

# Bat Conservation Trust

# National Bat Conference



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## Conference abstracts 2008

### Assessing species diversity of bats in woodlands

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Woodlands are important habitats for British bats but have not been a major focus of monitoring efforts because of the difficulties involved in surveying them. Consequently, there is much less information on the distribution or conservation status of bats in woodlands than for bats roosting in buildings. Similarly, there are few data on the effects of various kinds of woodland management on patterns of habitat use by bats. We present a summary of results obtained using the Sussex Autobat acoustic lure to systematically survey a variety woodland sites in south east England. The highest species diversity and greatest average number of bats were caught in oak woods. Woods with good cover in understorey also had a greater diversity of bats than woods with less cover. A common prescription for improving the conservation value of "neglected" woodlands is to thin understorey, reinstate coppicing and open up rides and glades. While this approach may benefit populations of some woodland flora and fauna, it is likely to have a detrimental effect on woodland bat communities.

### Ideal homes for lesser horseshoe bats

Henry Schofield, The Vincent Wildlife Trust; [henryschofield@vwt.org.uk](mailto:henryschofield@vwt.org.uk)

For eighteen years The Vincent Wildlife Trust has been acquiring and adapting buildings as nature reserves for the lesser horseshoe bats, The Trust now has 36 bat reserves for this species, ranging from small cottages to disused churches. Significant proportions of the populations of this species in England, Wales and Ireland are now protected in these reserves. At each site the same general techniques have been employed, applying the knowledge of the animal's roosting ecology to modify or redesign the site and make it into an optimal roost. In this process extraneous problems such as predators, nesting birds blocking entrances and human disturbance have been encountered, and a suite of techniques have been developed for dealing with these problems. The success of the design is augmented by improvements to the habitat surrounding the building.

The key features in successfully designing roosts for *Rhinolophus hipposideros* are discussed and examples are presented.



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## **Shedding light on bat behaviour – the impact of street lighting on lesser horseshoe bats**

Emma Stone, University of Bristol

*No abstract*

## **Autumn swarming and the implications for the restoration of underground sites**

Jon Flanders, University of Bristol; [Jon.Flanders@bristol.ac.uk](mailto:Jon.Flanders@bristol.ac.uk)

Underground sites perform an important role in the autumn when a number of species of bats visit them in an event described as autumnal swarming. The nightly bat activity at four structurally different underground sites, located within 400 meters of one another, was surveyed on the same night over three years. The swarming activity at these sites was then compared to a coastal mine 3.1 km away. A total of 838 bats of 8 species (including Bechstein's bats) were caught over 64 capture occasions. High levels of variation in abundance of different species was observed within and between different underground sites indicating that there are multiple factors governing site selection by swarming populations.

The large number of bats caught over the three years highlights the importance of underground sites for bats. High levels of variation between quarries outlines the need for a better understanding of the factors influencing a site's suitability for the bat communities using it. Finally, these results show the importance of surveying all of the underground sites within an area to assess their significance for different species of bat.

## **Building a future for bats**

Amy Coyte, BCT; [acoyte@bats.org.uk](mailto:acoyte@bats.org.uk) and Cath Laing, BCT Review Steering Group,

This year has seen some exciting new developments for the Bat Conservation Trust, which directly enhance our ability to work towards our vision of a world where bats and people live in harmony. This presentation outlines some key highlights of the year, plus some of the ever increasing challenges bats face.

Highlights include:

- establishing bats as UK Biodiversity indicator species and hence ensuring that they are major flagship species in the delivery of Biodiversity Conservation
- commencing work on establishing the distribution of Bechstein's bats and other woodland bat species across southern England and Wales, in collaboration with experts and volunteers
- securing a major Heritage Lottery grant to take forward the Count Bat Project, which aims to involve a wider spectrum of people in bat conservation
- taking forward the Bats and Built Environment project which investigates how we can ensure our future buildings include provisions for bat biodiversity

Bats continue to face ever increasing challenges – BCT's work towards meeting some of these challenges is outlined:

- the implementation of the Habitats Directive - does the current licensing process work towards the spirit of the Directive?
- Increasing use of Wind Energy - – does this impact on UK bat populations on the same scale as identified in the USA, Canada, Germany and France?

The independent review was commissioned by BCT following the request made at the Bat Group Forum last year. The background to the review is presented together with a summary of the findings – what works well and what is not so good. The proposed new direction for the structure governing BCT's relationship with Bat Groups and for regional meetings as a future model of communication and representation are outlined. The results of the most recent consultation and the next steps are presented.

## **Bat research and conservation in Greece: past, present and future**

Eleni Papadatou, University of Leeds; [elena.papadatou@gmail.com](mailto:elena.papadatou@gmail.com)

Although Greece hosts among the richest bat faunas in Europe with 34 species present to date, little work on their ecology has been done and published distributional records are incomplete. However, the ecology and conservation priorities of Greek bats are possibly quite different from those in other parts of Europe where most of the work is done. Here I present the history of bat research in Greece, with emphasis given to recent ecological studies and surveys, including a study on the ecology of a cave-dwelling species with Mediterranean distribution, the long-fingered bat *M. capaccinii*, in the National Park of Dadia (NE Greece); an ongoing ecological study on bats of Crete (S Greece) and bat surveys in the National Park of Prespa (NW Greece). All bat species are protected by law in the country, but none are actively protected: bat conservation is still in its embryonic phase. The potential for future research and the first necessary steps for more effective bat conservation in Greece are discussed.

## **Modelling the distribution of barbastelle bats in Portugal**

Hugo Rebelo, University of Bristol; [hugo\\_reb@sapo.pt](mailto:hugo_reb@sapo.pt)

The in depth knowledge of a species distribution is of prime interest for conservation management and better understanding of its ecology. Predictive modelling allows researchers to determine the distribution of poorly known species, as well as which ecological factors may be limiting their distribution. Usually, there are greater knowledge gaps in rare species. As such, we applied the most recent modelling techniques to the barbastelle bat, *Barbastella barbastellus*, in Portugal, where little was known. This is one of the rarest European bats with a very elusive behaviour.

Using two different presence-only modelling techniques, Ecological Niche Factor Analysis (ENFA) and Maximum Entropy (Maxent), we built potential distribution maps using only 18 presence points (locations where the species was known to exist) and a set of climatic variables, altitude and land cover. Our results show that according to both models this species seems to be clearly dependent of native woodland, preferring areas of higher altitude where temperatures are cooler and humidity is higher. Regarding spatial predictions, both models agreed that the northern parts of the country were more suited for its presence. Nevertheless, the predicted area was scarce and fragmented. On the other hand, models disagreed greatly on where barbastelles could occur in the southern areas of the country, probably a result of the very different bioclimatic conditions (north and centre mainly dominated by Atlantic forest and climate, while in the south the Mediterranean bioclimate dominates). Through acoustic transects and mist-netting sessions between the summers of 2005-2007, we verified that predicted areas in north and central Portugal proved to be accurate, whereas in the south only Maxent gave correct predictions. Overall, using the predictive maps we were able to find 15 new populations of barbastelles and extend its known distribution a further 100 miles south. In a nutshell, presence-only modelling seems to be a strong method when working with rare or elusive species, allowing researchers to develop habitat-suitability maps and determine which ecological factors are limiting a species distribution. As for the models, they proved to be very powerful by allowing the discovery of several new populations, as such ecological modelling should be considered when planning survey areas or developing management plans and conservation policies.

## **Plants that echo in the night: sensory ecology of bat-pollination**

Mark Holdereid, University of Bristol

The neotropics are home to a highly specialised group of bats that feed on nectar. The ecology of these Glossophaginae is similar to that of their diurnal counterparts – the hummingbirds – with which they share a range of interesting feeding-related homologies. Nectarivorous bats feed predominantly on nectar and pollen and in return pollinate the plants they are visiting. In a remarkable plant-pollinator co-evolution, over 1000 species of plants have evolved chiropterophily. They show floral traits that match the perceptual and cognitive abilities of their bat pollinators, generating a typical flowering syndrome characterised by e.g. dull colours, strong aromatic scent and exposed inflorescences. Remarkably, as their pollinators also use echolocation to find and

recognise them, such flowers have evolved unique features that make them stand out echo-acoustically from the background vegetation. The bats' echolocation behaviour also seems to be highly specialised to the very demanding task of flower detection, object recognition and correct approach guidance ('active gleaning'). During approach these bats also adjust their call design in a distance-dependent manner such that Doppler-related ranging errors are minimised. In Bristol we house a captive colony of *Glossophaga soricina* to study their performance in object localisation and recognition.

### **Social calls in brown long-eared bats**

Stephanie Murphy, University of Sussex; [s.e.murphy@sussex.ac.uk](mailto:s.e.murphy@sussex.ac.uk)

Bat 'Social' calls are vocalisations produced in addition to echolocation calls, and carry information to conspecifics. We have been investigating the function of these social calls and, also, the seasonal and temporal patterns of Brown Long Eared Bats social calls at 20 differing roosts across Sussex. We have collected 2441 social calls at these roosts in 2007, and found that the numbers of calls recorded at each roost sites was positively correlated with the number of Brown Long Eared bats within the roost. We will describe the variety of the structure of these social calls recorded at roost sites including, the variation in the call types within roosts and between roosts. We will also discuss the temporal and seasonal patterning of the Brown Long Eared social calls.

### **Dumfries and Galloway Nightjar Radio-tracking Project**

Stuart Spray, Stuart Spray Wildlife Consultancy; [stuart@stuartspraywildlife.co.uk](mailto:stuart@stuartspraywildlife.co.uk)

There is now a consensus of opinion that bats are good indicator species for the health of the environment. It is logical, therefore, to assume that if habitats, such as conifer plantations, are managed to encourage bats, many other species will also benefit.

Recent research in Dumfries and Galloway revealed that nightjar, a red listed bird of conservation concern, is one of the many species that would benefit from managing conifer plantations with bats in mind.

In Summer 2006, five male nightjar were radio tracked to learn more about their foraging preferences and to shed light on why the species was recovering in England but declining in Scotland.

The results showed that foraging nightjar preferred forest rides, forest edges and groups of trees in openspace where the birds were taking advantage of the shelter to forage for insects in much the same way as bats do.

It is clear from this research that increasing the insect density of forest edge habitat by creating buffer zones along forest roads and coupe boundaries where ponds, other wetland habitats, meadows, broadleaf trees and scrub can be established, will benefit nightjar, bat and a range of other wildlife.

### **Why bats should join CPRE**

Tom Oliver, Campaign to Protect Rural England; [TomO@cpre.org.uk](mailto:TomO@cpre.org.uk)

The history of the last 80 years has been one of ever greater fragmentation of landscapes and habitats. The rise of the private car, the major airport, the motorway and the business park has introduced hugely disruptive new features to many landscapes. Elsewhere there has been a huge expansion of urban settlements, external lighting and more recently, the spread of industrial scale wind turbines.

At the same time, our farmed landscapes have experienced unprecedented change in the 50 years after 1945. There has been wholesale removal of hedges, farmland trees and ancient pollards. Most traditional farm buildings have either been demolished, converted into domestic housing, or

substantially altered to accommodate modern agriculture. Landscapes have never been so under pressure or so rapidly changing.

Most of this is very bad news for most bat species. And despite the remarkable change in the attitude to bats among the general public brought about by the bat conservation movement, wholesale habitat disruption and destruction has continued.

CPRE is the environmental NGO at the heart of the debate about planning, whether the strategic kind; planning policy; or the case by case footsteps of development control. Meanwhile we are also heavily engaged in the debate over the future of the CAP and agri-environment schemes. CPRE has a unique combination of spatial and agricultural influence, locally and nationally. And we are one of very few NGOs which tackle bad light pollution and poorly sighted wind turbines.

Bats and CPRE go well together and when we are successful, bats usually will be too. For the future, let's work more closely together, for the interest of all mammals which deploy radar, or a pale imitation of it!

### **The Isles of Scilly Bat Group – a voyage of discovery**

Mike and Anne Gurr, Isle of Scilly Bat Group, [manda.gurr@btinternet.com](mailto:manda.gurr@btinternet.com)

The Isles of Scilly lie some 30 miles from Land's End and are characterized by relatively warm winters and cool summers compared with the mainland. Bats, once common in Scilly, declined severely in numbers in the late 20<sup>th</sup> century. In response, a Species Action Plan was prepared in 2003 and the Bat Group was established at the end of 2006. At the time of preparing this abstract, we have had just a year of considerable activity with the aims of promoting bat conservation and accumulating reliable information about bats in the Islands. We now have 38 members (2% of the population!) four of whom are now licensed bat wardens. We have instigated a programme of bat walks (for members and visitors) with instructions in the use of simple bat detectors. Several members have conducted research into roost sites (about which little is known) and bat behaviour. This has revealed increasing numbers of mainly common pipistrelles. A project with Cornwall Wildlife Trust is continuously monitoring bat activity on the five inhabited islands and has already revealed considerable activity in the winter months as well as the presence of several species other than common pipistrelles.

### **Bat rehabilitation – why bother?**

Gail Armstrong, North Lancs Bat Group; [gail.armstrong@talk21.com](mailto:gail.armstrong@talk21.com)

“My name is Gail and I am addicted to bat rehabilitation.”

Bat conservation is all about working to influence policy, safeguard habitats and maintain bat populations, so why bother with bat rehabilitation at all? Being passionate about bat welfare for 11 years, and having over 350 personal records of bats in trouble, I decided to take a look at the statistics.

Where do the bats come from, how do they end up in trouble and what happens to them? Why are more males than females found? How many bats do cats really catch? Which species bucks the national trend by being found more often in Lancashire?

What, if anything, are these data telling me? And above all, in the modern world when time is precious, is it worth the effort?

### **Count Bat and engaging new groups in bat conservation**

Dan Merrett, BCT and Jude Hirstwood, Bedfordshire Bat Group; [DMerrett@bats.org.uk](mailto:DMerrett@bats.org.uk)

To secure sustainable bat conservation we need to engage, educate and involve people in the wonder of bats. The Bat Conservation Trust and the bat groups across the country have made huge in-roads in changing attitudes to bats and debunking the myths and misunderstandings that surround them. We recognise however that there are a number of communities that are under-represented in bat conservation and that have not traditionally been engaged in bat events. The Count Bat Project seeks to involve as wide a spectrum of people as possible in bat conservation,

building on examples of outreach work already done by a number of bat groups and encouraging and supporting others. A pilot project was initiated in 2005 which worked in partnership with 4 bat groups, and the success of which led to an England-wide Heritage Lottery Funded 4 year project commencing in 2008. A further Count Bat project is currently being piloted in Wales.

### **Establishing Bats as Indicators: BCT's Work in UK and Europe**

Karen Haysom. BCT; [khaysom@bats.org.uk](mailto:khaysom@bats.org.uk)

Pledges by governments to significantly reduce or, in the case of the EU, halt the rate of biodiversity loss by 2010 have created a demand for biodiversity indicators that measure progress towards the target. Such indicators should provide accurate, robust, summary statistics for policymakers and the public. Selected species from a small number of taxa, mainly birds and butterflies, have been used to represent trends in the abundance and distribution of specific groups in the UK and Europe. Recent moves to expand the suite of taxa used as indicators have considered the use of bat data and the UK government adopted "Trends in widespread bat populations" as a UK Biodiversity indicator in May. This presentation outlines BCT's contribution to establishing bats as indicators, focusing on local and European projects and potential future directions through EUROBATS and other initiatives.

### **Bat activity patterns and habitat use within lowland agricultural landscapes**

Danielle Linton, WildCRU D.Phil Student; [danielle.linton@zoo.ox.ac.uk](mailto:danielle.linton@zoo.ox.ac.uk)

To investigate the influence of habitat composition on bat activity across different spatial scales within a lowland agricultural landscape 6 x 50km car transect routes and 24 x 1km<sup>2</sup> farmland study sites within the Upper Thames catchment area, Oxfordshire, UK, were regularly monitored over 180 bat detector transects undertaken between April to October during 2006 and 2007. Continuous broadband recordings of bat echolocation calls were obtained using an Avisoft UltraSoundGate116, and subsequent sonogram analysis was then carried out to enable species identification (or classification into species groups) and quantification of bat activity based on minutes of recordings per species/group.

Total bat activity was found to be influenced by habitat composition along survey routes, indicating selection of riparian corridors, proximity to woodland within the surrounding landscape, and also preferences for hedgerows containing mature trees. Patterns of habitat use varied between bat species/groups, with the common pipistrelle *Pipistrellus pipistrellus*, being the most frequently encountered and widely distributed species, whilst soprano pipistrelle, *P. pygmaeus* and *Myotis spp.* had stronger preferences for waterbodies and woodland habitats. Larger bat species, predominantly Noctule, *Nyctalus noctula*, were also encountered more frequently along riparian corridors.

### **Bat conservation management in agri-environment schemes in Wales**

Anne Humble, Welsh Assembly Government; [Ann.Humble@Wales.GSI.gov.uk](mailto:Ann.Humble@Wales.GSI.gov.uk)

In Wales, Tir Gofal is the higher-level agri-environment scheme, it forms the main pro-active habitat management scheme in Wales.

In response to comments from NGO's and specialists within the Welsh Assembly Government (WAG) that the broad brush approach to wildlife management was not tackling the decline in key species identified on the Article 74 list Tir Gofal managers together with NGO's and scientific specialists in CCW developed the concept of species packages. These experts were asked to identify key species that require positive management on farmland. For bats, the Bat Conservation Trust identified Greater and Lesser horseshoe bats.

For each species, experts were asked to identify key areas in Wales where work for these species should be focused. These maps are provided to Project officers on their desktop GIS system. For each new Tir Gofal application processed, the species package layer is consulted. Specialists have also reviewed the existing Tir Gofal management categories and have written guidance notes for

PO's to help them target the most suitable options in their negotiations with the farmer. The next stage is to draft management advice leaflets for landowners, with tips in best practice and information on the species they are trying to protect.

### **White Nose Syndrome in the United States**

Emily Davis, Speleobooks; [speleobooks@speleobooks.com](mailto:speleobooks@speleobooks.com)

White Nose Syndrome (WNS) is an unidentified agent or agents that are causing the death of cave bats in unprecedented numbers across a rapidly increasing portion of the Northeast US. The most obvious visible symptom of the problem on hibernating bats is a white fungal growth often completely surrounding the nose of some, but clearly not all, affected animals. Fungus also appears on other exposed tissues including the ears, wings and tail membrane. Animals in affected sites often leave their traditional roosts and shift to colder regions of the site, and also to areas nearer the entrances, which are often the coldest. They are also frequently less responsive to disturbance by humans. Animals at affected hibernacula begin to leave the hibernacula as early as late January, and continue to do so until their normal emergence period. These early dispersers lack fat reserves and invariably die on the landscape. In some locations, large numbers of bats die inside the hibernacula. The immediate cause of death appears to be starvation, presumably because fat reserves are depleted before insects are available in the spring. Animals are being found dead on the landscape even after it would seem that there would be adequate food for survival. We do not yet know if WNS is affecting tree bat species.