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Delivering an Ecological Network – the Case Study of Cheshire

Alun Evans MIEEM, Ian Marshall and Mike Wellman

Introduction

Ecological networks are increasingly seen as a potential solution to the problem of habitat loss, fragmentation and isolation in lowland landscapes and the uncertainties of climate change (Jongman, 2005; Yost, 2006). Cheshire's Agenda 21 Strategy and Action Plan, published in 1996, included an action '*to create a sustainable network of habitats and species for people and wildlife by 2020*' (Cheshire County Council, 1996). Since that time Cheshire County Council has worked in partnership with public, private and voluntary agencies, community groups and individuals to turn this vision into reality.

The creation of an ecological network is ambitious, long-term and large-scale, and is progressing in a methodical, sequential timescale. By 2020, the Ecological Network (ECOnet) for Cheshire will encompass nearly 4,000 ha of new and restored peatlands, heathlands, woodlands, meadows and wetlands linked together with existing priority habitats to form a coherent and sustainable network that will improve conditions for many species of plants and animals.

The ecological network for Cheshire is being developed by a wide range of people and organisations working together to a common framework. Parts of it are already in place, for example, as protected areas. Mostly, however, the ECOnet is being incorporated in existing rural and urban land use initiatives including conservation, agri-environment and forestry grant schemes. Opportunities for the creation of new habitats also exist through 'green generators' such as mineral extraction, land regeneration schemes and landfill sites.

The ECOnet approach is founded on two guiding principles:

- that habitat expansion and restoration is ecologically informed and targeted to maximise ecological benefits; and
- that the creation of the ecological network is relevant to people's lives (socially and economically) and has the support and involvement of local communities, authorities and agencies.

Both of these principles need to be met if real change on the ground is to be achieved.

A view of Cheshire from Bickerton

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Editorial

The Weber Shandwick regular parliamentary report stated in its last edition that the first major event after the debate on the Queen's Speech would be the Pre Budget Report expected in early December. Health, education, transport and the Olympics are all likely to benefit, while smaller departments will be increasingly squeezed. I wondered what that could mean but I did not have to wonder for long. A day later it was reported that Defra has been told to cut its budget by nearly £200 million over the next six months. It emerged last week that the Rural Payments Agency, responsible for huge delays in the processing of 120,000 claims under the new £1.6bn farm subsidy scheme, is set to cost taxpayers £200m next year. The other element is the extra £50 million being spent on avian flu. What seems unclear is whether this year, the farmers have been the main beneficiary or, as has been suggested, extra administration, computer costs, etc. were necessary to process the scheme.

At a more detailed level, £12m is being cut from Natural England even before it has started. Sir Martin Doughty, IEEM Patron and Natural England Chairman, said the scale of these cuts '*risks the wheels coming off the organization even before it reaches October's launch pad*'. The Environment Agency is expected to cut £14.9m on flood defence work and £9m on environmental improvements. *The Guardian* on 2 August reported leaked letters from another IEEM Patron, Dame Barbara Young complaining about the severity of the cuts. There is something quite odd about government cuts for flood defence work being announced at the same time that IEEM and others are being asked to respond to the Consultation: Making Space for Water: Environment Agency Strategic Overview – Strengthening Our Strategic Approach to Sea Flooding and Coastal Erosion Risk Management. This consultation seeks views on Defra's preferred approach to implementing the Environment Agency's new strategic overview for all sea flooding and coastal erosion risk management.

Lurches in available finance are one of the bains of environmental management. Remember the Foot and Mouth Disease? Unavoidable perhaps though it was, virtually all survey work was stopped during the crisis and was carried over to the next year. There was then plenty of money but a real struggle for ecological surveyors to undertake the work in a sensible time frame.

So how are government's targets to be met? How is the 2010 Countdown target to be met? If there have been such substantial sums paid to farmers – although belatedly and at least a good proportion of it is in direct benefit to farmers then surely there has to be a gain in farm conservation and farm biodiversity so perhaps this is the silver lining. This raises the other interesting question. Are biodiversity gains really being achieved through the farm subsidy schemes and if so, could they be more effective? The answer has to be positive but *In the Journals* reports on a paper by P.F. Donald and A.D. Evans of the RSPB on this theme - *Habitat connectivity and matrix restoration: the wider implications of agri-environment schemes*. This suggests that Agricultural Environment Schemes may carry substantial wider benefits, which so far have not been considered in the design and deployment of such schemes and which are there to be realised. But if this is a Treasury claw back to be borne in subsequent years it surely means that there will be fewer people in Defra to process and advise on the schemes, let alone improving their effectiveness.

Jim Thompson

The development of the ecological network

The development of an ecological network was carried out by Cheshire County Council and its partners during the 1999-2003 European Union funded *Life* ECOnet Project (Cheshire County Council, 2004; Clarke and Boothby, 2000) (Table 1).

Table 1. Research undertaken to define an ecological network for Cheshire.

Body	Research
Cheshire County Council	Defining Core Areas for Wildlife using Geographical Information Systems (GIS) spatial analysis techniques of priority habitats, wildlife improvement areas, buffer zones, all data gathering, all co-ordination of tasks.
Alterra, Wageningen, NL	Analysis using the ecological model LARCH on 15 key animal species in five different key habitats to try to determine how animals use the Cheshire landscape.
Alterra, Wageningen, NL	Development of a scenario for an ecological network in Cheshire, with recommendations for its design based on species requirements, competing land uses and stakeholder consultation.
The University of Lancaster	Development of a database and potential vegetation map of Cheshire based on the UK's National Vegetation Classification (NVC), National Soil Map, solid and drift geology, terrain and climate.

The combination of this research led to the production of a strategic ecological network for the county (Figure 1).

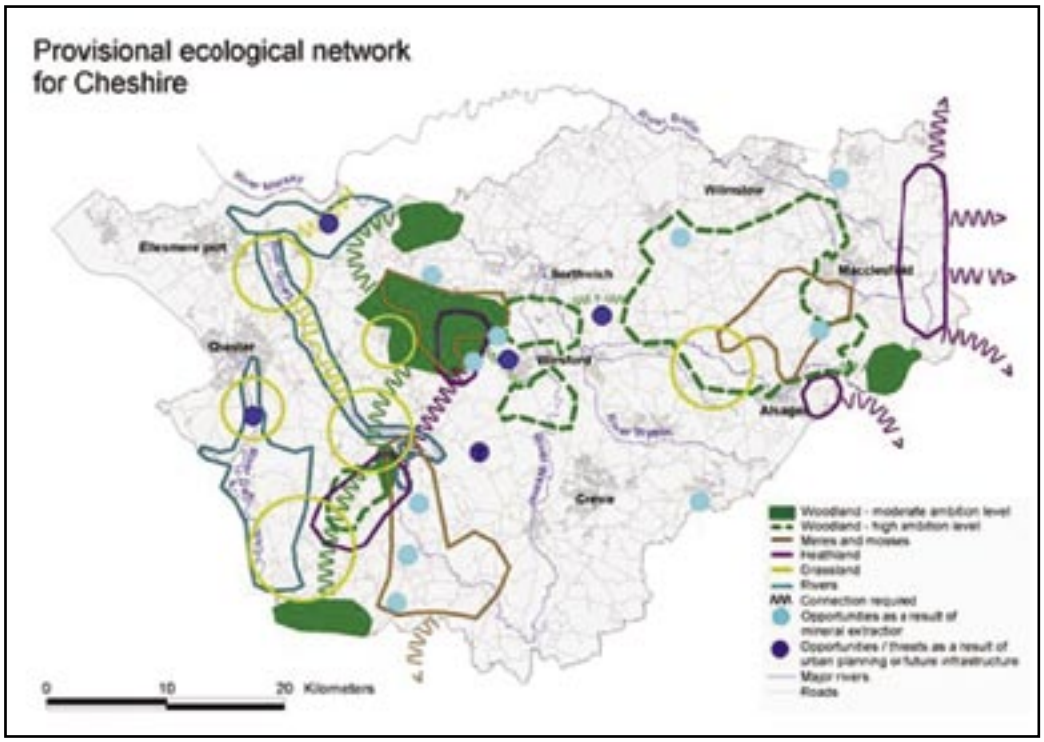

Fig 1. Ecological Network for Cheshire

Three phases of implementation have been identified. The first of these will take place between 2005-10 and focus on the mid-Cheshire Sandstone Ridge between Frodsham in the north and Bickerton in the south (a distance of some 27 km). Scientific analysis indicates that this area deserves the highest ecological priority due to the potential chain of interconnected woodland networks, alternating with two interconnected heathland networks and two isolated, but locally sustainable, peatland networks. It also contains priority areas for meadow development.

The project area

The boundary of the area adopted for the first phase of implementation is shown in Figure 2. The mid-Cheshire Sandstone Ridge is one of the County's defining landscape features and an attractive place in which to live and work, visit and enjoy. The project area includes:

- an area covering 20,000 ha or 9.5% of Cheshire;
- a population of 34,000 people;
- extensive natural heritage interests including 14 Sites of Special Scientific Interest (SSSIs - seven of which are of European importance), 74 Sites of Biological Importance (SBIs), 78 meres and mosses, 28 ancient woodlands, together with a similar exhaustive list of cultural and historic features; and
- extensive involvement with, and the support of, all sections of the community including:
    - 3,500 local people;
    - 400 farmers and landowners;
    - 1,000 businesses;
    - 44 Villages and Town and Parish Councils; and
    - facilitation process with Cheshire Community Council, National Farmers Union and the Country Landowners and Business Association.

Although the selection of the project area has been determined scientifically, the precise boundary has undergone minor realignment to reflect the Landscape Character Assessment currently being developed for Cheshire. The project area broadly reflects the 'Cheshire Sandstone Ridge Joint Character Area' (JCA 62) identified by national Government Agencies, and now being used for initiatives such as Environmental Stewardship targeting.

The social and economic case for action

A key element of the delivery of the ecological network for Cheshire is to make explicit the links between biodiversity, social and economic benefits. With the support of the North West Development Agency (NWDA) and Forestry Commission, a feasibility study was undertaken by consultants Scott Wilson and County Council officers between December 2003 and November 2004 to describe and quantify the economic, social and environmental benefits of the first phase of Cheshire's Ecological Network along the Sandstone Ridge (Scott Wilson, 2004). The Study was also supported by a steering group of local stakeholders.

The feasibility study demonstrated that the creation of an ecological network along the Sandstone Ridge would have significant socio-economic benefits for the local and wider regional economies in terms of wealth generation, employment creation and quality of life improvements. These included significant new public and private investment (estimated £3 million), encouraging additional spending by visitors, local employees,

businesses and contractors and generating an estimated 550 jobs over 20 years as farmers diversify into habitat management. This complements the already proven scientific case for an ecological network.

The study demonstrated that the project is well suited to environmental, planning and socio-economic policy objectives at national, regional and local levels, and will make a major contribution towards achieving them. Furthermore, it provided evidence that the project was workable and realistic and that it would help to persuade future funders and the people of Cheshire that investment in the project is worthwhile.

A Vision for the Sandstone Ridge

The County Council has set out a vision for the project area to '*create an interconnected network of woodlands, heathlands, peatlands and meadows that will provide benefits for people and wildlife*' (Cheshire County Council, 2005).

A range of projects has already been identified, and these have been costed and worked up in more detail with the local community, and are now being delivered on the ground. The types of projects that are being supported under the four main Programme Themes include:

Habitat management in action

1. Sustaining the natural heritage

The conservation and enhancement of 1,100 hectares of new and enhanced habitats needed to create the ecological network is the cornerstone of the vision. Support will be given to projects that help to achieve the following minimum targets for restoration/creation: lowland heathland 320 ha; meres and mosses 530 ha; woodland 220 ha; and meadows 30 ha.

2. Improving access and awareness

The vision seeks to provide appropriate high quality recreation and access opportunities for local people and visitors that are compatible with the over-riding aim of sustaining the natural and cultural heritage. This will be accompanied, where appropriate, by projects that enhance awareness, understanding and appreciation for the special features of the Ridge. Support will be given to projects that: link environmental features and the existing rights of way network including local permissive routes; interpret the natural, historic and cultural environments and the linkages between them; and interpret the area in imaginative ways including the innovative use of the media.

3. Supporting education and rural skills

The vision wishes to identify practical ways in which the work of conserving the special features of the Ridge and raising understanding and enjoyment can benefit local people, jobs and the rural economy. Support will be given to projects that: provide opportunities for education at all ages; will result in people gaining rural skills through various outlets including Cheshire Rural Enterprise Gateway; and enhance opportunities for learning through links with the County Council's three Outdoor Education Centres in the area.

4. Promoting the built and cultural heritage

Wherever possible, ecological improvements will be linked with improvements to the built and cultural heritage. The vision seeks to identify new initiatives to protect and conserve individual historic features and celebrate broad cultures and traditions whilst increasing appreciation and understanding of the historic environment. Support will be given to projects that: increase understanding of the extent and condition of the historic resource; maintain and enhance local character and traditions; and enhance access to historic sites and improve their understanding.

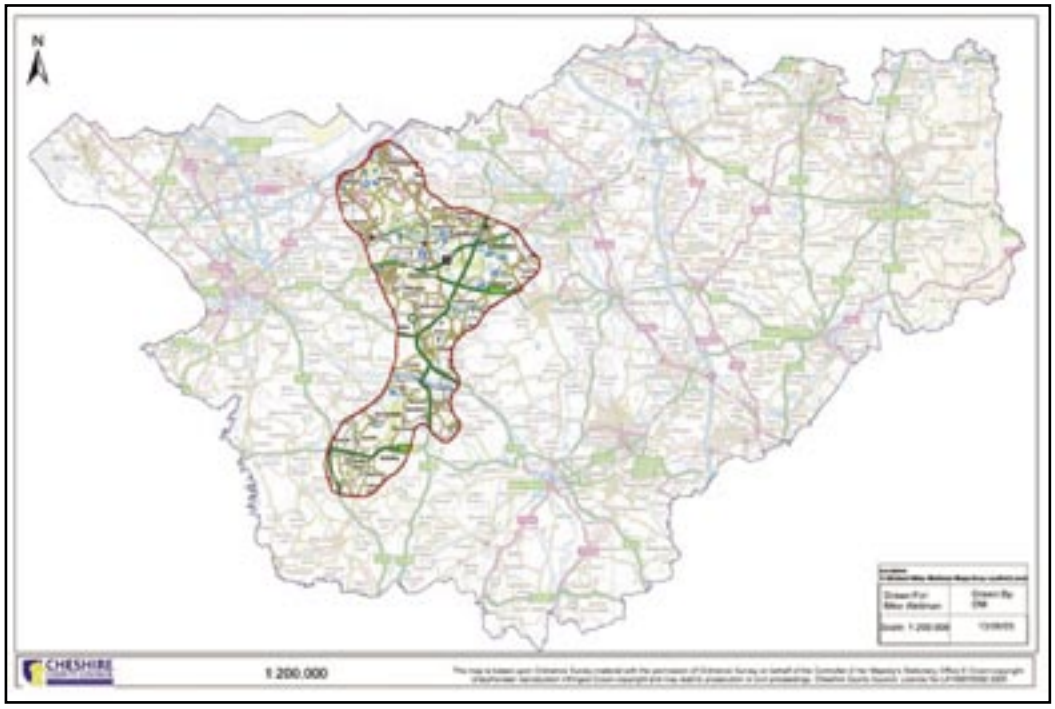

Figure 2. Boundary of the project area

The vision and framework for action are intended to complement statutory plans, policies and strategies. Participation in the initiative will be entirely on a voluntary basis.

Delivery

A Partnership Board, the Sandstone Ridge ECOnet Partnership (SREP), has been set up to take a strategic and proactive lead to pursue the realisation of this vision. The Board is led and chaired by a Member of Cheshire County Council, and includes a single representative from each of the following key groups: landowners, the community, farmers, business, industry, rural conservation agencies, education, district councils, and heritage. Board members comprise individuals who have a direct involvement in the project area, and are willing and able to deliver changes on the ground.

To ensure widespread stakeholder involvement, informal advisory groups for organisations with appropriate knowledge, interest or influence in the SREP area will be established. These advisory groups will be consulted by the Board for views on specific issues or to progress specific local actions.

Funding

The total value of all of the projects during the five years is estimated to be approximately £3 million, comprising core costs and individual scheme costs, depending on the types of schemes and the external funding that can be raised. The initial capital costs and long-term financial sustainability of the programme will be spread between a wide range of funding and investment sources.

Local community involvement

During 2004/5 a number of habitat restoration projects were initiated with the support of local landowners, farmers and community groups using small scale funding from the County Council together with grants provided by the Aggregates Levy Fund, Cheshire Rural Trust and Vale Royal Borough Council. Work included restoration on four of the area's glacial meres and mosses SSSIs (Flaxmere Moss, Hatchmere, Abbots Moss and Pettypool Valley), hedgerow restoration on 12 farms and reinstatement of livestock grazing on SBI (Site of Biological Importance) meadow.

In 2005/6 Cheshire County Council committed £200,000 for capital works in the SREP area, with £200,000/annum for a further three years thereafter. The aim is to deliver a range of projects and to complement and attract external funding from a variety of agencies. 2005/6 saw the delivery of 39 projects in partnership with landowners, NGOs and community groups, geographically spread across the area. Matched funding and voluntary time to the value of £470,000 was provided by those parties involved. Projects included the acquisition of 5 ha of agricultural land by the National Trust with the aim of reverting it to lowland heath, access improvements at a community woodland site and a range of habitat and landscape enhancements on a private estate.

Applications are in preparation for the Heritage Lottery Fund Landscape Partnership Scheme and funding has been secured from the Cheshire Rural Enterprise Programme (£167,000) to support habitat creation and restoration on agricultural land.

Conclusion

The development example in Cheshire and its delivery through the Sandstone Ridge ECOnet Partnership is one approach to creating ecological networks. It balances the needs for targeted habitat expansion and restoration with the socio-economic needs of the local population for the benefit of both people and wildlife. A range of financial instruments and incentives are required to deliver such networks together with a long-term perspective - ecological networks don't happen overnight!

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EcIA: Science and Best Practice

Joint BES–IEEM Conference, Bath Spa University, 11 - 12 July 2006

This very successful conference marked an end and a beginning; the end of six years work by the authors of the EcIA Guidelines and the launch of the new guidance on the IEEM web site. The conference proved to be very popular and was well oversubscribed. The programme started by setting EcIA into the legislative context, speakers then went on to cover topics relating to surveys and evaluation of ecological importance both in terms of data collection and evaluating and reporting on the importance of habitats and species; predicting impacts and their significance and finally mitigation and monitoring.

The speakers abstracts will give you a flavour of their presentations; the full presentations can be accessed on the IEEM web site. Conference proceedings will be published for those that attended.

IEEM EcIA Guidelines launch and wine reception sponsored by McParland Finn

ABSTRACTS

Legislative context for ecological impact assessment. *David Harrison (English Nature)*

Several pieces of legislation may give rise to an assessment that is or includes an assessment of ecological impacts:

- EIA Directive aims to ensure that decisions on consent for certain types of projects take account of any likely significant effects on the environment.
- Strategic Environmental Assessment Directive aims to provide a high level of protection for the environment and to contribute to the integration of environmental considerations into plans and programmes with a view to promoting sustainable development.
- Habitats Directive, provides an assessment that is specifically ecological in its nature. Where a plan or project, not directly connected with or necessary for management, is likely to have a significant effect on a Natura 2000 site an 'appropriate assessment' is required.

Treatment of ecological issues in EIAs. *Jo Treweek (Independent Consultant)*

Important changes in recent years with respect to ecological aspects of the impact assessment process include: a change of emphasis from 'ecological impacts' to 'impacts on biodiversity' driven by the global biodiversity-related conventions, and increasing emphasis on ecosystem services and the values of biodiversity for people. The Millennium Development Goals set a framework of targets that the world must achieve by 2015, focusing on poverty alleviation, health, education and gender equity. Achievement of these Goals is inextricably linked with healthy and biodiverse ecosystems. The real costs to society are often much higher than expected and are discovered too late for effective remedial action to be taken. We need early warning indicators of cumulative change and irreversible damage to avoid major economic 'surprises' in the longer term.

IEEM Guidelines for ecological impact assessment. *John Box (Atkins) and Karen Colebourn (EPR)*

These Guidelines have been developed by the Institute of Ecology and Environmental Management (IEEM) to promote good practice in Ecological Impact Assessment (EcIA). EcIA is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of a formal environmental impact assessment (EIA) or to support other forms of environmental assessment or appraisal. A common framework for EcIA will help promote better communication and closer cooperation between all ecologists involved in the process. The purpose of EcIA is to provide decision-makers with information about the likely significant ecological effects associated with a proposal. Good outcomes for biodiversity depend on input from ecologists at all stages in the decision-making and planning process.

Ecological Baselines – detecting species and habitats of importance. *Bill Butcher (Somerset Environmental Records Centre)*

This paper analyses the issues involved in using existing ecological data in baselines for ecological impact assessment. Drawing on Local Records Centres' experiences it focuses on quality assessment of species and habitat information and evaluation of further survey required. Techniques to predict unrecorded species from habitat data and known habitat requirements are explored. The paper concludes that data providers could do more to support good interpretation and those undertaking ecological impact assessments could make better use of available data to produce improved baselines.

Ecological survey guidelines: the importance of scoping. *Jon Davies, Stephanie Wray and Elaine Richmond (Cresswell Associates)*

The scope and methodology of ecological surveys undertaken to inform Impact Assessments for development projects have developed significantly over recent years. However, relatively few guiding principles have emerged and there is little up-to-date published guidance that covers the entire process. A standardised approach is recommended to the initial walk over 'extended Phase I' surveys. The importance is highlighted of carrying out, at this stage, all ecological surveys which require an inspection of the entire length of a scheme or site footprint, and for it then to be possible to restrict follow-up surveys to selected habitat features or locations. The use of a small multi-disciplinary team competent to undertake each relevant survey's scope and all subsequent investigations, is proposed as by far the most cost-effective option.

Ecological survey effort: how much is enough? *Sue King, Alan Fielding and Paul Haworth (University of Manchester, Manchester Metropolitan University)*

Environmental statements vary widely in the quality of their bird survey data and many of the conclusions are based on inadequate or inappropriate survey effort. An innovative method for determining the survey effort required to accurately establish and interpret home range use for large raptors so that the impacts of any potential new development may be assessed more accurately is presented. A geographic information system is used to analyse an intensive case study of a golden eagle range in NW Scotland. Analysis indicated significant diurnal and seasonal differences in range use; sub-sampling techniques have quantified the optimum and minimum survey effort required to give an accurate representation of range use throughout the year. The principles of this methodology could be adapted for other species and derive recommendations to inform best practice in the design of scientific surveys for Environmental Impact Assessments.

The principles of ecological evaluation. *Graham Tucker (Ecological Solutions)*

Ecological evaluation is the process of measuring the value (ideally quantitatively) of ecological components, such as genes, species and habitats (*i.e.* biodiversity) and ecological processes, such as carbon sequestration or nutrient cycling. The scope of values that may be considered include utilitarian socio-economic benefits from ecosystem services to less easily quantifiable intrinsic, scientific and socio-cultural values. Evaluations may be carried out on various components of biodiversity and at a variety of scales, from specific sites, counties, countries and biogeographical regions up to the global level. To be effective, ecological evaluations need to have clear objectives, be objective and repeatable, based on ecological principles and be readily understandable by non-ecologists. This presentation attempts to identify some of the underlying principles that should be taken into account when carrying out an ecological evaluation as part of an environmental impact assessment.

Valuing bat populations: standards for survey and conservation status assessment. *Katie Parsons (Bat Conservation Trust)*

All British bats are European Protected Species listed on Annex IV of the Habitats Directive. The concept of conservation status is thus central to the adequate assessment of any bat population and to assessing the significance of any impact that may result from a proposed site or landscape change, for example, a barn conversion, highway construction or wind farm development.

There is a clear need within the area of bat survey work for quality control and appropriate levels of expertise. The Bat Conservation Trust has been working with bat experts across Europe and from the UK government agencies and departments to produce good practice standards for surveying bats.

The authors of the EcIA Guidelines at the conference

New techniques to link the local impacts of development into large scale species conservation. *Jenny Hodgson, Aldina M. A. Franco, and Regan Early (University of York)*

Arriving at quantitative estimates of site value and the impact of a proposed change is an important challenge in EIA. Recent advances in population ecology, that exploit available population and habitat data, can help to predict long-term and landscape-scale changes in populations, under different development scenarios. Two new approaches are presented and a case study that is particularly relevant to EIA in the UK. The new technique 'ZIG' determines the most important areas for maintaining long-term viability of multiple species populations. Multiple taxa can be included in the analysis and species can be weighted differently.

From point data to density maps: the application of spatial statistics in ecological impact assessment. *Isobel Clark and Rebecca Klaus (Geostokos Limited)*

Ecological impact assessment frequently requires a robust estimate of the proportion of a population or habitat that may be displaced under the footprint of a development. Subsequent impact assessment will give incorrect answers without the correct baseline population estimate. A body of spatial statistics known as kriging, developed for the mining industry in the 1960s has begun, this decade, to be applied to ecological data sets. Its first application for conservation planning and ecological impact assessment in the UK has been in the boundary delineation for marine Special Protection Areas for seabirds and impact assessment for offshore wind farms. Kriging uses spatial autocorrelation, the similarity between data points with increasing proximity, to predict values in un-sampled locations. An elaboration, co-kriging, uses the correlation between sample points and a continuous known data surface, such as altitude or water depth, to fill gaps in the density map. Kriging is more advantageous for impact assessment than other interpolation techniques because of its defensible statistical base and the ability to put confidence intervals on density estimates. Kriging is of particular use in the mapping of species and habitats that are aggregated and where densities can be predicted from other measured variables.

Mapping vegetation change for assessing environmental impact. *A. Yallop and J. Thacker (Cranfield University), and S. James (Carl Bro)*

Anglian Water Service Plc has a requirement to assess the impacts on SSSI's status as a result of water abstraction under both the EA review of consent and Water Framework Directive obligations. Any assessment would benefit from a direct assay of plant changes over the monitoring period. However, few methods are capable of mapping vegetation to this standards required; NVC survey protocols (Rodwell 1991-2000) are not designed for monitoring, or mapping, and their use for such purposes flounder for numerous reasons. A new method using unbiased DGPS located sampling, geostatistical analyses and confidence bounding is presented. It is able to produce repeatable species distribution maps that can be used in conjunction with Ellenberg values to allow assessment and prediction of potential ecological impacts from abstraction.

Approaches to modelling and predicting biodiversity impacts. *William J. Sutherland (University of East Anglia)*

In this paper he describes a range of methods for predicting how populations are likely to respond to given impacts. He also suggests that we make insufficient use of the available evidence for determining the consequences of given interventions. www.conservationevidence.com

Predicting and assessing impacts of off-shore wind farms on marine ecosystems. *Köppel and Kirsten Wippel (Berlin University of Technology)*

In recent years many countries have started to develop the considerable potential of wind power at sea to increase the use of renewable energies. Environmental issues need to be carefully reflected in the planning and decision making process to avoid negative effects on marine ecosystems and coastal landscapes. This proposal seeks to point out various approaches for the transfer of marine ecological science to Environmental Impact Assessments for offshore wind farms in the Northern and Baltic Sea. An ambitious ecological research programme covering a wide range of themes has been established) and more than 4 million were allocated by the German Federal Environmental Ministry. The research projects have been mainly aiming at baseline investigations to fill in the gaps in knowledge about the marine environment and environmental effects of offshore wind energy.

Responses of hen harriers (*Circus cyaneus*) to wind farms: previous studies and impact prediction. *Ally McCluskie, Mike Madders and Phil Whitfield (Natural Research Ltd and Manchester Metropolitan University)*

The rapid growth of the wind energy industry has produced an unprecedented single-issue demand on environmental impact assessment in the UK and elsewhere in the world. Birds are a key assessment concern, due to two main potential adverse impacts of wind farms: fatalities through collision with turbine blades and disturbance or displacement effects (Langston & Pullan 2003). We first describe relevant features of harrier ecology and behaviour and then review existing wind farm studies of collision mortality and disturbance, including the first case study results from Scotland. We next describe current methods used to assess impacts at proposed schemes, highlight their shortcomings (often caused by annual and regional variation in harrier ecology and behaviour) and suggest potential improvements in approach.

Landscape ecological assessment: a tool for prediction and assessment of impacts on biodiversity. *Berit Balfors and Ulla Morthberg (Royal Institute of Technology, Sweden)*

The ongoing global urbanisation causes changes in land use and alters natural habitats worldwide. These changes affect the living conditions for species and populations in transforming areas, and as a result, the biodiversity in urban regions. In order to minimize adverse impacts of urbanisation on biodiversity, the planning of urban developments should consider the consequences of the proposed changes of land use on a landscape level, whether these developments are planned within an urban or suburban landscape or in a rural landscape close to the city. Therefore, strategic decisions related to urban developments should involve a systematic assessment of impacts on biodiversity on a landscape level. The results of the prediction of the species' potential distributions provide a valuable input in the SEA. The LEA method offers a transparent framework, in which biodiversity issues are assessed by relating the distribution of impacts on a set of species to specific landscape targets.

Evaluation and communication of impact significance. *Graham Wood (Oxford Brookes University)*

Since its inception, the rationale underpinning Environmental Impact Assessment (EIA) has been to provide an analysis of the potential significant environmental effects associated with major development proposals, and to communicate this information to decision-makers and the wider public. Whilst research has revealed little evidence of EIA serving to influence the final direction of project authorization decisions (in terms of whether the proposal should proceed or not on environmental grounds), the production and analysis of information generated during the EIA process can influence decisions made in relation to project design and impact mitigation (Wood and Jones, 1997). This serves to highlight the importance of promoting the transparent assessment and communication of the potential significance of environmental impacts during the appraisal process such that improvements to the environmental performance of development can be maximised and the outcomes of EIA improved.

Habitat creation and translocation – a review. *Penny Anderson (Penny Anderson Associates)*

Habitat creation and translocation are essentially last ditch measures to use as compensation when all other avenues for mitigation and reduction of impact for a project are exhausted. Habitat translocation success is dependant on great attention to detail related to matching the character of the donor and receptor sites, and undertaking the translocation in an acceptable manner. Translocation rarely moves all the plant species in the donor site, and the more valuable the habitat, the longer it has been in situ, and the more complex it is hydrologically, the poorer such transfer will probably be. There are circumstances where translocation can be used to create the best new habitat possible.

Habitat creation can provide for the widespread and common species of plants and animals, it cannot replace long-established complex communities of plants or animals. However, the widespread and common are becoming less so, so habitat creation has its place in rebuilding biodiversity.

Monitoring the restoration of communities. *James Bullock (CEH Dorset)*

While a huge amount of ecological restoration is taking place, we are not very good at monitoring outcomes. Monitoring is critical to check whether we are getting, and sustaining, the communities we are trying to restore. Monitoring has to follow on from clear, up-front, setting of targets. These will often be UKBAP habitats, probably translated into National Vegetation Classification communities, but some cases may involve simpler targets. After ensuring we are using the best available methods to achieve the target, we must then monitor to see whether we are actually reaching the target. There is evidence that some restorations may approach the target initially, but then diverge away. Other restorations do approach the target, but this can take a very long time.

The Potential of IEEM Improving Effectiveness Though Evidence-Based Conservation

William J. Sutherland

It is increasingly realised that consultants need to be able to provide evidence as to whether their suggested practices work (*e.g.* Harvard Business Review January 2006). The website www.conservationevidence.com provides the opportunity to share experience as to whether interventions have worked. Thus the simple essence of conservationevidence.com is for everyone to learn from the collective experience. IEEM could play a central role in collating and reviewing evidence in the effectiveness of conservation practice with the goal of its members providing more effective advice.

Our research has shown some major problems with current conservation practice:

- almost all decisions are based upon speaking to others with only 2.1% of actions based upon the primary literature;
- some of the standard conservation textbook advice is wrong;
- it is difficult to find out the basis of much of the conservation advice. Is it based upon sound experience or just a guess?
- information is often not retained within organisations; and
- with increasing demands for cost effectiveness showing that conservation works is likely to be attractive to funders.

Conservationevidence.com currently has over 450 cases from 42 countries. Each case documents the effectiveness of a single conservation intervention. These can either be syntheses of published papers or it can be unpublished material based on the experience of practitioners. Each case has three components: background, action and consequences. *Background* is a brief account of the site and the problem. *Action* is what has been done. Thus if the problem is an invasive plant then the required information is the exact means of control and date applied. *Consequences* provide some quantitative evidence as to what happened. This could be a change in percentage cover of *Crassula* or the number of treated sycamore stumps that died. For a modification to a bat roost the information would be the actual alteration and some counts before and after (or just after if it is a new roost).

Although we have made minimal attempts to advertise it and are aiming at a technical market the site has about a thousand visits a week. The BES is providing funding for the Journal of Applied Ecology articles to be summarised.

The Centre for Evidence-based Conservation led by Andrew Pullin at the University of Birmingham (www.cebc.bham.ac.uk) coordinates the production of systematic reviews, which review all the evidence relating to specific questions. The cases from ConservationEvidence.com will be included in subsequent reviews.

There are many activities, such as habitat manipulations for great crested newts or bats, where the collective experience of IEEM would enormously improve practice. By having access to the collective experience of all members it would be possible to make more sophisticated decisions and start to understand the factors that influence success. The interpretation and application of this information would require trained ecologists in the same way as evidence-based medicine has increased the need for medics.

It seems to me that the questions are whether IEEM members consider this worthwhile and how this could be encouraged and coordinated.

Bill Sutherland is a researcher and lecturer at the School of Biological Sciences, University of East Anglia.

Managing Species-Rich Grassland – A Practitioner's View

Robert S. Shiel

A sunny afternoon's walk down a field at Cockle Park farm shows how 109 years of differential management has transformed what was in 1896 described as 'old land hay', into a species-rich flower meadow, a species-poor grass sward, a productive species-rich meadow or an all grass meadow. How has this been done? Like the famous lawn in the Oxford quad, the answer is several hundred years of appropriate management. I've only been in charge at the Palace Leas meadow hay plots for 26 years, though I did first get to know them on a botany field class 40 years ago. Since that time, views on grass management have developed but these views are often based on short-term objectives, laboratory analysis and wish lists. What happens though when you set out to achieve an objective? What can Palace Leas tell us about sustainability, diversity and productivity?

Firstly, don't be in a rush. When the old meadow was divided up into huge plots (they are now about 15 m by 120 m and were originally far larger) and manure or the fertilisers of the late 19th century were applied, at what were then appropriate rates, the effect on yield was immediate. The fertiliser plots only got about 35 kg.ha^{-1} of N and, as a result, their yield was never outstanding, but the farmyard manure plots, at 20 t.ha^{-1}, gave an average of about 6 t.ha^{-1} depending on the spring rainfall – in 2003 we had a record yield of just on 11 t.ha^{-1}. The botanists dutifully recorded the species in the hay every other year for the first 10 years, and gave up in disgust. Nothing was happening. It was in fact nearly 40 years before the botanical changes became really clear, and the mixtures have now settled down (as far as we are aware) into a flower-rich hay meadow on the high phosphorus plots, a species poor grassland with nitrogen only – largely due to soil acidification – a diverse productive meadow with the manure and a grass-rich productive meadow on the more recent (30 years-old) plot receiving fertiliser providing the same nutrients as the 20 t.ha^{-1} manure.

Why has this happened? The soil is a clay (Hallsworth Series) and is low in P (ADAS index 0) but well supplied with K. The phosphorus has enabled legumes, particularly red and white clover to establish, and the plots with these are preferentially grazed after the hay is cut. In fact, the stock appear to be relatively unwilling to move onto the more grass-rich plots until they have exhausted the clover-rich plots. These plots now have a wide range of species but with buttercup, daisy, plantain, dandelion and yellow rattle the most striking plants. Analysis shows the larger mineral content of herbage from these phosphorus-enriched plots and it is this, not the more-digestible grasses, which attracts. The close grazing together with some dunging and urine patches, and possibly the yellow rattle, are the drivers in this case of diversity. The low-phosphorus plots have far poorer diversity, as measured by the Shannon-Weiner index, in fact their diversity is poorer than the high-yielding manure plots. Where the nitrogen all comes in spring as fertiliser – as on the 'new' plot referred to above, this encourages the grass growth and the broadleaf plants only become visible after the hay is cut. This happens too on the manure plots if there is heavy rain in May, as in 2003, to encourage massive grass growth.

The total species count is now limited by the lack of seed of the 'missing' species. The farmland around is in rotational use for grass and arable crops and there appears to be a dearth of the extra species that could increase the diversity further – the management has in effect rearranged the existing species between the plots but has not increased the total number. We have never tried to sow in new species – this was not part of the original plan; it was to show Northumbrian farmers how they could at low cost and without reseeding alter both the species mix and the productivity of their meadows. As the experiment is now the world's longest running grazed grassland we would prefer to retain it as close as possible to its original form so that we can continue to monitor the long-term effects of the original treatments.

What then if you want to increase diversity and increase productivity? If you are willing to wait, then the Palace Leas message is clear – phosphorus only and cut and graze every year gives you a flower-rich meadow but not a lot of hay. Farm yard manure gives you a much more productive meadow but the flowers are less visible until after the hay is cut. No phosphorus gives you a lower diversity and very low productivity meadow while nitrogen-only gives a grass rich unpalatable meadow – from the animals' perception – they use these plots in which to lie, ruminate and defecate! Enough said. Fertiliser nitrogen with other nutrients gives, as we all know, the expected grass-rich meadow. What though if you want it in a hurry? Sorry, the jury remains out on that one. Sowing species in, resowing etc. tend to give a brief flowering of the sown mixtures but then the richness fades and even years later there has not been a lot of improvement. Defra-funded research run by Newcastle University staff in the Yorkshire Dales has shown that the relationship between soil fertility, parasitic plants – like rattle- and the micro-organisms – such as mycorrhizae – in the soil is complex and until a new balance is struck diversity does not increase in a sustainable way. Not unlike the 40-year wait for the botanical changes at Palace Leas, even the grassland-resower may find that the Holy Grail of a diverse flower-rich meadow remains out of reach for the foreseeable future.

You can read more about research and results from Palace Leas at its web site at http://www.staff.ncl.ac.uk/r.s.shiel/Palace_Leas/index.html and if you would like to visit the site to see for yourself please contact me at r.s.shiel@ncl.ac.uk or AFRD, King George VI Building, Newcastle University, NE1 7RU, UK.

Robert Shiel is involved with research, teaching and consultancy at Newcastle University.

Mapping Irish Grasslands from Space

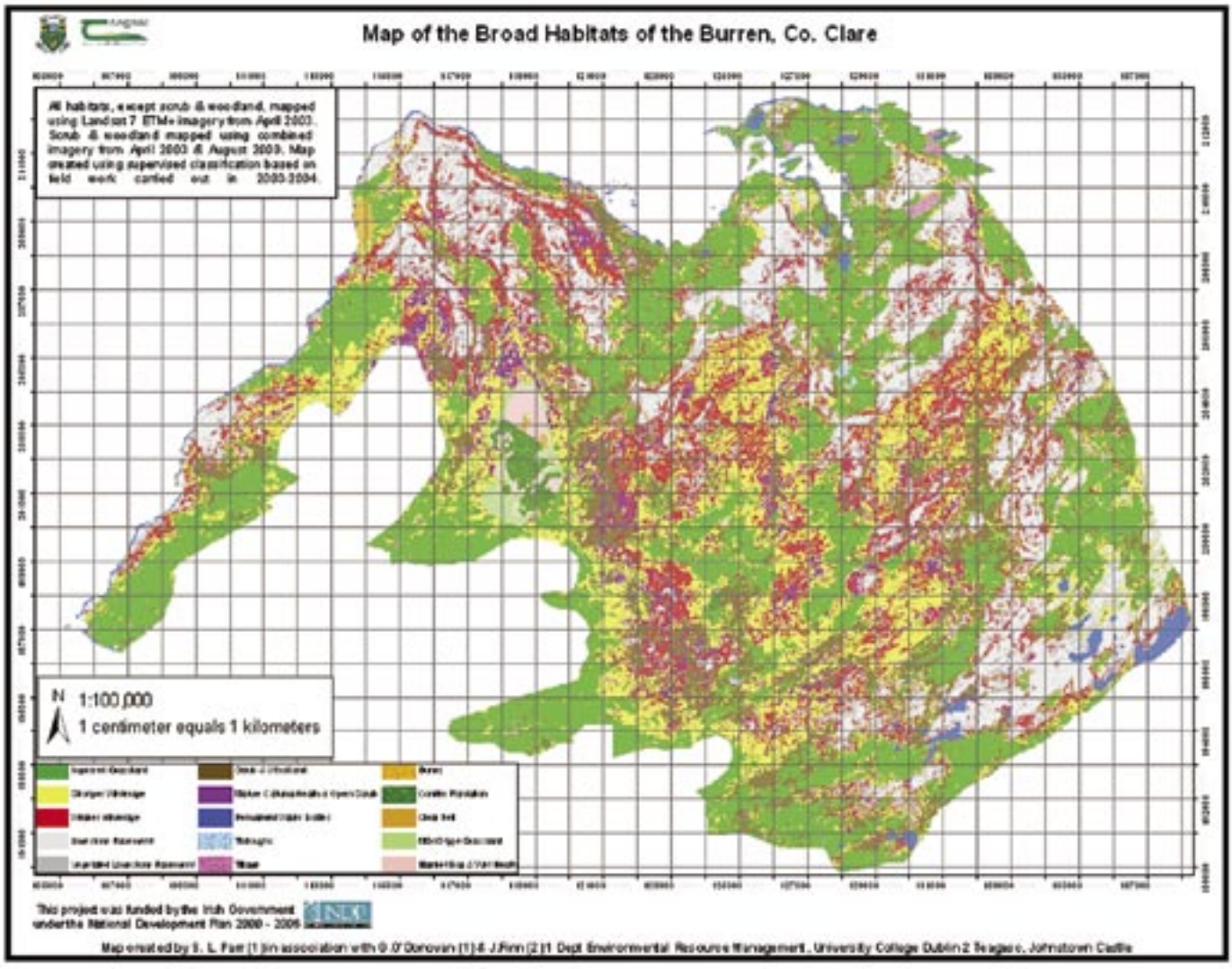
Grace O'Donovan

Mapping the Earth's surface using remote sensing is now common-place. With EU legislation pushing for protection of habitats, some member states like Ireland are having difficulty in identifying and mapping habitats of conservation interest due to lack of manpower and funding. An area of particular concern is lowland grasslands. Dr Grace O'Donovan from RAW Ecology, a division of RAW has been using satellite imagery to map Irish grasslands of conservation value.

The percentage cover of grassland in Ireland is somewhere in the region of 65-70%. The historical reasons for this are complex but much of it is explained by the wholesale removal of trees in the 17th Century by the Tudors. Unlike Britain, a sustainable tree management practice was not put in place and evidence of coppicing and pollarding is not commonly seen in Ireland. Due to Ireland's mild, oceanic climate, temperatures are moderate, rainfall is plentiful and grass growth is consequently very good. This is one of the main reasons Ireland has become predominantly an agricultural economy. It went through the same agricultural revolution as the UK when the advent of artificial fertilisers changed the face of agriculture forever. In the UK, many inventories have been carried out since the widespread use of fertilisers and the story emerging is quite shocking. Nationally, over 97% of hay meadows no longer exist due to changing methods of cultivation. Along with that goes the biodiversity linked to these meadows and which solely depended on them for their existence. One such species is the corncrake, which still has a tenuous hold in the Shannon Callows of Ireland.

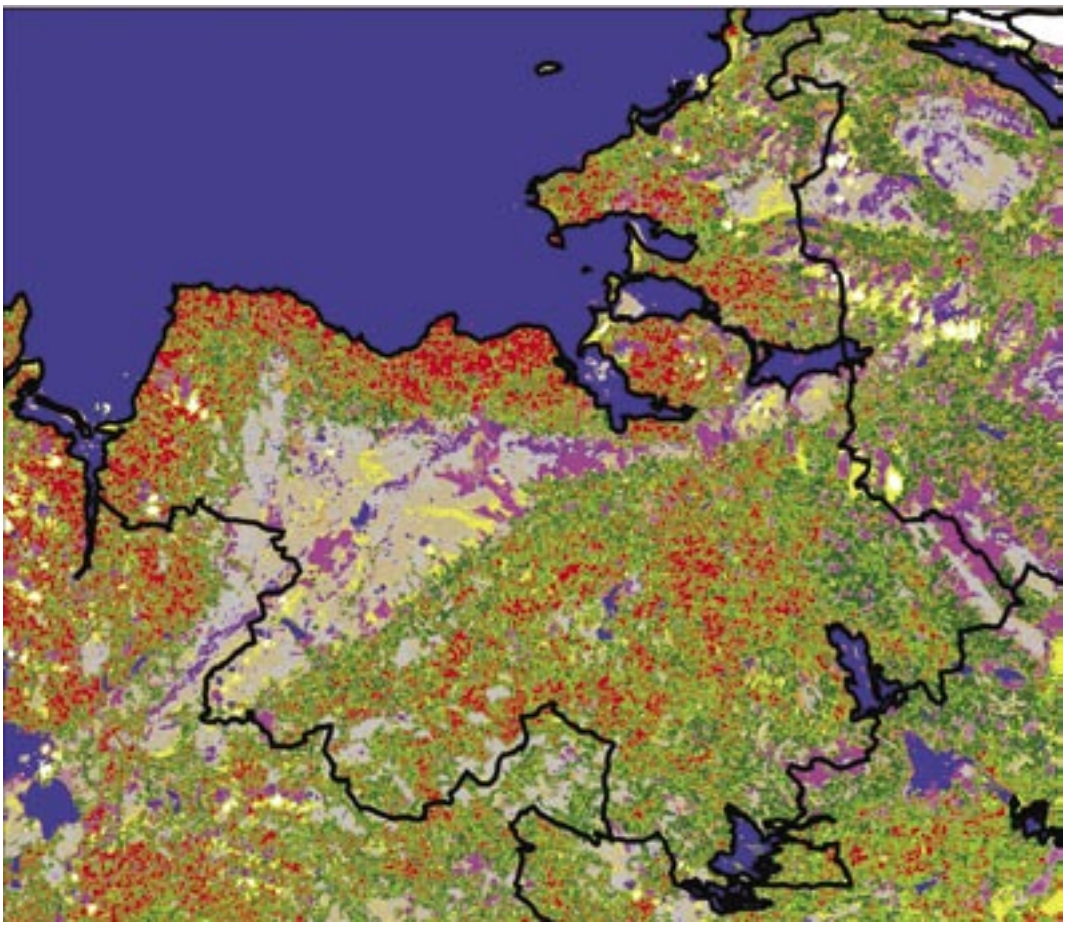
In Ireland there has been no such inventory of loss. Due to a much smaller population and the problems of funding large scale surveys, Irish lowland mesotrophic grasslands of conservation interest remain an unknown quantity for the most part. Work in the late 1960s by Austin O'Sullivan from Teagasc, (the agricultural advisory body in Ireland) yielded enough information to classify Irish grassland types. Subsequent surveys have concentrated on the special grassland types found in Ireland of European significance. These include turlough grasslands – grasslands that form on the dry beds of lakes over karst terrain. These grasslands appear when lake levels fall dramatically in the summer due to fluctuating water tables. There are also the machairs which form in Western Scotland and North West Ireland only – a form of western dune grassland that depends on a combination of strong winds and grazing for its survival. Another well documented grassland type in Ireland is the orchid-rich grasslands that form over limestone. However, these rare grasslands only cover a small percentage of the total grassland cover of Ireland. The majority have yet to be mapped or surveyed in any meaningful way.

Since the early 1980s, satellite imagery has provided a novel opportunity to view the Earth's surface in a regular and repeatable way. At the European level, mapping of land cover with satellite imagery under the CORINE programme has become a standard way of cataloguing land cover types. A baseline of 44 land cover classes was established and now the programme is in the process of monitoring changes in these classes over the whole of Europe. However, these land cover classes were too coarse for mapping Irish grasslands adequately so a pilot study was funded by the Heritage Council of Ireland to use satellite imagery specifically to identify grassland



types. This study used Landsat 5 and Landsat 7 imagery and two contrasting counties in Ireland were chosen for analysis, namely Sligo and Westmeath. The imagery was then processed using Erdas Imagine and an 'unsupervised' classification was carried out. This is where a false colour thematic map is derived from the imagery based on a specified number of classes. Twenty classes were used to classify these images and these included all habitat types present within the two Counties. The resulting output – a false coloured image with 20 classes - could then be randomly sampled and tested in the field. Only grassland classes were sampled and vegetation analysis of each sample site was also carried out using quadrats to provide a sound grassland classification background for the imagery. When the vegetation samples were analysed, they reflected adequately the range of lowland grassland types found throughout Ireland from highly improved grassland dominated by perennial ryegrass to wet and dry unimproved types. These samples were then, in turn, used to 'train' the imagery so that a new image was created which relied on the 'ground-truthed' samples. An indicative map was then created of these basic grassland types for each of the two counties. As this was a short study, the map needed to be tested.

Landsat imagery for Sligo



Classified imagery for Sligo

This summer, more samples are being taken in County Sligo to help identify grasslands specifically of conservation interest. A combination of field habitat mapping and more up-to-date satellite imagery will be used to identify grasslands outside of existing conservation designations (*e.g.* EU designations such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and the equivalent of Sites of Special Scientific Interest in Ireland – Natural Heritage Areas (NHAs)). This continuing study in Sligo was prompted by the lack of protection for grasslands of conservation interest outside of designated areas. The rise of development within the County means that grasslands of conservation interest may be lost if they have not been identified in time.

Even when an area in Ireland has been designated at the EU level, it is often difficult to map the habitats within the designations due to the large scale of the sites. Another follow-on from the pilot study has led to a classification of grasslands within a large complex of candidate SACs based in the Burren region of County Clare in the West of Ireland. This is one of the largest areas of karst limestone in Europe at 38,000 ha in area, most of which has been designated as a SAC. The Burren is a complex of grassland, heathland and scrub types inter-digitating over short distances with few clear boundaries between them. This is because a large part of the Burren complex is commonage where field boundaries do not exist. A two year study starting in 2004 was funded by the Irish Department of Agriculture and Food (DAF). The study incorporated multi-temporal Landsat 7 satellite imagery to classify the grassland types within the Burren SACs. Nearly all of the grasslands present in the Burren Complex are of conservation interest and are well documented in the literature. What was missing was a reliable map of these grassland types within the SAC boundaries. This was needed as part of the EU requirement to map the SAC habitats but also to inform any practical conservation management with regard to the different types of grassland and heath present. Over the two year period, 40 permanent plots were set up for long-term monitoring and 850 points of data were collected within the grassland types to ground-truth the imagery. A vegetation analysis of the grassland types was also carried out to form a classification which could be used to inform the imagery. Unsupervised and supervised classifications were carried out on the imagery as before and a resultant map of grassland types was produced. These included improved grasslands, strong 'winterage' (more productive calcareous pastures with mesotrophic elements and mesotrophic winter-grazed pastures), weak winterage (less productive, calcareous winter-grazed pastures), vegetated limestone pavement, drying turloughs, and mesotrophic grassland.

Imagery is proving to be a useful method of classifying grasslands in Ireland in the absence of extensive field work. An element of error is associated with these classifications but this is quantifiable within the classification process and it points to areas that need further analysis. To be acceptable, the accuracy of the imagery should be over 85% for each grassland class. That is, 85% of the time a grassland type identified by the imagery will be found in the field. This may not be possible for some grassland types, particularly if they depend on their botanical composition solely for classification *e.g.* the Annex I grassland type 'orchid-rich limestone grasslands'. What the map will do however, is indicate where these grasslands might be found. Many of our remaining grasslands of conservation interest are located in inaccessible sites such as at high altitudes and on very steep slopes and this is usually the reason they have survived to the present day. Topography may be taken into account in GIS by making a 3-D model and calculating altitude, slope and aspect over large areas. This, combined with other GIS data sets such as geology can then be used as a predictive model for identifying potential sites of interest for grasslands and also as a template for reinstating grasslands of conservation interest in the future.

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Letter from Member - Advice for Young Ecologists

Dear Young Ecologists

RE: CAREER ADVICE

It can be very frustrating for recent graduates when employers all seem to want both qualifications and experience and it can be daunting to receive a string of rejection letters or, even worse, silence in response to your CV.

Two tips for getting some experience are (1) contact local voluntary organisations, tell them how much time you could offer them as a volunteer, and ask whether they could use this time while giving you some useful experience, and (2) contact local companies to see if they need additional help during the spring and summer survey season, when unskilled ecologists can learn a lot as the second person in a survey team. If this all sounds like too much hard work then, please believe me, you need to think about what you really want from your career and whether this is the right job for you. If there is any job in ecology that is not hard work at times, I haven't met the person doing it yet!

Obviously, apply when a relevant job is advertised, but don't be afraid of sending out your CV speculatively. A few rejection letters won't hurt you. In my experience, when someone says "nothing at the moment but we will keep your details on file" most people do actually mean it. If you are looking to work in consultancy, look at sources like the ENDS directory and the IEEM directory.

If you are early in your career, don't rely solely on sending your CV to recruitment consultancies and letting them get on with it without making any efforts yourself. You should be aware that some ecological consultants will not look at inexperienced CVs sent by recruitment agencies, because of the fees they charge. Therefore you could miss out on some prospective employers.

The last question is "is it worth it?" All I can say is that over fourteen years I have had five different jobs, and each has had its frustrations, but in each I have had days when I have wondered why anyone should pay me for doing something I enjoy this much, and I for one, wouldn't want to change career.

Claire Wansbury MA MSc CEnv MIEEM MLI
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A Risky Business

Martin Jackson

Professional Indemnity Insurance For Ecologists and Environmental Managers - What Does It Cover, Why Do You Need It and How Does It Work In Practice?

Think you'll never be landed with a liability claim? Why it pays even the most professional of us to have Professional Indemnity Insurance.

The insurance available under the IEEM Professional Indemnity scheme provides cover for legal liability incurred in consequence of the exercise and conduct of the Assured's Professional Business and/or by others on behalf of the Assured. In practical terms that usually means negligence in connection with professional work undertaken, although other types of legal liability also fall within the cover.

Clearly if incorrect advice is provided, someone may incur financial loss. Below are examples of professional indemnity (PI) claims that have occurred:

- An ecologist was employed to devise a survey methodology and to undertake ornithological surveys for a number of potential wind farm sites. The client complained that it would suffer potential financial loss due to delays in the planning consent process. The client alleged these delays were caused due to the inadequacy of the survey reports produced by the ecologist. The subsequent result of such losses being passed back to the ecologist to defend.
- A wildlife officer from the Metropolitan Police interviewed and cautioned an ecologist on allegations of disturbance to a colony of great crested newts, thus contravening the provisions of the Wildlife and Countryside Act 1981. In addition to the costs of providing legal representation to defend any forthcoming criminal prosecution, the insured was faced with the costs associated with the delays to the project caused by the subsequent police investigations.

The professional errors that have caused claims have rarely involved straightforward ignorance of well documented guidelines, protocols or similar technical errors. Carrying out work to a tight deadline is a frequent cause of claims. If an ecologist makes a mistake in those circumstances, it is no defence to say there was inadequate time to do the job. If there is not time to do it properly, as a matter of risk management it is better not to accept the instruction. Another element of risk management is to make sure that your brief is properly defined and your terms of engagement are effectively implemented with your client.

The IEEM scheme policy provides cover for legal and other costs in the defence of claims: bear in mind that these can arise irrespective of the validity of the claim. There is also cover for other types of claim entirely, including:

- *loss of or damage to documents.* The cover is both for the documents themselves and for any legal liability to others resulting from the loss or damage.
- *libel and slander,*
- *infringement of copyright.* The ecologist is covered for liability as a result of breach of copyright, and also for the costs of bringing action to enforce the ecologist's own copyright in the event of breach by others, and
- *the ecologist's unrecovered fees.* Many PI claims start as counterclaims to professionals' efforts to recover unpaid fees. This may be a spurious attempt to avoid payment but even then, it can be a big distraction to have to deal with the claim and legal costs might be incurred in defending it. It can sometimes be more cost effective simply to drop the fee recovery. If that enables a liability for a greater PI claim to be avoided, the insurers may reimburse the fee instead.

PI insurance covers claims brought against the professional during the currency of the policy, irrespective of when the error causing the claim occurred. In contrast with other classes of insurance, for cover to be available there has to be a policy in force when the claim is actually made. This gives rise to special considerations, especially with regard to potential claims that are already known about. You wouldn't expect a household insurer to be prepared to grant cover for a house that was already on fire. Equally, when you apply for PI cover, the insurer will not give cover for known potential claims. The way PI insurance deals with this is that potential claims must be reported to your current insurer as and when they arise. That insurer will then deal with any actual claim that subsequently materialises, even if the policy has expired by then. Failure to report potential claims at the appropriate time is the greatest source of disputes between PI insurers and their policyholders. It is also vital that if an actual or potential claim arises, no offers of settlement or admissions of liability should be made without first obtaining agreement from the insurer. In order not to jeopardise your insurance cover, you must consult your broker or insurer as soon as a problem is developing and agree what is to be done.

Professional indemnity insurance is concerned with complex legal issues and it has been possible to highlight only the main features here. If you require clarification or guidance, please take advice from your insurance broker.

Notes: -

MFL Professional Partnerships is a specialist Professional Indemnity Insurance Broker based in Manchester, Leeds and Burnley.

MFL Professional Partnerships has arranged Professional Indemnity Insurance for Ecologists and Environmental Manager professionals for over 10 years and administrates the only endorsed Professional Indemnity Insurance Scheme for members of the IEEM.

In addition to the Professional Indemnity Insurance scheme MFL has a special Office Package facility designed with the "Professional" in mind.

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MFL Professional Partnerships
INSURANCE BROKERS

An Agenda for Urban Biodiversity - Green Grids, Design Codes and Fiscal Incentives

John Box CEnv MIEEM and George Barker

Enhancing the biodiversity of urban areas is a necessity for human beings living and working in them. But enhancing biodiversity does not directly profit urban residents or businesses. Its direct economic benefits are derived at a community level. Therefore, environmental taxation (carbon emissions, waste to landfill) or financial savings (energy efficiency, water consumption) do not provide a template for financial incentives for biodiversity gains. We set out an agenda of nine issues as a challenge to all those involved with biodiversity in urban areas.

No. 1. The contribution that biodiversity can make to physical and mental health and wellbeing and the environmental functions of ecosystems and habitats in urban areas - for example, flood protection, noise reduction, air quality improvements - need to be quantified and costed in economic terms. Realistic cost/benefit analyses should inform the introduction of new planning policies and fiscal regimes which could have beneficial or adverse effects on the biodiversity of urban areas.

No. 2. The UK has a world-wide reputation for creating urban greenspace, for ecological research, and for the conservation of biodiversity. However, we must not ignore the vast amount of research and its application to urban design and management done in other countries. To move forward, we need a vibrant and innovative programme in relation to urban biodiversity which has at its core the health, enjoyment and wellbeing of all those in urban areas. In designing this programme, we should draw on international knowledge and practical experience as well as feed into it. The ecology of urban areas and the study of the effects of their surroundings on human wellbeing are relatively new fields of scientific enquiry and our state of knowledge is necessarily incomplete. The questions are complicated and the answers will not be easy or simple.

No. 3. The regulatory framework for all urban development needs to move away from mitigating biodiversity losses. Instead it should demand demonstrable biodiversity gains, over and above requirements for mitigation or compensation, that are formally agreed by an informed regulator whose standards are based on good science rather than political expediency.

No. 4. Fiscal incentives are required for the inclusion and, crucially, the maintenance of measures such as accessible natural greenspace, biodiversity-friendly sustainable urban drainage systems (SUDS), green roofs and new habitats – both in new developments and retro-fitted into existing developments. The review of housing supply in the UK undertaken for the Treasury by Kate Barker, a member of the Bank of England Monetary Policy Committee, included two proposals which could see more measures to enhance biodiversity being included in urban development (http://www.hm-treasury.gov.uk/consultations_and_legislation/barker/consult_barker_index.cfm).

No. 5. The first of these proposals is for a planning-gain supplement (PGS) imposed on development gains accruing to a landowner who receives planning permission. Such a tax would extract some of the windfall gains

Editor's note: Trees in urban spaces provide shade and other beneficial services, but they are also a possible health and safety problem and regular monitoring needs to be carried out in order to avoid serious incidents. The images above are from the aftermath of the recent storm in Budapest, Hungary in which several people lost their lives due to falling trees and branches.

Housemartin (www.wildstock.co.uk)

habitat fragmentation and would make it easier for species to move in response to climate change. Article 10 of the EC Habitats and Species Directive encourages the management of features of major importance for wildlife such as those which have a linear and continuous structure or a function as stepping stones and are essential for the migration, dispersal and genetic exchange of wild species. Green bridges could be developed in relation to any network of sites from the Natura 2000 network to green networks in urban areas.

No. 9. It is reasonable for businesses, Local Government and Government-funded agencies to pay for research and review which helps tackle particular practical issues, but pure research is needed as well. Without the development of understanding which this will bring, we may be – and probably often are – addressing the wrong issues in programmes of applied research. To focus solely on problem-solving, risks continually narrowing the field of view. Pure research broadens the perspective and sheds fresh light. Universities and research institutes should reassess the balance of their programmes of research into urban ecology - and related disciplines including ecosystem functioning, sociology and psychology - to give more weight to pure research which will bring benefits to all in the longer term.

and recycle them back to local communities – a concept which is consistent with the transference between economic, social and environmental assets required by sustainable development. English Nature and the RSPB have examined ways in which this might benefit nature conservation including discounted rates of PGS for developments incorporating biodiversity measures (EN Research Report 672, 2006).

No. 6. Secondly, greater reliance should be placed on urban design codes for improving the quality and acceptability of developments. These codes have been used in other parts of Europe, Australia and the USA to allow the key features of the design of new developments to be established and developers have to abide by the code. The challenge is with the Commission for Architecture and the Built Environment (CABE) and the Sustainable Buildings Task Group to incorporate biodiversity in these design codes - and Government agencies like Natural England and voluntary bodies such as the Wildlife Trusts and the RSPB need to pursue this with vigour.

John Box and George Barker have both chaired the influential Urban Forum of the UK-Man and the Biosphere Committee (www.ukmaburbanforum.org.uk). Contact at john.box@btopenworld.com and georgebarker@talk21.com.

An earlier version of this article was published by English Nature in Urbio 12 (2006).

No. 7. Accessible natural greenspace standards (ANGSt) are currently promoted by both English Nature and the Countryside Council for Wales. If real benefits for people are to be derived from ANGSt, these standards need to be formalized through the planning system for the whole of the UK. In addition, Local Authorities should prepare strategies for open space, natural greenspace and green networks. Such strategies will become key building blocks for integrating landscape with development at a regional or sub-regional scale, for example the Green Grid Network proposed for East London and Thames Gateway (http://www.thames-gateway.org.uk/projects-content.asp?id=160).

No. 8. The construction of 'green bridges' across roads and railway lines at key locations would provide a means of reducing

Urban stream ecology in Glasgow

Curry and Conservation

Linda Yost CEnv MIEEM

To help fulfil its aims of being '*fit for the challenges of today; ready for the tasks of tomorrow; and capable of building for the future*' the MOD is one of the UK's largest landowners. Its Defence Estates arm is responsible for 240,000 ha of diverse estate of which 160,000 ha is rural estate and includes: 21 major armed forces training areas, 39 minor training areas, small arms ranges, test and evaluation ranges, and aerial bombing ranges. There is also a significant overseas estate in Germany, Cyprus, the Falkland Islands and Gibraltar with major overseas training facilities in Canada, Norway, Poland and Kenya.

Left: The MOD's 2nd Permanent-Under-Secretary of State, Ian Andrews

Below: Guests and workers at the MOD Biodiversity Day on Salisbury Plain

As the custodian of such significant areas of rural estate in the UK it is not surprising that some of it is designated for its nature conservation value – in fact 179 SSSIs of which 81 are also designated as SACs including 20 marine sites, 39 SPAs and 24 Ramsar sites. Therefore, the Government's '*delivering UK sustainable development together'* in particular *'making biodiversity happen across Government*' applies very much to the MOD. As the Government has stated that it will promote biodiversity in its own policies and programmes and in the management of its estate, one way of doing this is to build biodiversity into staff training. The MOD's 'Biodiversity Day' is its way of demonstrating this commitment and to raising awareness across the department.

This year's – the fifth – 'MOD Biodiversity Day' was held on Salisbury Plain; at 2,750 ha it makes up 1.7% of the MOD's rural estate and 1,519 ha is designated as a SSSI. As the Plain had a history of neglect and unsuitable management it was not surprising that it was assessed as being in 'unfavourable condition'. So with the Government's Public Service Agreement (PSA) target of 95% of SSSIs to be in 'favourable' or 'recovering' condition by 2010, this assessment as 'unfavourable' provided impetus for a partnership headed by English Nature, including Defence Estates, CEH and RSPB amongst others, to apply for EU Life Funding. A successful bid provided £2.13 million, 50% of the funding, with the other 50% coming from the partners. Getting on for £4.5 million has since been spent on the management of the chalk grassland, juniper, stone curlew and the marsh fritillary butterfly. Although the *Life* project period of four years has ended, this is seen only as the beginning of the long-term management that is required to bring Salisbury Plain's SSSI's into 'favourable' condition.

Salisbury Plain though, is not only of value for its nature conservation interests but also for its archaeological interests. Although damaged by agricultural and MOD operational activities in the past, its retention by the MOD means that it has been afforded a level of protection and is considered '*probably the best preserved area of upland in southern Britain, with earthwork remains of field systems, settlements and funerary monuments of various periods…*[1]'. Images taken over 70 years apart show that little has changed on the Plain in that time compared with much of the rest of southern England[2].

It was the archaeological value - the clearance of a 200 metre length of a Bronze Age linear ditch dating back to 1,400- 1,000 BC - that was the focus of attention of the MOD's 2nd Permanent- Under- Secretary of State, Ian Andrews, Vice Admiral Peter Dunt CB Chief Executive Defence Estates, military officers, men and officials. The Bronze Age ditch is a Scheduled Monument that runs from an adjacent modern-day golf course towards a number of Bronze Age burial grounds 'tumuli' at Severn Barrows. At this particular location it is obscured by trees and scrub, these provide cover for rabbits that dig into the feature and cause its erosion; its clearance will not only halt deterioration of the monument but also encourage regeneration of the chalk grassland. Close by at Sidbury Hill the restoration of the Iron Age Hill fort through the removal of conifers planted in the 60's has also provided the opportunity to encourage the restoration of chalk grassland, which is seeing the return of the marsh fritillary butterfly.

And the curry? Well, Bonaparte said '*an army marches on its stomach*', the lunch would certainly keep the army of workers supplied with good and plentiful food; curry and all its trimmings is something the British Army has always done well!

For further information on the *Life* Project contact Stephen Davies at English Nature. The MOD also produces *Sanctuary* a beautifully illustrated annual magazine about conservation (nature and archaeological) on MOD land.

Linda Yost is the Deputy Executive Director of IEEM.

1,2 http://www.english-heritage.org.uk/server/show/nav.00100200300400200300e

Double Award for MAGical Meadows

Jason Reeves AIEEM

In the blistering heat of the late afternoon on 17 July the *Flora locale* Go Native! Awards for two categories were awarded to MAGical Meadows.

The event at the Durham University Botanical Gardens began with a few words of welcome from Richard Wood, Chief Executive of the Durham Wildlife Trust, who then introduced Michelle Appleby. Michelle is the MAGical Meadows Project Officer and, along with her other responsibilities, she almost single-handedly organised the entire event. She explained to the assembled crowd the importance and diversity of the MAGical Meadows.

'MAGical Meadows is a Durham Wildlife Trust project undertaken on behalf of the Durham Biodiversity Partnership. The aim of the project is to conserve, connect and create magnesian limestone grassland in South Tyneside, Sunderland, Durham, Easington and Sedgefield. MAGical Meadows are the wildflower-rich grasslands found on thin soils overlying Magnesian Limestone rock. In the UK Magnesian Limestone is restricted to a narrow band which stretches northwards from Nottinghamshire into Durham and Tyne & Wear.'

*'The geographical position of the Magnesian Limestone acts as an ecological bridge between the chalks and limestones of southern Britain and the limestones of northern Britain. As a result magnesian limestone grassland contains unique assemblages of both southern and northern calcareous (lime-loving) plants. Many of these plants are close to or at the limit of their natural growing range including bee orchid (*Ophrys apifera*), bird's-eye primrose (*Primula farinose*) and perennial flax (*Linum perenne*). Unique to east Durham and Tyne and Wear is the magnesian limestone grassland community containing blue moor-grass (*Sesleria caerulea*) and small scabious (*Scabiosa columbaria*). This community is not found anywhere else in the world and is both nationally and internationally important.'*

IEEM Council Member, Steve Pullan, then gave a short presentation on IEEM and the role it had played in the awards. Judging for the entire competition had been carried out earlier in the year by senior IEEM members who had undoubtedly put in a lot of time and effort in order to carry out the judging in the required time frame and to the specified professional standards. After Steve, Bernadette Lobo, *Flora locale* North of England Co-Ordinator, explained why the awards had been set up in the first place. *Flora locale* promotes good practice in the use and sourcing of native flora among suppliers, land managers and plant specifiers involved in large-scale habitat creation and restoration projects in the British and Irish countryside.

Far left: From left to right – Bernadette Lobo, Flora locale Co-Ordinator for the North of England, David Bellamy, the Jolly Green Giant himself, Michelle Appleby, MAGical Meadows Project Co-Ordinator, and Steve Pullan, IEEM Council Member

Left: The picturesque setting of the Durham University Botanical Gardens

Below: David and Michelle take a closer look at the magnesian limestone grassland planting at the Botanical Gardens

Lastly, David Bellamy, IEEM Patron and Jolly Green Giant, presented Michelle with the awards for the Grassland and Northern England categories and gave a short talk on the importance of such projects to biodiversity conservation efforts and to society in general.

The evening ended with a guided tour of the gardens and a visit to the magnesian limestone wildflower bed in the grounds. The bed was coming along well but had apparently suffered a little from some rogue rabbit activities.

Jason Reeves is the External Relations Officer for IEEM.

IEEM in Central Europe - the ECCB Congress, Eger

Jim Thompson and Jason Reeves

The first European Congress of Conservation Biology was held in Eger, Hungary from 22 to 26 August 2006. This was the first meeting of the European Section of the SCB, the Society for Conservation Biology. This is an international professional organization dedicated to promoting the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity.

IEEM acted as a sponsor of the Congress and had a small exhibition area about IEEM and also EFAEP, the European Federation of Associations of Environmental Professionals. President-Elect, Andy Tasker, Jim Thompson and Jason Reeves represented IEEM and there was also attendance by several IEEM members – Philip James, Rob Marrs, Jonathan Mitchley, Tony Sergeant and Philippa Wood.

IEEM Members at the Congress – left to right: Rob Marrs, Andy Tasker, Philip James and Jim Thompson

The conference was attended by no less than 1,000 delegates and was an exceedingly busy event. The opening ceremony took place in the Cathedral, it being the obvious place to seat 1,000 people, with a welcome address by the Hungarian Minister for Environment and Water, Miklos Persanyi.

Each day of the conference started with a Plenary Lecture, lasting about 40 Minutes. This was then followed by a series of wide ranging parallel sessions. These sessions mostly consisted of a series of 20-minute talks rather similar to the BES Annual Meeting. A real feature of the Congress was the poster session on Friday afternoon with no less than 350 contributions. The range of work on exhibit was extraordinary and many hours would have been needed to do them full justice. I am pleased to say that one was by an IEEM student member, Philippa Wood.

The first plenary was given by Sir John Lawton, President of the BES, on *European Biodiversity Conservation; Science, Policy and Practice*. This was a thought provoking session in which he made the claim that in a way there was already almost too much scientific knowledge. Further lengthy and costly refinements of current knowledge may be of limited value. Conservation *per se* was a value judgement determined by society rather than science. Scientists already had or could develop the means by which conservation might be achieved. The real challenge was how to distil what is already known and to influence politicians and decision makers. From the IEEM viewpoint, though these sentiments with respect to political influence would certainly be shared, influencing fellow professionals in other disciplines is also crucial. One point which stood out from his talk was the great concern over logging of the primeval Bialowieza Forest in Poland and alarm in general over the attitude of the Polish Government to the Habitats Directive and the Natura 2000 sites.

The second day started with a Plenary by Ladislav Miko, Director of the EU DG Environment on *The Natura 2000 Network – Time for Moving to Management.* There were now 20,000 Natura sites in Europe which constituted an area the size of Germany. Europe was characterised by having had a long and intensive development, its nature was not the most diverse, there was not much original habitat and practice should reflect this. The Natura programme was now more or less at the end of the designation phase and management was the key issue. A toolkit for managers needed to be developed with a range of options bearing in mind the range of sites – from wilderness areas to those heavily populated and traditionally managed or heavily visited. He was concerned that designation as a Natura 2000 site might be used as an argument for non-intervention management. He thought that intervention should be minimal but had to recognise problems particularly with alien species.

The Friday started with a Plenary Session by Georgina Mace, President-Elect of the SCB, Vice-President of the BES and Director of the Zoological Society of London, on *Biodiversity loss: Europe in a Global Setting*. This was partly the antidote to the previous plenary dealing with biodiversity globally and in Europe, what are the broader and long-term implications, and what can be done about biodiversity loss? Species extinction rates were of real concern having increased in recent years to 10–100 times that previously considered to be normal. In addition to species loss there was also species homogenization with links into alien species. She concluded by saying that humans had made great changes to ecosystems; that these had improved the lives of millions of people but at a cost and that pressures on ecosystems would increase. The loss of biodiversity and ecosystem services was a major issue. We needed to define what we wanted from the environment, what we should maximise and what trade-offs are acceptable. To do this conservation scientists needed to work on various fronts – maintaining an excellent base of conservation biology, developing new science with other scientists and disciplines, and developing new kinds of linkages for translating science into policy.

Jim Thompson presents the IEEM talk at the Congress

The final day started with a plenary by Robert Pressey on the theme of *Moving Targets: planning to maintain biodiversity processes in the context of anthropogenic landscape dynamics*. This was a quite a theoretical planning paper and dealt with how to achieve more rational decision making in the designation of sites of conservation or indeed other interest on a regional scale. This had been applied with some success in New South Wales and especially in the Cape Floristic Region in South Africa.

The Conference was extremely efficiently organised by the Hungarian Local organisers under András Báldi. The Scientific Committee responsible for the overall programme was chaired by Andrew Pullin of the University of Birmingham.

From the IEEM viewpoint, attendance at major gatherings is a very good opportunity to make our presence felt and often to recruit new members or to get contributions for *In Practice*, the networking aspects sometimes being more important than the actual Congress material.

On this occasion IEEM had a specific agenda which had risen from discussions in the External Affairs Committee. There are concerns that biodiversity in eastern Europe might not be as well protected as it might be in the face of economic and development pressures associated with the EU. There is also concern that the professional aspects of being an ecologist in central and eastern Europe in particular might not be sufficiently developed, and, as far as is known, there is no parallel organization to IEEM. Might IEEM have a role here and if so, how it might be developed? Might there be interest in the formation of separate 'IEEMs' in the various countries concerned or could there be separate branches of IEEM set up on the lines

Mist nets used to capture bats on the excursion

of the current Geographic sections? National identity being what it is, it was felt that organizations growing from the inside of the various countries with whatever assistance IEEM was able to give, might be the best way forward. A further possibility might be membership of EFAEP because this body would offer the opportunity for ecological professionals to meet their counterparts in engineering and planning in a pan European context.

It was apparent from the outset that attendance in Eger would be substantial and in the end over 1,000 delegates registered. It was also evident that there would be substantial attendance from central and eastern Europe. The organisers very kindly supplied a list of those attending and prior contact was made with all members from such countries with a view to sounding out their views about ecology as a profession and to explore whether a possible preliminary meeting was feasible or desirable in Eger. Representatives as individuals from nearly all of the countries contacted responded in various ways, mostly to confirm that they would welcome a meeting or discussion. The idea of the contact was also that it should link in with the talk given by Jim Thompson in the session on the Economic and Social Context. This was attended by about 80 delegates and some useful discussion followed. IEEM then held a special discussion session attended by several IEEM members, the idea being to learn how delegates from Eastern Europe viewed professional bodies and how they might be established. Several IEEM members attending gave their views on what IEEM meant to them. This meeting was unfortunately rather poorly attended and mainly by delegates from Croatia and Romania.

Eger is an attractive town set in an intensive wine producing region and famous for the locally produced Bull's Blood wine whose name derives from the battle of Eger between the Hungarians and the Turks in 1552. It also lies close to the Bükk National Park, a mostly wooded area of gently

The puszta grasslands of the Hortobágyi National Park

rolling hills. This proved to contain a rich store of bird and bat life, both aspects being included in the excursions programme.

A late night bat excursion took place at a site known to have 22 of the 28 species of bat in Hungary. This was the water reservoir of Felsotarkany, surrounded by mountains and forest and was only 10 km from Eger. The participants had come armed with bat detectors and these revealed two species of pipistrelles *Pipistrellus pipistrellus* and the soprano *P. pygmaeus*. The course organisers had set up mist nets and there were captures and detections of pipistrelles *P. pipistrellus*, Daubentons *Myotis duabentonii*, a pond bat *M. dasycneme* and a noctule *Nyctalus noctula*.

During the Congress there were two opportunities to go out on an early morning bird walk with some very knowledgeable local experts. Jason Reeves attended one of these excursions. It involved a short bus ride into the Bükk National Park and then onto some agricultural land. It was a 5am start to allow delegates to be back for the plenary session beginning at 8.30am. The trip into the Bükk National Park was very interesting though yielded little in the way of bird viewing. Out on the agricultural land around Eger it was a different story – to be seen were imperial eagle *Aquila heliaca*, lesser-spotted eagle *A. pomarina*, marsh harrier *Circus aeruginosus*, grey heron *Ardea cinerea*, white stork *Ciconia ciconia*, buzzard *Buteo buteo*, great white egret *Egretta alba*, and other species, though unfortunately no great bustard *Otis tarda*.

Bird watching in the Bükk National Park

Eger is also within striking distance of the Hortobágyi National Park, the first one in Hungary. This features the great Hungarian plain – the Puszta – with its traditions of cattle grazing, horsemanship and birdlife. The soils in the area are saline and alkaline – sometimes known as Czernozem – this word describing their pronounced black colour. Amid the colourful traditions of the area, the local houses, often thatched with materials from the hugely extensive reedbeds and sometimes supporting on their roofs or nearby structures spectacularly large storks nests. It was interesting to see from the viewpoint of National Park planning, how the central town of the park attracts significant numbers of tourists but a short distance away unsurfaced tracks lead to a wealth of birdlife, grassland habitat and in a landscape that could stretch completely flat to eternity. From the botanical viewpoint it was interesting to see the Hungarian sea lavender present in some abundance. But as a word of caution it is clear that agriculture, mostly sunflower and maize production is encroaching into nearby areas to a significant extent.

NE Section Field Meeting Report: Heathland Creation

Andrew Cherrill CEnv MIEEM

A small group of members gathered on 10 May to visit two heathland creation sites in the north east: Burdon Moor in Gateshead (NZ 215 574), and Daisy Hill, adjacent to Waldridge Fell in County Durham (NZ 248 496). Prior to heathland creation both sites had been subjected to agricultural improvement and mining, although the sequence of events differed between sites. Historically both sites supported heathland (up until the 1940s on parts of Burdon Moor) but the seed bank had been lost and soils modified. Establishment of heather (*Calluna vulgaris*) has been distinctly patchy at both sites. The meeting provided an opportunity to explore the reasons behind the varied successes and failures of different techniques. The meeting was led by Dave Collins (Rural Development Service). Dave had been involved in the planning of restoration at both sites. Additional input was provided by Don Atkinson (site manager for Burdon Moor; Gateshead Council) and Andy Cherrill (responsible for supervising MSc students, Canming Zhang and Guangqiao Zeng, who conducted investigations at Burdon Moor in 2005; University of Sunderland).

Common heather (Calluna vulgaris)

At Burdon Moor, pasture and arable cropping followed drift and opencasting for coal. Constraints to subsequent restoration of heathland were identified as being high residual soil fertility and pH following agricultural improvement. Restoration techniques included application of sulphur cake (an industrial by-product with approximately 75% elemental sulphur content) at 2 tonnes per hectare, and trial areas of topsoil stripping. Heather seeds and heathland grasses were broadcast on the site in 2002 and 2003 (heather only). Investigation of the site in 2005 revealed that sulphur application has reduced the pH of topsoil from approximately 6 in 2001 to averages of 4.5 and 4.8 in two fields respectively, while estimates of topsoil fertility (based on soil concentrations of nitrate, phosphate, and potassium) remain significantly higher than for undisturbed heath nearby. Establishment of heather seedlings is largely restricted to areas where topsoil has been stripped to expose the subsoil. The pH of the exposed subsoil (5.3) is higher than that of the topsoil, while soil fertility is slightly lower, yet the major difference between stripped and unstripped areas is arguably the poor establishment of grasses in the former. The principle constraint to heather establishment across much of the site may therefore be competition with grasses mediated through high topsoil fertility. Discussion focussed on the viability of the long term objectives for the site given that the original heathland soils had been lost through agricultural improvement and mining. It was suggested that the relatively high clay content of the sandy loam soil, leading to poor winter drainage and a dry surface crust in summer, may limit the success of the project irrespective of any future reductions in soil fertility or pH. Despite uncertainty over the 'next step', Burdon Moor has succeeded in attracting a wide range of species, including breeding skylarks and lapwings, and locally rare invertebrates and plants.

Restoration at Daisy Hill followed opencast mining for coal on farmland between 1988 and 1991. An experimental field trial explored options for establishing heather on reinstated subsoil and topsoil. Treatments included varying application rates for heather litter, nitrogen fertiliser and grass nurse species. The experiment commenced in 1991 and preliminary results in 1994 revealed successful establishment of heather on both topsoil and subsoil with litter application rate being by far the most important determinant. These results were published by Dave Collins in *Aspects of Applied Biology* 1996, volume 44. Twelve years later he was able to point out the locations of each treatment to members of the field excursion. Today the major differences in vegetation are between treatments established on topsoil and subsoil. The topsoil plots support larger heather plants and higher cover of grasses than the subsoil plots, although in August both types of plot have nearly 100% cover of flowering *Calluna*. The less vigorous growth of heather on the subsoil plots can be attributed to lower soil fertility, while an additional factor in the lower grass cover is low pH. The preliminary results from 1994, demonstrating that heather could be established on topsoil, contributed to the decision to proceed with replacement of topsoil across the entire 20 ha heathland restoration area. Unfortunately, protracted land transfer arrangements between British Coal and Durham County Council led to heather litter being applied two years after a nurse grass seed mix had been applied to stabilise the reinstated soils. It was foreseen that competition with the established grass sward would result in low establishment of heather seedlings. A forestry soil scarifier was therefore used shortly before the litter was broadcast. The site is now dotted with mature flowering heather plants marking the location of the scrapes, but there has been little spread of heather by seed rain into the surrounding grass sward. Observations in the first years after litter application revealed that, in addition to competition with grasses, herbivory by slugs reduced survival of heather seedlings. Clearly, the timing of litter application relative to establishment of grass species was a key issue at this site. If heather had been spread two years earlier (as planned) there is every prospect that the site would now be carpeted in heather.

Overall, the field excursion provided valuable insights into the practical difficulties of establishing heathland floras on disturbed soils, reinforced the need for continued monitoring of restoration projects, and highlighted opportunities for further research at both Daisy Hill and Burdon Moor. Readers wishing to learn more about these sites are invited to contact the organisers by e-mail: andrew.cherrill@sunderland.ac.uk, DonAtkinson@gateshead.gov.uk, David.x.Collins@defra.gsi.gov.uk.

NE Section Review of the Year (Sept '05 – Sept '06)

Andrew Cherrill CEnv MIEEM

This year's AGM at Sir Robert Campbell's farm marked the end of a successful year for the NE Section. Membership in the NE has passed 100; we held a series of well-attended events and plans are in hand for our first regional conference early next year. Over the year the NE Committee has comprised in alphabetical order Ian Bond, Fiona Corby (left region and stood down early '06), David Feige, Caroline Gettinby, Maria Hardy, Tony Martin (joined June '06), Steve Pullan and Jane Young (joined January '06). Thanks are due to all members of the Committee, but special mention must be made of Steve Pullan's contribution to the NE Section. Last September's AGM marked Steve's 'retirement' as regional convenor having previously also acted as the convenor of the NE Shadow Section. Steve deserves special recognition for successfully steering the Committee from a shadow group to a full Regional Section. Without Steve's vision of the region as a major point of engagement and activity for members we would not have the active NE Section we do today.

Coots and a freshwater ecosystem

The Section's programme of regional events during the year included five indoor meetings, and three field excursions. Attendance increased markedly compared to previous years with several events attracting an audience of over 40. Topics were seeds of local provenance, fluoride as an environmental pollutant, woodland management and creation, control of invasive plants, implications of Planning Policy Statement 9, heathland creation, and the value of long-term experiments on grassland management. Events were held at locations in Teeside, Durham, Northumberland, Gateshead and Newcastle upon Tyne. We are grateful to the following organisations and speakers who variously contributed their time, expertise and venues at no cost: Bernadette Lobo of *Flora locale*, Alan Davison and Robert Sheil of University of Newcastle Upon Tyne, Peter Samson of North Pennines AONB, Tim Barrat of Tweed Invasives Project, Alison Povey and Dave Mitchell of English Nature, Dave Collins and Steve Pullan of RDS, Don Atkinson of Gateshead Council; plus Durham Wildlife Trust, Northumberland National Park Authority and the Environment Agency. Speakers were invited to submit short summaries of their presentations and these have appeared in *In Practice* giving regional activities a much higher profile over the year.

The NE Committee met three times during the year and members also visited several careers events and university departments to promote IEEM and environmental careers to students and recent graduates. In this respect it is interesting that student members currently represent only 6% of NE members. The conversion rate of these into Associate or Full members is difficult to assess given that graduates often move to different parts of the country. However, in the longer-term an increasing proportion of new members are likely to enter the Institute as recent graduates because the pool of potential members amongst experienced and employed environmentalists must be finite. Nonetheless, with NE membership standing at around 105 there still appears to be ample scope for recruiting new members from existing work colleagues. Everyone can help by encouraging non-members to attend the regional events and submit those application forms that have been lying around the office for the last six months or so! A regional target of 200 members in the next few years does not seem unreasonable, but we need help in reaching colleagues who have yet to be persuaded of the benefits of membership. The long term vibrancy of the NE Section depends on increasing membership, thereby expanding the potential range of activities that can be organised within the region.

Plans for the year ahead have been bolstered by allocation of a sum of money from IEEM funds to support regional activities. We have plans to organise a one-day conference with the provisional title '*Ecology and Management of Grasslands in North East England*' for early April 2007 and hope to give further details in the near future. The programme of indoor and field events for '06/'07 includes (provisionally at the time of writing) events focussing on wind farms, peatland landscapes, freshwater ecology, floodplain management, biological recording, bats, and riparian mammals. It is our intention that these events will remain free to members and non-members alike as the primary means of engaging with members, and promoting IEEM to a wider audience. As always members are invited to contact the Committee by e-mailing the regional convenor at: andrew.cherrill@sunderland.ac.uk. Your comments and ideas for regional events would be very welcome.

Andy Cherrill is the Convenor of the North East Geographic Section.

IEEM South West Shadow Section

The IEEM South West Shadow Section has held a number of well-attended events throughout the Region in the last few months. The Dorset evening meeting was held in the delightful Poundbury Hall and focused on 'habitat restoration'. Will Bond from Alaska Environmental Contracting provided an excellent insight into the practical issues associated with undertaking restoration work in 'sensitive' habitats. Alan Frake from the Environment Agency gave a superb presentation on chalk stream habitat restoration and gave an insight into future management approaches for this habitat type.

The evening meeting in Bath was held at Bath Spa University and looked at different approaches to 'ecological design'. Mike Wells from Biodiversity by Design provided a fascinating overview of the various approaches to designing habitats on buildings whilst David Hill from Bristol University focused specifically on the creation of lichen communities – an area of ecology that is so often over-looked by ecologists. The Section was very grateful to Dr David Watson from Bath Spa University who helped to arrange the venue and refreshments.

The Environment Agency offices in Bodmin provided the venue for the June evening meeting, where the theme was based upon 'invasive species' control. David Appleton from English Nature presented the Lundy Island project, where rats were 'removed' to conserve the various seabird colonies. The project was an excellent example of conservation 'in the front line' and initial results show that bird populations are beginning to recover. Trevor Renals from the Environment Agency presented the latest code of practice on 'Japanese knotweed' control, which is due to be published in September. This will be a must for anyone involved in land management or development where knotweed is an issue.

Forthcoming Section events, including evening meetings and field visits, can be viewed on the IEEM website under 'Geographic Sections'. If anyone would like to get involved with the Section or would like further information on any of the above meetings, please contact Matt Jones, the Section Convenor (mattj@eadconsult.co.uk).

Drylands´ Hidden Wealth
Investment in sustainable dryland management is low, despite an increasing number of studies that show their hidden wealth. Bringing together over 40 regional and international dryland and ecosystem management experts, the two-day conference: 'Drylands´ Hidden Wealth – Integrating Dryland Ecosystem Services into National Development Planning' underlined their wealth to change the still common view that drylands are wastelands.

Future Sustainability
'The Future of Sustainability: Rethinking environment and development in the 21st century' is the title of a new IUCN report. Discussions on the future of sustainability by a number of prominent thinkers and practitioners provide its basis. It considered society's progress towards sustainability and whether the concept of sustainable development has a future. It explored global challenges and opportunities in the 21st century, and how the Union should attempt to meet these challenges. It called for new innovations in sustainability, a greater role for social and business entrepreneurs, new ways of presenting the notion of limits, new alliances, metrics, an emphasis on solutions, and the need to recapture hearts as well as minds.

Health, Financing, Better Management
Leaders of a number of the world's major protected areas agencies gathered to discuss some of the major challenges for protected areas in the 21st century. They discussed how visiting national parks can improve health, explored innovative financing mechanisms, and improved management of protected areas. This meeting - the annual World Protected Areas Leadership Forum - involves CEO's of leading protected area agencies.

Nigeria Commits $13 Million to Save the Komadugu Yobe River
Six northern states of Nigeria together with the Nigerian Federal Authorities have agreed to invest $13 million toward saving the Komadugu Yobe River. The money will be invested in the Catchment Management Plan, launched by the Government of Nigeria and IUCN. President Obasanjo of Nigeria described the summit and the resulting agreement as unprecedented in the history of the basin and Nigeria.

IUCN Project Launched to Prevent Illegal Forest Activities in Ghana
Communities, government representatives and the private sector have debated the meaning of community forestry in Ghana. While the concept is not new, its definition is not clear nor its implementation. The 'Strengthening Voices for Better Choices' project, launched by the World Conservation Union (IUCN) will address how to improve community access and benefits in Ghana 's forest sector. A common issue highlighted by community member participants is the lack of tenure for trees. This is problematic for various reasons such as migrants who plant trees on land but have no right to cut them or communities who develop plantations but then have no right to harvest or profit from the seeds they sowed. This has resulted in some communities wanting to destroy the forest in order to plant usable crops such as maize.

Fiji Leaders Receive Global Ocean Conservation Award for Unprecedented Network of Marine Protected Areas
In tribute to World Ocean Day, conservation partners bestowed the second annual Global Ocean Conservation Award to Fijian Prime Minister Laisenia Qarase and Tui Macuata (Paramount Chief) Ratu Aisea Katonivere of Fiji's Macuata province on the island of Vanua Levu, for their work protecting the island nation's unique marine biodiversity.

Welcome Ibrahim Thiaw as Acting Director General of the World Conservation Union
Ibrahim Thiaw has taken up the post of Acting Director General of IUCN after the recent departure of Achim Steiner. Ibrahim Thiaw was appointed by the 65th IUCN Council to lead the Union until the new Director General has been selected and taken up his post. Ibrahim Thiaw, a Mauritanian national, is the Director of the Union's West Africa Office. Achim Steiner stepped down from the position of Director General to take up the post of Executive Director of the United Nations Environment Programme (UNEP) in Nairobi, Kenya.

Armed Conflict Undermines Conservation Efforts
While the armed conflict in the Middle East is causing tragedy and anguish to people caught up in the hostilities, nature and protected areas are also being affected. Nizar Hani, Scientific Coordinator of the largest natural reserve in Lebanon, Al Shouf Cedar Biosphere Reserve, stands idle as he watches ten years of arduous conservation work crumble right in front of his eyes in light of the recent incursions by Israeli armed forces. In another example, the Society for the Protection of Nature in Lebanon, also an IUCN member, had revived the Hima system, a traditional form of protected area management that was practiced for hundreds of years in the Arab world. It established a Bird Reserve known as 'Hima Ebel es Saqi' in South Lebanon two years ago, the first community-driven conservation effort in a forested area under the revived Hima system. The site, which was declared by experts in BirdLife International as an important area for migrating birds and an IBA, has been at the centre of the military conflict.

Giant Panda Sanctuary, Malpelo Island and Kvarken Archipelago inscribed on World Heritage List
Based on technical advice of the World Conservation Union (IUCN), the UNESCO World Heritage Committee has inscribed three natural sites on the World Heritage List. The sites include the Sichuan Giant Panda Sanctuary – Wolong, Mt. Siguniang and Jiajin Mountains (China); Malpelo Flora and Fauna Sanctuary (Colombia); and the Kvarken Archipelago (Finland), an extension to the High Coast of Sweden (Sweden).

Call for an Amphibian Global Action Team
The formation of an Amphibian Survival Alliance (ASA), to co-ordinate global conservation plans for amphibians in the face of a massive extinction catastrophe has been called for by a group of the world's foremost amphibian experts. The SSC Amphibian Specialist Group of IUCN would head the new ASA and have an initial five-year budget of $400 million. The paper in the journal *Science*, 'Confronting Amphibian Declines and Extinctions', calls for the implementation of the Amphibian Conservation Action Plan (ACAP) which was created at the Amphibian Conservation Summit (ACS) in 2005.

West African Black Rhino Feared Extinct
While four of the six African rhino subspecies are recovering, new surveys have failed to locate any West African black rhinos, and found no more than four northern white rhinos. In both cases, poaching for rhino horn is the main cause of their demise.

Fishing Companies Announce World's First Voluntary Closures to High-Seas Deepwater Trawling
In a global first, four major fishing companies have announced a voluntary halt to trawling in eleven deep-sea areas of the southern Indian Ocean. This will protect and conserve the bottom of the sea floor, or benthos, associated fish fauna and related biodiversity in one of the largest marine protected area enclosures ever.

Countdown 2010 Supports Urban Conservation
By the end of this year, more people will live in cities than in rural areas. To mitigate the far-reaching consequences on biodiversity, Countdown 2010 is presently supporting the development of a pilot project on urban conservation. Representatives from five cities have met to finalise the development of the pilot project called 'Local Action for Biodiversity'. The pilot group, which will eventually extend to 15 cities, includes Cape Town, Durban, Rome, Tilburg, São Paulo, Los Angeles and Havana. These cities plan to pioneer a global programme on urban biodiversity, as a contribution to the 2010 biodiversity target.

Institute News

New Fellows

As an IEEM member, and certainly if you were a Founder Member, you will have a good few years of solid experience. And looking back you will have done some interesting work with achievements in which you have taken personal satisfaction. You will definitely have something to show for your efforts, but it may not have hit the headlines and it may not have been published in the scientific journals. Will this make you a Fellow of the Royal Society? – Well probably not, but it may well make you eligible for the next best thing – Fellow of IEEM. The Institute would like to hear from more potential Fellows as the current number (18) is still well below the 10% target of Full Members. This is roughly 160. Have a think about it for yourself or if you know someone who would deserve it but through modesty has not applied, then give them a nudge – even get the application forms on their behalf.

Revision of Membership Regulations

As reported in the last *In Practice*, revisions to the Membership Regulations were being reviewed and some significant changes were approved at the last Council meeting. New detailed regulations will be issued shortly and posted on the website. These will operate from 1 October 2006. For some time now there has been a feeling that we should tighten up a little on our regulations and the main proposal is to extend the professional work experience requirement for Full Membership to 4 years. The usual requirement for Associate Membership will then become two years. There will also be a new grade of membership – Graduate - which it is hoped will encourage increased membership from those embarking on a career in ecology or environmental management. Progression through the grades will then depend on the nature of the Professional Experience and whether a full CPD record has been maintained. These regulations will not affect those already enrolled in the current grades. The other significant change will be the end of the portfolio route and its replacement by an examination of a detailed CV, an extension of the professional work experience requirement and the production of a written statement.

Membership Fees

Time for me to make my annual plea – please pay your membership fees promptly. Every year there are quite a number of members who do not respond and this then entails reminders, e-mails and even telephone calls from the Secretariat. Also if for some reason you do not wish to continue your membership it is very helpful to let the Secretariat know. There are a number of members whose employers pay and often the employer is not told of the need to renew and it sinks to the bottom of the tray. Also please remember that it is the obligation of the individual member to see that the subscription is paid so it may be worth checking with your employer that this has been done.

Standards for Surveys

The issue of what constitutes an appropriate level of detail for a survey has often been discussed within IEEM and to some extent this remains unresolved. Jacqui Green has done much to define 'Standards for Survey' which can be found on the IEEM website.

Nonetheless, the Institute has received a number of complaints recently that the standards of survey work undertaken by some IEEM members are not what they might be. Such complaints will be considered and investigated by the Secretariat under the Disciplinary Regulations but there does seem to be an underlying issue which may give rise to some of these concerns, namely that the client is not made fully aware before the start of the work what the limitations might be. A typical example might be a bat survey undertaken as part of a planning application. The client may wish to get away with the absolute minimum in terms of time and cost but may find that the quality of the survey is subsequently challenged by an objector. This runs the risk of putting the surveyor and IEEM in a bad light. IEEM members must under the Code of Professional Conduct '*identify the limitations to the interpretation of information which is utilized in reports or advice*' and should come to a judgment as to whether to accept a contract for undertaking work of a standard that might be blatantly unfit for purpose and in such circumstances should err on the side of caution.

Extending the discussion might lead some IEEM members to ask – well what is the standard of survey considered acceptable by IEEM? Up to now we have avoided being prescriptive as such attempts might cover anything from snails to butterflies or bats. Would it be of help to members if a series of guidance notes could be developed? The Professional Affairs Committee will be giving further consideration to this issue at its next meeting and would welcome any views beforehand.

IEEM Section Meetings

Welsh Section?

The call for a possible new Section in Wales has not really produced much response and so the conclusion appears to be that this is not currently needed. If there are second thoughts there is still time to set things up (until 1 October 2006) with a view to the launch of a Shadow Section in Cardiff.

Greywell Tunnel, Basingstoke

News of Members

Many congratulations to Dr Robin Buxton CEnv MIEEM as Chairman of the Northmoor Trust and the Oxford Nature Conservation Forum who was awarded an MBE in the Queen's Birthday Honours for services to the Environment. Robin was the Northmoor Trust's first warden in 1982 and, until recently, chair of the Oxfordshire Nature Conservation Forum, as well as a trustee of BBOWT for 16 years. The little known Oxfordshire Wildlife and Landscape Survey (OWLS) and a particularly good county Biodiversity Action Plan are legacies of Robin's time as chair of the Forum. Robin has been very active in IEEM from its start. He has served on the TECDC and F&GP Committees and was a long standing member of Council and Secretary of the Institute. In this capacity he was very helpful in getting the new Constitution through its various hurdles. He took a break from this and

many other aspects but will be joining the External Affairs Committee for its autumn meeting.

Congratulations also to Dr Gordon McGlone CEnv MIEEM, Chief Executive of Gloucestershire Wildlife Trust, who was awarded an OBE for his services to conservation. He has been very active on the national stage including representing the Wildlife Trusts on the Minister of Agriculture's Advisory Panel on Badgers and Bovine TB from 1996-97. He is also Managing Director of Gloucestershire Wildlife Management, a trading subsidiary formed to offer environmental consultancy and practical habitat management services. He is currently chairman of council for Lantra, the Sector Skills Council for the environmental and land-based sector. This is a national organisation licensed by the UK Government to drive forward the new skills, training and business development agenda for the sector.

Electronic Mailing

Members will now have received the second E-Newsletter prepared by Jason Reeves. This seems to have been well received with an encouraging response to the call to serve on Committees. There are still a number of e-mail addresses that do not function so if you cannot recall having received the E-Newsletter, please check that we have your correct contact details. The membership renewal notices show the information we hold so please amend as necessary when you return them or let us know by e-mail.

Under the new Constitution we are allowed to send out the notices of the AGM and the accounts electronically. We shall do this as much as is feasible in the interests of efficiency and cost effectiveness. Paper copies will be available on request and at the AGM itself. This also applies to the annual accounts.

Finding Out the Facts

There is always a danger that yet another request to complete a survey will be put in the bin and the Institute is considering four – but at least we do not send them out very often! The first is that we really want to know what you as members think of the services being offered by the Institute and whether additional services and improvements can be made. It is now five years since the last survey was done and much has been achieved since, especially in the development of external relations, which was then considered to be inadequate by many respondents.

The second one stems from the Professional Affairs Committee which is interested in the operation of the profession. It is about 15 years since a survey of issues like type of work, salaries, size of organisations, etc. were looked at and much may have changed during these years. Obviously issues such as salaries and working arrangements will need to be dealt with very sensitively and of course some members may not wish to respond on such points. Certainly, there is increasing evidence that salaries have moved more in line with other professions (though there is still some way to go). This comes out in the '2006 ENDS Directory Trends in Environmental Careers and Salaries'. Another point which would not have occurred 15 years ago is that it is sometimes a requirement for a job applicant to be a member of IEEM or an appropriate professional body. This is a powerful tool for increasing membership but is also recognition that IEEM has really become the professional membership to have.

The third rather smaller survey will be targeted at the Agencies and other employers to try and find out how the Institute is viewed from an external perspective and what importance is placed on employees being members.

The fourth survey is all to do with the skills gap and trying to find out from employers of ecologists where they think the gaps really are – if any. IEEM would very much like to develop the professional skills of members and others where these are thought to be lacking and there is already much work that has been carried out. But before embarking on what could really be a major project we need to do some scoping. Again this survey will be aimed at employers of ecologists rather than individual IEEM members.

IEEM Staff Brush Up On Field Skills

I think it always helps if the Secretariat staff do have a bit of a feel for the subject area in which we work. But it is depressing how quickly field skills get rusty if you do not use them (even if you had them in the first place!). This year IEEM staff have been seen in bluebell woodland, acid heaths, mires, bat detecting and bird watching equipped with field guides and of course cameras for the stunning picture you see below!

Photographs Needed

IEEM always needs good quality photographs for its publications and displays and this is likely to increase. For instance *In Practice* is likely to include more illustrations. But we like to avoid paying agency prices! So if you have any really good quality photographs of particular species or management practices and would be happy for IEEM to use them, please let Jason Reeves know. Any photographs used will be properly acknowledged.

IEEM Staff News

On 21 August the IEEM team will be joined by Christine Searing as a temporary Administrative Assistant. Christine has just completed an honours degree in Biology from Cardiff University. Autumn is always the busiest time of the IEEM calendar and she will be helping in a variety of ways leading up to the Cardiff conference.

The Secretariat team refreshing their field skills near Greywell Tunnel

Notice of AGMs

Please note the dates and locations of the following AGMs:

North East Section
13 September 2006, Oneholmes Farm, Seamer near Stokesley, Middlesbrough

Scottish Section
28 September 2006, The Moorings Hotel, Banavie, Fort William

Irish Section
16 October 2006, Botanic Gardens, Dublin

Main Institute
15 November 2006, The Park Hotel, Cardiff

The Society for the Environment

The 28th of June was a notable day in the development of the Society for the Environment. There was a Board Meeting of all of the Constituent Bodies, followed by the AGM and finally a reception.

The Society has made great progress during the course of the last year with the appointment of a permanent Chief Executive, Dr David Hickie, and passing the milestone of the 4,000 Chartered Environmentalists. Recent additions to the number of Constituent Bodies have been the Chartered Institute of Building and, as approved at the Board Meeting, the Royal Institution of Chartered Surveyors and the Institute of Agricultural Management

The AGM marked the retirement of Peter Matthews from CIWEM as President and the appointment of his successor, Dr John Brady from IEMA. It also marked the retirement of Alex Tait, IEEM Treasurer, as Board member and his replacement by Eirene Williams, IEEM Vice-President. Alex has been a stalwart of the Society and made a significant contribution to its development always ensuring that the voice of IEEM was clearly and effectively heard. He will however be continuing as a member of the important Registration Authority.

The AGM was followed by a reception attended by Eirene Williams and IEEM President-elect, Andy Tasker and at which, the guest speaker was the Rt Hon John Gummer, MP. He congratulated the Society on its achievements and promoted the important role it has in ensuring that public opinion is based on sound science and evidence, communicated in a way that people will understand. He stressed that innovation and co-operation were the key to achieving environmental sustainability and he clearly welcomed the fact the SocEnv had made such a successful start. There were three Honorary Fellowships awarded – Sarah Parkin, Programme Manager for the Forum for the Future, John Edmonds, former General Secretary of the GMB Union and President of the TUC - both Board Members of the Environment Agency and Dr Robert Fuller, of the Institution of Environmental Sciences and Honorary Secretary of SocEnv – just retired. All three had been very helpful in the early days of setting up the Society.

IEEM has phased the renewal of SocEnv membership to coincide with the IEEM membership year and these will be due very shortly. As a Board member I think it is true to say that SocEnv has passed the turning point – the membership numbers speak for that, the new Chief Executive is now well established in post and a secretariat has been set up in offices in Atherstone. SocEnv should now be able to move forward and to make the impact on the environmental scene that was originally envisaged. So for those who may have voiced doubts about its benefits, I think this year will see those doubts dispelled.

The numbers of members applying to be Chartered Environmentalists is currently quite low but we expect the first of those having passed through in the post-grandparenting phase to be announced shortly.

Currently IEEM provides website services to SocEnv through Nick Jackson but this is now scheduled to be independently managed from September. Do keep up to date with SocEnv by visiting the website - www.socenv.org.uk.

Soc Env
Society for the Environment

EFAEP News

2006 General Assembly

The General Assembly of EFAEP took place in Bergamo near Milan on 15 June. The Italian members were the local organizers in the same way that IEEM had acted in June 2005 in London. This time they had decided to have an afternoon conference before the start of the Assembly which was an innovation. IEEM was represented by Mike Barker, Jim Thompson and Jason Reeves. Mike Barker presented the paper by IEEM on *Biodiversity - Applying European Directives*, especially the Habitats Directive. The paper also gave an insight into the way that IEEM members work and it was interesting that many in the audience still did not know what the world of a professional ecologist entails – as opposed to being a naturalist – so the paper was really very useful.

The General Assembly itself is the occasion for the passing of essential business, much like an AGM. The President, Jan-Karel Mak, introduced the meeting and identified the priorities for the forthcoming year as being: preparing one or two position statements; the completion of the Database – the European Network of Environmental Professionals (ENEP); and carrying out the agreed work plan. The revised Vision and Values were approved as the basis for a new Constitution which will be developed during the course of the year and hopefully adopted in June 2007.

The budget presented by the Treasurer, Jim Thompson, was also approved – this is relatively small and depends on the subscriptions from the constituent bodies – generally on the basis of 1 Euro per member of each organization. There will be further allocations for the development of the database, for the promotion of EFAEP, the development of the website, attendance at the annual Pollutec exhibition and the underwriting of a European Environmental Verifiers Day.

The database will need further work especially up to its launch - probably in early 2007 and through its initial operation. A working group was formed to take this forward on which Jason Reeves is the IEEM representative. IEEM members wishing to extend their contacts in Europe should find ENEP of considerable value.

The organization is growing with the admission of a new member from Belgium – the VMD and news that the Association of Italian Naturalists (AIN) would like to join, as would CIWEM and the IES from the UK. There are indications of interest from several other organizations.

The regular work of EFAEP is undertaken through the secretariat in Brussels located in the VDI office. The Executive Committee meets on a quarterly basis and there are sometimes intervening telephone meetings.

EFAEP needs further promotion and to help in this, IEEM prepared a banner which was warmly approved and on display at the meeting. This was also used in conjunction with IEEM at the ECCB meeting in Hungary (reported on pages 18-19). A number of visitors to the joint EFAEP/IEEM stand expressed interest in EFAEP and said they would discuss it within their own organizations – again a positive sign.

The Italian organisers lead by Mario Grosso, the EFAEP Secretary, had made a real effort to ensure the success of the meeting – it was excellently organised and a very positive step for EFAEP. Further details about EFAEP and the meeting are available on the EFAEP website – www.efaep.org.

EFAEP
European Federation of Associations of Environmental Professionals

Recent Publications

Bumblebees
Author: Ted Benton
ISBN-10: 0007174519
Available from: HarperCollins Publishers (www.collins.co.uk)
Price: £25

The 98th book in the New Naturalist series from Collins is the first of its kind that is entirely dedicated to the humble bumblebee in Britain. Bumblebees are generally much loved in Britain because of their industrious and co-operative behaviour, but in recent years they have not fared well. They have suffered mainly because of habitat degradation and destruction but being adapted mainly to temperate regions of the northern hemisphere they are also suffering from the effects of climate change. The book covers all 23 of the bumblebee species found in Britain from the common white-tailed bumblebee *Bombus lucorum* (L.) to the rarer shrill carder bumblebee *Bombus sylvarum* (L.). It extensively covers the natural history of the bumblebee from life cycle and psychology to conservation and identification. The book includes a key for the males and females of commonly found British species and is excellently illustrated with photographs and diagrams.

Key Topics in Conservation Biology
Editors: David Macdonald and Katrina Service
ISBN-10: 1405122498
Available from: Blackwell Publishing (www.blackwellpublishing.com)
Price: £26.99

This is not one large piece of work but rather a collection of essays. They do, however, fit together well, largely due to the fact that they are all set out in the same format and all covering contemporary topics that are of key relevance today. There are 18 essays covering conservation in relation to biodiversity loss, prioritization, the economics of biodiversity, modern molecular genetic techniques, metapopulations, climate change, technology, animal welfare, modelling, the tropics, parasites, biological pest control, alien species, bushmeat, sport hunting, farming, living with wildlife, and integration and alignment. The authors are from a variety of countries from Chile and Uganda to Israel and Malaysia, though most are American and English (predominantly from Oxford University). The book is aimed at conservation practitioners, policy-makers, undergraduate and postgraduate students, and those eager to better understand the central issues of modern conservation. There is also an interesting use of quotes from history to highlight certain points throughout the book.

Deer and Deer Parks of Lincolnshire
Author: Chris J. Manning AIEEM
ISBN-10: 0948005076
Available from: Lincolnshire Naturalist's Union (www.lnu.org)
Price: £15 + £1.50 p+p

This is a fascinating book for those interested in either deer or the Lincolnshire countryside, or both. The book includes an introduction to deer in England and Lincolnshire, a background on deer and deer evolution, some anatomy, physiology and behaviour is covered, deforestation and later forest management, the forests and parks of Lincolnshire, the extinct and current deer of Lincolnshire, the current species covered individually, a Gazetteer of the county's parks, deer management, problems associated with deer, tips for deer watching, and the best parks in the county for viewing the different species. Another recent publication by the Lincolnshire Naturalist's Union is *The Butterflies and Moths of Lincolnshire* by Rex Johnson and Colin Smith (£12 + £1.50 p+p). This is a review of the current known status of the butterflies and moths of Lincolnshire.

Methods in Stream Ecology
Editors: F. Richard Hauer and Gary A. Lamberti
ISBN-10: 0123329078
Available from: Academic Press (www.elsevier.com)
Price: £51.99

This is the revised and updated edition of the 1996 original *Methods in Stream Ecology*. All of the chapters have been updated to include the most recent advances in particular areas of expertise and include remote sensing, the relationship between stream flow and alleviation, coverage of macrophytes and a new section on riparian zones. Six new chapters have been added bringing the total to 36. All the chapters are consistent by having the same subsections, namely introduction, general design, specific methods, questions for the student or researcher, list of necessary materials, and relevant references. There are six fundamental areas covered – physical stream ecology, material transport, uptake and storage, stream biota, community interactions, ecosystem processes, and ecosystem quality. The book is suitable for reference purposes or for use as a textbook, and is aimed at aquatic ecologists, natural resource managers, national and local government officials responsible for stream evaluation and monitoring, and undergraduate and postgraduate students. The book is largely based on North American studies and methodology though its predecessor was used worldwide and this edition should be no different.

England's Landscapes Vol. 1-8
Series editor: Neil Cossons
Available from: HarperCollins Publishers (www.collins.co.uk)
Price: £35 per volume

This collection of books is probably the most detailed description of why the English countryside looks the way it does. They cover the geology, archaeology and history of each area and what effects each has had on the landscape we see today. The impacts of human settlement have affected every inch of the English countryside and these books deal particularly with the influence of humans on the landscape since the end of the last Ice Age. Today the English landscape is still undergoing change but with a deeper understanding we will hopefully be able to manage it in a more conscious and thoughtful manner for those who live there. The eight volumes in the collection are as follows:

1. *The South East* by Brian Short – ISBN-10: 0007155700
2. *East Anglia* by Tom Williamson – ISBN-10: 0007155719
3. *The South West* by Roger Kain – ISBN-10: 0007155727
4. *The West* by Barry Cunliffe – ISBN-10: 0007155735
5. *The East Midlands* by David Stocker – ISBN-10: 0007155743
6. *The West Midlands* by Della Hooke – ISBN-10: 0007155751
7. *The North East* by Fred Allen – ISBN-10: 000715576X
8. *The North West* by Angus Winchester – ISBN-10: 0007155778

Parks and Gardens
Authors: David Lambert, Peter Goodchild, and Judith Roberts
ISBN-10: 0951837788
Available from: Landscape Design Trust (www.landscape.co.uk)
Price: £9.99

In order to make decisions about the repair, alteration, use and management of parks, gardens and other designed landscapes you need to be able to research, analyse, survey and investigate the historic design and features of the landscape in question. This book, produced by the Landscape Design Trust in association with English Heritage, aims to provide the reader with an introduction to and summary of sources for those wishing to research the history of a particular designed landscape. It provides an ideal starting point for research programmes and grant applications. The book is relevant to parks, cemeteries, gardens and other designed landscapes.

Tauro-Scatology and the Art of Christmas Shopping

It is nearly October, the shops are starting to fill up with Christmas decorations and soon we'll be unable to escape the strains of 'Away in a Manger' as we trawl through the supermarket. So we've decided that *In Practice* should ask its favourite Professor of Tauro-Scatology for some ideas for Christmas presents. What are you suggesting this year, Prof?

I am ashamed to say that I'm climbing onto a bandwagon. I'm guessing that most IEEM members, as conscientious ethical shoppers, will have passed through two stages of the 'Good Gift' catalogues craze already.

Two stages? You'll have to explain.

The first stage is that you read about the 'Good Gifts' concept in *The Guardian* or another high-minded newspaper and think that it sounds like the ideal antidote to the crazy materialism that accompanies Christmas, so you'll have got the catalogue or perused the website and bought a friend or relative a goat that they'll never see.

Been there, done that.

Of course you have. And I'm sure you'll have felt the warm glow of satisfaction of sparing your friend or relative from more needless material goods whilst at the same time benefiting an African subsistence farmer.

Something like that. What's the second stage?

The second stage is the goat that an African farmer received on your behalf from a friend or relative. Did you feel that same glow of satisfaction as you opened the envelope…

Not exactly…

Of course not. Because the whole 'Good Gifts' idea overlooks the fact that an act of charity is a personal contract between giver and receiver and there is not really room for a middleman. Seen from the viewpoint of the receiver, it can be rather patronising. If you wanted to give to charity, you should make that decision for yourself and not have the decision made for you by a friend.

So what are you suggesting instead?

The obvious antidote to 'Good Gifts' is, of course, *The Better Gifts Guide*. I've stumbled on a radical new concept: not only can revenge be sweet, it can also be ethical and sustainable.

Give us some examples?

Let's say that your friend who bought you a 'Good Gift' is the type of person who never seems to have any change in his pocket so he walks past every *Big Issue* seller, feeling guilty and trying to avoid eye contact. What you do is buy *The Big Issue* yourself for a few weeks and then wrap them up with some nice recycled wrapping paper from Oxfam and give it to your friend who can then leave them around his house so that all his other friends think that he is the type of kind, considerate bloke who buys *The Big Issue* on a regular basis.

Not bad. What else can we find in *The Better Gifts Guide*?

Another of the benefits of 'Good Gifts', from the point of view of the Western materialist, is that one deals with the concept of a goat without the smelly reality intruding into the lifestyle of either giver or recipient. So, *The Better Gift Guide* must, perforce, turn this benefit around.

Give us an example.

Composting. Everyone likes the idea. Most people don't get around to actually doing it. So *The Better Gift Guide* suggests a practical way of kick starting your friend's good intentions. Simply gather 30 or 40 used tea bags into a plastic bag and, hey presto, your friend is a few months away from some wonderful compost for his azaleas. It is important, however, to use a plastic bag.

Why is that?

Every IEEM member knows that microbial degradation is enhanced if the C:N ratio of the compost is low. So, shortly before you wrap the tea bags up in the inevitable Oxfam recycled wrapping paper, pee into the bag. Your friend won't believe how thoughtful you are.

He'll have a point. Let's have one more example.

Okay. I'm leaving the best until last: you have a friend who likes chocolate, believes in fair trade but who has a slight weight problem. What do you give them?

Presumably not a bar of calorie-rich chocolate, however fairly it has been traded?

No. But that means that they have to undergo the torment of knowing that they are doing nothing to support small and medium-scale rural enterprises in the Third World. *The Better Gift Guide* has a great idea: you buy the chocolate, thus supporting the farmers and then eat it, thus sparing your friend's waist. You send them the foil wrapper as an indication of your benevolence. One thing is guaranteed.

What is that?

Follow the prescriptions in *The Better Gift Guide* and your friends will never send you or anyone else a Good Gift again.

The downside is, of course, that they probably won't be your friends anymore either.

But it also means one less Christmas card to write next year, thus saving even more natural resources. *The Better Gifts Guide* takes sustainability to the ultimate extreme.

You've thought of everything.

Happy to oblige.

In the Journals

Compiled by Jim Thompson, Jason Reeves and Nick Jackson

British Ecological Society

P.F. Donald and A.D. Evans.
Habitat connectivity and matrix restoration: the wider implications of agri-environment schemes.
Journal of Applied Ecology 2006, **43**: 209-218.
Habitat connectivity is a growing area of interest and so this comprehensive review is very timely. It includes reference to nearly 130 papers and would be well worth a read by those involved with developing and giving advice on Farm Environmental Plans. The spread and intensification of agriculture are recognized as two of the most important global threats to wildlife with clear links between agricultural change and declines in biodiversity across a wide range of agricultural systems, and convincing evidence that reversing these changes leads to a recovery in wildlife populations.
Nearly four billion euros are now paid annually through agri-environment schemes (AES) to farmers in Europe and North America to make environmental improvements to their land. Where appropriately designed and targeted, these schemes have proved successful in reversing declines in farmland wildlife populations.
The authors suggest that AES may carry substantial wider benefits, which so far have not been considered in the design and deployment of such schemes. These could offset some of the negative impacts on biodiversity of the loss and fragmentation of non-agricultural habitats; could allow species to adapt to climate change; could slow the spread of alien and invasive species; and could contribute positively to the coherence of key biodiversity and protected area networks. There is a particularly useful table showing the characteristics of species likely to benefit most from matrix restoration.
Correspondence: paul.donald@rspb.org.uk

R.H. Gibson, I.L. Nelson, G.W. Hopkins, B.J. Hamlett and J. Memmott.
Pollinator webs, plant communities and the conservation of rare plants: arable weeds as a case study.
Journal of Applied Ecology 2006, **43**: 246-257.
Little is known about the pollinators of rare plants, which is cause for concern given that pollination is essential for the long-term survival of most plant species. The aim of this study was to determine the probable pollinators of three species of rare arable weed: red hemp-nettle *Galeopsis angustifolia*, small-flowered catchfly *Silene gallica* and spreading hedge-parsley *Torilis arvensis*. Species of arable weed are among those suffering the greatest declines in the UK.
A wide range of insect species visited the three plant species. *Galeopsis angustifolia* was most likely to be pollinated by *Bombus pascuorum* at one site and *Sphaerophoria scripta* at another. *Silene gallica* was also likely be pollinated by *Sphaerophoria scripta*.
All three species of rare plant were linked to other plant species in the community by shared pollinators. In many cases these other plant species constituted the primary food sources for the shared pollinators. Therefore, the long-term survival of rare plant populations is likely to depend on the more common plant species in the community. The authors recommend that management of the rare plants should also include the protection and management of populations of some of the more common plant species in their respective communities. The new agri-environment schemes including wide unsprayed field margins beetle banks and less intensive hedgerow management could help in this context.
Correspondence: Jane.Memmott@bristol.ac.uk

Water vole (www.wildstock.co.uk)

K. Johst, M. Drechsler, J. Thomas and J. Settele.
Influence of mowing on the persistence of two endangered large blue butterfly species.
Journal of Applied Ecology 2006, **43**: 333-342.
This paper deals with the effects of mowing on the dusky large blue *Maculinea nausithous* and the scarce large blue *Maculinea teleius*. The consequences are felt directly through egg destruction and larval mortality on the mown plants and indirectly through altering the abundance of their resources in meadows (*Sanguisorba* plants for oviposition and early larval development and *Myrmica* ant nests for later larval development and pupation). These are two continental species and not to be confused with the recently introduced large blue *Maculinea arion* but the issues may well apply.
Although conservation biologists have argued that mowing during the adult stage is detrimental to population persistence, it is not obvious how the timing and frequency of mowing impact on population dynamics. A simulation model was used to investigate how current 'traditional' mowing regimes could be altered to reconcile butterfly conservation with agriculture.
The results showed that the 'traditional' mowing regime (twice per year with the second cut during the flight period) was always detrimental to the two butterfly species at both local (single population) and regional (metapopulation) scales. However, mowing once a year, or every second or third year, before or after the flight period, was appropriate for both species. *Maculinea teleius* could persist only at a regional scale, assuming dispersal among the meadows, whereas *M. nausithous* could persist at both local and regional scales. Thus it is essential that the recommended mowing regimes are applied across several connected meadows within reach of dispersing butterflies if both butterflies are to be conserved in a region.
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P. Delattre, R. Clarac, J.P. Melis, D.R.J. Pleydell and P. Giraudoux.
How moles contribute to colonization success of water voles in grassland: implications for control.
Journal of Applied Ecology 2006, **43**: 353 –359.
This paper serves as a cautionary tale for those concerned about the survival of water voles. It refers to grassland situations away from water such as upland regions of Europe where outbreaks of the water vole *Arvicola terrestris* cause severe damage. Little is yet known of the biological mechanisms underlying the speed of colonization of grasslands during the population growth stage. Like *A. terrestris*, the mole *Talpa europaea* digs vast tunnel networks that may be used by *A. terrestris*. The availability of extensive networks of this sort might greatly boost the colonization potential of *A. terrestris* and so explain the speed of onset of its outbreaks.
Areas occupied by networks of *A. terrestris* and *T. europaea* tunnels, and their respective locations, were evaluated and mapped with a global positioning system (GPS) during low-density, growth and the first weeks of abundance phases of cyclic fluctuations of *A. terrestris*. During the growth phase and the first weeks of the abundance phase nearly 80% of new *A. terrestris* colonies were found in *T. europaea* tunnel networks.
These findings have implications for controlling outbreaks of *A. terrestris*. Temporally, chemical pest control of *A. terrestris* can be reduced by taking action during the *A. terrestris* low-density phases, preferably in the autumn. Spatially, control operations should be targeted at *T. europaea* and early *A. terrestris* networks. Mechanical destruction of tunnels (*e.g.* ploughing) and trapping should be considered as an alternative to chemical pest control.
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A. Rindorf and P. Lewy.
Warm, windy winters drive cod north and homing of spawners keeps them there.
Journal of Applied Ecology 2006, **43**: 445-453.
The North Sea cod stock is currently under pressure from both environmental change and human exploitation. This stock has experienced poor recruitments since the late 1990s and, along with a decrease in abundance, the distribution of cod has changed. It has been suggested that the change

in distribution can be linked to increasing temperatures and fishing pressure, however, there is little evidence for this hypothesis.
Using winter and summer survey catches, the authors investigated whether a directional shift in the distribution of cod has taken place over the years 1983–2003. The authors examined whether the change could be linked to climatic conditions, fishing mortality, stock size or limited directional movement of cod. Using the derived models, they investigated whether fishing had increased the sensitivity of the cod population to climate-induced distribution changes.
A series of winters characterised by high temperatures and southerly winds during the egg and larval phases of cod led to a northward shift in the distribution of juvenile North Sea cod the following year. A northern shift of mature fish around the time of spawning was linked directly to a tendency for northerly distributed juveniles to remain northerly throughout their life. This shift of the spawners further augmented that of the new recruits.
Although fishing mortality on a North Sea scale was not directly correlated with the displacement of any of the age groups, fishing has severely decreased the number of fish in older age groups. This increased the sensitivity of the distribution of the cod stock to climatic changes.
The distribution of North Sea cod has moved north as a result of the effect of a series of warm, windy winters on the distribution of recently settled cod. The shift was followed by a northwards shift in the distribution of older age groups. Unless a series of cold and calm years combined with a reduced mortality in the southern areas allows a southern spawning population to rebuild, the cod stock is unlikely to return to its previous area of distribution.
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J. Smart, J.A. Gill, W.J. Sutherland and A.R. Watkinson.
Grassland-breeding waders: identifying key habitat requirements for management.
Journal of Applied Ecology 2006, **43**: 454 –463.
This is a useful and practically based paper on improving habitat for redshanks. Habitat loss and degradation of wetland ecosystems, principally through large-scale drainage and conversion to arable farmland, have been implicated in the widespread, dramatic declines of breeding waders across Europe. Managing the remaining wetlands to reverse these declines will require a detailed understanding of their habitat requirements.

Upland sheep in Scotland

In the UK, grazing marshes are key components of the remaining wetlands in both coastal and inland sites, and the structure of grazing marsh habitat can differ between these locations. Redshank *Tringa totanus* is a declining wader species that breeds in both marsh types. The authors quantified the habitat features that influence redshank selection of breeding and nest site locations, across coastal and inland marshes, in eastern England.
On both marsh types, breeding location and breeding densities within fields were positively related to the lengths of pool edge and all wet features, respectively. Nest site location was principally influenced by vegetation characteristics, with soil penetrability also important on inland sites but proximity to wet features and vegetation type at the nest important on coastal sites. Hatching probability was higher when the surrounding soils were more penetrable.
The wet features of critical importance for breeding redshank are common on coastal marshes and can be deliberately established on inland sites. This paper is also worth considering in the context of agri-environment schemes and of course new coastal wetlands creation as part of managed retreat.
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W. Reckendorfer, C. Baranyi, A. Funk and F. Schiemer.
Floodplain restoration by reinforcing hydrological connectivity: expected effects on aquatic mollusc communities.
Journal of Applied Ecology 2006, **43**: 474-484.
The Danube which passes through the Donau-Auen National Park, Austria, where the work was carried out has been substantially canalized with many former meanders cut off. There is currently concern over flows in the Danube following the devastating floods in April 2006 experienced from Austria through the Balkans.
One of the main targets of river–floodplain restoration is the reconnection of former side channels. While there is information about the overall impact of such measures, far less is known about specific species' response patterns to hydrological connectivity.
This study examined the composition of aquatic mollusc communities based on the performance of individual species with respect to hydrological connectivity in the Park. Species' traits were used to make generalizations about community responses to hydrological changes.
The authors introduced a connectivity parameter that could easily be derived from the river hydrograph and altitude of the inflow areas. This parameter integrated several key features of floodplain waterbodies and reflected the cause–effect chain of restoration schemes, thus allowing the outcome of restoration measures to be quantitatively predicted. Endangered rheophilic mollusc species reached higher frequencies as connectivity increased; for most eurytopic molluscs, however, increased connectivity reduced abundance.
With respect to species' traits, the proportion of large gastropods declined continuously with increasing connectivity whereas the percentage of gastropods with globolose shells and the relative number of strongly calcified (thick-shelled) individuals both increased. Species dominating in isolated sites were characterized by a higher resistance to desiccation, a food preference for higher plants and a preference for less shaded habitats. They matured later and typically had more offspring than rheophilic species.
The methodology thus provides both an urgently needed and a practical tool for predicting the impact and success of restoration schemes.
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D.M. Evans, S.M. Redpath, D.A. Elston, S.A. Evans, R.J. Mitchell and P. Dennis.
To graze or not to graze? Sheep, voles, forestry and nature conservation in the British uplands.
Journal of Applied Ecology 2006, **43**: 499-505.
In order to optimize biodiversity in the uplands, the challenge is to find how to balance the different land-use pressures. There is currently considerable concern over the large number of sheep in the British Uplands. One key upland species that is potentially affected by livestock grazing, and is of considerable interest to both foresters and nature conservationists, is the field vole *Microtus agrestis*. Relaxation of livestock grazing can result in an increase in vole numbers. This in turn could have both positive and negative implications for biodiversity as (i) field voles are a major source of prey for other species and (ii) they are a cause of damage to newly planted trees and potentially damaging in areas of native woodland regeneration.
An experiment was established in 2003 which enabled the effects of livestock grazing on field vole abundance to be examined. In the first year of the experiment, immediate treatment effects were detectable, with a lower abundance of voles in the conventionally grazed treatment compared with those in the ungrazed treatment, and with intermediate vole abundances in the lightly grazed treatments. The significant treatment effects became more apparent in 2004, with a higher abundance of voles in the extensively grazed mixed treatment (*i.e.* sheep and cattle) than in the extensively grazed treatment that contained only sheep.
In order to maximize biodiversity in the uplands, the results suggest that low intensity livestock grazing could be a useful management tool to reduce vole abundance (and hence subsequent tree damage) compared with excluding livestock from young plantations completely. Vole abundance would still be higher at low grazing intensity compared with conventional stocking rates, thus still providing food for raptors and other vole-eating vertebrates. The results suggest that it may be possible to maintain the open character of moorland habitats, and benefit key upland species generally, by reducing sheep grazing pressure and introducing low-intensity mixed livestock grazing throughout the uplands.
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M. Sims, S. Wanless, M.P. Harris, P.I. Mitchell and D.A. Elston.
Evaluating the power of monitoring plot designs for detecting long-term trends in the numbers of common guillemots.
Journal of Applied Ecology 2006, **43**: 537-546.
In recent years concerns have been raised regarding the status of the common guillemot *Uria aalge* in the UK. Numbers have declined in several regions. However, the extent to which the current monitoring scheme is capable of detecting declines and options for improving efficiency has received little attention. Counting guillemots is not straightforward. They build no nest and sometimes form highly dense aggregations of on average 20 pairs and there is considerable spatial and temporal variation in colony attendance by the mates of those tending adults and others.
The authors investigated the power of different monitoring design options for detecting long-term trends in abundance at a colony on the Isle of May. The ability to detect trends in abundance was reduced by the large temporal and spatial variability in colony attendance. The authors assessed how best to allocate sampling effort in the light of the count variability structure.
Changes to the allocation of sampling effort by counting birds in more plots rather than by increasing the number of counts at existing plots and also the plot-revisit pattern will improve both the statistical power to detect long-term trends and the efficiency of conducting the survey.
This study has implications for improving aspects of the UK seabird monitoring scheme generally.
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R. Aerts.
The freezer defrosting: global warming and litter decomposition rates in cold biomes.
Journal of Ecology 2006, **94**: 713–724.
This is a comprehensive treatment of the concept that decomposition of plant litter, a key component of the global carbon budget, is hierarchically controlled by the triad: climate > litter quality > soil organisms. Over 65 references are listed. Given the sensitivity of decomposition to temperature, especially in cold biomes, it has been hypothesized that global warming will lead to increased litter decomposition rates, both through direct temperature effects and through indirect effects on litter quality and soil organisms.
It concludes that global warming will lead to increased litter decomposition rates only if there is sufficient soil moisture. Hence, climate scenario and experimental studies should focus more on both factors and their interaction. Another point to consider is that the temperature-driven migration of the, hitherto absent, organisms to high-latitude sites may significantly increase decomposition rates through changes in the species composition and structure of the soil community but the consequences for litter decomposition are largely unknown.
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J. Silvertown, P. Poulton, E. Johnston, G. Edwards, M. Heard and P.M. Biss.
The Park Grass Experiment 1856–2006: its contribution to ecology.
Journal of Ecology 2006, **94**: 801–814.
This is an interesting paper on the famous Park Grass Experiment, begun in 1856, and the oldest ecological experiment in existence. Its initial purpose was to evaluate how different fertilizers would improve the yield from hay meadows. Its value to science has changed and grown since it was founded to answer agricultural questions. In recent times the experiment has shown how: plant species richness, biomass and pH are related; community composition responds to climatic perturbation and nutrient additions; soil is acidified and corrected by liming. It also provided one of the first demonstrations of the evolution of adaptation at a very local scale. The application of molecular genetic markers to archived plant material promises to reveal a whole new chapter of genetic detail about the long-term dynamics of plant populations.
This experiment should also be compared with the Palace Leas hay plots at Cockle Park in Northumberland which started 54 years later - see article by Robert Shiel on page 9.
Park Grass illustrates how long-term experiments grow in value with time and how they may be used to investigate scientific questions that were inconceivable at their inception.
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A.P. Møller, E. Flensted-Jensen and W. Mardal.
Rapidly advancing laying date in a seabird and the changing advantage of early reproduction.
Journal of Animal Ecology 2006, **75**: 657–665.
Bird ringing schemes have collected immense amounts of data on timing of breeding for over 100 years. These data provide an unexploited source of information on temporal changes in breeding date. The study investigated changes in the breeding date of the Arctic tern *Sterna paradisaea* P. in Denmark from 1929 to 1998, using information on the ringing date of young birds. The data showed that the mean ringing date advanced by over 18 days during 70 years. Advanced mean ringing date was explained by an increase in the mean temperature during April and May and an increase in the North Atlantic Oscillation (NAO) index for May. Variance in the ringing date increased in years with high temperatures in April and high NAO index values in April. There are changing temporal patterns of selection for early breeding as reflected by analyses of the difference in mean ringing date for Arctic tern young that were subsequently recorded as survivors and mean ringing date for all young. The intensity of selection on breeding date changed from favouring late breeding in the 1930s to favouring early breeding during the 1990s. Analyses of bird ringing information for bird species deposited in national ringing schemes may provide unlimited access to long-term time series of reproductive variables.
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C.M. Beale, I.J. Burfield, I.M.W. Sim, G.W. Rebecca, J.W. Pearce-Higgins and M.C. Grant.
Climate change may account for the decline in British ring ouzels *Turdus torquatus*.
Journal of Animal Ecology 2006, **75**: 826–835.
Climate change is already affecting biodiversity, but the number of species for which reliable models relate weather and climate to demographic parameters is low. The study modelled the effect of temperature and rainfall on the breeding success and territory occupancy of ring ouzels *Turdus torquatus* (L.) in northern Britain, using data from a range of study areas, including one where there was a long-term decline in ring ouzel abundance. Timing of breeding was significantly related to meteorological variables affecting birds in the early spring, though there was no evidence that laying dates had advanced. Breeding success was not significantly related to weather variables; but rather by density dependence. Annual change in territory occupancy was linked to rainfall and temperature the preceding summer, after the main breeding season and to rainfall in the wintering grounds 24 months previously, coinciding with the period of juniper *Juniperus* sp. (L.) flowering. High temperature in late summer, intermediate levels of late summer rainfall, and high spring rainfall in Morocco 24 months previously all had negative impacts on territory occupancy the following year. All three weather variables have changed over recent decades, with a significant increase in summer temperature, a significant decrease in summer rainfall, and a nonsignificant decline in Moroccan spring rainfall. A model based on these trends alone predicted an annual decline in occupancy of 3.6% (compared with an observed decline of 1.2%), and suggested that increased summer temperatures may underlie declines in the British ring ouzel population. Changes in summer temperature after the main breeding period could affect the survival rates of adult and/or juvenile birds. An improved understanding of the post-breeding ecology of ring ouzels is required to elucidate the mechanisms and causes of this relationship. Such knowledge might allow management aimed at buffering the impacts of climate change on ring ouzels.
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F.P. Massey, A.R. Ennos and S.E. Hartley.
Silica in grasses as a defence against insect herbivores: contrasting effects on folivores and a phloem feeder.
Journal of Animal Ecology 2006, **75**: 595–603.
The function of silica, in the form of opaline phytoliths, in the leaves of grasses remains uncertain. It has been suggested that it acts as an anti-herbivore defence by increasing the abrasiveness and reducing the digestibility of grass leaves. The study investigated the effect of manipulating silica levels on the abrasiveness of the leaves of five grass species and on the feeding preferences, growth performance and digestion efficiency of two folivorous insects and one phloem-feeding insect. The addition of silica resulted in increased leaf abrasiveness in four of the five grass species

and also deterred feeding by both folivores and reduced their growth rates and digestion efficiency. These effects resulted in lower pupal mass of the lepidopteron larvae *Spodoptera exempta* and compensatory feeding by the orthopteran, *Schistocerca gregaria*. In contrast, silica had no effects on the feeding preference or the population growth of the phloem feeder, *Sitobion avenae*. The results show that silica is an effective defence against folivorous insects, both as a feeding deterrent, possibly mediated by increased abrasiveness, and as a digestibility reducer. No detrimental effect was found on the feeding preference or population growth performance of the phloem-feeder. The effects of silica on pupal mass and development time may impact on herbivore fitness and exposure to natural enemies.
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T.A. Wilkin, D. Garant, A.G. Gosler and B.C. Sheldon.
Density effects on life-history traits in a wild population of the great tit *Parus major*: analyses of long-term data with GIS techniques.
Journal of Animal Ecology 2006, **75**: 604-615.
Population density often has strong effects on the population dynamics and reproductive processes of territorial animals. However, most estimates of density-dependent effects use the number of breeding pairs per unit area in a given season and look for correlations across seasons, a technique that assigns the same density score to each breeding pair, irrespective of local spatial variation. This study employed GIS techniques to estimate individual breeding densities for great tits breeding in Wytham Woods UK, between 1965 and 1996, and then used linear mixed modelling to analyse the effect of density on reproductive processes. There were significant, independent and positive relationships between clutch size, fledging mass and the number of offspring recruited to the population, and territory size, but no effect of territory size on lay-date or egg mass. These results suggest that, in the current population, great tits with territories smaller than 2 ha independently lay smaller and later clutches, have lighter fledglings, and recruit fewer offspring to the breeding population. These analyses thus suggest a causal role of local population density in explaining individual reproductive processes.
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Dogfish

D.W. Sims, V.J. Wearmouth, E.J. Southall, J.M. Hill, P. Moore, K. Rawlinson, N. Hutchinson, G.C. Budd, D. Righton, J.D. Metcalfe, J.P. Nash, and D. Morritt.
Hunt warm, rest cool: bioenergetic strategy underlying diel vertical migration of a benthic shark.
Journal of Animal Ecology 2006, **75**: 176-190.
Diel vertical migration (DVM) is a widespread phenomenon among marine and freshwater organisms and many studies have sought to understand its significance.
To investigate DVM in benthic predatory fish in the marine environment and to determine why it might occur, the authors tracked movements of adult male dogfish, *Scyliorhinus canicula*, by short- and long-term acoustic and archival telemetry. Movement studies were complemented with measurements of prey abundance and availability and thermal habitat within home ranges. A thermal choice experiment and energy budget modelling was used to investigate trade-offs between foraging and thermal habitat selection.
Male dogfish undertook normal DVM (nocturnal ascent) within relatively small home ranges (100 × 100 m) comprising along-bottom movements up submarine slopes from deeper, colder waters occupied during the day into warmer, shallow prey-rich areas above the thermocline at night. Few daytime vertical movements occurred. Levels of activity were higher during the night above the thermocline compared to below it during the day indicating they foraged in warm water and rested in colder depths.
A thermal choice experiment using environmentally realistic temperatures supported the field observation that dogfish positively avoided warmer water even when it was associated with greater food availability. Males in laboratory aquaria moved into warm water from a cooler refuge only to obtain food, and after food consumption they preferred to rest and digest in cooler water.
Modelling of energy budgets under different realistic thermal-choice scenarios indicated dogfish adopting a 'hunt warm - rest cool' strategy could lower daily energy costs by just over 4%. The author's results provide the first clear evidence that is consistent with the hypothesis that a benthic marine-fish predator utilizes DVM as an energy conservation strategy that increases bioenergetic efficiency.
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J.E. Orpwood, S.W. Griffiths and J.D. Armstrong.
Effects of food availability on temporal activity patterns and growth of Atlantic salmon.
Journal of Animal Ecology 2006, **75**: 677–685.
Patterns of sheltering and activity are of fundamental importance in the ecology of animals and in determining interactions among predators and prey. Balancing decreased mortality risk when sheltering with increased feeding rate when exposed is believed to be a key determinant of diel patterns of sheltering in many animals.
Despite lower foraging efficiency at night than during the day, Atlantic salmon, *Salmo salar*, parr are nocturnal during winter and at low summer temperatures. Nocturnal activity also occurs at warm water temperatures during summer, but little is known about the functional significance of this behaviour.
This study aimed to determine: (1) the preferred activity and shelter pattern of Atlantic salmon parr during warm summer months, and (2) their response to variations in food availability when balancing growth rate and mortality risk, as expressed through time out of shelter.
The authors found that time exposed from shelter was inversely related to food availability. Fish subject to high food availability were significantly less active during the day than those with restricted rations. However, food availability had no significant effect on the extent to which fish were active at night. There was no evidence of variation in growth rate with food availability.
Salmon were predominantly nocturnal at high ration levels, consistent with their previously reported behaviour during winter. Rather than switching to diurnal behaviour at high temperatures, as previously was supposed, it appears that the fish are diurnal only to the extent needed to sustain a growth rate, and this extent depends on food availability.
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S.L. Watwood, P.J.O. Miller, M. Johnson, P.T. Madsen and P.L. Tyack.
Deep-diving foraging behaviour of sperm whales (*Physeter macrocephalus*)
Journal of Animal Ecology 2006, **75**: 814–825.
The authors used digital tags to describe diving and vocal behaviour of sperm whales during 198 complete and partial foraging dives made by 37 individual sperm whales in the Atlantic Ocean, the Gulf of Mexico and the Ligurian Sea.
The average maximum depth of dive differed across the three regions and was 985 m, 644 m and 827 m, respectively. An average dive cycle consisted of a 45 min dive with a 9 min surface interval, with no significant differences among regions. On average, whales spent more than 72% of their time in foraging dive cycles.
Whales produced regular clicks for 81% of a dive and 64% of the descent phase. The occurrence of buzz vocalizations (also called 'creaks') as an indicator of the foraging phase of a dive, showed no difference in mean prey capture attempts, per dive, between regions. Sperm whales descended an average of 392 m from the start of regular clicking to the first buzz, which supports the hypothesis that regular clicks function as a long-range bio-sonar.
There were no significant differences in the duration of the foraging phase (28 min) or percentage of the dive duration in the foraging phase (62%) between the three regions, with an overall average proportion of time spent actively encountering prey. Whales maintained their time in the foraging phase by decreasing transit time for deeper foraging dives.
Similarity in foraging behaviour in the three regions and high diving efficiencies suggest that the success of sperm whales as mesopelagic predators is due, in part, to long-range echolocation of deep prey patches, efficient locomotion and a large aerobic capacity during diving.
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News in Brief

Government Fails to Act Over Lyme Bay

Defra is failing to protect the biodiversity-rich reefs of Lyme Bay. A considerable effort has been made by English Nature and Devon Wildlife Trusts to demonstrate the damage being done to one of the UK's only soft corals, the pink sea fan. Yet the government has ignored their advice to close off just 10.3% of the bay to stop destructive fisheries, and has instead called for even smaller voluntary closures to restrict scallop dredge boats. Scallop dredge fishing is known to be one of the most damaging of fishing activities and rare and threatened marine species are often taken as bycatch by towed and set-net fisheries on a daily basis. Not only are many of these species rare, but their growth rates are also very slow, with scientists suggesting that many diverse sponge communities can take between one and two decades to recover from the result of destructive fishing practices. Despite having the same legally protected status as the golden eagle, marine life such as the pink sea fan is only afforded paper protection and voluntary compromises because the public cannot see the damage that is being done.

Top 10 Most Wanted Aliens

The Environment Agency has released a top 10 most wanted list of exotic, invasive species that need to be contained and removed:

1. Japanese Knotweed - Plant
2. American Signal Crayfish - Crustacean
3. American Mink - Mammal
4. Giant Hogweed - Plant
5. Floating Pennywort - Plant
6. Himalayan Balsam - Plant
7. Australian Swamp Stonecrop- Plant
8. Chinese Mitten Crab - Crustacean
9. Parrots Feather - Plant
10. Topmouth Gudgeon - Fish

National Wildlife Trust Survey Shows Extent of Wetland Work

A recent survey of The Wildlife Trusts has shown that, with support from the Water for Wildlife (WfW) partnership, the partners have been able to achieve:

- Over 600 ha of wetlands maintained or restored
- Nearly 50 km of rivers protected or restored
- 1,344 water vole surveys
- 19,000 people participated in walks and talks

Other findings from the survey:

- 96% of Trusts thought that otter populations were stable or increasing
- 6% of Trusts thought that water vole populations were not present (8% in 2005)
- 58% of Trusts thought that water vole populations were declining (70% in 2005)

Quarries Help Wildlife Out of a Hole

The quarries that dot the English landscape could become safe havens for its rarest wildlife thanks to work by the RSPB. More than 400 square miles of the country has planning permission for mineral extraction. More than half are active and minerals firms are increasingly keen to see sites restored for wildlife after they have finished working them. To help make sure habitats created in that restoration are the best and most suitable for the area, the RSPB is developing a unique online guide to quarry restoration. The website, which is due to go online early next year, will be powered by a huge database of information about every mineral site in England, compiled at the RSPB's headquarters in Sandy, Bedfordshire. Mineral firms and planners will be able to 'zoom in' on individual sites and find out which habitats they are most suited to becoming. They will also be able to get advice on habitat creation, the costs involved and similar, successful projects elsewhere. The RSPB hopes that by using the website firms can turn what are currently holes in the ground into homes for some of the nation's scarcest habitats and creatures.

Big Brothers Help Corncrake Regain Toehold in English Countryside

A project to reintroduce the corncrake to England has met with its best success yet with four male corncrakes uttering their distinctive rasping 'crex-crex' calls from one small part of Cambridgeshire. This is the first time that such a strong chorus has been heard from this migratory bird in England for many decades. The corncrake has declined in England and much of Europe because of intensive farming methods. Three of the four returning birds were related and were among 78 chicks to be released last year at the RSPB's Nene Washes reserve, near Whittlesey, after being captive-bred at Whipsnade Wild Animal Park. The corncrake was once widespread across Britain and Ireland, but this elusive bird, which spends each winter in Africa, was forced out of much of its former range as fewer people and more machines cut the bird's grassland habitats. Before the project began in 2001, corncrakes were restricted in the UK to islands off the north and west coasts of Scotland, where intense conservation effort is helping to restore their numbers. The project, a partnership between RSPB, English Nature, Zoological Society of London, and Pensthorpe Conservation Trust, aims to re-introduce the corncrake to the Nene Washes. The wet grasslands of the Washes are being managed to provide returning corncrakes with optimal habitat for nesting. The project involves captive-rearing corncrake chicks and releasing them on site in the hope that they survive the perils of the journey to Africa to return the following spring to nest.

Decision on M6 Upgrade

Future improvements to the M6 between Birmingham and Manchester will not include the option of a tolled Expressway. The Highways Agency has carried out a detailed review of the option of building a new Expressway to run broadly parallel with the M6 between junctions 11a and 19, as an alternative to widening the existing M6 by one lane in each direction. The Expressway option would be more difficult to construct than initially believed and cannot be built more quickly than the widening, which the Highways Agency's work shows could be delivered by 2017. The Expressway would require 50% more land than the widening option, would cost some £3.5 billion (15% more), and its construction would introduce significant disruption to the existing M6. The decision has been welcomed by many local residents and environmental campaigners who prefer the widening option.

Community Woodland Groups Get Help Setting Up Own Websites

The Woodland Trust has created a new service for community woodland groups to enable them to create and manage their own websites to highlight their work, discuss projects and showcase good working practices. The Trust's Community Woodland Network has unveiled the so-called mini-web pages and is urging all like-minded groups to sign up and create their own personalised sites. It has been set up by the Woodland Trust to support woodland groups throughout the country with their invaluable work in managing and conserving woodland. The Network is also keen to help new groups that would like support in getting started and aims to help volunteers link with like-minded woodland groups and share information. To find out more go to www.woodland-trust.org.uk/communitywoodlandnetwork or e-mail the Community Woodland Network at communitywoodlandnetwork@woodland-trust.org.uk.

First Annual Reports for Wind Farms

The first annual reports published for North Hoyle and Scroby Sands offshore wind farms have revealed the following: enough clean energy produced to power almost 80,000 homes; more than a quarter of a million tonnes of greenhouse gas emissions saved; minimal impact on bird and sea life; a good safety record; and valuable lessons learned for the future development of a key industry. The first major wind farm to be built in British waters was North Hoyle, which is located off the North Wales coast between Rhyl and Prestatyn. This 30-turbine/60 MW project became fully operational in April 2004. The second, Scroby Sands is near Great Yarmouth in Norfolk and is also a 30-turbine/60 MW scheme. As well as a good record on the technical side, the wind farms have also received a positive response from the public. Surveys were carried out into residents' attitudes in Rhyl and Prestatyn before and after construction of North Hoyle. They showed a rise in support for the project from 62% to 73% once the wind farm was in place, with only 5% opposing the scheme. In addition, the Scroby Sands information centre had 35,000 visitors in its first year, illustrating the keen interest in renewable energy projects of this type.

EUROPEAN NEWS

Mosses Indicate Air Quality

The revised Guideline VDI 3957 Part 12 'Mapping of Diversity of Epiphytic Bryophytes as Indicators of Air Quality' has been published by the Commission of Air Pollution Prevention of VDI (Association of German Engineers) and DIN (German Institute of Standardisation) – Standards Committee KRdL. It describes a method of bio-indication that specifies the diversity of epiphytic mosses. Therefore, the frequency with which moss species are found on a defined part of the tree bark is determined. The observed frequency of occurrence of moss species is combined with the sensitivity data of the respective species. The procedure described in the Guideline is a quick, cost-effective method to outline zones of different air pollution. Due to their anatomy and physiology epiphytic mosses react particularly sensitively to air pollutants and have been in use as bio-indicators of air quality for decades. While concentration measurements provide only data on the amounts of individual air pollutants present in ambient air at the time of measurement, mosses provide insight into the combined effects of all biologically relevant environmental factors. In addition, they have the advantage that each species reacts with a different degree of sensitivity so that from the presence of certain species conclusions on ambient air quality can be drawn. The Guideline VDI 3957 Part 12 is available in English at the price of €62,20 from www.vdi-richtlinien.de or www.beuth.de.

Construction Begins on Huge Solar Plant in Portugal

Construction on what is to become the world's largest solar power station has begun in the Alentejo region of southern Portugal. The £40 million plant is being built near Serpa, 125 miles south of Lisbon, and will cover a 60-hectare south-facing hillside. 52,000 photovoltaic modules will produce enough electricity for 8,000 homes when production begins in January 2007. Portugal also has plans for other solar plants to counter a rise in carbon emissions.

Natura 2000 Network Making Progress

Significant progress has been achieved in implementing EU nature protection legislation in the ten new Member States but important gaps remain. Almost 11% of the territory of the new Member States taken as a whole is protected under the Birds Directive and over 12% has been proposed for protection under the Habitats Directive. However, the percentages range from less than 3% in Malta and 8% in Poland to more than 25% in Slovakia under the Birds Directive and from about 4% in Poland to more than 31% in Slovenia under the Habitats Directive. The EU's biodiversity was greatly enhanced by the 2004 accession of ten new Member States. It added 20 new habitat types and 178 species to those already protected under the Birds and Habitats Directives. Treasures such as the Bialowieza primeval forest in Poland with its European bison (*Bison bonasus*), large areas of puszta grasslands in Hungary, bogs and flower rich meadows with big populations of orchids - are now part of our common natural heritage.

Jellyfish Alert

Huge swarms of jellyfish have moved into the coastal waters of the Mediterranean Sea. Some beaches in Spain have been closed while Sicily and North Africa have also been affected. Over 30,000 people have been stung since the beginning of the summer. Hot, dry weather may be bringing the jellyfish closer to the shore, whilst over-fishing may be increasing jellyfish numbers. The coastal waters of the region are warmer and saltier than usual because of high temperatures and low river flow which means offshore waters are being washed closer to the coast. Global warming could mean that these conditions occur more frequently.

WORLD NEWS

Escaped GM Grass in US

A genetically modified form of a grass commonly grown on golf courses is worrying the US Department of Agriculture (USDA) enough that it is running its first full environmental impact assessment of a GM plant. The plant, creeping bentgrass (*Agrostis stolonifera*) carries a bacterial gene that makes it immune to the potent herbicide, glyphosate. The manufacturer is hoping the grass will provide a turf that makes it easier for golf course owners to manage their fairways and greens by letting them kill competing weedy grasses with glyphosate. The US Environmental Protection Agency's labs in Corvallis, Oregon, identified nine escapees out of 20,400 plants of various grass varieties sampled within a 4.8 km radius of the site where the bentgrass is being cultivated, the most distant found 3.8 km away. The team showed that the GM grass has spread both by pollinating non-GM plants to form hybrids, and by seed movement. Bentgrass is a perennial, so it will regrow year after year, whereas most GM crops - mainly soybeans, maize and canola (oilseed rape) - are annuals. Another worry is that unlike the other GM crops, bentgrass has many relatives in the US with which it can cross-breed or hybridise, potentially passing on the glyphosate-resistance gene to other species - with unpredictable results.

American Consumers Don't Care About 'Green' Products

A study in the US has shown that 58% of the general US population surveyed considers itself 'Not Green Interested'. These self-proclaimed 'non-green' individuals do not care about environmentally friendly practices, including recycling, corporate social responsibility, or natural and/or organic ingredients. 25% of the respondents consider themselves 'Green Interested', meaning that while this group is concerned about the environment, it is not active in its defense. The remaining 17% surveyed are 'Green Motivated', meaning that they feel it's very important for a company to be 'green'. The 'Green Motivated' individuals do base purchase decisions on whether or not a brand reflects 'green' behaviour in its packaging, ingredients and corporate actions. The study also showed that consumers don't understand 'green' when it comes to companies and brands – they may be interested in 'green', but can't identify it. 66% of the American population cannot identify the steps a company can take to make itself more 'green'. Additionally, the study reveals that while two out of three consumers cannot name a brand they consider to be 'green', there are differences between perception and reality on whIch companies are 'green'. To consumers, a 'green' brand uses technology that is environmentally friendly and uses natural and organic ingredients in its products. Brands placing emphasis on supporting environmentally responsible organisations or donating money to environmental causes, however, did not receive recognition as being 'green'.

US Study Finds Children Choose TV Over Trees

A Nature Conservancy funded study in the US has found that visits to US National Parks have been declining since 1987, after having risen for the previous 50 years. The study tested more than two dozen variables and found that video games, home movie rentals, going out to movies, Internet use, and rising fuel prices accounted for 98% of the decline in people visiting national parks. Other variables such as family income, aging of the population, a recent rise in foreign travel and park capacity were also tested but the correlations were very weak in comparison to home entertainment and fuel prices. Steve McCormick, President and CEO of The Nature Conservancy, noted that a way needs to be found to connect children with the special places and natural systems that sustain us all. He also added "*Achieving meaningful conservation in the 21st century takes tremendous commitment, innovation, and collaboration. Conservation is becoming increasingly more difficult as the pressure to develop natural areas becomes intensified, and we will be relying on the next generation to carry forth this very important work*". Could it be the same in the UK?

2008 Rolex Awards for Enterprise Launched

The Rolex Company is again asking for submissions for its biennial award for enterprise. This will be the 13th occasion that the awards have been presented since the first ceremony in 1978. The awards are open to anyone of any age, nationality or background whose innovative project meets the programme's originality, feasibility and potential impact criteria. Project areas comprise Science and Medicine, Technology and Innovation, Exploration and Discovery, the Environment, and Cultural Heritage. The five winners of the 2008 awards will each receive US$100,000, a specially inscribed gold Rolex chronometer and worldwide recognition of their work through international publicity and advertising campaigns. Five Associate Laureates will also be selected. The winners of the 2006 Rolex Awards will be announced at a ceremony in Singapore in October this year. For more information please visit www.rolexawards.com.

Prospective members of IEEM

IEEM is pleased to welcome applications for membership from the following:
If any existing member has any good reason to object to someone being admitted to the Institute, especially if this relates to compliance with the Code of Professional Conduct, they must inform the Executive Director by telephone or letter before 30 October, 2006. 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 directly by Council itself.

APPLICATIONS FOR FULL MEMBERSHIP
Dr Nicholas R. Betson, Miss Elizabeth K. Burrows, Mr Gregory H. Chamberlain, Dr Peter J. Cosgrove, Miss Nicola Faulks, Ms Melanie Findlay, Mr Peter Hadfield, Mr Aaron M. Hamblyn, Dr Nigel J. Harding, Mr Justin D. Hart, Ms Anne Harvey, Dr Barbra A. Harvie, Mr P. Leslie Hatton, Mr Matthew Hawking, Dr Ann E. Hill, Dr Juliet Hynes, Mr Andrew P.Jefferies, Mr John Kennedy, Miss Tamsin J. Kilner, Mr Alexander Laurie, Dr Stuart J. Otway, Ms Zara Paris, Mrs Amanda J. Proud, Miss Karen J. Shelley, Miss Natalie R. Smith, Mr David L. Sutton, Mrs Linda Swankie, Mr David Wakelin, Mr James J. Wallwork, Mr Robert H. Weston, Mr Paul C. Wilkinson, Ms Helen M. Williams, Mr Christopher J. Wood

APPLICATIONS FOR ASSOCIATE MEMBERSHIP
Mr David J. Andrews, Miss Caroline Bailey, Miss Lucy Baker, Mr Iain H. Bray, Mrs Joanne Bates, Miss Elisabeth Bradshaw, Mr Robert J. Broadbent, Dr Richard J. Burkmar, Mr Martyn D. Catlow, Mr John D. Crowder, Ms Primrose H. Duplessis, Miss Charlie K. Dwight, Miss Jessica Eades, Ms Zoe K. Falk, Miss Katie A. Finlinson, Miss Rebecca J. G. Floate, Mr Stephen J. Foot, Miss Louise A.C. Forder, Dr Sally E. Fraser, Mr Benjamin R. Gardner, Mr Jason Gillingham, Ms Andrea L. Gosse, Mr Nick Hall, Mrs Catherine Haynes, Miss Rebecca S. Harvey, Mr Eric Heath, Dr Alice F. Helyar, Miss Alexandra Hollands, Miss Gemma L. Howard, Miss Alison R. Ingleby, Mr Darren J. Ivey, Miss Sarah Jennings, Mr Robert J. Kirkham, Mr Terence C. Loughran, Mr Nicholas P. Masters, Miss Poppy J. McDonald, Mr Christopher J. Mitchell, Mr Gary P. Mock, Miss Leanne Moses, Mr Darryn Nash, Mr Matthew S. Oakley, Ms Lisa J. Palframan, Miss Huma R. Pearce, Miss Laura A. Penniston, Miss Elizabeth Powell, Mr Philip J. Rogers, Dr Daphne A. Roycroft, Miss Tessa C. Rutty, Miss Rosalind Salter, Mr Richard S. Smith, Mr Jonathan Steele, Mr Luke M. Stevens, Mr Ian M. Stewart, Mr James E.T. Streets, Dr John J. Sweeney, Miss Rebecca J. Sykes, Miss Lucy Taylor, Mr Daniel Watson, Mr Paul Whitby, Miss Jenny S. Whitcher, Mr Steven Whitcher, Miss Susan E. White, Mr Robert W. Whiteley, Miss Charlotte E.A. Widgery

ADMISSIONS
IEEM is very pleased to welcome the following new members:

FULL MEMBERS
Miss Jessica Arnold, Miss Nicola A. Barnfather, Mr John E. Black, Mr Wayne F. Butler, Miss Claire-Marie Cable, Mr David Cadman, Mr Mark H. Champion, Miss Jessica Colebrook, Mr James B. Cooke, Mr Philip H. Davidson, Miss Nancy Davies, Mrs Michelle L. Delafield, Mr David J. Denman, Dr Sue Dent, Mrs Frances C. Eley, Dr Noranne E. Ellis, Dr Gavin J. Fennessy, Mr James D. Fisher, Miss Georgina Hammond, Dr Rachel J. Holmes, Mr Paul R. Howden-Leach, Mr Rupert M. Johnson, Mr Mark G. July, Mr Andrew D. Law, Dr Michael G. Le Duc, Dr Declan J. Little, Mr Richard Mackay, Mrs Cheryl M. Marriott, Mr Riwilo Masulani, Miss Catherine E. Mowat, Dr Adrian C. Newton, Miss Chloe J. Palmer, Miss Delphine Pouget, Miss Alexis M.F. Pym, Mr Peter R. Quelch, Dr Nigel J. Reeve, Mrs Bernice Roberts, Mr Brian A. Spink, Mr Brian C.Y.Tam, Mr Craig S. Turner, Mrs Sophie J. Tweddle, Mr Steven Whitbread, Mrs Tamsin Wray-Williams

ASSOCIATE MEMBERS
Miss Phillippa L. Baron, Miss Rachel R. Bauld, Miss Lucy J. Bridgman, Miss Julia R. Brown, Mr Frank W. E. Burlton, Mr Andrew J. Charles, Miss Katherine Cooper, Mrs Susan K. Cooper, Miss Karen Couper, Miss Maria Di Monaco, Miss Claire Dinham, Miss Anna E. Dudley, Miss Lucy J. Emery, Ms Colette M. Fardal, Mr Christopher Farmer, Miss Emma K. Fawcett, Mr David Ferguson, Miss Sarah E. Fielding, Miss Peneope Foster, Mr Daniel Foster, Miss Laura Garrod, Mr Martyn J. Gest, Mr John F. Haddow, Mr William G. Haines, Miss Lorna I. Harris, Miss Adela G. Hepworth, Miss Megan L. Hooper, Miss Mererid Howells, Miss Gail E. Ireland, Miss Hayley Jack, Mrs Gaynor M. Jones-Jenkins, Mr Barrington G. Kaufmann-Wright, Dr Katherine D. Kelleher, Miss Rachel J. Kerr, Ms Stephanie Kiel, Mr Hing Kin Lee, Miss Rachel L. Mayor, Miss Catherine Meaden, Miss Rebecca J. Mills, Mr Fraser A. Milne, Mr Paul G. Moore, Miss Kerry M. Murton, Miss Marjorie Nadouce, Miss Victoria J. Naylor, Mr Paul K. Parsons, Miss Rachel M. Patemen, Mr James R. Pattenden, Dr Christopher J. Peppiatt, Miss Jodey Peyton, Mr Philip J. Pointon, Miss Katie H. Randall, Miss Caroline N. Roper, Miss Madeleine S. Ryan, Miss Betsabe Sanchez, Miss Rebecca Seaman, Mr Richard P. Sheane, Miss Samantha L. Shove, Miss Holly Smith, Miss Carol Smithard, Miss Mary Tibbett, Mr Andrew G. Upton, Dr Kate E. Vincent, Dr Emilie R. Wadsworth, Miss Alison M. Whalley, Mr Robert Williams, Mrs Jessica D. Wilson, Mr Adrian C. J. Wood

AFFILIATE MEMBERS
Mr Colin B. Austin, Mr Charles Bradshaw, Miss Janette Holliday, Mr Myles H.M. Menz, Miss Anna E. Sabota, Mr Alex Stephens, Mr Daniel W. Taylor

STUDENT MEMBERS
Mr John Ankers, Ms Claudia Bernardini, Mr Richard Blackburn, Miss Amy G. Buckenham, Ms Claire V. Dowding, Miss Lisa Durrant, Miss Emma S. Glister, Miss Laura Gore, Miss Jessica Hutchinson, Miss Deborah Jones, Ms Jane Kavanagh, Miss Helen L. Kokkinou, Mr Divine D. Kokoti, Miss Crystal Leung, Mr Richard Phillips, Mr Ben W.R. Ralston, Miss Emma Seabrook, Miss Nina Sheer, Miss Susan K. Smith, Mr Rory M. Swiderski, Miss Sasha A. Ufnowska, Mr Nick White, Miss Philippa J. Wood, Miss Nicola J. Wookey

The following have successfully upgraded their Membership from Associate to Full:
Mr Vilas Anthwal, Mr Robert Aquilina, Miss Lucy Arnold, Dr Ian J. Fairclough, Dr Mark Hampton, Mr James A. McCrory, Miss Rebecca Willetts

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

Centre for Alternative Technology: Further details about each course can be obtained from Joan Randle. Tel: 1654 705950, Fax: 01654 702782, www.cat.org.uk

Field Studies Council: For a copy of the FSC Courses 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, 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, www.btcv.org

2-3 October 2006. SEPA Conference: The State of Scotland's Environment. Edinburgh.
High-profile speakers and key players from Scotland, and beyond, will come together to debate the priorities, to forge new partnerships and to stimulate new ideas on how Scotland can take a more integrated approach to tackling environmental problems and 'Change Tomorrow Today'. www.sepa.org.uk

10 October 2006. Tropical deforestation: patterns, causes and consequences. London Zoo.
This scientific meeting will examine the global patterns and rates of tropical deforestation, and look at how the causes of deforestation differ among continents. The meeting will then look specifically at the Amazon. From 6.00 pm, free but booking essential. Contact joy.miller@zsl.org for more information.

12-13 October 2006. Recreational Hunting, Conservation and Rural Livelihoods: Science and Practice. London Zoo.
Presented by ZSL and IUCN this symposium aims to get behind the rhetoric and the suspicion and to examine objectively whether recreational hunting does genuinely contribute to wildlife conservation and rural livelihoods. Contact joy.miller@zsl.org for more information.

12-13 October 2006. One Step Beyond. The Eden Project, Cornwall.
Ecological Restoration and Creative Conservation in the United Kingdom. Explaining the importance of people in ecological restoration and highlighting 'the practical and inspirational ways in which individuals may become involved in making positive contributions to ecological restoration and incorporate the cultural elements' – a serious challenge for ecologists! Cost of registration £35.00. Further details are available from Fiona Tooke E-mail: ftooke@edenproject.com or tel: 01726 818770

16 October 2006. IEEM Irish Section Conference and AGM. Botanic Gardens, Dublin.
The Irish Geographic Section will be holding its Inaugural Conference and AGM on the topic of Habitat Restoration. For more information please contact mieke@eircom.net.

20 October 2006. Phenological Change, Causes and Consequences. Royal Botanic Garden Edinburgh.
RBGE/Association of Applied Biologists event. The meeting will provide a forum where researchers and interested amateurs in these topics and disciplines can meet, share knowledge and generate ideas for new projects that will provide a more secure foundation for making predictions about the consequences of climate change on the viability of wild and domesticated species of plants and animals. More information www.aab.org.uk.

26 October 2006. Earthwatch Institute Debate: Climate Change – The Truth on Trial. Royal Geographical Society, London. www.earthwatch.org

26 October 2006. Masterplanning. CBI Conference Centre, London WC1.
This Architects' Journal conference is for all professionals involved in the planning and designs of site, developments and regeneration projects. More information from constructconferences@emap.com

1-2 November 2006. Barn Owl Ecology, Survey and Signs. Ashburton, Devon.
Two one-day foundation courses designed for environmental professionals involved in Barn Owl survey work. www.barnowltrust.org.uk/

14-16 November 2006. Practicalities of Climate Change: Adaptation and Mitigation - IEEM Annual Conference and AGM. Cardiff, Wales.

23 November 2006. Earthwatch Institute Lecture: Sharks and Seals – At Risk in our Seas. Royal Geographical Society, London.
Two part lecture given by Colin Speedie (Britain's Basking Sharks) and Stephen Westcott (Seals of Southwest England). www.earthwatch.org

24-25 November 2006. Invasion Ecology of Mammals - Mammal Society Annual Autumn Symposium. London Zoo.
For further details see www.mammal.org.uk.

28-30 November 2006. Beyond Consultation - Good Practice in Stakeholder Participation. Imperial College, Wye Campus, Kent.
This three day training course will help participants: explore the benefits and challenges of involving stakeholders in decisions about the environment; understand the principles and concepts of stakeholder participation; learn practical facilitation skills and how to design a participation process. Details from training@dialoguematters.co.uk or www.dialoguematters.co.uk/training.htm

14-15 December 2006. Delivering Sustainability within Profitable Farming Systems. Studley Castle, Warwickshire.
Assessing if sustainability can be delivered within profitable farming systems. More information www.aab.org.uk.

18 April 2007. IEEM Spring Conference. London.

IEEM CPD Courses with places still available:

6 Oct	Introduction to NVC Survey (Guildford, Surrey)
11 Oct	Practical Action for Water Voles (Rye Meads, Hertfordshire)
19 Oct	Tree Identification (Redhill, Surrey)
1-3 Nov	Management Planning for Nature Conservation and Protected Areas (Snowdonia National Park, North Wales)
9 Nov	Coordinating Desktop Studies (Buxton, Derbyshire)
16 Nov	Winning Approaches - What do you need to do to convince a planning inspector? (Basingstoke, Hampshire)
13 Dec	Reedbeds, Bitterns and Biodiversity (Rye Meads, Hertfordshire)

Please visit www.ieem.net for more information