



British Ecological Society



INSTITUTE
OF BIOLOGY

A response from the British Ecological Society and the Institute of Biology to the Environmental Audit Committee Inquiry into 'Halting UK Biodiversity Loss'

1 June 2008

Summary

- A lack of base-line data across a range of taxonomic groups impedes the ability of ecologists to assess the Government's progress towards the 2010 biodiversity target. Greater resources are needed to allow a more comprehensive assessment to be undertaken. This must include investment in the training and development of systematists and taxonomists. Consideration should be given to developing ecosystem-function based, rather than species based, indicators.
- Biodiversity conservation is often seen as in conflict with the economic drivers of development. Defra and others must increase efforts to work with the ecological and economic community on developing a robust framework for assigning economic values to biodiversity and ecosystem services.
- Considerations of biodiversity and ecosystem services must be built in to planning decisions, with the development of a spatially explicit environmental asset inventory and model of ecosystem goods and services: maps of natural capital at a resolution sufficient for making decisions at scales, starting with national planning all the way down to individual dwellings.
- Ecological networks are based on understandings arising from key ecological theories but the evidence base for the beneficial effects of networks is limited. There is consensus on the need for better evidence in relation to the effectiveness of enhanced connectivity across the landscape for biodiversity conservation. Until further evidence is available, the precautionary principle must apply and interventions adopted to create networks.
- We suggest that an independent assessment of the effectiveness of all relevant Government Departments and agencies, including in the devolved administrations, of conserving biodiversity, be undertaken. The Royal Commission on Environmental Pollution might be an appropriate body to take on this piece of work.

Comments and recommendations

Q1. Is the Government on course to meet its 2010 biodiversity target?

1. A major stumbling block in assessing progress to meet the 2010 biodiversity target is the lack of availability of adequate base-line data. Only a very few indicator groups are well sampled. For example, the national BAP mentions only three species of freshwater invertebrates (the Southern Damselfly, Freshwater Pearl Mussel and Native Crayfish). But the Trichoptera (Caddis Fly family) have at least seven species listed in the IUCN Red Data Book 1, indicating that they are extremely endangered.
2. Two groups for which data is available, birds and butterflies, show a series of losses. Species of farmland birds have seen severe population declines since 1970, with declines too in farmland bird species. Three quarters of the UK's butterfly species have declined in distribution over the last 25 years, with habitats specialists faring the worst. In 2006, habitat specialists were at 76% of their 1976 baseline. Wider countryside generalists have declined since 2003 to 80% of the 1976 baseline. The past 20-40 years has shown major declines also in bumblebees, arable plants and amphibians. The 2005 BAP recorded positive upward trends in 38 species, but declines in 68.¹

Q2. How effective is the biodiversity monitoring and reporting process? Are the biodiversity indicators meaningful? Is there adequate data upon which to define targets and to assess progress?

3. As we allude to in our answer above, biodiversity monitoring and sampling is adequate for only a very small subsection of taxonomic groups, compromising ecologists' ability to report on progress towards the 2010 target. For some groups, the available data is fairly good; for example birds, butterflies, and vascular plants. In its recent report on the state of the natural environment, Natural England called for better surveillance of mammals, fish, invertebrates, lower plants and fungi¹, a vital step towards better understanding the species which we have, and may be losing.
4. As we noted in our joint response, together with the Biosciences Federation, to the House of Lords Select Committee's inquiry into 'the State of Systematics and Taxonomy Research', systematics and taxonomy is fundamental to assessing biodiversity. Specialist institutions are seeing a decline in systematists and the majority of the skills base in taxonomics is now held by amateurs in local recorders groups. Without sustained investment in the development of a robust skills-base in systematics and taxonomy, biodiversity monitoring and reporting will be severely compromised. The threats to many species may be underestimated if few people can identify and record them. Once more, **we recommend that Defra recognise the strategic role of systematics and taxonomy in delivering key policy priorities.**²

¹ State of the Natural Environment. Natural England, 2008

² The Biosciences Federation, the Institute of Biology and the British Ecological Society, Systematics and Taxonomy: Response to the House of Lords Science and Technology Select Committee. February 2008.

5. Indicators should be linked to ecosystem services and ecosystem function. The designation of SSSIs should not be linked to the presence of a particular indicator species, given the shifts in range expected from species under pressure from climatic change.

Q3. Are the policy and institutional frameworks effective at protecting biodiversity? Is biodiversity protection addressed effectively at local and regional levels? How successful has the UK Biodiversity Action Plan been? Does Conserving biodiversity - the UK approach address the need to have a joined-up approach to biodiversity protection with the devolved administrations?

6. The BAP process has encouraged conservation thinking to move out from a focus on protected sites. It has led to recognition of the scale of the challenge. The recent BAP review was carried out more rigorously than the first assessment and has indicated the size of the problem we face. The review resulted in an approximate doubling of the number of priority species, the addition of new BAP habitats such as many marine habitats, open mosaic habitats on previously developed land, oligotrophic and dystrophic lakes and ponds, and the extension of some habitats (e.g. *Chalk rivers* now form a subset of the broader habitat *Rivers*)³.
7. In the context of these recent results, it is concerning that limited and patchy resources are available for the BAP process, due to budget cuts at Defra and its agencies. This model of funding seems to have led to bursts of activity relating to individual habitats and species in the past, without provision available for long term, concerted, efforts.
8. A member of the BES reports that his local council has indicated little enthusiasm at the local level to engage with the BAP process; *"The policy framework exists...[but] there has been no enthusiasm for allocating resources and a timetable for LBAP production since it was first raised in 2001"*. Worryingly, another member informs us that the East Riding of Yorkshire Council is only this year (2008-09) developing a BAP. This is highly concerning and indicates that more needs to be done to encourage local delivery of BAP priorities.
9. There is some indication from our membership that the BAP process has become overly bureaucratic in some areas, with few links between regional and local initiatives, hampering efforts to translate the BAP into real results for biodiversity.
10. Indications too are that the BAP process is largely implemented by voluntary groups. Biological Records Centres could prove useful to the BAP process but these are largely understaffed and under-funded. As we indicated in our response to Q2, recorders groups face difficulties in recruiting members with the requisite taxonomic expertise needed to accurately identify less well-known species. Without sustained investment in training and development of taxonomists and systematists, the UK BAP process will remain incomplete.
11. In order to protect biodiversity, we need to go beyond conservation in situ, by adopting ecological restoration of degraded ecosystems to provide new spaces for native and migrating species. We draw the Committee's attention to a recent briefing note by the Science and Policy Working Group of the Society for Ecological Restoration International, on 'Opportunities for

³ UK Biodiversity Action Plan, Species and Habitat Review Report, 2007.

Integrating Ecological Restoration and Biological Conservation within the Ecosystem Approach.⁴

Q4. How well is biodiversity protection incorporated into the policy-making process? How well will the Ecosystem Approach Action Plan address this issue? Has there been enough progress in ensuring that the value of ecosystem services are reflected in decision-making?

12. Indications are that biodiversity is often overlooked by the policy-making process in favour of industrial or economic considerations, which take precedence. Feedback from ecologists involved in Environmental Impact Assessments (EIA), through work with contractors, indicates that *"where it is taken seriously, good projects and satisfactory outcomes result but all too often the ecology is left to the end, rushed and superficial."*
13. One example of where biodiversity conservation has been taken into account, and has worked very successfully, comes from Wales, with the development of the A477 Sageston to Redberth Bypass. The bypass cuts straight through optimal foraging and dispersal grounds for the Greater Horseshoe Bat (*Rhinolophus ferrumequinum*), protected under UK and EU legislation. Following the EIA process, a team of ecologists and engineers worked together to develop a series of lures, to divert bats away from the road, coupled with poor quality habitat directly adjacent to the road, to prevent bats from foraging. The development of a network of tunnels concomitant with the bats dispersal routes has led to a highly effective solution, with no bat/vehicle collision recorded since the scheme was implemented in 2003.⁵
14. Perspectives from ecologists working on woodlands indicate that the incorporation of biodiversity concerns into policies relating to these areas is good. Biodiversity is strongly reflected in the recent (2007) England Forestry Strategy⁶ and in 'Keepers of Time', the Defra/Forestry Commission policy on ancient woodlands (2005)⁷. The protection of ancient woodlands and veteran trees was recently incorporated into planning guidance to local authorities as part of PPS9 (2005)⁸.
15. Defra is to be commended for the development of the Ecosystem Approach Action Plan, which provides a useful framework for addressing the traditional neglect of the value of ecosystem services in policy-making. However, this will only be effective if relevant Government Departments, including HM Treasury, the Department of Health, Department of Transport, DCLG, all parts of Defra and the devolved administrations, incorporate the Approach into policy formulation, assessment and implementation. Defra and others must increase efforts to work with the ecological and economic community on developing a robust framework for assigning economic values to biodiversity and ecosystem services.

⁴ Society for Ecological Restoration International (2008). Opportunities for Integrating Ecological Restoration and Biological Conservation within the Ecosystem Approach www.ser.org.

⁵ Wildlife Crossing Structures: Planning, Placement, Monitoring. (2005) ICOET Proceedings, p369 - 379 http://www.icoet.net/ICOET_2005/proceedings/06IPCh9-369-379.pdf

⁶ A Strategy for England's Trees, Woods and Forests (2007) Defra.

⁷ Keepers of time: A statement of policy for England's Ancient and Native Woodland. Defra/ Forestry Commission. [http://www.forestry.gov.uk/pdf/anw-policy.pdf/\\$FILE/anw-policy.pdf](http://www.forestry.gov.uk/pdf/anw-policy.pdf/$FILE/anw-policy.pdf)

⁸ Planning Policy Statement 9: Biodiversity and Geological Conservation (2005) Office of the Deputy Prime Minister.

Q5. What are the key drivers of biodiversity loss in the UK, and is the Government addressing them?

16. The key drivers of biodiversity loss in the UK are: land use change; climate change; nitrogen deposition; biotic exchange and increasing atmospheric CO₂ (Sala et al. 2002).⁹
17. Agriculture involves 70% of the UK landscape (Hails 2002) so represents not only a threat to biodiversity but also an opportunity for its conservation, and of sustainable food production. Intensive farming has led to declines in a number of bird species over the past 20 years. Benton et al (2003) have suggested that reversing declines in farmland birds requires enhanced heterogeneity, from within fields to whole landscapes¹⁰. In light of this, the decrease in the proportion of set-aside land this year (2007-08), from 500,000 to 255,000 Hectares, is of concern. This is projected to impact negatively on a range of species, including the stone curlew, white-tailed and other bumblebees (BAP species) and a variety of arable weeds¹¹.
18. Similarly concerning is PPS3, which allows building on 'used' brownfield sites, has led to the subdivision of large gardens in many areas of the country, a concern both for residents, who now face high density dwellings in semi-rural areas, but also in terms of a loss of green spaces for wildlife in these regions¹².
19. The Climate Change Bill and draft Marine Bill represent two examples of where the Government is taking steps to address the causes of biodiversity loss, which is to be commended. It is very encouraging that the draft Marine Bill contains provision to develop a network of marine protected areas to encompass 14-20% of the coastline. The draft Bill currently states that 'benign' activities will be allowed in most of these areas, with provision for more stringent protection where necessary¹³. It is vital that decisions on which areas to conserve, the extent of the protection afforded, and the size of the network, are decided with regard to the best available scientific evidence, in order to maximise the benefits for the UK's coastal biodiversity.
20. The Ecosystem Approach Action Plan too offers an encouraging step in the right direction. However, the factors affecting biodiversity loss cut across all Government Departments, from Communities and Local Government to Transport and the Department of Trade and Industry. For example, the Highways Agency is responsible for almost 30,000 Hectares of land, between highway fences, the road way and the soft estate. Through the Highways Agency Biodiversity Action Plan, the Agency has committed to working with Natural England, the Environment Agency and others to deliver its own BAP.¹⁴ Feedback from one of our members' in the Hull area suggests that a £36million local grade junction has been developed with little regard to its

⁹ Sala, O.E. *et al* (2000) Biodiversity - Global biodiversity scenarios for the year 2100. *Science* 287 (5459): 1770-1774

¹⁰ Benton, T.G., Vickery, T.A., Wilson, J.D. (2003) Farmland biodiversity: Is habitat heterogeneity the key? *TREE* 18 (4): 182-188

¹¹ A World Apart, The Guardian, 7 May 2008, <http://www.guardian.co.uk/environment/2008/may/07/wildlife.conservaion>

¹² Planning Policy Statement 3: Housing, 2006. <http://www.communities.gov.uk/publications/planningandbuilding/pps3housing>

¹³ Defra, Draft Marine Bill for England, April 2008 <http://www.official-documents.gov.uk/document/cm73/7351/7351.pdf>

¹⁴ Highways Agency, Biodiversity Action Plan <http://www.highways.gov.uk/aboutus/1153.aspx>.

biodiversity value or the development of wild habitat, with only grass and shrub plantings. Action plans and strategies to address biodiversity loss must be cross-departmental, reflecting the Government's commitment to meeting the 2010 biodiversity target.

Q6. Will the Invasive Non-native Species Framework Strategy prove effective? Is there adequate regulation and resources to prevent further invasions and to undertake eradication programmes?

21. An excellent summary of the damage caused to native species, and to the UK economy, by non-native invasive species, along with a discussion of the Invasive Species Framework Strategy for Great Britain, can be found in the POSTnote on the subject, authored by the British Ecological Society's most recent POST Fellow¹⁵.
22. Without a CCTV camera on every hedge it's very hard to enforce existing legislation against releasing non-native species into the wild, therefore there is a vital need for resources to support public education programmes to raise awareness of the problems posed for the UK through the release of non-native invasive species. Particular attention should be paid to those most serious pests and those for which a simple change in people's behaviour could be most effective. These could include the need to suitably dispose of aquaria plants such as *Elodea Canadensis*. It is very encouraging that provision for education, as a means for prevention, is included in the Invasive Non-Native Species Framework Strategy.
23. We are supportive of the Invasive Non-Native Species Framework Strategy and the measures proposed to cover prevention through to eradication and control seem sensible. It is somewhat concerning that the introduction to the Strategy states that *"where appropriate, and subject to adequate resources and technical capability, contingency planning and improved capacity to act decisively will enable rapid responses..."*¹⁶ We could not find figures for the cost of the invasive species initiative: this vision can only be achieved however if adequately resourced.
24. An example from Swansea Borough Council provides an illustration of how local-level solutions, involving eradication programmes coupled with educational initiatives, can prove effective. Swansea employs a full-time Japanese Knotweed officer, reflecting the pernicious nature of this invasive organism, has conducted research into the spread of the weed and has run local education campaigns to highlight the public to the need to dispose of the weed properly, and how to identify it. Local legislation, through bye-laws and planning applications, has also targeted resources into combating this invasive alien species.
25. Eradication programmes provide better value for money when populations of invasive non-native species are small. This can only be accomplished by an early warning and detection system. There are concerns amongst our membership that recent cuts to Defra budgets mean that groups involved in fulfilling this function now have limited resources to do so.

¹⁵ POSTnote 303. Non- Native Invasive Species, April 2008.

¹⁶ Invasive Non-Native Species Framework Strategy for Great Britain (2008), p5

Q7. What impact will climate change have on UK biodiversity? How might the impacts of climate change be reduced? How can potential conflict between climate change mitigation and adaptation measures and biodiversity protection be effectively managed?

26. All indications are that climate change will have a tremendous impact on UK biodiversity, although not all of it necessarily negatively. Climate change will lead to significant species turnover and the shifting of species' ranges. Our landscapes may appear unaltered for a considerable period, but the species within them will become increasingly stressed and/ or prone to disease. As these species die, new ones will replace them. New species assemblages will arise due to changes in climate; some stable, some transitory. In most cases, UK ecosystem types are migrating northwards with warming temperatures.
27. Mitigation of climate change impacts should include the sensitive management of existing sites, to ensure that non-climate change impacts on species are reduced, whilst ensuring that the quality and area of habitat available to species in the countryside is enhanced. Provision must be made for the northwards spread of many of the UK's species. In our answer to Q10 we explore the use of the precautionary approach in relation to the development of ecological networks to mitigate some of the effects of climate change on species.
28. Only with a truly holistic ecosystem-based approach to conservation and land-use can adaptation, mitigation and protection methods be reconciled. **It is vital that all Government Departments adopt Defra's Ecosystem Approach Action Plan.**

8. Does planning policy adequately protect biodiversity? Are effective measures in place to ensure that Government plans for housing growth (including eco-towns) enhance rather than damage biodiversity? Should there be a review of greenbelt policy, and what might the consequences be for biodiversity? Do guidelines encouraging development on brownfield sites risk damaging biodiversity?

29. All indications from our members are that ecology is placed at the end of the list of priorities when compiling Environmental Impact Assessments, signaling a rushed, hurried 'shoe-horning' of biodiversity and ecosystem function considerations into the development process. Biodiversity does not have the same profile and influence as other drivers of local authority action, despite, in relation to some ecosystems, such as woodland, the presence of good guidance which could help (PPS9). Local authorities should be required to report periodically on the consequence of their planning decisions on biodiversity.
30. Ecosystems, ecosystem functions and the goods and services they provide, are, in the words of one member "*virtually invisible to the planning regime*". Planning tends to be predicated on the notion of an infinite capacity, with little heed paid to biophysical limits and constraints. The wider impacts of development beyond site boundaries must be taken into account in a way in which they are not currently.
31. Planning decisions, including those concerning transport infrastructure, do not take the true value of ecosystem services into account. **Much more work is needed by Defra and others**

to assign economic values to these services before the approach can be implemented effectively.

32. As the Institute of Biology previously stated in its response to the Environmental Audit Committee's inquiry into eco-towns, we believe that the planning regime is currently unfit for the purpose of taking full account of environmental impacts of house-building on our environmental assets. The eco-town initiative, although a step in the right direction, falls well short of what could be achieved given a spatially explicit environmental asset inventory and model of ecosystem goods and services – i.e. maps of natural capital at a resolution sufficient for making decisions at scales, starting with national planning all the way down to individual dwellings. This remains the case. **Both the British Ecological Society and Institute of Biology recommend once again that a spatially explicit map of the UK's environmental assets is developed**, taking into account ecosystem services and their valuation. Although data is as yet of too low a resolution to allow development at the scale of individual dwellings, maps could be produced at the hydrological catchment level.
33. Again, to reiterate the Institute of Biology's response to the Committee's inquiry into eco-towns, green belt designations are a crude tool, and do not offer a full degree of protection from development. Having said this it is likely that intensively cropped Green Belt land provides fewer ecosystem services than properly developed sustainable urban development – but neither should be assessed in isolation. Green Belt development should be subject to the same rigorous biophysical test as suggested above for urban development. The urban/rural divide is invisible in terms of ecosystems and their functions and **we once again recommend that Government recognises this in developing and implementing policy for land use in general.**

Q9. Are there adequate resources for biodiversity protection and enhancement? Has the Government addressed the need to provide additional support for biodiversity protection in the UK Overseas Territories?

34. Feedback from members suggests resources are inadequate. Cuts to the budgets of Defra and Natural England will undoubtedly have a negative effect on resources available for this agenda. As the Institute of Biology recorded in its response to the House of Lords Select Committee inquiry on the 'State of Systematics and Taxonomy Research', when approached for feedback on how the Department was progressing with implementing the actions stemming from the 2002, 'What on Earth' report from the House of Lords¹⁷, Defra stated that *"as a result of the tight financial situation at Defra...systematics [has fallen] below the threshold to command the necessary resources."*² In light of our comments in response to Q4, this is highly concerning. Sufficient resources should be found to support those who can record and monitor biodiversity; trained professionals and amateur Biological Recorders groups.
35. The British Ecological Society is a member of the UK Overseas Territories Conservation Forum and would like to register its support for the Forum's response to this inquiry. The UK

¹⁷ House of Lords Science and Technology Select Committee (2002) What on Earth? The Threat to the Science Underpinning Conservation.

Overseas Territories and Crown Dependencies offer a wealth of biodiversity, with very many endemic species. Despite this, Government protection for the Territories seems woefully inadequate, leaving them open to unregulated tourism and development¹⁸. The flora and fauna of the Territories are poorly documented; because of this biodiversity loss is largely unquantifiable. Many of the economic activities of the Territories depend on the integrity of their biologically diverse environment, for example fishing and tourism.

36. **Along with the UK Overseas Territories Conservation Forum, we recommend that the Government increase its level of support and funding for conservation initiatives in the UK Territories and Crown Dependencies.** Conserving biodiversity here offers a tremendous opportunity for the UK to meet the 2010 biodiversity target. The expansion of the Overseas Territories Environment Programme (OTEP), run by the FCO and DFID, to encompass larger environmental initiatives in the Territories, could offer a very welcome step forward. Combined with this, there must be a concerted effort to raise awareness of the biological importance of the UK Overseas Territories to the UK, and the Government's responsibility for this, amongst policy-makers. Government departments with responsibility for the Overseas Territories must work together to create a truly joined-up approach to conservation, in order for this to be at all effective.

Q10. Is the UK protected area network up to the job of maintaining biodiversity, now and into the future? Are arrangements to protect sites effective? Is more work needed to reduce habitat fragmentation and to link up those semi-natural habitat areas that remain?

37. Feedback from woodland experts indicates that the condition of woodland SSSIs is generally better, and better known, than in the past, but that there is still variable coverage of different habitats in different parts of the country (for example, a much higher proportion of ancient woodland is protected in Cambridgeshire than in Sussex).
38. There are varying reports as to the effectiveness of wildlife corridors and other linear habitats – most notably edge-effects within the corridor and species-specific behavioural responses to such habitats. In terms of the current understanding of the ecological community, it would be premature for the British Ecological Society to advocate specific adaptation strategies. The effectiveness of particular measures should be evaluated on a case-by-case basis in relation to species-level conservation whilst research continues. **We recommend that the Environmental Audit Committee refer to POSTnote 300 on Ecological Networks**, which provides a comprehensive overview of current scientific uncertainties surrounding ecological networks and connectivity, including the use of the precautionary principle to govern measures which should be taken in the absence of definitive evidence.¹⁹
39. In considering the enhancement of the connectivity of the UK landscape it is important to adopt a risk-based approach, examining how these interventions could assist the movement of invasive non-native species, and facilitate the spread of emerging wildlife diseases. How do

¹⁸ Biodiversity on the far-flung outposts of Europe. Hindmarch, C. (2007) *Biologist* 54 (2): 80-85.

¹⁹ POSTnote 300 (2008), Ecological Networks, <http://www.parliament.uk/documents/upload/postpn300.pdf>

the threats posed by non-native invasive species and disease compare to the benefits which might accrue to biodiversity in the UK with increased connectivity? It is at present too early to make a reasoned scientific case for or against either strategy and **we can only recommend that further research is undertaken to resolve these uncertainties.**

Additional comments

40. Many of the agencies dealing with biodiversity are under substantial resource pressures. It might therefore be helpful if there were some independent assessment, in all the countries that make up the UK, of the effectiveness, of the overall efforts to protect biodiversity, including those aimed at valuing it fully for decision-making and trying to clarify its role in maintaining the ecosystems on which we all depend. Since the overall impacts of human activity on biodiversity might be very broadly considered as a form of pollution, perhaps the Royal Commission on Environmental Pollution might be asked to conduct such an assessment.

The British Ecological Society

The British Ecological Society (BES) is the learned society for ecology in the UK. Founded in 1913 and with over 4,000 members worldwide, the BES supports ecologists and promotes ecology; the study of living things and their relationship with the environment in which they live.

Institute of Biology

The Institute of Biology (IOB) is an independent and charitable body chartered by Royal Charter to further the study and application of the UK's biology and allied biosciences. It has 14,000 individual members and many specialist learned Affiliated Societies. It is a member of the Biosciences Federation, established in 2002 to represent the UK's biological expertise.

Openness

The British Ecological Society and the Institute of Biology are pleased for this response to be made publicly available and both organisations will be placing a copy on their respective websites once we have the Committee's permission to do so. Please direct any queries relating to this response to:

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