Bat Conservation Trust Partner Group

Issue Seven – Winter 2013/14

In this issue....

The committee*:

Chair - Michael Walker
Treasurer – Paul Stone
Membership – Ruth Testa
Minutes – TBC
Events – Matt Cook
Bat Care – Lynn Victor and Rebecca Dicks
Newsletters - Michael Walker and Matt Cook
Data & Info – Michael Walker, Chris Turner and Phil Carter

*to be proposed at the March AGM

We are currently **seeking a Minutes Secretary** to stand at the March AGM please. This role involves minuting our indoor meetings and then disseminating the info (after its seconded) shortly afterwards, with a quick reminder before the next meeting. It's a very straightforward but crucial role – can you help .....?

Bat Records

Recording where we find which bats is a very important part of bat conservation. We can't conserve Nottinghamshire bats and their habitats if we don't know where they are. Please remember to send records of bat roosts, grounded / injured bats, and records from bat detectors via http://www.nottsbatgroup.org.uk/recording.html or Michael Walker at nottsbatman@gmail.com ☺

Welcome to the latest newsletter of **Nottinghamshire Bat Group**. The winter months are often quieter for the bat group with a focus on meetings and talks in the warm indoors. One of our indoor events this winter though was neither a meeting nor a talk and was far from quiet.... for the first time as *Nottinghamshire* Bat Group we decided to arrange a Christmas Social. This was very well attended, raised over £100 for the group, and received positive feedback, albeit there were mutterings of the quiz being too hard and the raffle being fixed! ☺ It's certainly something we'll be looking at again next year along with a summer social when it's a bit warmer ..... and there are some bats about.

The main talk held so far this year was an excellent presentation by Phil Brown of Bristol Uni on his small Myotis bat research project, described in the Autumn newsletter. Although Phil didn't catch any Alcathoe's bats in Notts last summer ☹ his study did reveal some very interesting findings; we've produced a handy ID guide on small Myotis bats this quarter to complement Phil's talk. One of our other articles this month also comes from a University study; *microclimate effects on the feeding attempts of common pipistrelles* by new bat group member and Nottingham Trent University student, Hannah Scutter.

If you have a look at the updated events list attached, you'll see we also have an interesting talk on the often complex topic of bats and Natural England class licences planned for Monday (3rd) expertly explained by the ubiquitous Lisa Worledge of BCT. This is a must for new and 'old', voluntary and professional bat workers. It will be preceded by the AGM when all being well the new constitution will be formerly adopted and the committee voted in.

Other indoor events also confirmed in early March include a bat call analysis / data handling workshop and a bat care workshop. These are to follow very successful similar events held within the last eighteen months; it would be great to get a good turn-out for both to help share the important workload over the coming summer.

We have ventured outdoors this winter too though with recent members trips to the caves of Creswell Crags and to the Rushcliffe Country Park man-made hibernaculum. Some of our members have been investigating potential new underground sites for bats this wet winter as well; both in Notts and elsewhere in the East Midlands and two accounts of these escapades are included below. Also included in this winter newsletter are a couple of articles about bats overseas - so you can at least imagine the warm weather until it gets here!

Once we're fully into spring we get a bit more active outdoors again with our biannual bat box checks at Center Parcs and Clumber Parks. There may be two or three other sites to be visited too to install or check bat boxes, following agreement by the group at the last meeting to purchase various designs. Once we're into May they'll be quite a bit going on as the bats are out and about so please keep an eye on your emails, our Facebook page, and our Yahoo forum for events updates.

Finally, there are two notable BCT events / projects to mention which include our bat group. Firstly there's the highly recommended Midlands Bat Conference on 26th April in Warwick. This regional conference is reasonably priced and offers some great talks and workshops.

Secondly, and possibly even more exciting though, is that we are very pleased to confirm that Notts Bat Group has been selected as one of four pilot bat groups / counties for the BCT National Nathusius' Project in 2014. This project, funded by the People's Trust for Endangered Species (PTES), aims to understand more about the distribution, status, and movement of *Pipistrellus nathusii* across the UK via a specific fieldwork methodology. We have been selected for the pilot partly due to our central geographic location but moreover thanks to the hard work of our members over recent months and years in accruing reliable data on this species, liaising with national experts, and our commitment to bat research and conservation. One of the study sites for the 'Nathusi project' fieldwork will be Attenborough Nature Reserve and there's an article below on some quite original bat roost habitat created there upon advice from the group, and which received national media coverage.

So with the National Nathusius' Pilot Project, the extensive Bat Atlas Project being carefully planned by our members working at Notts Wildlife Trust (outlined by Chair Michael Walker at the January meeting), the advanced bat training / research at Clumber Park, and all the other events planned, 2014 could be the bat group's most exciting year yet !

Nottinghamshire Bat Group, February 2014

The eastern entrance to Withcall disused railway tunnel in Lincs

A brown long-eared bat (below) hibernating at Withcall Tunnel; the only species of bat recorded hibernating there other than Myotis bats.

Results of Withcall Tunnel hibernation count, January 2014.

Species	Number
Natterer's bat	43
Daubenton's bat	27
Brandt's bat / whiskered abt	1
Brown long-eared bat	4
TOTAL COUNT	**75**

A Natterer's bat (below) hibernating behind calcified soot on a tunnel wall; *Myotis nattereri* is the most abundant species found at Withcall Tunnel.

Photos: Laura Hammerton

A TALE OF TWO TUNNELS .....

Members of Notts Bat Group have been assisting neighbouring bat groups with hibernation checks this winter, with two such visits undertaken at disused railway tunnels; Withcall Tunnel near Louth in the Lincolnshire Wolds (an Area of Outstanding Natural Beauty), and the other a bit closer in Leicestershire. Both sites are monitored annually in January and February as part of BCT's National Bat Monitoring Programme (NBMP). On the face of it the two tunnels provide very similar conditions for bats to hibernate; they're both 'underground', they're both disused, are of similar lengths, constructed from similar materials, and are both located in the countryside in good bat habitat. However, the surveys of these tunnels always turn up very different results .....

Withcall Tunnel, Lincolnshire

Withcall Tunnel is a 900 m long disused railway tunnel running east – west and carved through sandstone and chalk, which was abandoned in the 1950's. The ends of the tunnel have since been bricked up but with openings above locked doors allowing access for bats. Once inside, no light can be seen at the other end of the tunnel because a summit is located around 300 yards from the eastern portal. Historically, the climb up to and within the tunnel (a gradient of 1 in 54) often caused difficulties for trains in the wet, and some locomotives took two or more attempts to reach the top. Interestingly, an oversight by the architect also resulted in no refuges being constructed, which is an unusual and potentially dangerous feature for a single track tunnel of this length.

Although wet at its western end due to penetrating groundwater, Withcall Tunnel remains in excellent condition despite a 50 year absence of regular maintenance. Today, the tunnel provides a wide range of underground microclimates, which are regularly utilised by large numbers of hibernating bats during the winter months. Humidity levels are high and temperatures stable - ideal conditions for hibernating bats.

Withcall Tunnel, together with the nearby South Willingham Tunnel (both on the Louth – Bardney railway line) has been designated a SSSI and is considered to be in the top ten (known) hibernation sites for Myotis bats (*Myotis spp.*) in the country - but only one other bat species, the brown long-eared bat (*Plecotus auritus*) has ever been recorded hibernating there.

Five species of Myotis bat have so far been recorded roosting or hibernating within the tunnel; Natterer's bat (*Myotis nattereri*) regularly occurs in the largest numbers with Daubenton's bat (*M. daubentonii*) then usually the second most abundant species. Beyond that, only very low numbers of Brandt's bat (*M. brandtii*) and whiskered bat (*M. mystacinus*) are recorded each year. To date no Alcathoe's bat (*M. alcathoe*) has been recorded although surveyors weren't looking for this species (discovered in the UK in 2010) until recently, and identification is tricky when not handling.

A total count of bats in Withcall Tunnel in a good year might reach one hundred including a small number of brown long-eared bats amongst all the Myotids. However, the total number of bats this January (75, see table to the left) is down on last year's January check where a total of 102 bats were recorded; it's also below the eighteen year January average of 87 bats. The lower numbers this January have been attributed to the relatively mild winter in comparison to 2013. Indeed some of the bats in the tunnel did appear 'twitchy' suggesting that they had not been in the tunnel very long; it's possible some had only entered the tunnel in the previous 24-48 hours due to a cold snap. Similarly, only one 'frosted' bat was seen this January unlike last year; bats covered in water vapour and in deep torpor when the temperature drops can often have a frosted covering.

Bats were found in a number of locations: bat boxes installed at either ends of the tunnel, underneath calcified soot (clinker), behind timbers on the walls, behind masonry and bricks stacked on the walls by previous surveyors, in drainage pipes, and cavities provided by missing brick work. A small number of bats were also free-hanging on walls. Some bats also seem to stuff themselves upside down into cavities like they've fainted, which can often look pretty funny!

Leicestershire Tunnel

This Leicestershire tunnel is approximately 760 m long and has been disused since the 1960's after opening in 1879. This tunnel has a slight curve at each end and rises in gradient very slightly from north to south. It's lined in brick although short sections of masonry sidewall are apparent including two facing each other near the centre and another in the east wall close to the northern entrance which is badly spalled. Stone is also present near the entrances. It's predominantly dry inside except for a central drain. Unlike Withcall this tunnel runs north - south and is open at both ends. Also unlike Withcall it also appears to have been dual track and has deep refuges provided along both sides.

This tunnel provides most of its bat roost habitat by way of missing bricks and mortar, behind clinker, and within the spalled masonry. Gaps and crevices in brickwork in some refuges also support bats and occasionally bats are free-hanging. The tunnel is less humid and is cooler than Withcall Tunnel with an occasional stiff breeze blowing through.

This tunnel has been monitored by Leicestershire & Rutland Bat Group since 1995. The table below opposite shows the total number of bats counted during each visit over fifteen of the last seventeen years*, with the average for each month over that period also shown. This

Total number of bats recorded at the Leicestershire Tunnel during NBMP counts since 1997.

	Jan	Feb
2013	25	18
2012	21	18
2011	18	19
2010	18	17
2009	9	16
2008	16	22
2007	13	14
2006	20	22
2005	*No Data	*No Data
2004	*No Data	*No Data
2003	14	*No Data
2002	16	10
2001	15	16
2000	9	9
1999	14	8
1998	12	8
1997	13	16
Average:	**16**	**15**

Note that bias in the above counts may occur as surveyors change and improve, and as degradation of the tunnel over time creates more roost habitat for bats to occupy.

Underground Sites in Notts

Even though winter is drawing to a close, the bat group continues to search for potential hibernacula and Autumn swarming sites. If you know of any disused railways tunnels, adits, mines or caves within or very near to our borders please get in touch with Matt Cook and Chris Turner. The bat group undertook three organised visits this winter including a training / survey visit to Creswell Crags; thanks to Derrick Eames for hosting this.

One of the Notts tunnels visited by bat group members this winter.

The Attenborough Delta Hide finished in 2013, complete with an abundance of potential bat roosting opportunities in fantastic surrounding foraging habitat.

All hide photos: Michael Walker

P.S. The hide is also very good for bird watching. With patience you may be lucky enough to see a bittern during the winter months!

Leicestershire tunnel has a peak count of only 25 bats (recorded last year) in contrast to Withcall Tunnel which can support around one hundred bats in a given year. However, over a similar NBMP monitoring period to Withcall, this Leicestershire tunnel has supported bats of seven species and four genus in an average annual count of just 15 to 16 bats; whereas Withcall has supported five species of just two genus in an average (January) count of 87 bats – so quite a contrast!

Species recorded at the Leicestershire tunnel (usually in single or low numbers) comprise those recorded at Withcall (the four Myotis species and brown long-eared bats) but also include common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*P. pygmaeus*). Pipistrelles are not often encountered at 'underground' sites although they do tend to roost near entrances here.

Perhaps most interesting though, is the presence of a hibernating barbastelle (*Barbastella barbastellus*) in the Leicestershire tunnel in both January *and* February each year since 2010, including again in January this year. The barbastelle is very rare in the East Midlands although two turned up to hibernate together in 2011!

There are many theories as to what is most important for a disused railway tunnel to be optimal for hibernating bats; it is most likely that a number of inter-reliant environmental variables need to occur to provide favourable conditions for a regular notable count, and this will vary by species and genus. In relation to this though the yearly external environmental conditions will also be important as will the condition, biology and ecology of the bats themselves. It's also entirely feasible quite a few bats get missed no matter how good surveyors are. So overall bat hibernation is pretty complex and fascinating – which pretty much sums up bats all round!

Laura Hammerton and Matt Cook

Special thanks to Dave Hughes of Lincolnshire Bat Group and Jenny Harris of Leicestershire & Rutland Bat Group for leading the respective annual NBMP surveys, and providing data for this article. Further references: http://www.forgottenrelics.co.uk/tunnels .

A tale of two Notts tunnels ....

As well as trips to foreign counties this winter, some of our members have also been exploring disused railway tunnels closer to home. In January, Laura Hammerton, Dave Goddard, and Matt Cook visited a large tunnel near Nottingham which seems to be something of a tourist attraction; three other groups of 'explorers' appeared in the three hours they were there!

Although it opens into a wooded cutting and on the face of it might be very good for bats, the tunnel was very wet inside and doesn't actually offer all that much bat roost habitat via cracks, crevices, and clinker, at least in the accessible part as much of the tunnel is blocked. Subsequently, only one hibernating brown long-eared bat was spotted.

A couple of weeks later, in early Feb, one of these members also visited a tunnel in the north of the county. Upon first arrival this tunnel seemed much more suitable for hibernating bats; it was cold, pretty humid but not wet, appeared to offer plenty of brickwork cavities, and was secluded near to a woodland. Indeed, within a few metres of exploring a couple of common pipistrelles were seen hidden away in the brick walls. Unfortunately though, this brickwork only extended up to 25 m inwards before the walls became mostly smooth sandstone. The concrete roof was also too intact to offer much potential bat roost habitat. So after the initial excitement this tunnel only actually supported those two pips, at least on this visit. However, with the addition of some artificial roost habitat and by excavating a few nooks and crannies, this could potentially be an excellent bat hibernaculum; watch this space as we're making enquiries .....

Matt Cook

The Attenborough Bat Hide

A few years ago the bat group was asked to help create a purpose-built bird hide with lots of bat roosting features for Attenborough Nature Reserve. Funding for this project was available as part of the mitigation for the Trent Left Bank Flood Alleviation Scheme. The idea was to rebuild the old hide with a larger new one but to include as many potential bat friendly features as possible.

Presented with this blank canvas I started to think of how we could get as many roosting opportunities into the hide as possible, for a range of species of bat. The proposed location, overlooking the Delta reed bed, was perfect for bats; in a very quiet part of the reserve and in close proximity to water, woodland and reed, it offered suitable foraging habitat for all of Attenborough's bat species.

As you may have seen on the BBC and BCT websites as well as our Facebook page, the hide was finally completed and opened late in 2013. The photos below show some of the bat roost habitat included in the design (all photos: Michael Walker).

Roof space: A large roof void has been provided for species which need an open space for their summer maternity roosts. The void needs to be warm enough for young bats to develop quickly so a slate roof has been fitted as slate warms up quickly in the sun. Two narrow strips of traditional bitumastic felt have been used on both sides of the ridge to give lots of places for bats to cling to; the rest of the roof has been left unlined. Multiple bat access points have been provided via gaps in the roof ridge, eaves and gable ends. The target species for the roof space is the brown long-

eared bat but other species such as whiskered bat may also use it. There is also an enclosed box on the southern gable within the void which provides a suitable roost for pipistrelle bats; access into the box is via an external gap.

Wall cladding: The walls of the hide are made of concrete blocks and clad in timber; the space between the wood and the wall is perfect for pipistrelle bats (all three species of UK pipistrelle occur at Attenborough; common, soprano and Nathusius') as Pipistrelles like a small enclosed area to roost. Slots in the timber allow the bats to access this space and other gaps will form over time as the timber weathers and warps. In the summer female bats can use the south facing sides, which will become very warm in the sun, for rearing young. At other times of the year the northern aspects will give good hibernation conditions.

Hibernation boxes: Six insulated hibernation boxes have also been installed under the floor of the hide (photos top left). In the winter bats need cool and humid conditions which stay reasonably constant to prevent them waking up unnecessarily and using up valuable fat reserves. The boxes are encased in concrete to help maintain constant temperatures and their location next to water will help with the humidity. The boxes can only be checked with an endoscope.

Finally, I installed two data loggers in the hide just recently; one in the roof space, the other in the pipistrelle box. These will record temperature and humidity every thirty minutes and show when conditions are good for bats to roost. During this visit I also found a single bat dropping in the roof void which is great news! Hopefully this pioneer bat will now pass on the details about this 'des res' to some others!

Michael Walker

Tasmanian Bats

This time last winter I was very fortunate to have been able to escape the snow and jet off across the other side of the world to see family in Tasmania. Whilst I knew a little about the megabats of mainland Oz and a bit about some of the more famous Tassie wildlife (the devil!) I'll admit I didn't know much about their bats. So I thought I'd swot up a bit with the intention of taking my bat detector to the Aussie island state, as well as seeking advice from some local bat conservationists.

I knew I wouldn't have time to get out and do an awful lot given we were visiting family on the other side of the world and were only in Tassie for a week, but I did manage to get in a couple of evening 'transects'. I use that term loosely though as they were more like evening strolls with a bat detector whilst dodging hungry possums and wallabies. Thankfully, I did have a good idea where should be good for bats near where we were staying, as one of the state's main bat researchers had returned my email a few weeks before.

There are eight species of bat native to Tasmania and like ours they're all insectivorous Vespertilionidae or 'evening bats'. Occasionally vagrant fruit bats might turn up from the mainland but crossing the Bass Straits is not that commonplace even for the large flying foxes. Perhaps understandably given the distance and environmental differences, none of Tasmania's bat species are classified as the same as ours. However, even relatively recently Taylor *et al.* (1987) described three species of Tasmanian bats as from the *Eptesicus* genus, the same as our serotine (*Eptesicus serotinus*), along with the 'Tasmanian pipistrelle'. These have all now been reclassified with the 'Tassie pip' renamed as the eastern false pipistrelle or falsistrelle (*Falsistrellus tasmaniensis*).

There are morphological similarities between our bats and those on the opposite side of the world. There are also of course ecological similarities as Tasmanian bats roost in trees and buildings and hunt insects, with some preferring urban / suburban habitats whilst others prefer forests. The photo opposite shows the stunning Cataract Gorge along the Esk River near

Previous Newsletters

Issue 1, Autumn 2009
http://www.nottsbatgroup.org.uk/PDF/snn1-181109.pdf

Issue 2, Winter 2009 / 2010
http://www.nottsbatgroup.org.uk/PDF/snn2-150210.pdf

Issue 3, Summer 2010
http://www.nottsbatgroup.org.uk/PDF/snn3-160610.pdf

Issue 4, Winter 2011 / 12
http://www.nottsbatgroup.org.uk/PDF/nn4-26-02-12.pdf

Issue 5, Spring 2013
http://www.nottsbatgroup.org.uk/PDF/nn5-180313.pdf

Issue 6, Autumn 2013
http://www.nottsbatgroup.org.uk/PDF/nn6-141113.pdf

The Cataract Gorge, Launceston, Tasmania

Tasmania's eight bat species of five genus:

Southern forest bat (*Vespadelus regulus*), large forest bat (*V. darlingtoni*), little forest bat (*V. vulturnis*), chocolate wattled bat (*Chalinolobus morio*), Goulds wattled bat (*C. gouldii*), lesser long-eared bat (*Nyctophilus geoffroyi*), eastern falsistrelle (*Falsistrellus tasmaniensis*), and the Tasmanian long-eared bat (*N. timoriensis sherrini*), which is endemic to Tasmania.

An eastern false pipistrelle, Tasmania's largest bat at up to 21 g and with a 50 mm forearm

We have a growing number of followers of our Facebook page and regularly use this page to share information. We know many of you are quietly addicted to Facebook so please follow us too here.

Photos: Rebecca Dicks

Summer Social: It might be a little way off yet but following the success of the Christmas Social, the bat group intends to host a **BBQ and Bats evening at Notts Wildlife Trust's Idle Valley Nature Reserve on Sat 16th August 2014**. All are welcome – so save the date!

Hannah's References:

Bartonicka,T., Gaisler, J. (2007) *Seasonal dynamics in the numbers of parasitic bugs (Heteroptera, Cimicidae): a possible cause of roost switching in bats (Chiroptera, Vespertilionidae).* Parasitology Research, 100, pp.1323-1330.

Ciechanowski, M., Zajac, T., Bilas, A., Dunajski, R. (2007) *Spatiotemporal variation in activity of bat species differing in hunting tactics: effects of weather, moonlight, food abundance, and structural clutter*. Canadian Journal of Zoology, 85, pp.1249-1263.

Dietz, C., Helversen, O., Nil, D. (2009) *Bats of Britain, Europe and Northwest Africa*. London, A&C Black Publishers Ltd.

Duverge, P.L., Jones, G., Rydell, J., Ransome, R.D. (2000). *Functional significance of emergence timing in bats*. Ecography 23, pp.32–40.

Launceston (http://www.launcestoncataractgorge.com.au/) where I was lucky enough to spend a couple of days (and evenings!).

In an ideal world I'd have been able to study Tasmanian bats a bit more whilst I was there but nevertheless we did get to see plenty of other incredible Aussie wildlife. This included wallabies, roos, an echidna, the famous Tasmanian devil, and a duck-billed platypus. Although I have to confess the latter two were in a zoo! ☺

Matt Cook

The search for the Proboscis bat (*Rhynchonycteris naso*) in Costa Rica

On my recent jaunt to Costa Rica I was fortunate enough to join a small team of Chiropteran biologists (as they called themselves!) who were trying to determine the outer ranges of the Proboscis bat (also known as the Brazilian long nosed Bat). These bats are often common in lowland forests near streams, rivers, mangroves, and lakes (Reid, 1997). They range from Oaxaca and Veracruz, Mexico, to central and eastern Brazil, Peru, Bolivia, The Guianas, Surinam and Trinidad (Simmons, 2005). In Mexico, as well as the above habitats, these bats have also been reported in secondary forests, crop-lands and grasslands. In Costa Rica though, the extent of their range has not yet been determined and any population trends are also unknown. The species is listed by the IUCN as Least Concern because it is widely distributed, common in areas with water and suitable habitat and unlikely to be declining at a rate which would qualify the species for inclusion in one of the threat categories in the near future.

Proboscis bats are almost always associated with moist areas near multistratal evergreen forests. They usually roost in small, single-species colonies of about ten to twenty-four, on tree trunks, in tree cavities, or in caves. When roosting they are often aligned in vertical rows with individuals about 10 mm apart. Interestingly, several males occur in a roosting group, and there appears to be no harem formation or defence. They tend to forage over water on insects, flying only a short distance above the surface.

My first encounter with these bats was in Tortuguero, a sand bar off the mainland in north-east Costa Rica. Whist out in the morning checking for a good place to place some mist nets we came across a small colony roosting on the window mesh at the back of my hut! I hadn't even noticed them! They demonstrated nicely their tendency to roost in lines. Later that evening on a boat tour, we also came across a single Proboscis bat roosting on a tree over the water - I would never have spotted it, it was so well camouflaged! The photos to the left show these stunning bats on the mesh and the tree.

That night we caught a total of eleven Proboscis bats leading us to believe there was another small colony nearby. We recorded all the biometrics for later analyses. The team then moved south-east to another small island and I moved south-west - to the beach and some sun!

Rebecca Dicks

Microclimate effects on the feeding attempts of *Pipistrellus pipistrellus*

There have been few studies on the effects of microclimate on bat behaviour in the UK but certain climates abroad have been seen to shape the emergence times and feeding behaviours of bats. Resident bats prefer different minimum temperatures such as 10 - 12°C in countries in the Northern hemisphere compared to 5°C in Australia and -2°C in New Zealand (O'Donnell 2013). Precipitation has also been shown to negatively influence bat activity (Ciechanowski *et al.*, 2007) as rain drops can interfere with echolocation (Griffin, 1971), and increasing body weight through saturation increases energy costs (Voigt *et al.*, 2011). Humidity and fog have also been seen to affect echolocation due to atmospheric absorption of frequencies (Griffin, 1971).

Lunar 'phobia' has also been observed in many bat species due to the risk of predation from raptors (Lang *et al.*, 2006). An interesting dilemma is posed here as an abundance of insects can be found at twilight hours and bats may risk predation for the potential of mass insect consumption (Duverge *et al.*, 2000).

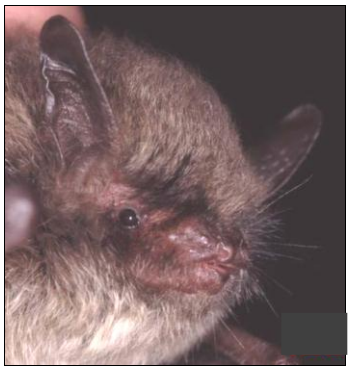
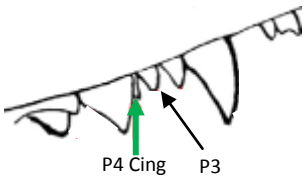
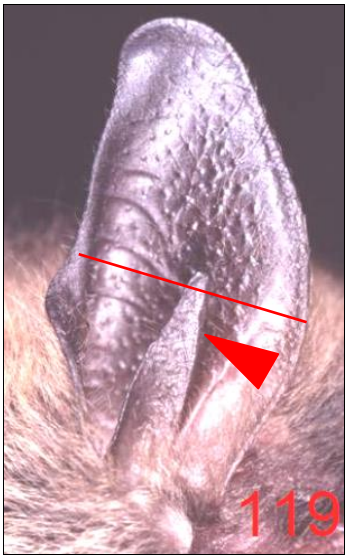
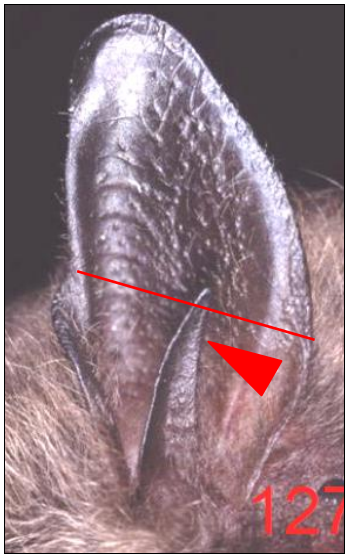
Therefore a study was carried out on a fishing pond situated in Sawley, Notts. Recordings of 20 minutes were made on an Mp3 voice recorder from a Batbox Baton detector for 100 nights between the months of June and October. Simultaneously, weather conditions and the lunar cycle were recorded each night. Feeding attempts were then counted from the recordings with the results analysed using R project analysis software (R Development Core Team, 2008). No statistically significant correlations were identified. However, anecdotal observations indicate that both rain and high winds result in a lack of both bat activity and number of feeding attempts. Optimum temperatures for bat activity and number of feeding attempts appear to be 10 - 20°C.

It's important to note that bat passes may not have always been due to foraging; bats may have been nursing young (Dietz et al. 2007) or roost switching to avoid parasite load (Bartonicka & Gaisler, 2007). An invertebrate study of the area would have helped to better understand the feeding behaviours of bats as well as automated dusk until dawn monitoring.

Hannah Scutter

Small Myotis Bat ID by Matt Cook

Common characteristics: Forearm usually ≤ 38mm; calcar half length of tail membrane; small feet; usually smallest Myotis but can overlap with small Daubenton's bat (*Myotis daubentonii*). *All photographs below reproduced from Dietz and Von Helversen, 2004.*

Note: Treat red with some caution	**Alcathoe's bat (*Myotis alcathoe*)**	**Brandt's bat (*M. brandtii*)**	**Whiskered bat (*M. mystacinus*)**
General Size:	Smallest	Largest	Medium
Face:			
Face Colour:	Palest (Red / Rufous)	Medium to Dark (Chestnut)	Darkest (Black / Brown)
Muzzle:	Shortest / Bluntest	Slightly more pointed	Slightly more pointed
Teeth:	N / A		
Upper Premolar (P)4 Cing Cusp Length:	Medium	Longest (slightly higher than P3)	Usually absent (or v. small)
Temperament:	Calmest	Medium	Liveliest / Noisiest
Forearm Length:	30.8 – 33.3 mm	33 – 38.2 mm	32.0 – 36.5 mm
Tragus:			
Ear / Tragus Description:	Palest base, tragus at or below outer notch of ear	Pale inner ear; tragus above outer notch of ear; tragus convex outer edge and blunt tip	Ears usually dark black / brown, not pale; tragus above outer notch of ear; concave outer edge with pointed tip
Nostrils:	Nostrils prominent, heart-shaped	Nostrils usually heart-shaped	Nostrils not heart-shaped
Penis:	Usually straight to end	Always bulbous at end	Usually narrows to end

*All newsletter text and formatting (and therefore mistakes!) by **Matt Cook** unless otherwise credited. Special thanks to **Michael Walker, Laura Hammerton, Hannah Scutter, and Rebecca Dicks** for their contributions this quarter. Contributions from any of our members on anything bat related are always welcome. Your next newsletter will be with you in the late Spring. Until then ..... **Happy batting!** ☺*