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Ecology & Environmental Management
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Bulletin of the Institute of Ecology and Environmental Management

Chartered at Last

Tim Bines, C.Env, MIEEM and Jim Thompson, C.Env, MIEEM

Well we have finally got it! The Royal Charter for the Society for the Environment was collected from the House of Lords on Friday, 17th September and the first Board meeting of the Chartered Company took place on 22nd September. The otherwise celebratory mood had to take account of much routine business to make the last push to finally and formally get us underway including the issuing of licences to Constituent Bodies.

Following a thorough external audit of our procedures, IEEM received its license from the Registration Authority 'to award and remove the designation of Chartered Environmentalist'. Our processes are now in place to make the 'grandparenting' process, which lasts a year, operational. The IEEM Chartered Environmentalist application forms were recently sent out to all Full Members and Fellows and, judging by the response in the IEEM Office in the last few days, there will be much to do and many applications to process.

From the IEEM point of view, it is a route to being chartered which would not otherwise have been available and is the culmination of a process set in train at the 5th Anniversary celebrations at the Guildhall, London in 1996.

There is a group of members from each Constituent Body whose membership has been approved directly by the Society for the Environment. In the IEEM case the new **Chartered Environmentalists are Mike Barker, Peter Beale, Tim Bines, John Box, Robin Buxton, Richard Graves, David Jamieson, Steve Pullan, Janet Swan, Alex Tait, Jim Thompson and Eirene Williams**. All had their certificates signed and issued on 22nd September. These members form an initial group of assessors for considering applications from all the other IEEM members and we will be establishing a review programme to move the applications forward.

To get this far is a major achievement and is due to a great deal of work by the Board Members - Alex Tait and Jim Thompson for IEEM. All the Board members at the last meeting recognised the real contribution made by Tim Bines (IEEM Council Member) in the four months that he has been Chief Executive. At the same time a significant number of influential individuals known to the various constituent bodies gave support to the concept either themselves or on behalf of their organisations.

So what happens now?
There are several operational committees being set up and with a Chief Executive in post and Service Provider appointed as support, consideration will now be given to identifying priorities for the Society – position statements, press releases, responses to consultations, exhibitions, inputs to conferences and lobbying are all part of a broad agenda to make the professional voice of the Society for the Environment heard both loudly and clearly.

One of the guiding principles behind its set up was that all Chartered Environmentalists should feel part of the new body and know that they have a contribution to make. The Board members are just two individuals per Institute so to really get things moving SocEnv will need to call on a much wider and deeper pool of members.

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Editorial

Elections Across the Pond

As we approach the IEEM Conference in Southport, I am reminded of the IEEM Conference in Ayr. I cannot resist a good night of election results and November 8th, the day before the start of the Ayr Conference was the last presidential election in the United States. That night Florida was called for the Democrats and election success for the pro- environment, Al Gore, seemed a formality. The following morning it was a very different picture.

The Republicans, however, are not without contributions to the Environment. Theodore Roosevelt in 1901 set up the U.S. Forest Service, established 5 national parks and 51 wildlife refuges as well as setting aside millions of acres of land as National Forests, Richard Nixon established the Environmental Protection Agency in 1970 and George Bush Senior passed the Clean Air Act in 1990 - all of which have had fundamental consequencies for the US environment.

American environmental politics are not as simple as the views of presidential contenders, influential though they are - much action is down to the individual States and to a very active voluntary movement.

John Kerry for the Democrats has outlined a six-point plan for restoring America's environmental values:

1. A new and permanent commitment to "Green and Clean Communities".
2. A new "Conservation Covenant" with America to protect and restore our nation's Parks, lands, and other treasures for the benefit of future generations.
3. Protecting our Health by Reducing Dangerous Air Emissions.
4. A new "Restoring America's Waters" Campaign.
5. Reasserting American leadership in the international community to tackle climate change and other key global environmental challenges (not clear ratification of Kyoto).
6. A new energy economy that will reassert American energy independence and power job growth and environmental improvement.

But it looks as though George W Bush may well be re-elected so where is his agenda for the environment for the next few years? Well, you have to look pretty hard to find anything on Republican websites.

Where is that much needed recognition of the threats of global warming and a commitment to the Kyoto Process? Perhaps the Insurance Industry will come to the rescue - 4 hurricanes in a row in Florida, $15-20 billion damages. If not the industry itself then those who have to pay for the increase in premiums might just put the pressure on.

More comfort though in the House Policy Committee (Republican) response to Earth Day 2004 'Through cooperative conservation, sound science and a fundamental appreciation for the earth..., Republicans renew our dedication to continue to lead America and the world towards a healthier, cleaner and safer planet'

I need not have worried.

Jim Thompson

The Institute is immensely grateful to those organisations listed below who have made financial contributions or provided substantial 'help in kind' to support its activities during 2004/2005

British Ecological Society
Landscape Science Consultancy
English Nature, Environment Agency
Scottish Natural Heritage
Countryside Council for Wales

Contact the IEEM office for details of how to get your company included in the Gold Box!

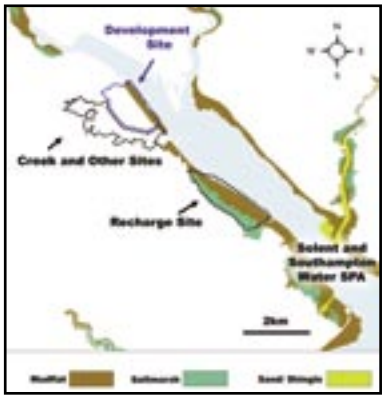
Putting compensation in its place. New Ports and Article 6(4) of the Habitats Directive

Benjamin Rosedale

Editors note: The figures shown are for illustrative purposes and are referred to generally in the text.

Introduction

The estuaries of the UK are of extraordinary importance for wildlife on an international scale, possessing over 581,000ha of estuarine mud and sand, representing 28% of the intertidal area of NW Europe (Davidson et al., 1991). The importance of these areas has in part been reflected by large-scale designation under European environmental legislation. At least 42 estuaries qualify for designation as Special Protection Areas (SPAs) under Article 4(2) of the Council Directive 79/409/EEC on the Conservation of Wild Birds, 1979 (the Birds Directive)[1] and a similar number of estuaries have also been included within candidate Special Areas of Conservation (SAC's) under Article 3(2) of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Fauna and Flora, 1992 (the Habitats Directive)[2]. These estuaries embody a number of resources besides biodiversity including valued natural beauty, flood defence, nurseries for economically important species of fish, agriculture and recreational opportunities.



Proposed Dibden Bay port development site and compensation sites showing interest features (habitat types) of associated European Marine Site.

Note: This map was created by the author to give an impression of the orientation and relative location of the proposed development, compensation and associated European Sites. It should not be interpreted as an accurate representation in scale or kind.

Source: EPR (2000b), EN (2001b).

In order to harness a number of these resources, a level of development has been essential. For over a century, man has attempted to interfere with the natural transition between the aquatic and terrestrial habitats within the lower riverine and estuarine environments in the form of large-scale reclamation for agriculture. To a lesser (spatial) extent, the development of ports has facilitated the growth of major population centres and has been, in part, responsible for the historical global influence that the UK has exerted on the rest of the world. Today, over 600 ports and harbours maintain their position as the most important gateway for trade in and out of the UK and in 1995, 66% of port trade was handled by just 10 of these ports (RSPB and MDS Transmodal, 1997).

[1]CEC (1979) Official Journal L103/1. Referred to as the Birds Directive
[2]CEC (1992) Official Journal L206/7. Referred to as the Habitats Directive

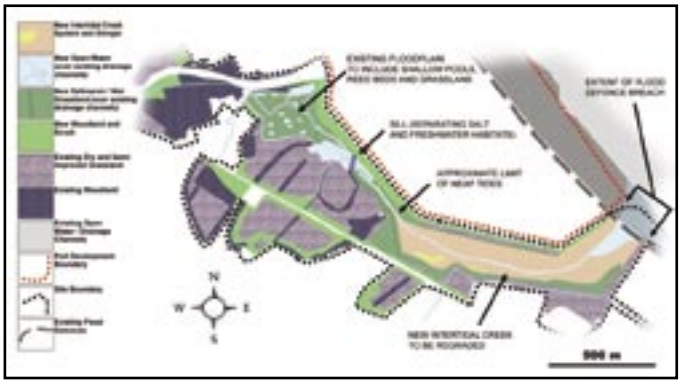
Stormy Waters

Recent proposals for container port development can be summarised as having a requirement for deeper navigation channels and new quay facilities that, due to the shortage of available space, have the potential to result in the substantial loss of estuarine intertidal habitat of importance for nature conservation. These implications have not gone unnoticed by environmental groups and the press in general (RSPB, 2003; Fairhall, 2003). In addition to development pressures, sea level rise and coastal erosion present further challenges to the conservation of littoral and intertidal habitats. European legislation dictates that permission for port developments that may affect an SPA or SAC can only be granted if the integrity of those sites will not be adversely affected. Where adequate mitigation of adverse impacts is not possible, development can only be permitted if there are no alternative solutions and where imperative reasons of overriding public interest (IROPI) can be demonstrated. Should a proposal meet these criteria, there is a statutory requirement for Member States to ensure that compensatory measures are undertaken to protect the coherence of the network of SPAs and SACs. The UK government has stated its commitment to ensuring that justified ecological losses are balanced with equivocal gains through the planning system.

Dibden Bay port proposal: Arial photo of 'the Creek and other features' compensation site.

Port Development

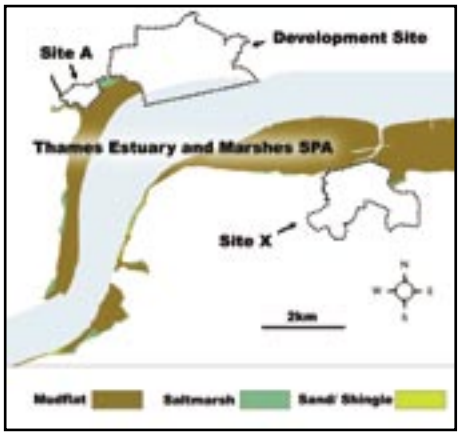
In 2000, the UK Government published 'Modern Ports: A UK Policy' (DfT, 2000), which examined the need for new port developments. The document describes how the container and trailer sector has taken the place of loose cargo shipments replacing traditional, labour intensive methods in the globalisation of trade. The sector has grown at a rate of 8% per year with some forecasts exceeding this figure (RSPB and MDS Transmodal, 1997). UK container ports are perceived to benefit greatly from the growing global market having an established client base and an excellent geographical location to both facilitate direct trade with the UK and act as 'hub' ports for the further transhipment of goods to other countries. However, this current position is arguably unsustainable in an economic sense due to the increasing size of ships required to serve the market, and the corresponding requirement for deeper shipping channels and larger berthing areas. The latest ships, 19 containers abreast with a draft in excess of 14 metres, have exceeded the functional capacity of the Panama Canal (assuming the name



Dibden Bay port proposal: Plan of 'the Creek and other features' compensation site

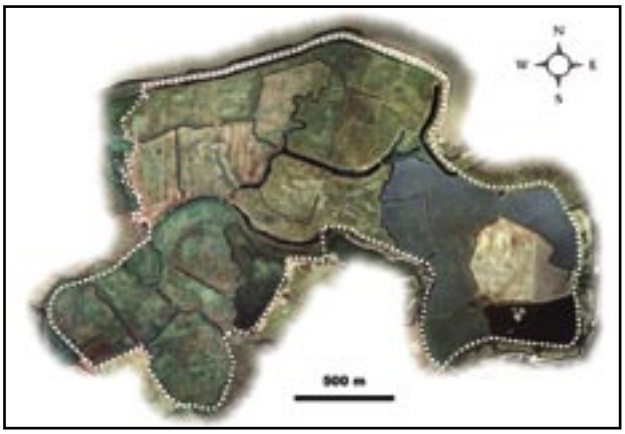
Post-Panamax) and there is talk within the industry of vessels capable of carrying more than 8,000 containers. The port applications examined in this study have been developed in direct response to the changing deep-sea container market and developers have, in combination with the likely creation of jobs and investment, used these factors to prove 'imperative reasons of overriding public interest'. Talbot (1992) identifies 81 ports and harbours with jurisdiction over at least part or one or more 'Important Bird Areas' (identified by Birdlife International) suggesting a focus for conflicting cases regarding European Sites.

Applications and subsequent public inquiries for the construction of large port developments have aroused public concern, perhaps none so much as the case of Dibden Bay for which proposals were recently turned down by the Inquiry Inspector following a long and expensive dispute. In almost all cases, developers have conceded that the proposals would have an impact on neighbouring European Sites.



Proposed London Gateway port development site and compensation sites showing interest features (habitat types) of associated European Marine Site.
Note: This map was created by the author to give an impression of the orientation and relative location of the proposed development, compensation and associated European Sites. It should not be interpreted as an accurate representation in scale or kind.
Source: P&O (2002a), Posford Haskoning (2003c), English Nature (2001d).

Although being the focus of this paper, it should be noted that port development is not the only significant pressure facing European Sites. Inappropriate water level or river management, coastal erosion, sea level rise and flooding are acknowledged by DEFRA as current threats to the integrity of European Sites for which Operating Authorities have a duty of care (DEFRA, 2003). Ecologists have highlighted the fact that to ensure that the ecological requirements of the Habitats Directive are met in the medium to long term, losses must be made good through the restoration or re-creation of new areas (John, 2001). To date, few practical measures have been taken specifically to compensate for the effects of coastal squeeze.

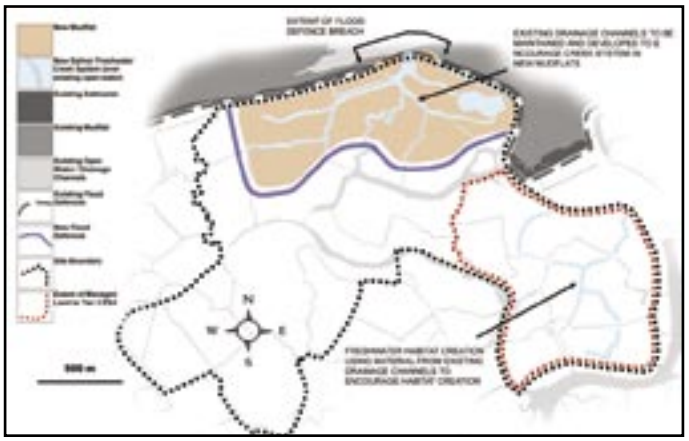


London Gateway port proposal: Plan of 'Site X' compensation site.

This article provides a timely examination of the issue of 'compensation' as defined in Article 6 (4) of the Habitats Directive and as transposed into UK law via the Conservation (Natural Habitats &c.) Regulations (the Habitats Regulations) (UK Government, 1994). The author of this paper conducted a study of how port developers have approached the compensatory requirements of the Habitats Directive through an extensive examination of past and present development proposals where European sites have been affected (with particular scrutiny of proposals at Dibden Bay, Bathside Bay and London Gateway). PPG9 (DoE, 1994) states that: 'If planning permission is granted for a development which would adversely affect the integrity of an SPA or SAC, regulation 53 [implementing Article 6(4)] requires the Secretary of State to secure that any necessary compensatory measures are taken to ensure that the overall coherence of the Community-wide network of SPAs and SACs known as Natura 2000 is protected.'

The Context of Article 6(4) Compensation

PPG9 advises on development control in accordance with the Habitats Regulations and implies a presumption against development on European Sites (Ball, 1997). Paragraph C10 in Annex C of PPG9 provides a useful interpretation of the 'series of tests' covered by Articles 6(3) and 6(4) in the form of a flow-chart. These tests, which include the necessity to determine 'significant effect', 'adverse affect on integrity', 'alternatives' and 'imperative reasons of overriding public interest', remain contentious and will undoubtedly provide lawyers with an income for many years. As such, compensatory measures are clearly identified as being those proposed subsequent to the identification of significant effects, resultant from the proposal, on a European Site (a last resort). This step wise approach clearly separates 'compensation' from 'mitigation', as does EC guidance. Managing Natura 2000 (CEC, 2000) defines mitigation measures as being "an integral part of the plan or project" as opposed to compensatory measures being "independent of the project".



London Gateway port proposal: Arial photo of 'Site X' compensation site.

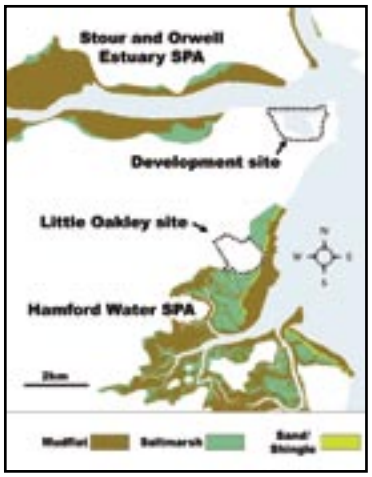
Detailed guidance on the nature of compensatory measures is generally lacking. A version of HRGN 7 (produced in 2001) specific to identifying physical characteristics of compensatory measures has been drafted but as yet, has not been published. However, a letter containing advice on the scale and location of any compensation required for a plan or project was issued by DEFRA in 2001 (Salmon, 2001) and contains a number of 'informal thoughts' for a particular port authority. Whilst the letter makes clear that the contents are to be considered guidance and not a legal text, Roger Morris (Head of Estuaries Conservation at English Nature) stated that the content was based on the material in the draft HRGN 7 document, was readily circulated between port authorities, and was used as the standard basis for the calculation of compensatory measures (Morris, 2003).

Examination of guidance reveals some underlying differences of opinion with significant implications for the implementation of suitable compensatory measures. It is apparent that the nature of compensation, and the conservation value which it seeks to redress, can be interpreted with varying degrees of flexibility ranging from the rather strict objective of preserving (exactly) the natural value of the affected site to concepts of environmental valuation and cost benefit analysis. In the case of European

Sites there is, undoubtedly, a strong argument for the preservationist attitude. However, natural processes such as coastal erosion and the proven necessity for development in certain circumstances mean that this may not always be possible, that some form of trade off will be necessary and that the measures finally agreed upon may constitute a set of (ecological) values different to those which are affected.

Identifying compensation objectives

Fundamental to the ability to compensate for losses resulting from impacts to European Sites is the ability to quantify those losses. The Habitats Directive makes it quite clear that 'appropriate assessment' must be made in view of the 'conservation objectives' for the site. PPG9 defines a site's integrity as the "coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of the species for which the site is classified". The challenge which endures is to quantify the impact (specifically as it relates to the conservation objectives of the affected site(s)) in a way that is transparent, robust and defensible.



Bathside Bay port development site and compensation sites showing interest features (habitat types) of associated European Marine Site.
Note: This map was created by the author to give an impression of the orientation and relative location of the proposed development, compensation and associated European Sites. It should not be interpreted as an accurate representation in scale or kind.
Source: P&O (2002a), Posford Haskoning (2003c), English Nature (2001d).

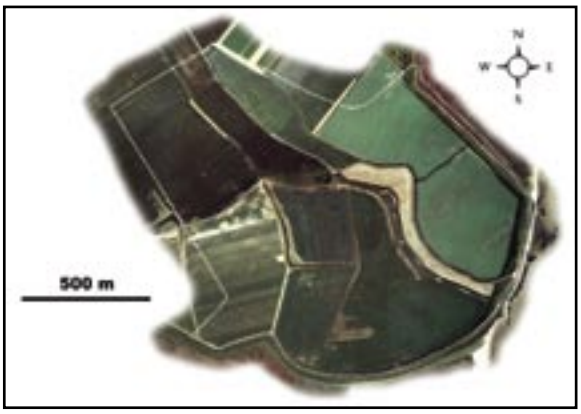
Articles 3(3) and 10 of the Habitats Directive provide some reference on the nature of the coherence of Natura 2000. Such connotations are substantiated by EC guidance (CEC, 2000) and, whilst it cannot be suggested that such a literal interpretation would vindicate the creation of any habitat (the guidance names hedgerows, riverbanks, ponds or small woods) as compensation for the significant loss of estuarine wetland, such guidance does suggest a broader interpretation of the directive.

Lessons Learned

Since the advent of the Habitats Regulations, a number of proposals have lead to major legal cases and case law. In particular, Cardiff Bay, Lappel Bank and Fagbury Flats have resulted posthumously in significant compensatory measures being required. In these cases, pressure from the EC forced the government at great expense to identify and implement such measures. Subsequently, a clear shift in the seriousness with which European Sites were considered emerged over the 1990's.

In terms of the success of established compensation projects, initial studies have been critical with resultant bird populations (in the case of Cardiff Bay) being described as providing "only symbolic connections" to those from the affected ecosystem. These and other examples illustrate the difficulties in implementing the requirements of the Habitats Directive and illustrate that a level of compromise has been necessary when identifying compensatory measures. Conflicts exist between developers, natural processes and even within and between nature conservation objectives. It is rarely possible to fulfil all the requirements of best practice with issues of alternative compensation (Cardiff Bay) and significant time delays between impacts and remediation (Lappel Bank) being evident. With hindsight, we should expect to see improvement.

Compensatory measures for impacts of intertidal areas commonly include the creation of a new habitat (e.g. mudflats from agricultural land), the enhancement of existing habitat (e.g. improvement to grazing marsh through the construction of 'scrapes') or, in very exceptional circumstances, the designation of an existing habitat (often linked to proposals for improved management). Practical examples include managed realignment, sediment placement, freshwater habitat creation, monitoring schemes and management plans; many of which have been suggested at Dibden Bay, London Gateway and Bathside Bay. Through examination of these port proposals, a number of inter-relational issues were identified and are described in the following section.



Bathside Bay port proposal: Arial photo of 'Little Oakley' compensation site.

Key Findings – Dibden Bay, London Gateway and Bathside Bay

Key areas of concern which became evident during the study included:

- The consideration of compensatory measures as a last resort, after including mitigation and accepting residual significant effects;
- The potential for agreement and establishment of compensatory measures prior to development consent, thus reducing the initial unidentifiable risk of habitat failure;
- The level of consultation with land owners, NGO's and principally, English Nature;
- The ability of the compensation sites to assume designated status, thus ensuring an equivocal level of protection to that land;
- The proximity of compensation measures to the affected area;
- The ratio of habitat loss to compensatory measures;
- The methods and historical success of habitat creation schemes;
- The relationship of compensatory habitat to the affected ecological features;
- The sustainability of the compensation measures; and
- The ecological value of the site proposed for habitat creation.

Bathside Bay port proposal: Plan of 'Little Oakley' compensation site.

Between them, these issues illustrate the great number of risks and limitations associated with compensation proposals. The main issues highlighted through the case studies are discussed below although the failure to address any one of these matters can evidently result in questionable measures being proposed.

It is apparent that, as the proposals progressed through the planning system, later applications benefited from issues encountered by those made in earlier years. This was undoubtedly the case for ABP in promoting Dibden Bay where the developer was initially required to assess the conservation objectives in the absence of clear guidance. Furthermore, in view of the conflicts between ABP and English Nature over Dibden Bay, developers at London Gateway and Shell Haven were quick to concede that significant impacts on the respective sites were likely, provoking negotiations on the less established subject of identifying what compensatory measures might be justifiable in recompense for those impacts. However, the ability to accept that significant impacts are likely has the advantage of opening the door to suitable levels of risk assessment and consultation. Elements of the compensation package (as distinct from integral mitigation measures) can then be assessed in isolation and their suitability determined. At Dibden Bay, this issue was raised in respect of proposals to 'recharge' a large sub tidal area with mud, thus raising the level of the substrate into the intertidal zone and potentially extending feeding areas. Concern was expressed not only in regard to the likely success of the scheme (no such measures had been previously attempted) but also for which particular impacts the scheme aimed to compensate.

An element of this study examined characteristics of the compensatory measures proposed; including the spatial extent of habitat creation and enhancement proposals. At London Gateway, the developer negotiated with English Nature over the extent of the impact on the neighbouring intertidal areas, eventually reaching agreement that various detrimental effects would be likely over approximately 74ha. Compensatory measures (largely consisting of managed realignment) were devised at two sites (named Site A and Site X) over an area of 74ha. In a letter to P&O, English Nature's regional team for Essex, Hertfordshire and London appear to support a quantitative approach referring to the 'balance' of hectares required to mitigate and compensate for impacts identified (Smith, 2003).

This approach, whilst clearly further supported by qualitative assessment, raises specific concerns relating to the consideration of ecological value within the planning system. Compensation ratios are seen by many to represent a clear means of determining cost benefit disputes but alone, fail to address the inherent (and widely recognised) risks involved in habitat creation.

Conclusion

Compensatory measures proposed by developers examined in this study suggest a steady improvement over time with concurrent consideration of evolving guidance. The stepwise approach advocated by the UK Government in 1994 has provided a framework, complicit with the requirements of the Habitats Directive, upon which to facilitate accountable consideration of environmental impacts.

However, past and current proposals demonstrate an inadequate consideration of risk and strongly suggest that the long-term affect of such projects will result in the loss of ecological value of the affected sites; that the overall coherence of Natura 2000 will not be protected to a reasonable extent.

The failure of the planning system to secure adequate compensation proposals is the result of a combination of factors common to the protection of natural capital with decision makers struggling to weigh up the relative value of environmental resources against social or economic factors. In particular, consensus is slow to develop on practical guidance, a factor which proves to be a major inhibition to developers who seek to gain the confidence of the nature conservation bodies and the planning system whilst reducing the economic risks to investors. It is felt that the most poignant weakness to existing guidance is the absence of a framework for the consideration of risk, possibly incorporating a method of calculating compensation ratios.

The second major flaw in the ability of the planning system to provide environmental remediation is the lack of scientific understanding behind the habitat creation and enhancement techniques and the success of such measures. In lieu of the precautionary principle and evidence demonstrating a relatively high rate of failure in habitat creation schemes, it must be presumed that the risks are significant. We should therefore expect to see compensation proposals that are capable of demonstrating no net loss of ecological value in the worst-case scenarios, if and when they occur.

The case studies suggest that it is the level of detail and self-set obligations within the environmental statement, which will form the basis by which the competent authority must evaluate the suitability of the nature, quantity and value of the proposed compensation.

Summary

Detailed investigations were made of compensatory measures proposed in recent planning applications for port developments at Dibden Bay, London Gateway and Bathside Bay. A number of issues related to compensation were identified including the timing of pertinent consideration and implementation, nature and form, consultation, status, location and spatial factors. These issues subsequently formed the basis for evaluation and discussion of the current application of proposals.

The author found that, whilst the framework exists for the objectives of the Habitats Directive to be fulfilled through compensatory measures, there is an inadequate recognition and consideration of the risks associated with such measures, principally, the inability of developers to be able to guarantee the maintenance of the valued aspects of the affected site.

Guidance has evolved slowly reflecting the contentious nature and variable interpretation of the requirements associated with the development. The deficiencies of guidance are themselves underpinned and exacerbated by the lack of scientific understanding of habitat creation and enhancement techniques.

Current proposals are generally considered to be inadequate due to the inability to assess these significant risk factors and the subsequent lack of further measures that would have the potential to account for these risks.

Acknowledgements

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North East Section Meeting and AGM

Steve Pullan, MIEEM and Jim Thompson, MIEEM

The 3rd AGM of the North East Section was held in Newcastle at the Garden House, St.Nicholas Park, Gosforth courtesy of the Northumberland Wildlife Trust. The meeting, which was also attended by President–Elect, Chris Spray, was opened by Steve Pullan who gave a brief summary of the activities of the year. Membership of the section currently stands at 67, a sign of very positive growth. Steve was particularly grateful to the support during the year from the Northumberland Wildlife Trust, the Durham WildlifeTrust, Northumbrian Water and Stockton Borough Council. Andy Cherrill, the Treasurer, gave a brief summary of the finances of the Institute in the region – they are essentially non-existent! (no charges are made for meetings and expenditure is very low key). The section intends to keep to this course.

The elections then took place with the following results:
Convenor: Steve Pullan – his last year he assured everyone.
Vice Convenor: Liz Allchin
Secretary: David Feige
Treasurer: Andy Cherrill
Elected Committee Members: Ian Bond, Fiona Corby, Caroline Gettinby and Rachel Penn.
Co-opted Committee Member: Steve Betts

Towards the end of the meeting Jim Thompson, Executive Director, gave a brief summary of the recent progress of the institute pointing out that there needed to be more sections of the Institute if it is to thrive and develop at a local level. All in all the North East Section seemed set to go from strength to strength.

An AGM is in itself, not usually enough to bring in the crowds but those who attended were treated to a very fine talk indeed. Given by Simon Henderson, a local Farmer, on the theme – does the environment have to cost?, it was a real insight into how a progressive farmer has responded to the many pressures of today's rural economy .

There were plenty of lessons - first for the urban fringe and for a farmer with a relatively small acreage - the farmer has a duty to fence in stock but what do you do if the fence posts go for fuel? His answer, a simple one – move.

His current farm at West Fenton (c.288 hectares) has quite a few environmental features including a recreated oxbow lake with newly established reed beds to control water pollution into the river Till/Tweed, 3 Countryside Stewardship schemes, including various arable options and educational access.

His farm has a rotation of winter wheat for milling, spring barley for malting, carrots, vining peas and potatoes, all foods for human consumption and his farm management philosophy is to use as many ways of sustaining yields by effective use of environmental "free" effects and at the same time minimising use of fertilizers and pesticides by effective rotation of crops. He strongly believed the successful integration of environment and food production was synergistic most of the time. Contract/share farming was important especially for carrots, vining peas and potatoes as the cost of machinery, specialist storage and handling facilities and the seasonality of labour requirement meant that farms had to cooperate to grow such profitable crops. He showed in the Millfield basin how farms had cooperated together to support 20 rural jobs by such a strategy. Technically the way he farmed he was not far from being "organic most of the time" but organic farming is complex and he feels that in reality it's purely a market tool to extract a higher price from the consumer. He did feel that organic agriculture was almost certainly a niche market and with the opportunistic definition of what organic means in some other European countries, possibly it has a limited future. Further, he felt that organic yields are simply not enough to support the growing world population. Then there are the imports from Eastern Europe, with low labour costs, vast quality soil resources – surely one of the largest problems going for UK agriculture. Use of new opportunities and techniques were going to be important in the future – rotation of crops, clever use of fertilizers – the right amounts at the right time, growing a certain amount of biofuel, making use of the ecologists and environmental managers for effective professional advice and being creative with modulation – the use of agricultural land for conservation purposes.

He was realistic though. In a North East context he saw farming as being no different from shipbuilding or mining. If the demands of the customer cannot be met at a realistic price why should they be subsidised? And, as he pointed out, farming is the most heavily subsidised of all UK industry.

His objectives for his farming business included the following:

- A profitable diverse business – without a profit nothing can happen
- Producing top quality products – meeting customer expectations
- Conservation and enhancement of the environment
- Educating the general public about agriculture
- Educating landowners about the environment
- Integrating these above objectives successfully

He had achieved some of this through environmental stewardship and developing some of the redundant farm buildings for visitors. He would be the last not to admit that farming can be hard work, unrelenting, and not necessarily the best environment for children with issues such as isolation. But here was a positive message about moving with the times, recognising the custodianship of the environment and taking positive steps, into the bargain- a fine example for other farmers to follow!

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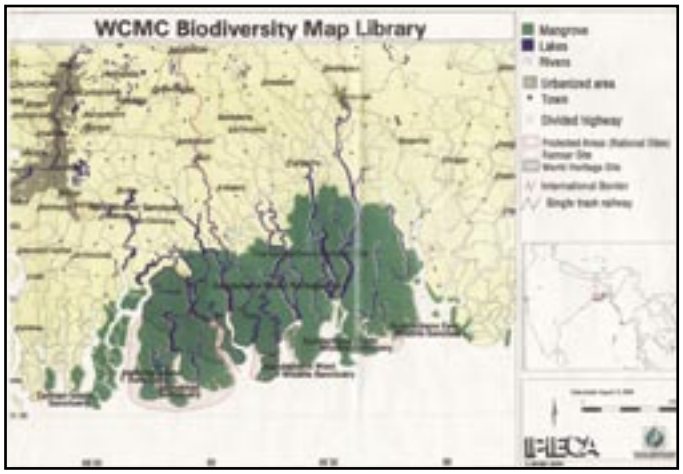
Mangrove Forest & Wild Tiger Ecology: Conservation Implications

Muhammed Ali Ashraf

What is Mangrove Forest?

Mangrove forests are the coastal forests in tropical and subtropical ecosystems. It is wetland ecosystem that is unique in terms of its biological resource potential. The Mangrove ecosystem is often termed as 'Rainforest by the Sea' and it is the most bio-diverse and productive ecological unit on earth. The geographical distribution of mangrove forest always lies near to the equatorial regions, hence the distribution of these spectacular ecosystem ranges from South America to Southern United States, West Africa to East Africa, South Asia to South East Asia and Australia. However, South Asia is the ancestral home of the mangrove forest.



The largest Mangrove Forest on Earth!

'Sundarbans' (meaning beautiful forest) is the largest single tract of contiguous mangrove wetland ecosystem on earth. Sharing the geo-political boundary between Bangladesh and India, Sundarbans covers an area that is nine times bigger than Hong Kong and two times bigger than the state of Delaware, USA. An area over 10,000 km^2 (over 1 million hectare), Sundarbans is the most productive and diverse wetland ecosystem on earth (See the map). This ecosystem is often termed a 'breeding lodge & restaurant' for mammalian, reptilian, amphibian, invertebrates and avifaunal species - an assemblage which forms a unique ecological niche and intricate food web.

The Bangladesh Sundarbans

Sundarbans shares the political boundary between India and Bangladesh. However, over 60% of the Sundarbans lies in Bangladesh comprising 6017 km^2 of non-fragmented wetland ecosystem. Bangladesh boasts a 720 km long non-fragmented coastal beach and sand dune ecosystem stretching from east to westward direction in the southern end of the country and Sundarbans mangroves occupy 25% of this costal sand dune in the south west corner of Bangladesh. Sundarbans comprises 6% of the total land area of Bangladesh and it represents over half of the country's remaining natural forest. The ecological, economic, social and aesthetic significance of Sundarbans mangrove forest in Bangladesh is immeasurable. Sundarbans is the national pride and heritage for every Bangladeshi citizen considering its unique botanical, zoological and social significance. It is surprising to realise that a country with such a high density of hungry human population (902 km^2) with little ecological consensus and awareness among people, can care enough to protect and save the forest for their future generations. The socio-ecological and economic linkages between Bangladeshi people and the Sundarbans are appreciated both directly and indirectly in every walk of life. Approximately 2.5 million people inhabit the periphery of Sundarbans ecosystem in Bangladesh. The daily livelihood of this large number of people depends on the natural resource exploitation from the forest mainly in the form of timber and non-timber forest products and fisheries. The forest is also home to the tigers. This is the national species of Bangladesh and symbol of power, wisdom, charisma and inspiration. The political and social recognition of tigers in Bangladesh is so prelavant that Bangladeshi currency is inscribed with the tiger head - a symbol of economic power in Bangladesh. Sundarbans is the last stronghold of the tigers in Bangladesh although ecological recognition of wild tiger conservation in Sundarbans is still in its infancy. Nevertheless, Sundarbans is the only mangrove ecosystem in the world with a wild tiger population, hence making Sundarbans so unique that it is one of the most high priority biological hotspots on the planet.

Wildlife Status of Bangladesh Sundarbans

Sundarbans boasts the most diverse and rich assemblage of floral and faunal species in the south and south-east Asian mangrove ecosystem. It is the breeding haven for various groups of fauna and the table 1 below provides the wildlife status of Bangladesh Sundarbans:

Group	*# of Species/Biomass kg*	*Habitat*
Amphibian	8	**Bangladesh Sundarbans**
Reptiles	53	**Bangladesh Sundarbans**
Plants	334	**Bangladesh/India Sundarbans**
Mammals	49	**Bangladesh Sundarbans**
Birds	315	**Bangladesh/India Sundarbans**
Fish	120	**India/Bangladesh Sundarbans**
Crustaceans	**140 million kg**	**Bangladesh Sundarbans**

Source: UNEP-WCMC Protected Area Programs

Table 1

Bangladesh Sundarbans is an internationally recognised waterfowl and wetland habitat (Ramsar Site). It was declared as a Ramsar site in 1992 considering its enormous potential to provide safe refuge for over 315 breeding/migratory avian fauna. Part of the Bangladesh Sundarbans was also declared as World Heritage Site by UNESCO. Sundarbans West Wildlife Sanctuary (715.02 sq km) comprising approximately 12% of the total mangrove forest of Bangladesh was declared as 522nd World Heritage Site by UNESCO in 1997 (see map attached). It has implications on wild tiger ecology and conservation management in Bangladesh Sundarbans.

The Health of Sundarbans Ecosystem and the Tiger

The Sundarbans ecosystem is a deltaic ecosystem where fresh water merges with the saline water from the Bay of Bengal. Three gigantic rivers i.e. Ganges, Brahmaputra and Meghna intermingle and form numerous tributaries which criss-cross through the entire mangrove forest before finding their way to the Bay of Bengal. Because of the deltaic nature of the forest, billions of tonnes of silt accompany the fresh water flush from the upstream of the Ganges and deposit in the lower basin of the Sundarbans. This rich silt together with monsoon rainfall creates a highly viable and productive ecological niche for all the species that thrive in the Sundarbans. Therefore the physical characteristics e.g. fresh water flow, high tide/low tide, rate of silt deposition, precipitation rate etc. play a significant role on regulating the overall physical health of the Sundarbans mangroves. However, the ecological/biological health of the Sundarbans is primarily governed by the tiger that serves as a flagship species in this ecosystem.

Tiger: The Flagship Species

The tiger is the largest cat and is a flagship species of the South and South

East Asian tropical, subtropical, mangrove and grassland ecosystem. In this ecosystem, the tiger acts as an ecological litmus paper that enables wildlife biologists to detect any changes in the ecosystem and help them to better understand the overall health of the forest. Tigers are internationally recognised as critically endangered species and have been on IUCN Red List Species Category for over quarter of a century. There used to be 100,000 wild tigers comprising eight subspecies in Asia in 1900, but now less than 7000 tigers remain, comprising five subspecies in the wild. Colonial wildlife hunting regimes in Asia during late 1800s to early 1900s had successfully managed to drive the tiger population to the brink of extinction. The effect of these hunting regimes were so intense that despite some level of protection and conservation measures, we have lost three subspecies of tigers from the wild over the last 60 years. Table 2 shows all the eight subspecies of tigers and their major habitat eco-regions. It also shows the approximate population size in these eco-regions/bio-regions.

Common Name	*Latin Name*	*Population Size*	*Eco-regions*
Bengal Tiger	*Panthera tigris tigris*	4000	Indian Subcontinent
Indochinese Tiger	*Panthera tigris corbetti*	1700	Indochina
Sumatran Tiger	*Panthera tigris sumatrae*	400	South-East Asia
Amur Tiger	*Panthera tigris altaica*	360	Russian Far East
South China Tiger	*Panthera tigris amoyensis*	20	South China
Javan Tiger	*Panthera tigris sondaica*	Extinct 1980s	South East Asia
Bali Tiger	*Panthera tigris balica*	Extinct 1940s	South East Asia
Caspian Tiger	*Panthera tigris virgata*	Extinct 1970s	Caspian Bio-region

Table 2

The Bengal tiger has the largest population size in the wild. Over 60% of the total tiger population belongs to the Bengal tiger race and half of the total world population of tigers live in the Indian Subcontinent bio-region. The Bengal tiger has the highest probability of long term survival in the wild when comparing the survival rate of its other four cousins. Long term tiger population viability largely depends on two critical ecological factors:

1. A large block of non-fragmented suitable habitat connected with ecological corridors that enable tiger populations to disperse
2. Ecologically adequate populations of large ungulate prey (tiger population size is directly correlated with large ungulate prey and their breeding rate)

The Indian subcontinent still boasts these two key ecological factors and hence is has the highest potential of long term survival of the Bengal tiger race.

Sundarbans: The Best Place for Tigers to Live!

Sundarbans comprises little over 5% of the total population of the wild tiger in the world. It is a significant tiger population considering the viability of long term survival rate of tigers in the Sundarbans. It is estimated that approximately 350 tigers remain in the Sundarbans but the population figure is open to scientific dispute. Sundarbans is the Level I Tiger Conservation Unit (TCU). Level I TCU has the highest probability of long term survival of tiger population. So far, 11 Level I TCUs are identified, geo-referenced, scored and ranked in the Indian Subcontinent Bio-region and Sundarbans ecosystem scored highest (65 points out of 70) both in the merit of long term persistence rate of tigers and of high priority protected area system.

The Ecological Study of Tigers in Sundarbans

The first ever ecological study of tigers and their prey base in Bangladesh Sundarbans was undertaken by the German Biologist Dr. Hubert Hendrichs in 1971. In 1975 he published his work on Sundarbans and estimated a population of 350 tigers with density of 0.1 tiger/sq km in this region. His classic publication, still serves as a benchmark ecological assessmentof

Bengal cxTiger

tigers, in the Bangladesh Sundarbans. Over the last 34 years, since Dr. Hendrichs ecological census on tigers was carried out, large mammal population estimation especially the *felidae* population has significantly advanced, along with the development of computers and information technology. The changes in mammal population monitoring techniques have become so advanced and refined that traditional tiger population census techniques such as foot print (pug mark) count, water hole count etc are no longer considered scientifically valid techniques to provide statistically correct estimates of numbers of tigers and other mammals. Tiger population estimation techniques have now entered the realm of rigorous statistical sampling designs and data collection, conceptually parallel statistical modelling and geo-referencing techniques in a spatial and temporal scale. Sundarbans is undoubtedly a potential tiger reserve with high probability of long term survival rate of tigers, but do we yet know the answers to the following key ecological questions:

1. What are the distributional ranges of Tigers in the Bangladesh Sundarbans?
2. Where are these ranges increasing/decreasing?
3. Where do the breeding tigers live and where are they increasing their ranges?
4. What proportion of the area of Sundarbans is occupied by the breeding female tigers?
5. What is the relative density of tigers and its prey in the core protected areas of the Sundarbans?
6. Are these Protected Areas large enough to sustain a viable population of breeding females?
7. What is the density and abundance of tigers and its ungulate prey in Sundarbans buffer zone?
8. What is the biomass contribution of tigers and what is the tiger's favourite prey base in the Sundarbans?

I doubt if merely counting tiger foot prints in Sundarbans can answer these questions reliably. The question I want to pose is shall we address these questions by embracing the cutting edge scientific advancement of mammal population monitoring techniques or shall we stick with the traditional foot print count survey in Sundarbans which is, I think, ithe best place for tigers to survive in the long term?

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Measuring Biodiversity - The Wildlife Trusts' Biodiversity Benchmark

Dr. Andy Tasker, MIEEM and James Calow, MIEEM

Introduction: the problem

Many organisations now operate environmental management systems (EMS), often certified to ISO 14000 series or EMAS (the Eco-Management & Audit Scheme). However, biodiversity issues are frequently neglected or even omitted, despite their importance. This is due to a variety of factors, including issues to do with the training of environmental managers and auditors, as well as the perception that 'biodiversity is too difficult' or even irrelevant.

It was with this background that Middlemarch Environmental began a organising a series of Biodiversity Workshops in 2002, bringing together policy makers and business practitioners to explore the barriers to biodiversity in business, and to find potential ways forward.

Participants at the second Middlemarch Biodiversity Workshop

Our workshops showed there are several barriers. The determination of biodiversity as a significant aspect within management systems lacks rigour in many cases, and appears in other cases to be simply overlooked. Some organisations have identified biodiversity as a significant aspect, but have had difficulty in establishing it effectively in their management programme, especially in setting targets and measuring progress. There is, however, a good business case for support of biodiversity even if it is not a significant aspect in EMS, by adding value and depth whilst demonstrating Corporate Social Responsibility.

Developing a benchmark

As the Middlemarch workshops developed, we began looking at the idea of a 'biodiversity management standard' which would be complementary to environmental management systems. Our early consultations made us quickly realise that the compilation of a formal 'standard' would require the rigour of a long process, and might undermine existing environmental management standards. So instead we began to devise a 'benchmark' process, which closely followed the principles of ISO 14001 and EMAS, but also encapsulated aspects of Biodiversity Action Plans (BAPs).

It emerged that there were a number of key features that any new 'biodiversity benchmark' would need to embrace. It should:

- Encourage company Biodiversity Action Plans (BAPs);
- Be complementary to existing EMS standards;
- Be complementary to existing biodiversity initiatives (such as Business in the Environment or Making a Corporate Commitment, MACC2);
- Add additional value by assessing the quality and performance of a biodiversity management system and suggesting improvements;
- Be robust and credible, yet also readily achievable by companies, demonstrating effective biodiversity stewardship.

Drafting and piloting

By early 2003 we had the essence of a new tool for organisations to use in measuring biodiversity performance, based on 10 key components (see table). These follow a familiar format beginning with commitment – at Board level – passing through survey and assessment to planning, implementation and monitoring. Given the multiple stakeholders in any biodiversity issue, we felt that partnerships and communication were key areas too. Finally, like any good system, there is a need to review and improve performance.

The Benchmark's Ten Components:

1	Commitment	6	Implementation
2	Survey	7	Measurement
3	Assessment	8	Partnerships
4	Legislation	9	Communication
5	Planning	10	Review

Having prepared the framework, we had three other tasks to complete:

1. We needed to determine a simple yet robust way to implement the process for any organisation carrying out the benchmark;
2. We needed to refine and test the entire system by piloting it in a range of large and small organisations; and
3. We needed it adopted by The Wildlife Trusts – our parent charity – as their system rather than ours, for on-going management and future development as a UK-wide system.

Remarkably, we managed to complete all these potentially drawn-out processes in less than six months, thanks to significant support from our partners and colleagues.

Launch

On 29 October 2003, The Wildlife Trusts Biodiversity Benchmark was formally launched at environment 2003, with Tony Robinson providing his support for a photograph, and key national figures adding their words of support too.

Tony Robinson at the launch of The Wildlife Trusts' Biodiversity Benchmark at environment 2003. (credit P.Fermor)

"I am sure the scheme will be very helpful to the work on standards of biodiversity performance, and I wish the launch every success" **R. Hon Margaret Beckett MP**, *Secretary of State for Environment, Food & Rural Affairs.*

"The advantages are that it is simple yet robust and therefore should further encourage busines to adopt sustainable management practices. You have our full support." **Sir John Harman**, *Chairman of the Environment Agency*

"The Business and Biodiversity Steering Implementation Group has identified benchmaking and performance criteria as a key work area... We support and welcome any iniative that helps achieve this aim." **Sir Martin Doughty,** *Chair of English Nature*

All the seven pilot organisations - whose assistance had improved the process significantly - received the inaugural Benchmark awards. The companies were BAA Heathrow, British Airways Waterside, Center Parcs UK, Elmwood College, Land Securities Group, Severn Trent Water Ltd and Shropshire Wildlife Trust. All of these organisations had previously supported biodiversity in their work, and had existing programmes against which to test the draft benchmark. They were also selected to represent a spread of sectors; single-site and multi-site companies; and both commercial and voluntary sector organisations.

The Wildlife Trusts Biodiversity Benchmark

In order to achieve the new Benchmark, an organisation must demonstrate a convincing biodiversity programme containing each of the ten components. Achievement of the Benchmark is a simple two-stage process. The first stage involves a self-assessment using a Benchmark pack obtainable from The Wildlife Trusts. This gives the organisation ownership of the process, and time to check that it does have the systems in place to support its further progress.

The second stage is an independent verification process by Wildlife Trust-appointed assessors. This process involves a site visit, though with multi-site companies this clearly includes visits to several sites. Having studied the self-assessment report, the audit team seeks verification of commitment or achievement against each of the ten criteria.

One of the great advantages of the Benchmark over a formal standard is that in addition to certifying compliance, the audit team is also able to offer advice for improving performance against any of the criteria. Whether or not the assessors recommend that Benchmark can be awarded, an assessment providing suggestions is included in the review report. Organisations awarded the Benchmark are accredited for two years, subject to an interim self-assessment after one year. At the end of the second year, a re-accreditation process begins, where demonstrable action and improvement against each criteria is required. Throughout accreditation, The Wildlife Trusts' Biodiversity Benchmark logo can be profiled as a public statement of biodiversity management commitment.

Endorsements for the Biodiversity Benchmark

We were very encouraged from the feedback from all pilot participants. Dave Farebrother, Assistant Director of Environmental Services of the Land Securities Group has the problem of addressing environmental issues at over one thousand varied locations. As a result of participation in the pilot, a new scheme for assessing the biodiversity potential of each site was implemented. He commented that: "Land Securities is very pleased to be taking part in this pilot scheme and to have been awarded the Benchmark. Within days of having our management plan being accepted, the scheme was already starting to be implemented. The programme has been enthusiastically received and we are confident that this process will enable us to bring about some real improvements."

John Salter, the Environmental Manager at Elmwood College explained that: "as a predominantly land-based college Elmwood has always placed sustainability and, more specifically, biodiversity, at the heart of its educational programmes. The college has developed its land holdings as a living, working, classroom, promoting biodiversity and delivering this as an integral part of the curriculum for all of our students intending to make a career in land management. The Biodiversity Benchmark gives us recognition for this ongoing effort."

Kevin Morris, Environmental Manager with British Airways noted that "British Airways ecological management processes have definitely benefited from this new methodology. The benchmark process has provided us with a new and improved tool to measure biodiversity change and better understand and help promote biodiversity improvements."

The Benchmark also contributes to the published biodiversity objectives of DEFRA, English Nature, the Environment Agency, Scottish Natural Heritage, Scottish Environmental Protection Agency, Countryside Council for Wales, JNCC and, of course, The Wildlife Trusts.

Conclusions

Most of the key information about the Biodiversity Benchmark is available from its website at www.biodiversity-benchmark.org, including a list of Benchmark organisations and statements of support. The Wildlife Trusts' UK Office is now in the process of setting up a UK Technical Committee to oversee the development of the Benchmark in a revision cycle, to ensure that the standard remains rigorous, robust and independent. Already several companies and other organisations have begun the self-assessment process, and two have progressed so rapidly as to gain the Benchmark following a successful audit: BAA Stansted, Beacon Press, Seacourt (a design and print company) and Wetland Creations Ltd.

We look forward to an increasing uptake of the Biodiversity Benchmark over the next few years, as knowledge of it spreads throughout the environmental sector. We will also be able to assess how much it has helped in raising profile and improving performance in organisations with biodiversity management issues. A particular area of development in the future will be with those organisations where biodiversity impacts are indirect, through supply chains, purchasing decisions, and other stakeholder involvement. For now, we have a new way to measure an organisation's impact on biodiversity – and a world first for an auditable biodiversity benchmark.

References

Details of the benchmark can be obtained from:
The Wildlife Trusts' Biodiversity Benchmark,The Kiln, Mather Road, Newark NG24 1WT www.biodiversity-benchmark.org

Acknowledgements

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Renewable Energy – Is It Ecologically Friendly?
IEEM Conference Report.

Nick Jackson

This conference took place on Tuesday 18th May 2004 and attracted around 100 delegates. There were speakers from a number of backgrounds including energy companies, statutory agencies, non-government organisations, consultants and universities. The day looked at current technologies, future developments and how ecologically friendly the 'green energy' process is.

Dan Lewis from the Economic Research Council opened the day with a look at the bigger picture. He started with the global perspective, saying that at present, only 13.5% of the World's total energy consumption is renewable. He then gave the delegates a run down of how much energy is produced by the various types of renewable energy generation in the UK and what the main policy drivers are, including the Kyoto Treaty. He then spoke about the economics of the four main areas of renewable energy production – solar, biomass, wind and water. He finished his talk with a look at where the growth of renewables will be in the future, with both on and off shore wind energy featuring heavily.

Rowena Langston from the RSPB was next, talking about how Birdlife and the RSPB are backing renewable energy. She spoke about Global climate change and how it is probably the greatest long-term threat to biodiversity. She said that the RSPB strongly supports moves to increase energy efficiency, reduce energy demand and supply more of our energy needs from renewable sources, including wind power. The available evidence suggests that wind farms can pose three main problems for birds – habitat exclusion (disturbance), habitat loss or damage, and collision. The location of renewable energy developments is the key to avoiding deleterious environmental impacts. In the rush to meet the 2010 target for renewable energy and to counter the impacts of climate change, protected habitats and bird species must be respected.

Richard Barker from Wind Prospect Ltd was the next person to speak. He talked about the criteria based approach to planning windfarms. The criteria based approach to planning is a positive way forward when trying to strike a balance between the various technical and environmental factors that must be considered. A detailed environmental impact assessment of individual sites enables the significance of potential impacts to be assessed. An objective assessment of the suitability of a site can then be made. Such an approach will ensure that sufficient suitable sites can be developed in the UK, which will have a significant impact on the need for renewable energy and contribute to a sustainable future for generations to come.

Delegates at the conference

Bill Band from Scottish Natural Heritage spoke next about offshore renewable energy developments and some of the environmental issues related to them. He covered 3 main types of development – offshore windfarms, offshore wave farms and tidal streams. If sensitively designed and sited, he said that marine renewables have the potential to have a less adverse effect than most land-based renewable developments of a comparable capacity. Offshore wave and tidal stream generators appear to have the potential to make the least impact. However, he did outline some of the potential problems involved with offshore developments, including noise, electromagnetic fields, collision risks, effects of foundations and sediment disruption. SNH would expect Environmental Impact Assessments for any project to do a full and thorough job of identifying all potential adverse impacts and evaluating their significance.

The last speaker in the morning was Professor Adrian McDonald from Leeds University. He talked about the Environmental Impacts of Short Rotation Coppice (SRC) grown for Biofuel. Negative impacts of SRC (visual impact, pests, odour and water quality) appear to be minor and are greatly outweighed by the social and environmental benefits and sensitive designs and management of individual plots would realise these potential benefits. The exclusion of areas of outstanding beauty, SSSIs, groundwater protection zones, buffered urban sites, river corridors, etc. will all serve to remove some of the possible negative impacts.

Before the break for lunch, Professor Nigel Bell of Imperial College was presented with his certificate for fellowship of the Institute.

Nigel Bell receiving his fellows certificate

The afternoon session considered the impacts of renewable energy schemes by looking at various case studies.

Nicola Young from Innogy Ltd spoke about ecological considerations for Hydro schemes. The focus for hydro-electricity is currently on run-of-river schemes. These schemes usually comprise an intake, weir and headpond, a pipeline to transport water to the powerhouse where the turbine(s) is located and a tail race, which returns the water to the river. Potential impacts to terrestrial and aquatic ecology resulting from the construction and operation of these schemes are associated with flow changes within the watercourse, the intake weir, location of the penstock, location of the power house, water return and grid connection. Other considerations include fish and invertebrate populations.

Steve Percival spoke next about the real impacts that onshore windfarms have on birds. Birds do collide with wind turbines but collision rates are generally very low (typically 1 in 10,000 bird movements through wind farm) and it was important to put mortality into population context. He gave examples of areas where problems have occurred in the past such as Altemont Pass in California where old technology is in use (small rotors, close to ground, very high rotation speed) and also Tarifa and Navarre in Spain. He also spoke about displacement around wind turbines, either temporary (e.g. during construction) or throughout the lifetime of the wind farm. It is effectively a loss of habitat, which has ecological consequences.

He said there is a need for detailed management plans to minimise human/ construction disturbance and also to stop possible barrier effects (long lines of turbines which may block flight routes).

Tom Dargie giving his presentation

Tom Dargie was the next person to speak and his talk was entitled "Windfarm Impacts on Blanket Peat Habitats in Scotland". He focused on the impacts of the construction of wind turbines (and the roads and power cables associated with them) and how these impact on the surrounding blanket peat. Roads are usually the first piece of windfarm infrastructure to be constructed, together with a temporary construction area. Overall, roads form the largest impact on blanket bog in terms of habitat loss and habitat disturbance in the road corridor (usually totalling about 1% of habitat area surveyed). Road length depends on the number of wind turbines, their spacing and the need for any new access to get to the site. Electrical cables between turbines are run through one verge of a road corridor. There are also impacts from turbine foundations. Turbine bases have to be founded on rockhead, requiring excavation of peat, boulder clay or other glacial material. Tom gave examples of impacts from two windfarm sites in Scotland - Novar Windfarm, Ross-shire (the first major windfarm in Scotland, built 1996-97, operating since October 1997) and Causeymire Windfarm, Caithness (currently under construction).

Victoria Copley from English Nature spoke next about nature conservation and offshore windfarms. She identified the following as potential impacts: birds - displacement, disturbance and collision; seabed sediment processes; seabed communities; electromagnetic frequencies and seascape. Broadscale habitat mapping would allow for greater certainty for both developers and regulators that development proposals are sited in areas which have a low risk to nature conservation. This is particularly important with respect to location of habitats which might qualify as potential Special Areas for Conservation under the Habitat Regulations.

Carolyn Heeps from the Crown Estate concluded the day's presentations. The Crown Estate owns and manages 139,600 hectares of land, property worth £4.06 billion (including the Windsor Estate), 55% of the shoreline, all the seabed (out to 12 nautical miles) and the UK Continental Shelf rights. Carolyn talked about COWRIE and the research needs for offshore renewable energy developments. COWRIE stands for Collaborative Offshore Wind research into Environment and aims to bring together expertise to identify and prioritise generic studies necessary to ensure that the offshore wind industry is developed in an environmentally acceptable way. The priority issues that COWRIE look at are impacts on birds, potential impact of electromagnetic fields on fish and impacts of noise and vibration on marine life.

The conference was a very informative day and I would like to take this opportunity to thank all the speakers for their input. The proceedings from this conference will be published in the near future and will be sent to all IEEM members and to delegates who attended the conference.

The next IEEM conference is on the 9-11th November 2004 and is entitled "Restoration, Re-introduction and Translocation". For further information please log on to our website and look at the conference section.

Nick Jackson is the Education and Professional Development Officer for IEEM.
Correspondence: e-mail nickjackson@ieem.demon.co.uk.

Environment Mentoring NorthWest

Many students are keen to move into an environmental role after they graduate, but it can be difficult for them to know where to start. This is why Environment Mentoring NorthWest was set up – a very successful scheme which matches keen, enthusiastic students with Mentors already working in the sector.

Mentors are professional people from within the Environmental Technology and Services sector, who are willing to share their knowledge and experience with students, allowing them to gain a valuable insight into their chosen field and building their overall confidence.

The scheme is managed by the Business, Careers and Community Division of the University of Manchester and we hope to recruit Mentors from a full range of organisations across the North West region. If you are willing to act as a Mentor you need only commit to 10 - 15 hours of time over a 6 month period.

If you are interested in becoming a Mentor, further information and an online application form can be found at (www.environmentmentoringnw.co.uk) alternatively contact Sara Russell on 0161 275 2828.

GIS in Conservation Seminar

The application of GIS in ecological survey, management planning, data storage and visualisation can provide great advantages. However, for many the deployment of these tools has occurred somewhat piecemeal, with a variety of platforms and approaches being adopted and for many the level of support in these areas can also be problematic.

We are hoping to organise a one or two day 'GIS in Conservation' seminar, probably early next year to provide a chance for IEEM members and other practising ecologists to meet colleagues from different areas and organisations, to share good practice, gain new ideas, and perhaps to learn from others' mistakes. From the basic to the advanced.

It is hoped ecologists from local government, wildlife trusts and larger NGO's like RSPB will take part to create a mix of presentation, workshops and open sessions. Much of the content will also depend on what you think you need, and attendees will be polled in advance. Costs will be kept to an absolute minimum so as to encourage as many as possible to attend.

Would such a day would be useful to you? If there is sufficient interest I will arrange such a get together. I would also be obliged if you could kindly pass this on to any ecologists etc. you work with, or know of in different departments and organisations who may not be IEEM members.

If you are interest please send a quick note to me at a.r.yallop@cranfield.ac.uk and I will supply more details as they become available.

Football's Grassroots

Basil O'Saurus

In this issue of 'In Practice', our old friend Basil O'Saurus, the inimitable Professor of Tauro-Scatology at the University of Neasdon, returns to tell us about yet another of his lucrative sidelines.

What is it this time, Prof?

You are referring, I assume, to my recent appointment as the Premier League's Consultant Ecologist?

That's the one. Why, we ask ourselves, does the Premier League need a consultant ecologist?

Funnily enough, you're not the first person to ask this question but there is a very simple and straightforward answer: it is to help the Premier League's referees tackle the growing problem of players diving.

And how can an ecologist possibly contribute?

Simple. Professional footballers spend so much time on the training grounds and on pitches up and down the country that they become experts on grass. And there is a growing realisation at the highest levels of the game that diving may, actually, be an attempt to make a rapid check on the identity of a species without disrupting the flow of the game.

Can you give us an example?

Yes. Cast your mind back to the derby match between Manchester United and Manchester City last season. Remember the point where Gary Neville breaks down the right flank, gets to the Manchester City penalty area and then appears to dive?

Vaguely…

The referee blows for a foul against Neville, who then gets involved in an altercation with Steve McManaman, who he appears to head butt.

I remember. Neville then got shown the red card?

That's right. Well, Neville's real reason for the apparent dive was to check the ligule on a Festuca that had not previously been recorded in the South Lancashire vice county. McManaman, of course, having just returned to the UK after a spell at Real Madrid was a bit out of touch with the subtleties of ligule morphology in Northern European Festucas and failed to respond to Neville's obvious excitement at the find. Hence the head butt. We can all empathise with Neville: we've all had the excitement of finding a rare specimen quashed by someone who reminds us that only the official BSBI recorder can confirm a new VC record. But, for most ecologists, the swift head butt to resolve taxonomic disputes remains a dream rather than reality.

So where do you come in?

In this case, I tossed a few quadrats in the penalty area where the offence took place and made a list of all the species I found, which the FA Disciplinary Panel then used to judge whether Neville really did have a case. But the job has a much wider remit than just disciplinary cases. Cast your mind back to England's quarter final defeat by Portugal in Euro 2004.

I'd rather not but, if you insist …

Okay. Remember the final penalty shoot-out Vassell's shot is saved by Ricardo who then goes on to take the next penalty himself and scores against David James?

I remember, but how is this relevant?

Well, the following morning the newspapers had a picture of Vassell kneeling on the ground, head in hands and this was seen as somehow emblematic of England's misfortune. Well, once again all the papers had got it wrong.

How do you mean?

Well, Darius was not in despair: he was seeking brief solace in his favourite hobby. And, what is more, every cloud has a silver lining. Darius showed me his specimens on his return and, I'm pleased to say, his paper 'Observations on some Iberian forms of the genus Rhytidiadelphus has just been submitted to the Journal of Bryology.

And Darius Vassell is not the only bryologist in the England squad. I bet you didn't know that Sol Campbell is doing a part-time PhD on the ecology of grassland mosses?

I'm amazed.

You see, Arsenal's training ground at London Colney is only a few kilometres from the University of Neasdon's campus, and Sol thought that, what with all the care lavished on the turf by the ground staff, it would be an excellent location to study competitive interactions amongst grassland bryophytes in a high nutrient regime subject to simulated grazing.

And this is prompted by Campbell's love of cryptogamic botany?

Only partly.

Why else?

Sol Campbell is not getting any younger and he has to start thinking about life beyond his playing career. His dream, if at all possible, is to escape the penury and obscurity of life in a Premiership football club and, instead, move into a glamorous and highly paid career in environmental consultancy.

Once again, Professor O'Saurus, I can only thank you for your fascinating and perceptive insights into the discipline of environmental management.

No problem.

Croeso I Gymru

Len Wyatt, MIEEM

Since devolution in 1999 the differences between England and Wales, have been gradually getting more distinctive for ecologists.

In terms of legislation, policy, language and general approach, there have been significant changes. If you are intending to work in Wales, it is good practice to be aware, and this article tries to give you at least an introduction to the changing situation – and a number of resources, mainly web based, which are well worth looking at. If of course you are already familiar with the Welsh situation, this will be a case of "yr oen yn dysgu l'r ddafad bori."**

Legislation
The differences between English and Scottish/Northern Ireland legislation is relatively well known. Increasingly the National Assembly is using its powers to produce new Statutory Instruments of relevance only to Wales. Many are the same as England but enjoy a different title and application date - but others are just different. Older legislation usually remains the same in their coverage as before devolution.

An example is the recent Statutory Instrument on "Strategic Environmental Assessment" which is known as the "The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 (WSI 2004/1656)".

Legislation from the National Assembly, Welsh Statutory Instruments:
www.wales-legislation.hmso.gov.uk/legislation/wales/w-stat.htm

Policy
The main documents for the various main areas people need to be aware are varied and numerous. Below is a list of the mainly Assembly/Assembly Government websites/ documents, many of which are similar to their English equivalent – but some are not. There is, of course, other guidance from local authorities and other organisations.

Agriculture
Assembly Government Website – www.countryside.wales.gov.uk

Farming for the future –
www.countryside.wales.gov.uk/fe/master.asp?n1=4&n2=52

Rural Development Plan 2002 - 2006
http://www.countryside.wales.gov.uk/fe/master.asp?n1=4&n2=256

EIA Regulations on uncultivated land and semi-natural areas –
http://www.countryside.wales.gov.uk/fe/master.asp?n1=3&n2=46

Agri-environment schemes –
www.ccw.gov.uk/generalinfo/index.cfm?Subject=Agriculture&lang=en

Biodiversity and Nature Conservation

Assembly Government Website – www.countryside.wales.gov.uk

Wales Biodiversity Group website – www.biodiversitywales.org.uk

The Section 74 list of habitats and species under the Countryside and Rights of Way Act 2000 of principal importance is different from England –
www.wales.gov.uk/subienvironment/content/guidance/species-statement-e.htm

There is currently no Welsh Biodiversity Action Plan or Biodiversity Strategy, but there is a response to the UK Millennium Report –
www.wales.gov.uk/subienvironment/content/biodiversity/future-action-e.pdf

The Hedgerow Regulations 1997 are currently not being reviewed in Wales.

cSACs, pSPAs. RAMSAR sites are treated as a matter of policy as Natura 2000 sites for the purposes of the "Habitat Regulations".

There is a Welsh List of Birds of Conservation Concern – 2002 to 2007 – available from - www.rspb.org.uk/wales/index.asp

There is "Wales only" guidance on a number of subjects - eg: Great Crested Newt surveys and LBAP preparation. It is best to check with clients/local CCW office as to whether guidance is available which should be applied.

Forestry
Forestry Commission Wales – www.forestry.gov.uk/forestry

Woodlands in Wales 2001 – www.forestry.gov.uk/forestry/infid-5nlkt7

Planning
Assembly Government Website –
www.wales.gov.uk/subiplanning/index.htm

The main policy documents are:
- Planning Policy Wales, 2002 – www.wales.gov.uk/subiplanning/content/planningpolicy/final/contents-e.htm. Section 5 covers conserving and improving natural heritage and coast.
- The Wales Spatial Plan, currently in draft - www.wales.gov.uk/themesspatialplan/index.htm
- Technical Advice Notes (Wales) – TAN - www.wales.gov.uk/subiplanning/content/tans/tans_e.htm

Other documents can be referenced from –
www.wales.gov.uk/subiplanning/toc-e.htm#p2

Sustainable Development
Assembly Government Website –
www.wales.gov.uk/themessustainabledev/index.htm

Transport
Assembly Government Website – www.wales.gov.uk/subitransport/index.htm

Transport Framework 2001 – www.wales.gov.uk/subitransport/content/policy/framework/index.htm

Trunk Road Estate Biodiversity Action Plan – www.wales.gov.uk/subitransport/content/trebap/index-e.htm

Language
The use of the Welsh language is gradually increasing. The 2001 census

showed an increase in the people able to use Welsh – including in areas such as South East Wales which have not been traditionally seen as Welsh speaking strongholds. Using Welsh, or even showing an appreciation of its importance, can be beneficial when communicating with people.

Increasingly:

- organisations have Welsh Language Policies (eg: Assembly Government – www.wales.gov.uk/subiculture/content/standards/language-scheme-e.pdf)
- documents are produced bilingually
- technical reports have a bilingual summary
- websites have a "Cymraeg" option, linking to mirror sites (eg: www.ccw.org.uk); or to a list of Welsh language pages (eg: www.dft.gov.uk).
- contract briefs are asking for consultants to provide Welsh language translation facilities.

You may also find that simultaneous translation is provided at seminars and conferences, to translate from Welsh into English, especially when discussions occur in Welsh.

It's best to check what is required.

General information

It is impossible to cover here all of the information which could be of relevance, but here are two which you may find helpful.

1 All the local authorities in Wales are Unitary Authorities (www.wlga.gov.uk), but in some areas responsibilities are shared with National Parks (eg: Snowdonia NPA). Not all are called County Councils (eg: Powys CC), some are County Borough Councils (eg: Blaenau Gwent), City and County Councils (eg: Swansea), or just a Council (eg: Gwynedd). There are Town Councils, but Parish councils are called Community Councils.

2 Increasingly, organisations have Welsh branches of their organisations, sometimes with a distinctive Welsh identity and information, but still linked to their main organisation. Examples include:

RSPB – www.rspb.org.uk/wales/index.asp
Butterfly conservation – www.butterfly-conservation.org
Plantlife – www.plantlife.org.uk/html/wales/wales_index.htm
Association of Local Government Ecologists – www.alge.org.uk/
Environment Agency (Wales) – www.environment-agency.gov.uk/regions/wales/?region=wales&lang=_e

While other organisations are distinctively Wales only.

Coed Cyrmu – www.coedcymru.org.uk
Welsh Development Agency – www.wda.org.uk

Conclusions

So to summarise:

- Don't assume that what is relevant in England, is relevant in Wales (or vice versa)
- Use the resources listed here.
- By the time you have read this – the situation may have changed – so check with your client/people you work with as to what the latest position is.

And finally…..

Mwynhewch weithio gyda ni.**

Len Wyatt works as an ecologist in the Transport Directorate of the Welsh Assembly Government. The views expressed here are his own. He is English and has worked in Wales for 3 and half years.

** Translations to English - "like a lamb teaching sheep to graze" and "enjoy working with us".



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Supporting The Wildlife Trusts

ROADS AND ECOLOGY: TOWARDS BEST PRACTICE

A seminar in Ireland on Thursday 20th January 2005 at Jury's Hotel, Ballsbridge, Dublin 4.

Ireland is in the midst of an unprecedented programme of construction of national roads which is part of the National Development Programme 2000-2006. The ecological impacts of this programme have been well studied and the National Roads Authority has recently published a set of guidelines for best practice in the Assessment of the Ecological Impacts of National Roads.

Much has been learnt over the last few years, by both consulting engineers and ecologists, about the best methods to be adopted. This seminar, hosted jointly by Institution of Engineers in Ireland (IEI) and the Institute of Ecology and Environmental Management (IEEM), is designed to chart the way forward in the development of best practice in this area.

The seminar will be addressed by leading practitioners in ecology, engineering and environmental law. It will consider a number of key questions such as bat survey methods, watercourse crossings and mammal underpasses. The keynote address "Habitat Creation on Roadsides" will be given by Penny Anderson, joint author of the book *Habitat Creation and Repair*.

Further details and a full programme will be available shortly on the websites www.ieem.org.uk. and www.iei.ie. e-mail: andrea@iei.ie

DRAFT PROGRAMME

9:00am Registration

10:15am SESSION 1: Chairman Dr Chris Spray President of IEEM
Welcome

10:20am **Ecological issues in EIA for Irish roads**
Dr Julie Fossitt (National Parks & Wildlife Service)

10.40am **The legal background to nature conservation on roads**
Philip Sheahan (Barrister)

11:10am **Bat surveys for road schemes**
Conor Kelleher (Bat Conservation Ireland))

11:30am Coffee break

12:00pm **Best practice for watercourse crossings**
Paul Murphy (NATURA Env.Consultants)

12:20pm **Mammal underpasses: do they work?**
Dr Paddy Sleeman (University College Cork)
and Pat Smiddy (National Parks & Wildlife Service)

12:30pm Questions and discussion

1:00pm Lunch break

2:00pm SESSION 2: IEI Chair (to be arranged)

2:10pm **Habitat creation on roadsides**
Penny Anderson (Penny Anderson Associates)

2:40pm **Kildare Bypass and Pollardstown Fen: Lessons for the future**
Dr Evelyn Moorkens
and Katharine Duff

3:00pm **Integrating ecology and engineering**
Mike Evans (Arup Consulting Engineers)

3:20pm **Ecology & the National Roads Programme**
Dr Vincent O'Malley (National Roads Authority)

3:40pm Questions and discussion

4:00pm End of meeting

4.40pm **Discussion for IEEM members on proposed section in Irleand**

5.30 Disperse

In the Journals

Compiled by Jim Thompson

British Ecological Society

A. Amar, B. Arroyo, S. Redpath and S. Thirgood.
Habitat predicts losses of red grouse to individual hen harriers.
Journal of Applied Ecology 2004, **41**: 305 -314.
Hen harriers *Circus cyaneus* prey on red grouse *Lagopus l. scoticus* and high breeding densities of harriers can limit the number of grouse available for shooting in the autumn. Grouse hunting contributes to the maintenance of heather moorland, an important habitat for biodiversity in general and hen harriers in particular. Predation rates vary widely among harrier individuals and understanding the factors behind this would be useful to target management to mitigate the effect of harriers on grouse, such as diversionary feeding.

The authors found that the rate at which grouse were delivered to harrier nests was positively associated with the proportion of heather *Calluna vulgaris* cover within 2 km of harrier nests.

When harriers were given diversionary food, the relationship between grouse predation rate and habitat was removed, with grouse predation reduced to negligible levels in most cases. This demonstrated the increased benefit of feeding birds with the highest proportion of heather cover within 2 km of their nest sites, rather than feeding birds at random.

The amount of heather cover around hen harrier nests can be used to predict which pairs will predate most grouse within a population. This information should facilitate targeted management practices, which may potentially reduce the conflict between grouse shooting and conservation of biodiversity.
Correspondence: e-mail arjuna@ceh.ac.uk

C. M. Beale and P.Monaghan.
Human disturbance: people as predation-free predators?
Journal of Applied Ecology 2004, **41**: 335-343.
Human disturbance has been associated with declines in breeding success in numerous species but there is considerable uncertainty about why animals are disturbed by people in the first place.A behavioural model of perceived predation risk was developed as a framework for understanding the effects of disturbance on cliff-nesting birds. The idea was that the effects of disturbance should increase with increasing numbers of visitors, and decrease with distance from the nest, something ignored in current conservation practice.

The predictions of this model were tested using field data on nesting success in two species of seabird, kittiwake *Rissa tridactyla* and guillemot *Uria aalge*.

The findings suggest that fixed set-back distances and buffer zones are likely to be inappropriate conservation measures in situations where the numbers of visitors to wildlife areas fluctuates spatially and temporally, as is generally the case. In managing access to wildlife areas there is a need to ensure that larger parties of visitors are kept further away from the nesting areas of vulnerable species or that set-back distances are determined for the largest party likely to visit the site.
Correspondence: e-mail 0102627@student.gla.ac.uk

J. Dannewitz, E. Petersson, J. Dahl, T. Prestegaard, A-C. Löf and T. Järvi.
Reproductive success of hatchery-produced and wild-born brown trout in an experimental stream.
Journal of Applied Ecology 2004, **41**: 355-364.
Dramatic increases in the releases of hatchery-produced salmonids to support wild populations have occured inrecent decades but little information is available about the performance in the wild of hatchery fish and their offspring. Factors determining success include (i) the relative reproductive success of released hatchery fish in the wild, and (ii) the extent to which the propagation affects reproductive success in the population as a whole.

Two field experiments on brown trout *Salmo trutta* from the River Dalälven in Sweden are reported. In experiment 1 they compared reproductive success between trout from a seventh-generation hatchery stock of native origin and wild-born trout from the river. In experiment 2, they compared reproductive success between seventh-generation hatchery trout and hatchery-reared trout derived from wild-born parents. Individual reproductive successwas assessed on three occasions after reproduction: immediately after hatching and after the first and second growth seasons.

In experiment 1 there were no significant differences in reproductive success between hatchery trout and wild-born trout. In experiment 2, males from wild-born parents were more successful than males from the hatchery stock, but not evident among females.
These findings indicate that supportive breeding can be managed to increase not only the numbers but also the genetically effective size of small, endangered salmonid populations. However, it is important to give priority to the restoration of natural habitats and thereby increase the reproductive output from individuals in the wild.
Correspondence: e-mail johan.dannewitz@fiskeriverket.se

R. H. Marrs, J. D. P. Phillips, P. A. Todd, J. Ghorbani and M. G. Le Duc.
Control of *Molinia caerulea* on upland moors.
Journal of Applied Ecology 2004, **41**: 398-411.
The work described tested various management treatments to reduce *Molinia caerulea* and encourage the development of dwarf shrub vegetation. It is a cautionary tale in that simple treatments gave quite complex results - food for thought for managers.

Two regions were selected: North Peaks and Yorkshire Dales and within each, the same experiment was carried out on two types of moorland vegetation, *Molinia*-dominated 'white' moorland and a mixture of *Molinia* and *Calluna vulgris*,'grey,'moorland. Burning, grazing and herbicide (glyphosate) treatments were applied and the responses of both vegetation and individual species assessed. On the white moors two techniques for *Calluna* re-establishment were investigated, (i) removal of *Molinia* litter by raking and (ii) application of *Calluna* seed.

Glyphosate application reduced *Molinia* but had little impact on other moorland species. Greater *Calluna* seedling densities were found in the plots where herbicide was applied, the *Molinia* litter was removed and seed was added. However, after initial colonization, there was a reduction in *Calluna* seedling densities as the *Molinia* recovered. This indicated that disturbance, seed addition and follow-up management are required for successful *Calluna* establishment.

Interestingly there was marked variability of response between 'apparently similar' vegetation types in different regions. There were abrupt changes some years after treatment application and a significant length of time was required for change to be detected. Managers need to obtain a greater knowledge of initial floristic composition before starting the restoration process, be prepared to accept multiple outcomes of response (acid grassland vs. dwarf shrubs), be prepared for a long-term monitoring process and perhaps the inclusion of additional treatments for continued *Molinia* control and dwarf shrub restoration.
Correspondence: e-mail calluna@liv.ac.uk

K. Norris.
Managing threatened species: the ecological toolbox, evolutionary theory and declining-population paradigm.
Journal of Applied Ecology 2004, **41**: 413-426.
This complex paper reviews the tools available for conservation biologists to intervene in the extinction process and reduce the loss of biodiversity. There are three broad classes of ecological tool used by conservationists to guide management decisions for threatened species: statistical models of habitat use, demographic models and behaviour-based models. Each tool was analysed, a case study reviewed and the practical applications considered.

Effective conservation needs to be based on a reliable diagnosis of the cause of decline and the use of ecological tools that aid an assessment of how management might assist in population restoration. Statistical models of habitat use and demographic models have been used successfully to make management recommendations for declining populations. To do this, assumptions are made about population growth that will apply when environmental conditions are restored, based on either past data collected under favourable environmental conditions or estimates of these parameters when the agent of decline is removed. The problem is that many future changes in the environment will not have been experienced by a population in the past and therefore future changes are not predictable from past patterns.

The paper concludes with a plea that conservation biologists should bring evolutionary theory into their work and that this might be helpful in the context of future changes.
Correspondence: e-mail k.norris@rdg.ac.uk

A. D. Fox.
Has Danish agriculture maintained farmland bird populations?
Journal of Applied Ecology 2004, **41**: 427-439.
This study reviewed agricultural change in Denmark from 1983 to 2001 to compare patterns of intensification and farmland bird abundance with the UK.

Changes in 26 agricultural variables showed consistent changes throughout the period that were similar to the UK. Pig and sheep production, and the extent of winter cereals, rape and fodder maize, all increased. The area used to grow fodder beet and spring barley, the applications of agrochemicals and the numbers of cattle reared all declined. The greatest change in land area in Denmark was the switch from spring-sown to autumn-sown cereals in the 1980s, almost a decade later than in the UK.

Of 27 bird species associated with farmland habitat in Denmark, five declined, 10 showed stable trends and 12 increased, compared with 15, 8 and 4, respectively, among the same species in the UK.
Agricultural yields have been sustained or enhanced during the survey period, while most farmland bird species declining in the UK have remained stable or increased in Denmark. Of the five declining Danish species, only lapwing Vanellus vanellus and yellowhammer Emberiza citrinella are associated with predominantly farmland habitat. The timing of the declines suggests that the switch to autumn sowing in Denmark has had little effect on any species.

The ability of species showing marked declines in Europe to maintain their number and distribution in the Danish landscape in the face of agricultural intensification gives hope for safeguarding farmland birds and biodiversity. However, there is a need to understand the reasons behind contrasting population trends in Denmark and the UK.

Marked differences between national patterns of agriculture and the contrasting nature of historical intensification offer the opportunity to contrast the effects of major changes in land-use practice on European farmland biodiversity.
Correspondence: e-mail tfo@dmu.dk

R. G. Hughes and O. A. L. Paramor.
On the loss of saltmarshes in south-east England and methods for their restoration.
Journal of Applied Ecology 2004, **41**: 440-448.
The saltmarshes of south-east England have been eroding rapidly with deleterious consequences for conservation and coastal flood defence.

The paper challenges the accepted view that the saltmarsh erosion is due to coastal squeeze, where sea walls prevent a landward migration of saltmarsh in response to sea level rises become: (i) as the sea level rises saltmarshes accrete vertically as well, at least at the same rate, and may even extend seaward; (ii) in recent decades the rate of rise in sea level has been no higher than in the past when the saltmarshes developed; (iii) the pattern of vegetation loss, mostly of pioneer zone species, is opposite to that predicted by coastal squeeze, where the upper marsh plants should disappear first.

The alternative reasons proposed are changes to the intertidal biota, an increase in abundance of ragworm *(Nereis diversicolor)*, and a decrease in abundance of intertidal seagrasses. Bioturbation and herbivory by *Nereis* cause the loss of pioneer zone plants, increase sediment instability and exacerbate the erosion of saltmarsh creeks. The erosion of the seaward edge of some marshes may also be due to increased wave action, and increased tidal current speeds in estuaries, following the loss of intertidal seagrasses since the 1930s.

The current strategy for saltmarsh creation is based on managed realignment, where some sea walls are breached to provide new intertidal habitat. If saltmarsh loss is not related to sea level rise this may not be the most appropriate means of saltmarsh creation as many realignment areas are unlikely to develop vegetation. Other methods should be considered including exclusion of the infauna, use of dredged material for strategic intertidal recharge, and transplantation of intertidal seagrasses.
Correspondence: e-mail r.hughes@qmul.ac.uk

O.A.L. Paramor and R.G.Hughes.
The effects of bioturbation and herbivory by the polychaete Nereis diversicolor on loss of saltmarsh in south-east England.
Journal of Applied Ecology 2004, **41**: 449-463.
In this second paper, field and laboratory experiments were used to test the hypotheses that: (i) at the mudflat-saltmarsh boundary there are two alternative states, one dominated by pioneer zone vegetation that excludes burrowing infauna, and the other dominated by infaunal invertebrates that exclude vegetation; and (ii) the major cause of the loss of saltmarshes in south-east England is internal creek erosion, which is exacerbated by bioturbation and herbivory by the ragworm.

In laboratory experiments *Nereis* ate *Salicornia* spp. and *Salicornia* deterred burrowing by *Nereis*. In field experiments, at Tollesbury in Essex, exclusion of *Nereis* from the sediment surface increased the density of *Salicornia*, but only when a source of seeds was close by. The plants and *Nereis* had mutually exclusive distributions within a vertical zone of overlap. The recently vegetated area of the managed realignment site at Tollesbury contained no *Nereis*, but *Nereis* colonized areas where *Salicornia* had been removed. These observations and data support the first hypothesis.

Much of the loss of the Tollesbury saltmarsh is by lateral erosion of the internal creeks. Physical factors alone cannot be responsible for this erosion because experimental exclusion of Nereis led to sediment accretion. These results support the second hypothesis.
Reducing the rates of saltmarsh creek erosion, by exclusion of the infauna, and/or by reducing current velocities in the saltmarsh creeks, would reduce the need to replace eroded marshes by managed realignment, and would reduce future erosion of existing sea walls by wave action.
Correspondence: e-mail r.hughes@qmul.ac.uk

R. K. A. Morris, I. S. Reach, M. J. Duffy, T. S. Collins and R. N. Leafe.
On the loss of saltmarshes in south-east England and the relationship with *Nereis diversicolor.*
Journal of Applied Ecology 2004, **41**:787-791.
Although appearing in the following volume of the journal, this forum paper challenges the conclusions drawn from the previous 2 papers and is appropriately included here.

The authors - all from English Nature argue that experience from the current range of managed realignment sites in the UK shows that saltmarsh communities are developing, and include the lower marsh Salicornia communities that Hughes and Paramor suggest are vulnerable to the effects of bioturbation and grazing by ragworm.

The importance is stressed of maintaining positive sediment budgets in order that saltmarshes may continue to adjust to sea level rise and to ensure that sufficient sediment exists to allow realignment sites to warp up to levels at which pioneer saltmarsh may develop.

There are a range of initiatives that seek to maintain sediment levels within estuaries in south-east England including the approach that looks upon dredged sediment as an important resource and not a waste material.

According to the authors, there is evidence to show that coastal realignment is effective in managing and reversing saltmarsh erosion. They suggest that infauna play an essential role in saltmarsh ecology and that *N. diversicolor* does not play a destructive role in saltmarsh establishment. In the broader context of coastal management, the long-term benefits of managed realignment in sea defence and in delivering nature conservation benefit are quite clear. Sustainable sediment management will play a key role in sustaining saltmarsh habitats in the future.
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J. Matthiopoulos, B. McConnell, C. Duck and M. Fedak.
Using satellite telemetry and aerial counts to estimate space use by grey seals around the British Isles.
Journal of Applied Ecology 2004, **41**: 476 – 491.
In the UK, resolving conflicts between the conservation of grey seals, the management of fish stocks and marine exploitation requires knowledge of the seals' use of space. The paper shows an most useful map of grey seal usage around the British Isles based on satellite telemetry data from adult animals and haul-out survey data.

Seal usage was primarily concentrated (i) off the northern coasts of the British Isles, (ii) closer to the coast than might be expected purely on the basis of accessibility from the haul-outs and (iii) in a limited number of marine hot-spots.

This work provides environmental managers with current estimates of grey seal usage and describes a methodology for maximizing data efficiency. The results could guide government departments in licensing marine exploitation by the oil industry, in estimating grey seal predation pressure on vulnerable or economically important prey and in delineating marine special areas of conservation (SAC). The finding that grey seal usage is characterized by a limited number of hot-spots means that the species is particularly suited to localized conservation efforts.
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D. Wilkinson, G. C. Smith, R. J. Delahay and C. L. Cheeseman.
A model of bovine tuberculosis in the badger *Meles meles*: an evaluation of different vaccination strategies.
Journal of Applied Ecology 2004, **41**: 492 – 501.
In recent years bovine tuberculosis (TB) incidence in cattle has been increasing in south-west England and badgers are implicated in its transmission.

A model was used to investigate the control of TB in the badger by various badger-vaccination strategies. This predicted that badger populations with greater natural barriers between social group territories would have a lower TB prevalence.

In the absence of information on the true prevalence of TB in badger social groups, vaccinating 80% of groups where 10% were successfully immunized was more effective in the model at reducing prevalence of TB in badgers, than vaccinating 10% of the groups where 80% were successfully immunized.

Although a lower cost option, vaccinating badgers purely in reaction to cattle herd infections took longer to reduce badger TB prevalence to 50% than proactive strategies (7-20 years compared with 3-5 years). Simulations suggested that at least 40% of healthy badgers need to be immunized each year to eradicate TB in badgers and so vaccination of badgers is a viable alternative to badger culling for the control of TB in cattle.

Widespread proactive vaccination appears to be the most effective strategy for disease control. Initial proactive vaccination followed by localized reactive vaccination can lead to a greater reduction in disease prevalence for less effort.
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R. W. Summers, R. E. Green, R. Procter, D. Dugan, D. Lambie, R. Moncrieff, R. Moss and D. Baines.
An experimental study of the effects of predation on the breeding productivity of capercaillie and black grouse.
Journal of Applied Ecology 2004, **41**: 513 – 525.
The capercaillie *Tetrao urogallus* and black grouse *Tetrao tetrix* are declining in the UK, and low breeding success has been identified as the key factor in the decline of the former. To investigate possible causes, breeding productivity was studied in relation to predation, weather, vegetation changes and deer numbers over an 11-year period (1989-99) within native pinewood at Abernethy Forest, Scotland. The abundance of predators (crows *Corvus corone* and red foxes *Vulpes vulpes*) was experimentally manipulated in 1992-96 by culling.

Predation on artificial nests was measured as an index of predator activity from 1991 to 1999. Predation was lowest during the last three years of predator control, 1994-96. Predation on artificial nests by crows was highest during 1991-93. However, after predator removal stopped in 1997 few crows returned, and increased predation on artificial nests did not involve increased signs of crow predation.

The total number of capercaillie eggs and nests depredated by crows was estimated and values produced from 18 to 158 eggs over 3 years, equivalent to 3-23 capercaillie nests year1.

Both black grouse and capercaillie productivity were negatively related both to June rainfall and the predation rate on artificial nests by crows.

The re-instatement of crow removal is a logical management prescription for increasing the productivity of capercaillie and black grouse at Abernethy Forest.
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H. Kokko, M. P. Harris and S. Wanless.
Competition for breeding sites and site-dependent population regulation in a highly colonial seabird, the common guillemot *Uria aalge*.
Journal of Animal Ecology 2004, **73**: 367- 376.
Site-dependent population regulation predicts that birds compete for available nesting sites leading to density dependence in heterogeneous habitats as poorer sites are used at higher population densities.

Common guillemots *Uria aalge* (Pontoppidan) breed at high density on sea-cliffs. The population breeding on the Isle of May, Scotland increased by 60% between 1981 and 2000. A good nest-site is a prerequisite for successful breeding and there is much competition for the best sites.

The data indicate declining quality of sites that remain available as the population has increased. Site-dependent regulation was evident in that average breeding success declined over the years, but no declining trend was detected in the best (and most preferred) sites.

An individual guillemot generally uses the same nest-site from year to year, but a minority move, usually less than 2m, between breeding seasons. These movements can be involuntary or voluntary. Involuntarily moving birds that had occupied very good sites before moving often spent several years as non-breeders (floaters) close to their previous site before breeding again, and then occupied poorer sites. Voluntarily moving birds significantly improved their site quality by moving.

Birds responded both to the physical site characteristics and to their own experience (breeding failure) when abandoning a site.
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Nesting birds at Cap Fréhel, Brittany

E. Hunter, J. D. Metcalfe, G. P. Arnold and J. D. Reynolds.
Impacts of migratory behaviour on population structure in North Sea plaice.
Journal of Animal Ecology 2004, **73**: 377-385.
Migration is widespread among marine fishes, yet little is known about variation in the migration of individuals within localities, and the consequences for spatial population structure. The authors tested the hypothesis that variation in the migratory behaviour among plaice (*Pleuronectes platessa* L.) in the North Sea could be explained by large-scale differences in the speed and directions of the tidal streams, which the fish use as a transport mechanism.

The results show that the fish were segregated into three discrete feeding aggregations during the summer non-breeding season. Two clusters were in warm, thermally mixed water in the eastern and western North Sea, respectively, and one was in deeper, cold, thermally stratified water to the north.
In the winter spawning period, fish from all three aggregations mixed together in the southern North Sea, and fish from the eastern and northern subunits spawned in the south-eastern North Sea. The only fish that left the North Sea were western subunit plaice that visited spawning grounds in the eastern English Channel.

The results re-affirmed the major role of the tidal streams in the southern North Sea in structuring plaice dispersion, both by providing transport and guidance and by delimiting the extent of distribution due to thermal stratification during the summer. However, plaice from the northern North Sea did not use tidal stream transport.
Correspondence: e-mail e.hunter@cefas.co.uk

M. Nordström and E. Korpimäki.
Effects of island isolation and feral mink removal on bird communities on small islands in the Baltic Sea.
Journal of Animal Ecology 2004, **73**: 424-433.
Islands may serve as refuges for ground-nesting birds against natural mammalian predators. However, many of the bird species breeding on islands are currently threatened by introduced predators because they may lack mechanisms to confront the threats of the new predator.

The authors studied the combined effects of American mink (*Mustela vison* Schreb.), and island isolation and size on species richness, abundance and equitability of birds breeding on small marine islands in SW Finland. The study comprised two mink removal areas and two comparable control areas.

In the two control areas, both the species richness and abundance were highest on the most isolated islands, while isolation did not have obvious effects on these variables in mink removal areas.
The distribution of a maritime species, the razorbill (*Alca torda* L.), has changed dramatically: in the 1973-74, before mink invaded the area, the species was found commonly on less isolated islands than in 1994, after mink invasion.

The authors suggest that in the presence of mink, birds may have changed their breeding site selection and started to breed on the most isolated islands, which are not visited by mink as frequently as less isolated islands.
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H. Brumm.
The impact of environmental noise on song amplitude in a territorial bird.
Journal of Animal Ecology 2004, **73**: 434-440.
The impact of environmental background noise on the performance of territorial songs was examined in free-ranging nightingales (*Luscinia megarhynchos Brehm*). An analysis of sound pressure levels revealed that males at noisier locations sang with higher sound levels than birds in territories less affected by background sounds.

This is the first evidence of a noise-dependent vocal amplitude regulation in the natural environment of an animal.

The results yielded demonstrate that the birds tried to mitigate the impairments on their communication caused by masking noise. This behaviour may help to maintain a given transmission distance of songs, which are used in territory defence and mate attraction. At the same time, birds forced to sing with higher amplitudes have to bear the increased costs of singing.This suggests that in songbirds the level of environmental noise in a territory will contribute to its quality and thus considerably affect the behavioural ecology of singing males.
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News in Brief

Review Of Uk Climate Change Programme - Terms Of Reference
Margaret Beckett, Secretary of State for Environment, Food and Rural Affairs recenty announced the Government's and devolved administrations' Terms of Reference for the review of the UK Climate Change Programme.

The UK Climate Change Programme was published in November 2000 to tackle the challenge of climate change. It is focused on policies and measures to meet the UK's Kyoto target and move towards a goal of reducing CO2 emissions to 20 % below 1990 levels by 2010.

The current Climate Change Programme is available online at http://www.defra.gov.uk/environment/climatechange/02.htm#uk

British Cricket On The Up
English Nature and The Zoological Society of London (ZSL) have released over 1000 British field crickets (Gryllus campestris) into the English countryside to help prevent extinction of these endangered native animals.

In the late 1980s population levels were as low as 100 individuals, found in a single colony in West Sussex, and it was clear, that without help, this species would be extinct within six years.

ZSL and English Nature have been working to protect Gryllus campestris for over ten years. The release of these animals (especially bred at London Zoo) will further strengthen the chance of viable breeding colonies of BFCs surviving in the UK.

For more information please contact English Nature 01733 455190 or Nathalie Golden, ZSL 0207 449 6280, Nathalie.golden@zsl.org

Investment For Wildlife
The draft price limits for water companies over the period 2005-2010 will usher in a very important programme of work to improve England's rivers, lakes and wetlands for wildlife.

The draft price limits will enable water companies to invest in more than 540 schemes to investigate and address problems of water quality and water resources affecting nature conservation sites.

For more information please contact English Nature 01733 455190

Boom In Bitterns
The bittern has become one of Britain's greatest wildlife success stories. Recent figures reveal the number of these rare herons has increased 500% in just seven years.

In 1997 only eleven bitterns were found during a UK-wide survey, but this year experts counted at least 55 bitterns at 30 sites, including strongholds in East Anglia and around the Humber with others in Lancashire, Wales, Kent and Somerset. A government action plan for the bittern hoped for 50 bitterns by 2010, but the target has been broken six years early!

For more information please contact Grahame Madge, RSPB 01767 681577

Sullum Voe
A major survey is underway at Sullum Voe in Shetland to map important marine and coastal habitats.

The work has been commissioned by Scottish Natural Heritage as part of the organisation's programme of mapping marine candidate Special Areas of Conservation (SAC) across the country.

Sullom Voe cSAC has been proposed under the EC Habitats Directive as a representative of Scotland's large shallow inlets and bays, lagoons and reefs.

The contractors will use a combination of methods to map the subtidal habitats including side scan sonar and drop-down video. Aerial photographs have already been taken of the shoreline including the Houbs at Fugla Ness and Haggrister. The survey team will use these to help map the intertidal habitats. A team of divers will also be doing more detailed work on the horse mussel beds in Sullom Voe.

It is anticipated that, as well as being an important reference for SNH, the report from the project will be used by the Shetland Oil Terminal Environmental Advisory Group (SOTEAG) in their assessments of environmental change in the voe. It will also be made available to Shetland Islands Council and Sullom Voe Terminal as a contribution towards the next review of Shetland's oil spill contingency plan.

For further information please contact Calum Macfarlane, SNH Inverness, 01463 723106

Bumper Year For Basking Sharks In Scottish Waters
The latest survey results from The Wildlife Trust's Basking Shark Project for 2004 has revealed Scotland to be this year's top spot for basking sharks. The UK-wide survey has found that out of a total of 120 sharks spotted over a 10-week period, 106 were found in Scottish waters. Compared to last year, when only around 40 sharks were seen during the same time period in Scotland, this is a huge rise in sightings.

The basking shark survey which began in 2003 aims to further protection of the UK's largest fish through developing knowledge and understanding of this fascinating species, its movements and most favoured sites. It covers the waters of the English Channel, the Irish Sea, the Firth of Clyde and the Hebrides. Forever Changes (the Wildlife Trusts boat) will leave Scottish waters and venture into the Irish Sea before working its way down the west coast back to Plymouth.

For more information please visit http://baskingsharks.wildlifetrusts.org

North Sea Birds Suffer As Industrial Fishing Grows
This year has seen the most catastrophic breeding season on record for the UK's seabirds, and now they face another threat as the seas they depend on could be suffering untold damage at the hands of industrial fisheries.

These large fisheries harvest millions of tonnes of small shoaling fish to become feed for fish farms and other livestock, not human consumption.

Fish farming is the fastest growing sector in the world food economy, and to keep up with the global demand, industrial fisheries may be seriously straining the UK's marine fish stocks, and the birds that rely on them.

Industrial fisheries target small fish such as sandeels, sprats and anchovy to produce fish meal and oil. These fish species prop up the entire marine food web, and yet little is known about the effect massive industrial fisheries are having on our seas.

With a continuation on this theme an RSPB study reveals fisheries are unsustainable.

The RSPB investigated two of the world's largest fisheries - the Peruvian anchovy fishery and the North Sea sandeel fishery - to gauge how sustainable this 'feed fish' industry truly is.

The study concluded that industrial fisheries around the world are failing to meet crucial criteria to be considered sustainable. The anchovy fishery scored worst but the sandeel fishery was also deficient, failing to fully meet sustainability on around 60% of the criteria tested.

From these findings, the RSPB is calling for more research - especially into interactions between industrial fisheries and the marine environment, better stock assessment, regulation and more efficient management of the industry to protect healthy fish stocks and healthy seas.

The marine environment is the last great wilderness of our planet and yet it is the least protected. We should be learning from past mistakes to make

sure we protect our seas and benefit from them. This is the only way to prevent further crisis.

Extinct Welsh Species Back Again
Rare sand lizards have been given a new lease of life - by re-populating their former strongholds on sand dunes in North Wales. To celebrate this tenth anniversary of reintroductions, the sand lizards will be reintroduced for the first time to dunes in Denbighshire, following in the footsteps of similar programmes in Flintshire and Meirionydd.

The sand lizards, although active during the day, are very shy and difficult to spot. Even in favourable weather they will spend much of their time under cover but can sometimes be seen sunbathing on patches of bare sand. It is the rarest of the three types of native lizard found in Wales, and became extinct from the dunes of north and west Wales in the 1960's.

Re-introduction started in 1995 when young sand lizards, bred from adults captured on Sefton Coast on Merseyside were released to suitable dunes in northwest Wales. Adult lizards not only need thick vegetation where they hide and feed in daytime, but also barren areas where they can lay their eggs.
For further information please contact Meinir Wigley, 01686 613400

Water Website Benefits Wildlife
A new website will show data collected for long term conservation monitoring in the Menai Strait while providing the public with a guide to weather and water conditions on the site.

The website has just been launched by the University of Wales Bangor in partnership with the Countryside Council for Wales. In this project the School of Ocean Sciences at the university is gathering data on turbidity (water clarity), temperature, salinity and tidal height off Ynys Faelog, near the suspension bridge in the Menai Strait. Wind speed and direction, air temperature, atmospheric pressure, relative humidity and rainfall are also measured at a meteorological station on the roof of the Ocean Sciences building at Menai Bridge.

This website will mean that people can check water and weather conditions in the Strait 24 hours a day. The turbidity (water clarity) readings will be especially useful for those planning to dive in the Strait. However, it must be stressed that weather and current conditions on the Menai Strait can change rapidly and without warning and that due care and attention is always necessary whilst enjoying this natural resource.

The website address is http://straits.bangor.ac.uk

New National Nature Reserve
The National Trust's Calke Park in Derbyshire has been declared a National Nature Reserve by English Nature.

Calke Park covers over 240 hectares (600 acres) and consists of a rich and varied landscape, from rolling grassland to ancient oaks. The National Nature Reserve designation is being made in recognition of the quality of Calke's wood pasture, one of the rarest habitats in Europe which is of global cultural significance.

New Biodiversity Benchmark (see article pg 11)
Many organisations operate environmental management systems, often certified by ISO 14001 or EMAS. However, in these biodiversity issues are frequently over looked. The new Wildlife Trusts' Biodiversity Benchmark provides a UK-wide process for organisations to use, to measure and improve ecological performance.

To find out more about please visit www.biodiversity-benchmark.org

Chip Fat Wins An Environment Award
Five award-winning projects, which include the production of a unique environmentally-friendly car fuel made from left-over vegetable oil and the involvement of an entire county in collecting and recycling thousands of old Christmas cards, were part of the 2004 Environment Agency Action Earth campaign, run by CSV.

The campaign saw thousands of volunteers from all over the UK get involved in a record-breaking 1,000 local environmental projects. The lucky winners beat dozens of other contenders to win awards in five categories:

A ground-breaking renewable energy project in Carmarthenshire, South Wales, which makes environmentally-friendly car fuel out of left-over vegetable oil was the winner in the 'the most unusual location or type of project' category. Local volunteers collected used vegetable oil from local chip shops, restaurants and schools and helped convert it into a fuel called Biodiesel at the Sundance Renewables production plant. 5,000 litres of the fuel will be made when the recycling process is in full production this autumn, making Carmarthenshire's car drivers among the most environmentally-friendly in the country.

To find out more about the Action Earth projects visit www.csv.org.uk.
Environment Agency: Sasha Chisholm 020 7863 8656.

Intelligent Woodlands Protect Lakes
Scientists have joined forces with land managers to try and combat one of the most serious threats facing Bassenthwaite Lake, a site of extensive conservation value in the Lake District.

Sediments eroded from slopes and river banks due to pressures like overgrazing and excessive trampling, are being washed into the lake causing it to 'silt up' at an excessive rate, choking fish spawning beds and damaging rich wildlife habitats.

The results of the study have been published as a new guide, Using Woodland for Sediment Control, available from the Forestry Commission's North West England office. See website www.forestry.gov.uk/northwestengland

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Funded by the Forestry Commission, English Nature, Countryside Agency, Countryside Council for Wales and the Royal Society for the Prevention of Cruelty to Birds

Beacon Forestry : 01721 724788

Institute News

Code of Professional Conduct
The Code of Professional Conduct was last revised in 1998 and is now in need of updating as various issues have arisen and case law on Human Rights legislation is now further developed. The Professional Affairs Committee has completed the necessary work and after consideration by Council, the new Code will be placed before the AGM in November for approval.

CPD
This is an issue of considerable concern to the Professional Affairs Committee. The essence of it is that an Institute worth its salt should be able to demonstrate that all its members are keeping up to date with developments in their field and are able to demonstrate that this is so. Ecology is a rapidly advancing field – so make sure that you can show you are up to date. There will be a 10% sample taken soon of the returns for 2003-2004. Surely this is not an issue where it should be necessary to apply any pressure to members - it wastes time, resources and for one thing it's dead easy to meet the IEEM minimum requirements!

2005 Professional Development Programme
Nick Jackson will be putting the 2005 programme together very shortly. Every year we like to repeat courses where there is still clear demand but new topics are always welcome from members with their own particular areas of expertise. Guidance for potential supervisors is outlined in No 4 of the Professional Issues Series. The ethos of the courses, which has very much stood the test of time, is that these are informal occasions where practitioners impart their experiences in particular topics to others in the field. They are not formal training courses but they certainly count towards CPD for members.

Professional Issues Series
Members will have received the new or Revised editions of the Professional Issues Series which contain a wealth of guidance.
The Series is composed of
2. Guidance for Costing of Project Work
3 Continuing Professional Development
4. Guidance for Organising Informal Training
5. Code of Professional Conduct
6. Guidance on Advertising Practice
7. Guidance for Access to Land
8. Guidance for Tendering
9. Guidance for Model Service Agreements

There is actually no No 1 at the moment as it was originally an introduction to the series and we have tried to keep to the original numbering where possible. The PAC has just agreed to start work on Guidance on Health and Safety and also Contracts.

Conferences
The Autumn Conference at Southport is already arousing quite some interest. It looks as though accommodation at the Royal Clifton Hotel is likely to be oversubscribed so don't delay in making your booking. IEEM may be able to make alternative accommodation arrangements at other hotels in the town or there are many cheaper bed & breakfast places available.

Council Members and Committee Members
There are expected to be several changes this year in membership of Council and new nominations would be most welcome. Also several of the Committees have vacancies, especially the Membership Admissions Committee (to deal with the ever increasing number of applications and the SocEnv applications) and the Finance and General Purposes Committee.

Future Conferences
We would like to get a Conference Committee established to get the forward thinking so necessary if a conference is to succeed. Bringing it all together and making it happen will continue to be done by the Secretariat. Ideas are urgently needed now for a Spring conference in 2005 and for our 2005 Autumn Conference. Please let the office know by email if you have any suggestions and can identify any key speakers.

News of Members
Mike Barker, Chairman of the External Affairs Committee will shortly be leaving Southern Water and joining Entec where he will be based in Bristol.

EFAEP
The European Federation of Associations of Environmental Professionals is holding its next General Assembly in Lyon on 1st December. This will coincide with the renowned Pollutec exhibition. On 30th November there is to be a Conference on European Policy on **Environmental Health: What is at stake? Impact and associates challenges for industry and communities.** EFAEP and the French members organization AFITE have put the programme together. The Pollutec details are being sent out as inserts in this edition and for members with wider environmental responsibilities, this may well be of interest – a word of warning though, accommodation in Lyon is already very tight.

Seminar in Ireland
Richard Nairn has put together an interesting programme for the first IEEM meeting in Ireland. This is to be held jointly with the Institution of Engineers in Ireland and will have the theme of **Roads and Ecology: Towards Best Practice**. It will be held at the Jury's Doyle Hotel in Dublin on 20th January 2005.

Proposed Section in Ireland.
All members in Ireland have been contacted by letter to see if they are interested in the idea of a new IEEM section in Ireland. A majority of responses were clearly in favour and so there will be a meeting in Dublin on 20th January 2005 at the Jury's Doyle Hotel following the seminar - about 4.30. This will be very much an informal gathering There are now 47 members throughout Ireland and, although this number has risen recently, it may still be a little on the small side. So – message to members in Ireland - how about some strenuous recruiting!

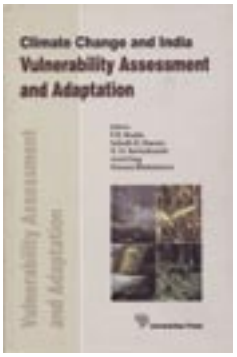
Obituary
The Institute is sorry to report the deaths of the following members:

Colin Bibby, MIEEM
Colin was a founder member of IEEM and had a distinguished career in Ornithology. He was Head of Conservation Science for the RSPB and played a prominent part in Birdlife International. He was the author of numerous scientific papers, the author of several books and, in the UK, will be particularly remembered for research underpinning the revival of the Dartford Warbler.

Graham Myers, AIEEM.
Graham worked as an ecologist for the Greater London Authority as part of the team under David Goode. His main interest was environmental education and, after leaving the GLA, moved to the Welsh Harp Environmental Education Centre for the London Borough of Brent.

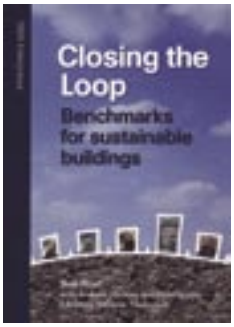
Gary Emans, AIEEM.
Gary worked as an ecological consultant for RPS with emphasis on EIA. He had a particular interest in turtles in Greece and Cyprus.

Recent Publications



Climatic Change and India - Vulnerability Assessment and Adoption
Editors: P.R. Shukla, S.K Sharma, N. H. Ravindranath, A. Garg and S. Bhattacharya.
Cost: £37.95
ISBN: 8173714711
Publisher: Universities Press

Scientific assessments of climatic change present a picture of a warming world. There is increasing evidence that human activities contribute to the warning.
This book assesses the impacts, vulnerabilities and adoption needs for the key economic and ecological sectors of India.
The sectors assessed include water, agriculture, forestry, ecosystems, health, coastal zones, energy and infrastructure.
The four key contributions of the book are: 1. The use of formal assessment tools under developing country contexts, 2. The articulation and qualification of climate change and emissions scenarios for India, 3. The consistency of assessments in connection with future climate change projections, and 4. The focus on delineating conclusions and tasks.
Climate Change and India presents a compilation of papers on the vulnerability assessment in different sectors in India. It runs with a sustainability theme rather than pure ecology. However, the book does in part concentrate on impacts of Climatic change on Natural ecosystems and Forestry within India.
The contents of the book will be of interest to those involved in impact assessment in developing countries.

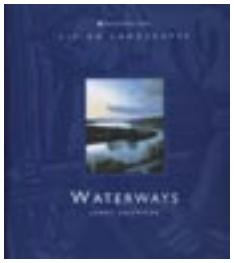


Closing the Loop
Benchmarks for Sustainable Design
Author: Susan Roaf
Cost: £29.95
ISBN: 1 85946 118 2
Available from: www.ribabookshops.com

Closing the Loop is a book that brings together design and performance in use of buildings enabling a more holistic approach to what is currently a fragmented system. The book introduces the benchmarks for sustainable building performance that will equip designers, developers, and occupants with the knowledge to monitor and evaluate their buildings.
Closing the Loop looks at a wide range of social and environmental issues, many of the established analysis tools are covered, including: life cycle analysis, environmental impact assessment, ENVEST, BREEAM and SAP.
Closing the loops main sections are: Social indicators (quality of life, health etc.), Environmental Indicators, Solutions and then moving on to Tools and Techniques which include the part EIA, lifecycle analysis and ecological foot printing, amongst others, have to play in sustainable building. Dr Susan Roaf explains, in these sections, the cycle of the sustainable building process and highlights the many key areas of most interest.
For such a detailed book, it is very readable, some sections are introduced using popular fiction quotations which serve to break up the text with a bit of fun. Closing the Loop will shed some light on the whole subject of sustainable building for those who have not tackled the subject before and will certainly be very relevant to developers and those involved in the building process.

Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners
Available from: Countryside Council for Wales, English Nature, Environment Agency and the Royal Society for the Protection of Birds.

The SEA Directive is intended to help protect the environment and promote sustainable development. SEA involves predicting, evaluating and mitigating the environmental impacts of plans and programmes thereby integrating environmental considerations into strategic decision-making.
The basic SEA process is similar to enviromental impact assessment (EIA) for projects, but SEA is not carried out to the same level of detail. SEA is generally more focused on broad directions of change, this is necessary to keep SEA in pace with the decision making process.
This guidance aims to ensure that biodiversity considerations are appropriately addressed in Strategic Environmental assessment. It is hoped that it will assist people and organisations in England, Wales, Scotland and Northern Ireland to prepare plans and programmes in a wide range of sectors, carry out SEA, prepare reports and comment on biodiversity issues in SEA.
In the first three chapters the guidance runs through the definition of SEA and its legal requirements, and the how biodiversity fits in. Charter four, the core of this guidance, explains step by step how biodiversity implications can be considered in SEA. While the links between sea and other procedures: sustainable appraisal, “appropriate assessment” under the habitats directive and project environmental impact assessment are examined in chapter 5
A tool kit of more specific techniques for promoting biodiversity through SEA is set out in the final chapter.



Waterways
Author: James Crowden
Cost: £18.99
ISBN: 0 7078 0347 0
Available from: www.nationaltrust.org.uk

James Crowden explores the engineering feats of the earliest canal builders, the communities surrounding watermills, native wildlife and how water powered the industrial revolution.
This book tells a story of how waterways have affected Britain over history in a quick and easy to read way with wonderful illustrations and photographs. While not pretending to be a highly informative read, Waterways is certainly entertaining and flows at a quick pace.
Waterways has a nice section on river nature, which not only looks at the species found, but, also their uses both commercially and historically.
I would recommend this book to people who want to gently skim over the surface of British waterways in their free time and enjoy dabbling in some history, architecture, artworks and even poetry.

Prospective members of IEEM

IEEM is pleased to welcome applications for membership from the following:
If any exi
with the Code of Professional Conduct, they must inform the Executive Director by telephone or letter before 23rd November, 2004. Any communications will be handled discreetly. The decision on admission is usually taken by the Membership Admissions Committee under delegated authority from Council but may be taken diectly by Council itself.

Full Membership
Mr David A. Bennett, Dr David Blakesley, Mr Jeremy P. Burgess, Dr Mihai Caroi, Mr Geoffrey M. Carr, Mrs Harriet E. Carty, Mr Mark O. Cartwright, Miss Ruth E. Chambers, Mr Adrian P. Chanter, Ms Morwenna J. Christian, Mr Robin B. Cox, Mrs Joanne Cullis, Mr Neil J. Davidson, Mrs Miranda J. Davis, Professor Alan W. Davison, Mrs Nicola J. Davison, Ms Diane J.T. Dobson, Dr Michael K. Dobson, Ms Susan M. Duke, Dr Paul L. Duvergé, Mr Ian D. Ellis, Ms Denise Exton, Miss Jemma L. Gaskin, Mrs Sarah M. Gillingham, Dr Martina S. Girvan, Mr Christopher N. Hall, Mrs Barbara G. Hogarth, Miss Rebecca Holder, Mr Stuart N. Ireland, Mr Andrew M. Jukes, Dr Adam V.A. Kwolek, Miss Abigail R. Lee, Mrs Linda A. Lockhart, Dr Paul H. Lunt, Mr Lee Morgan, Miss Deirdre T. Murphy, Mr Christopher Needham, Miss Sarah L. Peaty, Mr Robert G. Raynor, Mr William H.Robinson Mr David A. Scranney, Mr Christian Smillie, Ms Amanda Spry, Mr Kevin D. Stubbs, Mrs Katharine L.T. Tobin, Miss Jane E. Walsh

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New admissions to IEEM

IEEM is very pleased to welcome the following new Members:

Full Membership
Miss Anna E. Bendall, Mr Paul R. Benyon, Dr Marion J. Bryant, Mrs Anne R. Bunker, Mr Peter J. Burston, Miss Karen J. Butterworth, Miss Rachel H. Carrie, Miss Clare E. Crane, Mr Paul J. Derbyshire, Mr Michael Drury, Mr Justin Gillett, Ms Anna L. Gundrey, Dr Richard J. Handley, Dr Jesse C. Hillman, Mr Martin D. Holt, Mr Simon R. Johnson, Mr Richard N. Jones, Dr John Knight, Mr David A. Knox, Miss Sharne E. McMillan, Mr Angus M. Proctor, Mr Derek J. Richardson, Dr Lynsey Robinson, Mr Stuart Silver, Mr Glyn D. Stewart, Dr Jim R. Thompson, Dr Stewart Thompson, Miss Madeline Warriner, Dr Peter I. Webb

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Affiliate Membership
Mr Neville Davey, Mr Craig P. O'Brien, Mrs Claire Storey, Miss Dawn A. Wilde

Student Membership
Mr Anthony Bird, Miss Jennifer L. Brown, Mr Adam H. Clayton, Miss Jennifer A. Crook, Mr Neil M. Lancaster, Miss Cecilia F. Medupin

The following have successfully upgraded their Membership from Associate to Full
Mr Graham S. Davison, Miss Louise Denning, Miss Rachel Hoskin, Miss Hannah J. Powell, Mr Benedict J. Rose, Ms Sofie A. Swindlehurst, Mr Michael D. Wood

The Course programmes for 2005 for the Centre for Alternative Technology, Field Studies Council, Losehill Hall, Plas Tan- y- Bwlch and BTCV are all now available. Each offers a wide range of courses that might be of interest to IEEM members. Information from:

Centre for Alternative Technology: Further details about each course can be obtained from Joan Randle.
Tel: 01654 70590, Fax: 01654 702782, http://www.cat.org.uk

Field Studies Council: For a copy of the FSC Courses 2005 brochure, contact FSC head Office, Preston Montford, Montford Bridge, Shrewsbury, Shropshire, SY4 1HW. Tel: 0845 345 4071, Fax: 01743 850 101, e-mail: enquiries@field-studiescouncil.org, www.fieldstudiescouncil.org

Losehill Hall: Details from Losehill Hall, Peak District National Park Centre, Castleton, Hope Valley , Derbyshire S33 8WB Tel: 01433 620373, Fax: 01433 620346, e-mail: training.losehill@peakdistrict-npa.gov.uk, http://www.losehill-training.org.uk

Plas Tan-y-Bwlch: Details from: Plas Tan-y-Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd LL41 3YU. Tel: 01766 590324, Fax: 01766 590274, e-mail: Plastanybwlch@compuserve.com.

BTCV Courses: - practically based. Details from: BTCV Training Programmes Unit, Red House, Hill Lane, Great Barr, Birmingham B43 6LZ. Tel: 0121 358 2155, Fax: 0121 358 2194, e-mail: info@btcv.org.uk, http://www.btcv.org

27 October. Forestry Update. Eastwood, Nottingham. 7pm start.. East Midland Section of IEEM first meeting to discuss Regional Forestry Framework (this will be out for public consultation at that time). Also space4trees and the new England Woodland Grants Scheme.
Details from bedmonds@slrconsulting.co.uk

28 October. Using Aquatic Invertebrates as Indicators of Biological Water Quality. Buxton, Derbyshire. This short course will introduce the use of invertebrates as aquatic pollution indicators, demonstrate how samples are collected and processed, consider the health and safety issues associated with sample collection, and look at the commonly used systems for summarizing aquatic invertebrate data, such as BMWP, ASPT and LIFE scores. IEEM Workshop.

3 November. Threats or Opportunities? The Regulatory Challenges Facing the Environmental Solutions Industry. London. EIC's National Industry Conference is the key event for UK companies to understand the huge market opportunities being created by UK and EU environmental policy and legislation. **There is a 10% reduced fee for IEEM members.**
Details from www.eic-uk/images/leaflet_2004.pdf or contact EIC on Tel: 020 7935 1675 or info@eic-uk.co.uk

3 November. Key Issues in Managing Soils for the 21st Century. Peterborough. A One-Day Conference organised by IAgrE Soil & Water Group and SCI Environment & Agriculture Group,
in association with the BSSS.
Details from conferences@iagre.org

4 November Professional Practice: Introduction to Contracts. Stevenage, Hertfordshire. An introduction to the requirements and responsibilities of managing a contract. Worked examples of contract documents for habitat creation schemes will be used to demonstrate good practice, including guidance on contra ct administration from design to completion. IEEM Workshop.

9 - 11 November. IEEM'S 20th CONFERENCE Restoration, Re-Introduction and Translocation. Southport
Details from Nick Jackson 01962 868626 or conferences@ieem.demon.co.uk

10 November. Counting the Daisies Alge Conference, Liverpool. How biochemistry Indicators can help local government.
Details from timms02@leicester.gov.uk. SOAS, London.

10 November. Integrating Landuse and Water in Practice: Linking Surface and Groundwaters Developing and Longterm Vision. SOAS, London.
Details from Bob Earll bob.earll@coastms.co.uk

10 - 11 November. Energy and the Natural Heritage. Pitlochry, Perthshire. SNH's annual conference.
Details from 0131 446 2420 or www.snh.gov.uk

17 November. Winning Approaches - What do you need to do to convince a planning inspector? Basingstoke, Hampshire. This course is most suitable for people with limited experience in this field and will focus on practical demonstration of the skills required to be an effective and relaxed Expert Witness.
IEEM Workshop.

17 November. Sustainable Development conferrence. Nottingham Trent University. Conference to show the potential for implimenting sustainable development into teaching.
Details from www2.ntu.ac.uk

19 November. Fourth National NBiodiversity Network Conference for Societies and Recording Schemes.
Details from the Natural History Museum www.nhm.ac.uk

27 November. British Mammal Populations - 500 Years of Change. London Zoo. Revised population estimates for all British mammals will be presented at this event.
Details from The Mammal Society on 02073502200 or meetings@mammal.org.uk

30 November - 3 December. Pollutec. Lyon, France. Over 63,000 professional visitors are expected to attend this global environmental show.
Details from Promosalons 02082163100 or enquiries@promosalons.co.uk or www.pollutec.com

4 December. Herpetofauna Ecology and Conservation - Targeting Research Where it's Needed. Open University, Milton Keynes. One day seminar presenting current ecological research on herpetofauna conservation issues.
Details from 01202 391319.

20 January. Roads and Ecology: Towards Best Practice. Jurys Hotel, Dublin. The first IEEM meeting in Ireland. This is to be held jointly with the Institution of Engineers in Ireland.
Details from andrea@iei.ie

18 February. Creating a Conservation Plan. Denmark Farm Conservation Centre. Betws Bledrws, Lampeter, Ceredigion. This course is primarily for those who wish to enhance land that is of low or average wildlife interest. It will show you how to design a plan that fits in with the landowner's needs and resources by building on existing features and assessing both the cost and effectiveness of various improvements.
Details from 01570 493358

For Details of all IEEM Workshops contact Nick Jackson
Tel: 01962 868626 ; Email: nickjackson@ieem.demon.co.uk