

# BSG BRIEFING NOTE

## BAT CONSERVATION TRUST – ONSHORE WIND FARM SURVEY GUIDELINES



Wind turbines



Brown long-eared bat (*Plecotus auritus*)

In May 2011 the Bat Conservation Trust (BCT) published guidelines for undertaking baseline surveys for bats at proposed onshore wind farm sites. This has been a long time in the making<sup>1</sup> and the BCT's 2007<sup>2</sup> survey guidelines as a whole are also now being reviewed, with an anticipated second edition publication date of late 2011. The wind farm guidance, which will form a new chapter in the revised general guidance, has been developed over five months by BCT with input and advice from an editorial board from across the ecology sector, as well as representatives of the statutory nature conservation organisations (SNCOs)<sup>3</sup>. A draft chapter was published in February 2011, which was sent out for consultation among a wide audience including statutory agencies and the wind energy industry. The draft was amended and the final chapter was published in May 2011.

### The need for guidance

When the Bat Survey Guidelines were published in 2007, wind farms were explicitly excluded because there was little knowledge or experience of surveying to inform a wind farm proposal. The need for the new guidelines has since been debated widely, given the guidance that already exists, principally in the form of the Eurobats<sup>4</sup> guidance and Natural England's guidance (TIN051 and TIN059)<sup>5</sup>.

Unfortunately, the existing guidance is quite open-ended with regard to survey methods and effort and there are real discrepancies between Natural England's guidance and that of Eurobats. This has given rise to significant variation in baseline bat survey methods and effort, which has in turn created a confusing and unreliable basis for EIA<sup>6</sup>. It has also provided fertile grounds for those wishing to challenge wind farm planning applications.

The new BCT guidance attempts to identify a basis for consistency, to help provide confidence in the simple facts of a baseline survey.

### Guidance or cook book?

The guidelines have been widely consulted on, but their status is somewhat indeterminate at the moment. When they are wrapped up in the next edition of the general bat surveying guidance it is likely that they will be formally endorsed by conservation bodies of all sectors but even then they could not be said to be the last word on this matter – and certainly not part of any statutory guidance. It should be borne in mind, though, that whatever the formal status of the guidance, it is very likely to be referred to and relied upon by decision takers and those who influence the decision takers. From a purely practical point of view, you are likely to be swimming against the tide if you move too far away from what

might be interpreted as appropriate based on the guidance – at least without very good reason.

A concern that many professional ecologists have with published survey and mitigation guidance is not the guidance itself, but the way in which it is applied. Over the years we have seen established survey guidance treated by objectors, planning authorities and statutory and non-statutory consultees as "cook books" with fixed recipes, with little or no room left for professional judgement and interpretation.

Undoubtedly these guidelines will come to be applied, to a greater or lesser extent, in this manner. The obvious downsides of this need to be weighed against the benefit of having a broad standard, sufficiently detailed to provide a clear guide to the approach and effort required to establish a robust baseline understanding of the use of a site by bats. Not only will this help scope the level of bat survey work required in a more consistent manner but it will hopefully reduce the frequency of objections based on lack of survey effort.

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## Scope of the guidance

Rather than replace them, the guidelines are written to build on and complement the Natural England guidance and, to the extent that it applies to the UK, the Eurobats guidance. They cover both single on-shore large turbines (>250kw) and onshore wind farms comprising multiple turbine arrays, but recognise that for single turbines the scale of impact may differ from that of larger multi-turbine schemes. However, the relatively lower potential risk of single or small wind farm schemes does need to be considered against the suitability of a proposed development site for bats. For instance, a single turbine proposed in a bat-rich landscape could pose a greater threat to bats than a multi-turbine scheme in an area of little or no bat activity. Clearly, the need to survey for single turbine schemes cannot be discounted without very careful consideration.

Off-shore wind farms are not covered by the guidelines but brief reference is made to potential bat-related issues for these types of development. It is recommended that these schemes are assessed on a case-by-case basis.

For micro-turbines (not defined) whilst there is some anecdotal evidence of bat mortality the guidance suggests an assessment on a case by case basis, and that surveys should be undertaken if it is considered likely that there will be significant impacts on bats. Particular concern is raised for schemes close to roosting sites.

## Assessing the need for a survey

The starting point is consideration of the potential value of a proposed development site for bats, along with the number of turbines, the presence of roosts and the species likely to be using the site. The factors inform an assessment of the risk of bat mortality, or the impact on bat populations, and identify the appropriate survey effort required. This matrix of factors is summarised in Table 1 on page 7 of the guidelines.

The lowest level of survey effort would be for a site with no potential for roosting, foraging or commuting bats, a single turbine, and no species likely to be using the site or roosting nearby. The word 'lowest' here will need interpretation but it is likely that, in this rare mix of circumstances, the need for bat surveys may be scoped out.

At the other end of Table 1, "High Survey Effort" is likely to be required for a site within an extensive and diverse habitat mosaic of high quality for foraging bats, with nine or more turbines, and high levels of activity of high risk species<sup>7</sup>.

Most sites will fall between these two extremes and will have some elements that suggest low risk and some that suggest a high risk. For example, a single or two-turbine scheme may suggest a low level of survey effort, but if situated in area of high-quality foraging habitat with a number of high risk species present, this would suggest that the survey effort should be somewhat greater. This may appear confusing but there is a place here for expert interpretation which is entirely reasonable: no single Table can provide an assessment that will neatly fit all circumstances.

Given the room for interpretation, it is advisable to define the scope of surveys required to assess impacts on bats, where possible with the local planning authority and the relevant SNCO, in advance of commencing survey. Where this is not possible we would recommend that survey effort in light of Table 1 be discussed by the developer and their ecological advisor. If there is any doubt, then err on the side of caution and adopt a precautionary approach to survey effort. This is a very practical approach, designed simply to minimise the risk of future challenge.

## The need for scoping studies

The guidelines recommend that a scoping study should be undertaken, which should include a walkover survey and a review of existing information on species, roosts and designated sites. Unfortunately (but understandably) it is normal commercial

practice for developers and their ecologists to try to pin down and agree bat survey methods and effort in advance of the scoping work. As a result, scoping studies are routinely commissioned at the same time as other ecological surveys (including the full-scale bat surveys). Nonetheless we would recommend that provision be made within the consultancy agreement that survey effort and methods are formally reviewed once the walkover survey and desk study are complete. This will ensure that the main bat survey is adequate for the site in question.

The guidelines also refer to the need to consider future land-use changes on and around a site during the operational life of a wind farm, and how such changes might affect the survey method and ultimately the assessment of potential impacts. For example, a change from arable to pasture management within the turbine field could alter the bat assemblage and use of the site, and consequently the development's long-term impacts.

If there is likely to be significant land use change then it may be useful to survey nearby land with similar habitats to those expected in future, to give an insight into how such habitats might be used by bats. However, it should be recognised that it is often difficult to accurately evaluate trends over the operational lifetime of a wind farm as externalities such as climate change and changes in agricultural policy are not entirely predictable in terms of their effect.

## Survey techniques and standards

Box 2 of the guidelines on page 11 discusses the main survey techniques. Detailed consideration is given to methods for roost surveys, manual activity surveys (transects), and automated detector surveys at ground level and at height. An overview is also presented for other survey methods such as vantage point surveys, back tracking surveys, infra-red camera work, low light video and radar surveys.

Surveys at height may be important at some sites and the guidelines recommend that

this is assessed on a case by case basis. Surveys at height should correlate to the rotor swept zone which means that surveys on small masts below 15 metres are unlikely to provide acceptable data unless the rotor swept zone extends that close to the ground. The guidelines acknowledge the difficulty of undertaking surveys at height and recommend for this reason that survey data is collected at the same time that met masts are erected.

Where turbines are being “key-holed” into woodland sites the guidelines suggest that it is essential that static monitoring at canopy level be undertaken.

### **Survey effort and minimum standards**

The guidelines set out the minimum survey standards in relation to low risk, medium risk and high risk sites in Table 2 on page 17. The level of risk a site represents is identified from Table 1.

Roost surveys follow the existing guidance set out in the BCT Bat Survey Guidelines (2007).

For activity surveys, the effort put into manual and static activity surveys is different for each of the risk categories and for different sized schemes. In each case, however, the guidelines recommend manual and ground level static detector surveys. For a low risk scheme the guidelines recommend one visit per walked transect per season (spring, summer and autumn). At the other end of the scale a high risk scheme should require two visits per transect per month between April and September or October depending on where you are in the country.

For static detector surveys at ground level the recommended effort varies with the number of turbines in the scheme and the bat risk level. There are some potentially significant differences between small schemes (1 to 4 turbines), medium schemes (5-10 turbines) and large schemes (greater than 10 turbines). For small schemes the guidelines’ recommendation is static detectors at each turbine location; whereas for large schemes a percentage of turbines

can be monitored per season or month. This approach appears to reflect the resourcing implications of large schemes and the cost of deployment of significant numbers of bat detectors units. Static detector studies also require survey on locations away from turbines on features or in habitats that may be used by bats, so that a comparison of relative bat activity at different parts of the site can be made.

### **Survey timing**

The guidelines recommend bat surveys throughout the active season which will vary from one part of the country to another, being generally shorter in the north of the UK compared to the south. However, the active season is taken in the guidelines as being between April and October. Recent research by Rydell et al. (2010)<sup>8</sup> on periods of peak mortality between July and September might suggest that this is the principal time when surveys should be undertaken. However, although 90% of mortality occurs in the late summer/autumn this still leaves 10% in the rest of the year, which is still an impact.

There is little research on the extent of year on year mortality that bat populations can withstand before they lose viability but it seems clear that if the April to July period is missed, this is likely to leave a gap in the baseline understanding of bat use of a site. This is particularly important when one considers that different species use different habitats and locations for foraging, commuting and roosting at different times of the year. To ensure a defensible baseline for assessment it is understandable that survey throughout the season is being recommended.

### **Surveying for different species**

The guidelines include a short section on interpreting results. They do not specifically advise that surveys should only focus on high risk species, but they do reflect the greater significance of the presence of high risk species in the assessment of bat potential in Table 1.

Bat detectors will record all species, although detecting and recording characteristics vary between detection systems<sup>9</sup>. Understanding your detector’s characteristics will have a bearing on how its data are analysed and used. This needs careful thought if certain species are to be “scoped out” of an impact on the basis of the low risk that turbines are likely to present to them. Scoping bats in or out of surveys can have a significant effect on data analysis time and cost, but this is not discussed in the guidelines.

### **Monitoring**

The guidelines include a brief section on post-construction activity surveys to monitor changes in bat use once a scheme is operational. They consider the first 2 years of operation to be the most important in terms of behavioural responses to the presence of turbines. Monitoring longer term impacts such as changes in habitat modification and off-site enhancements may require monitoring over a longer period but no timeframe is suggested. This section also makes a brief reference to the potential need in some cases to undertake fatality searches. The intention is that this section will be updated in light of on-going research in this field.

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## Notes and References

1. The wind farm guidance will form a new chapter of the Bat Survey Guidelines, first published in 2007. In 2010 the Bat Conservation Trust (BCT) started a review of the Bat Survey Guidelines and consulted on the areas that users of the guidelines felt required updating. Guidance on baseline survey for bats at wind farm sites was seen as an important gap in the survey guidance and developing a chapter on surveying for wind farms was given priority.
  2. Bat Conservation Trust. 2007. Bat surveys – good practice guidelines. BCT, London
  3. In England, Scotland and Wales: Natural England, Scottish Natural Heritage, and Countryside Council for Wales.
  4. Rodrigues L, Bach L, Dubourg-Savage MJ, Goodwin J, and Harbusch C. 2008. Guidelines for consideration of bats in windfarm projects. Eurobats Publication Series Number 3.
  5. Natural England. 2009. Bats and onshore wind farms: interim guidance. Technical Information Note 051. And Natural England. 2009. Bats and single large wind turbines: joint agencies interim guidance. Technical Information Note 059.
  6. EIA: Environmental Impact Assessment
  7. High risk species are those assessed by TIN051 as being at high risk of collision or death from barotraumas (pressure-related injury to a bat's internal organs).
  8. Rydell JL, Bach M, Dubourg-Savage M, Green L, Rodrigues L, and Hendenstrom A. 2010. Bat mortality at wind turbines in northwestern Europe, *Acta Chiropterologica*, Volume 12(2), pp.261-274.
  9. We have undertaken independent research into the characteristics of different detectors to inform our understanding of the pros and cons of the different detector systems that we deploy.
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