have also featured prominently in British natural history TV and books, where they tend to be portrayed positively. Looking at the archive of the *Times* newspaper, I found people arguing about badgers pretty much as we do now, nearly a hundred years before any connection with bTB had been made.

Muddying the waters

So what does this imply for the badger/bTB controversy? I think that this much older 'badger debate' is fuelling contemporary arguments both for and against culling, making it much harder for policymakers and the media to address the complexities of what the science might be able to tell us, never mind finding policy solutions acceptable to all.

If we need to have a debate about badgers (and given how differently people seem to feel about them, we may well), then let's do that. But can we also make some space to talk about the rest of the picture? Issues like cattle movement, ecological consequences, the uncertainties of testing, the roles of international trade and global (human) health, the involvement or otherwise of farmers in policymaking, and the future shape of the British countryside are all being squeezed out of public debate. If we are ever going to move forward, we have to reframe bTB, and start understanding badger culling as a small part of a much larger problem.

Further discussion can be found in Dr Cassidy's recent article '*Vermin, Victims & Disease*', published in Sociologia Ruralis: http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9523.2012.00562.x/abstract

Two badgers moving in. Photo by Sue Searle

Dormouse. Photo by Stuart Edmunds

Mammal Training

Dormouse Ecology & Conservation: Course Review

As a member of Shropshire Mammal Group, I am aiming to coordinate a dormouse nest box scheme to encourage wider monitoring of dormice in the county, so I was keen to attend the course and learn more about dormice, their ecology and the law surrounding them.

The event was led by Bob Boyce, who leads The Perch Project, set up with Somerset Wildlife Trust to monitor nest boxes around quarries in the Cheddar area. Bob gave an insightful overview of dormouse ecology and his passion for studying and protecting dormice was inspiring. It was very interesting to learn of the hardships that dormice populations suffer in adapting to shrinking suitable habitats and struggle with inconsistent climate. It was reassuring to know that there are many dedicated people prepared to help give dormice a fighting chance.

Checking. Photo by Stuart Edmunds

For me, the course highlight was checking the nest boxes around the course base at Callow Rock. We ventured off into the woods despite the drizzle and were fortunate enough to find two torpid dormice, which were more than happy to pause for photos as they began to awaken. We were then involved with weighing and sexing the individuals and checked for pit tags with a scanner; rice grain-size tags used to monitor individual movement and development.

On returning to base, time was allowed to ask questions and learn more about dormouse legislation. Bob was able to give advice on how to create a survey project and we were well briefed on how best to attain a licence in the future. Overall, the course was insightful and entertaining and gave a good solid background to dormice ecology and conservation, suitable for professionals and enthusiasts alike.

Weighing. Photo by Stuart Edmunds

Stuart Edmunds, Shropshire Mammal Group

Training News

You will see that our new training brochure is enclosed in this issue. It includes new courses for consultants, conservationists and enthusiasts alike including a very special Wild Boar Study day – open only to members. You may have also noted that we have introduced a different format to previous brochures. We have altered the design to enable us to keep you better informed on courses throughout the year by issuing updated brochures with each issue of Mammal News. As ever, we would like to hear what you think of the changes.

In the meantime, there are still spaces left on some of our 2012 courses:

Dormouse Ecology and Conservation
19th October in Somerset

River Dwelling Mammals
20th October in Winchester

Mammal Identification Weekend
19th – 21st October in Shropshire

Dormice and Development
22nd October in Wiltshire

Book now via **www.mammal.org.uk/shop** or by calling **023 80237874**.

Membership Matters *with Laura*

Welcome to our new regular feature keeping you, our members, up to date on matters important to you. Contact me at l.drake@themammalsociety.org with any membership questions.
To be kept up to date between issues, why not sign up to our e-bulletin? Access at www.mammal.org.uk/e_bulletin.

Mammal Review going digital?

As many of you will have seen in the last Mammal News and by email, we ran a poll giving you the opportunity to say whether you would continue your Mammal Review subscription if it became online only, a move which would save The Mammal Society £7,500 a year. A total of 145 journal subscribers (or 25%) responded, with 32% of those saying they would cancel their subscription to the journal.

Based on your feedback, we have decided to continue the paper subscription of Mammal Review as an option for all current members (with or without the online service), but make online subscription the only option for new members joining us after 1st November 2012.

However, if you are happy to cancel your paper subscription and move online only, please let me know by emailing, phoning or writing to me, as reducing paper subscriptions as much as possible will help us save money.

Unfortunately, anyone whose membership is still in shortfall, since the subscription rise in 2010, will no longer receive a paper copy until their subscription is brought up to date and any surplus will be treated as a donation. We will write to everyone this affects very soon with instructions on how to do this.

Thank you all for your valuable feedback and useful comments, and I hope you are all pleased with the decision. If you have any questions, please don't hesitate to get in touch.

Mammal Photographer of the Year 2013

Send us your snaps for our photo competition and WIN a Spypoint HD10 Wildlife Camera worth £250!

Judges include renowned wildlife photographer, film-maker and consultant Kate MacRae (**www.wildlifekate.co.uk**), and wildlife photographer Steve Magennis.

We are looking for images that tell a story, show rare behaviour, highlight mammals in a fragile environment, or just make the ordinary extraordinary.

In addition, one member can win a **Bushnell Trophy Cam worth £199** for the Best Members' Image.

Visit **www.mammal.org.uk/photo_competition** for Ts&Cs, full list of prizes, and submission guidelines. Many thanks to Amanda Wilson of the Student Committee for organising this.

Deadline for submission: January 31st 2013

Direct debits, coming soon

Sign up and save 25% for a year

We'll be making it easier for you to manage your subscription by bringing in direct debits in the next two months. Never worry about renewing or falling into shortfall, and spread the cost of your payment over 12 months, if you choose. Plus, everyone who signs up to direct debit will get 3 months free! We'll be in touch soon with more news.

New to the network: *Welcome Dorset Mammal Group!*

Founded in June, the latest addition to the growing network of county mammal groups is overseeing the amalgamation of the previous Badger and Otter Groups and plans to cover the full range of mammals except bats (already well catered-for by the county Bat Group). The group aims to follow the guidelines set out on The Mammal Society's website, and embrace the scientific (recording, surveying, investigating) and ethical (welfare, respect). In this, they have the support of Chris Packham who said:

"The Dorset Mammal Group has my support in its aim to combine the scientific with the ethical. This is a progressive move which sets the right tone for the twenty-first century. I wish the group every success."

They are now planning a series of launch meetings across the county in the New Year; featuring a presentation by Colin Varndell, one of the UK's leading nature photographers and a founder member of the Group.

Visit **www.dorsetmammalgroup.org.uk** (under development) or email **membership@dorsetmammalgroup.org.uk** to find out how you can get involved if you live in Dorset.

Wildcat. Photo by Sue Searle

Book Reviews

UK BAP Mammals – Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation

ISBN 978-0-906282-73-1. **Book Review by Sue Searle, BSc, PGDip, MIEEM, *Managing Director and Principal Ecologist at Acorn Ecology Ltd and previous Mammal News Editor*.**

Authors and Editors – Warren Cresswell, Johnny Birks, Derek Yalden, Stephanie Wray, Marina Pacheco, Pat Morris, Mike Dean, Will Trewhella, David Wells, John Gurnell, Peter Lurz, Simone Bullion, Phil Wheeler, Andrew Kitchener and Linda Yost.

The Mammal Society has produced this book primarily to help people involved in Ecological Impact Assessments (EcIA). It covers UK BAP mammal species that were not receiving adequate attention. Species covered are red squirrel, harvest mouse, brown hare and mountain hare, European hedgehog, wildcat, pine marten and polecat. In the back of the book there is also a helpful literature review of available guidance for the dormouse, water vole, greater horseshoe bat and otter.

Following on from The Mammal Society's autumn symposium entitled Advances in Ecological Impact Assessment for Mammals in November 2007, organised by Warren Cresswell, a workshop was arranged for 2009 to discuss UK BAP mammals and identify knowledge gaps. Warren chaired this workshop and was involved in developing the basic templates for each species before he sadly died. As such, the publication is, quite rightly, dedicated to him.

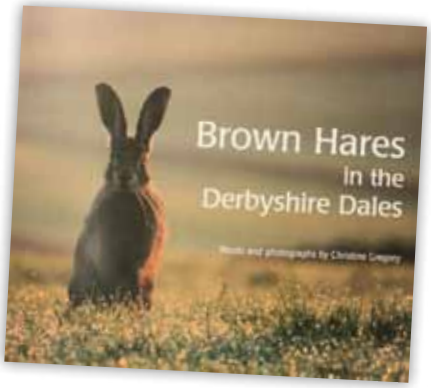
For each species the book covers background biology; habitats and requirements; status and distribution; legal protection; BAP status and recommended actions; survey methodology; impact assessment, mitigation, compensation and enhancement; research requirements as well as giving references and bibliography for further study. The research requirements section outlines the need for further study, and, as with many UK mammals, it highlights that there is still a lot to learn about them. This I found to be very interesting and food for thought for possible student research projects. Ones that caught my eye included: Do harvest mice cross roads? What are the impacts of wind turbines on hares and, do they use tunnels to cross roads? And how do hedgehogs use arable landscapes? Roads are a major issue for all mammal species and much research is still required to help reduce the impacts on them.

The great and the good of the mammal world in the UK have worked together and contributed to this book, including our current Chairman, former Chairman, CEO and President! It is easy to read, very comprehensive and complemented by good photographs, tables and other illustrations within it. Some of the survey methods are innovative and really useful for ecological consultants and decision-makers to know about. Meant as interim guidance I am sure that this book will be updated in the future when more is known about these mammal species.

I have found this publication to be a useful addition to my bookcase both for personal and professional interest and I feel that this book should be used by all ecological consultants and others involved in EcIA or indeed by anyone working on these mammals. This is a valuable contribution to the conservation of UK mammals.

Brown Hares in the Derbyshire Dales

Author: Christine Gregory
ISBN: 9781906148560
Hardback, 144 pages, includes colour photographs by Christine Gregory.
Published: September 2012



This is a second edition of this beautiful book on hares and would make an ideal Christmas present for anyone interested in mammals. The highlights of the book are the stunning photographs of brown hares taken by Christine Gregory in the Derbyshire Dales. But to focus on the images alone would be to miss out on a well researched book which covers everything on hares from their biology to mythology and a good section on conservation and what we can all be doing to support an increase in hare numbers. As our President, Derek Yalden, says in the foreword of this book, "there is a message of hope here, and a beautifully illustrated one at that".

Book Review by Marina Pacheco

Mammal Encounter Haiku

Parabolic gait,
Perhaps it is a weasel?
It's stoataly not.

Aidan Rooney
Hill walking in Scotland, June 2012.

Making Connections with Wildlife

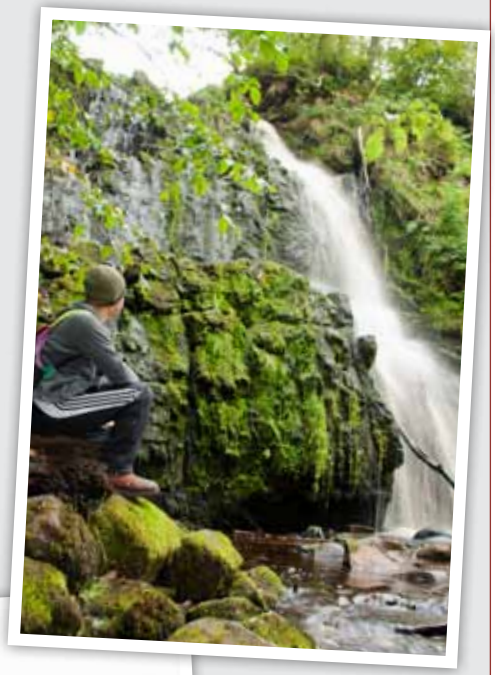
On a beautiful sunny June morning in Cumbernauld Glen, I am sitting amongst thousands of blue nodding flowers that carpet the floor of this semi-natural ancient woodland. Nestled within an urban environment, this is perhaps the least likely place to expect so many bluebells, yet it is one of the best displays I have ever encountered. Staying stock still and holding my breath as I aim my camera to capture the dew drops sitting delicately on fragile petals, I am completely immersed in the micro world in front of me; absorbed in capturing more images of these beauties for the 2020VISION photography project I am involved in.

I am brought out of my intent concentration by a slight rustling to my right and glance up to witness a beautiful roe deer buck approaching, about twenty feet away. The dappled light falling across his dark russet fur contrasts with the bright blue flowers. He spots me and freezes, ears pricked up; alert. Having my macro lens attached I make no attempt to photograph him; instead I sit and marvel at him in the brief seconds before he turns and darts away. Despite no physical evidence, I have a lasting image of that moment; a snapshot of my encounter in my mind that is as clear as the day I saw that magnificent deer. And in that moment I smile as I acknowledge that I have just experienced what myself and the 2020VISION team are trying to inspire others to do; rekindle our relationship with nature through positive interactions and experiences that create lasting memories and nurture a fondness for the natural world.

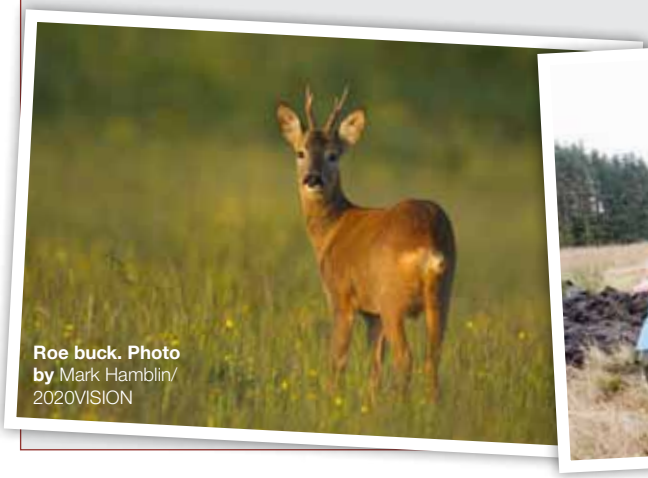
The bigger picture of 2020VISION is to communicate the important links between the restoration of healthy ecosystems and the well-being of people in a bid to increase their perceived value at such a crucial point in time. Visual media are being utilised as a tool to reach the masses in order to achieve this ambitious task. I am lucky in the town of Cumbernauld that there are so many nature reserves and greenspaces which have resulted in numerous encounters with my many mammalian neighbours. But no matter the location – countryside, suburban or urban – there are close encounters to be experienced and enjoyed by all. As we acknowledge the important messages received from conservation groups and take appropriate action to rebuild our natural home, the potential for familiarising ourselves with the wildlife which surrounds us cannot help but increase as we progress towards an ecologically diverse and sustainable future.

For more information on 2020VISION and to view more stunning photographs from the professional team, please visit www.2020v.org.

Katrina Martin



Connecting with nature. Photo by Katrina Martin/ 2020VISION



Roe buck. Photo by Mark Hamblin/ 2020VISION

Involvement. Photo by Katrina Martin/ 2020VISION