

Bat Conservation Trust



Woodland Bat Symposium 18 November 2014 Abstracts

Session 1: Woodland bat species

Branching out: understanding the importance of woodland to the barbastelle

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The barbastelle is one of the rarest and least understood bats in the British landscape. Although widely distributed throughout England and Wales, populations are sparse, characterised by relatively few individuals occupying proportionately large home range areas. Evidence from research suggests that while other bat species are adapting to anthropogenic change by readily exploiting roosting opportunities in man-made structures, the barbastelle has retained a strong preference for roosting in our remaining woodland fragments, away from human disturbance. This talk examines the strong association of barbastelles with woodland and draws on research findings from across the UK and Europe to highlight the importance of woodland and targeted woodland management for the conservation of this enigmatic bat species.

Life on the edge? - the importance of woodland to pipistrelles and other aerial hawking bats

Dr Ian Davidson-Watts, DW Ecology Ltd, ian@dwecology.co.uk

Many ecologists associate bat species such as pipistrelles (e.g. common and soprano) with edge habitats such as treelines, or woodland edges. Due to their conspicuous flight behaviour and echolocation, this view on habitat use has been developed over many years of acoustic surveys and visual observations often undertaken within the first few hours of bats emerging from their roosts. But is this the whole picture? Do woodlands provide more than just a 'bit of edge' for such species, especially when most survey methods are limited to a fraction of the bat nightly activity? This presentation outlines the latest research on habitat use of several aerial hawking species where more advanced survey methods including all night acoustic data logging and radio telemetry were used to study the habitat use and activity patterns. This presentation highlights the key role a range of woodland attributes, including woodland interior, individual trees, as well as woodland edge habitats to roosting, commuting and foraging of such species.

Brown long-eared bat woodland ecology

Dr Stephanie Murphy, Arbeco Ltd, myotisbats@gmail.com

We studied the brown long eared bat *Plecotus auritus* in South East England to determine how their patterns of habitat use could inform conservation management. Radio-tracking of 38 adult females showed that they foraged primarily in woodland and that each had a foraging area (mean =4.4 ha) that they returned to on successive nights. Core foraging areas (mean=2.1 ha) were characterized by more

cover and greater species diversity in the understorey layer than more peripheral areas. Hedgerows were also used for foraging in the late summer and autumn. Of the 38 females radio-tracked 60% roosted in buildings and 40% in trees. All tree roosts were in the same woodland complex; most more than 50 metres from woodland edge & had a tendency to be large. Roost switching was more common in trees but 20% of females roosting in buildings also switched. Most conservation activities for this species have focused on protecting roosts in houses and other buildings. While such protection is important for bat conservation, efforts should also be made to protect foraging habitats in woodlands by maintaining cover of native species in the understorey layer and hedgerows that provide connectivity between woodland patches.

16 years of ringing Bechstein's bats. What has it shown us?

Colin Morris, Vincent Wildlife Trust, colinmorris@vwt.org.uk

Bechstein's bat is a European Protected Species under Annex 2 of the Habitats Directive, and the UK government has a statutory obligation to monitor and conserve such species. Successful conservation and protection of a species can only be undertaken when a full knowledge of its ecology is understood.

Radio-telemetry studies and dietary analysis have provided us with a robust understanding of the basic ecology of this species, but give little insight into factors such as longevity, breeding success, roost fidelity or colony dynamics. Currently this can only be achieved through long-term ringing studies: such a scheme was established in 1998 at Brackett's Coppice in Dorset and data gathered from a colony that was using Schwegler 2fn and 1fw bat boxes.

The boxes were surveyed every month from April to September and, with the exception of June, every animal was removed for examination. Breeding condition and biometric data were gathered and newly captured animals fitted with individually numbered rings.

Over the past 16 years, 660 animals have been ringed and more than 70% of the females return to the boxes to breed. Male animals are rarely seen again. Ratio of males to females born during the study is 1:1 and more than 90% of animals have bred by the age of three years.

This study is beginning to provide major baseline information for the species in the UK, including longevity, breeding, site fidelity and colony dynamics.

Session 2: Surveying bats in woodland

A standardised method for survey and monitoring of woodland bats

Dr Chris Scott & Prof John Altringham, University of Leeds, J.D.Altringham@leeds.ac.uk

Woodland bat species are particularly vulnerable due to the loss, fragmentation and disturbance of their primary habitat. It is important therefore to be able to survey and monitor them effectively. Due to the difficulties of detecting and identifying many woodland species using bat detectors, it has been common practice to determine their presence by capture, increasingly with the aid of acoustic lures. This method gives reliable identification, but is more invasive than bat detector survey and rarely captures enough individuals for even semi-quantitative monitoring.

We have developed free, stand-alone software that can rapidly isolate bat calls from large sound files and identify woodland species with high accuracy and explicit levels of confidence. The software has been designed using Pettersson time expansion and direct sampling (full spectrum) detectors, but works with some other brands. To complement the software we have tested the effectiveness of different transect methods, and determined the number of repeat transects needed, to reliably detect

species known to be present. The hope is that this method can be rolled out on a national basis through the BCT, and with sufficient volunteers can be used for effective long-term survey and monitoring. The data generated can be used flexibly – for large scale presence-absence analysis, intensive monitoring of single sites and for mapping projects. A workshop at the conference will demonstrate the software and describe the transect and data collecting methodology.

Funded by Defra and conducted in collaboration with BCT.

Advanced survey techniques for woodland bat species

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Significant advances have been made in the effectiveness of trapping surveys for bats over the last decade with the development and advances in ultrasonic lures, devices used to attract bats to a trapping location. These enable significantly increased capture rates as well as trapping to target specific, often notably rare, and difficult species to catch leading to increased understanding of species ecology, population and distribution as well as quicker and more accurate assessment of species assemblages and populations present at a specific sites. However, the number of different ultrasonic lures available operating in different ways with different methods of call reproduction and frequency range can affect the quality of calls made and trapping success. Trapping with lures is very different to passive trapping and many people have a lack of understanding in how to use this equipment effectively to enable accurate surveys. Further guidelines are needed in this area to identify pros and cons of lures, best practice and effective use to get the potential results that can be achieved using this equipment.

Reliable tree-roost indicators

Henry Andrews, Andrews Ecology Ltd, henry.andrews@aecol.co.uk

In the six years I have been mapping and inspecting trees for bats I have recorded over 500 PRF in detail and seen inside 136 bat roosts, variously holding barbastelle, Bechstein's bats, Daubenton's bats, whiskered bats, Natterer's bats, noctules, common and soprano pipistrelles and brown long-eared bats. This experience has led me to conclude there are three consistently reliable field-signs of roost-presence in trees, and a fourth may also prove useful for some multi-disciplinary surveyors.

In this short talk I would like to share my experiences with you and show you photographic evidence to support my conclusions. I hope the talk will re-enthuse those of you who have lost heart, galvanise the resolve of those of you who are actively searching for tree-roosts, and illicit comments and accounts from those of you who have found roosts yourselves.

The talk is primarily aimed at arborists and professional bat-surveyors, but is sufficiently light-hearted to be enjoyed by anyone with an interest in trees or bats or both.

The Warwickshire barbastelle project

Lois Browne, Warwickshire County Council, loisbrowne@warwickshire.gov.uk

The Warwickshire Barbastelle Project is a 3 year conservation project funded by the SITA Trust and lead by Warwickshire County Council, in partnership with Warwickshire Bat Group.

The project involved studying barbastelle bats from the only known maternity colony in Warwickshire. The bats were radio-tracked over two summers by teams of volunteers to identify new roost sites and key feeding areas, and to understand more about their ecology.

The project also involved working with several landowners in the area to maintain and improve habitat quality and connectivity for the barbastelles. This has included the planting and enhancement of hedgerows, erecting bespoke bat boxes in satellite woodlands and the creation of wildflower meadows. Over 30 volunteers helped to achieve these practical habitat enhancements.

Session 3: Forestry practices – practical application

The ecological effects of woodland management

Dr Keith Kirby, University of Oxford, keith.kirby@bnc.oxon.org

Woodland management affects woodland in many ways, so we need a framework for exploring these. One effect may be through a change in tree species whether this is the effects of coniferisation of ancient woods, or the implications of ash dieback. A second is through alterations to the age structure of the woodland and how different age classes and open space are distributed through the wood. A third is through changes in the vertical structuring of the woodland, affected both by direct management and through grazing levels. While not as extreme as in farmland there are also changes in the soil conditions within sites through for example drainage and impacts from the surrounding land.

The practice and planing of ancient woodland restoration

Jeremy Evans, Woodland Trust, JeremyEvans@woodlandtrust.org.uk

Ancient woodland is the richest land habitat for species in the UK, having been wooded since at least 1600. It is the natural world's equivalent of a grade 1 listed building and can't be recreated simply by planting new trees, but can be restored! Many ancient woods were planted with non-native conifers between the 1930s and 1980s to supply much needed timber for industry, resulting in damage to hundreds of thousands of hectares of ancient woodland. The best way to restore these woods back to their former glory is to change the woodland canopy structure gradually, slowly removing the conifers to let the light back in. Restoration is the only way to protect the long-term future of the last 2% of ancient woodland that remains in the UK.

The Countryside Stewardship Scheme, woodland management and bats

Dr Mike Render, Forestry Commission, Mike.Render@forestry.gsi.gov.uk and Dr Carol Williams, Bat Conservation Trust, cwilliams@bats.org.uk

The Countryside Stewardship Scheme will be launched in 2015. Biodiversity will be a key objective of the new scheme. What was the previous agri-environment scheme delivered by Natural England and the English Woodland Grant Scheme delivered by the Forestry Commission will be amalgamated into this one grant scheme.

The aim is to move management for species to a more habitat based approach, so that habitats and landscapes work better for species using the new scheme as effectively as possible.

The woodland elements of Countryside Stewardship will include creation and the management of existing woodland areas. Support will be through a mixture of payments for a wide range of capital items and multi-annual payments to cover all or part of the additional costs arising from management commitments to achieve environmental improvements.

There will be a requirement for all applications to be supported by an approved woodland management plan that meets the requirement for sustainable forest management as detailed in the UK

Forestry Standard. The management commitments will primarily be targeted at priority habitats and species.

For species delivery there will be a two-tier approach. They are still under development but are:

1. The Mosaic approach

Caters for species whose ecological needs/limiting factors can be addressed through generic 'best practice' habitat management approaches that incorporate the needs of species found in that habitat.

This means placing much greater emphasis on creating **mosaics** within habitats, and in this case woodlands, that include important **elements** that are required by species. The majority of priority bat species needs in woodland would be catered for in this way.

2. The Bespoke approach

It is recognised that for certain species or assemblage of species; a more **bespoke** tailored management will be needed to deliver their specific habitat requirements. Such an approach caters for species whose ecological requirements/limiting factors cannot be fully addressed through more generic habitat management described above. This may be because:

- Option-level management needs from a habitat that goes beyond that prescribed under the mosaic approach
- A higher level of pre-agreement advice, within-agreement, aftercare or monitoring is needed to inform successful delivery

It is hoped that the woodland components will be sufficiently flexible to meet both these approaches. Whilst it has been necessary to develop 'options' that give a clear indication of what is expected very detailed prescriptions have been avoided; this reflects the very great diversity that exists within woodland ecosystems. Individual agreements will be specifically tailored to the requirements of the woodland in question.

The current approach to bat species under this approach will be expanded on in this session.

Managing Risk: We must open our eyes and make significant changes to accepted and widely practiced forest management in the UK

John Weir, Forest Research, Forestry Commission, John.weir@forestry.gsi.gov.uk

Our woodlands have been managed successfully during the last century under the assumption that the environment they are growing in will be relatively stable. This key assumption is now proven to be flawed.

Over the last ten years there has been a significant increase in the number of pests and diseases attacking our trees, and this is compounding the challenges of adapting to a changing climate.

We must act with **URGENCY and plant a wider range of tree species**, with a wider range of origin.

The resilience of woodlands in England relies on tree species selection being based on the predicted future climatic conditions rather than current.

The use of woodlands by bats in anthropogenic landscapes: implications for policy and practice

Dr Kirsty Park, University of Stirling, k.j.park@stir.ac.uk

Woodland is one of the most biodiverse habitats on the planet and an important habitat for the majority of bat species worldwide. Approximately 40% of woodland has been lost globally over the

past 300 years due to human activities, and in large parts of Europe, woodland cover has been fragmented and depleted for hundreds of years. Whilst woodland cover is now slowly increasing in Europe much of this in the form of commercial forestry plantations or small fragments embedded within a relatively hostile agricultural matrix. A key action for bats is through landscape-scale management focused on the creation and management of woodland. However relatively little is known about how woodland character relates to bat abundance and activity, and there is a dearth of information on the effects of woodland management (silviculture) on bat populations. Over the past seven years research at Stirling has been investigating bat ecology in woodland heavily affected by human activities, specifically those in agricultural landscapes, plantation forestry and urban woodland. There are marked differences in the response of bats to woodland characteristics which vary, not only between species but between the sexes. The effect of site versus landscape characteristics also differ according to the mobility of species. In this talk I will highlight some of the findings arising from this research, outline the implications for policy and practice and suggest future research priorities.

Session 4: Woodland case studies

Wood-pasture and woodland bats: restoring the first without losing the second. Lessons from Croft Castle, Herefordshire

Dr David Bullock, National Trust, david.bullock@nationaltrust.org.uk

Wood-pasture and Parkland, a Priority Habitat in the UK, is a highly significant historical feature which supports lower plants, invertebrates and bats many of which are rare. It has been an integral and distinctive landscape feature over millennia, providing pasture for livestock and deer, and timber and fruits from open grown and often veteran trees. At Croft Castle in Herefordshire, UK, National Trust is restoring W-P by removing planted conifers. The forestry operation, and the resulting deep shade cast by the western hemlock, killed or terminally damaged lots of the veteran oaks. Bat surveys prior to removal of the conifers revealed six species using the W-P, some of which require special protection such as the barbastelle and lesser horseshoe bat. Management recommendations to retain woodland habitat for bats focused on retention of large corridors of western hemlock through the W-P making care of the veteran oaks very difficult. This project challenges our objectives of restoration of grazing, rescue of the surviving veteran oaks and conservation of habitat for bats. Felling of conifers is underway this winter. We aim to track the distribution and abundance of bats in 2015 and beyond. But we are not clear whether either the intensity of survey or methods used in 2014 were sufficient to provide a baseline from which we can detect changes and, if necessary, alter woodland management if we judge the populations of any of the bat species are being harmed.

Integrating bat conservation into multi-objective woodland management – a case study focussing on Swanton Novers Woods

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All British bat species use woodlands to a greater or lesser extent. Some are entirely reliant upon woodland for their survival. There are strong moral as well as legal reasons for ensuring that the requirements of bats are taken into account when designing woodland management programmes. There is a prevailing view that woodland management for nature conservation is best achieved by restoring traditional methods of management, such as coppicing. Indeed, current National policy seeks to ensure that active management is restored to a large proportion of British woodlands. Whilst active management may benefit some species, evidence shows that others require relatively undisturbed areas to survive. Swanton Novers Woods National Nature Reserve is one of Norfolk's most important woodlands for bats. We describe how these woods are managed for nature conservation, commercial

forestry and public access and highlight some of the difficulties presented by multi-objective approach to management when seeking to conserve bats in our woods.

Balancing the requirements of rare woodland bats with other interest features at an SAC in West Sussex

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Ebernoe Common SWT Reserve is designated as an SAC for its maternity colonies of barbastelles, Bechstein's bats and for its acidophilous beech woodland. It's also designated as a SSSI for saproxylic invertebrates, lichens, fungi, birds and more. The dense understorey of holly that has developed over the last 70 years that dominates much of the woodland but benefits the bats by stabilising the micro-climate, is having a detrimental effect on most of the other interest features, including the acidophilous beech woodland. A management plan showing a small proportion of the holly to be managed and a proportion of the veteran trees to be haloed was drawn up. Natural England agreed the plan if a detailed monitoring programme of the bats and associated environmental variables was put in place. This was achieved by the review of the new management prescriptions by Tony Hutson, who developed the monitoring strategy, covering at least a seven year period. The work has been carried out as sensitively as possible with continued input by bat specialists and it is hoped that the next phase of monitoring will show no significant declines in the bat populations. This talk covers the baseline monitoring, the management carried out so far and the next phase of detailed monitoring to be carried out in 2015.