Is important bat foraging and commuting habitat legally protected?

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INTRODUCTION

Bats typically forage in/over woodlands, scrub, hedgerows, unimproved/semi-improved pasture, field margins and water. Decline and deterioration of foraging habitat and its fragmentation due to agricultural intensification and development, is probably the principal cause of the decline of bat populations over the last hundred years (Walsh & Harris, 1996; Vaughan *et al.*, 1997; Racey & Entwistle, 2003; Altringham, 2003; Wickramasinghe *et al.*, 2003). Many bat species in the UK are reluctant to cross open ground (exceptions include noctule and Leisler's bats) and so usually commute between their foraging areas and roosts following linear features such as hedgerows, lanes, fence-lines, watercourses and woodland edges (Limpens & Kapteyn, 1991; Racey & Entwistle, 2003)[1]. Such features are vital to bats for orientation, attracting prey, and affording shelter from the elements and predators; and facilitate both movement within existing home ranges and wider dispersal. The fragmentation of these corridors, e.g. as a consequence of hedgerow loss and road building, is also of serious concern. Although the strong legal protection afforded to bat roosts in England and Wales, under the *The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007* (Habitat Regulations (HR)) and the *Wildlife and Countryside Act* (WCA; as amended by the *Countryside and Rights of Way Act 2000*), is to be welcomed, bat conservation and legislation cannot be effective by concentrating on the protection of roost sites alone, whilst neglecting foraging habitat and the corridors that connect these sites (Altringham, 2003; Racey & Entwistle, 2003).

Assessing the impact of development on important foraging and commuting habitat of protected/notable species is considered best practice by ecologists (Mitchell-Jones, 2004; Institute of Ecology and Environmental Management, 2006; Oxford, 2006). Moreover, new survey guidelines provide detailed methodology for surveying bat behaviour in the field (Bat Conservation Trust, 2007). It is hoped therefore that most ecologists endeavour to protect the important foraging and commuting habitat of bats when it could be compromised by development. Nevertheless, given the decline in most bat populations[2]

[1] Bats do not have the same consciousness of what constitutes a wildlife corridor as humans do and it is only through our observation that we associate flight paths with types of habitat corridor (Nagel, 1974).

[2] A few bat species appear recently to have increased in number possibly due to climate change and increased conservation awareness, e.g. lesser horseshoe bat, although long term

connected with ongoing fragmentation and habitat loss, these efforts have appeared insufficient.

A dense network of hedgerows and woodland providing good foraging opportunities and facilitating movement. Photo S Markham

The *Bat Mitigation Guidelines* (Mitchell-Jones, 2004) state that bat *'foraging areas and commuting routes are not legally protected'*. We argue in this article, however, that there is an existing legal basis for the protection of these features in accordance with the HR, *The Natural Environment and Rural Communities Act 2006* (NERC) planning policy and international treaties[3]. Ecological consultants and others interested in bat conservation should therefore be putting forward a strong legal argument for the protection of important bat foraging and commuting habitat, rather than solely relying on convincing developers and local planning authorities of the merits of good practice.

To avoid having to cite legislation and policy from England, Wales, Scotland and Northern Ireland, which is similar in many respects, this article focuses primarily

monitoring is required to confirm this trend (see UK Mammals Species Status and Population Trends –Update 2007 – JNCC/Tracking Mammals Partnership)

[3] The Bat Mitigation Guidelines do explain that there may be exceptions close to SACs and were also written before NERC and recent changes in planning policy. It should also be noted that the guidelines only give generic advice rather than a comprehensive explanation of the legislation and recommend that developers may wish to seek their own legal advice in relation to bat issues.

on England. Because of these similarities, however, much of our discussion is relevant to all parts of the UK, although ecologists outside of England are advised to refer specifically to legislation/policy relevant to them. Most ecologists will be aware of the protected status of bat roosts and resting places in law (see Mitchell-Jones, 2004; Mitchell-Jones & Robertson, 2004). Roost protection is not therefore discussed in depth in this article. Although we concentrate on bats here, as species which are of particular interest to us, many of the points raised also apply to other species afforded protection under European and UK legislation.

WHAT IS IMPORTANT BAT FORAGING AND COMMUTING HABITAT?

What constitutes important bat foraging and commuting habitat in relation to new development has to be agreed on a case by case basis by the consultant ecologist and other informed stakeholders. Most notably Natural England in the case of Special Areas of Conservation (SACs) designated for Annex II bats and licensing issues (see below) and the local planning authority ecologist/biodiversity officer (if one exists).

Daubenton's Bat
Photo courtesy of J. Kaczanow & BCT

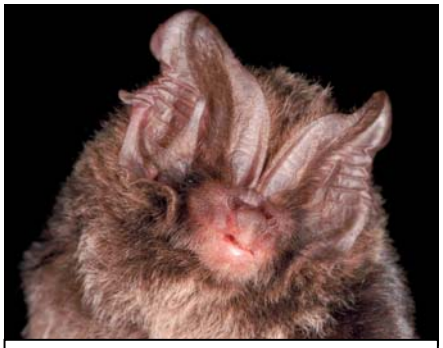
One possible example of an important bat commuting route might be where only one hedgerow connects a roost of Daubenton's bats to their feeding grounds. This hedgerow would probably be considered an *essential attribute of the roost* as its removal might have a major impact on the viability of the roost[4]. However, one out of seven similar hedgerows connecting a Daubenton's roost with surrounding foraging habitat would perhaps not be judged important or essential for bats, at least not in terms of the legislation we discuss below[5]. A similar example might also apply for important foraging habitat. It is assumed in both scenarios that the important habitat should relate to key roost sites, i.e. those used for breeding, maternity or hibernacula, rather than summer roosts used by only a few males (although larger male roosts may be given more prominence). Assessment of the importance of foraging and commuting habitat obviously depends on undertaking surveys of sufficient quality to be able to clearly link the habitat in question with roosts of key concern. The importance of the foraging

[4] There is a shortage of studies testing the degree of preference different bat species have for using linear features. While it's not unusual to observe some bat species flying across open (non corridor) environments, in our view the willingness of many bat species to do so can be compared to a pedestrian's keenness to cross a road; not all roads are equal and it isn't normally the place to loiter.

[5] Exceptions to this could include hedgerows with a disproportionately high but not exclusive level of utilisation, or hedgerows with particular seasonal importance.

and commuting habitat would also vary with the conservation status of the species in question at national, regional and local levels.

SPECIAL AREA OF CONSERVATION AND SITE OF SPECIAL SCIENTIFIC INTEREST DESIGNATED BAT ROOSTS



Barbastelle
Photo courtesy of J. Kaczanow & BCT

Four species of UK bat, barbastelle, Bechstein's, greater horseshoe and lesser horseshoe, are included on Annex II of the EC Directive on the *Conservation of Natural Habitats and Wild Fauna and Flora 1992* (Habitats Directive (HD)), which requires the designation of SACs to protect their key roost sites and ensure these species are maintained at a *Favourable Conservation Status* (the concept of Favourable Conservation Status is discussed in greater detail later in this article). Such SACs are considered in law to possess ecological integrity, i.e. there is *'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified'* (English Nature, 1997). Unless a number of strict conditions are met, under R.48(5) of the HR (which transpose the HD into UK law) a proposed development cannot be permitted if it would have an adverse effect on the integrity of an SAC.

Even if a proposed development is some distance away, the integrity of an SAC designated bat roost (or an SAC designated for other species/habitat) can potentially be adversely affected (English Nature, 1997). For example, a development that severs an important commuting route of bats from such an SAC could prevent them readily accessing an important foraging area and possibly result in the abandonment or long term decline of the colony/roost, in which case causing an unlawful adverse effect on the site's integrity.

Under the WCA planning authorities are also expected to give careful consideration to any development likely to adversely affect bat roosts designated as Sites of Special Scientific Interest (SSSI) and in such circumstances seek assent from Natural England. As with SACs, planning authorities must also seek to minimise impacts that result from development outside of SSSIs (ODPM & DEFRA, 2005), such as to the essential attributes of a SSSI bat roost, i.e. important foraging and commuting habitat. For an example of legislation protecting an SAC and SSSI designated bat roost being applied in such circumstances, see the Planning Inspectorate Appeal Decision APP/X1165/A/06/2024260/NWF published in 2006, ruling against Riviera Holiday Village.

The HR and also the WCA can therefore provide a significant level of protection for the foraging and commuting habitat of bats from SAC and SSSI designated bat roosts respectively. However, the conservation of important bat habitat unrelated to SAC and SSSI protected sites is also a conservation priority and it is this which the rest of this article focuses on.

PROTECTION FOR ANNEX IV SPECIES

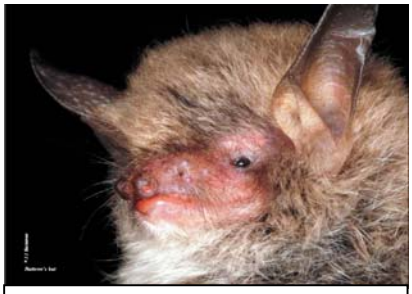
Habitats Directive Article 12(1)b

Under S.9(4)(b) of the WCA it is an offence to intentionally or recklessly disturb a bat *'while it is occupying a structure or place which it uses for shelter or protection'*. However, R.39(1)(b) of the HR states:

'A person commits an offence if he -

(b) deliberately disturbs animals of any such species [referring to species listed in Annex IV of the HD which includes all UK bat species] *in such a way as to be likely significantly to affect —*

- *(i) the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young, or*
- *(ii) the local distribution or abundance of that species'*



Natterer's Bat
Photo courtesy of J. Kaczanow & BCT

This is also in keeping with the recent legislative changes in Scotland (see *The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2007*). There is no specific reference in the HR to the location of disturbance and so it is not only an offence to disturb bats at their roosts but also in other circumstances (as was also true prior to the 2007 amendment of HR – see Reid, 2002; Bat Conservation Trust, 2003; Mitchell-Jones & Robertson, 2004), e.g. while foraging or commuting. This appears to correctly interpret Article 12(1)b of the HD which prohibits the *'deliberate disturbance of these* [Annex IV] *species'*, although the HD places particular emphasis on the *'period of breeding, rearing, hibernation and migration'.*

Although the meaning of disturbance in Article 12 of the HD appears open-ended, it was never intended that minor perturbation should constitute illegal disturbance (Environment Directorate-General of the European Commission, 2007). Nevertheless, the HR now provides greater clarity, explaining first that disturbance must be significant and subsequently explaining the terms in which any significant effect might be defined (see above). On this basis, bat commuting and foraging habitat appears to be indirectly protected by the HR, as

severance/destruction of this habitat clearly has the potential to affect/disturb normal bat behavioural patterns, and thus adversely affect the ability of bat populations to survive and successfully breed, impacting on their local distribution and/or abundance.

Having said this, interpretation of the law in this respect is not quite so straight forward. The European Court of Justice (ECJ) has repeatedly recognised the need for all interpretation of Community legislation to take into account the original aims of that legislation (Environment Directorate-General of the European Commission, 2007). A number of our correspondents from statutory bodies and with links to the Habitats Committee (a group established by the Environment Directorate-General of the European Commission (EDGEC) to consider interpretation and implementation of the HD) have suggested that the European Commission and Member States believe the link between cause and effect with regard to disturbance was originally intended to be *direct and explicit* or an active process at a point in time rather than an ongoing state.

On this basis perhaps the most appropriate definition of a direct effect (which might result in disturbance) is from the US Federal Highway Administration (undated), which considers it is *'caused by the action and occurs at the same time and place'*. If a direct impact is considered to have both spatial and temporal elements then you could have the situation where:

- **It is illegal** at night to cut down all the vegetation along an important bat commuting route, as the disturbance caused is direct, i.e. the bats are present; but
- **It is not illegal** to cut down all the vegetation along the same corridor during the day when the bats are absent (assuming the bats are roosting elsewhere).

In the latter case, although the bats would not be directly disturbed by the actual works (noise, light and vibration associated with the vegetation removal), once it becomes dark and the bats become active again, their ability to commute along the previously well-used corridor might be markedly hindered in which case their normal behaviour would be indirectly, but seemingly not illegally, disturbed.

However, a much less ambiguous example in our opinion relates to brightly lit developments, including flood-lit sports pitches, roads, marinas etc. As lighting often comes on during the early evening when many bat species are becoming active, should their movement along a corridor be significantly inhibited by this lighting (see Limpens *et al.,* 2005), then this would appear to be a direct impact and so would, in keeping with the above interpretation, constitute illegal disturbance.

We should state, however, we have yet to find any documented reference stating that the original aim of the legislators was for disturbance to be direct and explicit in order to be considered illegal under Article 12(1)b, and if this was their original

intention, why was it not simply stated in the legislation? As effective implementation of the HD requires full, clear and precise transposition by Member States (EDGEC, 2007), and given the importance assigned to habitat and corridor protection in nature conservation, it seems surprising that there have been no challenges to such developments whereby case law could establish a precedent one way or the other.

Habitats Directive Article 12(1)d

Under the R.39(1)(d) of the HR it is an offence *'to damage or destroy a breeding site or resting place of such an animal'*, referring to Annex IV species. This is a transposition of Article 12(1)d of the HD which states that *'the deterioration or destruction of breeding sites or resting places'* of an Annex IV species is prohibited. As the HD does not provide a specific definition of a breeding site or resting place, the EDGEC (2007) states *'there is room for different interpretations',* due to the wide range of species listed in Annex IV. The EDGEC goes on to advise that Article 12.1(d) should be understood as *'aiming to safeguard the* ***ecological functionality*** *of breeding sites and resting places'.*

In keeping with this, can it be argued that destruction of important bat foraging or commuting habitat is illegal under Article 12(1)d when these features are essential for the *functionality* of the colony/roost they are connected to? Saving one tree roost while felling the surrounding forest and severing connecting corridors, makes no sense in terms of bat conservation if these features are essential attributes in terms of the roost's viability (or important as stated in the title of this article). In other words, if bats can no longer forage locally or readily commute to other suitable foraging areas, then the colony/roost to which they belong will deteriorate and ultimately not survive.

The ECJ would ultimately need to decide whether this more *'holistic approach'* to interpreting Article 12.1(d), focusing on the *'continuous functionality'* of a species' habitat, could be applied in relation to important bat foraging and commuting habitat threatened by development. According to EDGEC (2007), such an approach should not be adopted in all circumstances and is considered to be more feasible for species with small home ranges rather than for wide-ranging species such as otters, or in our case bats, where in their opinion protection should be restricted to the holt and roost respectively. The ECJ would, at the very least, require strong evidence demonstrating that although the key bat roost in question remained intact, it could not be used in practice because of the destruction of the roost's essential attributes; whereas an example that showed just some deterioration of the roost as a result of loss of associated habitat, would be much less likely to be viewed favourably (Prof. C. Reid, pers. comm.).

NATURAL ENGLAND AND WELSH ASSEMBLY GOVERNMENT LICENSING

Subject to certain conditions, Natural England issue licences in England under R.44 of the HR, to permit activities that are otherwise unlawful with respect to Annex IV species protected under R.39 of the same legislation. Natural England's *European Protected Species Guidance Note* (2007) provides the following guide with respect to R.44:

'a licence is needed if the consultant ecologist, on the basis of survey information and specialist knowledge of the species concerned, considers that on balance the proposed activity is reasonably likely to result in an offence under regulation 39.'

This guidance note further states (emphasis added):

'If an activity is likely to result in disturbance or killing of a European protected species, damage to its habitat or any of the above activities [those listed in R.39], *then a licence will usually be required.'*

On this basis, a Natural England licence should be obtained, not just in cases of potential damage or disturbance to bat roosts, but also where development causes unlawful disturbance to bats in other circumstances, i.e. while foraging or commuting. Despite this guidance, the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004) only provide licensing guidance in relation to disturbance and damage to roost sites, and it is our understanding that no licence applications have been submitted specifically in relation to disturbance that would be caused to bats while foraging/commuting or because of damage to their wider habitat. In all cases licence applications have related to potential damage or disturbance to roost locations. It should be noted that Natural England licences are obtained in relation to potential damage to habitat of species such as great crested newts and dormice but these probably all relate to protection of resting locations, the potential presence of which is often much more difficult to discount with these terrestrial species.

It has been suggested that the licensing system is geared around roosts as derogations from R.39 (in the form of licences) should be strictly and narrowly applied and thus be rare exceptions rather than the norm. However, licences are regularly obtained when summer roosts used by small numbers of male bats are threatened (surely not a rare exception), whereas they are not obtained when an important foraging area or commuting route is to be destroyed or severed, the latter being of potentially much greater significance to local bat populations. Surely at least, in cases of *direct* disturbance, e.g. lighting of an important commuting route, a Natural England licence should be required.

Although bat licences are currently only applied for in the UK where there is a risk to a roost site, applicants are required as part of the licence application to

highlight where bat habitat will be lost and/or modified and demonstrate how such impacts will be mitigated to ensure the bat population in question is maintained at a Favourable Conservation Status. Where significant impacts on habitat cannot be mitigated, Natural England requires that habitat creation, restoration and/or enhancement measures should be implemented. There is also a requirement to demonstrate that habitat management measures, where necessary, will be implemented. Therefore in many of those situations where roosts are directly threatened, the licensing system is also providing a legal mechanism for the protection of bat foraging/commuting habitat.

FAVOURABLE CONSERVATION STATUS

The overall aim of the HD is outlined in Article 2(2) and requires Member States to ensure that *'measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest'.* The HD states that the conservation status of a species can be considered as *'favourable'* when:

'population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.'

There is a popular suggestion that this might provide broad protection for important foraging and commuting habitat not otherwise protected. The EDGEC (2007), however, states that *'this provision does not in itself create obligations for the Member States'*. Perhaps the key phrase in Article 2 in relation to this possible misconception is *'measures taken pursuant'*, pursuant meaning – *following the stated requirements of*. Consequently, the obligations for SACs (Articles 3 – 10), strict protection of species (Articles 12 – 16), and surveillance (Article 11), are the principal means by which Favourable Conservation Status should be maintained and restored. Nevertheless, we contend that if these measures are failing in their duty to maintain or restore Favourable Conservation Status of a species in a Member State, in our case that of a bat species, then that Member State could be in breach of the HD (see Charalambides, undated). While in the long term this infringement might require that Member State to amend its transposition of the HD, prior to the amendment, it would not seem to provide a legal defence for the protection of important bat foraging and commuting habitat threatened by an individual development.

NATURAL ENVIRONMENT AND RURAL COMMUNITIES ACT

Section 40(1) of NERC states that *'every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'*. This is known as the *Biodiversity Duty* (Defra, undated[a]) and can be interpreted as meaning (according to legal advice we have obtained that was originally prepared for the Welsh Assembly Government) that the conservation of biodiversity *'is a factor that they must consider* [along with other factors which are not necessarily of an ecological nature] *when deciding whether to, and how to, exercise their functions'*. In terms of species, biodiversity is considered by the act to be principally those listed in S.74 of the CROW Act (i.e. UK Biodiversity Action Plan (BAP) Priority species; the Secretary of State has a duty under S.41 of NERC to review and revise this list), which includes the four Annex II species discussed earlier and also the common pipistrelle bat which is now two species *Pipistrellus pipistrellus and P. pygmaeus*[6].

The public authorities to whom this duty applies are listed in S.40(4) of the act and notably includes local planning authorities (previously under CROW this duty only applied to Ministers of the Crown, Government departments and the Welsh Assembly Government). If local planning authorities must exercise the Biodiversity Duty when assessing planning applications, then by implication so must developers if their proposals are to be viewed favourably. If a development would result in significant harm to important foraging/commuting habitat of a S.74 bat species, then the local planning authority must take this into consideration ('*have regard'*) when assessing the planning application. The *Guidance for Local Authorities on Implementing the Biodiversity Duty* (Defra, undated[a]) supports this view stating that local planning authorities *'should give proper consideration to biodiversity outside of designated areas'*, which includes *'habitats of principal importance'*.

PLANNING POLICY STATEMENT 9

The extent to which local planning authorities, and thus developers, must consider biodiversity is not defined in NERC. To *'have regard'* could be argued to be a soft or secondary duty as it is overshadowed by the condition *'so far as is consistent with the proper exercise of those functions'*, i.e. the primary duty of the local planning authority to carry out its main functions, which may not always be compatible with the conservation of biodiversity (Roberts & Reid, 2005).

A more positive interpretation, however, of how the Biodiversity Duty should be implemented was perhaps established in England prior to NERC by *Planning Policy Statement 9: Biodiversity and Geological Conservation* (PPS9; ODPM,

[6] The UK Government are currently considering adding noctule and brown long-eared bat to this list and removing the pipistrelle species

2005), relating to the similar duty required under the CROW Act. PPS9 is the key planning policy tool for the protection of biodiversity. In accordance with PPS9, developers must be able to demonstrate that they have considered alternative options to prevent *'significant harm'* to *'biodiversity interests'*. In terms of PPS9 *'biodiversity interests'* refers not only to UKBAP but also to local BAP species and all other species protected under the WCA and the HR (see Garland & Wells, 2005). This not only includes the bat species listed on S.74 but also our other eleven native species.

PPS9 goes further, recommending where *'significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused'*. What constitutes *significant harm* might include, as discussed earlier, the loss of the only commuting route connecting a key bat roost to its foraging habitat. In keeping with both the Biodiversity Duty and PPS9, it should therefore be protected or else, should other considerations be given greater prominence, mitigated/compensated for. However, one out of a number of similar commuting routes connecting a bat roost with surrounding foraging habitat would probably not be afforded the same level of protection, at least not with respect to bats.

PPS9 also highlights the risks of habitat fragmentation and isolation, stating that habitat networks should be *'protected from development'*, which it is assumed includes corridors essential to foraging and commuting bat species. In relation to habitat networks, PPS9 builds on R.37 of the HR which requires planning policies to encourage the management of features of the landscape which are of major importance for flora and fauna such as rivers and their bank sides, traditional field boundaries, and ponds and small woods. All such features are of obvious value to bats.

Ancient Countryside (see Rackham, 1986); a mosaic of habitats and a landscape worth protecting from fragmentation. Photo: I Barton

PPS9 also requires that developers should seek opportunities for habitat enhancement. In keeping with PPS9, the reference to *'conserving biodiversity'* in NERC 2006 is considered to include *'restoring and enhancing a population or habitat'* (see S.40(3)). Planning conditions and obligations should be the principal mechanism for imposing adequate enhancement measures for bats and other wildlife in new development and ensuring they are subsequently implemented (Defra, undated[a]).

In accordance with *The Planning and Compulsory Purchase Act 2004*, new development should be in keeping with local, regional and Government planning

policy unless there are material considerations to indicate otherwise. Hence PPS9 does not merely provide planning guidance, it has a statutory basis.

INTERNATIONAL TREATIES

The UK Government is a signatory to a number of international treaties with respect to nature conservation that have relevance for the protection of important bat foraging habitat and commuting routes. Although the legal status of such treaties cannot be relied upon in the British courts, the Government is bound by these agreements in international law (Reid, 2002; Defra, undated[b]). Most notably the *Convention on the Conservation of Migratory Species of Wild Animals 1979* (Bonn Convention) aims to conserve species (including bats) that migrate between signatory states. Within this Convention the UK Government is also a signatory to the *Agreement on the Conservation of Bats in Europe (EUROBATS) 1991,* which requires each state to *'endeavour to identify and protect important feeding areas for bats from damage or disturbance'*.

This agreement, according to the Bat Workers Manual (Mitchell-Jones & Robertson, 2004), does *'not appear to need any changes to current UK domestic legislation'.* The Bat Workers Manual, which was written prior to NERC and PPS9, is equivocal as to which existing legislation it considers provides protection for *'important feeding areas'*. We are unsure as to the correct legal interpretation of EUROBATS in this regard but perhaps the UK Government considers that *endeavouring to protect* does not require legal enforcement and so agri-environmental schemes, BAPs and best practice nature conservation guidance might suffice.

CONCLUSIONS

Although the Bat Mitigation Guidelines from 2004 advise that the foraging habitat and commuting routes of bats are not legally protected, we have suggested a reinterpretation of the legislation that predates these guidelines could challenge this statement. Certainly we contend that nature conservation legislation and planning policy subsequent to these guidelines, i.e. NERC and PPS9, while not providing explicit protection for important bat habitat, if properly applied can and should be used to provide a strong case for either the legal protection of such features or else for a sufficient level of mitigation and/or compensation.

It has been argued that effective nature conservation can best be achieved by looking after the habitat and letting the species take care of themselves (Marren, 2002). While the strong protection afforded to bat roosts is welcomed, adopting a landscape approach to nature conservation, which places greater emphasis on ecological processes and the wider countryside, certainly has great merit. Bat conservation (as well as the conservation of other species) must not neglect foraging habitat and the corridors that connect these sites, as it is the loss,

deterioration and fragmentation of such habitat which has probably been the principal cause of the decline of bat populations. While we should continue to seek improvements in legislation and best practice protecting such habitat, in the meantime ecologists should be making the most of the legal protection currently available, while also in this respect, *challenging and clarifying* the ambiguities which currently exist in the legislation and guidance.

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REFERENCES

Altringham J. (2003). *British Bats*. Harper Collins, London.

Bat Conservation Trust (2007). *Bat Surveys: Good Practice Guidelines*. Faber Maunsell/AECOM.

Charalambides, L.C. (undated). *Guidance Document for the* 'Habitats Directive' *92/43/EEC:* 'Favourable Conservation Status' *From legal Interpretation to Practical Application.* The Bat Conservation Trust, The Herpetological Conservation Trust, The Mammal Society.

Defra (undated$_a$). *Guidance for Local Authorities on Implementing the Biodiversity Duty*. http://www.defra.gov.uk/wildlife-countryside/pdfs/biodiversity/la-guid-english.pdf

Defra (undated$_b$). *Guidance for Public Authorities on Implementing the Biodiversity Duty.* http://www.defra.gov.uk/wildlife-countryside/pdfs/biodiversity/pa-guid-english.pdf

English Nature (1997). *Habitat Regulations Guidance Note*. English Nature, Peterborough.

Environment Directorate-General of the European Commission (2007). *Guidance Document on the Strict Protection of Animal Species of Community Interest Provided by the 'Habitats' Directive 92/43/EEC.* European Union.

Federal Highway Administration (undated). *Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process*. http://nepa.fhwa.dot.gov/ReNEPA/ReNepa.nsf/All+Documents/8AE2449A6338CAB185256CC50047CC24/$FILE/q&aattachment.doc

Garland, L. & Wells, M. (2005). Will Planning Policy Statement 9 make a significant contribution to sustainable development? *Ecology and Environmental Management In Practice*, **51**, 1-7.

HM Government (1994). *Biodiversity: The UK Action Plan*. HMSO, London.

Institute of Ecology and Environmental Management (2006). *Guidelines for Ecological Impact Assessment in the UK.* http://www.ieem.org.uk/ecia/index.html

Limpens, H.J.G.A. & Kapteyn, K. (1991). Bats, their behaviour and linear landscape elements. *Myotis*, **29**, 39-48

Limpens, H.J.G.A., Twisk, P. & Veenbaas, G. (2005). *Bats and Road Construction*. Dienst Weg – en Waterbouwkunde, Delft.

Marren, P. 1992. *Nature Conservation: A Review of the Conservation of Wildlife in Britain 1950-2001*. Harper Collins, London.

Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.

Mitchell-Jones, A.J. & McLeish, A.P. (2004). *The Bat Workers' Manual.* JNCC, Peterborough.

Mitchell-Jones, A.J. & Robertson, C.J. (2004). Bats and the law. In:*The Bat Workers' Manual.* (Ed. By A.J. Mitchell-Jones & A.P. A.P.. A.P.. McLeish), pp. 11-23. JNCC, Peterborough.

Nagel, T. (1974). What is it like to be a bat? *The Philosophical Review* LXXXIII, pp. 435-450.

Natural England (2007). *European Protected Species Guidance Note*. Natural England, Bristol.

ODPM 2005. *Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9).* ODPM, London.

ODPM & DEFRA 2005. *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (ODPM 06/2005 & DEFRA 01/2005)*. ODPM, London.

Oxford, M. (2006). *Publicly Available Specification 2010 Planning to Halt the Loss of Biodiversity: Biodiversity Conservation Standards for Planning in the United Kingdom – Code of Practice.* Landmark Design.

Racey, P.A. & Entwistle, A.C. (2003). Conservation ecology of bats. In: *Bat Ecology* (Ed. By T.H. Kunz & M.B. Fenton), pp. 680-743. The University of Chicago, Chicago.

Rackham, O. (1986). The History of the Countryside. J. M. Dent & Sons Ltd.

Reid, C.T. (2002). *Nature Conservation Law*. W.Green & Son, Edinburgh.

Roberts, I. & Reid, C. (2005). Nature conservation duties: More appearance than substance. *Environmental Law and Management*, **17**, 162-168.

Vaughan, N., Jones, G. & Harris, S. (1997). Habitat use by bats (Chiroptera) assessed by means of a broad-band acoustic method. *Journal of Applied Ecology*, **34**, 716-730.

Walsh, A.L. & Harris, S. (1996). Factors determining the abundance of vespertilionid bats in Britain: geographic, land class, and local habitat relationships. *Journal of Applied Ecology*, **33**, 519-529.

Wickramasinghe, L.P., Harris, S., Jones, G. & Vaughan, N. (2003). Bat activity and species richness on organic and conventional farms: impact of agricultural intensification. *Journal of Applied Ecology*, **40**, 984-993.