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Deer Vehicle Collisions in Britain - A Nationwide Issue

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Introduction

Collisions of vehicles with wild deer are a long-standing problem in Britain, known to cause around 300 human personal injury accidents and some human fatalities every year. The annual toll of deer killed or injured in such accidents was already estimated to have exceeded 30,000 by the mid-1990s (SGS, 1997), but ever rising volumes in road traffic combined with increased numbers and spread of several of our resident deer species make further escalation of this problem almost inevitable.

The Result of a DVC

The scale of even the above estimates may come as a surprise to some readers, but a similar picture emerges from national statistics for Deer-Vehicle-Collision (DVC) in other countries across Europe and North America. One of the earliest detailed studies of deer casualties in Germany during the 1960's suggested that even then 40,000 deer were killed there annually by road traffic (Ueckermann, 1964). That figure had risen to 120,000 by 1996, while more recent estimates suggest 140,000 DVCs on German roads each year (DJV, 2003). Switzerland, one of the few countries where all accidental mortality of game animals has been systematically collated for many decades, shows deer accidents there too have more than doubled from around 5000 in the 1970s to over 10,000 by the end of the century (annual game statistics - Bundesamt fuer Forstwesen). Wider review of available figures across other European countries shows >55,000 DVCs in Sweden, 35,000 in Austria, 10,000 in Denmark, 3500 in Norway, and led Groot-Bruinderink & Hazebroek (1996) to estimate that close to half a million deer are hit by vehicles in Western Europe every year, leading to over 300 human fatalities and 30,000 human injuries and with damage to property estimated in excess of £1 bn. In the United States the figures are equally horrific, with estimates ranging upward of 500,000 to 726,000 deer crashes annually (Romin and Bissonette, 1996; Conover *et al.* 1995), leading to over 220 human fatalities annually; and in some of the worst affected States - such as Michigan and Wisconsin where 65,000 and 22,000 DVCs are reported annually - these make up over 15% of all vehicle accidents (www.deercrash.com).

Cause for concern

Until recently accurate information on the extent and distribution of the problem in Britain has been lacking; already what is clear is that deer related accidents do present a major cause for concern both in terms of road safety and animal welfare.

From a road safety point of view, hitting a deer may be expected to pose a heightened risk compared to collisions with other animals such as badgers, foxes or rabbits which are also commonly encountered on roads in this country. Further accidents occur through increased tendency of drivers to swerve to try and avoid hitting an animal depending on its size. This remains true not only in relation to live animals darting across the road, but also where animal carcasses remain on the carriageway having been hit by earlier traffic.

DVC and Vehicle Damage

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Editorial

Challenges in Prospect

The much publicised document, **Securing the Future – the UK's shared framework for sustainable development**, was launched in London on Monday, 7th March. Heading the Defra contingent were Margaret Becket and Elliot Morley. It is also a joint document with the Scottish Executive, the Welsh Assembly and the Northern Ireland Office which gives it quite some clout.

The publication is timely because one of the hurdles which aspirant Chartered Environmentalists have to cross is to explain what they understand by sustainability. Easy you may say and that's what ecologists do all the time. Being close to the subject it is easy to forget that the concept is also about engaging with society, social justice and economic equity so there is a real challenge for ecologists to look over the parapet and engage with the wider world. I ought to say at this point that in reviewing a number of SocEnv applications, there is something of a tendency by IEEM members not to recognise the breadth of this concept.

Securing the future does indeed embrace the broad concept of sustainable development with the environmental, social and economic aspects clearly laid out. There is much in this which IEEM members would welcome. One of the guiding principles is using Science responsibly – ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainly (through the precautionary principle) as well as public attitudes and values.

There is a series of no less than 68 UK Government Strategy indicators some of which require measures to be developed, the main ecological ones being – greenhouse gas emissions, bird populations, biodiversity conservation, farming and environmental stewardship, land use, fish stocks, ecological impacts of air pollution, river quality and finally environmental equality.

Also significant is a series of issues for the UK government to develop in an international context. These include the commitment to halt biodiversity loss by 2010, a network of marine protected areas by 2012 and restoration of depleted fish stocks by 2015.

Another interesting development on the horizon and due for adoption by the British Government and other EU Member States in 2007 is the Environmental Liability Directive. This will require all those causing damage -defined as anything that has a significant adverse effect upon reaching or maintaining favourable conservation status for species and natural habitat types protected under EU legislation – to return the environment as a whole to baseline condition. Well, what may you ask is favourable condition? How is the damage assessed and how is a return to baseline condition going to be achieved? Somehow I sense even more employment prospects for ecologists.

Jim Thompson

This was indeed confirmed recently through an analysis of road accidents involving any animals (excluding dogs) across a sample of 14 English counties (Langbein, 2003), where among a sample of 1450 Personal injury accident records noting animals as a 'carriageway hazard', 603 were found to be due to wild mammals (mainly deer, fox, badger, and lagomorphs), 558 due to domesticated animals and birds (cows, sheep, ponies, and incl. pheasants), while 290 were noted merely as an 'animal' on the road. For those with 'wild' mammals, close to 50% concerned deer, with rather fewer associated with rabbits and hares (21%), foxes (20%) and badgers (9%). Human injury accidents are however, merely the (mostly costly) tip of the ice-berg, with most vehicles involved in accidents with deer suffering some damage ranging from minor dents to total write-offs; extrapolation of insurance claims data provided by Fortis-Group (holding approximately 4 - 5% of the private vehicle motor insurance market), suggests that annual car repair costs in the UK resulting from DVCs alone exceed £11M. (Langbein, 2003).

From the deer welfare point of view, numerous deer hit by vehicles are not killed outright, but may suffer for prolonged periods until suitably qualified persons can be called to attend. The RSPCA alone is called to assist with over 1500 live deer road casualties in England, and thousands of others are dealt with by individual deer stalkers, vets, wildlife rescue organizations or other competent people police are able to call on when faced with such accidents. In the vast majority of cases the severity of injuries suffered by the deer make dispatch at the roadside – most commonly with a firearm or via lethal injection - the only humane option after a traffic accident, though each raises still further issues of public safety and environmentally safe disposal of carcasses, not to mention the distraught drivers and passengers unfortunate enough to have hit the deer who, feeling responsible, may not wish the animal to be destroyed. Besides this 'individual' welfare aspect, data from Continental Europe suggest that road traffic accidents may result in the death of up to 10% of the estimated spring population of some species each year; such 'cull' by motor vehicle is not only inhumane but of course completely unselective.

National Deer Collisions Database Project

In the UK, as in many other countries, there is at present no legal requirement to report collisions with non-domestic animals to any authority, nor indeed for police to maintain detailed records of such collisions even when they are reported, except in cases of accidents leading also to human injury. Other potential data sources for nationwide assessment of the true scale of the problem, such as major motor insurance companies have also (with one or two notable exceptions) tended not to log 'animal related' collisions in ways enabling separate retrieval of information on numbers of claims relating to deer or other types of animals. This lack of accurate records for DVCs clearly poses a major handicap to development of effective management and was highlighted in an initial nationwide assessment undertaken for the Highways Agency in 1997 (ed. Smith & Langbein, SGS Environment, 1998) as well as in a subsequent independent survey commissioned by the Deer Commission for Scotland in 2000 (Staines, Langbein, and Putman, 2001), As a consequence, the National Deer Collisions Project was launched in January 2003 to collate information on as high a proportion as possible of DVCs occurring throughout England, Wales and Scotland for two to three years, and initiate research into the effectiveness of various, different preventative measures at the roadside.

The key objectives of the project are:

- To assess the true scale and geographical distribution of the problem within mainland UK;
- To identify local deer accident black spots where future mitigation efforts should be targeted;
- To investigate key risk factors in order to help predict future problem areas, and identify road design and road management practices which tend to contribute to increased accident risk;
- To assess the effectiveness of different measures employed to reduce animal road kills;
- To increase public awareness of deer-related traffic collisions and how to avoid them.

The project is administered via The Deer Initiative (a broad partnership of statutory, voluntary and private organisations committed to delivery of a sustainable deer population in England and Wales) on behalf of the Highways Agency and Scottish Executive. They have provided lead funding for the project, together with also the National Forest Company, Woodland Trust, and The Deer Study & Resource Centre.

Information on deer related accidents and/or simply dates and locations of any dead deer seen at the roadside is being gathered from a wide range of sources, including Trunk road and local authority roads cleansing departments, police, county road safety teams, deer managers, RSPCA/SSPCA, Forestry Commission rangers, vets, other wildlife rescue organisations, insurance companies, scientists naturalists and many others – and including hopefully, increasing numbers of Ecological Consultants or other members of IEEM. Records can also be submitted by anyone direct to the project via a dedicated form on the project web-site www.deercollisions.co.uk.

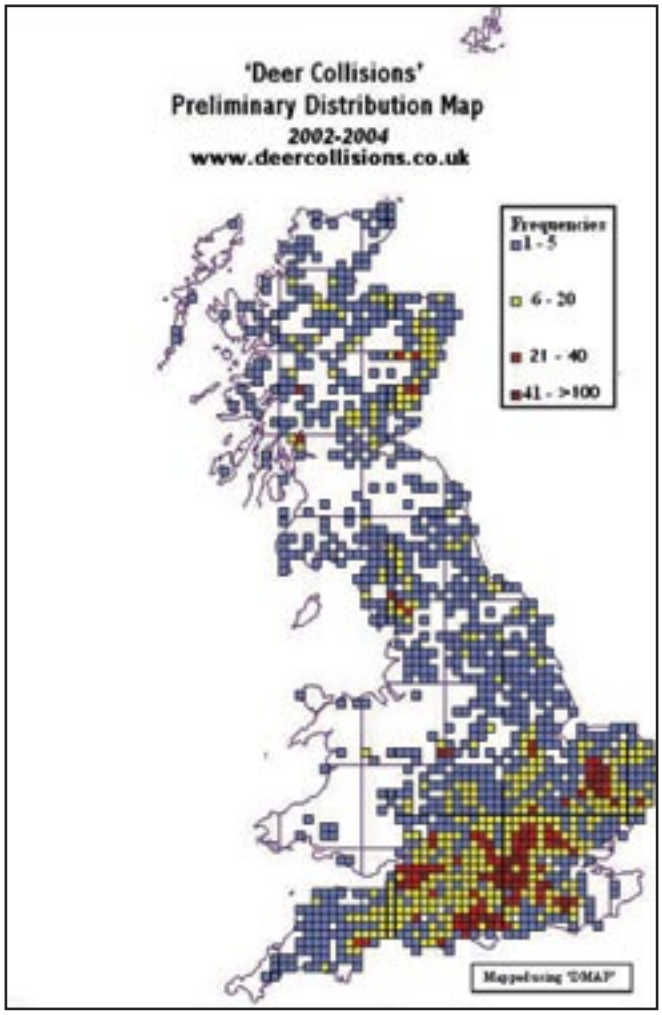

Figure 1. The distribution of reported DVCs in with in Britain.

Not only a rural issue

During the first 18 months of the project, records on over 18,000 different deer-vehicle collisions or deer found dead at roadsides since January 2000 have already been submitted to the study, with well over half of these relating to incidents occurring during 2003 & 2004.

This does not represent an increase in accident rate of that period – merely an increasing capture rate of accident records by our database, as we recruit increasing numbers of information sources. Data for 2000-2002 represent past data we have also been able to obtain from some sources, rather than the more stratified data collection attempted from the commencement of the Deer Collisions Project itself.

Even the initial year of the current project had always been planned as a period over which to raise awareness about the project and establish the necessary data-collection networks and thus was not expected to return comprehensive data and figures available still represent a low percentage of the full likely toll of casualties.

Although data-collection will remain on-going (at the very least to the end of 2005), initial results already show the emergence of regional patterns. Preliminary mapping of some 15,400 records received to date with sufficient location details (Figure 1) demonstrates how very widespread DVCs are throughout most parts of mainland Britain. The filled squares on the map show all those 10km Ordnance Survey grid squares for which at least some post-2000 incidents have been submitted. The greatest concentration of records in Scotland comes from the northeast and the Highlands. However, while over half of all deer in Britain occur within Scotland, the highest concentrations of DVCs in fact occur in southern England, where vastly higher volumes of traffic coincide with high levels of deer density and especially so within the well-wooded commuter-belt areas around Greater London, the Home Counties and Hampshire. Relatively high DVC numbers have also been reported so far from East Anglia and Cumbria.

To put these numbers into a more local perspective, it is worth noting that more than 250 deer carcasses are uplifted annually by council road cleansing teams alone in individual counties such as Aberdeenshire and Hampshire (during 2003); while many others are dealt with by RSPCA/SSPCA, individual stalkers, vets and others. And even then, figures available at best relate only to those incidents where requests were made to attend to remove a carcass or assist with injured deer.

Deer species and other factors

While the species of deer involved is only known in a proportion of all records submitted (depending on source type), preliminary inspection of the data suggests that in England roe, muntjac and fallow each contribute some 30% of all incidents; though in Scotland roe make up closer to two-thirds of all deer hit, with most of the remainder relating to red deer. Although some accidents occur throughout the year, a pronounced late-autumn peak is apparent in numbers of fallow, red, sika, and to a lesser extent of muntjac, hit by vehicles during October and November. This is likely to relate in part to autumn rutting activity of the three larger species, and in part as at this time peak daily traffic flows co-incident with peak times of deer movements around dawn and dusk. By contrast, only accidents with roe deer show a very distinct peak during April and May, possibly related to dispersal movements of sub-adult roe and does around calving time. Such patterns suggest that there could be some benefit in seasonal enhancement of warning signage or other preventative measures. However, aside from such ecological relationships, of greater interest may be what features of road-type, road design, roadside habitat and other factors – which might be more susceptible to management - are associated with increased accident risk. Once well-stratified data are available and fully verified for a number of years, it will be possible to interrogate the database in greater detail to explore factors associated with heightened risk of DVCs and implications for management and mitigation design. It is hoped to use the information to build up a geographical information system (GIS) showing areas with high risk of DVCs and others of relatively lower risk, to aid decision-making by trunk road engineers and local authority road departments regarding the need for and targeting of preventative measures.

What can be done to reduce Deer Vehicle Collisons?

Although the main objective of the current project is to develop a well stratified, nation-wide system for collection of standardised information on deer related RTAs throughout mainland UK, we do not merely seek to get a handle on the actual number of incidents occurring or assess the distribution and true scale of the problem. As well as attempting to understand the factors influencing accident risk, a further objective is to explore the effectiveness of different measures which may be employed to reduce accident risk.

So far some small trials have been initiated, including one with Suffolk County Council to investigate the potential for using rumble strips and improved signage to reduce DVCs in known black-spots (Wilson & Langbein, 2004). Other parallel work is underway to monitor the effectiveness of recently installed deer fencing and use by deer of underpasses and bridges across the new A120 in Essex. It is hoped that it will be possible to mount other trials in the near future with interactive, driver and/or animal-activated road signage to increase awareness of risk of DVCs in known black-spots. While that remains for the future, for now we offer below a broader review of the wide range of options which may be available to help reduce DVCs – even though in many cases, evidence of the actual effectiveness of the differing methods remains rather sparse or inconclusive.

From the outset, we must stress that there is no universal solution to the problem, but that different measures are more or less suited to different circumstances, and any mitigation programme must be tailored to the precise local situation. In the present article we can clearly offer only the briefest of introductions, based on a more detailed review undertaken for the Deer Commission for Scotland in 2004 (Putman, Langbein and Staines, 2004; and available on-line at www.deercollisions.co.uk).

Attempts at reducing the frequency or severity of deer-vehicle collisions may broadly be considered under a number of different headings:

i) Preventing, or controlling crossing, by the use of highway fencing, roadside wildlife warning reflectors, reductions in local deer population density, and less conventional methods such as chemical fences or the fitting of warning whistles to vehicles.

ii) Increasing driver awareness, through the use of various driver warning systems – whether through the use of fixed signage, or signage responsive to driver speed, or the actual presence of deer on the roadside.

iii) Provision of safer crossing places for deer by the installation of dedicated overpasses or underpasses, by modification of existing structures for joint use, or by the creation of designated 'cross-walks' across the carriageway itself.

The need for Preventative measures

Preventing or 'Controlling' crossing

High tensile roadside fencing is, and is likely to remain the primary method used to try and reduce road-crossings and resultant accidents at identified sites of high risk. However such fencing must be of adequate specification (height/mesh size) for the deer species present and be designed not with the expectation, or aim, of attempting to prevent road-crossings altogether, but rather to channel animals to cross elsewhere. Long lengths of complete barrier fencing to prevent all road-crossings are rarely justifiable, both because of high cost of installation and long-term maintenance, and the likelihood that they will prove ineffective due to some animals eventually forcing the fence to cross roadways (with the added risk that they may then become trapped within the carriageway, unable to escape). At the very least, where effective as a total barrier to movement such fencing causes fragmentation and isolation of previously continuous populations of deer and other larger wildlife.

Roadside wildlife-warning reflectors are also designed not to stop animal movements across roads, but to delay these to times when there is no traffic on the carriageway. Working on the principle that light from approaching headlights is reflected onto the verge to provide a flash warning, or continuous visual barrier (depending on reflector type and deployment) they are designed to alert deer to oncoming traffic at night. In practice, since they rely on reflected light from approaching headlights, they can only be effective when lights are in use. Since in addition, they are designed not to prevent crossing, but delay it until the road is clear, they can also only hope to be effective on roads of low traffic volume, where there are adequate gaps in the traffic to allow animals to cross, and lesser likelihood of habituation by deer to the light barrier created. Despite these obvious constraints, these reflectors are amongst the most common form of mitigation deployed in the UK - and often in the most inappropriate situations – because they are of comparatively low cost, and because their installation satisfies the need to be seen to be doing something (however ineffective!). In fact, there remains considerable uncertainty about the effectiveness of such reflectors. Early results from a recent trial in Germany of a newly developed type of reflectors incorporating an auditory deterrent as well, suggest significant reductions in DVCs have been achieved (German Ministry of Industry and Transport web-site, 2005). However, the majority of published scientific research in both Europe and North America indicate no or only short-term reductions in accident rates (for review see Putman *et al*. 2004).

'Chemical fences' (repellent chemicals encapsulated in slow release organic foam and applied to roadside posts or trees) have also been trialled in Germany, with claims by the manufacturers of some efficacy in reducing the frequency of deer-vehicle collisions. (Kerzel and Kirchberger, 1993). More detailed assessment showed that although roadkills were reduced by 30-80 % within the test sections, accidents outside the trial areas actually rose – suggesting that the fences merely displaced crossings to other, equally unsuitable locations (Lebersorger,1993). Further new similar olfactory products are being marketed by various companies, though much more information is needed to assess true effectiveness as well as maintenance requirements and costs.

Roadside Warning Reflectors

Car-mounted warning whistles. Several commercial companies are offering a device for attachment directly to the front of a motor vehicle which emits a high frequency whistle claimed to be a deterrent to deer or other roadside wildlife. In the only formal study undertaken of the response of deer to such air-activated whistles, deer showed no behavioural response to suggest acknowledgement or avoidance of vehicles equipped with such devices (Romin and Dalton, 1992), nor could any reduction in the number of deer-vehicle collisions be demonstrated. Indeed a separate study of many of the products which are available commercially, established that the sound emitted was at the limits or outside the auditory range for deer, and/or inaudible over the general traffic noise such as tyres on tarmac (Scheifele *et al*.,1998). In any event, such devices are likely to lead to a reduction in accident frequencies only if fitted to the vast majority of vehicles using the road network.

Reductions of deer density.

Some published studies have now been able to demonstrate a relationship between the frequency of deer-vehicle collisions and local deer densities, which does suggests that a general reduction of deer density, in association with other mitigation techniques, may help to reduce accident frequencies (e.g. Schwabe *et al*. 2002, Rondeau & Conrad, 2003). It is patently clear that there must exist some relationship between deer numbers and accident frequency. Despite this, formal studies of the effectiveness of a local reduction in deer numbers are few and contradictory. While Jenks *et al.*, (1993) Danielson and Hubbard (1998), Jones *et al.*, (2002) reported that a decrease in deer numbers in their study areas resulted in a corresponding reduction in the number of deer-vehicle collisions, Waring *et al*., (1991), Doerr *et al*., (2001) found that deer-vehicle collisions did not decline even after significant decreases in local deer population density (for refs. see Putman *et al.,* 2004). Any such relationship is probably not linear, and so many other factors may be important in determining the actual level of accident risk. Manipulation of deer numbers may not in practice achieve much of a response; not least as any localised reductions in densities may rapidly be replaced by immigration of animals from the wider surrounding area. Recent assessment of influence of habitat fragmentation on animal road-kills in Sweden (Seiler, 2004) also concludes that while quite clearly at a regional basis a large scale reduction in deer density is bound to reduce overall numbers of DVCs, at a more local scale at which culls would generally occur, several other factors become increasingly (more) important than density, including habitat connectivity, safe crossing areas and traffic flow.

Vegetation Management

Vegetation Management – another, perhaps obvious, conclusion from our own analyses and various other authors, is that risk of accidents is greatly increased where dense vegetation comes right down to the roadway. Deer, especially the smaller species such as roe and muntjac, favour scrubby areas for the food and shelter that they offer and so are inclined to come closer to the roadway. At the same time, the 'advance warning' that drivers may get of deer near the road is reduced by screening vegetation, whilst the visibility to the deer themselves of approaching traffic is also reduced.

Removal of scrub and woodland from a margin at the road edge may have benefits in increasing driver awareness of deer and vice versa (e.g Waring *et al*., 1991). However, major clearance of woodland from large stretches of road verge would be detrimental to other environmental interests and is likely only to be justifiable in particular black-spots. The method and timing of removal of roadside vegetation may also be critical, as the subsequent re-growth of young shoots within cut-over areas may become attractive for foraging deer at certain times of the year (Rea, 2003).

Increasing driver awareness

Deer warning road signs are the most frequently used measure to reduce deer-vehicle accidents. No evidence exists that these standard highway signs actually help at all in reducing DVCs. It is likely that they will be of benefit only if erected solely on approaches to known regular crossing points, where the message will be reinforced by a high proportion of drivers having actual experience of seeing deer cross near that point. In practice, warning signs are relatively rarely so precisely targeted and usually, more generally alert drivers to increased probability of deer on the road ahead over a stretch of several miles.

Dynamic signage.

Various suggestions have been made to increase the effectiveness of such signs. Driver habituation might be reduced where signs are only exposed at particular times or seasons where accidents are known to be more frequent. Alternatively, lighted signs might be illuminated only if vehicle speeds in known problem areas exceed some (advertised) threshold level, or specifically when large animals approach the roadway. Such 'dynamic electronic signage' systems have now been tested in several areas in the US and in Europe and do appear to have good potential (e.g. Huijser and McGowen, 2003). Costs of animal-activated systems, which are mostly based on either radar or heat-sensing infra-red detection of animals near the carriageway to trigger illumination of a digital road signs, tend to be relatively high (£ 50 to 75 K). Cost/benefit studies are much needed to look into the relative effectiveness of such animal-activated signs, compared to cheaper vehicle activated signage. The latter type of electronic signs are designed and already in widespread use as traffic calming in urban and rural accident black-spots, through displaying real-time speed of on-coming vehicles to alert drivers to their speed and encourage safer driving. Their installation in areas of high deer collision risk would seem well worth trialling.

Safer crossing points

As noted above, highway deer fencing is at its most effective if it seeks not to prevent all animals crossing the road, but to direct them to safer crossing points.

On roads carrying high volumes of traffic, such crossings may include purpose built wildlife underpasses or 'green' bridges, as are now increasingly installed in new-built roads in continental Europe to preserve or increase connectivity of wildlife habitats fragmented by roads (see COST, 341). The ideal dimensions and high associated costs of such structures if designed to maximise usage by animals including the larger deer species (from 15 to over 40m wide) will only rarely be possible to justify through predictable savings to the economy via enhanced road safety and reduced animal collisions alone; and these may generally thus only be a viable option where other multiple environmental and conservation benefits will arise.

Safe Crossing Point in Use.

However, in cases where the primary concern is road safety, ratherthan enabling free interchange of deer from populations resident to either side of the road, then adaptation of other structures such as farm accommodation bridges, viaducts, or cattle-creeps may help to provide a 'bolt-hole' for those deer determined to cross and alleviate pressure from fences. The most likely types of structures to be used by deer will be bridges or underpasses already close to some concealing cover, and/or this may be further enhanced through planting and by provision of deer-fencing to funnel animal movements towards the passage. A good example how even large wild deer may become accustomed to using such structures is shown in the photograph above taken from recent video footage filmed by us on a narrow (4m) bridge over the six-lane wide M25 London orbital road. Deer use this bridge and a number of other structures not only at night but sometimes even during full-daylight and peak traffic flowing beneath.

Finally, on non-trunk roads of relatively low traffic volume/speed, consideration may given to use fencing to deter deer from crossing in areas of poorest visibility (such as at corners or blind summits), but guiding them to areas where it is safer to cross the carriageway or even guiding them to specially-constructed 'cross-walks' i.e. locations where animals may actually cross on the carriageway surface, but in well-delimited and well-signposted locations, thus limiting crossing to just a few defined areas of good visibility and where proper warning can be given(e.g. Lehnert and Bissonette, 1997).

In offering the above review and general recommendations of what may be the most effective measures, we would emphasise that this represents merely our best current advice. Due to a degree of context-related variability in the effectiveness and cost-effectiveness of various measures, actual mitigation will be dependent on local conditions. It is clearly crucial that each mitigation scheme should be based on good quality survey information, and tailored to the particular local situation and identified deer movement patterns.

Conclusion

Concern in preventing collisions between road traffic and deer (or other wildlife) has in the past often tended to be treated foremostly as an animal welfare issue and funding allocations to address this

have tended to be minimal. It is becoming increasingly clear however, that in addition to the animal welfare implications and the effects of roadkill on population size of a number of species, there are also very real major costs to the economy. Human injury RTAs alone, involving deer, are estimated to incur over £40m to the UK economy annually, with damage to vehicles conservatively put a further £11m. Greater consideration and expenditure on measures to reduce deer and other animal road casualties therefore seems well justified not merely for ecological reasons, but also based on substantial potential savings and benefits through enhanced road safety.

The National Deer Collisions Project remains very much 'work-in-progress' and further submissions of records from anyone with information on deer road kills or related accidents are still required throughout 2005/6. A date for incidents is usually essential to identify potential duplication, together with an OS grid reference (remembering to give the Easting before Northing to avoid too many deer collisions being logged in the sea!) Alternatively, a simple description of the location, such as two miles west of [place] on the [road/number] can be used with the date. The more information provided the better – such as the species of deer, roadside habitat, time of day, mitigation measures present and so on. Records can be submitted online via the project website and may include any incidents, even of just deer carcasses seen by the roadside. There are procedures in place to identify possible duplicate records, and it is important not to assume that someone else will already have reported it. For contact details and further information see the project web-site www.deercollisions.co.uk or mail us at info@deercollisions.co.uk .

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New Articles Needed

Articles for *In Practice* are always needed.

Each page takes about 1,200 words and papers are welcome up to 4 pages, preferable in 1-page units.

It helps to have articles with good quality illustrations, photos or slides.

We reserve the right to edit or not to publish but most IEEM members who have submitted articles to date have had them published.

A Case Study Of A Great Crested Newt Mitigation Project in Cheshire, Northwest England

Saffra Kelley, CEnv, MIEEM

Plate 1. Pond 6.1 prior to the vegetation clearance of floating sweet grass in winter 2002/2003.

Introduction and History

This article presents a case study of a great crested newt (GCN) mitigation scheme in Cheshire, Northwest England, and subsequent long-term monitoring of the population. The Hole House Gas Storage Project is adjacent to an existing brinefield operation and a gas pipeline forming part of the British Gas TransCo national grid. The site is located at Warmingham in Cheshire, midway between Crewe and Middlewich.

The project consists of creating underground cavities in a controlled solution mining operation and subsequently utilising the cavities for the storage of natural gas. In 1995 an Environmental Statement was produced for the project, which raised the issue of GCN in the ponds present on site. Cheshire Wildlife Trust (CWT) was asked to visit the site and upon surveying the ponds, using netting and egg searching techniques, found great crested newt eggs in every pond except one (pond 2).

Penny Anderson Associates (PAA) were commissioned to provide advice with regard to GCN and prepare a mitigation strategy for the translocation of amphibians from the development areas. The 1995 survey indicated low egg numbers, and only a single adult, indicating a low-medium population, which may extend to ponds occurring just outside the development site.

The proposed development was predicted to have a low ecological impact. It was phased over a number of years, consisting mainly of a network of small access tracks and pipelines, as the main purpose of the development remains underground. Once each phase is in place, the land continues to function as a managed farm, and so conditions for amphibians and other wildlife are unlikely to change significantly during or after the constructional phases. No ponds were lost, so the breeding habitat was secured, and less than 5% of terrestrial habitat was lost.

A mitigation strategy was developed which allowed the continued use of the site by the development and yet provided protection for GCN, and other amphibians, in situ. Amphibian population monitoring commenced in 1999 and has continued to date with the exception of 2000 and 2001.

In 1995 an additional pond and hibernacula were created close to pond 6 in preparation for Phase 1 trapping in early 1996. A trapping period of 16 weeks (February to April) yielded only four amphibians – two GCN, a common frog and a common toad. The trapping was repeated in spring 1997 for a 54-day trapping period and no amphibians were captured. During spring 1998 Phases 2 and 3 were trapped and 99 amphibians were captured with 66 (66%) of these being GCN. The numbers released next to each pond is shown on Table 1.

Habitat improvements such as vegetation clearance (on pond 6.1) and desilting and deepening of pond 6 were undertaken during winter 2002/2003. Small scale redistribution of soft rush, *Juncus effusus* from the central area of pond 6 to the edges helped improve the pond structure with regard to GCN courtship and breeding requirements by created a larger area of continuous open water (see Plates 1 to 5).

Plate 2. Pond 6.1 in spring 2004 showing a marked improvement with a varied pond flora developing including abundant broad-leaved pond weed.

Pond Descriptions

Pond 1

This is a large pond (c.130m circumference) with abundant common reedmace (*Typha latifolia*) and willow (*Salix sp.*) occurring at the west end. Two pedunculate oak (*Quercus robur*) trees are also present at the west end. The eastern end of the pond is dominated by soft rush with other species occurring including common water-starwort (*Callitriche stagnalis*), celery-leaved buttercup (*Ranunculus sceleratus*), great willowherb (*Epilobium hirsutum*), ivy-leaved duckweed (*Lemna trisulca*), gipsywort (*Lycopus europaeus*) and branched bur-reed (*Sparganium erectum*).

A single nine-spined stickleback (*Pungitius pungitius*) was captured in a bottle-trap in pond 1 in 2003 but no fish had been recorded previously to this or since. GCN eggs and a heavily gravid female GCN were recorded, confirming breeding. A maximum of 11 GCN were captured in bottle traps. GCN have been detected in pond 1 consistently since monitoring commenced in 1999.

Pond 2

This pond is very shaded with a dense hedgerow running around most of its perimeter. There is a deep silt layer and the water depth is over 1m in the centre. The perimeter is approximately 86m. Marginal plants include bittersweet (*Solanum dulcamara*), broad-leaved dock (*Rumex obtusifolius*), common water-starwort, brooklime (*Veronica beccabunga*), gipsywort and water forget-me-not (*Myosotis scorpioides*).

No fish were captured in bottle traps in 2004 and a maximum of 4 GCN were recorded. Fish had been recorded during previous years but it is speculated may have perished due to the dry summer of 2003. GCN have not been recorded in this pond since the 1999 monitoring visit. GCN eggs were recorded on celery-leaved buttercup. These GCN are likely to have colonised from pond 3, which has a thriving GCN population and is contained within the same fencing compound as pond 2.

Plate 3. Pond 6 prior to vegetation clearance, desilting and deepening in winter 2002/2003.

Pond 3

Pond 3 is divided in two by a spit of land down the centre. Hawthorn (*Crataegus monogyna*) and ash (*Fraxinus excelsior*) shade part of the pond but other areas are relatively open. Abundant marginal vegetation is present and includes species such as common water-starwort, water forget-me-not, soft rush, branched bur-reed, brooklime, water plantain (*Alisma plantago*) and bittersweet. The pond is large (c.300m circumference) and over 1m deep in the middle.

A maximum of 4 GCN were recorded and eggs were found on water forget-me-not and fool's watercress (*Apium nodosum*). The GCN population in this pond has remained stable since 2002 (no GCN were recorded during the 1999 survey).

Pond 4

Pond 4 is dominated by marestail (*Hippuris vulgaris*) but still has some water plantain, soft rush, water forget-me-not and gipsywort occurring. The pond is large (c.100m circumference) and has gently sloping banks. Nine-spined sticklebacks were again recorded in the pond as they have been since 1999. No GCN have been recorded in this pond during monitoring.

Pond 5

This pond is large (c.100m) and contains species such as soft rush, common water-starwort, water plantain, broad-leaved pondweed (*Potamogeton natans*), curled dock (*Rumex crispus*), bittersweet, branched bur-reed and hard rush (*Juncus inflexus*). A hedgerow containing hawthorn, elder (*Sambucus nigra*) and willow is present along one side of the pond.

GCN eggs were found on broad-leaved pondweed and a maximum count of 3 GCN was made. Two nine-spined sticklebacks were recorded, which is the first time any fish have been found in this pond. Monitoring in 2005 will help to decide on any remedial action, if required.

Pond 6

Pond 6 is shallow (less than 1m in depth) with a proportion of the pond heavily shaded by willow. The shaded area has virtually no marginal vegetation and is heavily silted due to leaf fall. Since the pond was cleared of encroaching vegetation in 2002/2003 the open water area in the centre has increased in depth and is now clear of vegetation (see plates 3 and 4). Around the edges abundant marginal vegetation is present such as floating sweet-grass (*Glyceria fluitans*), creeping bent (*Agrostis stolonifera*), soft rush, cuckooflower (*Cardamine pratensis*), bittersweet, water forget-me-not, celery-leaved buttercup, water plantain, yellow-cress (*Rorippa* spp.), branched bur-reed, gipsywort and marsh bedstraw (*Galium palustre*).

Since 2003 GCN breeding has been evident in pond 6 presumably resulting from the desilting and vegetation clearance during winter 2002/2003. A maximum of 1 GCN was recorded but the presence of eggs show that more GCN are present.

Pond 6.1

Pond 6.1 is a small pond which was created for the purpose of providing an extra receptor pond during the GCN mitigation. It is less than 10m in circumference although it is deep in places (over 1m). It is dominated by broad-leaved pondweed instead of floating sweet-grass which dominated in 2002 before the pond was cleared out. Other marginal plants are present such as great willowherb, soft rush, water plantain, creeping bent, water forget-me-not, creeping buttercup (*Ranunculus repens*) and gipsywort.

GCN eggs were found in this pond on water forget-me-not and a

maximum of one GCN captured. This is in contrast to results obtained in 2003 when no eggs or adult GCN were recorded. Again this re-colonisation is assumed to be due to the clearance of a heavy mat of floating sweet grass in winter 2002/2003.

The removal and stacking of floating sweet grass in the vicinity of pond 6.1 had incidently created a refugia resource for amphibians and reptiles. An adult grass snake was found to be using one of these in spring 2003.

Plate 4. Pond 6 in spring 2004 showing a marked improvement after desilting and deepening.

Discussion

Ponds 1,2,3,5,6 and 6.1 all contained GCN adults and eggs in 2004. This is an improvement since 2003 when only 4 ponds were recorded with GCN and previously to this only three ponds in 2002. The presence of eggs in these ponds confirms GCN breeding.

The four years of monitoring spread over a six-year period has shown that the status of GCN within the ponds had altered significantly over a short period of time. It also shows the resilience of GCN to survive within a confined habitat in the absence of suitable breeding habitat and then commence breeding once conditions become favourable. This is demonstrated in ponds 6 and 6.1.

The actions of merely deepening and clearing choking vegetation can have an almost immediate benefit for GCN populations. Also the (incidental) removal of fish allowed GCN to re-colonise pond 2 within one season. This also indicates that draining down ponds can be utilised as a successful management technique for eradicating fish populations.

Further monitoring will show if the sticklebacks are completely eradicated or if a small number have survived and slowly start to build up again. Unfortunately it is not known to what extent Pond 2 dried out because the dry weather occurred in the late summer long after the population monitoring visits were undertaken.

All of the compounds contain highly favourable terrestrial habitat such as hedgerows, scrub and deciduous tree planting. Shrubs, hedgerows and deciduous trees are generally considered to be particularly valuable as habitat for over-wintering GCN (Jehle and Arntzen, 2000; Duff, 1989; Franklin, 1983). Recent studies have shown that most pitfall trap captures during translocation projects are made within 50m of GCN ponds (Cresswell and Whitworth, 2004). This indicates that the majority of a GCN population stays within 50m or closer depending on the quality of the surrounding terrestrial habitat. The monitoring at Warmingham has shown that GCN certainly appear to be surviving and thriving within a small area of high quality terrestrial habitat. Populations had managed to survive in this terrestrial habitat despite the previous lack of juvenile recruitment in ponds 6 and 6.1 where breeding has only recently resumed following desilting/deepening and vegetation clearance.

The main points of interest flagged up by the ongoing monitoring so far can be summarised as follows:

- Adult GCN are hardy, long-lived and relict populations are still likely to be present in terrestrial habitats where there are historical records for them – even if the pond has dried up or become unsuitable in some other way. These numbers may be low but due to high fecundity and the fact that GCN breed repeatedly throughout their lives (Beebee and Griffiths, 2000) they can quickly re-colonise ponds and establish breeding populations.
- Desilting/deepening and the control of choking vegetation can almost immediately restore a GCN breeding pond when a relict population is present.
- Survival of healthy breeding GCN populations is possible even in small areas of terrestrial habitat, providing the habitat is of good quality.
- Eradication/control of fish populations can also have an immediate positive effect on GCN breeding populations.
- Long-term monitoring is necessary to make informed recommendations of habitat improvements to ponds. It is unlikely that results obtained over a two to three year period would provide sufficient information from which to draw any meaningful conclusions with regard to population status and trends.

Plate 5. Desilting and deepening being carefully undertaken on pond 6 during a cold day in mid-winter 2002/2003.

Table 1. No of GCN initially translocated to ponds and results (maximum counts) of CWT survey and subsequent monitoring visits

	P1	P2	P3	P4	P5	P6	P6.1
Cheshire Wildlife Trust (egg search and netting, 1995)	eggs	-	eggs	eggs	eggs	eggs	
No. of GCN transferred into each safe compound in 1998	4m, 6f, 12j	*3m, 4f, 1j		1m, 1j	7m, 7f, 15j	*3m, 2j (*²2j)	
Maximum counts for 1999 monitoring visits	5f	1f	-	-	2m,3f	-	2f, eggs
Maximum counts for 2002 monitoring visits	4m, 11f, 1j eggs	-	4f, 1j, 3l eggs	-	3m, 1f, eggs	-	-
Maximum counts for 2003 monitoring visits	10f eggs	-	4f, 4m, 2j eggs	-	1f, 1j eggs	1f, 2m eggs	-
Maximum counts for 2004 monitoring visits	11f, 3m eggs	2m, 2f eggs	2m, 2f eggs		3f eggs	1m eggs	1j, 1f eggs

* P2 & P3 and P6 and P6.1 are within the same compound but survey results are separated.

*² Two juveniles were released into this safe compound during the 1996 translocation.

Key:

	Pond not in existence
m	male
f	female
l	larvae
j	juvenile
-	No results

Conclusion

The article speculates on the causes for the changes of GCN status at Warmingham. This is based on the monitoring results obtained and knowledge of the actions undertaken. Conclusions drawn from these results broadly support findings from recent research on GCN habitat use.

From a conservation viewpoint it is encouraging to note the fast recovery time of GCN populations. Therefore pond restoration and creation is a very worthwhile activity if there is a historical presence of GCN at a site.

A recent study has shown that only 29.9% (out of their sample) of mitigation projects were monitored for a period of 5 years or more. The study also shows that 44.4% of their sample projects required some form of management to the receptor site which was not carried out (Edgar and Griffiths, 2004) This indicates that many translocated populations are probably suffering from either fish colonisation or successional changes to their ponds. These problems will either not be identified because monitoring has ceased or will not be dealt with because of uncooperative developers.

The project at Warmingham demonstrates that with a cooperative developer, GCN populations can be maintained and even increased through small scale and inexpensive habitat management, informed by continued monitoring.

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CITES, Ecology and Environment – A global affair

David H. W. Morgan, MIEEM

It has been encouraging to see a number of articles in recent issues of In Practice picking up on the impact of European Union and international developments on our work.

As a professional ecologist I began my career at local level, but I now work on a global scale and have become increasingly convinced that the real drivers of environmental change are to be found at this level. Through a quick overview of the work of the international convention with which I am involved (the Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES), I hope to make this point and to show a little of the variety of work that Institute members get involved in.

CITES – the Convention

Annually, international wildlife trade is estimated to be worth billions of euros and to include hundreds of millions of plant and animal specimens. The trade is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, wooden musical instruments, timber, tourist curios and medicines. Levels of exploitation of some animal and plant species are high and the trade in them, together with other factors, such as habitat loss, are capable of heavily depleting their populations and in some cases bringing species close to extinction.

A consignment of tortoises is subject to an airport inspection to check compliance with CITES requirements

CITES is an international agreement which aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. In the public eye, the Convention is often believed to protect wild species by banning their trade. Such perceptions are erroneous, as the Convention is a mechanism that regulates a large and widespread legal trade in wild resources. Indeed, over 95 per cent of the world's trade in CITES-listed species involves those which are not endangered. This regulation of trade simply ensures that species are not traded at levels that are unsustainable. Sustainable use being an essential element of sustainable development, CITES therefore contributes to this development while acting as a safety net for wild resources.

CITES was conceived in the spirit of international cooperation to safeguard certain species from over-exploitation. The text of the Convention was agreed at a meeting of representatives of 80 countries in Washington DC, United States, on 3 March 1973, and entered in force on 1 July 1975. Nowadays CITES regulates trade in more than 33,000 species of animals and plants, whether they are traded as live specimens or as processed products. With 167 Parties having agreed to be bound by its provisions, CITES enjoys a membership which is amongst the largest of any of the conservation agreements. The United Kingdom was a very early member (1976) and is a leading player today.

Pitcher plants are popular in the international horticultural trade

How CITES regulates trade

CITES works by subjecting international trade in specimens of selected species to certain controls. CITES regulations require that all import, export, re-export and introduction from the sea (import from the high seas) of species covered by the Convention have to be authorized through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering the licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species. The species covered by CITES are listed in three Appendices, each corresponding to a certain degree of protection.

- Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances, and usually only for non-commercial purposes such as research, education and conservation management. Appendix I includes some 530 animal and 300 plant species.

- Appendix II includes species not necessarily threatened with extinction, but in which the trade must be controlled in order to avoid utilization incompatible with their survival. Appendix II includes more than 4,400 animal and 28,000 plant species.

- Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. Appendix III includes some 240 animal and 40 plant species.

The species may be included in the Appendices as individual species, subspecies or geographically separate populations of a species, or included under entire genera, families or orders. Some of these higher-taxon listings include primates, cetaceans, sea turtles, parrots, corals, cacti and orchids. Any type of wild plant or animal may be included in Appendices I and II following a decision of the Conference of the Parties (the regular meeting of the Parties), whilst species are included in Appendix III at the request of individual Parties.

A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit. There is some variation of the requirements from one country to another as a result of national laws, but the main conditions that apply for each Appendix are the same.

For Appendix-I specimens, both an import and an export permit are normally required whereas for Appendix-II and Appendix-III specimens only an export permit is needed. In the case of re-export, a re-export certificate is needed to confirm that the specimen was previously imported in accordance with the provisions of the Convention.

The Convention allows certain exceptions to the general trading principles described above, such as for personal or household effects or animals bred in captivity and plants propagated artificially. On the other hand, Parties are also entitled to adopt stricter domestic legislation than that required by CITES, which is the case of the European Union Member States.

Crowned pigeons from New Guinea command high prices

In those instances where trade has been shown to be unsustainable, CITES provides for a number of corrective mechanisms. For instance quotas to limit the export level can be established by the Party concerned or through a decision of the Conference of the Parties; or trade in those species can be reviewed by the CITES technical committees (the Animals and Plants Committees), through a process known as the 'Review of Significant Trade'. This in turn may lead to a range of recommendations regarding status surveys, non-detriment findings, quota setting and the regulation of trade. Non-compliance with these recommendations may lead to trade suspensions and the species can even be transferred to Appendix I to halt all commercial trade.

A common thread running through the application of CITES, both in the determination of whether a species should be subject to control and what trade is subsequently permitted, is the need for decision-making to be based on sound science. Trade is not usually permitted unless a Scientific Authority has confirmed that the trade would not be detrimental to the survival of the species. On paper the role of ecologists is critical but in practice there have been some difficulties in making sure the need for sustainability takes precedence over short-term economic gain, particularly when those harvesting the wildlife in question have few other sources of income available to them. On the other hand, for some high profile species such as whales and elephants, certain Parties complain that ethical objections disguised as scientific concerns are used to prevent exporting countries from benefiting economically from their wildlife resources.

CITES and sustainable development

With its specific mandate to regulate international trade, CITES represents one of various international components and efforts to conserve biodiversity. In recent years, three important initiatives were taken to link environmental management and sustainable development, namely the Agenda 21 plan adopted at the United Nations Conference on Environment and Development (UNCED) in 1992, the United Nations Millennium Declaration of 2000, and the 2002 World Summit on Sustainable Development (WSSD).

Agenda 21 is a comprehensive plan of action for achieving sustainable development in the 21st century. It is being implemented globally, nationally and locally by Governments and organizations, after having been adopted by more than 178 Governments at UNCED held in Rio de Janerio, Brazil, in 1992. Commitment to the plan was reaffirmed at the WSSD held in Johannesburg, South Africa, in 2002 where Heads of State also agreed to substantially reduce the rate of biodiversity loss by 2010. The Agenda 21 plan recognizes that good governance within each country and at the international level is essential for sustainable development. At the domestic level, sound environmental, social and economic policies are also required for sustainable development. The United Nations Millennium Declaration of 2000 marked a strong commitment to sustainable human development. Included in the Declaration adopted by 189 States, were what have become known as the eight Millennium Development Goals, including 18 time bound targets. Integrating the principles of sustainable development into country policies is one of the targets of Millennium Development Goal 7 on ensuring environmental sustainability. The goals have been commonly accepted as a framework for measuring development progress.

CITES is well placed to contribute to all of these, as it is a potent and practical means towards integrating the principles of sustainable development into country policies and programmes and reversing loss of environmental resources. CITES is also a means towards promoting good governance and sound science in resource management, resulting in better management of wild species, and management of ecosystems for environmental sustainability.

Most countries have already established, or are in the process of establishing national biodiversity conservation strategies aimed at the maintenance of biodiversity at national level. This approach has also been incorporated in, and is supported through, international agreements such as the Convention on Biological Diversity (CBD) and CITES. Both of these agreements make provision for the sustainable use of natural resources, and provide guidance for the management and use of wildlife resources and international trade according to this principle.

Sonnerat's junglefowl feathers are used in the fishing fly industry

Recently, CITES Parties have adopted a Resolution that urges Parties to take effective measures at policy and institutional level to ensure synergy between their implementation of CITES and CBD at the national level. The Resolution also urges Parties to make use of the Addis Ababa Principles and Guidelines for the Sustainable use of Biodiversity, adopted by the CBD. These consist of 14 interdependent practical principles, operational guidelines and a few instruments for their implementation that govern the uses of components of biodiversity, to ensure the sustainability of such uses. The principles provide a framework to assist Governments, resource managers, indigenous and local communities, the private sector and other stakeholders in ensuring that the use of the components of biodiversity will not lead to the long-term decline of the resource.

Asian cobra skin fashion accessories

The voice of environmental professionals

With its strong science base, CITES has had some successes and can be considered an effective tool and one that works in parallel with other more recent efforts towards the same goal of wildlife conservation. However, its mandate is very specific and threats to the environment are numerous, from pollution to the destruction of natural habitats. Overall the state of the global environment continues to deteriorate.

The market for wildlife products is often to be found in wealthy countries like the United Kingdom. The responsibility for ensuring that use is at sustainable levels is therefore a shared one. CITES is a good example of how actions in one part of the world affect sustainability in another. From climate change to the export of toxic waste; from oil pollution caused by ships from faraway ports to the impact of the World Trade Organization on the industries we possess and the crops we grow, the story is the same: we cannot afford to ignore the bigger picture.

Having witnessed many inter-governmental negotiations first hand, I am bound to say that the voice of professional scientists and ecologists is often not heard loudly enough. In the field of biodiversity in which I work, despite much earnest endeavour over many years, we are still not in a position to provide a comprehensive picture of the status of global biodiversity or of the threats to it. Consequently we do not have a coherent vision for the future and the ample evidence we do possess that all is not well, is often not deployed where it counts: in the major decision-making fora. In addition, too often it seems we are content to talk to ourselves about these questions.

The global environment is deteriorating fairly rapidly and we must improve our knowledge and convey it more effectively to decision-makers at European Union and global levels. Local successes will be swept aside if we do not get it right at these higher levels.

David Morgan is Head of the Scientific Support Unit at the CITES Secretariat in Geneva, Switzerland.

Basking Sharks in the UK – Key Trends and Hotspots

Joana Doyle and Jean-Luc Solandt
Marine Conservation Society

Introduction

The basking shark (*Cetorhinus maximus*) is the largest fish in the Northeast Atlantic and second in size only to the whale shark (*Rhincodon typus*). A non-predatory, coastal-pelagic filter-feeder, the basking shark can exceed 11 metres in length and weigh up to 7 tonnes. However, much of the basking shark's life history, movements, population dynamics and general ecology have not been comprehensively described. Better knowledge of these parameters will allow practical management measures to be implemented in order to protect this wide-ranging species.

Historically, all well-documented local basking shark fisheries have shown high initial catch levels, followed by serious and long-lasting depletion of stocks (Fowler, 1999). Their life history characteristics, large size, slow growth, late sexual maturity and low fecundity makes them particularly susceptible to drastic decline when targeted by fisheries (Compagno, 1984). However, it is currently impossible to accurately estimate population numbers or monitor population status, due to the lack of historical population data and the difficulty and expense involved in studying these animals scientifically. This lack of ecological data, and thus inability to influence conservation measures, led the Marine Conservation Society (MCS) to launch the Basking Shark Watch project in 1987. The aim of the project is to provide a general indication of the geographic distribution of shark surface sightings around the UK coast as well as to create a greater awareness of the basking shark, and has formed an integral part of the campaign for protection of the species from fishing and disturbance.

The cost-effective nature of public sighting schemes provides long-term datasets that show population trends over a number of generations that are invaluable when added to complementary effort-based and telemetry (tracking) surveys (principally carried out by Dr. David Sims of the Marine Biological Association of the UK, and Colin Speedie's surveys aboard Forever Changes). Furthermore public sightings data can also be used to highlight important areas for basking sharks on a more local scale and describe trends in surface activity and distribution of sharks over space and time.

The basking shark has been described as 'vulnerable' on the IUCN Red List (2000), with the North-east Atlantic population described as 'endangered'. It is currently protected in coastal waters (out to 12nm) under English, Scottish and Welsh legislation. It is also protected under the Wildlife and Countryside Act (WCA) 1981 in the UK Crown dependencies (Isle of Man and the Channel Islands). Furthermore, it is listed under CITES Appendix II (Anon, 2002), but is not currently listed under the UK Habitats Regulations, the Convention on the Conservation of Migratory Species, or under Northern Ireland or Irish legislation.

Aims of Basking Shark Watch

The aims of the MCS Basking Shark Watch sightings scheme are to:

- Maintain the national database of information on numbers, geographical and size distribution and behaviour of basking sharks sighted in UK waters.
- Promote a better understanding of the species and its protected status in UK waters.
- Engage the public in basking shark monitoring.
- Provide feedback to the public and interested parties on the UK distribution of basking sharks.
- Contribute to the implementation of the Basking Shark Species Action Plan, and conservation measures in the North-east Atlantic.

Gathering the data

Since its launch in 1987, the aim of Basking Shark Watch has been to provide a general indication of the geographic distribution of shark surface sightings around the UK coast and this undertaking is still the primary focus of the project. In brief, the scheme engages members of the public and other organisations in recording and reporting details of basking shark sightings (see Plate 1). The scheme has been promoted via direct mail, national press, radio, television and various magazine advertisements and articles and through the internet. The information is subsequently collected by MCS and entered onto the project database at the Ross-on-Wye head office via telephone, from direct mailing of MCS basking shark reporting cards, emailed reports, or direct online reporting to the MCS basking shark pages on our website.

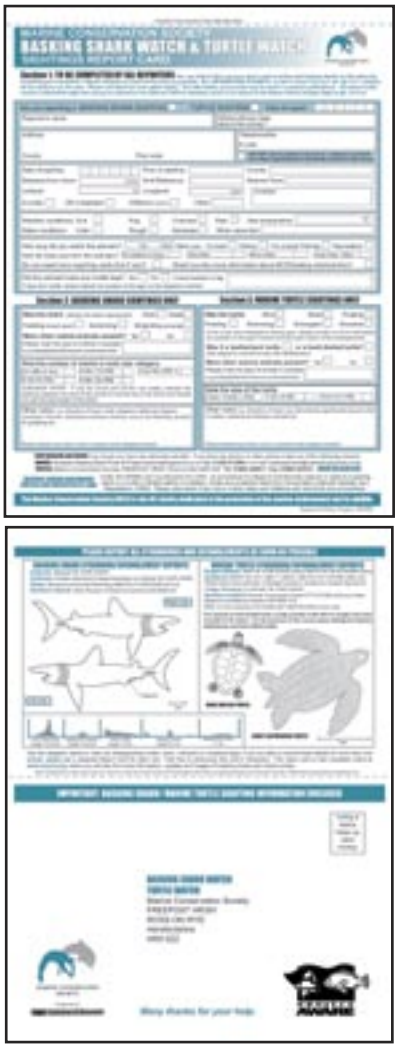

Plate 1. Basking Shark and Turtle Watch sightings report card.

Promotion

The project was promoted to a wide audience via television and radio following the launch of a new poster and report cards in April 2001. However, the effort put into promotion of the project prior to 2001 was mixed (Table 1). Adverts were (and continue to be) placed in dive magazines and newspapers throughout the year. The MCS basking shark web pages (www.mcsuk.org/baskingsharks.html) have also expanded to include information on monthly sightings, and are regularly updated.

Year	Total number of records sent to MCS	Promotion
1987	102	Scheme began in Autumn
1988	396	Direct mail & media
1989	509	Direct mail & media
1990	360	Direct mail & media
1991	298	No direct mail; high media
1992	130	Little effort; limited media
1993	81	Not promoted
1994	78	Not promoted
1995	157	Media & Advertising
1996	172	Media & Advertising
1997	171	Little effort; limited media
1998	539	Little effort; limited media
1999	444	Little effort; limited media
2000	268	Little effort; limited media
2001	562	Re-launch of scheme: Direct mail, advertising & dedicated staff post
2002	439	No dedicated staff member
2003	544	No dedicated staff member
2004	546	Direct mail, advertising & dedicated staff post
Total	5795	

Table 1. Information on relative promotional effort dedicated to the basking shark project from its inception to 2004.

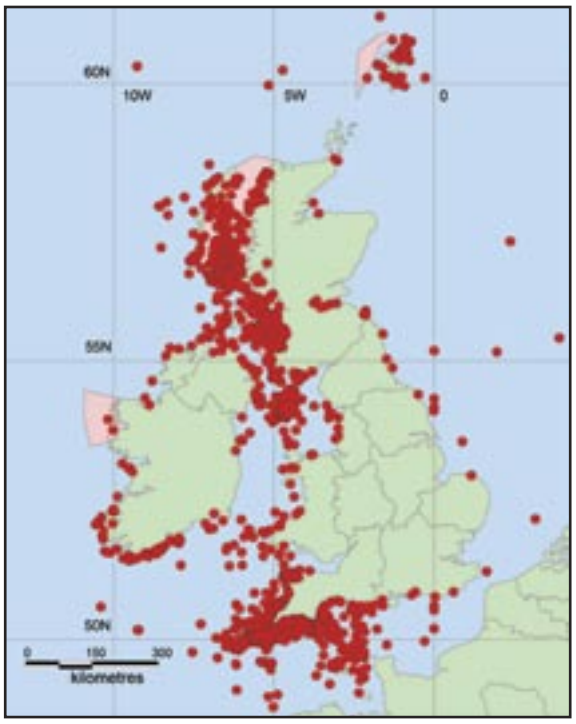

Figure 1. Basking shark sightings from the UK database as recorded between 1987 and 2004, and mapped using Mapinfo (approximately 5795 reports). Pink areas are approximate historical ranges of defunct basking shark fishing grounds from Achill in western Ireland, The Minch and Shetland in Scotland.

Results

Spatial distribution of sharks

The most compelling results that appear from the survey are the spatial presentation of the data showing increased shark activity recorded from the Southwest, Isle of Man and western Scotland (Fig. 1). There is an apparent 'east-west divide' in the density of sightings, with the North Sea being particularly poorly represented, despite the holistic nature for promotion of the project. It appears that there is a 'channel' of sightings between the Southwest, Isle of Man, and the western seaboard of Scotland, with few sightings along the east coast of Ireland and the western seaboard of Wales. Indeed, in 17 years of UK project promotion, with particular emphasis on Wales in 2004 (as the project has been part funded by CCW in 2004), only 41 basking shark sightings have been made. There are probably an unrepresentative number of sightings from Ireland, which may be linked to a lack of direct promotion. MCS are currently in discussions with the Irish Whale and Dolphin Group who collate sightings from the general public. However, there is difficulty with this approach as IWDG primarily solicit mammal sightings, and not basking shark sightings. Therefore it is assumed that basking shark sightings will continue to be limited from across the Irish Sea. (www.idwg.ie).

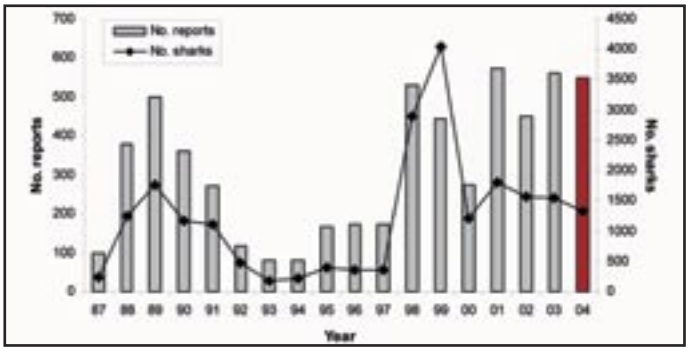

Figure 2. Number of sightings reports (left Y-axis), and number of basking sharks recorded each year (right Y-axis) between 1987 and 2004.

Annual variation in shark numbers

The trends in sightings over the 17 years of the project reveal an apparent bi-modal distribution of the data, with a peak in the late 1980s, and another episode of a large number of sightings between 1998 up to the present day (Fig. 2). The number of sightings doesn't necessarily correlate with promotional effort. For example in 1995 and 1996, although considerable effort was dedicated to promoting the project, the number of recorded sightings was very low.

Seasonal variation in shark numbers

Shark sightings are more prevalent in the summer months due to the increased surface abundance of *Calanus* copepods, their primary food source. (Fig. 3). It is thought that the large schools of sharks that are often seen are not necessarily due to increased intraspecific contact, but are more often related to the patchy distribution of *Calanus* copepods (Fig. 4), which tend to aggregate in large densities, thus attracting large schools of sharks. Research has shown that when sharks happen upon a dense volume of copepods, they tend to swim slowly, and in a restricted area in order to maximise the use of available food (Sims and Quayle, 1998). Sharks often interact with each other in these food patches, with charging between individuals having been observed, and it may be that shark aggregations may have a secondary function of bringing males and females together (although copulation has never been recorded in the UK). The largest school reported to the Marine Conservation Society comprised over 500 individuals (this was corroborated by two independent persons reporting this large sighting) at the Lizard peninsula in Cornwall in June 1998. There are parts of the UK coast that consistently attract large numbers of basking sharks in shallow waters, and these tend to be areas with seasonally persistent fronts, where conditions of nutrient supply, thermohaline stratification

and phytoplankton supply provide rich food for *Calanus* copepods, and hence, basking sharks. The southern Isle of Man and the Lizard peninsula on a scale of 10's of Kilometres are two examples of where these fronts persist.

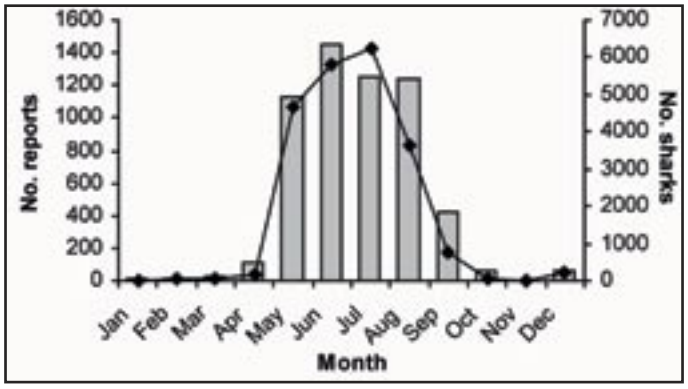

Figure 3. Seasonal variation in numbers of basking shark sighting reports, and numbers of individual basking sharks reported.

Figure 4. *Calanus* copepods comprise the majority of the summer shallow-water diet of the basking shark in NE Atlantic waters.

Change in seasonal patterns over time at different locations

There is a clear south to north progression of basking shark sightings occurring from spring to late summer (Fig. 5). It is clear that basking sharks are more prevalent in shallow waters in the Southwest in spring, in the middle of the Irish Sea in early summer (June), and are more prevalent around the waters of western Scotland in late summer (numbers peak in August). The south-to-north shift in sightings over the seasons matches the timing of the plankton blooms at these locations over the late spring to summer months, from southerly to northern latitudes later in the year.

Another noticeable trend from both MCS public sightings data, and that of the effort-based cruises of Colin Speedie, is the large (112%) increase in sightings from Scotland between 2001 and 2003 compared to historical data. It has been suggested that this increase may have been the result of increased promotion of the project in Scotland in the last three years, however the effort-based sightings data recorded by Colin Speedie over the past 3 years has shown a similar increase in the number of sharks recorded in Scotland between 2001 and 2004. Furthermore evidence that Scotland's summer in 2003 was the hottest summer on record, could mean that this increase in basking shark sightings from Scotland is related to ocean warming.

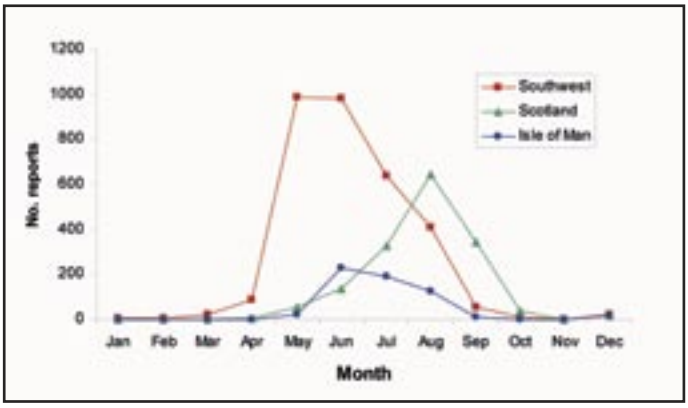

Figure 5. Seasonal variation in basking shark reports from the Southwest, Isle of Man, and Scotland.

Application of the dataset at a local level – how management can use the data

The data can be applied at UK, national, regional and local levels to help inform managers of the timing of basking sharks entering into their coastal waters at a variety of spatial scales. MCS, in collaboration with the Shark Trust, has developed a basking shark code of conduct that has been distributed to local authorities and coastal managers to advise them on how to operate when approaching basking sharks (Fig. 6). Similarly, management measures can be adapted in order to prevent collisions with and general disturbance to basking sharks during the times they are most likely to be in shallow surface waters at particular UK locations. It is possible to introduce seasonally closed areas for particular types of vessel in order to prevent collisions with basking sharks. Perhaps a more practical implementation of management measures may be to introduce bylaws, in order to restrict the maximum speed of motorised craft in areas of basking shark hotspots during spring and summer months. Basking sharks are also caught in static fishing gear, which may be an under-recorded impact on shark mortality. MCS has only received 5 confirmed reports of sharks caught at sea in ropes or nets, and we have only had 67 reports of stranded dead basking sharks (Fig. 7) since 1987.

Figure 6. Sea users, managers and coastal authorities have been provided with the basking shark code of conduct developed between the Shark Trust, the Marine Conservation Society and other members of the Basking Shark BAP group.

Limitations of public sightings data

There is a danger in interpreting the data from public sightings schemes as a record of the number of animals in a given location. We have received reports of on average 1273 sharks in UK waters per year. However, this is an average of the number of sharks sighted by members of the general public at the surface of UK seas - it is not an assessment of the numbers of sharks in UK waters. Whilst some 'filtering' of erroneous or repeat records can be made from the central MCS database, there is inevitably a possibility of repeat sightings of sharks being recorded within a single location and between locations. For example, a shark that moves between one bay and the next during a single day of foraging could be recorded twice by two different observers.

Effort-based surveys at sea using a moving vessel from which to record sharks on a set transect can provide a better estimate of the numbers of sharks in local areas. However, there is considerable difficulty in covering enough of the surface area of UK seas to get an accurate record of shark numbers in any one location, let alone for the whole of the territorial waters of UK seas. Recent research has also shown that sharks may only feed at surface waters during the diel period at fronts, and that sharks in unstratified (non-front) waters may be foraging in deeper waters during the day, and hence aren't 'counted' during surveys (Sims et al, 2004). This means that counts of basking sharks from effort-based surveys may also be unrepresentative of actual shark numbers due to the newly discovered foraging behaviour of the species. As a result of these different behaviours affecting survey accuracy, the Conserving Endangered Basking Sharks (CEBS) work based at the Marine Biological Association is attempting to combine all forms of data to get a more accurate assessment of shark numbers in UK territorial waters.

Figure 7. Live basking shark caught in the ropes of crab pots off Achill, western Ireland in August 2003. The shark was subsequently disentangled by divers, and appeared healthy as it swam away.

The MCS database is extremely effectively in providing an invaluable estimate of the amount of basking shark activity in any given location, and can as such, provide an important cue for management measures to mitigate against damage to sharks, either through collisions or bycatch in fishing gear. The periodicity of shark activity at different areas of the country is well represented by this database, and the 17-year span of the project can allow the basking shark to be used as an indicator of the effects of environmental changes, and *Calanus* copepods in shallow waters of the UK.

Conclusions and future work

The Basking Shark Watch Project has provided key information on a species that is difficult and expensive to survey scientifically and monitor with any degree of accuracy. The project has resulted in a database which shows temporal and spatial trends in basking shark sightings, that is useful for the management of the species at a local, regional, and UK level. MCS continues to campaign for greater local protection for the species given the frequency and number of sharks reported in the Southwest, Isle of Man and Scottish hotspots. We are currently providing higher resolution maps of sharks to local wildlife management authorities (English Nature, Isle of Man Wildlife Division, and to Scottish Natural Heritage), such that they can use their resources better to manage activities that may affect the species. Similarly, we are campaigning for the species to be added to Northern Ireland and Irish wildlife protection legislation. When sites important for mating and for nursing are identified, MCs will campaign for these sites to receive protected status as marine protected areas. Whether the designation of Special Areas of Conservation specifically for basking shark protection under the Habitats Directive would actually result in a significant benefit for the UK basking shark population remains to be determined. However, changes in basking shark distribution over time indicate the importance of exercising caution when designating specific sites for protecting such pelagic and migratory species.

For further information, contact:
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Ross on Wye, Herefordshire HR9 5NB
Tel: 01989 566 017; email: info@mcsuk.org; WEB: www.mcsuk.org

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Joana Doyle is the Biodiversity Project Officer and Jean-Luc Solandt is the Biodiversity Policy Officer for the Marine Conservation Society.

Open Question to Institute Members

Neil Redgate, MIEEM

Where does our primary responsibility lie – our Code of Conduct or our client's wishes?

If there were a better recognition of our discipline, the answer is simple – they are the one and the same.
In the real world, there is often a strong conflict of interests and I would be interested to hear of other members' experiences and how they respond to this question.

I am a freelance ecologist and have worked on a wide range of developments that have involved a variety of ecological surveys and impact assessments throughout Scotland. I comply with the Institute's code of conduct to the best of my ability.

The key statements in the Code are -

3.1.1 advance the science and practice of ecology and environmental management for the public benefit in the United Kingdom and internationally;
3.1.2 further the conservation and enhancement of biodiversity and maintenance of ecological processes and life support systems essential to a fully functional biosphere;
3.1.3 further environmentally sustainable management and development;

5.1 report correctly, truthfully, clearly and so far as is possible in the circumstances, fully and convey their findings objectively. No member shall fabricate or falsify data or information or commit fraud and members shall use their best endeavours to prevent fabrication, falsification or fraud by others;
5.2 identify the limitations to the interpretation of information which is utilised in reports or advice;
5.5 avoid and discourage the dissemination of false, erroneous, biased, unwarranted or exaggerated statements concerning ecology and environmental management;
5.6 use their best endeavours to ensure that their advice, assessments or other forms of appraisal have regard to local, regional, national and global implications for natural resources and ecosystems;

Whether we like the current situation or not, the majority of clients would prefer that their planning application be assessed without any ecological or environmental surveying and assessment – many regard it as an "unnecessary waste of money" and would rather not have this expense. If they must have ecological/environmental impact assessments, then they want the cheapest and least work possible. They certainly do not want surveys that meet all the guidelines and best practice, which our Code requires us to undertake.

This leads to the question I posed at the beginning of this letter: does the professional ecologist (IEEM member) insist on Best Management Practice (BMP) and risk losing the contract or acquiesce to the client's wishes and undertake a limited survey that does not provide the required set of data to answer the questions that are raised?

If the member takes the latter action, is he/she then in breach of our Code of Conduct?

By taking the former action, the member is meeting the Institute's Code of Conduct and risks losing the contract (to a non-member ecologist?), unless the client realises that by providing BMP surveys, his (the client's) interests are met.

This conundrum is further exaggerated by the fact that the ecologist may find himself in the following situation –

- After initial site investigations, the ecologist is recommending BMP surveys at a particular intensity (well above "legal minimum" guidelines) for well known groups, such as birds or plants, as well as for other less well known groups, quite often for a site not in or adjacent to a designated area;
- The Statutory Nature Conservation Organisation (SNCO) stating a minimum level (i.e. a "legal minimum" which is expected for all sites and not modified to suit the sensitivity of the site) must be complied with: implicit in this statement is 'plus anything extra that the client's expert (ie. hopefully, an IEEM member) recommends' [Regrettably, the Statutory and Regulatory Authorities (S/RA) will not precisely state what is required as they will be policing their own advice during the consultation period];
- The client, wanting to keep costs down to a minimum, acknowledges what the S/RA states and considers this level of activity as "that is all that has to be done" and considers his expert is "touting for more work and fees".

Does the IEEM member keep to the Institute's Code of Conduct and consider the sensitivity of the local biodiversity interests, which includes lesser well known groups and areas outside the designated site hierarchy (which act as both buffer zones and corridors for these designated sites), or does he/she "toe the line" and only consider supporting the fragmentary nature of the designated site hierarchy and only the more popular ecological groups?

By insisting on being professional and thorough in our work, I am not acting against development or progress. I am only trying to provide adequate and sufficient information to allow proper, informed decisions to be made, that will allow developments to proceed with a sound ecological management programme that is properly implemented and monitored.

We are all aware of the loss of biodiversity in the last few decades as a result of our current attitude, which is a reflection of our past level of concerns.

I would be interested to hear comments from other members.

Neil Redgate is a consultant ecologist (Environmental Services) Ltd.

IEEM IN IRELAND: A Major Seminar and the establishment of a Shadow Section

Peter Marsden, MIEEM

Over the past 18 months or so, a number of Ireland-based IEEM members have been examining the feasibility of establishing an Irish Section of the IEEM and of generally raising the profile of ecological practitioners operating both north and south of the border. Since the beginning of this year, two significant events have occurred that have helped move this process forward.

The Roads & Ecology Seminar

On 20th January 2005, the IEEM held its first major event in Ireland. Jointly organised with the Institution of Engineers of Ireland, the Roads & Ecology – Towards Best Practice seminar attracted a large and enthusiastic attendance drawn from both the public and private sector in the Republic and Northern Ireland as well as a significant number of UK-based professionals. The opening address was provided by Martin Cullen TD, Minister for Transport, who has recently announced Ireland's National Roads Programme that commits Government road development investment of over €1.415bn (c. £1 billion) in 2005 alone.

IEEM President Chris Spray with Richard Nairn and Martin Culley

Attendees heard a range of perspectives on the interface between ecological issues and the rolling out of Ireland's road building programme, from the opening paper, by IEEM member Dr Julie Fossitt of the National Parks & Wildlife Service, which set out the broad issues facing ecological practitioners in undertaking EIAs of road schemes in Ireland, through to the final presentation, by Dr Vincent O'Malley of the National Roads Authority, which outlined the means and mechanisms for integrating environmental issues into national road developments. Along the way, attendees were provided useful insights into the legal context within which ecological work on road schemes is advanced and into the manner in which ecological issues are managed in engineering-led road project teams as well as presentations on specific road scheme case studies. Best practice approaches to bat surveys, habitat creation, watercourse crossings and mammal underpasses were also addressed.

An Irish Shadow Section

The seminar attracted higher numbers than had initially been anticipated and discussions across the floor and in the lunch and coffee breaks seemed to confirm the need for greater integration of approach and for wider information sharing between practitioners in Ireland. This linked directly to the second organised gathering of the day: a meeting to which all current Ireland-based IEEM members were invited to determine the level of interest in the establishment of a formal Irish Section of the IEEM to act as a focus for providing information exchange, training and best practise guidance amongst IEEM members operating in Ireland. Some 60% of the Ireland-based membership attended and a number of other members forwarded their apologies.

The meeting was addressed by the IEEM President, Chris Spray, as well as by Kathy Dale and Steve Pullan, the conveners of the Scottish and North East England Sections respectively. The conveners of the existing Sections described the means by which their respective Sections had been established, explained the benefits that accrued to the local IEEM members and outlined the pitfalls and challenges that a shadow section would face. A wide ranging discussion ensued and concluded in a unanimous vote to set up a Shadow Section with a view to putting firm proposals to the Irish membership on the establishment of a formal Irish Section. Volunteers to form a Steering Group to run the Shadow Section were called for and eight members expressed their interest to participate.

The Steering Group met for the first time on 25th February and is currently drawing up proposals for a programme of events for the forthcoming year. For further details on the Irish Shadow Section contact either the Shadow Convener, Peter Marsden (peter.marsden@erm.com) or the Secretary, Mieke Muyllaert (mieke@eircom.net).

Peter Marsden is Technical Director ERM Ireland Ltd.

Society for the Environment

Jim Thompson, CEnv, MIEEM

Applications by IEEM members to become Chartered Environmentalists have continued to flow into the IEEM Office. IEEM interest in the Chartered Environmentalist is currently the most active of all the institutes in relation to its size. It is in third place behind the Chartered Institute of Water and Environmental Management and the Chartered Institute of Wastes Management. There are currently about 300 applicants and the backlog which was experienced earlier has just about been eliminated. This is very much thanks to the initial SocEnv members and the Membership Admissions Committee, especially Richard Graves, Steve Pullan and Anna Thompson who has overseen the process and the reporting back to the SocEnv Secretariat. Do please bear in mind, however, that this is the Grandparenting year and this lasts until 23rd September only. After that time there will be more stringent entry rules which will almost certainly involve a professional interview. The very reasonable IEEM processing costs will have to rise significantly to meet this requirement. So it should be obvious that a lot more effort will be needed if you leave it beyond the cut off date. You have been warned! - return the SocEnv Application forms without delay.

Apart from that, SocEnv is beginning to come of age as an organization with Tim Bines as its Chief Executive. It has responded to various consultations. The following will be of interest to members:

- The DEFRA consultation on Sustainable Development Taking It On - Developing a Uk Sustainable Strategy Together;
- Recognising the Skills of Environmental and Conservation Management Advisors.

It has also started to raise its profile with various events. There will be a SocEnv display at the forthcoming ET 2005 exhibition on 24 - 26 May.

SocEnv has also just signed a Memorandum of Understanding (MOU) with London 2012, the company bidding to host the 2012 Olympic and Paralympic Games. SocEnv's Chairman, William Pope, and Chief Executive, Tim Bines, met with London 2012 Chairman, Lord Sebastian Coe, at the Environment Forum, held at Church House, Westminster on 7 March 2005. This has been supported by the work of IEEM member, David Stubbs, who is Environmental Project Manager for London 2012 Ltd.

The Memorandum of Understanding establishes a partnership between the two organisations that will, among other matters, seek to:
Promote sustainability through professional environmental advice throughout the Olympic projects;
Work towards the establishment of the highest professional standards drawing on the members of the Constituent Bodies that make up SocEnv;
Promote the concept of a quality environment during and after the Olympic Games.

Lord Coe said 'from the outset London 2012 has sought to engage with environmental organisations and we are delighted at the positive response we have received. It is really important for us that our environmental and sustainable development plans have been developed in partnership with the top professionals in this field. The support of Society for the Environment through its constituent bodies and their members will help us deliver this to a high standard.'

Will Pope, Lord Coe and Tim Bines with the M.O.U.

IEEM Members who have become Chartered Environmentalists since those reported in the last in Practice are the following:
Mr Ian Alexander, Dr Keith Alexander, Mr Julian Arthur, Mr John Arundell, Miss Diane Barker, Mr Ian Barker, Professor Nigel Bell, Dr David Blakesley, Mr Cain Blythe, Mr Ian Bond, Mr Wayne Borden, Mr Jonathan Bradley, Mr Stephen Bradley, Mr Jonathan Brickland, Dr Peter Bridgewater, Mrs Anne Bunker, Dr Graham Burt-Smith, Dr Kenneth Campbell, Mr Peter Carpenter, Mr Stephen Carter, Ms Elizabeth Charter, Mr Mitchel Cooke, Mrs Katrina Cooper, Reverend Nigel Cooper, Dr Matthew Cowley, Mr Ian Crosher, Mr Russell Cryer, Ms Katharine Dale, Dr Hilary Denny, Ms Oda Dijksterhuis, Miss Kathryn Doughty, Mr Michael Drury, Mr David Dutton, Mr Frederick Edwards, Dr Phillip Edwards, Mr David Feige, Miss Catherine Ferguson, Dr Peter Ferns, Mr Christopher Formaggia, Mr Michael Freeman, Mr Darren Frost, Mr Graham Garratt, Miss Emma Goddard, Mr Paul Goriup, Dr Lorraine Gormley, Mr Mick Green, Professor Jeremy Greenwood, Miss Catherine Grundy, Mr Neil Harwood, Mr Gordon Haycock, Mr Brian Hedley, Ms Anne Heeley, Dr Jesse Hillman, Dr Jeremy Hills, Dr Rachel Hirst, Mr Desmond Hobson, Mr Paul Hodges, Ms Madeline Holloway, Mr Martin Holt, Dr Floyd Homer, Mr Simon Humphreys, Professor John Innes, Mr David Ivison, Mr Richard James, Mrs Lyn Jenkins, Mrs Elizabeth Johns, Mr Matthew Johns, Mr Robin Jones, Mr Adrian Jowitt, Miss Sarah Jupp, Ms Saffra Kelley, Dr Martyn Kelly, Mr Ian Kemp, Mr Thomas Knight, Dr Andrew Lane, Dr Bruce Lascelles, Ms Suzanne Lawley, Mr Neil Lee-Gallon, Mr J. Patrick Lehain, Ms Janet Lister, Dr David Lloyd Owen, Mr Stewart Lowther, Mr Jeffrey Lunn, Mr Grant Luscombe, Mr Andrew Macfarlane, Mr Adrian Mallia, Mr William Manley, Dr Aidan Marsh, Mrs Heather Marshall, Mr Roger Martindale, Mr Gordon McGlone, Ms Geraldine McGowan, Mr Peter McIntyre, Mr Dougal McNeill, Mr John Moorcroft, Mrs Jenny Neff, Miss Alison Newell, Miss Kerry Nicholson, Mrs Naomi Oakley, Miss Genevieve O'Farrell, Mr Michael O'Kell, Miss Caroline Oldroyd, Miss Fleur Oliver, Mr Gary Oliver, Mr Eric Palmer, Mr Christopher Parry, Mr Kevin Patrick, Mrs Gayle Pearson Boyle, Dr Rachel Penn, Mr Mark Phillips, Mr Matthew Pickard, Mr John Poland, Ms Diana Pound, Mr R. Crawford Prentice, Dr Elizabeth Price, Dr Patricia Rae, Miss Nicky Richardson, Mr Malcolm Robertson, Dr Richard Robinson, Mr Peter Robson, Mr Paul Rooney, Dr Robert Rowlands, Mr Jonathan Rudge, Ms Kate Ryland, Mr Richard Sands, Mr David Scranney, Mr Nicholas Sibbett, Mr Peter Sibley, Mr Graeme Smart, Dr Paul Smith, Dr Deborah Snook, DrClifford Stuckey, Dr Peter Sturgess, Dr Dominic Tantram, Mr Nicholas Tardivel, Dr Andrew Tasker, Dr Peter Tattersfield, Mr Adrian Taylor, Mrs Joy Tetsill, Mr Darren Towers, Dr Una Urquhart, Dr Alexandra Van der Sleesen, Miss Karen Vowle, Professor Paul Wade, Ms Samantha Walters,Mr Patrick Waring, Ms Louisa Watkins, Mr James Watson, Mrs Karen Watson, Dr Matthew Watts, Mr Michael Way, Dr Michael Wells, Mr Peter Wells, Mrs Jo White, Mr Ian Whitehead, Dr James Wilson, Mr Stuart Wilson, Mr Nicholas Woods, Mr Graeme Worsley, Mrs Fiona Wren, Dr Gordon Wright, Mr Neil Wyatt, Mr Stephen Wyatt, Mrs Linda Yost.

First Catch Your Botanist

Stephanie Wray, CEnv, MIEEM

Nobody can dispute the huge strides forward that our profession has taken in the last decade or so. The quality of ecological scoping and reporting has undoubtedly improved in projects I review. But what of the quality of the surveys that underpin those reports? The 'skills gap' we observe in new graduates in ecology is not a new phenomenon, but does it extend to those already engaged as professional ecologists?

I believe that this lack of field ability is more pronounced, and more problematic, in botany than in zoology. Zoologists – if they exhibit an appropriate level of interest, commitment and hardiness - can be taught to survey for badgers or dormice, for example. Botanists -whilst we can teach them the methodologies for Phase 1 surveys or the rudiments of the NVC - need even at the outset of their consultancy careers to have good plant identification skills.

When we recruited a Head of Botany nine years ago, we devised a simple plant ID test to "ground truth" their CVs and, we thought, act as a relaxing start to the interview before we asked more complex questions. The results were shocking. Several candidates, despite being interviewed for a post clearly labelled as 'Botanist' rather than the potentially misleading 'Ecologist', visibly paled or trembled at being asked to identify 10 common plants. One memorably only managed four correct answers.

This year, we are recruiting for two further botanists, and we decided to put into place a similar plant ID test. I had hoped that the standard would have improved in ten years. Regrettably, I have to report that, no, the general standard of candidates was not significantly better. On average, those we interviewed scored significantly less well than a random selection of our non-botanical staff, the candidates averaging 55%. Yet, again, some candidates were already working as botanical consultants. At this point you might start to suspect that we were setting an unfairly arcane test, but the plants used for identification were no more obscure than hazel, Yorkshire fog and *Glyceria maxima*, selected at random from our grounds before the interviewees arrived. There was no winning candidate to identify all of the specimens in 13 seconds flat and with a faint air of boredom at the lack of a challenge.

There is a wider issue here than my recruitment tribulations. The skills gap is wider and more pervasive than just the ID skills of new graduates. If our random sample is representative, basic plant ID skills are poor in practising ecologists. What effect that has on the quantity of surveys and the conservation of our natural heritage is unknown.

So what can we do as employers within the profession?

When recruiting we have to search for competent professionals, however difficult they may be to find. We cannot let the skills shortage in recruitment translate into a poorly-regulated, poor quality profession. If qualified people can't be found, we need to develop our own staff, or sub-contract. We can't afford to 'make do' and send ill-qualified people out to do our fieldwork; to do so would be damaging to a young profession.

Once we have recruited, we need to value and develop our botanical staff, make sure we keep their skills honed and review their need for specialist training on difficult taxa. We should support the IdQ system and allow rumours to circulate that taxonomy is sexy again. As for me, I'm off to cruise the museums and taxonomy departments of the land in search of competent botanists willing to come over to the dark side.

Stephanie Wray is a Director of Cresswell Associates.

Brief Law Update

Andrew Baker, MIEEM

In the run up to Christmas I and other members of the Nature Conservation Group of the UK Environmental Law Association were wrestling with the ODPM's consultation on the new Planning Policy Statement 9[1] (PPS9). This consultation had been eagerly anticipated as the old PPG9, which was published in 1994 - the same year that the Habitats Directive was translated into UK domestic legislation and has become increasingly out of date. We are fortunate in the UK that the ecological profession is backed up by a considerable battery of legislation, which is subject to almost continuous refinement and interpretation. In the ten years since PPG9 was introduced, the development of case law embedding within the legislation, challenges through the European Court and the introduction of new legislation such as the CROW Act 2000, has meant that the revision to PPG9 has been long overdue.

The new PPS9 has a new structure. The actual planning policy statement is brief, amounting to less than 2000 words. The PPS is, however, accompanied by two additional documents. The first is a draft government circular[2] which brings together advice on the raft of nature conservation legislation which is likely to be encountered by planning authorities. There is also to be a good practice guide, which I understand is being drafted by English Nature. While this is not going to be subject to formal consultation, it is widely hoped that this will be a practical manual on how local authorities can achieve their obligations towards biodiversity.

The old PPG9 is now so anachronistic that I know of many in the profession who have encountered significant problems when dealing with planning issues. European protected species provide a typical example where the wording in the old PPG now bears little resemblance to current practice, never mind the letter of the law. This begs the question as to why the ecological and planning professionals have continued to rely so much on PPG9. Surely the raft of nature conservation legislation and the accompanying case law provides us with a much more solid foundation upon which to make planning decisions, rather than obsolete planning policy guidance? Why has such a large gap developed between the nature conservation law as written and its implementation through the planning system?

Unfortunately the answer probably lies in the fact that, although nature conservation has a robust legal framework, many professionals working within the area seem to have what can only be described as a cursory understanding of nature conservation law. It is my experience that most people rarely read the actual legislation upon which much of our professional work is based and few have a good understanding of how the law is couched. Many may not feel it appropriate to delve into the depths of the legislation and that it should be left to the lawyers, while others simply do not have the time to read the regulations, relying instead on a layman's précis or guidance such as the PPG9.

The gap between the law as written and its implementation was echoed in the recent Audit Committee report on Wildlife Crime[3], which, for an audit committee report, makes excellent reading. In examining the resource available to local authorities to allow proper implementation of the nature conservation law, the report states; 'The lack of resources to enable local authorities to fulfil their own statutory duties and responsibilities, in terms of conservation, preservation, planning and in tackling wildlife crime reflects at best a woeful ignorance on the part of those in charge and, at worst, neglect or absolute disdain. Local authorities still have a considerable amount of work to do to educate and train their own workforce on their roles and responsibilities'. In presenting evidence to the same audit commission the Association of Local Government Ecologists (ALGE) illustrated this lack of resources with the sobering fact that of the 400 local authorities only 35% employs an ecologist.

There is no doubt that nature conservation law is changing rapidly. I have two consultations currently on my in-tray; a review of Part 1 of the Wildlife and Countryside Act[4] and the a review of Schedules 5 and 8 of the same Act[5]. In some respects we have become victims of our own success in that the recognition of the importance of biodiversity protection by our legislators means that an under resourced profession can find it difficult to keep abreast of current developments, never mind educating and training the planning professionals who rely on their advice. While the new PPS9 provides a valuable update of government policy in a format that may not age as rapidly as the previous guidance, the accompanying Government Circular will inevitably need to be updated regularly to enable the planning system to keep up with legislative change. It is unfortunate that professionals who need to keep up to date with nature conservation law are also the same local government ecologists who are so under resourced or, in the majority of LPA's, don't actually exist!

Andrew Baker is a partner in the ecological consultancy Baker Shepherd Gillespie and convenor of the UK Environmental Law Association's nature conservation working group. www.ukela.org

1 Office of the Deputy Prime Minister (September 2004) Consultation on Planning Policy Statement 9: Biodiversity and Geological Conservation.

2 Office of the Deputy Prime Minister (September 2004) Draft Government Circular: Biodiversity and Geological Conservation – Statutory obligations and their impact within the planning system.

3 House of Commons Environmental Audit Committee Environmental Crime: Wildlife Crime
Twelfth Report of Session 2003–04. September 2004

4 Review of Part 1 of the Wildlife and Countryside Act 1981 (http://www.defra.gov.uk/corporate/consult/wildlifeact-part1/consultation-english.pdf)

5 Fourth quinquennial review of Schedules 5 & 8 of the Wildlife And Countryside Act 1981 (http://www.defra.gov.uk/corporate/consult/wildlifeact-review58/consultation.pdf)

Developing a Tauro-scatology Professional...

Prof. Basil O'Saurus

Daunted by all the paperwork arriving through the post from IEEM at the moment? Can't seem to find the time to fill in all the forms? Spare a thought for the poor office staff in Winchester who have to read it all. But fear not: Prof. Basil O'Saurus, our resident Professor of Tauro-scatology is on hand to tell you how to fill out the forms and, at the same time, make their day a little more entertaining. So what's this all about then, Prof?

Well, I was filling out my Continuing Professional Development form and was busy calculating how many hours of CPD I had notched up during a recent international conference in Prague. I was wondering whether the pub crawl on the last night that ended in a lap-dancing club arguing with a Texan about the Kyoto agreement counted as unstructured CPD when I had a terrible thought…

… you wondered what your wife would say if she could see you?

Okay, I had two terrible thoughts.

And the other one was…

The other one was that there are nearly 2000 IEEM members all conscientiously filling out CPD forms and someone in the IEEM office has to read through all of these, and that it must be a terribly dreary task…

Surely not as bad as all that. After all, not all IEEM members actually get around to filling out their forms… but well over 1000 CPD forms still sounds like an awful lot.

Give the Professional Affairs Committee a little more time to devise some more devious and unimaginable punishments to persuade the recalcitrant to fill out their forms and it will be 2000 forms every year.

Anyway, I thought that we humble IEEM members should do our bit to maintain morale in the office and so I have devised a competition in which we award prizes to IEEM members who slip the most preposterous notion through under the general heading of Continuing Professional Development.

Give me an example?

Well, an ecologist might, for example claim that a Saturday afternoon watching Sunderland play Queens Park Rangers actually counts as unstructured CPD as he contemplates the mechanisms by which members of the *Poaceae* grow via a basal meristem. This is, I am told, rather more interesting than watching either of these teams play football.

Any other examples?

Er… Crystal Palace versus West Bromwich Albion… Rushden and Diamonds versus Wycombe Wanderers… Brentford versus…

Okay, okay, you've milked your football prejudices enough: I meant other types of scenario?

Well, I guess a visit to a Sea Life Centre or the London Aquarium could count as an opportunity to expand your knowledge of aquatic life … how about justifying half an hour watching Charlie Dimmock on Groundforce as CPD on habitat regeneration?

That would definitely count as 'unstructured CPD' although, quite frankly, I'd rather do an hour's honest toil reading the latest journals than put up with Titchmarsh and co.

Fair comment. But, remember, I am not advocating that this is CPD, just that someone out there ought to slip something like this onto their CPD form just to see if anyone notices.

Though it is, surely, possible to learn more about our subject from the popular media?

Absolutely. Only the other day, I was watching the DVD of 'Erin Brokovich' and was unjustly accused of only watching so that I could lust after Julia Roberts in a leather miniskirt when, actually, this film is a very useful source of information on the dangers of chromate pollution. That's two hours of CPD without having to leave the sofa.

Three hours, if you watch the special features.

Especially as one of them is a documentary about the real Erin Brokovich and her campaign against chromate pollution. So you see: CPD forms are much easier to complete than many IEEM members think.

Okay, so you've made your point. At the start of our interview you mentioned something about a prize for the most preposterous notion on a CPD form. Tell us a bit more.

Well, any diligent reader of In Practice must know by now that the O'Saurus coffers are rather flush at the moment, thanks to all my extra-curricular activities. I've now decided to share this largesse with the IEEM membership as a whole. There is a bar of fairtrade chocolate is on offer to the first member whose CPD form leads to an audible guffaw from a member of the IEEM office staff.

You're personal generosity amazes us all. But, hang on a moment, am I right in thinking that structured CPD includes 'technical authorship such as the preparation of material… for publication in the technical press'?

Yes.

And In Practice counts as the technical press?

I should think so.

So, Basil O'Saurus, you expect us to count this article as part of your CPD for 2004-05.

I am, as ever, the living embodiment of all my principles.

Of course you are, Prof. You are an an advert to the entire IEEM membership. In fact, you might have just won that bar of fairtrade chocolate yourself.

In the Journals

Compiled by Jim Thompson

British Ecological Society

M.J. O. Pocock, J. B. Searle and P. C. L. White.
Adaptations of animals to commensal habitats: population dynamics of house mice *Mus musculus domesticus* on farms.
Journal of Animal Ecology 2004, **73**: 878-888.
Commensal mammals live in habitats that appear to provide both benefits and costs compared with natural and semi-natural (non-commensal) habitats. These commensal habitats offer potentially rich food resources but are also characterized by instability in time and space. House mice (*Mus musculus domesticus*) are unusual because they are able to persist entirely in both commensal and non-commensal habitats, and so can provide a test of the distinctiveness of commensal populations.

Populations of commensal house mice were studied on two neighbouring farms in North Yorkshire, for 2 years by capture-mark-recapture.

In situ reproductive recruitment occurred throughout the study and was numerically more important than immigration. Breeding throughout the year allowed the population to persist despite low survival rates. The results suggested that births and deaths had more influence on the overall population dynamics than movement.

In comparison, non-commensal house mice have lower mortality, seasonal breeding, and individuals move more frequently and further than commensal house mice.

These differences illustrate the responses of house mice to the specific opportunities and demands of commensal habitats and demonstrate the importance of a flexible life-history strategy for animals exploiting these habitats.
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A.G. Finstad, T. Forseth, T. F. Naesje and O. Ugedal.
The importance of ice cover for energy turnover in juvenile Atlantic salmon.
Journal of Animal Ecology 2004, **73**: 959-966.
The food consumption and metabolism of Atlantic salmon (*Salmo salar*) juveniles was compared when exposed in laboratory conditions to simulated ice cover (darkness) with fish in natural short, 6 h light, day length (without ice). Three different populations along an ice-cover gradient were tested .

Resting metabolism was on average 30% lower under simulated ice cover than under natural day length and the response was similar for all populations. Northern salmon grew equally well in dark and light conditions, whereas the southern grew significantly poorer in the dark. Fish from all populations fed more under natural day length than in the dark and the northern population had higher consumption than the southern. The relative high growth of fish from the northern population in the dark compared to the southern populations was due partly to higher consumption and partly to higher growth efficiency. Fish from the southern populations had negative growth efficiency in the dark.

The study indicates that ice break-ups or removal following climatic change may affect winter survival significantly, particularly in northern populations.
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P. Almaraz and J. A. Amat.
Multi-annual spatial and numeric dynamics of the white-headed duck *Oxyura leucocephala* in southern Europe: seasonality, density dependence and climatic variability.
Journal of Animal Ecology 2004, **73**: 1013-1023.
A model was developed for the globally threatened white-headed duck during its regional expansion throughout Spain from 1980 to 2000. This estimated the relative intrinsic, climatic and stochastic effects on population fluctuations and spatial expansion on several time-scales.

Although a climatic effect during the period of chick rearing enhanced numeric brood recruitment in the short-term, brood production appeared to decrease with increasing population density, despite a long-term exponential numeric growth.

Both wintering population density and rainfall during post-nuptial moult exerted a positive effect on subsequent spatial expansion during breeding, which suggest a major role for social interactions during wintering and wetlands availability on spatial dynamics.

The results suggest that seasonality, density-dependence and climatic forcing are all major processes in the spatio-temporal dynamics of the white-headed duck. Ignoring the relative biotic and abiotic effects and their temporal scale of interaction on population dynamics might yield misleading conclusions on the factors affecting the short- and long-term abundance of waterfowl populations.
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D. L. Haughland and K. W. Larson.
Exploration correlates with settlement: red squirrel dispersal in contrasting habitats.
Journal of Animal Ecology 2004, **73**: 1024-1034.
This paper may be of significance in dispersion studies on likely re-introductions. Dispersers in heterogeneous habitat theoretically should target the habitat(s) where reproduction and survival (i.e. fitness) will be highest. However, the cues that dispersing animals respond to are not well understood: differences in habitat quality ultimately may be important, but whether animals respond to these differences may be influenced by their own familiarity with different habitats.

To determine if dispersers reacted to differences in habitat, the exploratory movements, dispersal, and settlement patterns of juvenile North American red squirrels (*Tamiasciurus hudsonicus*) (not to be confused with the European species!) originating in adjacent patches of different habitats were studied.

Dispersers originating in mature, closed-canopy forest (linked to higher female reproductive success and smaller territories) did not explore contrasting open forest with lower tree densities, and the magnitude of the dispersers' explorations was relatively similar. In contrast, dispersers from the open forest habitat made explorations that carried them into contrasting, mature forest habitat. When settlement occurred, there was a strong tendency to remain near a particular site.

The relative importance of individual experience, habitat familiarity, and habitat quality are important to understand how individual animals and populations react to habitat heterogeneity.
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N. E. Eide, J. U. Jepsen and P. Prestrud.
Spatial organization of reproductive Arctic foxes Alopex lagopus: responses to changes in spatial and temporal availability of prey.
Journal of Animal Ecology 2004, **73**: 1056-1068.
In a similar context this paper deals with the home range size, spatial organization and territoriality of reproductive Arctic foxes during the summer. The influence of spatial distribution and availability of the main prey was investigated in order to evaluate whether the spatial organization of Arctic foxes agreed with key predictions of the resource dispersion hypotheses (RDH). In addition to the spatial characteristics inherent in RDH the temporal characteristics were also investigated.

The study was conducted on Svalbard, a simple High-Arctic terrestrial ecosystem which allowed estimates of prey abundance. The main prey of the Arctic fox - reindeer, seabirds and geese were surveyed systematically. These surveys revealed highly contrasting patterns in prey abundance within the terrestrial ecosystem.

Arctic fox summer home ranges varied in size, as well as in overlap. Small home ranges with large overlap were characteristic for coastal areas where prey was concentrated in small patches and predictable both in space and time. Medium home ranges and overlap occurred inland where prey was clumped in larger patches and less predictable. Large home ranges with little overlap occurred inland where prey was widely scattered and unpredictable.

This study emphasizes the need to incorporate both spatial and temporal characteristics of resource distribution in order to fully understand the diversity of spatial arrangements among carnivores.
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L. K. Weir, J. A. Hutchings, I. A. Fleming and S. Einum.
Dominance relationships and behavioural correlates of individual spawning success in farmed and wild male Atlantic salmon, *Salmo salar.*
Journal of Animal Ecology **73**: 1069-1079.
Atlantic salmon (*Salmo salar*) males form dominance hierarchies during spawning, such that the dominant individuals are predicted to realize the highest reproductive success. However, the degree to which this occurs depends on various genetic and environmental factors.

The authors investigated the influence of the aquaculture environment on male Atlantic salmon behaviour during spawning in three experiments involving groups of either purely farmed or wild males, or mixed groups composed of equal numbers of farmed and wild fish. The objective of this study was to compare and contrast the formation of dominance hierarchies and relationships between aggression, courtship and spawning success in farmed and wild males.

Although farmed males did not establish dominance hierarchies as effectively as wild males, they courted and spawned with females in larger numbers and they frequently failed to release sperm when females released eggs.Dominance structures established by wild males led to reliable behavioural correlates of spawning success but this was not the case among farmed males.

Farmed males can be expected to have reduced spawning success, although the degree of reproductive inferiority of farmed relative to wild males depends upon rearing environment and the populations under consideration.
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R. E. Green, I. Newton, S. Shultz, A.A. Cunningham, M. Gilbert, D. J. Pain and V. Prakash.
Diclofenac poisoning as a cause of vulture population declines across the Indian subcontinent.
Journal of Applied Ecology 2004, **41**: 793-800.
Rapid population declines of the vultures *Gyps bengalensis*, *Gyps indicus* and *Gyps tenuirostris* have recently been observed in India and Pakistan, continuing at least up to 2003. Surveys indicate annual rates of decline of 22 - 50% for *G. bengalensis* and *G. indicus* during 2003. Previous studies in Pakistan have shown that the non-steroidal anti-inflammatory drug diclofenac causes renal failure and is lethal to *G. bengalensis* when it feeds on the carcass of a domestic animal that received a normal veterinary dose shortly before death. In Pakistan, diclofenac poisoning was found to be by far the most frequent cause of death.

A model showed that the observed rates of population decline could be caused by contamination with a lethal level of diclofenac in a small proportion (between 1 : 130 and 1 : 760) of ungulate carcasses available to vultures.

The authors recommend that urgent action be taken in the range states of the three currently threatened vulture species to prevent the exposure of vultures to livestock carcasses contaminated with diclofenac. Research is also needed to identify alternative drugs that are effective in livestock and safe for vultures. Efforts should also be made to raise awareness, among veterinarians, pharmacists, livestock owners and the general public, of the problem of diclofenac contamination and the availability of safe alternatives. Captive holding and breeding of vultures until diclofenac is controlled is recommended as a precaution to ensure the long-term survival of the threatened species and to provide a stock of birds for future reintroduction programmes.
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R. K. Heikkinen, M. Luoto, R. Virkkala and K. Rainio
Effects of habitat cover, landscape structure and spatial variables on the abundance of birds in an agricultural-forest mosaic.
Journal of Applied Ecology 2004, **41**: 824-835.
The authors examined the independent and joint effects of habitat cover, landscape structure and spatial variables on the total number of bird pairs and that of bird pairs on agricultural land.
The total number of bird pairs was negatively related to agricultural land, and positively to cover of forests and landscape heterogeneity.
Most of the explained variation in the number of agricultural bird pairs was related to the joint effects of the variables. The independent effect of habitat cover variables was considerable and agricultural birds showed a positive relationship with semi-natural grasslands.
The results indicate that a major part of the spatial structure in bird patterns in agricultural-forest mosaics can be caused by the clumping of habitats either preferred or avoided by birds.
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F. Sergio, L. Marchesi, P.Pedrini, M. Ferrer and V. Penteriani.
Electrocution alters the distribution and density of a top predator, the eagle owl *Bubo bubo*.
Journal of Applied Ecology 2004, **41**: 836-845.
The authors investigated the impact of electrocution in two eagle owl *Bubo bubo* populations located in the Italian Alps and Apennines and subject to two different levels of electrocution risk. In a review of 25 studies, electrocution was frequently cited as the major cause of death and has progressively increased in the last three decades independently from other causes of mortality.

The impact of electrocution was tested by (i) comparing estimates of risk between currently occupied owl territories and infrequently

occupied or abandoned territories; (ii) collecting information on the spatiotemporal frequency of electrocution incidents; (iii) measuring density, breeding success and post-fledging survival for populations and territories subject to different degrees of risk.

Eagle Owl

In the low-risk population electrocution casualties peaked in the period of immature dispersal and at pylons that were good hunting perches. Eagle owls over-selected low-altitude habitats, which forced them into close contact with power lines. However, nest-site selection was independent of electrocution risk.

In contrast, in the high-risk population, territories near to power lines, most of them at low altitude, were progressively abandoned during a 10-year period, leading to a steeply declining, scattered, low-density and increasingly high-altitude population.

Conservation guidelines should prioritize the insulation of those pylons most likely to cause casualties (e.g. in good hunting habitat and close to nests), ensuring that all new lines are raptor safe.
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E. Bro, P. Mayot, E.Corda and F.Reitz.
Impact of habitat management on grey partridge populations: assessing wildlife cover using a multisite BACI experiment.
Journal of Applied Ecology 2004, **41**: 846-857.
The grey partridge is a species of conservation concern. In common with many farmland birds, its widespread decline in western Europe has been attributed to agricultural intensification. Attempts to restore populations have concentrated upon habitat management. In France, a mosaic of strips planted with maize- or kale-based mixtures is widely used to benefit the grey partridge on intensively cultivated farmlands. The rationale for planting these summer-to-winter cover strips is to increase the overwinter survival rate and hence breeding density. Although this policy is costly to apply, there is little information on its effectiveness.

The authors tested the effectiveness of this management scheme. No partridge population increase occurred on managed areas compared with control areas. Wildlife cover strips did not improve reproductive success but were associated with higher overwinter 'apparent mortality' rates.

Some field data suggested that there was a predation risk at cover stripfield edges. Cover strips may concentrate a number of species within small isolated areas and may act, under some circumstances, as an ecological trap for prey species such as the grey partridge. Due to these complex and unforeseen interactions, this habitat management measure proved unsuitable for partridge restoration.

The study demonstrated the necessity of field experiments at a farm-scale to test the effectiveness of habitat management schemes.
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M. D. Madhusudan.
Recovery of wild large herbivores following livestock decline in a tropical Indian wildlife reserve.
Journal of Applied Ecology 2004, **41**: 858-869.
This 2-year field study at Bandipur National Park, India, examined livestock-mediated resource limitation among five wild herbivore species: wild pig *Sus scrofa*, chital *Axis axis*, sambar *Cervus unicolor,* gaur *Bos gaurus* and Asian elephant *Elephas maximus*, by comparing their distribution and densities in adjoining livestock-grazed and livestock-free areas before, and after, a 49% decline in livestock density.

During 2001, mean densities of wild grazers, gaur, chital and elephant, were higher in the livestock-free area than in the adjacent livestock-grazed area. Densities of gaur, chital and elephant showed a sharp declining relationship with increasing livestock density, whereas no clear pattern was discernible with wild pig, a non-ruminant generalist, and the sambar, a forest browser. Preferred plant biomass also fell sharply with increasing livestock density.

Following the decline in livestock density in the livestock-grazed area in 2002, the densities of gaur, chital and elephant increased whereas no changes were seen in the densities of wild pig and sambar or in the preferred plant biomass.

These results indicate that resource competition may be intense between wild herbivores and grazing livestock, and if left unchecked could trigger declines of wild herbivores, particularly grazing ruminants and bulk feeders. Interventions to reduce livestock grazing may rapidly benefit wild herbivores that have been competitively suppressed. This has important implications for the management of livestock grazing in India's wildlife reserves.
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R. F. Pywell, J. M. Bullock, K. J. Walker, S. J. Coulson, S. J. Gregory and M. J. Stevenson.
Facilitating grassland diversification using the hemiparasitic plant Rhinanthus minor.
Journal of Applied Ecology 2004, **41**: 880-887.
Diversification of species-poor grasslands has proved to be problematical due to seed limitation, lack of microsites for germination and competition from established species.

Studies of semi-natural grasslands in Britain and Europe suggest that the presence of hemiparasitic angiosperms of the genus *Rhinanthus* is correlated with local decreases in productivity and an associated increase in species richness.

Following successful establishment in grassland of *Rhinanthus*, a native wildflower seed mixture was oversown into a number of the treatments at 5 kg ha^{-1}. The mixture comprised 10 forbs and all established with up to seven species m^{-2}. This resulted in an increase in mean richness of sown species.

There was a strong, inverse relationship between the frequency of *Rhinanthus* and sward height. There also appeared to be a threshold frequency of the hemiparasite above which there was a significant reduction in grassland productivity.

The introduction of *R. minor* is a practical management tool to facilitate the colonization of species-poor, productive grasslands by desirable species. This is achieved by the hemiparasite modifying the competitive

relationships between the component species, and increasing establishment and survival of introduced species. This species has a potentially central role in determining the structure and dynamics of grassland communities.
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A. C. Terry, M. R. Ashmore, S.A. Power, A. Allchin and G. W. Heil.
Modelling the impacts of atmospheric nitrogen deposition on Calluna-dominated ecosystems in the UK.
Journal of Applied Ecology 2004, **41**: 897-909.
The increased deposition of nitrogen (N) from the atmosphere over the last century has been associated in Europe with changes in species composition, including replacement of plants such as *Calluna vulgaris* by grasses in heathlands and moorlands. However, these changes may also be associated with changes in management practices and environmental stresses, which may interact with changes in N deposition. Policies have now been implemented to reduce N deposition, but whether, and over what time scale, changes in vegetation composition will be reversed is uncertain.

A model was developed to simulate competitive growth between *Calluna vulgaris* and the grass species *Deschampsia flexuosa* and *Molinia caerulea,* driven by light and N availability. The model was applied to UK heath and moorland systems and new routines to simulate management (burning, mowing, sheep grazing) were incorporated, and the model included a stochastic treatment of heather beetle *Lochmaea suturalis* responses. The effects of increases and decreases in N deposition over a period of 250 years were simulated under different management regimes.

Using a simulation model of competition between heather and grasses for light and N, scenarios were run for 250 years. Nitrogen deposition above 30 kg ha year^{-1} initially increased *Calluna* biomass, consistent with field experiments, but after several decades led to grass dominance rather than heather dominance. The effect of N deposition depended on grazing pressure and the degree of litter removal through mowing, burning or sod-cutting. The benefits of policies to reduce N deposition, in terms of restoring heather dominance, may only be realized after several decades, and active site management may be needed to capture the full benefits of such policies.
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R.E. Blyth, M. J. Kaiser, G.Edwards-Jones and P. J. B. Hart.
Implications of a zoned fishery management system for marine benthic communities.
Journal of Applied Ecology 2004, **41**: 951-961.
The purpose of the paper was to investigate the large-scale chronic impacts of towed fishing gears on zoned commercial fishery management systems and to allow comparison of habitats and communities between areas of seabed subjected to varying levels of towed-gear use.

The Inshore Potting Agreement (IPA) was implemented in 1978 to restrict the use of towed gears in inshore areas that had traditionally been used by static-gear (pot and net) fishers. The authors used scallop dredges to sample benthic communities at sites within and adjacent to the IPA area that had been subjected to four different commercial fishing regimes since the inception of the system. These were: (i) towed gears only, (ii) annual, seasonal towed-gear use, (iii) temporary towed-gear use but reverting to static-gear use 18-24 months prior to sampling, and (iv) static gears only.

There were no significant differences in the total species richness or biomass of benthic communities between sites under regimes (i) and (ii). There was significantly greater total species richness and biomass of benthic communities at sites under regimes (iii) and (iv) than at sites under regimes (i) and (ii). The benthic community biomass under regime (iv) was significantly greater than under all other regimes.

The IPA has maintained benthic species that are important for the settlement and survival of others. The cessation of towed-gear fishing for a period of greater than 2 years would be necessary for benthic communities in areas adjacent to the IPA to recover such that they were indistinguishable from areas where towed gears had not been used.

The fishing industry may object to the creation of permanent closed areas because harvestable stocks can move in space and time. This study indicates that zoned fishery management can allow some sectors of the fishing industry to retain access to fishery resources while protecting benthic species and habitats.
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A.C. Frantz, M. Schaul, L. C. Pope, F. Fack, L. Schley, C. P. Muller and T. J. Roper.
Estimating population size by genotyping remotely plucked hair: the Eurasian badger.
Journal of Applied Ecology 2004, **41**: 985-995.
Size is a basic attribute of any population but it is often difficult to estimate, especially if the species under investigation is rare or cryptic. For example, there is currently no cheap and robust way of estimating the abundance of the European badger *Meles meles*, despite the species' role as an agricultural pest and carrier of bovine tuberculosis.

The authors tested the reliability and accuracy of estimating badger abundance by genotyping DNA extracted from remotely plucked hair and concluded that DNA extracted from remotely plucked badger hair could form the basis of a potentially cost-effective, reliable and widely applicable method of estimating badger abundance. Hair trapping may offer a feasible method of estimating population size in a range of species even when the species are rare or patchily distributed.
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D. M. Cairns and J. Moen.
Herbivory influences tree lines.
Journal of Ecology 2004, **92**: 1019-1024.
Transitions between major vegetation types, such as the tree line, are useful systems for monitoring the response of vegetation to climate change.
Tree lines are considered to be primarily thermally controlled, although recent work has highlighted the importance of biotic factors. Dispersal limitation and the invasibility of the tundra matrix have been implicated and herbivory is proposed as an additional control at some tree lines.

The authors developed a conceptual model in which differing relative impacts of foliage consumption, availability of establishment sites, trampling, dispersal and seed predation can lead to very different tree-line responses.

The presence of large numbers of small trees above the current tree line at a site in northern Sweden that experiences limited reindeer (*Rangifer tarandus*) herbivory suggests range expansion. Other locations in the same region with higher reindeer populations have considerably fewer small trees, suggesting that range expansion is occurring much more slowly, if at all.

The use of tree lines as indicators of climate change is confounded by the activity of herbivores, which may either strengthen or nullify the impacts of a changed climate. Similar arguments are likely to be applicable to other ecotones.
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News in Brief

Time to see change

Charting Progress: An Integrated Assessment of the State of UK Seas is a new DEFRA report, which covers the two most serious threats facing the sea: over-exploitation of some marine species and the impacts of climate change. The resulting effects of climate change are leading to the loss of intertidal habitats as a result of coastal squeeze, as salt marsh and sand dunes get trapped between rising sea levels and fixed sea walls. This has implications for the management and cost of flood defences, many of which rely on coastal habitats to reduce wave energy.

To view the report please go to: http://www.defra.gov.uk/environment/water/marine/uk/stateofsea/index.htm

2004 - The worst year on record for UK seabirds

Concern has been raised over the health of some of the United Kingdom's internationally important seabird populations. UK Seabirds in 2004, a report compiled by the Joint Nature Conservation Committee (JNCC) revealed that 2004 was the worst breeding season on record for some of the most common species such as the black-legged kittiwake, the northern fulmar and the common guillemot. The report also showed that their numbers, which together comprise half of all seabirds breeding in the UK, have declined in recent years.

It should be noted that seabird populations are quite resilient to occasional years of poor breeding success – they are long-lived and can afford a few years of non-breeding in their lifetime. However, if the food shortages that occurred in 2004 and other recent years were to become sustained, then breeding populations will start to decline, as has already been seen in the kittiwake.

Further research is underway to gain a better understanding of the mechanisms involved, particularly with respect to the role of fisheries and climate change.

For more information please contact the JNCC via their website www.jncc.org.uk

Birds of prey: progress to resolve conflicts

It has been over five years since the The UK Raptor Working Group produced a report advising Government on solutions to conflicts involving protected birds of prey, game and recreational interests. These included predation on red grouse in the uplands, racing pigeons, and pheasants prior to their release in the lowlands. Over the last five years, the Joint Nature Conservation Committee (JNCC) and the country conservation agencies have been helping to implement the Working Group's recommendations. There has been significant progress.

- The establishment of a Scottish Raptor Monitoring Group;
- The establishment of Scotland's Moorland Forum;
- The establishment of a major project by English Nature to conserve threatened hen harriers in England;
- The launch by the police in 2004 of Operation Artemis;
- The undertaking of joint research with pigeon racing interests in Scotland which has led to a better understanding of the nature and extent of raptor impacts on pigeons;
- The publication of Birds of Prey in a Changing Environment (2003);
- Wide dissemination of best-practice guidance on minimising raptor predation on pheasants in the lowlands;
- A decline in levels of illegal persecution in some areas of lowland Britain.

The JNCC has recently advised that there is still much work to be done to complete the recommendations made by the working group and many raptors still face heavy persecution.

For more information please visit www.jncc.gov.uk

Rare Fish re-housed at a secret location in fight against extinction

The Gwyniad is a member of the whitefish family and is unique to Llyn Tegid. Changing water conditions mean that it has become more difficult for the Gwyniad to survive in the lake. A lack of oxygen in the water caused by the growth of blue green algae and human activity means that it can no longer make its home in the deeper parts. And the surface waters are too warm for the Gwyniad so the sections of water in which it can survive have become severely limited.

Amid concerns that the Gwyniad could soon face extinction if conditions do not improve a collaborative project has been set up between the Countryside Council for Wales, Environment Agency Wales and Snowdonia National Park.

Spawning fish and Gwyniad eggs will be taken from Llyn Tegid and transported first to a hatchery and then to a new site where it is hoped that a new population will flourish under more favourable conditions.

Education CD asks children to control their own virtual community

A new educational CD, specially produced for children between 8 and 11 years old, aims to give children environmentally responsible values and help them apply these values to the decisions they make. The CD gives the child a senario and a sequence of choices from building a factory or developing a football ground or developing the area for tourism? For each of these choices they will have to prove that the research has been done and that they need to consider the consequences of their own actions.

The CD has been produced by B-DAG, a Cardiff-based multimedia publisher, specialising in creating fun educational interactive programs for children, with support from the Welsh Books Council and the Countryside Council for Wales. Copies can be bought from the Welsh Books Council or direct from the website www.b-dag.com at £29.99.

New Forest National Park is born

The New Forest, created in 1079 by William the Conqueror as a hunting area for deer, is now, as of 1 March 2005, the New Forest National Park. The ancient hunting grounds become the UK's smallest national park and the first in England for 50 years. The National Park supports a mosaic of wildlife habitats many now rare: extensive wet and dry heaths with rich valley mires and associated wet and dry grasslands, ancient pasture and enclosed woodlands, a network of clean rivers and streams and frequent permanent and temporary ponds. The New Forest has outstanding examples of habitats of European importance including bog woodland and riverine woodland. It will lead to further protection for these rare species and habitats. The New Forest National Park Authority will receive an annual government grant of about £3.5m, to be spent on conservation projects.

New era for farming as Environmental Stewardship launched

Every farmer in England will be able to earn payments for undertaking environmental protection and enhancement work on their land under the new Environmental Stewardship scheme. Farmers will earn money for work such as looking after hedgerows to provide habitat for birds and small mammals, creating wildflower plots for bees and other beneficial insects and protecting ponds from pesticides and fertilisers to encourage wildlife such as frogs and newts.

The Environmental Stewardship Scheme will boost populations of species hit by the loss of hedgerows and wild flowers and increased pesticide use. Funded by the EU and the government, it will be open to all farmers.

Farmers are paid to deliver habitat improvements under the Environmentally Sensitive Areas and Countryside Stewardship Schemes which have now been reformed and replaced with the new Environmental Stewardship Scheme.

http://www.defra.gov.uk/news/issues/2005/farm-0303.htm

Scotland's Environmental Assessment Bill

The Environmental Assessment Bill in Scotland will ensure that all public sector plans, strategies and programmes are scrutinised for their environmental impact. Strategic Environmental Assessment (SEA) provides a systematic method of considering the significant environmental effects on the environment of public sector strategies, plans and programmes.

Through its consultation provisions the Bill proactively seeks to increase effective public participation in public sector decision making. It does this through its requirements to notify and to consult with key environmental agencies, Scottish Natural Heritage, Historic Scotland and Scottish Environment Protection Agency and with the public on the environmental assessments of the strategies, plans and programmes subject to the Bill.

Lake ospreys given 'super nest'

Gale force winds blew the ospreys' nest from the top of a tree in Wythop Wood, Bassenthwaite Lake near Keswick. Wildlife experts have rebuilt the nest in readiness for the birds' expected arrival. They are the first pair of osprey to breed in the Lake District in 150 years. Ospreys use the same nest each year, and with the birds due to arrive back in the area next month, the Lake District Osprey Project team was faced with the possibility that the birds would have nowhere to nest on their return to Cumbria. The nest has been the focus of global attention, with pictures beamed from a camera overlooking the nest sent around the world over the internet.

Beavers bound for Argyll

Many NGO's including the Scottish Wildlife Trust are urging Ministers to approve an official recommendation for a trial re-introduction of European beavers to Scotland by Scottish Natural Heritage. Martin Gaywood (Scottish Natural Heritage) gave a talk at the IEEM conference in Southport in November on this subject. Approval for the trial would see beavers living in Scotland for the first time since they were hunted to extinction in the sixteenth century. As part of the European Union's Habitats Directive, UK government is obliged to consider the restoration of extinct species. As part of the Scottish Biodiversity Strategy, the Scottish Parliament has made a further commitment to restoring and enhancing key habitats as well as reversing previous losses of species.

Twenty-four countries across Europe have already successfully re-introduced the beaver, with evidence suggesting that this species offers the least problematic opportunity for the re-introduction of an extinct mammal. The site for the trial is Knapdale Wildlife Reserve in mid-Argyll which is national forest land managed by the Forestry Commission Scotland in partnership with Scottish Wildlife Trust.

Further details available from SNH and the Scottish Wildlife Trust.

Water vole numbers are critical

Water vole numbers have plummeted with alarming speed nationally. The situation is particularly critical in the South West and the water vole has not officially been recorded in Cornwall for seven years.

Cornwall was part of the English stronghold for the mink, which are now believed to be in decline themselves, although this may be too late to benefit the water vole. Recent research suggests that another key factor affecting the water vole is flooding. Despite being semi-aquatic mammals that live along riverbanks, they do not like sites that flood.

Riverside vegetation is important as a bank with reeds or long grasses can provide suitable cover and protection. However, riverside management has seen an increase in mowing the vegetation, dredging watercourses and grazing by livestock. These together with man-made modifications to reinforce riverbanks with concrete and increased water leisure pursuits, have all contributed to the destruction of its habitat.

If you think you've seen a watervole in Cornwall, let the Cornwall Wildlife Trust know on 01872 273939.

Nature conservation is good for you and your community

A new report by the London Wildlife Trust and English Nature says wildlife conservation could be the answer to some of Londoners' most pressing concerns. The new report, 'London's Life Force – how to bring natural values to Community Strategies,' shows the positive impact of integrating nature into a wide range of initiatives related to health, housing, community cohesion and economic prosperity.

The report demonstrates how biodiversity links directly to sustainable development at a local level, through Community Strategies. The report also recommends that biodiversity should be at the heart of the Government's commitment to create cleaner, safer, greener communities.

The report concludes that wildlife can be a key indicator of the quality of the local environment and people's quality of life. The ability of a neighbourhood to support a wide range of wildlife is not only an expression of the amount of 'natural' habitat locally (for example, woods, ponds and grasslands) but also of the care and sympathy applied to the management and use of parks, green spaces, gardens and communal spaces. It's also a reflection of the way buildings and the landscapes around them are maintained.

A copy of the report is available from:
http://www.wildlifetrusts.org/

ARKive's mobile menagerie

Have you ever dreamed of having a mobile menagerie where you can see the wonders of the natural world at the touch of a button? ARKive, the award-winning web-based Noah's Ark for images and information on the world's endangered species is now available to anyone, anywhere in the world with an internet activated phone.

Users can now view the ARKive website's vast bank of images, species information and a selected range of movies via their handsets. All that is required is to access the web browser option on the phone and type in www.arkive.org, ARKive will then do the rest. ARKive has so far created species profiles for over 1500 species, with 10,000 still images and more than 20 hours worth of movies available via its free-to-view website.

Visit www.arkive.org for more information.

Plea for public help with otter casualties

Many otters die on roads in Wales each year. A new poster has been produced to encourage people to report sightings of dead otters to the Countryside Council for Wales or the Environment Agency Wales. The information will help the Roads and Otters Steering Group collect records of otters killed on the country's roads and use the information to provide safe crossings for them.

New roads can be designed with special features to help otters cross safely, such as ledges under bridges above the flood level, or even dry tunnels next to the bridge. Better records of where otters are killed on Welsh roads will help prioritise funding for such mitigation measures.

If you see a dead otter in Wales, please follow these two steps:
1 – Write down where and when it was found;
2 – Ring Environment Agency Wales on 0800 807060 or the Countryside Council for Wales on 0845 1306229.

Biovision

Biovision is a think tank which very much links into sustainability. It recently met at a London Hotel to discuss the agenda for a major Conference to be held in Lyon from the 10th – 15th April. There are three themes to be addressed – Health for all?, Agriculture and Nutrition and BioIndustry and the Environment. About 5000 delegates are expected. From the health viewpoint it ties in with the 50th Anniversary of the successful trials of the Salk vaccine against polio. The conference itself does not come cheap at 1050 Euros but in terms of blue sky thinking could be money well spent.

Visit www.biovision.org for further information.

Institute News

Who's who in IEEM - 2005

In previous years at about this time, I have listed the names of and contact e-mails of members of Council and the various IEEM Committees. If you wish to raise an issue with a Council or Committee member, you will be most welcome to do so.

The Council members and office bearers are as follows:

President

Dr Chris Spray, MA, Ph.D, MBE, CEnv, MIEEM Director of Environmental Science, Scottish Environment Protection Agency (SEPA) - chris.spray@sepa.org.uk

Vice- President

Mr William Manley, BSc, MPhil, PGCE, CEnv, MIEEM, Principal Lecturer: Countryside Management, Royal Agricultural College, Senior Consultant: GFA-RACE Partners Ltd - will.manley@royagcol.ac.uk

Secretary

Dr Robin Buxton, BA, B.Phil, D.Phil, CEnv, MIEEM, Chairman,The Northmoor Trust - Robinbuxton@compuserve.com

Treasurer

Dr Alex Tait BA, DPhil, CEnv, MIBiol, MIEEM, County Ecologist, East Sussex County Council – alex.tait@eastsussexcc.gov.uk

List of Council Members

Dr Tim Bines	Ecological Management Consultant, Parnassia parnassia@onetel.net.uk
Dr Nick Carter	Director of Development, British Trust for Ornithology nick.carter@bto.org
Ms Kathy Dale	Senior Ecological Consultant, Northern Ecological Services kd@northecol.co.uk
Ms Nicola French	Technical Director (Environment), Terence O'Rourke ltd nicola.french@torplc.co.uk
Mr Richard Graves	Technical Director, Faber Maunsell richard.graves@fabermaunsell.com
Mrs Jenny Neff	Director and Principal Ecologist, Ecolgoical Advisory and Consultancy Services (EAC) info@eacs.iol.ie
Ms Pam Nolan	National Ecology Manager, Environment Agency. pam.nolan@environment-agency.gov.uk
Mr Steve Pullan	Countryside Steward Advisor, Department of Environment, Food and Rural Affairs steve.pullan@defra.gsi.gov.uk
Ms Karen Colebourn	Environmental Consultant karencolebourn@yahoo.co.uk
Dr John Rose	Senior Lecturer, Sheffield Hallam University j.c.rose@shu.ac.uk
Dr Peter Shepherd	Partner, Baker Shepherd Gillespie p.shepherd@bsg-ecology.com
Dr Janet Swan	Director, RSK ENSR Environment Ltd swan@rskensr.com
Dr Andy Tasker	Director, Warwickshire Wildlife Trust andy@globe.org.uk
Dr Eirene Williams	Principal Lecturer, University of Plymouth, Seale Hayne ewilliams@plymouth.ac.uk

Current Committee Members

The Chairman of the Committees are shown in bold type.

Finance and General Purposes Committee

Dr Chris Spray	**chris.spray@sepa.org.uk**
Dr Robin Buxton	Robinbuxton@compuserve.com
Dr Andrew Cherrill	andrew.cherrill@sunderland.ac.uk
Mr Kim Harding	K.Harding@macaulay.ac.uk
Mr William Manley	will.manley@royagcol.ac.uk
Mrs Jenny Neff	info@eacs.iol.ie
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Dr Andy Tasker	andy@globe.org.uk

External affairs Committee

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Dr John Box	john.box@atkinsglobal.com
Dr Jon Capel	jon.capel@hullcc.gov.uk
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Mr Robert Frith	robfrith@netcomuk.co.uk
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Ms Jenny Heap	jheap@sunrise.ch
Mrs Elizabeth Johns	elizabeth.johns@npaconsult.co.uk
Dr Lawrence Jones-Walters	lawrence.j-w@english-nature.org.uk
Ms Zana Juppenlatz	zana.juppenlatz@adas.co.uk
Mr William Manley	will.manley@royagcol.ac.uk
Dr Stephanie Wray	swray@cresswell-associates.com

Membership Admissions Committee

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Mr Paul Rooney	rooneyp@hope.ac.uk
Mrs Claire Wansbury	claire@jfa.co.uk

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Ms Pamela Nolan	pam.nolan@environment-agency.gov.uk
Mr Peter Phillipson	Peter@telltale.co.uk
Dr Elizabeth Price	e.price@mmu.ac.uk
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Dr Fred Slater	slaterfm@cf.ac.uk
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Mr Mark Woods	markwoods@ntu.ac.uk

Scottish Section Committee

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Mr Kim Harding	K.Harding@macaulay.ac.uk

Mr Paul Kirkland	pkirkland@butterfly-conservation.org
Ms Geraldine McGowan	gw@northecol.co.uk
Miss Sally Monks	sally.monks@erm.com
Miss Crona O'Shea	co2@stir.ac.uk
Dr Annie Say	annie.say@naturalcapital.co.uk
Miss Christine Welsh	christine.welsh@snh.gov.uk
Ms Karen Wright	karen.wright@snh.gov.uk

North East Section Committee

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Mr Ian Bond	Ian.Bond@stockton.gov.uk
Dr Andrew Cherrill	andrew.cherrill@sunderland.ac.uk
Ms Fiona Corby	Fiona.Corby@defra.gsi.gov.uk
Dr Rachel Penn	pa@pennassociates.com
Mr Steven Pullan	**steve.pullan@defra.gsi.gov.uk**

Shadow section in the North West

Mr Paul Rooney	rooneyp@hope.ac.uk

Shadow Section in Ireland

Mr Peter Marsden	peter.marsden@erm.com

Professional Development Programme

The Professional Development Programme seems to be proving highly popular this year with quite a number of courses already filled. This really is a case of booking early to avoid disappointment. These courses are an ideal way (but not the only way) of meeting some of the CPD requirements of the Institute.

IEEM and the Training Education and Careers Committee would like to record their gratitude to the many supervisors of the courses who have been involved in the programmes for this year and last year. Last year over 700 people took part in the courses so it is really a significant feature of IEEM.

Continuing Professional Development

There does now seem to be more acceptance of the need for CPD but there is still some way to go. This does not reflect well on professionalism where the assumption is that members will be making efforts to keep their skills up to date. Anyway it would be peevish not to welcome the improvement. Those who have not yet responded may find that this is identified in the 10% test sample which will be carried out shortly.

IEEM Website

The IEEM website continues to develop and there is now much more on the members section. For those members who have not done so this part is well worth a visit. A number of members have enquired recently as to how access is obtained and for those still unsure, please contact Joel Bateman for the necessary information– joelbateman@ieem.demon.co.uk.

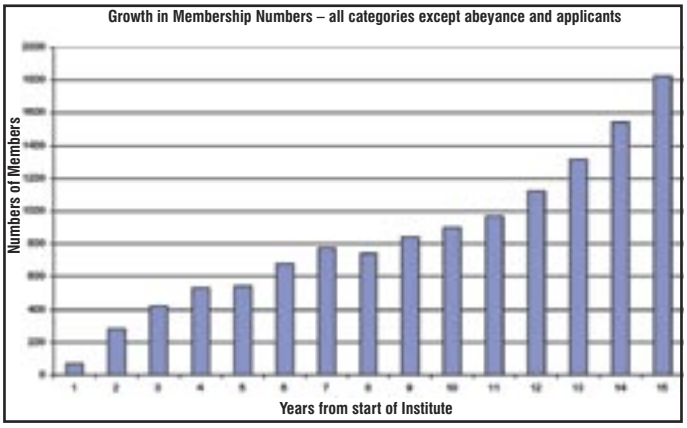
Membership Renewals

The process is once again over and again there was a very high rate of renewals. The many members who required two reminders and finally an email or phone call really ought to reflect on whether this exercise should be necessary and what it means for IEEM resources.

This year there was a cost advantage in paying by Direct Debit and this may well be the case again. But we have to have the details from you in good time so do take time to sort it out now.

New Members

The Membership Admissions Committee welcomes the support of existing members in sponsoring applicants. However, could you please check that your applicant is applying for the appropriate level of membership. See the eligibility criteria on the IEEM website. Growth



in membership still continues at an all time high as seen in the chart. There is real strength in numbers so please keep the pressure up on your colleagues.

IEEM 2005 Conferences

The programme for the Spring Conference is now developing well and the programme will be available shortly. The date is 19th May 2005 and it will be held at Hamilton House, London - near Kings Cross Station. The theme will be Impact Analysis: from Strategic to Specific. Now nearing completion, the comprehensive IEEM project on Ecological Impact Assessment will be a feature.

The location and theme for the Autumn Conference has now been agreed. It will be held on the 15 – 17th November at the Carrington House Hotel in Bournemouth and will broadly follow the format of previous years with delegates assembling on the evening of the 15th and 2 full days to follow. The theme will be the effects of housing and other developments on ecology. This should prove to be even more popular than our last conference at Southport – put it in your diary now! We usually try to include papers on the first day that set the broad scene and papers of a more practical nature on the second day. If anyone is able to offer a paper, especially on the practical aspects or examples relating to the theme it would be most welcome. We can't promise to include it until we get to the final planning stages, but we have had several in previous conferences.

EFAEP

IEEM members will know of the involvement of IEEM with EFAEP, the European Federation of Associations of Environmental Professionals.

The organization has two main meetings a year and an Executive Committee which meets more regularly. Tim Bines and Jim Thompson recently went to Brussels for the Executive meeting which was also an opportunity to introduce Will Pope, Chairman of SocEnv. It is hoped that at the General Assembly in June which is to be held in London there will be further opportunities to develop these useful links. For further information about EFAEP, please visit the website www.efaep.de.

A new venture for EFAEP will be the creation of a Europe-wide Directory of Environmental Professionals which will give UK members the chance to feature in a wider Europe. It is proposed that the wording currently used on the IEEM website will be directly transferable but it also seems likely that members will be responsible for making their own entries and keeping them up to date.

EFAEP invites all IEEM members to let it know what you would like it to do and which activities would be most relevant for you. Please take a few minutes to go to the EFAEP website www.efaep.org and fill in the questionnaire. The results will give EFAEP a useful insight to what environmental professionals want on a European scale.

Consultations Update
The External Relations Committee has responded to several consultations since the last update of progress, namely:
Review of The General Licences to Kill or Take Certain Species of Birds under Section 16 of The Wildlife And Countryside Act 1981;
Review of Badger Licensing Procedures for England and Wales;
Achieving the Sustainable Management of Wild Deer in England;
Consultation on PPS9: Biodiversity and Geological Conservation.

The Training Education and Career Development Committee responded to the recent consultation: Education Outside the Classroom.

UKPopnet and the British Ecological Society
An example of blue sky thinking was the recent meeting at the University of East Anglia to identify the key questions that policy makers might ask of ecologists. Several organisations including IEEM were invited to put forward their suggestions with the idea that the 2-day meeting would distill them down. IEEM was represented by Chris Spray and Jim Thompson.

The initial list consisted of 900 questions and 2 days were fully taken up in distilling these to about 100! It was a fascinating process and the group achieved a good deal of consensus, much being due to the hard work of Bill Sutherland and Andrew Watkinson. The results are to be written up in the Journal of Applied Ecology shortly.

Spreading the Word
IEEM members will be interested to know that IEEM now has a selection of PowerPoint Presentations available for use when giving talks about the Institute. These are targeted specifically for:

- Statutory Agencies;
- NGOs;
- Local Authorities;
- Consultancies;
- Industry;
- Teaching and Research;
- Students.

Also available is an updated leaflet providing a short introduction about the Institute. These leaflets complement the presentations and will be useful for members should they want promotional information easily to hand.

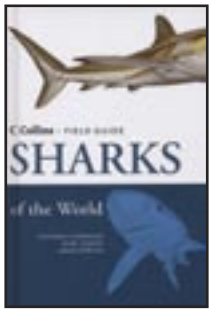
For a copy of a Powerpoint presentation on CD or some information leaflets please contact Joel Bateman at the IEEM office.

Code of Profesional conduct
Don't forget that the revised code was approved at the last AGM and is now somewhat sumlified. the revised version will be sent out to all members shortly.

New Constitution
Following the decision of the Charity Commission not to approve the application of IEEM to be a charity, there will need to be some revisions to the IEEM constitution. These will be put to an EGM on 19th May during the meeting in London – time 16.00.

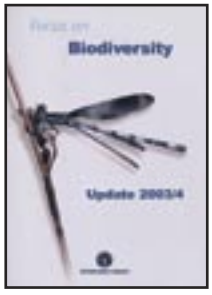
Notice of EGM: 19th May 2005, Hamilton House, Mabledon Place, London WC1H 9BD, 16.00.

Recent Publications



Collins Field Guide — SHARKS
Authors: Leonard Compagno, Mark Dando & Sarah Fowler MIEEM
Available from: Collins
ISBN: 0-00-713610-2
Cost: £25.00
The classic horror film "Jaws" made the shark a star and last year's "Open Water", based on a true story has done the same.
This book is the definitive identification guide to the sharks of the world. The shark is undeniably the 'king of the seas', having existed unchanged for 350 million years. Not only is it the biggest fish, it is also the best equipped for hunting down and destroying its prey. It is capable of living in all waters shallow or deep, tropical or temperate, fresh or salt, and unlike most animals, it has no natural predators apart from the Killer Whale.
Set to become a classic natural history title, the Collins Field Guide to Sharks describes and illustrates the world's 530 species of shark. Shark families are grouped together and for each individual species there is detailed identification information, colour illustration and a distribution map showing where that species can be found. Covering all aspects of these extraordinary creatures, from their behaviour, breeding, feeding and ecology, right through to the impact of humans on sharks throughout the world, this is a seminal work for those with an interest in the field.

Development and flood risk - guidance for the construction industry (C624)
Authors: James Lancaster, Martin Preene & Clive Marshall
Available from: CIRIA www.ciriabooks.com
ISBN: 0-86017-624-X
Cost: Non-members £130.00The effects of climate change, population growth and demographic changes mean that major flooding events are likely to become more frequent in the UK. This book sets out practical guidance in assessing flood risk as part of the development process. It describes the mechanisms and impacts of flooding, whether caused by rivers, the sea, estuaries, groundwater, overland flow, artificial drainage systems or infrastructure failure.
The guidance recommends a tiered approach to flood risk assessment and provides a simple-to-use toolkit to help practitioners complete the assessments. It covers UK planning policy guidance for development and flood risk and is aimed at achieving a consistent approach to the implementation of that guidance, which in turn should allow developments to be planned and designed more efficiently.
This guidance will be of value to ecologists and environmental managers who work with developers, builders, designers and planners.



Focus on Biodiversity Update 2003 –2004 Environment Agency
Available from: the www.environment-agency.gov.uk
This report summarises the progress made by the Environment Agency (EA) in carrying forward its principle obligations under the UK Biodiversity Action Plan (UK BAP) during 2003 - 2004
The original 'Focus on Biodiversity' document was released in July 2000 and clearly set out the Environment Agency's role, obligations and involvement in wildlife conservation and in particular actions under the UK BAP. It was designed to be the EA base line for tracking progress. This is the fourth annual progress report.
The report feeds back on 39 key BAP species and 5 habitats. It also gives an overview of the different legislation involved for the species and habitats. The most useful attribute of this document is the summary of each particular species and examples of the project work done to achieve their targets. The document also highlights actions planned for 2005 and how much it is expecting to spend.
This document highlights the effort the EA puts into nature conservation. It is primarily aimed as an internal report for agency staff, but is also relevant to all environmental professionals and academics.

Coastal and Estuarine Managed Realignment – Design Issues
Editors: D. J. Legget, N. Cooper, R. Harvey
Available from: CIRIA www.ciriabooks.com or Tel: 020 7549 3300
ISBN: 0-86017-628-2
Price: £90.00
Managed realignment is a relatively new technique compared with wall and embankment design, beach recharge, and the use of groynes and rock structures. This approach to design has been developed over the past decade. It makes use of natural defences such as salt marshes, shingle ridges, sand dunes and other coastal features that absorb wave and tidal energy.
This book is split into three sections:
Part 1. Explains the objectives, application and general background to managed realignment schemes, the application of managed realignment as an option. It gives a general background. It considers success and failure criteria for different stakeholders and how these might have a bearing on site design issues.
Part 2. Discusses whether managed realignment is appropriate for a particular site and explains how it may be delivered. This section is intended for a wider readership and explains the decision process.
Part 3. Provides technical guidance on designing and implementing managed realignment schemes. The guidance covers the design, implementation, construction and monitoring phases.
Managed realignment is a developing area of flood management that draws upon many traditional techniques. As techniques improve, there will be opportunities to innovate and to feed such innovation back to the more commonplace approaches to flood management. It provides coastal managers and their consultants with comprehensive information on the design process and help with the practical application of this management option. This book's comprehensive guidance on the design and construction of managed realignment schemes will be of value to coastal and estuarine managers and consultants for whom it has been designed. The book also comes with the guidance on CD, which is a useful extra.

Water birds and Wetland Recreation Handbook – A review of issues and management practices
Authors: J. Kirby, N. Davidson, N. Giles, M. Owen, C. Spray.
Available from: The Wild fowl and Wetland Trust Tel: 01453 891900
ISBN: 0900806508
This handbook is about wetlands, whether they be reservoirs, estuaries or lakes, as places for people to enjoy recreational activities but also as habitats supporting significant water bird populations. It focuses on what we know about the interactions and on the management approaches that may reduce or remove any conflicts of interest. Whilst many of the examples are British the issues raised and their solutions are more widely applicable especially to Western Europe.
The book starts by giving a background to the key terms and develops a good overview of the conservation issues and the conflicts of interest. It goes on to describe what wetlands provide for water bird species, for example a place to moult or to breed etc. Then it explores in more detail water based recreation from sailing to angling, discussing different recreational activities and their popularity. Chapter 4, discusses how these activities impact on water birds including key issues like mortality and disturbance. Chapter 5, develops the need for management and highlights the policy issues surrounding finding a suitable compromise between conservation needs and recreational usage, developing themes such as zonation, landscape design and codes of practice. In each of the sections key terms and principles are highlighted in boxes and the book is filled with interesting examples, figures and images.
This book holds a large quantity of information for ecologists and is a comprehensive guide to water birds and wetland recreation. This book is recommended to all environmental managers and professionals involved with wetlands schemes that have a variety of recreational impacts.

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 3rd May, 2005. 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.

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

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

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

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

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

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

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5 – 7 April Practical Plant Conservation. The National Botanical Gardens, Glasnevin, Dublin. A Plant Network Conference on how botanical gardens are contributing to conservation.
For more details, contact Matthew Jebb Tel: 00353 1 804 0329 or e-mail: mjebb@duchas.ie

5 April Joint BES/BSAS Symposium: Farm Animals and Biodiversity. University of York. For more details, contact James Bullock e-mail: jmbul@ceh.ac.uk

8 – 9 April. Lyme Regis Fossil Festival. Come along to the two-day festival and join amateur palaeontologists of all ages in fossil hunts, art classes, exhibitions, sand sculptures, walks and evening talks.
For more details, contact Tel: 01297 444570 or visit www.lymeregisfossilfestival.co.uk

12 – 13 April. Native flora for the future. Flora Locale Conference, Reading. This two day conference aims to concentrate on the issues surrounding the sourcing of planting stock for habitat restoration and creation projects.
For more details, contact Liz Manley Tel: 01488 680458 e-mail: info@floralocale.org

11 – 15 April. The World Life Sciences Forum biovision 2005. Lyon, France. The World Life Sciences Forum 2005 will provide a renewed opportunity for this unique platform to carry forward, in an ethical and balanced manner, the key developments of the 21st century.
For more details, visit www.biovision.org

29 – 30 April. Urban Environments & Biodiversity. Urban Environments, History, Biodiversity and Culture. Sheffield. The event seeks to address major issues of urban environmental history, urban ecological timelines of post industrial landscapes.
For more details, contact Paul Howden-Leach Tel: 0114 2724227

4 May. An Introduction to Translocation of Great Crested Newts. Warrington, Cheshire. This practical course will introduce standard survey methods for amphibians with special emphasis on the great crested newt. **Repeated on the 5 and 6 May**.
Part of the IEEM CPD programme.

11 May. North East Section Cleveland Field meeting. Meeting location TBA. Time 2.00pm. INCASite and details to be arranged For those who missed the site visits when the annual conference came to Newcastle the regional group have been invited back to have another look.
For more details, contact Steve Pullan Tel: 0191 266 1769 or e-mail: steve.pullan@virgin.net

12 May. Basic Taxonomy and Flowering Plant ID. Redhill, Surrey. An introduction to the 'whys' and 'whats' of Taxonomy in general, followed by a look at keys of all sorts and how to use them as aids for identifying different groups.
Part of the IEEM CPD programme.

18 May. Introduction to NVC Surveying for Woodlands. Northamptonshire. The aims and principles of the NVC will be addressed, as will the basics of woodland surveying and NVC interpretation. The idea is to relate text book descriptions to field situations and to demystify some of the terminology.
Part of the IEEM CPD programme.

18 May. River Survey Techniques. Perth, Scotland. This workshop will introduce current techniques used for evaluating river habitats. Methods will include Macrophyte sampling, River Corridor Survey, River Habitat Survey and SERCON.
Part of the IEEM CPD programme.

19th May. Impact Analysis: from Strategic to Specific. Hamilton House, London - near Kings Cross Station. Now nearing completion, the comprehensive IEEM project on Ecological Impact Assessment will be a feature.
For more details, contact Nick Jackson Tel: 01962 868626, e-mail: nickjackson@ieem.demon.co.uk.

20 May. A World Turned Upside Down. North West Section Meeting. Landlife National Wildflower Centre, Knowsley, Liverpool.
For more details, contact Paul Rooney Tel: 0151 291 3933 e-mail rooneyp@hope.ac.uk

24 – 26 May. ET 2005 and EMF expo. NEC Birmingham. The Environmental Management Forum is the UK's leading event for environmental accreditation, consultancy, training and software.
For more details, visit www.et-expo.co.uk

15 June SUDS - Time to get to grips with it. SOAS, London, CIWEM Conference. The conference will cover the potential benefits and actual and perceived barriers with a view to establishing how these may be resolved.
For more details, contact Justin Taberham at CIWEM Tel: 0207 883 3110
e-mail: Justin@ciwem.co.uk

18 June. Achievements in the reclamation of coal waste heaps in the Lancashire coal field - learning from hard 1 experience. North West Section Meeting. Meet at J4 M61 at 10:30.
For more details, contact Paul Rooney Tel: 0151 291 3933
e-mail rooneyp@hope.ac.uk

18 – 23 June. 17th Botanical Congress. Vienna, Austria.
For more details, visit www.ibc2005.ac.at

20 – 23 June European Vegetation Conference. National University of Ireland, Galway. The objectives of this conference are to provide a forum for European vegetation and conservation scientists to examine various aspects of European vegetation with particular regard to European legislation and in the light of anticipated land use and climate change.
For more details, visit www.duchas.ie

23 – 25 June. Loving the Aliens. Sheffield Hallam University. Major national and international conference on issues associated with alien, non-native, and invasive species.
For more details, contact Diane Harrison e-mail: info@hallamec.plus.com

For details of all IEEM Workshops contact Nick Jackson Tel: 01962 868626; e-mail: nickjackson@ieem.demon.co.uk
or Website: www.ieem.org.uk