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# Ecology & Environmental Management IN PRACTICE

Bulletin of the Institute of Ecology and Environmental Management

## MARINE ECOLOGY AND THE HABITATS DIRECTIVE: EUROPEAN MARINE SITES AROUND THE ISLE OF WIGHT.

Gareth Lewis and Mike Barker MIEEM

### Introduction

Southern Water, as part of a major wastewater treatment enhancement project on the Isle of Wight, is transferring flows from eight sewerage catchments around the islands coastline to a single wastewater treatment works (WTW) at Sandown on the south east side of the island (Figure 1). At Sandown a new WTW will be provided for both primary and secondary treatment followed by discharge of the treated wastewater into dispersive waters off Sandown Bay via a three kilometre long sea outfall (LSO).

### Combined Treatment South East Wight

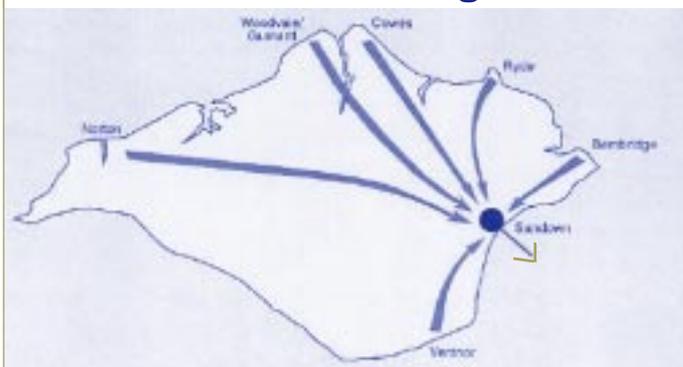


Figure 1 Transfer of Flows from coastal catchments to Sandown

Much of the Isle of Wight coast and the surrounding shallow waters are protected as European and other international designations, (Figure 2). These include areas of international importance for their bird populations (Special Protection Areas - SPAs), wetlands (Ramsar sites) and candidate Special Areas of Conservation (cSACs), which contain internationally important species and habitats. The protected habitat in Sandown Bay,

notified within the South Wight cSAC, is subtidal rocky reef which supports a variety of biological communities.

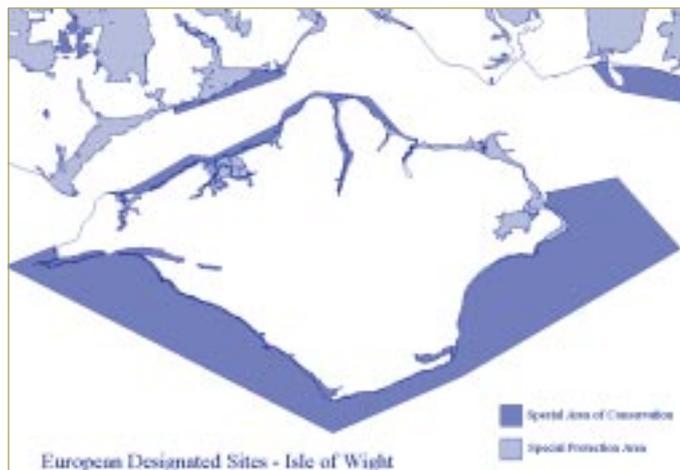


Figure 2 International Designations in the coastal areas of the Solent and Isle of Wight

### Legislative Drivers

The prime drivers for carrying out the work on the Isle of Wight are the Urban Wastewater Treatment Directive and the Bathing Waters Directive. The key compliance criteria for the coastal waters include microbiology (e.g. coliform counts), biological oxygen demand, chemical oxygen demand and suspended solids. The scheme was designed to fully comply with these Directives and criteria.

In order to construct and operate a LSO within the marine environment, key permissions needed to be obtained. These included a Ministry of Agriculture Fisheries and Food (MAFF) licence under the Food and Environmental Protection Act (FEPA); a Department of Environment Transport and the Regions (DETR) consent under the Coastal Protection Act (CPA) and an Environment Agency discharge consent under the Water Act. Also of key importance given the environmental sensitivity of Sandown Bay, were other permissions and consultation with the Isle of Wight Council, Crown Estates permission, Trinity House, County Archaeologist, MOD and vitally, English Nature.

Under the EU Habitats Directive, which aims to contribute towards biodiversity by conserving internationally important habitats and species, the UK defined the Habitats Regulations. Within these Regulations particular

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Full membership is open to those with three years' experience, and Associate membership with less experience. Appropriate qualifications are usually required. Details are given in the Membership criteria.

The membership year is 1 October–30 September.

Environmental Issues seem to be moving apace. Since the last edition of In Practice we have had the American election which finally has given George Bush the Presidency. This will certainly have an impact on the general issues facing the environment. It is hard to be optimistic.

Then we have had the climate summit at the Hague which failed to reach an agreement. As the editorial last time pointed out it will take a seismic shift in attitudes in the US for there to be a significant decrease in greenhouse gasses. Were the Europeans and the French in particular unwise not to grab at any agreement no matter how inadequate? Some took the view that no agreement was better than a bad agreement - we shall see.

Closer to home the Countryside and Rights of Way Act 2000 ( The Crow Bill ) has now received the Royal Assent - a good deal faster than many had expected and applies only to England and Wales.

The provisions which will come into effect from February 2001 are:

- Setting up of local Access Forums
- Strengthening of the protection of the most important wildlife and conservation sites
- Promotion of diversity of species and habitats
- Tougher action against wildlife crime
- Improvements to the management of AONB's
- Putting forward solutions to help property owners who need to drive across registered common land to access their homes.

Under Nature Conservation and Wildlife protection there will be a new duty on Government Departments and the National assembly to have regard to biodiversity conservation and maintain lists of species and habitats for which conservation steps should be taken or promoted. With SSSI's, conservation agencies are given the power to refuse consent for damaging activities and to encourage positive management of the land.

There will be a statutory duty on public bodies to further the conservation and enhancement of SSSIs.

There will be increased penalties for damage to SSSIs by owners and occupiers and other parties.

Legal protection for protected species make certain offence arrestable.

There will be a new offence of reckless disturbance.

there will be increased powers to the police and wildlife inspectors

The courts will be able to impose heavier fines and prison sentences for virtually all wildlife offences.

There is much which will need to be digested and acted upon. This is why the topic for your next Conference in Birmingham could not be more relevant - how to implement the new act and, just as importantly how to find the resources to do so. The title is: *What Price Amenity? - opportunities offered by new wildlife conservation and access legislation and its resource implications.* **The date is 5th April, 2001 at the Birmingham Botanical Gardens.** The programme will be available shortly.

*Jim Thompson*

The Institute is immensely grateful to those organisations listed below who have made financial contributions or provided substantial 'help in kind' to support its activities during 2000

British Ecological Society  
Browne Jacobson, Solicitors  
Corporation of London  
Environment Agency  
Wardell Armstrong  
Yorkshire Water

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

# ECOLOGICAL COMMENT

*David Hill, FIEEM, President IEEM*

This is an apt time to be writing an article for *In Practice*, the journal of our Institute of Ecology & Environmental Management. With the highest rainfall of any autumn since records began (230 years ago), dramatic floods and environmental damage running into billions, and the accepted view that things will only get worse, one can be forgiven, as an environmental professional, for thinking that, through our doing, the planet has plain and simply had it! Another daunting statistic is that some 70% of the global human population will, within only a few years, live in cities, with the potential therefore to make anything in the “wider countryside” of irrelevance to them. But then I watched David Attenborough’s stunning new series “The State of the Planet” and realised how, given his unique skills of communication, we as professional ecologists, could and should be striving to make a difference. He effortlessly summarised the five ways that man has affected the planet as follows:

- Overharvesting
- Introduction of alien species
- Habitat destruction
- Islandisation
- Pollution

I thought it would be interesting to briefly and personally review how we in our profession, are involved in these five areas.

**Overharvesting** - Ecologists have played a fundamental role in developing models for predicting collapse in density dependent population mechanisms, in designing sophisticated monitoring methods and analytical procedures, and for defining harvest thresholds. Some of the first studies were undertaken by consultants as well as academics, working on cetaceans and now that the arguments do appear to have been accepted, it is up to the politicians to deliver harsh but necessary measures to, for example, the fishing industry. The principles however, apply just as much to other sectors and many species and assemblages, for example crustaceans, corals, forests and tropical forest fauna (using bushmeat by loggers, etc), are not truly harvested but are removed at rates beyond which density dependence compensates for these losses. Overharvesting is usually first evidenced by a collapse in the species’ abundance almost always before historical data have been collected, thereby preventing analysis of population particulars and strengths and stages in the life cycle at which density dependence occurs. This is why it is essential that we have sound monitoring of all species which we “harvest”. This demands input from professional ecologists with a remit in many cases to apply the precautionary principle. Perhaps the most pervasive overharvesting has occurred on lowland farmland across most of Europe in the past 30 years, with, in my view and most of my colleagues, the most devastating impacts on biodiversity as a result of the intensification of farming. This has resulted in increased mechanisation, larger fields, increased use (particularly in the 1950’s and 1960’s) of herbicides, and then insecticides and fungicides and switches away from spring, undersown crops. In addition, fields in which stubbles are ploughed in during late summer, and bare earth fields sown with winter crops provide no habitat for birds or the invertebrates on which they depend. Ecologists have tracked these changes and documented declines in most farmland species, epitomised

by the first species to be studied - the Grey Partridge. What a pity it took until other farmland birds were shown to have declined as much, such as Linnets, Corn Buntings, Skylarks, Tree Sparrows, etc., for the farming community and government to act. My feeling is that farmland bird populations are now too sparse and too fragmented to make a comeback to the numbers they were at 30 years ago - all as a result of “overharvesting”. But I hope I am wrong and I also hope organisations can work together to deliver action now, with the direction of ecologists to ensure that politicians act.

**Introduction of Alien Species** - IEEM has been at the heart of recent reviews and case studies looking at the impacts of alien species in the UK, notably with the highly successful Birmingham conference earlier in 2000. Much of the debate in the UK is concerned with vegetation encroachment, its management and, hopefully, eventual eradication, such as rhododendron, Himalayan balsam, Japanese knotweed, snowberry and a species I know a bit about - *Lonicera nitida*, until recently planted as pleasant cover. I am sure IEEM members will be beavering away giving advice and overseeing removal and management programmes in the coming years, providing our contribution to rectification, albeit on a small spatial scale compared to the global picture. Introduced and escaped Americans Mink are causing their own problems to a species which, as a result, has been granted special protection measures in respect of its habitat - the Water Vole. I wonder just how much the absence of buffer prey species (the Mink is a “switching” predator), in polluted waters, may have helped the retention of Water Vole populations, which, feeding on bankside vegetation, may be less prone to pollution that we might have thought? A number of us have recently been asked to advise on Water Vole issues and this is a good sign that changing legislation can create new opportunities for our profession - in effect we are a business driven by legislation. But, let’s not forget other introduced species, such as the Starling, which has undergone a 45% decline in numbers in the past 25 years or so as a result of farming intensification, and which is therefore giving us cause for concern for entirely the opposite reasons!

**Habitat Destruction** - Without doubt, this is the one with which most IEEM members will be familiar and which probably exercises most of their time. The balances between development, wealth creation, habitat loss and sustainability have never been more acutely important, yet we understand little. I never cease to be alarmed at how cursory the issues of mechanics, delivery and evaluation of mitigation and compensation schemes are dealt with in the planning and development control process (through EA’s and ES’s) and I would very much like to see greater long-term studies on these important measures for reducing impacts. For example, much of our work is still “inventory ecology” - make a list of species and some measure of abundance, work out direct (habitat loss) and indirect (eg. disturbance) impacts, attempt to devise some mitigation and sit back and enjoy! What about range sizes, population processes, habitat use on migration, cumulative effects, effects on keystone species, etc. We have barely started.

**Islandisation** - We have all seen the often miserable attention given to preventing habitat fragmentation in planning control, fragmentation which is specific in its nature and impact to the habitat type, species complement, range size and species’ sedentary habits or colonising ability. We rely on habitat “corridors” of unproven scientific validity, or wildlife network areas, to enable development schemes to proceed. Tougher measures to ensure the development community funds basic research, are urgently needed.

## Ecological Comment cont.)

**Pollution** - If your PI allows it, many of you may work on issues concerning pollution or land contamination. The role of the ecologist, linking with air and water quality specialists, has been brought into focus recently in the undertaking of studies to inform Appropriate Assessments under the Habitats Regulations. I can think of a number of cases where emissions from waste plants were considered to have an ecological importance beyond the significance of air quality to human health - the ecologist had to demonstrate that the emissions would not lead to an effect on the integrity of salt marsh flora for which the particular site is designated as a candidate SAC. I was alarmed again about our basic lack of detailed understanding of the ecological issues such as threshold effects on plants, cumulative and in-combination effects of different chemicals in emissions and measurements of air quality at a spatial scale which enable analyses to be performed for an individual site (but maybe I need to read more!).

So, this, albeit, brief review has shown how all five of the big issues facing the planet need our input as ecologists. These big issues demand big science to produce big answers. But we can do our bit, no matter how small. We need greater inter-disciplinary understanding, more strategic research funded by the industries which wish to pursue their plans, greater enforcement, and definitely radical thinking. The challenge is too big to give up yet!

*David Hill is Managing Director, Ecoscope Applied Ecologists*

# UPDATE ON PROGRESS WITH GUIDELINES FOR ECOLOGICAL EVALUATION AND IMPACT ASSESSMENT

*Karen Regini & CPM Ecology Team*

Note: The article in September's 'In Practice' was incorrectly ascribed to Karen Regini. The paper was drawn from many sources and is the result of the combined effort, over many years, by the whole of the CPM ecology team, with particular input from Dr Richard Tofts and Karen Regini.

The meeting on 28th September 2000, to discuss the proposal for a procedure for assessing impacts on ecology which can be agreed by professionals working in the sector, generated much interest. 37 IEEM members attended and many more sent comments on the article in the last 'In Practice'.

In brief, the outcome of the meeting was that the objective is one which it is worth striving to achieve. The approach outlined in the August article is to be used as starting point, but it is already clear that the final proposal to be put to IEEM members is likely to be very different. The means of focusing the wealth of experience and information within the Institute and elsewhere, into a practical set of guidelines has been the subject of much discussion, but is now fixed as follows:

All those who attended the meeting on 28th September and all those who have or will provide comments will form the 'Working Party'. Drawn from this wider body, the following team will form the 'Steering Group':

John Box	Wardell Armstrong
Helen Byron	RSPB
Nicola French	EPR
Mick Hall	RLE

Philip Horton	Independent
Richard Knightsbridge	Entec UK
Steve Moon	Bridgend Council
Mike Oxford	North Somerset Council
Karen Regini	CPM (Co-ordinator)

Jo Treweek	Komex Europe
Mike Wells	Nicholas Pearson Associates

The Steering Group has proposed the following approach to IEEM's Professional Affairs Committee. When the approach is agreed, (hopefully at the January meeting) the group will be a formally constituted sub-committee of PAC. Mike Wells will be the PAC representative.

## Mission Statement

"To prepare guidelines for assessing the significance and implications of ecological effects within environmental assessment, providing practical guidance for professionals working in this field."

Input from IEEM members and others:

- All Working Party members will be e-mailed or copied notes of meetings and other exchanges of information.
- An effort will be made by the Steering Group to incorporate comments from members of the Working Group whenever they are received during the programme, although the later that comments are received after a topic has been discussed by the Steering Group, the greater the risk that the comments will not be addressed in the current exercise. They will however be recorded for use in possible future refinement of the guidelines produced..
- Some form of regularly updated record of the comments received and the emerging guidelines will be available on an electronic medium. (The favoured option is the Web page of the Institute).
- Statutory, planning and voluntary bodies throughout the UK will be contacted and invited to be involved with the process, by joining the Working Party. The Steering Group believes that it is vital that the final product can be endorsed these bodies.

## Programme and Outcomes

The subject has been broken down into the following key topics, which will be discussed at separate meetings, as indicated. Each meeting will be lead by different members of the Steering Group, who will be responsible for producing the outcome of each meeting, which should take the form of proposed guidelines on the relevant subject. Detail on the issues to be considered in each session is provided in the notes of the Steering Group's November meeting, which can be made available on request. The programme is designed to be completed in time to present the proposed guidelines at the 2001 IEEM conference.

Topics	Led by	Meeting Date
Scoping	JT	31-01-2001
Valuation	RK	28-03-2001
Consequence	NF/MO	23-05-2001
Significance	HB/MH	18-07-2001
Implications	KR/MO	26-09-2001

If you would like to make a contribution to any of the above topics please contact the relevant leader or Karen Regini at [info@cpm-uk.co.uk](mailto:info@cpm-uk.co.uk). Also for those who were not able to attend on 28th September their input and comments would still be welcome as part of the 'Working Party'.

*Karen Regini is an Associate at CPM.*

this. At midnight I felt sorry for the Oddbins staff waiting for a small group to finish the leftovers. Next day it was interesting to be thanked for the good excursion weather. I was glad Jim persuaded David Parker to join in and that he chose the Culzean trip with grand views of Ailsa Craig. Civilised afternoon tea in the lounge as delegates returned satisfied with the excursions. Conference dinner, the presentations, the ceilidh; fine memories. Excellent papers: the sad saga of the Burren, native woodlands in the Welsh economy. A quarter of the Scottish membership at our AGM. The enthusiastic Irish contingent and talk of study tours to Landsdowne Road and Murrayfield!

## Ayr - a delegates view

### Sue Bell, MIEEM

Was it the stunning coastal scenery, talks about heather-clad hills, tastes of haggis and Ayrshire potatoes, the ceilidh, or (more likely) the whisky fumes which gave this years Conference and AGM such a Scottish flavour? Ayr, on Scotland's west coast was the location for this years conference, and those who managed to travel north of the border found a welcome respite from floods, rain, and travel problems.

After dinner on Thursday night the audience replete with haggis (for those brave enough to sample it), and other local produce settled back with pleasure to listen to the Patrons lecture presented by Professor Charles Gimingham. Prof Gimingham took us on an historical journey, reminding us of the evolution of ecologists from plant scientists. He then took us forward by highlighting the need for ecologists and environmental managers to understand how natural resources are important to local communities, and to work with them. The talk was illustrated with reference to Prof Gimingham's work in the Scottish uplands, and slides of heather-clad hillsides brought a whiff of Scottish romanticism to the room.



### Deirdre McKinnon explains a point to delegates on the visit to Culzean Country Park

The Bowmore whisky is going down well. All the Scottish committee must be thanked: particularly David J, Una, Kathy Dale, Sarah Eno, Alan Booth and Sue Bell. Jim T deserves most thanks. It took me a few days to get used to not having so many ecologists in town and giving directions to lost ones.

It doesn't finish there of course. A month later and I'm still writing thank-you letters, bits of the proceedings and this! But future local organisers should know that the success of the conference was ample reward for my efforts. I look forward to Devon.

Carol Crawford is Principal, The Natural Resource Consultancy, Ayr.



### Una Urquhart displays her Fellows certificate in the company of Prof. Charles Gimingham and Carol Crawford



### Statue of Robert Burns in Ayr

Romance was the stock-in-trade of Robert Burns, famous past-resident of Ayr. The "Burns Connection" and other famous sons were highlighted by Carol Crawford in her introduction to the area. This heady, aesthetic atmosphere was further enhanced with a whisky tasting. An ebullient American poured generous tots of Uisge beage (the water of life), selected to be representative of the five different whisky regions of Scotland. Through the rapidly ensuing haze, we were assured that there is "no such thing as a bad malt whisky", and everything we sampled seemed to be described by our guide as the "purest expression of a malt whisky"!

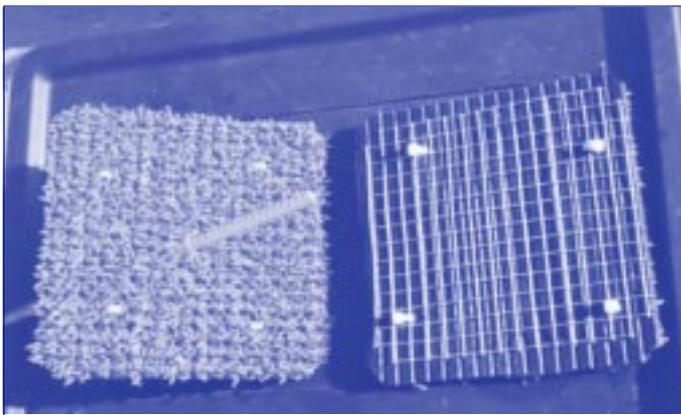
Legislation and the policy framework may not be the best topics to tackle after a night spent whisky tasting, but the morning speakers did an admirable job. Sandy Cameron from the Scottish Executive explained how Scottish conservation policy could develop within the frameworks provided by the EU. Roger Crofts, Chief Executive of Scottish Natural Heritage gave a personal perspective of the need to review management in the wider countryside, rather than focus all efforts on designated sites

monitoring and suspend work if sediment levels were heightened above established thresholds. This role extends the more normal environmental clerk of works position, where the ability to suspend work is often limited.

**Construction Monitoring**

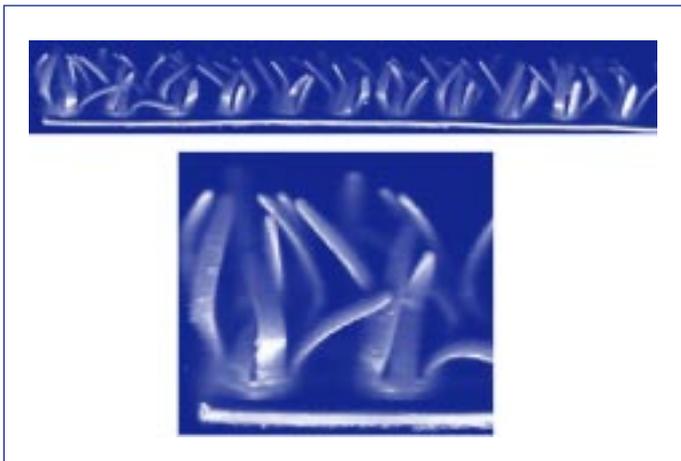
The monitoring of the construction phase depended mainly on scientific diving operations which measured a series of physical and ecological parameters. The sediment deposition rate on the surrounding benthic habitats, particularly the reef features, was measured using a novel technique which proved very effective.

A total of 17 underwater monitoring stations were established at sites near to the outfall construction area and at control sites further afield. Biological and sediment deposition monitoring were carried out at these sites. Sediment monitoring was undertaken at 7 strategic sites on a weekly basis throughout the dredging operation. The novel technique employed used carpet tiles made out of plastic doormat type material (Figure 5).



**Figure 5. The physical structure of the Carpet tiles**

When examined closely the carpet fibres have the appearance of polyps not dissimilar to some of the bryozoans and hydroids found on some of the reefs (Figure 6).



**Figure 6. Carpet tile detail**

The technique involved deploying these carpet tiles on the seabed at fixed sites, and recovering and replacing these tiles on a weekly basis. Any sediment retained on the carpet tiles during the week of exposure could then be measured and sorted by particle size. This data was then compared with data on sea state, weather, tidal current information, and the proximity of the dredger.

Also employed was a technique using repeatable photo-mosaics at fixed quadrat sites. Photomosaics could be taken at exactly the same location on a weekly basis and an assessment made of silt coverage on the epifauna and epiflora.



**Figure 7. Carpet tile recovery for sediment load measurement**

**Conclusions**

The results of the weekly monitoring during the outfall construction demonstrated that background levels of suspended sediment varied considerably from day to day and from week to week. When the dredger was operating beyond 500m of a monitoring site, anthropogenic loadings were not detected. Within 200m of a monitoring site, anthropogenic loadings were detected, but only at certain times, particularly where dredging coincided with peak tide periods and storm events. The agreed mechanism of an independent marine ecologist with the authority to suspend dredging activity was a novel approach, as was the system designed to measure sediment deposition. The first was not tested, as sediment levels never breached the agreed thresholds. However, for major construction projects in European sites, the use of an independent ecologist with the authority to suspend work may be a technique that could become more widely adopted.

As predicted within the Appropriate Assessment major effects were limited to area immediately adjacent to the trench. No adverse impacts have been detected to the surrounding reefs by the settlement of suspended sediment created by the trenching / back-filling works. Biological monitoring is continuing to investigate the recovery of the directly affected areas of reef. Formal results from this work will be available once post-construction monitoring is complete.

The Habitats Regulations made the process of gaining full project approval more complex and time-consuming. However, it can be seen that the regulations are one of the only mechanisms in current legislation to provide statutory protection to sub-tidal ecological features and habitats. The construction approach was carefully designed to significantly reduce the overall impact of the scheme and from this point of view the Regulations can be seen to be working in the marine environment in providing protecting marine species and habitats.

The views expressed in the above article are the personal views of the authors and do not necessarily represent those of Southern Water.

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# The World Conservation Congress

## Amman, Jordan

3rd - 11th October 2,000

Jim Thompson

As everyone knows ecological issues are not constrained by national boundaries and so it is highly appropriate that IEEM should now start to look more beyond UK. One of the ways in which this is being done is through our membership of IUCN. I recently attended the 3rd World Conservation Congress at Amman, the Capital of Jordan. This was set at the time of the sudden unrest in the middle east so the organisers did well to complete the proceedings without much sign of outward disturbance. As a novice to the affairs of IUCN I found it a fascinating experience. In terms of conference organization with over 2,000 delegates and a small army of IUCN staff, it did rather make our efforts in Ayr look somewhat tiny. On the whole this conference was well organized both by IUCN and the local Jordanians. This was an occasion when the PowerPoint presentation came into its own - those arriving with slides or the humble overhead were in for a shock - slides could no longer be taken in this high tech arena of presentation. The sports palace though unusual for a scientific conference proved more than adequate for the purpose.

There was a stunning opening ceremony in the Roman Amphitheatre in Amman and an equally impressive host country event on the shores of the Dead Sea, where the lights on the Palestinian west bank were clearly visible. IUCN is a highly influential international organization and it was therefore appropriate that Her Majesty, Queen Noor al Hussein, a patron of IUCN, should be present on several occasions, one of the most interesting being the launch of a magnificent new book from Birdlife International - Threatened Birds of the World. Incidentally this book was produced for Birdlife International by the Nature Conservation Bureau in Newbury.



H.M. Queen Noor presents a copy of the Threatened Birds of the World to Dr Maritta Bieberstein von Koch-Weser, Director General of IUCN.

Pleasantly hot by day and warm by night Jordan has much to offer. It was also encouraging to learn of some of the Activities of the Royal Jordanian Society for Nature Conservation. This NGO organized the site visits to a number of national parks and biological reserves on the excursion day in the middle of the congress. All excursion coaches had armed members of the tourist police on board - just in case!

A feature of the IUCN Congress is the debating and deciding on motions. These are an important in a variety of ways: they may be on an issue of conservation importance such as the Dugong or they impinge on the existing IUCN programmes or establish new ones or have implications for the budget and governance of the organization for the next four years. IUCN is politically influential and these resolutions may well be helpful in persuading governments of the need for a particular course of action. 113 motions were set out in advance of the meeting and a number more were added. Some were uncontentious and some hotly disputed and many were agreed only after an often very demanding process of refining and debating away from the main sessions in revision sessions by so called contact groups. The 2000 Delegates were kept up to date on the progress of these and other issues by each having a pigeon hole. These have to be visited on a regular basis and were constantly updated by the efforts of the IUCN Officials who often appeared to have been working throughout the night to keep the organization on schedule.

There were some well known figures present - Sir Martin Holdgate, an IEEM Patron and former Director General of IUCN, Adrian Phillips, former head of the Countryside Commission; Roger Crofts of SNH lead the British delegation. There were many others who work at the interface of conservation and politics in the many countries represented throughout the world.

Another interesting process was the election of Councillors and other officials of the Union. Richard Sandbrook, previously Regional Councillor for West Europe was standing down at the end of his term. In a complicated process, which nonetheless managed close results without legal battles, Alistair Gammell from the RSPB became one of the two new Regional Councillors for West Europe. In a very close run result, Prof. Ed Maltby from Royal Holloway College was just beaten by Dr Hein van Asperen from the Netherlands for the chair of the Commission on Ecosystem Management.

I thought that members of IEEM which is a member of IUCN, might find it useful and interesting to reproduce in entirety, the report on the interactive session on Sustainability which was organised by the European Regional Office in Tilbrook, the Netherlands. This was one of nine interactive sessions covering a range of highly relevant themes. There were some excellent papers and some touched on the issues later raised in Ayr at our own conference.

The IUCN website - IUCN.org has a wealth of information on the Congress and indeed much else and is well worth a visit. The paperwork produced during the Congress was truly spectacular and anyone returning without a full suitcase of papers, publications and also good intentions would have been in a distinct minority.

If I took away one general message from the meeting it was that the science of ecology, though still with much to resolve, is in a way secondary to the social issues facing at least the vast proportion of the worlds population whether this be in terms of argument of food versus conservation, jobs versus conservation and economic prosperity, at least in the short term, versus climate change. Scientists were often held up as having paid insufficient regard to wider issues for too long and yet are now dependent as never before, on the political will and skill to achieve the desired changes. The trouble is that a good ecologist or scientist may not always be the best person to get these messages across - a pointer for IEEM to make its presence more strongly felt in Society at large.



## Interactive Session 8

# Sowing the Seeds for Sustainability: Agriculture, Biodiversity, Economy and Society

Organised by IUCN European Regional Office (ERO)  
 Director: Liz Hopkins  
 Project Co-ordinator: Rachel Wiseman

### Aims of the Session

1. To influence the global agriculture / biodiversity debate through dissemination of conclusions and/or statements from the Session and a full report
2. Identification of a set of key issues IUCN and its partners must address over the next period to promote sustainable agriculture

### Background

Agriculture in relation to biodiversity is a critical issue to address, since it is the largest single human activity impacting on global diversity. Approximately 10% of the earth's surface is used for agriculture. In Europe this figure is over 50% and of the 81 billion dollar EU budget, 47% is allocated to agriculture. Staying in the OECD countries, in 1999 the overall cost of agricultural policies to consumers and tax-payers was \$US 361 billion or 1.4% of GDP (note however, that NATO countries spent 2.8% of GDP on defence in 1997). Such expenditure on support to agriculture causes losses in earnings from agriculture in other parts of the world. In Latin America, for example, it has been estimated that income losses are \$3.4 billion annually. These mega-figures can be matched by others: FAO has estimated that food security remains unmet for more than 800 million people around the world.

With the population growing at a rate of 78 million people per year and global concerns about food security in the 21<sup>st</sup> century, the production of agricultural goods must apparently increase or be more equitably distributed. At the same time, IUCN and its members demand more attention to the conservation of biodiversity within sustainable development, and view agriculture as being both a potentially destructive and a potentially supportive use of land.

The objectives of conserving biodiversity and achieving food security might seem to be contradictory, but are they? Without the maintenance of resources such as the soil in which crops are planted or careful use and conservation of water supplies, or a variety of wild and domestic crop species to guard, *inter alia*, against disastrous losses as a result of diseases, agricultural production cannot actually be maintained. In the developing world between five and 10% of agricultural land is lost each year through soil degradation and over 10% of irrigated land is highly salinised. It is essential that countries look towards integrating food security measures with the conservation of biodiversity and natural resources.

It is important to gain a realistic picture of beneficial and sustainable development. For instance, over the last two decades the area devoted to farming has decreased, at least in the developed countries, as agricultural technology has advanced and intensification has become possible. This has been promoted by some as a positive change since land has been set aside and could possibly be converted back to nature, whilst high levels of production have still been maintained. However, biodiversity losses are also expected on land that has been abandoned by farmers and the maintenance of traditional farm practices is important for maintaining biodiversity. In developing countries marginal land is brought into cultivation bringing risk to both biodiversity and food security.

The variety of landscapes and related biodiversity across the world has been shaped by agriculture across the centuries. For example, until the advent of modern rice cultivation practices, rice fields remained as one of the most sustainable agro-ecosystems, supporting a huge diversity of life. The rich array of natural biological control organisms as well as the diverse soil benthos which enhances and maintains soil fertility, mean that traditional rice fields can actually be perceived as managed wetlands outside natural protected areas.

Modernisation of agricultural practices over the past few decades has played a significant role in the rapid decline in biodiversity associated with agriculture. For example, the heavy use of fertilisers and other agro-chemicals allow the land to be utilised more intensively, but soil quality is declining and chemical run-off into surrounding rivers and water bodies has had a detrimental impact on the water quality, the biodiversity within these water systems and the ecosystem function.

The development of intensive irrigation systems has allowed crops to be grown in areas previously deemed infertile, but this has resulted in considerable drainage of wetlands, salination and water pollution. The Diama dam in Senegal has changed the quality of the water considerably and caused much disturbance to the wildlife and natural values of the Djoudj National Park. The Park is a Ramsar and World Heritage site and its degradation has impacted on the social and economic well being of the surrounding villages.

The removal of hedgerows in Europe has made it easier to use large machinery and obtain economies of scale, but hedgerows are a habitat for many plant and animal species and act as a buffer zone between agricultural land and natural land.

Development of practices which are sustainable both within the agricultural environment and the land surrounding agriculture is necessary and those practices must take into account both direct and indirect impacts on biodiversity.

The impact on agricultural, environmental and cultural diversity of stakeholders, who have no direct interest in local economic, environmental or social welfare, is part of the agriculture/biodiversity debate. Large multinational corporations tend to control markets around the globe but they are also gaining greater vertical control of the whole process "from seed to shelf". This highlights the issue of free and fair trade. Ironically free trade can generally represent anything but freedom for the people at the bottom of the chain. Take for example bananas. In Latin America where multinationals control the industry wage rates are low, social conditions of workers poor and there is little regard for environmental preservation. Not only is this of detriment to the farmers and workers managed by these corporations and to the surrounding landscapes and ecosystems in which these farms exist, but it also threatens the persistence of locally owned farms, operating in a sustainable manner, as they simply cannot compete. Some multinationals are, however, sponsoring pilot projects to review more sustainable ways of farming (e.g. Unilever) and supermarket chains, at least in Europe, are beginning to respond to consumer demand for more healthy food which is often grown in more environmentally friendly ways.

Genetically Modified Organisms (GMOs) for the agriculture sector are at the cutting edge of biotechnology, providing the potential to increase production and decrease fertiliser use. However, in their desire to reap the benefits and not to be left behind where biotechnological advancements are concerned, countries have hastily planted GM crops without first making a thorough assessment of the impact on the surrounding environment. It is also feared that limited access to such advanced technologies, controlled as they are by a handful of multinational corporations, will compound the negative impacts of global free trade.

### Relation to the IUCN Programme

Until recently, the IUCN programme did not have a direct focus on the agriculture sector in relation to biodiversity, although much work on various types of land-use has been carried out through the members and global secretariat. The European Regional Office has been working on agriculture and biodiversity for some years and is now beginning to focus more on the broad policy areas of trade and multinational impacts on agriculture. The multifunctionality of agriculture within Europe will also be a key area of work for ERO.

IUCN has the knowledge of species and plant biodiversity, through its networks, that is needed to supply the scientific knowledge base required to assess impacts of agriculture practice and policy. It also has wide experience in implementing sustainable development projects taking into account social, economic and cultural considerations. Finally, it can bring together different interests to address key areas of controversy in a considered and measured way to arrive at "standards" or reference points for policy-makers and practitioners.

The results of the Interactive Session need to be further refined and set out in a strategic approach which will address Key Result Areas of the Global Programme. Part of this process will involve a stocktaking of what IUCN is already doing in the field. Re-focussing of the existing Programme where there is interest is probably all that is required, not a new programme area.

### The Session

Throughout the day an estimated 300 people, from a diversity of NGOs, governments and institutions attended the session. Representatives of major NGOs, many of the smaller NGOs, state and government members and environment ministries around the globe actively participated in the session. Taking into account all the instruments that were made available for making the session interactive, over 100 organisations/institutes from over 50 countries were represented in the discussions.

### The Interactive Approach

In addition to providing participants with opportunities to be involved through presentations and open discussion sections, a Feedback Form was handed to those attending the session. This enabled ERO to gauge what the participants felt were the main issues raised, what people believe IUCN should be doing and also their fields of work. Members and other interested groups who were unable to attend the Congress sent contributions in advance, either as a poster presentation or through the internet discussion forum, which was set up in June. These contributions were displayed at the Interactive Session in addition to material brought by IUCN members attending the session.

The posters, the internet discussion forum and the Feedback Form were designed to make the session as interactive as possible and to prevent the session being entirely restricted to those attending the Congress. This was also an invaluable exercise in providing ERO with feedback from more people than could have commented in the short time frame of the session. The methodology has provided IUCN with connections to many people working in the field and many links and partnerships have been formed both in the run-up to the session and as a result of the session programme. These form a stage in building up, and introducing, networks of expertise.

### Session Format

The morning section examined issues from the grass-roots perspective within drylands and wetlands.

Problems within African, Jordanian and Australian drylands were discussed to draw comparisons between different locations with different social and economic structures. In all three areas, overgrazing is one of the largest factors impacting on dryland areas. The contrasting social, cultural and economic environments in the different areas will require contrasting sustainable development practices, goals and international aid.

*Walter Lusigi (World Bank)*

### Sustainable Development and Desertification in African Drylands

Due to the level of poverty in certain African drylands, some practices will simply not be applicable until a certain stage in the development process has been reached. For example, a lack of security of tenure may prevent long-term investments in land and the poor labor situation of a particular farmer may prohibit the acceptance of an otherwise attractive proposition.

A community-based approach will play a role in improving dryland degradation as will interaction with farmers on opportunities and constraints from the perspective of their present farming system, rather than prescribing specific treatments. If farmers are made aware of the options to overcome constraints and exploit opportunities, they can select the treatment that best fits their situation and interests.

*Mohammed Ajlouni (UNDP/UNCARTT)*

### Agro-biodiversity Status in Jordan

Agro-biodiversity measures have the potential to help protect and restore farmed areas in Jordan, but implementation will rely on:

- raising awareness about the importance of agro-biodiversity, through training programmes
- reviewing existing policies, legislation and land tenure arrangements to promote the use of land for profitable and sustainable production.

*John Benson (Sydney Botanical Gardens)*

### Australian Rangelands: Managing for Production and Biodiversity

In dryland areas that have been heavily grazed, many plant species have not recruited seedlings to adult plants as the seedlings have been grazed before they could establish. This has resulted in aging cohorts of palatable plant species to a point where their eventual senescence and death will lead to significant changes in the vegetation. In some regions, non-palatable, woody native species are increasing in abundance and acting like weeds.

Fortunately, the value of maintaining deep rooted native vegetation (soil stabilising and water resourceful) is now being appreciated and the removal of artesian bores from some regions will assist vegetation to recover after a hundred years of overgrazing. Biodiversity must be monitored over decades and adaptive management applied to maintain restoration.

Wetland presentations focused on two wetland systems, the Lower Mekong Basin and the Macanas Reserve in Panama. Agro-chemicals are having a major impact in both areas as chemicals leach down through the food chain and into the water systems.

*Kosal Mam (Wetlands International)*

### Agriculture and Wetlands in the Lower Mekong Delta

The national economies of the Lower Mekong states are based primarily on agriculture and natural resources. Subsistence farming has predominantly been replaced by an intensive model of rice production geared towards export. In the northern areas, fertilisers and pesticides are intensively used, leading to human toxication, accumulation of toxic residues in the water and pesticide resistance resulting in the need to increase the dosage. Investment is placed in damming for irrigation and hydropower projects as annual rice yield can be quadrupled. This can drastically alter the flooding regime and soil quality of natural wetlands.

Crops that require less water should be promoted, awareness about agro-chemicals must be increased and chemicals appropriately labeled. Biological pest control and green products should be examined and habitat protection needs to be integrated into agriculture policy. At the international level; agro-chemical producers should be made to share liability and regulations placed on the trade of agro-chemicals.

*Rene Chang (Circulo de Estudios Cientificos Aplicados)*

**Macanas Wetland: a Conservation and Agricultural use area**

Rice plantations have been developed by a big national company and critical problems relating to pesticide use have arisen. Spraying by air transports the excess over human habitats. Bronchial, dermal, stomach and cerebral health problems have been reported and pesticides residues have been found in maternal milk. The close proximity of the rice plantations to the shore of the wetland has resulted in agro-chemical run-off, causing the mortality of thousands of birds, fish and aquatic plants each year. Further mortality has been caused by the lethal doses of pesticides in insects and worms, which birds feed on.

A buffer zone between the Macanas wetland and the rice plantations is required and research to recover the native corn, beans, and rice seeds with natural resistance is needed. However, implementing the use of biological and natural pesticides and organic practices is a slow process as the big companies consider this too expensive. Input is needed from the agriculture ministry, health authorities and universities to promote the use of biological pest control, adequate management of pesticides and security for the farm workers.

Towards the end of the morning policy level aspects became incorporated as the EU Common Agriculture Policy (CAP), US agriculture policy and sustainable agriculture in Russia were examined.

*Chris Howe (WWF-UK)*

**Environmental Effects of the Common Agricultural Policy (CAP) of the European Union**

Since 1992 the EU CAP has addressed agriculture and the environment by shifting support to direct payments for production, together with specific environmental, forestry and early retirement schemes. Agenda 2000 places obligation on member states to prevent environmental damage and to make available options to achieve this, such as the introduction of agri-environment schemes and withholding of direct payments. Further reforming of the CAP through eliminating subsidies that cause environmental damage and shifting support from commodities to sustainable rural development would bring significant social, environmental and economic benefits. Additionally, WTO settlements must not prevent states from supporting sustainable development, from taxing or penalising damaging activities, or from encouraging voluntary initiatives

*Annie Kirschenmann (IFOAM)*

**Agriculture and the Environment in the US**

There appears to be a lack of cohesive or overarching policy regarding agriculture, the environment and conservation in the US. There is more than one agency dealing with agriculture and the environment and the various programmes are often in conflict with one another. In addition, states, tribes and local governments can enact their own agriculture and conservation laws and funding is generally low for environmental research. The current government aims to identify US\$ 1.3 billion for conservation programmes in 2001 that help family farmers take steps to protect water quality and the environment, as well as preserve farm land.

*Alexander Karpov (University of St Petersburg)*

**The opportunities for the sustainable agriculture in CIS: balancing on the wire**

Agriculture in CIS is at the point of bifurcation. It can go different ways depending on state policies and resources available. Sustainable agriculture would unify social, economic and ecological benefits.

The afternoon had a strong focus on policy, looking at the impacts of free trade, multinational corporations and GMOs on agricultural systems and biodiversity across the globe.

*Peter Nowicki (Imperial College at Wye)*

**Vertical Integration - From Seed to Shelf**

Vertical Integration refers to the unified control of multinationals from seeds to agro-chemicals to farm-level production, to retailers. Within a local economy, the added value of each step is retained on the farm or is shared among neighbours. Within a global economy, the added value is diverted from the locality in which the seed grows to the localities where the other steps in the production take place.

What is the relationship between governments and the private sector? Who controls the research agenda that has an influence upon agriculture? What is the justification for establishing private property rights over genetic structures, such as happens with terminator gene seeds? The issues involved are not purely scientific, nor are they purely economic, nor are they purely social, but intimately inter-related and debate must bring the three domains together.

*Wilfrid Legg (OECD)*

**Reconciling Agricultural Trade and Environmental Policy Goals**

OECD trade negotiations over the last decade have worked to provide some balance between agriculture and the environment. Trade liberalisation has led to an increase in trade and a decrease in prices. The undesirable side of trade liberalisation includes an increase in livestock herds and so greater green house emissions, an increase in transport, contamination from exotics and greater impacts on the environment in non-OECD countries.

Yet, on the broader scale, trade liberalisation is predicted to improve global and domestic environmental performance within the agriculture sector. OECD stress three factors for sustainable agriculture within a freer trade regime: subsidies should be cut, externalities should be internalised and taxation should be altered to take into account agricultural impacts on society and the environment.

*Vandana Shiva (Research Foundation for Science, Technology and Ecology, New Dehli)*

**Free Trade versus Fair Trade**

Trade liberalisation has led to the devastation of large rural areas and the extinction of cultural and environmental diversity. Liberalisation has meant that developing world countries are no longer growing food for domestic use, but are growing alien crops for an international market. Until recently, India was the largest producer of a diversity of oil seed crops e.g. groundnut, coconut, sesame and mustard. Within a year, modified soybean oil has flooded the market at a low price, thus decreasing the income of the traditional oil seed farmer by 20-30%.

One of the major challenges for trade liberalisation will be to safeguard the right to protect sustainable practices. This should be higher up the scale of priorities than the rights of overseas companies.

*Zhang-liang Chen (National Laboratory of Plant Genetic Engineering, Beijing University)*

**The potential role of GMOs in Food Security**

China is looking to GM crops to feed an increasing population. Insects have been a major factor in crop devastation in China, but research has shown that transgenic plants have the potential to solve this problem. In particular, a worm, which resides in cotton fields has mutated due to high pesticide use and is causing havoc. A GM strain of cotton has been shown to be resistant to this pest and no agro-chemicals are required for the cultivation of this crop.

Health and environmental concerns are making it hard to obtain permission to plant trial GM crops. So far, comprehensive studies at Beijing University have shown that GM potatoes have no adverse effects on rats. There is a lack of public awareness about the truth of arguments both for and against different GM crops and it is important that dissemination of factual information is made available.

Bernward Geier (IFOAM)

**Organic Agriculture – an Alternative to Gene Technology**

Genetic engineering introduces a new and ultimate level of risk. The necessary large scale sale of genetically engineered varieties and breeds will further destroy what remains of biodiversity today. Organic agriculture is more energy efficient and thus less dependant on “chemical” input and keeps animals and land in a balance (organic cows are fed by and large from what grows on the farm where they live instead of primarily importing feed). Organic agriculture does not contribute to the ongoing pollution of the environment. Is there sufficient evidence that GM crops can lead to a more sustainable agriculture?

Rodrigo Artunduaga (Instituto Colombiano de Agricultura)

**The Impact of Biotechnology to Sustainable Agriculture Development in Latin American and the Caribbean Region (LAC)** (due to unforeseen circumstances this talk was not delivered)

The potential contribution of biotechnology to sustainable agriculture is truly great and scientists hope that the development of transgenic plants will help to alleviate both the heavy use of pesticides and the susceptibility of traditional cultivars to a number of pest and abiotic stresses. Cotton and some types of corn are of great economic importance in LAC. In certain regions of Mexico, transgenic varieties of cotton resistant to insects or herbicides are grown commercially.

While some countries in LAC have Biosafety regulations, the majority do not and many do not have the sort of multiple- and inter-disciplinary personnel needed to carry out risk analyses and risk management. LAC must continue to develop and perfect existing regulatory instruments on a par with related international agreements in order to prevent or minimize possible risks derived from the use and handling of transgenic products. For this to occur competent national institutions must also develop institutional capacities in order to manage and evaluate field trials. Only then will countries in the region be able to take full advantage of transgenic crops capable of enhancing agricultural production and improving food security.

From the GMO Press Session...

Hartmut Meyer (GTZ)

**Biosafety Capacity Building Initiative - Germany**

The lack of human and institutional capacity, transparent decision-making processes and public awareness often hamper the development and implementation of an appropriate biosafety framework in developing countries. It is important to have a scientific risk assessment based on the Precautionary Principle, which addresses potential impacts on the environment, human health and social and economic structures.

The German government Biosafety Capacity Building Initiative aims to assist in determining state-of-the-art within a given country, to suggest a mechanism for the formulation of biosafety policy, to provide advice and scientific knowledge on the development of risk assessment and to enable and facilitate decision-making.

Michael Darkoh (University of Botswana)

**Agriculture and Biodiversity in the Drylands of Africa**

The loss of biodiversity has been accelerated as attempts are made to increase crop and animal production to feed the increasing population and contribute to the growth of the national economies. Overcultivation, overgrazing, bush fires, cultivation of marginal and easily eroded land and the widespread use of chemicals and pesticides have intensified the degradation of the soil and vegetation and led to alarming decline of species types and their numbers. A broad landscape planning approach, embracing all elements of the landscape and ecosystems, is required to ensure biodiversity and environmental sustainability. Strategies must respect and incorporate African values, knowledge systems and priorities, the planting of trees on and around farms should be recommended, to provide fuel wood, timber, medicines, etc and national agricultural policies should be re-assessed. The single most important activity that will enhance biodiversity conservation in the medium to long-term is to raise well-informed future generations with a strong commitment to sustainable management of natural resources and biodiversity.

**Poster and Discussion Forum Contributions**

**Biodiversity of *Medicago* spp. – *Rhizobium meliloti* Symbiosis in Temperate Mediterranean Zones** (Guiseppe Brundu *et al*, University of Sassari) Many species within the *Medicago* genus have significant and wide-ranging agricultural applications due to nitrogen fixation and self-sowing abilities. Nitrogen fixation may lessen the need for certain fertilisers, thus providing a suitable tool for “biological” farming. Self-resowing capabilities are also desirable as this leads to low input agriculture. However, this self-sowing capability also demonstrates the potential of *Medicago* spp. to become invasive aliens when planted outside their natural range. The introduction of exotics could lead to the impoverishment of natural biodiversity if not carefully assessed. Collecting activities, conservation and evaluation of the use of plant genetic resources is advised.

**Dams of the Senegal valley – case study on Wetlands, Biodiversity and Local Communities** (Abdoulaye Ndiaye, Wetlands International, Dakar)

The Diama dam on the Senegal River was constructed to bring socio-economic benefits to the people by preventing salt water intrusion and by controlling the water levels in the main valley. Rice crops have increased due to the irrigation systems, but the disturbances have been detrimental to the Djoudi National Park and to the surrounding villages. There is now little room for livestock farming and free-floating aquatic plants are clogging the water ways. Sustainable development is now being promoted and there is a five-year programme underway to increase local income through ecotourism. Whilst dams are important in Africa, management plans should be adapted to really address conservation goals and to reduce poverty in the long term.

**Desertification, Biodiversity and Environmental Problems in the Socio-economic Development of Nigeria – Causes, Consequences and Recommendations** (Adeniyi Arimoro, University of Ibadan, Nigeria)

Human activities in Nigeria are causing significant changes to the natural ecosystem, mainly into that of an agro-ecosystem. Such activities include: overgrazing, dam construction, bad irrigation design and the mismanagement of pesticides and water. These processes have caused soil erosion and fertility use and have occurred to satisfy immediate wants. Now the impacts are boomeranging back as the land able to support agriculture decreases, and drought and famine result. Some of the problems arise as risk assessments and environmental impact assessments are not properly implemented and funds are lacking for research facilities.

**Invasion of Alien Seeds** (Sri Indiyastuti, Yayasan Pengembangan biosans dan Bioteknologi, Indonesia)

Due to multinational advertising, a centralistic agriculture policy, under promotion of native crops and a lack of control on imports, many Indonesian people are now consuming alien food species. Consequently, local farmers are forced to plant alien species and native crops are becoming extinct. Aims to improve the situation are based on environmental education schemes.

**News clippings** (Evaggelos Valliantos, US Environmental Protection Agency)

**The Indigenous People should be allowed to Rebuild their Land and Culture** – The industrialisation of agriculture in Mexico has brought America’s hybrid corn to undermine the corn sacred to the indigenous people of the Tarahumara Sierra. In addition to cultural losses, unsustainable cash crop plantations are leading to soil erosion and desertification, perpetuating impoverishment and hunger.

**The Last Invasion of Greece** – The coming of agribusiness, agrottoxins, synthetic fertilisers and manipulated crops is leading to the genetic decline of Greece. Hundreds of naturally adapted varieties of wheat, corn, rye and barley have been lost and peasants are being evicted from the land they have used sustainably and now the remaining EC subsidies for Greek peasant farmers are coming to an end.

### Pasture Farming Strategy for Ecologically Sustainable Agriculture and Reconstructing of Deserted Territories' Biodiversity

(Tatiana Bakinova, Foundation for Sustainable Development of the Republic of Kalmykia)

Kalmyk steppe lands have traditionally been used for Kalmyk sheep pasture. The sheep are adapted to the climate and nature and have had a sustainable impact on the land. In the 1960s large areas were ploughed for grain crops and Kalmyk sheep replaced with merino sheep. Now 80% of pastured territories are badly degraded and desertification has become a major problem. Some pastures have been reconstructed, but still merino sheep are grazed there. It is essential that traditional livestock species and traditional knowledge of rural conditions and farming are put back into practice if the reconstructed Steppe lands are to be maintained. Complicating this issue is the absence of Kalmyk sheep from Kalmykia, which now have to be bought back from China or Mongolia.

### Role of Biodiversity in the Conservation and Future Sustainance of the Rice Field Agroecosystem (Channa Bambaradeniya et al, IUCN, Sri Lanka)

Until the advent of modern rice cultivation practices, rice fields remained one of the most sustainable agroecosystems. An ecological study of two traditional rice fields identified 494 species of invertebrates and 103 species of vertebrates. The rich array of natural biological control organisms and the diverse soil benthos, which maintains soil fertility, are important functional aspects. Traditional rice fields are also important feeding habitats for waterfowl and other wildlife and the rich photosynthetic aquatic biomass contributes to a high primary and secondary productivity.

### A Summary of the Major Issues Addressed

- Policy or pressures driving the positive and negative impacts of agriculture on biodiversity
- Policies and practical measures to mitigate the negative and support the beneficial effects of agriculture
- Protectionist trade measures versus genuine support to biodiversity and environmental needs
- Biodiversity as an important factor for securing rural development and food security
- GMOs as a tool for food security, economic improvements and social justice for rural communities and biodiversity conservation ..... or the reverse?

The issues raised within these themes are examined in more detail below.

#### 1. Modern agriculture - impacts on biodiversity in drylands and wetlands

##### PROBLEMS

- soil degradation and desertification
- pollution
- introduction of exotic species
- loss of cultural and ethical values
- dams and irrigation schemes
- large farming units / agro-industrial developments
- lack of access of farmers to biodiversity

##### SOLUTIONS

- management plans for food production, sustainable rural development and biodiversity
- training of farmers to apply sustainable use of natural resources (organic farming)
- involve users in restoration
- development of indicators and monitoring of biodiversity
- respect of cultural and ethical values

### Agricultural policy, trade and biodiversity

##### PROBLEMS

- agro-industry has direct and indirect control over farms
- subsidies that undermine sustainable rural development and biodiversity
- market liberalisation leading to devastation of rural areas
- regional and local differences are not sufficiently considered
- "free trade" is not really free / market prices do not reflect the social and environmental costs
- added value does not remain on the farm / in the region

##### SOLUTIONS

- facilitate dialogue between public - private sectors
- introduction of "polluter pays" principle
- develop trade measures to incorporate social, cultural and environmental values
- mix of market and public policy tools required

### GMOs - intrinsic value and impacts

##### PROBLEMS

- polarity of debate: are GMOs beneficial or harmful to livelihoods, health and environment?
- lack of capacity to regulate the release of GMOs
- release of GMOs without adequate assessment of risks
- increased dependence of farmers on agro-industry
- relative lack of public investment in alternative farming methods and in research
- huge cost and complexity of testing and regulation
- ethical concerns over gene transfer

##### SOLUTIONS

- capacity building for implementation of Biosafety Protocol
- independent examination of evidence: scientific / social / economic
- incentives to support alternative farming practices
- facilitate the dissemination of balanced information to the public

### Conclusions - suggested future priorities for IUCN

There was enormous and overwhelming support for IUCN to adopt agriculture as a global focus in its Programme. Many conclusions and suggestions arose from the session encompassing the following:

- **carry out local activities and field projects to develop and test sustainable farming practice**
- **facilitate linkages between the local, regional and global levels**
- **examine the impact and opportunities offered by multinational corporations**
- **address the role of current incentives and trade policies in providing biodiversity and rural development benefits**
- **act as an independent convenor of all interest groups**
- **facilitate development of tools, methods and indicators for assessment of trade impacts**
- **provide guidelines for integration of the CBD Biosafety Protocol into agricultural practice**
- **assess the multifunctionality of agriculture and its role in support of sustainable rural development and biodiversity conservation**

## News in Brief

The IEEM Office receives press releases and other items of news on a daily basis from a wide variety of sources. The following is a selection of some of the more recent and relevant items.

Environment Minister Chris Mullen opened the Howdon Wetlands on 11 December. This 5ha site is adjacent to Northumbrian Water's sewage treatment plant at North Tyneside. This was a very cost effective solution to an engineering problem and used clay to cap contaminated land. The result has been a major enhancement of the biodiversity of the area. The site was designed to attract waders, wildfowl, breeding terns and the smooth newt. This is likely to be enhanced further as the site matures. The site is complete with a footpath, wheelchair access and a two storey birdhide by the main lake giving excellent views of the wetlands and the River Tyne. This is part of Northumbrian Water's extensive Biodiversity Strategy within the eight distinct Natural Areas of the Northumbrian region and contributes to the overall UK BAP.

Committed to Green is the first environmental certification programme specifically aimed at the sport sector in Europe. Following a meeting of its International Advisory Commission on 21 November in Brussels, the first awards of Committed to Green Recognition, valid for three years, were made to 15 golf clubs from 5 European countries including 4 from Scotland and 2 from England. Further details from: David Stubbs, Executive Director, Committed to Green Foundation, 51 South Street, Dorking., Surrey RH24 2 JX. Tel: 01306 743 288 E-mail admin@committedto green.org

Together with the passing of the Countryside and Rights of Way Act another significant event has been the publication of the White Paper: Our Countryside: The Future a fair deal for Rural England. Whether the measures proposed will restore a vibrant living countryside remains to be seen but, as we learned at Ayr, a healthy countryside is certainly crucial to its wildlife and biodiversity. Protection of the Countryside is included under the categories of conserving and enhancing our countryside, restoring and maintaining wildlife diversity and the natural environment and increasing enjoyment of the countryside.

## News from the Geographic Sections:

### Scottish Section:

After the Scottish Section has had time to recover from Ayr, the next Meeting will be the Scottish Spring meeting:

**Thursday 10th May, National Parks in Scotland - a role for ecologists. Loch Lomond.**

Details available shortly from the IEEM Office, Kathy Dale Tel: 013398 87407 or the IEEM Website.

The AGM of the Scottish Section was held on 10th November during the Conference. The following were elected:

Convenor: **David Jamieson**; Vice-Convenor: **Carol Crawford**, Secretary: **Kathy Dale**, Treasurer: **Daniel Gotts** Other members of the Scottish Committee elected are: Una Urquhart, Christine Welsh, Alan Booth, Neil Redgate and Sue Bell.

### The Northeast Shadow Section:

The section now has a programme of local meetings arranged to go through to 2002. Members in the Section should ensure that these dates are in their diaries - as Steve Pullan has said - this programme together with the Scottish Meeting in Ayr is living proof that not all IEEM activities are in the South of England!

The Environment Minister, the Rt.Hon. Michael Meacher recently launched the £23.8 million restoration of the Rochdale Canal. A 20km length of the Rochdale Canal has recently been notified as an SSSI by English Nature in recognition that the canal supports a population of the Floating Water Plantain, *Luronium natans*, one of Britain's rarest water plants. This white flowered, grass like water plant was once found in heathland pools and upland lakes and its presence in the Rochdale canal is of international significance.

The Wetland Centre at Barnes, operated by the Wetlands and Wildfowl Trust is a celebrated example of habitat creation in London. The reservoir site owned by Thames Water, had become redundant on the completion of the Thames Water Ring Main. Using some of the profits generated from a 10ha housing development by Berkeley Homes, a further £5 million has been fundraised by WWT to fit out buildings, interpretation and educational facilities. The Discovery Centre took first place in the Built Environment category, one of five categories in the Biffaward Awards 2000 Ceremony held at the Wetland centre site.

The 10th Kew Environmental Lecture took place on 21 November. This was an inspiring occasion with a double bill; the first by Secretary Bruce Babbitt, US Department of the Interior and the second by Professor Peter Raven, Director of the Missouri Botanical Garden.

Secretary Babbitt has far ranging responsibilities for National Parks and Government lands in the Clinton administration. He sketched out in remarkable depth, many of the issues facing wildlife conservation in the USA including invasion by non native species and the efforts to control these by fire and other means. In particular he described the little known creation of hundreds of thousands of acres of nature conservation areas mostly in the desert areas of the USA. These are predominantly lands owned by the State. This must rate as an outstanding achievement of the Clinton Administration. Professor Peter H Raven is well known as Director of one of the finest botanical gardens in the U.S.A. His speech was more wide ranging and dealt with issues of population and the earth's resources, pointing out that if all the current population of the world were to live at normal western standards there would already need to be the equivalent of 3 globes to support them. The Kew Environmental Lectures are available on request from the Royal Botanic Gardens.

### Dates and venues for IEEM Northeast Section in 2001:

**Local Biodiversity Plans** (Leaders: John Barrett & Keith Bowey) **30 January, 7.00pm** Northumberland Wildlife Trust

**Regeneration of industrial sites** (Leader: Dave Mitchell MIEEM) **14 March, 2.00pm** The Rising Sun Countryside Centre, North Tyneside: Meet in the top car park of the ASDA supermarket 2.00pm

**The Turning the tide project: Durham Magnesium grassland recreation.** (Speaker: Ray Leonard) **9 May, 2.00pm** Seaton Holme Visitor Centre, Easington Itinerary: 2-2.30 presentation; 2.45- 3.30 Visit to Blackhall Rocks Expected to focus on habitat creation and restoration.

**Land Management Initiative: Northumberland National Park** (Leader: Peter Samson, MIEEM) **5 September, 2.00pm** - Venue to be arranged

**Access issues in the Northern Region and the Countryside and Rights of Way Act, 2000.** November 2001 - Details to be arranged.

Information about the events and the Northeast Section from: **Steve Pullan** 20 Holystone Drive, Holystone, Newcastle upon Tyne. NE27 0DH. Tel: 0191 266 1769

This section is a list of recent publications and reflect a broad range of items which cross IEEM's desk. In this listing we normally include as many details as are available to us.

**Dams and Development - a New Framework for Decision Making**  
**ISBN 1-85383-798-9 paperback**

Launched in London on 16th November by no less a figure than ex President Nelson Mandela, this is the final report of the two year work of the World Commission on Dams chaired by Professor Kader Asmal, Minister of education, South Africa. It is well known that many dams have been disastrous for wildlife, have not actually benefited the people they were supposed to and have sometimes lead to unexpected and calamitous consequences. Nelson Mandela commented: *It is one thing to find fault with an existing system. It is another thing altogether, a more difficult task, to replace it with an approach that is better.*

The Commission found that:

Dams deliver significant development services in more than 140 countries. On a global scale hydropower dams account for 19% of electricity generated and for an estimated 12 - 16% of global food production. China has over 22,000 dams, by far the largest number in the world and UK has 517.

Large dams display a high degree of variability in delivering predicted water and electricity services - and socially related benefits - with a considerable portion falling short of physical and economic targets, while others continue to generate benefits after 30-40 years.

Large Dams have demonstrated a marked tendency towards schedule delays and cost over-runs.

Large Dams have lead to the loss of forest and wildlife habitat and loss of aquatic biodiversity of upstream and downstream fisheries. The Commission found that efforts to counter the ecosystem impact of large dams had met with limited success.

Estimates suggest that some 40-80 million people have been displaced by dams worldwide while the livelihoods of many more living were affected but not recognised. Mitigation, compensation or resettlement programs were often inadequate.

Only 29 of the 404 pages are devoted to environmental aspects which seems a little thin. It is nonetheless interesting with some very useful findings. Just to select one point: mitigation was the most widely practised response to ecosystem impacts for the large dams reviewed. In a sample of 87 projects for which ecosystem impacts were recorded, mitigation was undertaken for less than 25% of the anticipated ecosystem impacts. Of these about 20% worked effectively, 40% did not mitigate the impact and 40% were moderately effective.

Available from Earthscan, 120, Pentonville Road, London N1 9JN £20.00

**Countryside Recreation 8 (3) Autumn, 2000**

This is the regular publication of the Countryside Recreation Network, the purpose of which is 'Exchanging and Spreading Information to develop best Policy and Practice in Countryside Recreation'. This edition includes: A System Dynamics Model for Visitors Choice of Transport Mode to and from National Parks; Exploring Nottinghamshire by Bike; New Millennium: New Horizons for Disabled Ramblers and Sustainable Tourism and the Internet. The CRN also lists Countryside Recreation and Training Events and has a series of modestly priced publications.

Contact: Emma Barratt, Network Manager, Department of City and Regional Planning, Cardiff University, Glamorgan Building, King Edward VII Avenue, Cardiff, CF10 3WA. Tel: 02920 874 970, Fax: 02920 874728, Email: crn@cf.ac.uk

**Tree Terms**

The new up-dated and expanded version of the Royal Forestry Society Tree Terms is now out. Available in both print and as a searchable glossary on the RFS website at [www.rfs.org.uk](http://www.rfs.org.uk), over 300 forestry and ecological terms are translated into plain English and almost 100 acronyms are decoded.

Available from RFS, 102 High Street, Tring, Herfordshire, HP23 4AF £5.

**The Root Causes of Biodiversity Loss**

**ISBN: 1 85383 699 0**

Edited by Alexander Wood, Pamela Stedman-Edwards and Johanna Mang.

The book starts with two introductory chapters on an emerging consensus on biodiversity loss and a framework for analysing biodiversity loss. The remainder of the book deals in considerable detail with ten case studies starting with an overview. Chapter 4 deals with the main findings and conclusions of the Root Causes Project and Chapter 5 gives recommendations on Addressing the Root Causes of Biodiversity Loss. The detailed case studies were as follows:

Brazil: Cerrado

Cameroon: Bushmeat and Wildlife Trade

China: South-western Forests

Danube River Basin: Wetlands and Floodplains

India: Chilika Lake

Mexico: Calakmul Biosphere Reserve

Pakistan: Mangroves

Philippines: the Islands of Cebu, Negros and Palawan

Tanzania: the Rufiji, Ruvu and Wami Mangroves

Vietnam: North and Central Highlands.

Each area had sometimes several separated study sites.

The book is a useful read and will be of particular interest to those seeking a general pattern in the overall process or those who may have to work in these or similar areas.

Available from Earthscan Publications, 120, Pentonville Road, London N1 9JN £17.95

**Where Next? Reflections on the Human Future**

**ISBN 1-84246-000-5**

This book, edited by IEEM Patron, Duncan Poore, was produced under the auspices of the New Renaissance Group (NRG). In *In Practice 23* the aims of the NRG were outlined in the text of a lecture by Max Nicholson and IEEM has given support to the Group when it was able. Each chapter is written by an authority in the field, one being by David Goode, former IEEM President. This is a thought provoking book par excellence and an ideal way to use that Christmas book token.

The topics covered are:

Setting the scene - Duncan Poore

The New Renaissance - E.M. (Max) Nicholson

Soil, water and people- Sir Charles Pereira

Populations and environment: assumptions, interpretation and other reasons for confusion - Virginia Deane Abernathy

Diversity: insurance or life - Sir Ghillean Prance FRS

The Urgency of environmental suitability - Robert Goodland

Economic Fiction: 'Stekram' or a homage to Samuel Butler - David Burns

Information, culture and technology - Justin Arundale

Cities as a key to sustainable development - David Goode

Sustainable livelihoods: the one-point agenda for planetary survival - Ashok Khosla

The limits to sustainable development - David Fleming

Contemporary order, peace and conflict: the balancing of opportunities and risks - James O'Connell

Improving the World's governance - Sir Shridath S. Ramphal

The dissolution of law? - N.E. Simmonds

The practice of conservation by religions - Martin Palmer

And after all that? Professor Rom Harre

Some thoughts on Education - Sir Hermann Bondi FRS

Eddies in the flow : towards a universal ecology - P.J. Stewart

Where next? - Duncan Poore

Available from Royal Botanic Gardens, Kew £9.95

# In the Journals

*Compiled by Pat Rae, Peter Shepherd and Jim Thompson*

and biogenic habitats were more adversely affected than those found in unconsolidated sediments.

The study also analysed the rates of recovery of benthic fauna following fishing impacts. Perhaps unsurprisingly the most rapid recovery was in physically less stable habitat that tend to support the more opportunistic species. However, even in these conditions areas that are fished more than 3 times a year are likely to remain in a permanently altered state.

M. Frederiksen and T. Bregnballe

**Evidence for density-dependent survival in adult cormorants from a combined analysis of recoveries and resightings**

Journal of Animal Ecology, 2000, **69**: 737-752.

The authors recognise that reliable estimates of survival of cormorants are an important factor to input into predictive models for control of this species in many countries, especially where they are affecting fisheries. This paper presents the findings of a combined analysis of re-sightings and recovery of dead birds over a 20 year period as a method for estimating survival and emigration in a cormorant population.

The analysis is based on 11,000 cormorants ringed as chicks in a Danish colony between 1977 and 1997. The results of the study showed that annual adult survival varied from 0.74 to 0.95 with a mean of 0.88. The study also concluded that the two main factors accounting for between 52 and 64% of the year to year variation in survival was the population size across Europe and the winter temperatures. There was also less than 1% difference in survival rates between adult male and adult female cormorants. The permanent annual emigration rate after 1990 was determined to be approximately 10%, which the authors state coincided with a decline in food availability. The study also demonstrated that survival rates were lower in cold winters when the population size was high which suggests that there may be a density dependence in adults bird survival at least in cold winters when access to good wintering sites can be a key factor in survival. The authors suggest that the high population growth of European cormorants in the 1970's and 1980's could be partly accounted for by unusually high survival rates among immature and adult cormorants which in turn is likely to be as a result of an absence of hunting, low population densities and high food availability.

M.Kery, D. Matthies and H-H Spillmann. **Reduced fecundity and offspring performance in small populations of the declining grassland plants, *Primula veris* and *Gentiana lutea*.**

Journal of Ecology, 2000, **88**: 17-30.

This paper sheds a little light on the issue of what may happen when an island population of species becomes too small and isolated. Land use changes have led to the widespread destruction of the habitats of many plants. The remaining patches are often fragments in a matrix of unsuitable environments and many formerly common species have been reduced to small isolated populations. The perennials *Primula veris* and *Gentiana lutea* which are both declining were studied. In both species, reproduction was strongly reduced in small populations where plants produced fewer seeds per fruit and per plant. Total seed mass per plant was higher in large populations but individual seeds were smaller, indicating a trade off between seed number and size. Reproduction was depressed most strongly in populations consisting of less than c. 200 *P. veris* and c. 500 plants *G. lutea*. This was also accompanied by reduced offspring performance. These patterns could be due to lower habitat quality, to pollen limitation, or to increased inbreeding and loss of genetic variation in small populations. The authors conclude that the decline was not the consequence of lower habitat quality. Another aspect of this study was the low plasticity shown by small populations of *P. veris*.

F.A.M Tutyttens, R. J. Delahay, D.W. Macdonald., C.L. Cheeseman, B. Long and C. E. Donnelly

**Spatial perturbation caused by a badger (*Meles meles*) culling operation: implications for the function of territoriality and the control of bovine tuberculosis (*Mycobacterium bovis*).**

Journal of Animal Ecology, 2000, **69**: 815-829.

This is the third paper published in this Journal reporting the results of a study of badger populations at North Nibley and Woodchester Park. The former population was subject to a MAFF badger removal operation (cull), whilst the latter was not. The results of the study over 3 years showed that the undisturbed population at Woodchester Park remained stable. In contrast in the North Nibley population the badgers' social organisation was severely perturbed in the first year after culling, and to a lesser extent in the second year with badgers utilising latrines further away from their setts than before the cull took place. The culling resulted in larger social group ranges that were difficult to define and considerable overlap between the ranges of the social groups. The results also show that the disturbance also affected social groups adjacent to the culling area and those some one or two groups distant.

During the 3 year study following the culling operation the incidence of TB in the North Nibley badger population was reduced by the cull and remained low until the end of the study period. The authors hypothesise that the epidemiological consequences of the culling may not have been revealed in the study because there was no evidence that infectious badgers survived the cull or colonised the area afterwards. The authors also suggest that there are many practical difficulties in carrying out culls and that the increased potential for direct and indirect contacts between badgers of different social groups following culling may still have contributed to the failure of culling operations to halt the rise of TB in British cattle.

The paper also reports that although the prevalence of TB in the North Nibley badger population was reduced to negligible levels there were further infections in cattle reported from the area. The authors suggest several explanations including a source other than the resident badgers, persistence of TB in the local environment or failure to detect the presence of TB in the badger population due to incomplete trapping or incorrect diagnosis.

J.S. Collie, S.J. Hall. M.J. Kaiser and I. R. Poiners

**A quantitative analysis of fishing impacts on shelf-sea benthos.**

Journal of Animal Ecology, 2000, **69**: 785-798.

This paper is based on an analysis of 56 fishing impact studies from Europe, North America, South Africa, New Zealand and Australia. The study determined that on average the immediate impact of fishing disturbance was the removal of approximately half the individuals of the fauna studied. The scale of the response varied significantly however depending on the type of gear used, the habitat and among different taxa. The most significant initial effects on the benthic fauna were found to be caused by inter-tidal dredging and scallop dredging. In addition fauna located in stable muds, gravels

The authors draw attention also to the danger that monitoring population size may not be sufficient to assess the risk of extermination of rare plants, in particular perennial species with low adult mortality. The authors showed that reproductive success can be reduced strongly in small populations of perennial plants, probably long before a further decline in the size of the populations can be measured.



Populations of cowslip, *P. veris* on the Isle of Wight

**M.L. Cadenasso and S.T.A. Pickett. Linking Forest Edges structure to edge function: mediation of herbivore damage.**  
Journal of Ecology, 2000, **88**: 31-44.

This study was based in the north-eastern United States but has relevance which extends well beyond the geographical area. As elsewhere, the fragmentation of landscape structure has increased both the prominence of forest edges and the proportion of forest area that lies close to an edge. In this paper two deciduous forest edges were artificially manipulated by thinning, producing alterations to the edge vegetation structure. Herbivore damage to transplanted tree seedlings in both regimes was then measured. At one site herbivore damage was affected both by edge vegetation structure and by distance from the edge. Voles caused significantly more damage in the intact rather than the thinned treatment but regardless of treatment only damaged seedlings on the edge. Deer damage was significantly greater in the forest interior than on the edge. At the second site vole damage to seedlings was affected only by distance from the edge and not edge structure. The two herbivores preferentially damaged different tree seedling species and in addition, tree seedlings browsed by Deer sprouted more frequently than those clipped by voles. The results suggested that both edge structure and distance from the edge influence herbivore activity and, as a result, influence the spatial arrangement, density and composition of populations of tree seedlings during regeneration in forest fragments.

M. Lindbladh, R. Bradshaw and B.H. Holmqvist.  
**Pattern and process in south Swedish Forests during the last 3000 years, sensed at stand and regional scales.**  
Journal of Ecology, 2000, **88**: 113 - 128.

This paper is of interest in the context of the possible link between climate change and vegetation composition. The rate of change analysis covering the last 3000 years showed that changes recorded from the last 150 years were the most rapid but represented the culmination of a transformation that was initiated 850 years earlier. The recent changes completely overshadowed the previous record. All stands moved away from the rich deciduous forest represented by *Alnus*, *Corylus*, *Quercus* and *Tilia* via *Betula* and *Carpinus* to *Pices* and *Pinus* forest or, in two stands towards *Fagus* forest. *Corylus*, *Quercus* and *Tilia* were the major species in the former forests but began a slow decrease in importance around 70AD. The increasing cereal pollen record

was related to the decline of the deciduous forest component suggesting that anthropogenic activity has been the major driving force in its loss.

B. D. Wheeler and M.C.F. Procter. **Essay Review: Ecological gradients, subdivisions and terminology of north-west european mires.**  
Journal of Ecology, 2000, **88**: 187 - 203.

This is, as it describes, an essay review which attempts to sort out some of the anomalies in terminology currently in use. It cites over 130 references. From the viewpoint of IEEM there is perhaps particular interest in the use of the term wetland and especially as defined in RAMSAR sites. These are 'areas of marsh, fen, peatland or water whether natural or artificial, permanent or temporary with water that is static or flowing, fresh, brackish or salt including areas of marine water the depth of which at low tide does not exceed 6 metres. The term is used widely and sometimes with different definitions. The north-west european mires clearly fit the RAMSAR definitions but the paper goes on to a series of recommendations in relation to terminology of Bogs, Fen and Swamp. The paper makes useful reading for those working in the area.

**K. Donohue, D.R. Foster and G. Motzkin. Effects of the past and present on species distribution: land use history and demography of wintergreen.**  
Journal of Ecology, 2000, **88**: 303 - 316.

This paper studies the role of environmental alteration vs historical factors in controlling distribution patterns of *Gaultheria procumbens*, wintergreen. It has a pronounced restriction to areas that have never been ploughed and near absence from adjoining areas that were ploughed in the 19th century. The low abundance of the species in formerly ploughed than in unploughed areas was in contrast with its performance. It was concluded that inherent limitations in the colonizing ability of some plant species may present a major obstacle in the restoration or recovery of plant communities on intensively disturbed sites, even in the absence of persistent environmental effects that depress growth.

M.A. Davis, J.P. Grime and K. Thompson. **Fluctuating resources in Plant communities: as general theory of invasibility**  
Journal of Ecology, 2000, **88**: 528 - 534.

This paper is included because of the recent Conference by IEEM on exotic and invasive species. The paper states that the invasion of habitats by non-native plant and animal species is a global phenomenon with potentially grave consequences for ecological, economic and social systems. Unfortunately, to date, the study of invasions has been largely anecdotal and resistant to generalization. Certainly the Conference at Birmingham, useful though this was, did concentrate on anecdotes and reviews of the current situation, not that this is necessarily a bad thing, especially where urgent control measures may need to be taken to safeguard a particular species. The theory of fluctuating resource availability focuses on the fact that opportunities for invading species to capture photosynthate, water and nutrients at rates allowing their success are often limited in space and time. The authors acknowledge that it is not yet clear whether the theory can be applied to animals. The paper concluded by pointing out that species invasions are one of the main ecological consequences of global changes in climate and land use. To respond effectively, ecologists must now begin the essential task of transforming the study of invasions from a diffuse anecdotal subject to a predictive science.

The paper identifies a number of predictions based on the theory of fluctuating resource availability. These are:

1. Environments subject to pronounced fluctuations in resource supply, either by periodic enrichment from external sources or by

releases from the resident organisms, will be more susceptible to invasions than environments with more stable resource supply rates.

2. Environments will be more susceptible to invasions during the period immediately following an abrupt increase in the rate of supply or decline in the rate of uptake of a limiting resource.
3. Invasibility will increase following disturbances, disease and pest outbreaks that increase resource availability by increasing resource supply (eg direct leakage from damaged tissues) and/or reducing the rate of resource capture by the resident vegetation.
4. Invasibility will increase when there is a long interval between an increase in the supply of resources and the eventual capture or recapture of the resources by the resident vegetation.
5. The susceptibility of a community to invasion will increase following the introduction of grazers into the community particularly if the community is nutrient rich.
6. There will be no necessary relationship between the species diversity of a plant community and its susceptibility to invasion.
7. There will be no general relationship between the average productivity of a plant community and its susceptibility to invasion

Priority Contribution.

R.M. Sibley, T.D. Williams and M.B. Jones. **“How environmental stress affects density dependence and carrying capacity in a marine copepod.”**

Journal of Applied Ecology, 2000, **37**: 388-397.

As the Editors explain, for the first time in 2000, the Journal of Applied Ecology is providing a fast track procedure for papers of all types that stand out for their policy value, management relevance, their topicality, or their scientific importance. Subject to the extremely stringent selection, these papers are then given priority at all stages of handling. This paper was published in less than 4 months from receipt.

Sibley, Williams and Jones present the findings of their studies with the marine copepod *Tisbe battagliai* Volkmann-Rocco. Using a robust experimental design, exemplifying protocols for such work, they carried out replicated experiments to establish the effects of 100(gL<sup>-1</sup> pentachlorophenol (PCP) in combination with varying diet and food concentrations. The results show that a stressor's effects at high population density may differ from its effects at low density. In this instance overall food concentration had the greatest effect, diet had some effect, and rather surprisingly, PCP had relatively few effects on population dynamics.

Among the most important messages is the importance for those involved with managed organisms of all types to consider how stressors affect population carrying capacity. Applications will arise not only when we wish to increase the numbers of a threatened species, but also where we wish to reduce the numbers of those that reach pest status.

J. Bokdam and J.M. Gleichman. **Effects of grazing by free-ranging cattle on vegetation dynamics in a continental north-west European heathland.**

Journal of Applied Ecology, 2000, **37**: 415-431.

This paper reports on a 10 year experiment in a grass-rich Dutch heathland, and adds some new observations to the body of work driven by the continuing loss of conservation value of heathland as a traditional pastoral landscape. The main reasons for the loss are attributed to abandonment, atmospheric eutrophication, and that traditional herding systems (where the herd daily returns to the stable) have become uneconomical, giving way to free-ranging systems using livestock or wild herbivores.

Existing evidence on the effects of grazing in grass rich heaths has

been varied, and attributable to many site factors as well as the grazing regime. The authors hypothesised for grass heath on nutrient poor soils, that free-ranging cattle might induce heather recovery, inhibit tree encroachment and increase vascular plant species richness, and that replacement of the traditional land use by free-ranging cattle would lead to nutrient redistribution rather than removal.

The study therefore looked at the effects of free-ranging cattle on the above features in six habitats in grass-rich heathland. The habitats differed in soil fertility, initial grass-heather ratio and the development stage of *Calluna*. The grazing neither reduced grass cover nor prevented grass invasion in heather - grass invasion failing only in a turf stripped, nitrogen poor, *Calluna* heath. Grazing induced a substantial *Calluna* recovery in grass heaths on podzolic soils, but its recovery failed in a grass heath on a phosphorous rich medieval arable field. As a consequence, the grass heather mosaics were restricted to habitats of intermediate soil fertility.

Grazing did not prevent encroachment by pine and birch. In the first 5 years, grazing induced a significant increase in species richness in all habitats. In the second 5 years, species richness stabilised in grass heath and heather-grass mosaics, and it declined in the pioneer *Calluna* heaths. There were indications that the mechanism for the vegetation mosaic cycling was due to a nutrient mediated grazing effect on the balance between woody pioneers and grass. Free-range grazing did not remove the high atmospheric nutrients of the whole area. Substantial amounts were redistributed from the grass lawns to the forest.

The management implications are discussed at the end of the paper, and the authors conclude that free-ranging grazing without additional management will generate dynamic tree-grass heather mosaics in the long term. These wood pasture mosaics are fundamentally different from the traditional heathland in which trees and grasses were excluded by the land use. Free-ranging grazing combined with tree cutting appeared to be a suitable management regime for the maintenance of species rich open heathlands with dynamic grass-heather mosaics. Herding, or a combination of free-ranging grazing with burning or turf stripping seems unavoidable if pure heather-dominated open heathlands are to be maintained under the present environmental conditions.

P.N. Ferns, D.M. Rostron and H.Y. Siman. **Effects of mechanical cockle harvesting on intertidal communities.**

Journal of Applied Ecology, 2000, **37**: 464-474.

This paper adds welcome data to yet another “over-exploitation” debate.

Compared with traditional methods, shellfish of marketable size can be harvested much more quickly and efficiently using mechanical methods such as tractor powered harvesters and suction dredgers. The adverse effects on non target organisms need to be assessed before licensing such activities.

Using a tractor-towed cockle harvester, plots of intertidal muddy sand and clean sand in the Burry Inlet SSSI in South Wales were extracted in order to study the effects on other benthic invertebrates and their predators. Harvesting resulted in a significant loss of the most common invertebrates in both areas, in muddy sand ranging from 31% of *Scoloplos* to 83% *Pygospio* (both *Polychaeta*). Significant effects could not be determined in species whose populations were below 100m<sup>-2</sup>. Populations of *Pygospio* and *Hydrobia ulva* (*Gastropoda*) remained depleted for more than 100 days after harvesting, and *Nephtys* (*Polychaeta*), *Scoloplos* and *Bathyporeia* (*Amphipoda*) for more than 50 days. Invertebrate populations in clean sand with relatively few cockles recovered more quickly than those in muddy sand with a more structured community, which included tube dwellers such as the *Polychaets* - *Pygospio* and *Lanice*. Bird feeding activity increased at first on the harvested areas, with gulls and waders taking advantage

of the invertebrates made available. Subsequently, in the area of muddy sand, the level of bird activity declined compared with control areas. It remained significantly reduced in curlews and gulls for more than 80 days after harvesting, and for more than 50 days for oyster catchers.

The conclusion reached from this study is that tractor dredging for cockles causes a sufficiently large mortality of non-target invertebrates that harvesters should be excluded from areas of conservation importance for intertidal communities such as invertebrates, fish and birds.

The remainder of this review deals with papers in Volume 37 (5) 699 - 894. It seemed totally inappropriate to pick out just one paper in this, another themed, or more precisely part-themed volume of the Journal of Applied Ecology. In this instance the first seven of the twelve papers are dedicated to what is called a “**Special Profile: Birds and Agriculture.**” For readers with an interest in this area of ecology, this volume is essential reading. In the introduction to the Journal, the editors set out the background and provide an overview of the papers’ various contributions:

SJ Ormerod and AR Watkinson. **Editors’ Introduction: Birds and Agriculture.**

Journal of Applied Ecology, 2000, **37**: 699-705.

About 10% of the papers in the Journal of Applied Ecology in the last three years have been on the subject of birds and agriculture. One reason behind the Special Profile collection is to reflect the position of birds as both indicators and as targets of agricultural change: their patterns of behaviour, distribution, seasonal phenology, and demography track closely onto the spatial and temporal scales of agricultural intensification. Another reason is to illustrate how research in this sphere has shifted from assessing trends to assessing processes - something increasingly called for by ecologists and policy specialists involved with birds.

The papers cover:

- spatial patterns in extinction;
  - assessment of long-term trends in bird abundance and agricultural practice;
  - how foraging and breeding performance in farmland birds varies between habitats;
  - the value of large scale modelling in examining hypotheses about the influences of land management on birds;
- and shows that birds can in some instances have intrinsically positive value on agricultural systems.

All of the papers involve issues at large spatial scales. One paper (Manel, Buckton and Ormerod: Testing large-scale hypotheses using surveys: the effects of land use on the habitats, invertebrates and birds of the Himalayan rivers 756 - 770) questions whether surveys, often the mainstay of ornithological research, can satisfy the needs of hypothesis testing about large scale factors such as the conversion of semi-natural habitats to agricultural land. Instead, emphasis is placed on the value of distribution models for birds, at least when supported by validation and process studies. Another paper (T.P. Milsom, S.D. Langton, W.K. Parkin, S. Peel, J.D. Bishop, J.D. Hart & N.P. Moore: **Habitat models of bird species’ distribution: an aid to the management of coastal grazing marshes**: 706 - 727) used this to positive applied effect by illustrating how the management of grazing marshes affects the distribution of lowland waders - a timely contribution as this group has shown dramatic population declines in recent years.

Each of the papers also raises management issues that are both microscopic (e.g. how to modify local land structure) and macroscopic (e.g. in relation to land-use policy). At the micro-scale, the recommendations are about how to attract or benefit

bird populations by modifying local farm- or plot-scale features, such as grazing, flooding or field margin management (R.E. Bradbury, A. Kyros, A.J. Morris, S.C. Clark, A.J. Perkins & J.D. Wilson, **Habitat associations and breeding success of yellowhammers on lowland farmland**: 789-805; N.W. Brickley, D.G.C. Harper, N.J. Aebischer & S.H. Cockayne. **Effects of agricultural intensification on the breeding success of corn buntings *Miliaria calandra***: 742-755 & Milsom et al.). At the macro-scale, several workers point to issues ranging from subsidy and fiscal support for sensitive management (Bradbury et al.); set-aside and cropping patterns (Brickley et al.); and the identification of areas appropriate for conservation incentives or designation (S. Gates and P.F. Donald, **Local extinction of British Farmland birds and the prediction of further loss**: 806 - 820). In Europe, science input into policy of this type is particularly timely, with a review of the Common Agricultural Policy (CAP) due in roughly 5 years.

Possibly most important of all is the key conclusion (D.E. Chamberlain, R.J. Fuller, R.G.H. Bunce, J.C. Duckworth & M. Shrubbs. **Changes in the abundance of farmland birds in relation to the timing of agricultural intensification in England and Wales**: 771 -788) that if single agricultural factors cannot be held responsible for effects on bird populations, then a profitable consideration could be holistic strategies that encourage whole farm, broad scale extensification. Agri-environment schemes move part way, but review is needed as to whether it is sufficient to restore whole bird communities. Additionally, such funding is still much less in some European countries than the CAP permits, and therefore the number of farms able to participate is small.

Finally, so as not to belittle the other contributions, this whole volume is a very interesting read, with the remaining “Standard Papers” covering such topics as:

L. Peacock & S. Herrick, **37**: 821-831. **Responses of the willow beetle *phratora vulgatissima* to genetically diverse *Salix* spp. plantations** - Management and design of short rotation coppice willows to control susceptibility to infestations.

A.J. Britton, P.D. Carey, R.J. Pakeman & R.H. Marrs, **37**, 832-844. **A comparison of regeneration dynamics following gap creation at two geographically separated heathland sites.**

S.J. Manchester and J.M. Bullock, **37**: 845-864. **The impacts of non-native species on UK biodiversity and the effectiveness of control.**

This review is of particular interest following on from the IEEM Meeting in Birmingham on exotic and invasive species. It points out that a large number of non-native species have been introduced into the UK but only a small number have established and caused detrimental ecological effects. Control might be more feasible if problem species could be identified at an earlier stage of establishment. The significant amount of legislation in the U.K goes only part of the way to ameliorate the impact and further enforcement of existing legislation and action against unlicensed releases is necessary.

G.K. Frampton, P.J. van den Brink & P.J.L. Gould, **37**, 865-883. **The effects of spring drought and irrigation on farmland arthropods in Southern Britain** - a factor relevant to the Special Profile issues above

Lastly, under another sub heading of the Journal “Advances in Applied Ecological Techniques”, there is an assessment entitled V. Standen, **37**, 884-893. **“The adequacy of collection techniques for estimating species richness in grassland invertebrates”**

# ORGANISING CONFERENCE 2000

*Carol Crawford, MIEEM*

This is a reference piece for future local organisers of the annual conference!

The Scottish Section was delighted when Council decided in 1999 that the 2000 Annual Conference was to be in Scotland. First we checked out southern towns for suitably sized hotels with a range of other accommodation and good transport links. I was over-enthusiastic in my research and Ayr was selected as the venue in autumn 1999.

Ayr has two suitable hotels: a grand old lady - the Quality Station Hotel and the tall modern Caledonian Hotel. The Station has the advantage of being right next to a major transport link, and just has more atmosphere - important when creating the right ambience for an IEEM conference! It also offered better prices. But what about the accommodation and food? It all looked very nice but we wanted to be 100% sure. The Station Hotel kindly invited the convenor of the Scottish Section, David Jamieson, and his family to stay. So one weekend November 1999, the Jamieson family nobly descended on Ayr to sample the facilities. I joined them on the Saturday evening; we worked our way through the menu and pronounced the food and wine fine. David researched the other - drink.



*Carol Crawford receives a token of appreciation from the New President, David Hill*

Meanwhile we were working on the programme. This took over a year to finalise! The Scottish Committee discussed it at July and September 1999 meetings. At the November 1999 Council meeting the general theme was agreed. At the December Scottish committee meeting we listed subject headings. The first 2000 Council meeting finalised the title and three subjects. Our idea of a ceilidh was adopted and Jim added the idea of a whisky tasting, for which I secured the services of Oddbins..

The Scottish Section put together a list of speakers, for each section, which Jim T took round other committees. I composed an article for the spring 2000 In Practice to "sell" the conference, Ayrshire and the range of transport options. This In Practice also

called for papers. I also began thinking of excursions on the theme of Ecologists and the Rural Economy.

David Jamieson approached Sarah Boyack then, Minister for Transport and Environment at the Scottish Parliament, to open the conference. She declined due to work pressures, nominating a civil servant instead. This proved fortuitous because in the cabinet reshuffle just before the conference, following the sad death of Donald Dewar, Environment was sliced from Sarah Boyack's brief and given to another minister.

Una Urquhart persuaded one of our first Scottish patrons, Professor Charles Gimingham, to give the Patron's Lecture on the opening night.

The programme finally began to take shape at the July Council meeting (and in the pub afterwards) but we now had far too many ideas and volunteers for each subject section. The August Scottish Committee meeting chose speakers/topics, out of this big list for the gaps, and we began to approach speakers.

It was now close to the event and not everyone we wanted was able to attend. Jim T approached most of the speakers; the Scottish Section sorted out the forestry section and the excursion leaders. It was frustrating but there was humour too; Jim describing the process of getting the last speakers to confirm "like rounding up straggling sheep". We got everyone in place during September; the programme went out late that month.

Perhaps as a result bookings were slow and low.

This illustrates the cumbersome process by which conference programmes are organised. Council, the afternoon before the conference, agreed that next year a tight sub-group including the local organiser, the president and others with knowledge of the theme should work out the programme and speakers, much earlier.

Una U had by now found Penny Legg to put the proceedings together and at our September Scottish committee meeting members volunteered to help record the discussion.

During August I discovered the conference lady at the Station Hotel had left and I had to brief her replacement. My week's holiday on October seems to have been filled with working out the finer details of the excursions with the leaders, writing to them, getting quotes for coach hire, finding a band for the ceilidh... Jim and I spent a lot of the time on the phone. One of his more unusual requests was to identify a surprise gift for our retiring president. I had the idea of something made of Ailsa Craig granite and found a local firm specialising in miniature curling stones.

The best piece of advice I can offer future local organisers is to leave the country for a week before the conference and not to take your mobile with you. Pleasurable tasks the day before leaving were selecting dinner menus and tasting whiskies. I went moss hunting in Eire, returning relaxed and refreshed on the eve of the event. The downside was scribbling my talk the hour before Council.

The conference is my highlight of 2000. Some anxious moments the first night, e.g. finding the whisky tasting room laid out theatre-style rather than bar-style, but the hotel soon rectified

this. At midnight I felt sorry for the Oddbins staff waiting for a small group to finish the leftovers. Next day it was interesting to be thanked for the good excursion weather. I was glad Jim persuaded David Parker to join in and that he chose the Culzean trip with grand views of Ailsa Craig. Civilised afternoon tea in the lounge as delegates returned satisfied with the excursions. Conference dinner, the presentations, the ceilidh; fine memories. Excellent papers: the sad saga of the Burren, native woodlands in the Welsh economy. A quarter of the Scottish membership at our AGM. The enthusiastic Irish contingent and talk of study tours to Landsdowne Road and Murrayfield!



**Deirdre McKinnon explains a point to delegates on the visit to Culzean Country Park**

The Bowmore whisky is going down well. All the Scottish committee must be thanked: particularly David J, Una, Kathy Dale, Sarah Eno, Alan Booth and Sue Bell. Jim T deserves most thanks. It took me a few days to get used to not having so many ecologists in town and giving directions to lost ones.

It doesn't finish there of course. A month later and I'm still writing thank-you letters, bits of the proceedings and this! But future local organisers should know that the success of the conference was ample reward for my efforts. I look forward to Devon.

*Carol Crawford is Principal, The Natural Resource Consultancy, Ayr.*



**Una Urquhart displays her Fellows certificate in the company of Prof. Charles Gimingham and Carol Crawford**

## Ayr - a delegates view

### Sue Bell, MIEEM

Was it the stunning coastal scenery, talks about heather-clad hills, tastes of haggis and Ayrshire potatoes, the ceilidh, or (more likely) the whisky fumes which gave this years Conference and AGM such a Scottish flavour? Ayr, on Scotland's west coast was the location for this years conference, and those who managed to travel north of the border found a welcome respite from floods, rain, and travel problems.

After dinner on Thursday night the audience replete with haggis (for those brave enough to sample it), and other local produce settled back with pleasure to listen to the Patrons lecture presented by Professor Charles Gimingham. Prof Gimingham took us on an historical journey, reminding us of the evolution of ecologists from plant scientists. He then took us forward by highlighting the need for ecologists and environmental managers to understand how natural resources are important to local communities, and to work with them. The talk was illustrated with reference to Prof Gimingham's work in the Scottish uplands, and slides of heather-clad hillsides brought a whiff of Scottish romanticism to the room.



### Statue of Robert Burns in Ayr

Romance was the stock-in-trade of Robert Burns, famous past-resident of Ayr. The "Burns Connection" and other famous sons were highlighted by Carol Crawford in her introduction to the area. This heady, aesthetic atmosphere was further enhanced with a whisky tasting. An ebullient American poured generous tots of Uisge beage (the water of life), selected to be representative of the five different whisky regions of Scotland. Through the rapidly ensuing haze, we were assured that there is "no such thing as a bad malt whisky", and everything we sampled seemed to be described by our guide as the "purest expression of a malt whisky"!

Legislation and the policy framework may not be the best topics to tackle after a night spent whisky tasting, but the morning speakers did an admirable job. Sandy Cameron from the Scottish Executive explained how Scottish conservation policy could develop within the frameworks provided by the EU. Roger Crofts, Chief Executive of Scottish Natural Heritage gave a personal perspective of the need to review management in the wider countryside, rather than focus all efforts on designated sites

alone. A very personal view of rural ecology was provided by Fred Edwards, who entreated us that if we were to remember nothing else it should be that “farmers are paid to over-produce and pollute the land”. The final two presentations of the morning session started to identify ways of bringing people back into the decision making process. Current thinking in forest planning was highlighted by Rob Soutar of Forest Enterprise. This includes dynamic plans which are updated regularly, and a recognition of biodiversity targets in planning new cropping and planting regimes. An illustrated tour of some Local Nature Reserves, and the important role they can play in the life of local communities was provided by Mathew Frith to conclude the morning.

In a throw-back to University field course trips, we grabbed our paper bags full of lunch and boarded the minibuses for the field excursions. With excellent timing, the grey rain clouds cleared away to leave a bright, crisp, sunny autumnal afternoon. The light and shadow acted to make the landscape stand out in sharp relief, and those of us lucky enough to be on trips near the coast were blessed with fantastic views to Arran and Ailsa Craig. Four trips were on offer: nature conservation and golf courses, Culzean Country Park, East Ayrshire woodlands, and opencast coal mining and site restoration.

The romance of the previous evening was re-lived for those of us who visited Culzean. The National Trust for Scotland own a magnificent house designed by Robert Adam set on the coast. The park and policy woodlands include coastline, heath, woodlands, and a serene “swan lake”. It was a perfect afternoon for wandering around the estate listening to Deirdre McKinnon explain the management regime. In spite of our technical questions I suspect that the high spot for everyone was being allowed to climb up the tree-top walk!

Undeterred by the previous night’s festivities, the Conference dinner and ceilidh were a lively affair. The AGM and dinner marked the end of David Parker’s time as President, and warm tributes were paid to David for steering the Institute through difficult times. In appreciation of his calm and unfailing support, David was presented with an engraved curling stone, carved from the granite of Ailsa Craig (Curling is a traditional Scottish game which is similar to playing bowls on ice). David was succeeded by David Hill as the new President, and it was remarked that three of the last four Presidents had borne this name! Further presentations followed: firstly Una Urquhart was presented with her Fellows certificate, and Carol Crawford received a bottle of malt whisky as thanks for her role in organising the conference.



*David Hill presents the Past President, David Parker with a gift from local craftsmen in recognition of his service as President*

A ceilidh means a gathering. Traditionally such events involved music, dancing, and everyone doing their party piece. A modern ceilidh tends to focus more upon the dancing, and should not be attempted by anyone who is either faint hearted or unfit! Most delegates felt able to rise to the challenge, and had the bruises and aching muscles to show for it the next day!

The next morning focused upon the “traditional” rural industries of farming, woodland and game management. An informative overview of some of the CAP terminology and administration was provided by Jim Dixon of English Nature. Ways in which these policies are interpreted and perceived by farmers was provided by Will Manley, and it was interesting to hear how important peer pressure can be in influencing major land use decisions. Steven Smith then provided a summary of the quest to develop meaningful indicators to assess the sustainability of the rural environment. The trail blazing role of the Game Conservancy Trust in promoting wildlife-friendly farming practices was outlined by Nick Sotherton. Community woodland initiatives in Scotland and Wales were then discussed. Penny Cousins highlighted the scale of local woodland regeneration and development made possible by the Millennium Forest for Scotland Trust. Over £12.5 million pounds has been received from the Millennium Commission, which has been used to restore around 15,000 ha woodland. David Jenkins explained ways in which local farmers are being encouraged and supported to manage and gain income from traditional Welsh woodlands. This has included the development of innovative woodland products such as window laminates and new furniture designs.

The final session looked at different types of development in the Countryside. Richard Nairn outlined how a variety of developments, including roads are perceived in the Irish countryside. Further Irish experience was provided by Jane Smart of Plantlife who provided a clear overview of the long battle to safeguard the Burren. This theme of involving the community in development proposals was amplified by Janet Swan who outlined ways in which this can be achieved. The final presentation by Densie Daly-Walton helped to provide an element of realism and understanding of the types of economic pressure facing rural communities, and ways in which diversification was necessary to help groups survive.



*David Parker contemplates the prospect of taking up curling !*

The conference proved to be informative, and provided a chance to swap gossip with old friends and make new ones. The Scots like to have a good time, and I hope that all the other delegates enjoyed themselves as much as I did. Carol and her team have set quite a target in terms of the social aspects of the conference. I can’t wait to see what is on offer next year in the south-west - scrumpy tasting? Cornish pasty sampling? who knows?

*Sue Bell is a Principal Environmental Specialist with Scott Wilson Ltd in Edinburgh*

# Institute News

## Ayr Conference and AGM

The Conference is reported on elsewhere in this edition. In terms of formal business, the AGM saw the retirement of David Parker as President and the new president Dr David Hill then took office. At the Council Meeting the day before, at the AGM and afterwards, appreciation was expressed to David Parker for his steady control of the Institute during some very difficult times. Through his calm guidance the Institute was now in a much stronger position and could look forward to the future with some confidence. The following were also re-elected: Alex Tait as Vice President, Sue Bell as Secretary and Colin Buttery as Treasurer together with all current members of Council who expressed their interest in continuing. The AGM also passed unanimously the constitutional changes set out in the agenda. These were of a somewhat technical nature except the decision to reduce the presidential term from 3 years to 2 years. This of course means that at the next AGM, - November 28, 2001, a new President- elect will need to be found. Finally during the Conference Dinner the opportunity was taken to present Una Urquhart with her Fellows Certificate, the first awarded to a member in Scotland.

## IEEM in Europe

Following the previous article in *In Practice*, Council considered this matter further. Although the responses had not been large Council felt that it would now be appropriate to resume our membership of EFEP, the European Federation of Environmental Professionals. This was largely in recognition of the increasing need to be aware of European regulations on the environment bearing in mind that the environment is one of the areas of qualified majority voting. Developments with EFEP will be reported in future editions.

## Membership Directory

Unfortunately, pressures of work, Conferences etc. have meant that there have been further delays in the publication of the Directory. This will now be early in the New Year and is likely to be a combined 2000/2001 version. Apologies to all members who have been inconvenienced by this.

## The 2001 Professional Development Programme

It is pleasing to report that the 2001 professional development programme has now been published. The programme now includes 23 courses with a number of new themes. Thanks are due to Robin Buxton and the Training and Career Development Committee whose efforts have enabled the timetable to move significantly forward.

## Future Meetings

The next one Day Meeting of the Institute will be in Birmingham, once again at the Botanical Gardens, on **5th April 2001**. The theme will be **What Price Amenity? - meeting the costs of wildlife conservation and access to the countryside**. This is very topical following the recent passing of the Countryside and Rights of Way Act, 2000. - How are the costs of wildlife conservation and access to the Countryside to be met.

The next 2-day Conference and AGM will take place on **28 & 29 November 2001** almost certainly in Torquay and is expected to focus on River, Estuarine and Marine Issues - challenges for ecologist and environmental managers. This is a subject area not so far considered by IEEM and has plenty of aspects of interest, including Marine SACs and the ecological implications of the recent floods and possible new flood defence schemes. **Offers of Papers would be welcome - by 1st February please.**

## Membership Subscriptions

Subscriptions were due on 1st October and the renewal form was sent during September. Many members have now renewed but it has taken a considerable time for some to do so despite reminders. This is a costly and time consuming exercise and diverts efforts from areas which might be of more help to members. Final reminders will be sent out shortly. Unless the renewals are received very soon, I am afraid that for some members, this will be the last *In Practice*.

## Back Copies of In Practice.

I recently had an enquiry as to whether there were complete sets of *In Practice* still available and would it be possible to acquire one. The Office does have quite a number of copies of most issues and might be able to make up a few of the missing ones by photocopying or even sell a special 10th Anniversary volume if there was demand. There is a great deal of useful information in *In Practice* - some of it has been superseded by events but many of the articles are still just as relevant as the time they were written. The next edition of *In Practice* will list the key articles in each volume. If anyone else is interested in back copies, please let the office know.

## Taxonomic Descriptions

Where some of the articles in *In Practice* would otherwise just be text, I try to break them up with diagrams or illustrations that seem relevant. One alert member pointed out that my caption for *Gentianella ciliata* in the last edition in the article by Karen Regini et al. was somewhat wide of the mark though the overall point was valid. The Triglav area does indeed have endemic gentians amongst other species but it does seem doubtful that *Gentianella ciliata* is one of them - apologies.

## Obituary

It is with sadness that we report the death of Bill Brackenridge, AIEEM, who was the ecologist for North Lanarkshire Council. This happened in a car accident shortly before the Ayr Conference which he was due to attend. The Council is donating a piece of land in memorium and donations will be accepted by the Ranger service towards a project for it. The funeral was held at Ayr and was attended by some IEEM members.

## Talking with other Institutions

As reported in IP28, talks are currently taking place with a number of other Institutions in the environment field and with CIWEM in particular to explore the possibilities of much closer working and as a means to achieving chartered status for members of those Institutions concerned. These talks have been friendly and constructive but as yet there are no specific results to report. Council is being kept informed of the discussions as they take place and has been keen to support the idea whilst retaining the overall independence of IEEM as an Institute. This view appears to be shared by most of the other Institutions in the discussions. Further reports will be made as the negotiations progress and in the event that any changes in the IEEM Constitution may be required.

## IEEM Member wins Marsh Botanical Award for Plant Conservation

This is a new award endowed by the Marsh Christian Trust aimed at field-based botanists/plant-ecologists who have made a large personal contribution to the conservation of a species or group of species. Potential recipients are assessed by a panel with representatives from The Royal Botanic Gardens, English Nature, Plantlife and MAFF. The first award was presented on 21st November 2000 after the 10th Kew Environmental Lecture, to **Dr Phil Wilson, MIEEM**. This acknowledged his work on the conservation and ecology of arable plants in Britain, a group of plants which until Dr Wilson completed his PhD during the late 1980s, had been largely ignored. This award will act as encouragement to those numerous individuals, often working in relative isolation, without whom Britain's botanical diversity would be much poorer.

**Prospective members of IEEM**

The following people have applied for membership of IEEM. 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 12th February 2001.

Any communications will be handled discretely. The final decision on an admission is always taken by Council.

F=Full      A=Associate

Name	Category applied for		
Mr Richard R.Y.	Andrews		F
Mr Mervyn D.	Anthony		A
Mr John C.	Arundell		F
Mr Jeremy E.	Bailey		A
Mr Mark A.	Bates		F
Dr Edward J.	Blane		F
Miss Katia	Bresso		A
Mr Barry J.	Collins		F
Ms Sarah J.	Coulson		A
Mr James	Couzens		A
Dr Berenice	Erry		A
Ms Frances D.	Farrugia		F
Mr David	Frost		A
Ms Alison M.	Glaisher		F
Mr Roger S.	Griffin		A
Mr Alan R.	Holmes		F
Mr Kevin W.	Jeanes		F
Mrs Elizabeth A	Johns		F
Mr Chris J.F.	Kaighin		A
Miss Tessa	Kilburn		A
Miss Lisa	Kirman		A
Mr Keith D.S.	Lawton		A
Mrs Claire L.	Leather		F
Dr Mark D.	Linsley		F
Mr Trevor R.	Mansfield		A
Mr Richard J.	Marsh		F
Mrs Heather	Marshall		F
Miss Kate J.	Mastel		A
Ms Jane A.	Orr		A
Miss Karen	Passmore		F
Mr Mark H.	Phillips		F
Ms Philippa	Pickles		A
Mr J. Stewart	Pritchard		F
Miss Kate M.	Proctor		F
Mrs Wendy	Scott		F
Mr John B.	Sizer		A
Dr Nicolas W	Sotherton		F
Miss Nathalie J.	Stevenson		F
Ms Jenny	Storey		A
Miss Johanna W.	Wäsch		A
Dr Mark R.	Webb		F
Mr Gordon A.	Wright		F

**New Admissions to IEEM**

IEEM is pleased to welcome the individuals listed below who have now been admitted as new members.

Name	Grade admitted
Dr Victoria	Abernethy F
Mr Michael	Batley F
Mr Robert	Bearne A
Dr Andrew	Brooks F
Miss Amy	Christie F
Mr Alistair	Church A
Mr Steve	Crosby F
Ms Julie	Dewar F
Ms Kathryn	Edwards F
Mr David	Feige F
Ms Alison	Fure A
Mr Timothy	Holzer F
Mr Mark	Jennison F
Mr Stephen	Lees F
Mr Giles	Manners F
Mr Dougal	McNeill F
Dr Stephen	Percival F
Mr Richard	Rivers A
Mr Andrew	Shaw F
Mr Graeme	Smart F
Miss Jennifer	Smith A
Mr Steven	Spode F
Miss Jane	Stott A
Mr Tim	Sykes A
Mr David	Whitehorne F
Mr Michael	Williams F
Mr Mark	Woods A

The following have successfully upgraded their membership from Associate to Full.

Mr Robert	Edmonds	F
Miss Saffra	Kelley	F
Mr Paul	Lee	F
Mr Jeremy	Steed	F
Mr Leonard	Wyatt	F

***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, preferably 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.

It is hoped to maintain future editions at 16 or 20 pages but this will be to some extent dependent on covering costs through advertising, sponsorship and other means.

The Course programmes for the Centre for Alternative Technology, The Field Studies Council, Losehill Hall, Plas Tan-y-Bwlch and BTCV have all been received and each offers a wide range of course 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 703743, Fax: 01654 703605, E-mail: joan@cateducation.demon.co.uk.

Field Studies Council: For a copy of the FSC Courses 2001 brochure, contact FSC head Office, Preston Montford, Montford bridge, Shrewsbury, Shropshire, SY4 1HW. Tel: 01743 850 674, Fax: 01743 850 178, E-mail fsc.headoffice@ukonline.co.uk.

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.u-net.com.

Plas Tan-y-Bwlch: Details from: Plas Tan-y-Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd LL41 3YU. Tel: 01766 590324, Fax: 01766 590274 E-mail: Plastanybwllch@comperserve.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: ETN@ukgateway.net

**Other Courses/Events in early 2001:**

**24-25 January. Coastal management for Sustainability 2001 Review and future trends**, SOAS, Russell square, Univ. of London.

Details from Bob Earll, CMS, Candle Cottage, Kempsey, Glos. GL18 2BU Tel/Fax: 01531 890415 E-mail: bob.earll@dial.pipex.com

**30 January IEEM North East Section Meeting: Local Biodiversity Plans** 7.00pm Northumberland Wildlife Trust.

**1 February. Realising the Opportunities in the Green Economy** RICS, London SW1. Details from Merlin Hyman, Environmental Industries Commission Tel: 020 7935 1675

**21 February. IEEM Course: Identification of Mosses along Watercourses**, Edinburgh area  
Details from the IEEM Office.

**8 March. Diversifying opportunities in Woods and Forests** National Agricultural Centre, Stoneleigh Park, Warwickshire  
Details from Gemma McCreath Tel: 024 7685 8252;  
E-mail: gemmam@rase.org.uk.

**14 March. IEEM North East Section Meeting: Regeneration of industrial sites** (Leader: Dave Mitchell MIEEM)  
2.00pm The Rising Sun Countryside Centre, North Tyneside.  
Details from: Steve Pullan, 20 Holystone Drive, Holystone Newcastle upon Tyne, NE27 0DH. Tel: 0191 266 1769

**30 Mar - 1 April. World Birding Conference II**, Swanwick.  
Details from: Steve Dudley, BOU Administrator, PO Box 17, Thetford, Norfolk IP24 3ES. E-mail: steve.dudley@bou.org.uk

**5 April. IEEM 1 day Conference on the Countryside and Rights of Way Act 2000. The Price of Amenity - meeting the costs of wildlife conservation and access to the countryside.**  
**Birmingham Botanical Gardens.** Details and booking forms from the IEEM Office

**5 - 6 April. International Sustainable Development Research Conference**, Hulme Hall, University of Manchester. Details from ERP Environment, PO Box 75, Shipley, West Yorkshire, BD17 6EZ Tel: 01274 530408, Fax: 01274 530409  
E-mail: elaine@erpenv.demon.co.uk

**23-25 April (Part 1) & 21- 22 June (Part 2) Site Management Planning**, Losehill Hall. Peak District National Park. Details from Dr S Gbaja, Faculty of Continuing Education, Birkbeck College, University of London, 26 Russell Square, London WC1 B5DQ. Tel: 020 8631 6668 E-mail: s.gbaja@cems.bbk.ac.uk

**25 April. IEEM Course Great Crested Newts - Survey, handling, licences and the law.** Little Wittenham, Oxfordshire  
Details from the IEEM Office.

**26 April. IEEM Course Water Voles.** Little Wittenham, Oxfordshire  
Details from the IEEM Office.

**3 May. IEEM Course: Japanese knotweed and giant hogweed control.** Warrington, Cheshire.  
Details from the IEEM Office.

**9 May IEEM North East Section Meeting: The Turning the tide project: Durham Magnesium grassland re-creation.**  
2.00pm: Seaton Holme Visitor Centre, Easington  
Details from: Steve Pullan, 20 Holystone Drive, Holystone Newcastle upon Tyne, NE27 0DH Tel: 0191 266 1769

**10th May. National Parks in Scotland - a role for ecologists. Loch Lomond.** IEEM Scottish Section Meeting.  
Details available shortly from the IEEM Office, Kathy Dale or the IEEM Website.

**10 May. IEEM Course: Introduction to NVC surveying for Woodlands, Bedford Purlieus, Northamptonshire**  
Details from the IEEM Office.

**15 May. IEEM Course: River Survey Techniques**, Central Scotland  
Details from the IEEM Office.

**16 May. IEEM Course: Managing native broadleaved woods**  
Wye Valley & Forest of Dean.  
Details from the IEEM Office.

**24 May. IEEM Course: Integration of conservation and agriculture (Arable) farming.** Oneholmes Farm, Stokesley, North Yorkshire.  
Details from the IEEM Office.

**11 September. Applying New Technology to Conservation Management Information**, Bath Spa University College, Bath  
Call for Papers: Theme: the use of new technologies such as GIS, remote sensing and GPS in addressing conservation issues.  
Details from Dr David Watson, Bath Spa University College, Faculty of Applied Sciences, Newton Park, BATH, BA2 9BN. Tel: 01225 875755. Fax: 01225 875776. Email: d.watson@bathspa.ac.uk.

**28 & 29 November. IEEM Annual Conference and AGM - River, Estuarine and Marine issues - challenges for ecologists and environmental managers.**  
**Location: Torquay**  
Details and Booking Forms available later from IEEM Office.