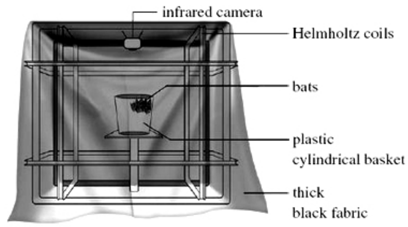
Magnetic Homing Instincts

The diagram below shows how a number of Chinese Noctules (*Nyctalus plancyi*) behaved when they were exposed to an artificial magnetic field. The bats actually gathered at one end of their basket in response to the polarity of the induced magnetic field.

To carry out the experiment, researchers recorded the hanging positions of the bats with an infrared camera, and then used Helmholtz coils to generate a magnetic field that aligned with the local geomagnetic axis at Beijing, where the experiment took place, with twice the intensity of Earth's magnetic field. At first they left the magnetic field steady for just over a fortnight but then they altered both the vertical and horizontal components. Altering the vertical field had the effect of altering the inclination of the field lines, whilst altering the horizontal field affects the magnetic polarity.

At first the bats roosted at the 'true' northern end of their basket as the artificial and natural magnetic fields found in the Bejing area were in alignment. Then the researchers began to change the artificial field's horizontal and vertical components and noted the reaction of the bats. Altering the slope of the induced magnetic field (its vertical component) made no difference. However, when the horizontal field components were altered (changing the artificial field's polarity) the bats roosted at what they thought was the northern end of their basket. Little did the bats know that they had been manipulated into roosting at its southern end!

So, it turns out that unlike birds, which use the inclination of the Earth's magnetic field to navigate, bats use the polarity of the field. The team think that the bats use some sort of magnetite receptor to sense the polarity. The disadvantage of using polarity rather than inclination is that over



geological timescales the Earth's magnetic field reverses and the magnetic north pole becomes the magnetic south pole and vice versa. How bats cope with this is not known.

The bats were sourced from a temple about 100km east of Bejing and were fed on mealworms during their brief stay in captivity before being released back into the wild. All other navigational cues were kept to a minimum. A thick black cloth kept the inside of the apparatus dark, the basket was cleaned every day whilst the bats were removed for feeding and temperature and humidity were kept at an even level. The research was carried out by a collaboration of scientists from the Chinese Academy of Sciences in Beijing, East China Normal University in Shanghai, and the University of Auckland in New Zealand.

Other studies with Big Brown bats (*Eptesicus fuscus*) have confirmed these findings. A number of this species were taken from their roost in a barn at Princeton University field station. They were put in a clear Perspex cage inside a Helmholtz coil next to the barn from 45mins before sunset to 45 minutes after sunset. In this experiment the bats had a clear view of the Sun and the horizon. There was a control group of bats that were not subjected to any artificial magnetic fields, one group that had its bearings skewed clockwise and another subjected to an anticlockwise artificial magnetic field. On subsequent nights one bat from each group was taken 20km north of their barn, released with a small radio tag attached to it and it was then followed using a light aircraft. The control bats appeared to have no problem finding their way back but those bats which had been in skewed magnetic fields headed off in the wrong directions. Happily though, it seems that most of them at some point realised that they were off course and changed direction.

Julia Waller

Further reading:

Chinese Noctule - http://tinyurl.com/yuxpwj
Big Brown bat - http://www.batcon.org/SPprofiles/detail.asp?articleID=98

Earth's magnetic field - http://en.wikipedia.org/wiki/Earth_magnetic_field

Wang, Yinan, Pan, Yongxin, Parsons, Stuart, Walker, Michael, and Zhang, Shuyi. "Bats respond to polarity of a magnetic field." Proceedings of the Royal Society B. doi:10.1098/rspb.2007.0904.

"Bat orientation using Earth's magnetic field" R A Holland et al (Princeton University) Nature 444, 702 (2006)
http://tinyurl.com/22aoqb (Supplementary material: http://tinyurl.com/3874f6)

PestTech – Bats Meet Rodent Control

We joined BCT at the national conference of pest technicians at the Motorcycle Museum last November, taking along some captive bats for the BCT stall. PestTech 'is viewed by many as the largest one-day Pest Control Exhibition in Europe and is attended by well over 1000 delegates', so is a good platform for raising batty awareness. We were very well received and got our pictures in the pest technician's trade journal along with a very good write up. The two pipistrelles were very good and spent the day hanging side by side just at the top of the arrow and label saying 'live animals in transit' on the side of the box. The brown long eared bat was a great attraction and a lot of the delegates were surprised at how small the bats were.

There was a good level of awareness among the delegates that bats are protected species, but less knowledge about where bats roost and how pest control work could affect them. Over all, most people were fascinated by the bats and wanted to learn more, and we were talking with the National Pest Technician's Association about running a workshop style seminar at the next annual meeting; we have already booked the date!

We have also noticed an increase in the number roost visits triggered by pest control workers who have told the householder they cannot do any work because there is evidence of bats in the loft, including Rentokil, and people doing insulation on council grants. So word is getting around, and the bats are benefiting!

Penny Angold

Bats & Bridges of the River Anker

The Warwickshire Bat Group carried out a survey of 52 bridges along a section of the river Anker running from Wolvey in summer 2007 and winter 2007/2008.

The aim of the survey was to provide a basic overview of potential use by bats of the bridges of this region.

Of the 52 bridges surveyed, 36% were identified as requiring further survey work. 40% (N=21) of bridges surveyed were considered to have no bat potential, 38% (N=20) were of low bat potential, 19% (N=10) were of medium bat potential and 2% (N=1) were of high bat potential. No bat roosts or evidence of bats was found at any of the bridges surveyed. Some bridges were identified as being of low potential but could be improved with additional attention. Bat boxes situated within the arches would provide roosting opportunities and crevices could also be created within the bridge structure. A copy of the report has been placed in the bat group library.

Jon Russ

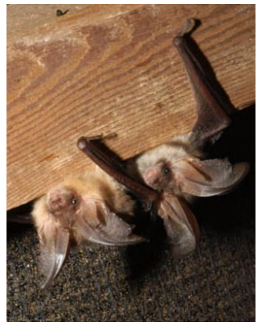
Developer fined £3,500 for destroying bat roost

The Bat Conservation Trust (BCT) has welcomed the prosecution of property developer P J Livesey Group, which pleaded guilty to illegal damage/destruction of a bat roost. The incident occurred at Bedwell Park, Essendon in Hertfordshire in the autumn of 2006.

Crimes against bats and their roosts are highly damaging to the conservation of bats in the UK. The destruction of just one bat roost can lead to the loss of hundreds of bats, which can take many years to recover.

2005 & 2006 Bat Survey Discrepancies

In 2005 a bat survey was undertaken to comply with a requirement of the planning permission granted for Bedwell Park by Welwyn Hatfield Council. Three species of bat were identified at the site. However, in 2006 P J Livesey Group commissioned another survey by a different consultant for a new application at the site, which included a loft conversion. This survey reported that no recent evidence of bats could be found. Concerns were raised about the differences in the surveys, and the local bat group visited the site and reported recent evidence of bats and saw bats.



In the autumn of 2006 demolition and conversion works took place at the location of the bat roost. This was illegal because no licence to damage or destroy a roost had been obtained under the Habitats Regulations. The police visited the site in December 2006 and discovered the illegal works.

According to the PJ Livesey Group's website, it 'built its reputation through painstaking renovation of some of the finest period properties in England.' The Group says it looks holistically at the problems of buildings and provides 'a single solution that covers, aesthetics, design, construction, costs, interior design, furniture and fittings.'

Alison Rasey, Investigations Officer at the Bat Conservation Trust, said: 'They will now have to add environmental issues to this list. The sorts of buildings that this company renovates are highly likely to harbour bat roosts either within the buildings or within the grounds of these properties, and it is a great shame that the company seemed to ignore its legal responsibilities to protected species, making prosecution the only option.'

P J Livesey Group was fined £3,500 and ordered to pay £2,000 costs.

Bat Hibernaculum Built in Suffolk

Ten of the UK's fourteen bat species currently inhabit Breckland and Thetford Forest, and six of these prefer to spend the winter underground. This includes the nationally rare and priority Biodiversity Action Plan species – Barbastelle. Due to the geography and geology of the region, natural underground sites (such as caves) are rare and a study undertaken in Norfolk has revealed that known hibernaculum sites are disappearing at a rate of nearly 2% per year.

The project aim was for the creation for a hibernaculum at High Lodge Forest Centre and involved the construction of a concrete tunnel in a secluded position. The Forestry Commission approached WREN to co-fund the project and pay for the major construction work involved totalling £16,020. This project is the first Category DA project that WREN has supported and The Forestry Commission worked closely with WREN to ensure that the project was delivered on time and within budget.

In the short term this project will help to alleviate the rapid decline in bat hibernaculum sites. In the longer term it will provide appropriate winter roosts and habitats for a Biodiversity Action Plan (BAP) priority species, as well as other bat species recorded in the Brecks and Thetford Forest. It should encourage colonisation of species not recorded in the area, provide a safe haven for a BAP species to breed, and relieve pressure on the only other bat hibernaculum known in the immediate vicinity.

Batty Vital Statistics!

Don't forget to pass on all your bat sightings to George Burton, Warks Bat Group's Records Officer. Included with this newsletter is a copy of a recording form. Send your records to:

Roost Records, The Old Dairy, 25 Brookside, Stretton-on-Dunsmore, Rugby, CV23 9NH

Email: records@warksbats.co.uk

If you have access to the internet then you can enter the information directly at the Warwickshire Batgroup's website

http://www.warksbats.co.uk

Click on the 'record entry form' link in the menu on the left hand side of the page.

THE 'E'- CHO

If you would like to receive an electronic copy of the newsletter via email then let me know…..

newsletter@warksbats.co.uk

THE BAT-'E'-GROUP

As well as receiving newsletters electronically, you can also take part in an email discussion group. It's completely free and only open to bat group members so if you have access to email and aren't already on the "egroup", the why not drop an email to me at:

web@warksbats.co.uk and we'll sign you up!

DIARY

If you know of any batty events then please send us the details and then we can include them in the next issue as well as on Warks Bat Group's website: www.warksbats.co.uk

APRIL

Lets go Batty!!! - Ensors Pool, Nuneaton
Wednesday, 23rd April 2008 20:30

Join enthusiasts from Warwickshire Bat Group, and first timers alike, on this dusk and evening meander in search of our little ultrasonic friends! Keep your eyes peeled! This is one of our most popular events so booking is essential. Please bring a torch if you have one.
Meet : Haselbury Corner off Tenlons Road. (Note: this is a new estate and may not appear on some maps.)
Organised by Nuneaton and Bedworth Borough Council Natural Environment Team 024 7637 6053

MAY

Bat Walk - Compton Verney
Thursday, 1st May 2008 19:30 - 21:30

Join Warwickshire Bat Group out and about in the grounds and discover the secret lives of these fascinating creatures. Children are welcome. Booking essential on 01926 645500.
£5/£3.50 Concessions

Bat Group Training for the Warwickshire Wildlife Trust Site Survey - Brandon Marsh Nature Centre
Friday, 2nd May 2008

Bat Walk - Compton Verney
Thursday, 8th May 2008 19:30 - 21:30

Join Warwickshire Bat Group out and about in the grounds and discover the secret lives of these fascinating creatures. Children are welcome. Booking essential on 01926 645500.
£5/£3.50 Concessions

Let's Get Batty - Ryton Pools Country Park
Saturday, 17th May 2008 19:30

An evening slide show followed by a nighttime stroll with local bat experts to spot the bats of Ryton. The event will finish whenever we stop spotting but you can leave whenever you wish. Meet at the Visitors Centre. Organised by Warwickshire County Council. Booking essential on 024 7630 5592
Adults £1.50 Concessions £1.00 Family £3.50

Bat Walk - Ragley Hall
Friday, 23rd May 2008

A presentation on bats in the UK and Ragley, followed by a barbecue and a bat walk around the grounds. There will be an opportunity to see bats emerging from their roost at the start of the walk.
Advanced booking essential, Tel: 0800 093 0290
Cost to be confirmed.

JUNE

Bat Group NBMP Training - Brandon Marsh Nature Centre
Saturday, 7th June 2008

Wildlife and Bat Evening - Burton Dassett Hills Country Park
Wednesday, 11th June 2008 20:00 - 22:00

A 2 mile midsummer evening ramble around the hills to see what might be lurking in the woods and valleys. Meet below the beacon. Booking essential on 024 7630 5592. Organised by Warks County Council.
Adults £1.50 Concessions £1 Family £3.50

JULY

Bat Night - Kingsbury Water Park
Wednesday, 9th July 2008 20:30 - 22:30

An evening to find out all about bats. A short talk followed by hot jacket spuds in The Old Barn Cafe, then a night-time stroll to spot the bats of Kingsbury. Please bring a torch. Meet at the Information Centre. Organised by Warwickshire Country Council. Booking essential: 01827 872660.
Cost: (includes food, drinks extra): Adults £5.00, Under 16s £4.50

Bat Walk - Ragley Hall
Friday, 18th July 2008

A presentation on bats in the UK and Ragley, followed by a barbecue and a bat walk around the grounds. There will be an opportunity to see bats emerging from their roost at the start of the walk.
Advanced booking essential, Tel: 0800 093 0290
Cost to be confirmed.

Bat Walk - Brueton Park, Solihull
Thursday, 31st July 2008 20:30 - 22:00

Learn more about this warm bloodied mammal, listening and tracking them down in the dark with detectors.
Organised by Solihull Council 0121 704 8000
Free

AUGUST

Lets go Batty!!! - Bedworth Sloughs
Wednesday, 20th August 2008 20:30

Join enthusiasts from Warwickshire Bat Group, and first timers alike, on this dusk and evening meander in search of our little ultrasonic friends! Keep your eyes peeled! This is one of our most popular events so booking is essential. Please bring a torch if you have one.

Meet : Bedworth Sloughs, entrance adjacent to 225 Newtown Road, Bedworth

Organised by Nuneaton and Bedworth Borough Council Natural Environment

Team 024 7637 6053

Bat Night - Kingsbury Water Park
Wednesday, 20th August 2008 20:30 - 22:30

An evening to find out all about bats. A short talk followed by hot jacket spuds in The Old Barn Cafe, then a night-time stroll to spot the bats of Kingsbury. Please bring a torch. Meet at the Information Centre. Organised by Warwickshire Country Council. Booking essential: 01827 872660.
Cost: (includes food, drinks extra): Adults £5.00, Under 16s £4.50

Bat Walk - Babbs Mill Local Nature Reserve
Thursday, 21st August 2008 20:30 - 22:00

Find out how to track down this nocturnal creature with the help of our experts and special detectors. A great opportunity to see bats in their natural environment. Starting from the boat house car park. Organised by Solihull Council 0121 704 8000
Free

Bat Walk - Ragley Hall
Friday, 22nd August 2008

A presentation on bats in the UK and Ragley, followed by a barbecue and a bat walk around the grounds. There will be an opportunity to see bats emerging from their roost at the start of the walk. Advanced booking essential, Tel: 0800 093 0290
Cost to be confirmed.

Let's Get Batty Again - Ryton Pools Country Park
Saturday, 30th August 2008 19:00

An evening slide show followed by a nighttime stroll with local bat experts to spot the bats of Ryton. The event will finish whenever we stop spotting but you can leave whenever you wish. Meet at the Visitors Centre. Organised by Warwickshire County Council. Booking essential on 024 7630 5592
Adults £1.50 Concessions £1.00 Family £3.50

SEPTEMBER

Bat Walk - Compton Verney
Thursday, 11th September 2008 19:30 - 21:30

Join Warwickshire Bat Group out and about in the grounds and discover the secret lives of these fascinating creatures. Children are welcome. Booking essential on 01926 645500.
£5/£3.50 Concessions

Bat Walk - Ragley Hall
Friday, 12th September 2008

A presentation on bats in the UK and Ragley, followed by a barbecue and a bat walk around the grounds. There will be an opportunity to see bats emerging from their roost at the start of the walk. Advanced booking essential, Tel: 0800 093 0290
Cost to be confirmed.

Bat Walk - Compton Verney
Thursday, 18th September 2008 19:30 - 21:30

Join Warwickshire Bat Group out and about in the grounds and discover the secret lives of these fascinating creatures. Children are welcome. Booking essential on 01926 645500.
£5/£3.50 Concessions

DON'T FORGET TO CHECK THE WEBSITE FOR RECENTLY ADDED DATES!

The next issue of the Echo is out on 15th May 2008. The deadline for articles is 1st May 2008. If you have any batty stories, anecdotes, interesting articles or research news then please send us the details so we can include them in the next newsletter.