

Look Our for Bats – They Could be Anywhere

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With the increased legal protection for bats comes a greater emphasis on responsible tree work undertaken by professional arborists who consider the ecological implications of their pruning or felling operations. Andrew Cowan offers some advice, which is based on extensive practical involvement with contracts where bats have been an integrated part of the arboricultural and ecological consultancy long before the first chainsaw could be started on site.

What are Bats?

Bats are a diverse group of nocturnal, insectivorous, flying mammals, occupying a variety of niche habitats, but using trees preferentially for foraging, navigation and roosting. This places arborists in a position of responsibility because tree work can have a dramatic impact on the sustainable use of trees by bats, in gardens, parks and woodlands, which can affect the dynamics of the local populations. Legislation also places a legal obligation on arborists not to recklessly disturb, destroy or obstruct a bat roost site, whether it is occupied or not. A responsible arborist should be aware of the ecological implications of tree work.

What to look for:

All animals need a place to rest or somewhere secure to sleep for a while, whether they live out their lives by day or night. Many will dig holes in the ground or excavate cavities in rotten trees, while others will build nests in the branches. However, bats do not have the physical ability to do any of these, and a fixed abode does not fit in with their nomadic life style. Therefore, this makes them reliant on naturally occurring features that offer them suitable conditions.

Nocturnal living enables bats to take advantage of a unique niche, allowing them to hunt insects under the cover of darkness without much competition. However, finding a safe place to spend the daylight hours is essential to avoid predation. This can often be difficult, especially in human dominated landscapes where natural habitats have been extensively cleared, fragmented or modified. Woodland management practices remove a large number of trees which exhibit features that could be used by bats, while tree pruning work often selectively removes limbs and branches which contain potential roost sites

Our understanding of what conditions make a good bat roost are limited, with a considerable bias towards residential dwellings where they are often found





in roofs, cavity walls, under tiles or behind wall claddings. General knowledge about tree roost sites tends to be restricted to records associated with the more obvious locations where large roosts are discovered often by accident. However, when you talk to arborists, bats seem to be popping up everywhere and in what might appear to be the most unlikely places, under loose bark or behind ivy.

When considering the use of tree features by bats it is first important to ask why they might like the conditions offered by such a feature and what purpose it could have within the bats annual life cycle of roost use. Bats depend on the availability of a diverse range of potential roost sites within their natural range, which they will use for different reasons depending on their age, sex or maturity. Changes in climatic conditions throughout the year and from day to day will also influence roost site selection. Radio tracking studies have found some species using over thirty different sites during the course of one summer.

Roost selection can be influenced by a number of factors, not least of which is availability.

Competition for suitable cavities, splits, and crevices can be fierce, with nesting birds, squirrels and various mice species all looking for suitable sites. This demand on what is very often a finite resource can mean that bats are forced into less desirable locations, or at least sites where they are less likely to be disturbed. This may explain the use of what can sometimes be quite precarious tree features like split branches and behind loose bark.

Signs of roosting bats may be indicated by:

- staining around a feature (cavity or split) caused by the natural oils in bat fur, this could also be used by the bats to scent mark the roost site;
- scratch marks around a feature (cavity or split) caused by the frequent use of a landing or launch site;
- bat droppings beneath a hole (these resemble rodent droppings but crumble to dust when rubbed between finger and thumb) which can often be stuck to leaves or bark;
- urine stains below the entrance or end of split, which can be similar to water stains often seen below rot holes or cavities, but tends to be less extensive resembling more of a trickle;
- audible squeaking from within the feature (cavity or split), especially on hot days or at dusk;
- large roosts or regularly used sites may produce an odour;
- flies may be seen around the entrance, attracted by the smell of guano.

Bat Awareness:

If you work with trees in residential gardens, public parks or woodlands, undertaking operations like dead wooding, reducing, crown clearing, felling or even removing storm damage, you will, at some stage, be removing features used by bats for roosting. However, whether or not you are aware of it at the time, may depend on how observant you are, or if you recognise the signs, and if bats are present. Bats are opportunists, using a diverse and extensive range of roost sites for different reasons depending on their age, sex, stage of life cycle and on the prevailing climatic conditions. Put simply, bats could quite literally turn up anywhere.



Our general lack of knowledge and limited understanding of bat ecology makes them appear unpredictable in nature. However, we know that they often use trees preferentially, due to the number and diversity of features that offer them suitable conditions for roosting, so arborists must be vigilant. It is important to consider the possible presence of bats from the first site visit to the completion of work when the wood is being fed into the chipper. There is no substitute for thorough preparation and an effective procedure that ensures everyone in the business knows what to do when a roost site is suspected or if bats are discovered half way through a job.

It is generally accepted that most tree roost sites can be considered to be transient in nature, in that they are often in features which are exposed to failure during adverse weather conditions, or could become unsuitable for use due to advancing stages of decay. Therefore it is assumed that the local bat population will be naturally adapted to frequent changes in roost availability, whether these occur as a result of natural events or due to human activities. However, some sites will last for a number of years, sometimes decades, and can become important sites locally, such as those used as maternity roosts or hibernacula.

Considering the above it therefore becomes necessary to make a judgment of the importance of certain tree features to the local bat population. Initially this may just be an assessment of the number of features, which could be affected by the proposed tree works, whether these are within one tree or spread across several. The next step is to consider whether the potential roost site(s) which will be lost are large enough or old enough to have been used on a regular basis by significant numbers of bats. The thought process should always be one of damage limitation because some roost loss is almost inevitable, but the impact of this can be limited by careful planning and it may be necessary to consider a licence under the amended Habitats Regulations.

At the early stages of specifying tree work or tendering for a contract, a simple assessment of whether the potential of disturbing a bat roost is low, moderate or high, should be sufficient to make the decision whether or not to ask for advice and to find out if a licence is required. However, if there is any doubt it is always best to contact the relevant statutory nature conservation organisation (SNCO) Natural England, Countryside Council for Wales, Scottish Natural Heritage or the Environment & Heritage Service Northern Ireland.

It is not unusual on larger tree work contracts, in parks or woodlands, for a consultant to be involved who will provide professional advice on working with trees where there is considered to be a moderate to high chance of disturbing bats. They will make an assessment of the trees to be affected by the proposed work and what the likely impact will be on the local population. This requires an understanding of bat ecology and a knowledge of which species are likely to be found using the local area.

Most tree work operations will have to be completed under the assumption that bats could be using any one of the features which offer them suitable conditions, because it is not reasonably practical to prove their absence. This also means that there is likely to be insufficient evidence to confirm the presence of any feature, which could be termed a 'known' bat roost. Therefore, it may be impractical to apply for a license under the Habitats Regulations, which would allow actions that could otherwise be considered an offence.

Where roosting potential is considered to be low, tree work operations can proceed, on the basis that if evidence of a roost site, or the presence of a bat, is discovered, all work will have to stop. At this point when a roost site has been confirmed it will be necessary to apply for a license to allow work to continue on the tree or trees. However, where roosting potential is considered to be high the methodology used to dismantle the tree without a license in place should be equivalent to that completed under the EPS Habitats Regulations licence.

The key component of any licence application is the incorporation of species specific mitigation to compensate for the loss of foraging, commuting and roosting habitat. Mitigation for roost loss should be based on the number, size





and character of the features removed. Where possible this could include the resurrection of some of the trunk and branch sections (containing potential roost sites) removed during tree work. However, the first option should really be to retain as many features as possible, by leaving standing trunks, reducing branches rather than removing them completely and only cutting out dead branches where they are imminently dangerous.

Tree work procedures:

All tree work activities should consider the presence of bats in decay cavities, splits, under loose bark or behind ivy, and take precautions to reduce the chances of injuring bats that might be present. Where the climber arborist can inspect small features and clearly see that no bats are present, then the branch or trunk can be dropped to the ground. However, where the split or cavity extends deeper into the trunk or branch, it may not be possible to clearly see all the possible places where a bat might be roosting, even with the use of visual aids like a torch and/or mirrors.

Where tree features cannot be fully inspected by the climber, care should be taken to establish the size of the internal cavity or split to avoid cross cutting through the void and therefore the possible injury or death of any bats that might be present. The section of branch or trunk should then be carefully lowered to the ground, wherever possible using a cradle method so the branch remains level, and is not shaken around or tipped upside down. In some situations this may involve the use of specialist lowering techniques like speed lining or perhaps the use of a crane.

In some cases, such as when a potential roost occurs in a trunk, it may not be possible to lower the section using ropes, without topping it out using a strop and thereby turning it upside down with a sudden jolt, which might injure any bats inside. In such circumstances there may actually be less shock impact on the potential roost site, if the tree is felled with the crown intact, onto a pile of brushwood, up hill or into another tree. However, these decisions really need to be discussed on a site by site basis with an experienced expert with knowledge of tree roosts and an understanding of tree work.

Mitigation:

Bat box schemes can be used to provide replacement roost sites and where possible should be installed prior to the work which will result in roost loss. However, the number and location of boxes must be considered by a bat specialist, who will take into consideration the context of the overall tree work proposal and the resulting habitat impacts. It is important that such replacement roosts are favourably sited both for access by bats and for conditions at the roost. The bat box installation should be designed to persist over many years to continue to provide bats with alternative roosts into the future.

All mitigation proposals should be species specific and therefore need to be based on knowledge of local bat populations and how they use the area



affected. The diversity of native bat species using a range of roost sites and foraging habitat places even greater pressure on the design of such schemes. Poorly designed, uninformed, mitigation can upset the natural balance and interaction between different species. For example, where a bat box scheme increases availability of roost sites for a species with a preference for cavities (Pipistrelle or Brown long-eared), at the expense of one that prefers splits and crevices (Barbastelle or Natterer's bat).

Dealing with bats that are found:

In warm weather active bats are likely to fly off promptly as a result of the disturbance, although bats generally do not appear to have a 'flight' response like birds, and may stay in the roost site unwilling to move. Bats disturbed in cold conditions, when they are using torpor to conserve energy, will not move at all and may appear dead. A bat in deep torpor can drop its heart rate to four beats a minute and may only take one breath a minute.

Ideally, both active and torpid bats should be captured and transferred into shelter, such as a bat box fixed to a tree, in a safe area nearby. Where possible it is best to avoid bats flying off in the day as they may fall victim to birds of prey. However, if there are other trees nearby with suitable roosting opportunities they may already know of a suitable alternative roost site, although it is always advisable to try and track where they fly, because this may also be a site affected by the tree works.

Any hollow section which cannot be fully examined for bats should be removed to a safe area where it can remain undisturbed for several days and where it will not be inadvertently added to the fire or removed from the site. This will allow any bats inside to arouse and fly off in their own time. The section should be positioned in such a way as to leave the access to the cavity unobstructed, without the risk of it filling with rain water. Sections that can be secured to nearby trees that will not be felled can continue to function as roost sites, and should be considered as part of the mitigation proposals.

Where bats are found outside a roost they should be transferred to a suitable place of shelter as soon as possible. If they need to be retained temporarily by the licensed bat expert it is important to ensure that a secure, quiet place that will not overheat is available and that the safety of the bats can be assured even though they may be unattended for a time while operations continue.

Bats should be handled as little as possible and wherever practical this should be left to a person trained and licensed to do so. Where it becomes necessary to handle them, gloves should be used or a folded cloth, to avoid grease or dirt being passed from hands onto the bats, and as a safety precaution, considering the possibility that the bat may be carrying the rabies virus (see below).

Rabies:

Following the death of a bat worker in Scotland during 2002, the risk of catching rabies from bats was well publicised in the national newspapers. This news heightened the awareness of those already working with bats, but caused considerable concern in others, like builders and arborists, who were likely to disturb bats during their work. Guidance was issued by the Bat Conservation Trust (BCT) that all those who worked with or who were likely to handle bats should be vaccinated and others who discover bats should not touch them.

Preliminary results from studies, funded by DEFRA and jointly by the Scottish Executive and Scottish Natural Heritage (SNH) into the prevalence of bat rabies (European Bat Lyssavirus) have found a low level of antibodies in one bat species in some bat populations in England and Scotland.





The risk to the general public from bats is very low, and advice issued jointly by DEFRA, the Scottish Executive, the Department of Health, remains unchanged. People who find a sick or ailing bat should not approach or handle the bat but seek advice from the Bat Conservation Trust. Licensed bat handlers and anyone who regularly handles bats in the UK should ensure that they have first had vaccination against rabies and should always wear protective gloves when handling bats. Anyone bitten or scratched by a bat should also seek medical attention.

The BCT can provide advice and information for everyone who comes into contact with bats, and can provide contact details for the UK's network of trained and vaccinated volunteers. For more information call the BCT's national helpline on 0845 1300 228 or visit www.bats.org.uk.

Although the possibility of contracting rabies from bats is extremely low Government advice is:-

- Anyone bitten or scratched by a bat should seek medical advice.
- People who find a sick or dead bat should not touch the animal.
- Advice should be sought from a bat conservation organisation or other animal welfare group.
- Licensed bat handlers and anyone who regularly handles bats should ensure that they have the relevant rabies vaccination and should always wear protective gloves when handling bats.

The content of this article and consideration for the amended legislation in England, Wales, Scotland and Northern Ireland, will form the basis for revisions to the Arboricultural Associations Guidance Note 1: Trees and Bats, which will be produced by Andrew Cowan in association with ArborEcology and the Bat Conservation Trust.