



Ecology & Environmental Management IN PRACTICE

Bulletin of the Institute of Ecology and Environmental Management

Protected Species Legislation Re-defined!

Andrew Baker MIEEM

Over the past few months, major changes have been quietly made in England and Wales to the issuing of licences for work affecting European protected species. The Countryside Council for Wales (CCW) and English Nature (EN) have effectively re-interpreted protected species legislation. This article aims to explain briefly the current situation and to explore the consequences that may arise for professional ecologists, planners and developers alike.

At the beginning of March the CCW ceased granting 'conservation' licences for all projects which were linked to development. The decision arose from a complaint made to the European Commission (EC) in 1998 concerning the protection of Great Crested Newts (GCN) at three sites: Broughton, Pontblyddyn and Connah's Quay. At each site CCW had issued 'conservation' licences to move GCN from the path of development. The complainant argued that the issuing of licences on the grounds of conservation of the species concerned was an incorrect interpretation of European Law. The complaint was upheld and on the 29th of April 1999 the European Commission issued a formal Letter of Notice expressing the view that the UK authorities had failed in their obligations by incorrect application of Article 16(1) (a) of the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive). A few weeks later, following legal advice, English Nature followed suit and ceased issuing licences in cases involving development.

In order to understand fully the implications of the case it is worth reviewing some of the detail of the protected species legislation in the UK and how CCW and EN previously interpreted it. The pertinent UK legislation is The Conservation (Natural Habitats, &c.) Regulations 1994 (Habitat Regulations) which bring the Habitats Directive into force in the UK.

The protected species in question are those listed in Schedule 2 of the Habitat Regulations, the most commonly encountered during developments being Great Crested Newts but the list also includes other species such as bats, otter, and dormouse. Having been given the highest level of legal protection, any work that affects these species requires the granting of a licence by an appropriate authority.

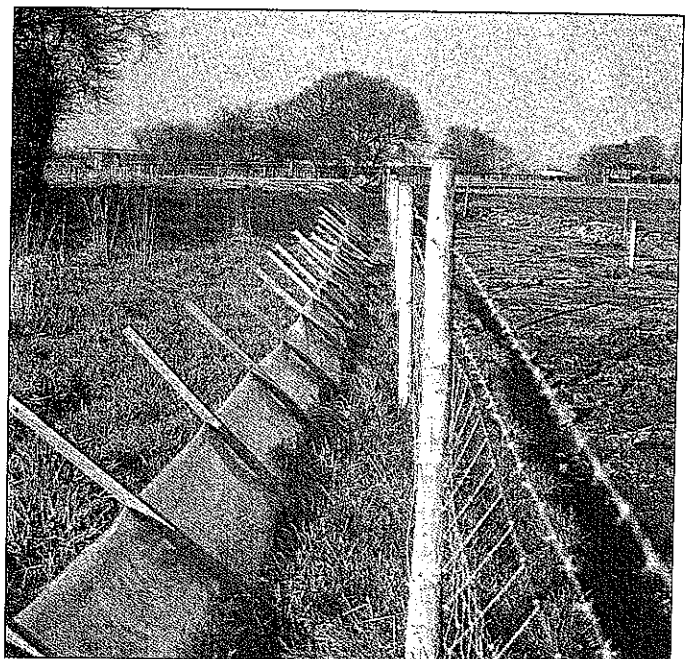
Previously, where Schedule 2 species were affected by a development, licences were issued by CCW and EN under Section 44 (2) (c) of the Habitat Regulations for the purposes of "conserving wild animals and plants or introducing them to a particular area", (so called conservation licences). This corresponds to Article 16 (a) of the Habitats Directive. The

argument to support this application of the Regulations was that having received planning permission the translocation of, for example, GCN from the path of a development was considered to be 'conserving' the species. In addition the conservation agencies argued that any compensation/mitigation package agreed with the developer would ensure that the favourable conservation status of the species would be maintained, another requirement of the Habitat Regulations.

It is the issuing of these 'conservation' licences which has been challenged. The complaint to the EC argues that Section 44 (2) (c) of the Habitat Regulations should only be used to allow the restoration of degraded habitats and not to allow development. The EC appears to agree.

If this previous application of the Habitats Regulations is invalid, it raises the question "when can a development that affects Schedule 2 species go ahead?" Examination of Article 16 of the Habitats Directive makes this quite clear. There are effectively three conditions which have to be met before member states may waive protection for Schedule 2 species and grant a licence effectively to allow development to proceed:

1. There is no satisfactory alternative,
2. The development will not be detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range and
3. The development must be for 'imperative reasons of overriding public interest including those of a social or economic nature'.



'Is GCN exclusion fencing soon be a thing of the past?'

Ecology and Environmental Management
In Practice No. 28, May 2000. ISSN 0966-2200

Editor for this issue: Jim Thompson.

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 In Practice is published quarterly by the Institute of Ecology and Environmental Management. It is supplied to all members of IEEM and is also available by subscription (£70 per year).

In Practice will publish news, comment, technical papers, letters, Institute news, reviews and listings of meetings, events and courses. In Practice invites contributions on any aspect of ecology and environmental management but does not aim to publish scientific papers presenting the results of original research. Contributions should be sent to the Editor at the IEEM office (address below).

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Original design by the Nature Conservation Bureau Limited. Tel: 01635 550380.
 In Practice is printed on ReNew Matt, an 80% recycled paper. HMSO Score: 60.0.
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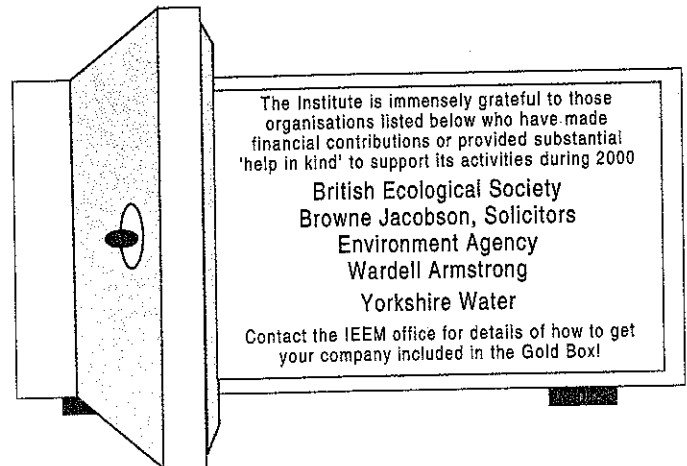
Hard on the heels of the Harrogate Conference comes the ruling by European Court with significant implications for the licensing process in England and Wales. Our lead article takes us through the current maze with expert legal assistance. The implications are significant and will probably be watched with some bewilderment by developers and the planning process at large not to mention ecologists!

What to measure and how to evaluate? These are issues which will not go away. It is one of the points of interest of IEEM to open debate on these issues but eventually to find a way forward. This would be of enormous service to Planners, and all those involved in Environmental Impact Analysis, work in Public Inquiries etc. With this in mind we reprint the Inaugural Fellows Lecture from John Box. Also included this time with a rather different perspective are the views of James Callow. Other members of the Institute are working on these issues and further editions of In Practice will include additional submissions. At the moment the Institute does not endorse any one approach. The Meeting of the Institute in Birmingham in October 1997 was called 'Standards for Survey - getting the right balance' and did much to stimulate the debate but the debate must now move on.

Spare a thought for the French! On Christmas Eve, 1999, a storm passed through Southern England giving a heavy soaking. There was a sudden increase in wind speed as it crossed the channel bringing widespread structural damage to buildings and causing absolute devastation to vast tracts of forest across northern France and into Germany. Two days later a second depression caused immense devastation to woodlands, buildings, power lines, telephones etc. across much of Southern France. The celebrated storm of October 1987 in Southern England accounted for about 15 million trees. The total losses in France are estimated at about 275 million. As in Southern England it appears to be the coniferous, commercial woodlands which suffered most with all too familiar scenes of widespread flattening and mature trees snapped off like matchsticks. The area of the Landes is the area in the southwest extensively planted with pines from the coastal sandunes inwards and the destruction in this area must account for the huge numbers of individual trees involved. The immediate response has been to clear and tidy up the immediate priorities and retrieve as much as possible for commercial wood and timber purposes. This is an opportunity and a challenge and a large scale experiment in woodland regeneration which I am sure is recognised. It will be interesting to see how the French approach what is truly a cataclysmic event.

At virtually the same time, the oil tanker, ERIKA spilled huge quantities of oil which quickly covered an area from south-eastern Brittany down a substantial part of the Atlantic Coast, causing widespread pollution of beaches rocks etc and enormous devastation of the seabird population. The oyster industry has also been substantially damaged. All in all it made the Sea Empress look fairly tame. There is still much cleaning up to be done but the impact will be felt for years to come.

Jim Thompson



This part of the directive is translated into UK law under Section 44 of the Habitat Regulations (See Box 1)

Box 1:

Grant of licences for certain purposes

- 44.(1) Regulations 39, 41 and 43 do not apply to anything done for any of the following purposes under and in accordance with the terms of a licence granted by the appropriate authority.
- (2) The purposes referred to in paragraph (1) are-
- (a) scientific and educational purposes;
 - (b) ringing or marking, or examining any ring or mark on, wild animal
 - (c) conserving wild animals or wild plants or introducing them to particular areas;
 - (d) protecting any zoological or botanical collection;
 - (e) preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
 - (f) preventing spread of disease; or
 - (g) preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other form of property or to fisheries.
- (3) The appropriate authority shall not grant a licence under this regulation unless it is satisfied-
- (a) that there is no satisfactory alternative, and
 - (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

As paragraph 44 (2) (c) is now considered an inappropriate reason for issuing a licence to allow removal of Schedule 2 species from the path of a development, it is clear that for most development projects a licence is likely to be granted only when the conditions of 44 (2) (e) apply. Consequently, one would have to demonstrate 'imperative reasons of overriding public interest' as well as satisfying the other criteria of 'no satisfactory alternative' and maintenance of 'favourable conservation status' before a licence could be granted.

The EC is now reviewing the evidence submitted by the UK in response to the Letter of Notice, and is considering its next steps. The conservation agencies are meanwhile seeking legal advice from countryside lawyers, Browne Jacobson. It appears that their advice concurred with the opinion of the EC, and CCW and EN have decided to pre-empt any formal decision and transferred the issuing of licences to the Welsh Assembly and the Department of the Environment, Transport and the Regions (DETR), respectively. The Assembly and the DETR will therefore make an assessment of the tests 'overriding need' and 'no satisfactory alternative', before seeking the advice of CCW and EN with regards to the maintenance of favourable conservation status and then deciding whether to grant a licence.

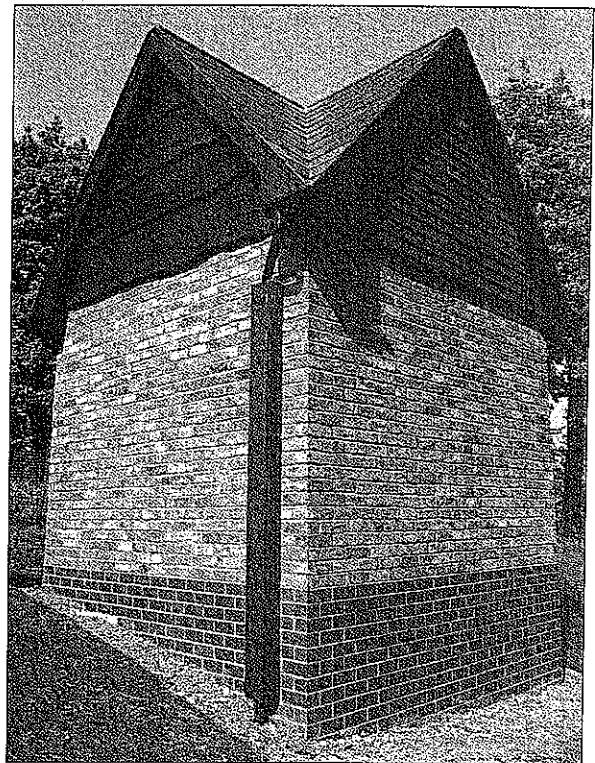
If a licence is not granted to a developer and the work does go ahead, the only possible defence remaining in law is that any damage to the Schedule 2 species was the 'incidental result of a lawful operation and could not reasonably have been avoided' (Section 40 (3)(c) of the Habitat Regulations). As time goes on it seems likely that fewer developments which affect Schedule 2 species will be granted planning permission because of the increased stringency of the new interpretation of Section 44 of the Habitat Regulations. In the short term, however, there are many projects which may have planning permission but for which

licences may not be granted as these developments do not meet the criteria under Section 44. It is possible therefore that developers will decide to risk the courts and rely on Section 40 (3) (c) with judgements being made on what is considered 'reasonable'.

This also raises wider questions as to whether there is now a need to revisit the Habitat Regulations. The Habitats Directive makes no mention of 'an incidental result of a lawful operation and could not reasonably have been avoided' and this defence may also be challenged by the European Commission.

Implications for Professional Ecologists

Mr Tom Huggon, Chairman of the UK Environmental Lawyers Association Nature Conservation Group and consultant to Browne Jacobson considers that this change in the application of the Habitat Regulations could have far reaching consequences, not only for ecologists but also for the planning system as a whole.



'Bat barn 3 – part of the ecological mitigation package at Manchester Airport's Runway 2'

In the short term many of the licences which are currently held by ecologists may be vulnerable to judicial review. The majority of, for example, GCN translocation licences have been issued under Section 44 (2) (c) of the Habitat Regulations. As the issuing of a licence is a legal process and CCW and EN seem to have accepted that this is not an appropriate use of this Regulation, the appropriateness of existing licenses may be open to challenge. EN and CCW may not insist that all current protected species licences are reviewed but it should be noted that environmental campaigners are becoming increasingly sophisticated in their use of the law and a legal challenge could easily bring a development to a sudden halt.

Ecologists should also remember that this shift in the legislation applies to a range of species. For example, until recently development related ecological work involving bats was carried out under an individual bat worker's licence. It would seem that these licences and anyone currently involved in this type of work are also open to challenge and may be vulnerable. Initially

English Nature confirmed that bat work related to development would also be referred to DETR in the same way as licences for work involving Great Crested Newts.

Just before this article went to press EN changed their advice saying that the existing licences are adequate, but when pressed to put this advice in writing they refused. We were also informed that if we were concerned about the legality of the existing licences we should "seek legal advice". The obvious question is "why should bats be any different to GCN?" They are afforded the same level of protection under the same legislation and if the licensing of GCN work in relation to development is re-defined, should not bat work be subject to the same procedures? An erroneously issued licence is just as open to challenge whether it relates to bats or a GCN.

With this increased level of scrutiny of protected species licence applications it is possible that current licences which are coming up for review may not fall within the new interpretation of the regulations and may not be renewed. Equally, projects for which planning permission has been granted and which would previously have been granted a licence may not now be considered eligible. In these cases developers may decide to continue with the work without a licence, relying on the defence under Section 40 (3) (c) of the Habitat Regulation as mentioned previously. In such cases any ecologist involved in the project, as well as the developer, would have to consider their position very carefully and, at least in the short term, could be well served in taking legal advice.

In the longer term it would seem that although translocation of Schedule 2 species may not become a thing of the past, the number of translocation projects could be drastically reduced. Schedule 2 species have, in effect, been elevated to the centre of planning policy, development and control. It is clear that guidance will be needed from EN and CCW to enable ecologists to assess issues such as the definition of favourable conservation status for these species.

Implications for developers

It is clear that any development which affects Schedule 2 species will be subject to an increased level of scrutiny by the Welsh Assembly, the DETR and the statutory conservation agencies. Developers will find it much more difficult to progress developments which, for example, affect GCN as they will now have to satisfy the new, more strict interpretation of the Habitat Regulations.

In the case of Manchester Airport's Runway 2, the overriding public interest, including satisfaction of the criteria for waiving protection could be clearly demonstrated. It may, however, be much more difficult to justify "imperative reasons of overriding public interest" when considering the conversion of an under used stately home supporting several species of bat or the extension of a golf course within the habitat of a population of natterjack toads.

Currently, there is no guidance on how the tests in the Habitats Regulations will be applied by local planning authorities, the Welsh Assembly or the DETR. It is also unclear how developments with existing planning permission will be treated and there is obvious potential for delay as the DETR and the Welsh Assembly take on their new roles.

Tom Huggon has suggested that in the longer term Schedule 2 species issues will be analogous to contaminated land issues with developers commissioning extensive pre-acquisition searches to ensure that any potential development site is free of Schedule 2 species. There may even be a demand for insurance policies protecting against Schedule 2 species occupying the site in the period between acquisition and development.

Implications for the planning system

The implications for the planning system could also be far reaching. As the law currently stands, examination of developments which affect European protected species theoretically have to show that there is no satisfactory alternative – in most cases this is examined through submission of an Environmental Statement and on occasions examination in public. In addition, the planning system will now have to be satisfied that there are imperative overriding public interests at stake. For current projects this is likely to be done on a case by case basis but as time goes on the suggestion is that the presence of Schedule 2 species will need to be considered at the allocation stage and considered during local plan inquiry. In effect, Schedule 2 species would need to be put at the forefront of the planning process rather than being an afterthought to be dealt with at the planning application stage.

It is clear that Planning Policy Guidance 9 on Nature Conservation does not accurately reflect the legal protection that is afforded to Schedule 2 species, because no mention is made of the three tests. In the forthcoming review extensive revisions will be needed.

The re-interpretation of the Habitat Regulations will be welcomed by many for the increased protection it has afforded Schedule 2 species, protection which they should have had for the last six years. The re-interpretation appears, however, to have left protected species licencing in disarray. Currently the DETR are in consultation with the Planning Directorate in an attempt to determine how licence applications will be dealt with. Consultants are experiencing delays in the issuing of licences, with knock on effects on their client's development programs. The situation regarding bats is unclear and does not appear to be consistent with the approach to GCN. What is certain is that ecologists need to be vigilant and make sure that they are not opening themselves up to their work being the subject of a legal test case or judicial review.

The Scottish contingent of the profession may well be wondering why they have been neglected in this article. It would appear that Scottish Natural Heritage's view has always been that conservation does not equate to development and licences there have always been issued in accordance with the spirit of the Habitats Directive.

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STOP PRESS

Since this article was submitted for publication the DETR have confirmed that it is the appropriate authority to consider licence applications for development works which would affect bats. Baker Shepherd Gillespie have been issued with a licence from the DETR under Section 44(2)(e) of the Habitat Regulations 1994 in reference to a specific development site which will affect Brown Long Eared and Pipistrelle bats. The Department were satisfied that the application met the purposes of imperative reasons of overriding public interest and that there was no other satisfactory alternative. English Nature confirmed to the DETR that the agreed mitigation would not be detrimental to the maintenance of the population at a favourable conservation status. The licence allows the damage or destruction of breeding sites or resting places and the capture or transport of up to 50 individuals of each species. The DETR also required that any translocated populations and/or habitats created be monitored to allow an assessment of the success of the mitigation.

Incorporating Biodiversity and Ecological Value into an Environmental Management System

James Callow

Industry is increasingly adopting environmental management systems (EMSs), particularly ISO 14001, for its sites and activities. This has led to a heightened confidence that these systems can play a key role in delivering changes and improvements to the environment in commercial settings. As yet however, there are no specific requirements to take account of either the biodiversity or ecology of company landholdings during the formulation of an EMS.

Since the definition of environment in the ISO 14001 standard (ISO, 1996) is:

'Surroundings in which an organisation operates, including...land, natural resources, flora, fauna, humans and their interrelation',

it is evident that these issues need to be addressed. To achieve this, companies require structured guidance setting out the actions they must take to formally incorporate biodiversity and ecological issues into their EMS.

This study provides both advice and guidance to enable companies to identify and quantify their impacts on the biodiversity and ecological value of their landholdings. It also sets out a framework for incorporating this information into an environmental management programme. It is designed not only to help them minimise any damage their operations may cause to their land, but also lays out clear guidance on steps that will help them, to protect and enhance, the biodiversity and ecological value of their landholdings within a cycle of continuous improvement.

The Strategy

A questionnaire was designed to establish current practices in companies with environmental management systems and large landholdings. The major companies that responded included Powergen, Severn Trent Water, London-Luton Airport, the British Airports Authority (Heathrow), Glaxo-Wellcome and British Petroleum.

Their responses (see Box 1) were analysed to establish those practices which were proving particularly beneficial to the biodiversity and ecological value of landholdings. Their responses also identify areas where the company's approach has proved less effective. The knowledge gained was used to produce a format for a management system, incorporating the most effective ideas and further developing those areas in which the surveyed companies had not been particularly successful.

Box 1 – Sample Questionnaire Response

Q. Do Severn Trent Water have a policy statement or plan relating to biodiversity and ecology issues in their EMS?

A. One of the four cornerstones of the Environmental Policy at Severn Trent Water is the promotion of biodiversity. In addition, Severn Trent Water's Environmental Objectives commits them to "enhance the environmental condition of our landholdings".

(Severn Trent Water Plc, 1998)

Initial Evaluation

Once a company makes an initial commitment to preserving or improving the biodiversity and ecological value of the company land through its environmental policy it needs to assess the ecological value and biodiversity value of its landholdings. This **Initial Ecological Evaluation** will allow a company to collect information on species and habitats upon which its activities may impact. The company can achieve this either by relying on information from desktop studies and/or by initiating a field survey within its site boundaries in order to determine the habitats and species present.

In May 1998 Earthwatch identified several sources of information available to companies including:

'...local and national interested parties: local Wildlife Trusts... national bodies such as English Nature... or consultants.'

In addition suitable survey techniques such as Phase 1 Habitat Survey (JNCC, 1990), National Vegetation Classification botanical survey (Rodwell, 1992) and aerial photography can be used to assess the ecological value of an organisation's landholdings. Companies can also adopt methods to assess the biodiversity value of their landholdings such as indices of species richness and Geographical Information Systems that can identify and delineate biodiversity 'Hotspots'.

These techniques allow companies to locate and verify the numbers of species and habitat types that indicate the biodiversity and ecological value of their landholdings. Companies can then quantify, measure, and extract these values to provide a baseline against which future company activities on the land can be measured.

Assessing Significant Impacts

The Institute of Environmental Assessment and Management, the Competent Body for EMAS in the UK, is of the view that biodiversity and ecological issues are often omitted from EMSs:

'...because conservation issues are not identified during an environmental review as being significantly affected by the organisations activities'.

(Baxter, 1998)

Therefore, to assist the company in identifying and measuring the potential impact of its operations on the environmental value of its land, a checklist was developed. The checklist aims to identify possible impacts (positive and negative) and to provide a means by which the **Magnitude Value** of these impacts can be scored. In order to achieve this, answers to the checklist questions are assessed subjectively using the scale presented in Box 2:

Box 2 - Assessing the Magnitude of Company Impacts

Magnitude of Impact	Magnitude Value
Major Positive Effect	+3
Moderate Positive Effect	+2
No Change	+1
Minor Negative	-1
Moderate Negative	-2
Major Negative	-3

Results from the checklist should enable a company to apply values to the magnitude of the impact which any one operation can have – the Magnitude Value. For example, the construction of a new oil refinery in a mangrove swamp would be a major negative impact and would be assigned a magnitude value of -3. However if the company is creating a wetland on improved grassland this would classify as a positive effect and as such would be awarded +3.

In order to assess the importance of any impact on company landholdings a study can be made based on the company's **Initial Ecological Evaluation**. A list can then be compiled of suitable biodiversity indicator species for that site. Weightings can be determined for the species by assessing their **Geographical Importance Status Value** (Box 3).

Box 3 – Geographical Importance Status Values

- **Nationally Important:** A species or habitat that is rare and/or has a restricted distribution in Britain (e.g. a grey partridge). (3)
- **Regionally Important:** A species or habitat that is rare or has a restricted distribution in the county (e.g. a short-eared owl). (2)
- **Locally Important:** A species or habitat that is rare and/or has a restricted distribution in the district/borough (e.g. a meadow brown butterfly). (1)

Subsequently the abundance of each biodiversity indicator species can be assessed to determine their **On-Site Status Value** (Box 4):

Box 4 – Determination of On-Site Status Value for Grey Partridges

Number of Grey Partridge Pairs	On Site Status Value
1 to 2 Pairs	1
3 to 4 Pairs	2
> 5 Pairs	3

The overall **Impact Importance Weighting** for each biodiversity indicator species can then be calculated by multiplying the **Geographical Importance Status Value** by their **On-Site Status Value**. For example if five pairs of grey partridges were recorded at the surveyed site the calculation would be (Box 5):

Box 5 - Example of an Impact Importance Weighting Calculation for Grey Partridges

Geographical Importance Status Value (From Box 3)	3
On-Site Status Value (From Box 4)	3
Overall Impact Importance Weighting	9

A matrix is then used to collate and interpret this information multiplying the **Impact Importance Weighting** by the **Magnitude Value** for each identified impact. This helps the company to realise the overall significance of their ecological impact or to evaluate the relative impact of any one specific operation (Box 6). The assessment matrix is used to focus attention towards operations that affect either the ecological or biodiversity value on site. This will help to ensure that where significant impacts to site ecology and biodiversity are occurring, the activities causing the impacts are brought within the EMS.

Planning

At this point a landholdings strategy can be developed by setting biodiversity and ecological objectives and targets – these aim to conserve or enhance species and ecosystem biodiversity through management actions. The objectives, targets and actions for landholdings will be guided by the significant impacts identified in the matrix and by information on threatened habitats and species provided by sources such as local Biodiversity Action Plans. Ideally, ecological targets should be quantified, with set dates on which they should be met.

Overall, the objectives, targets and actions will ensure that there is no threat to, or loss of, native species, populations and ecosystems in the short term and will enhance ecological and biodiversity value in the long term.

Monitoring

Biodiversity and ecological value issues have traditionally been seen in qualitative rather than quantitative terms. This has presented difficulties due to the requirement for quantifiable elements in an EMS in order to assess the success of management interventions. However, a system for monitoring the biodiversity and ecological value of company landholdings can be developed using the selected ecological indicators used in the assessment matrix. Changes in indicator values can be used to measure performance and help companies obtain the information they need to manage their land assets more effectively. The aims of the system should be to:

- ❖ Address the company goals on biodiversity and ecological value;
- ❖ Show performance trends in this area;
- ❖ Provide information that can be used directly to improve performance.

Environmental consultants can be used to develop a list of quantitative performance indicators for an individual company and establish targets for each specific indicator. Once baselines for each indicator have been established, continuous improvement can be achieved by incorporating the monitoring information into an EMS review, thus moving the system forward.

Benchmarking

Companies should be encouraged to seek motivation and guidance from 'mentor companies' who are considered to be leading the way in integrating biodiversity and ecology issues into EMS. This process, known as 'benchmarking', has two main purposes:

- ❖ It motivates companies to become more committed to the active management and positive stewardship of their landholdings;
- ❖ A company can see how it compares with leading organisations whose performance it wishes to emulate.

Benchmarking offers an attractive path to improvement of the biodiversity value of company landholdings through the adoption of practices already proven to be effective. The higher-performing company also benefits by passing on innovations or techniques, which will result in reportable success.

Box 6 - Overall Significance Assessment Matrix

Impact Identification Questions - Site management

1. Does the Company regularly apply herbicide to its grassland ? (-3)
2. Does the Company leave a buffer strip around its grassland ? (-3)

		Biodiversity Indicator Species					
Impact Questions	Magnitude	Grey Partridge	Short-Eared Owl	Meadow Brown Butterfly	Etc	Overall Significance	
Site Management		Impact Importance Weighting					
		9	6	4	Etc		
1	-3	-27	-18	-12	...	-57	
2	+2	+18	+12	+8	...	+38	
Etc	
	Total	-9	-6	-4	-19		

Conclusion

A significant number of companies possess a large amount of land surrounding their offices and other business sites. In practice though, ecology, biodiversity and land management issues are often a poor relation compared to other issues such as waste and energy, for companies implementing environmental management systems. However, there is considerable interest in changing this pattern. Ecological issues that are significantly affected by the organisations activities can be identified using checklist and matrix methodology. In addition, there is no reason why quantitative performance indicators and benchmarks for biodiversity and ecology should not be incorporated within an EMS. This study provides a framework for fusing the biodiversity and ecology of company landholdings into an environmental management system and aims to further the message that ecology and biodiversity should be an integral, rather than a peripheral element of EMS.

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Middlemarch Environmental Ltd and Coventry University are registered members of the IEA.

Acknowledgements

The study on incorporating biodiversity and ecological value of company landholdings into EMSs was initiated and supported by Dr Mark McLellan MIEEM, Non-executive Director, Middlemarch Environmental Ltd. The authors would like to acknowledge with thanks the contribution that Dr. McLellan has made in the realisation of this paper.

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CPD revisited

Stephanie Greshon MIEEM

The Code of Professional Conduct of IEEM requires members to comply with written CPD guidance. To summarise briefly members should:

- (a) on an annual basis maintain competence in key areas in which they practise and in other aspects of professional practice relevant to their work
- (b) every three years enhance competence in key areas
- (c) attain new competencies in key areas
- (d) enhance competencies in other aspects of professional practice

The approaching tenth anniversary of IEEM is an opportunity to review progress made by the Institute with CPD and to consider the next steps. Do we continue to operate under the current self-assessed and self-regulated voluntary scheme or do we align ourselves with other, longer standing professions with compulsory CPD recording?

Professional development does not stop with qualification and IEEM acknowledges there should be minimum standards for CPD. For example, members of the Institute of Chartered Accountants have to accumulate 150 CPD points annually. One hour of structured CPD earns 3 points whereas an hour of unstructured CPD such as background reading earns one point. Failure to comply with such schemes may result in disciplinary action or, in certain cases, disqualification from the institute concerned.

One of the original aims of IEEM was to provide a credible representation for ecologists and environmental managers, helping to raise the status of its members to that of other professions. Members accepted into the Institute acknowledge a continuing responsibility for the maintenance of their professional competence. This is essential if Institute members are to inspire public confidence in the service they offer as professional ecologists and environmental managers and to demonstrate publicly our commitment to the maintenance of the highest standards. We also strive, as an Institute to maintain and enhance professional standards, both on admission and throughout our careers. Ensuring that CPD becomes an important and integral part of professional life will help us fulfil these important goals.

CPD develops our abilities and allows us to perform well in our current role. This role has widened into areas that we feel may be outside the scope of our original competencies or skill base. This is where strategic CPD becomes important in the development of knowledge, skills and expertise needed for the future. This is essential in the world of rapidly changing and tougher wildlife protection legislation, particularly on the European front. Failure to keep up to date with these changes could have serious repercussions for our clients. This was well demonstrated at the conference on Environmental Law and Biodiversity in November last year where the full implications of the new EA and Habitat Regulations were fully discussed. An important, but often less obvious aspect of CPD, is to promote wider job satisfaction and personal effectiveness. A wide variety of CPD activities will help us achieve this.

This may be in the form of structured training courses such as the excellent low cost workshops offered by the Institute, conference attendance, etc or as unstructured CPD such as technical research for practical work and by other means. As professionals we should keep accurate, systematic and up to date records of our CPD training with a view to these being requested for regular inspection. The annual subscription renewal period and when members upgrade would be a sensible time to request CPD records.

TWO FOR THE PRICE OF ONE:

Efficacy of Advertisements in "In Practice"

Mike Barker, MIEEM

You may recall a small green flyer in the last edition of "In Practice" advertising for an experienced ecologist to work within the Environment & Product Quality (E&PQ) Team in Southern Water. This is the central team of environmental scientists, ecologists, geologists and singular environmental economist. We were looking to recruit a senior ecologist to work on capital scheme appraisals and also ensure the sound management of our key ecologically sensitive landholdings.

Our early attempts to attract the right calibre of candidate, involved a full-page advert in *New Scientist*, which ran with a further five posts to spread costs. However, the cost of the advert was significant. The immediate result were an impressive 100+ responses for the marine scientist post also in the E&PQ Team. However, the ecologist post received a derisory five applications, the worst return for any of the six posts advertised.

A chance conversation with Jim Thompson indicated that it was too late to get an advertisement printed in the bulletin, however an A5 flyer could be inserted into *In Practice* for a very reasonable price. This quick turn-around allowed us to run the flyer with only a marginal delay to the original recruitment timetable. We received a reasonable response and were able to interview eight candidates with a range of experience. Indeed we have successfully appointed a senior ecologist with industry, consultancy and Environment Agency experience. The range of CV's we received also allowed us to appoint a further ecologist on a contract basis.

I would recommend using *In Practice* to recruit as it does reach a wide range of practising ecologists and is economic alternative to other publications. The main issue to bear in mind is timing, although IEEM are looking to improve the publication frequency and it's regularity. I can't guarantee you will get an extra ecologist "free", but you will get a reasonable response in what seems currently to be a rather flat market.

Why Not Advertise in this Space?

Rates are:

Full Page – £320.00

Half Page – £160.00

Quarter Page – £80

Contact IEEM for Further Details:

Tel: 01962 868626, Fax: 01962 868625

Email: enquiries@ieem.demon.co.uk

All adverts must be camera-ready
IEEM uses Word and other PC packages but not MAC

A shadow North East Section

Steve Pullan, MIEEM

A small group of self-appointed IEEM members in NE England having seen a Scottish section being formed by the Institute, thought it was about time UDI was declared and that a regional group for those in the North was formed. What this "shadow" regional committee has done is to put together a programme of events in the North for those in the North-East, Cumbria and North Yorkshire, but of course the invite is also open to our Scottish cousins who might like to use their passports and any others who would like to join us and come to the events we have organised.

The first event is a lecture by Prof. Peter Evans of Durham University, who will be talking on implications of higher levels of sewage treatment on conservation of coastal bird populations. This issue has arisen due to the EU's Urban Waste Water Directive and the Bathing Water Directive, which is causing Northumbria Water to invest millions in treating sewage, but it may have implications on the international renowned bird sites on the northeast coast, many of whose prey are sustained by sewage-derived organic matter. This event will take place at 7.30 pm on Thursday 11 May at the Durham Wildlife Trust's Headquarters at Rainton Meadows near Durham. This will be followed by a field day in the summer on one of the Northern Wildlife Trust sites where a sharing of knowledge and skills in survey techniques and ecological management, which will allow our Local Wildlife Trusts to gain a detailed understanding of one of their sites from the range of members who attend. After these two initial events the following are then likely to take place starting from September about every two months in the evening, opening with Professional Survey Standards, then Regional planning and the Regional Development Agency, local biodiversity action plans and regeneration of industrial sites

For further details please contact Steve Pullan who has agreed to act as coordinator for the North's shadow section. Any members in this region who have ideas for site visits, or are willing to offer topics for discussion, please could they contact Steve. So those in the North stop whinging about everything being in the south and come and support the events and bring as many friends and colleagues who should be IEEM members. Remember as IEEM events they will count as CPD.

Steve Pullan, AREAS, 20 Holystone Drive, Holystone, Newcastle upon Tyne NE27 0DH E-mail steve.pullan@virgin.net Tel: 0191 266 1769

Editors Note: Apologies! Unfortunately it was not possible to synchronise the appearance of In Practice with the first event in the North East although many members in the area were aware of it. Nonetheless it was felt that the article was still a good launch for the shadow section and illustrated the kind of activities a regional section might undertake.

Branching out as an Expert Witness

Fiona Neville

Expert witness work can be a satisfying adjunct to a successful career. Many ecologists are attracted to the idea of expanding their particular professional expertise by branching out into expert witness work, but not knowing where to begin, the idea remains a pipe dream. The Society of Expert witnesses believes that this is a great shame as the majority of people would bring a wealth of new knowledge into the expert witness arena. Through its mentor scheme the Society is offering unique, individual tailored guidance and advice to all aspiring expert witnesses who join the Society as Associate members.

Since the advent of the Civil procedure Rules in April 1999, it has become clear that expert witness work is no longer an area that one can just drift into. It is essential the expert witness has a clear understanding of the Civil Procedure rules in practice. The rules are being interpreted with little flexibility and woe betide any expert witness who flouts the rules whether through ignorance or design.

The Society of Expert Witnesses developed its successful mentor scheme as part of its continuing determination to foster the spirit of self-help amongst its membership. The novice requests to be linked with a volunteer Mentor who will show the Associate member the ropes. The scheme is informal, the individuals decide together the nature, type and extent of the support that is needed, thus meeting the particular needs of the novice as his expert witness work develops. There are straightforward expert witness skills, such as report writing, that can be covered in letter from the Society's helpline. But nothing can beat the benefit of guidance and advice from an established expert witness, willing to share both experience and expertise.

The value of membership of the Society of Expert Witnesses is reflected in the massive growth of the Society during the last year. The Society was created by experts who saw the need for an independent organisation that could concentrate solely on meeting the needs of the expert, from the fledgling to the eminent. The society has answered thousands of queries since its inception in 1996. Free of any attachment to any commercial body and committed to promoting higher and more uniform standards of expert evidence, it offers members practical support on the professional, legal and business aspects of providing expert services. If you are a practising expert witness, or are interested in becoming one, and would like to find out more about the Society of Expert Witnesses, please ring 0845 702 3014 and speak to Teresa Brown or Fiona Nevill.

Footnote:

Some members may by now have decided to register as an expert witness. Apparently the fees currently charged per hour by different Professional categories range from £136 for Medicine to £71 for Engineering. If Ecology fits into this picture at all it is probably Science/Agriculture where the rate is £79. It would be interesting to know how many of IEEM members do earn at that rate!

Further information on line as the Web Register - www.jspubs.com. which lists more than 3,100 experts from across disciplines.

INAUGURAL FELLOWS LECTURE ECOLOGICAL GUIDELINES AND SUSTAINABILITY

*or, roast heron for
the king*

Dr John Box FIEEM

BIODIVERSITY AND SUSTAINABILITY

Like air and water, wildlife is assumed to be a free resource that we take for granted and which can be adversely affected without direct economic payment. However, the protection and continued enjoyment of natural resources does entail costs to individuals and to society. Legislation, planning guidance and public attitudes are continually driving the burden of these costs away from the victim and the taxpayer and onto the consumer and the shareholder where they rightfully belong. Air and water legislation has focussed on discharges from sites that exceed certain limits, for example aquatic discharges are consented with the aquatic ecosystem in mind.

Over the past 40 years, the conservation of nature in Europe has focussed on the protection of rare habitats and species, rather than on the overall losses of biodiversity. Wildlife legislation has not yet set limits for changes in species or populations in relation to individual sites - either due to the initial land-take or to subsequent disturbance. Sustainability may offer a more appropriate mechanism to achieve net gains in biodiversity for individual projects. Any project - industrial, residential, commercial, agricultural, mineral extraction, fisheries - can be assessed for biodiversity and sustainability. The levers are there - we just need to learn how to use them.

Sustainable development - or sustainability - is an admirable theoretical concept but is very hard to get to grips with in practice. How plausible is it when the concepts have to move from the drawing board to the economic realities of the boardroom and the

practical realities of the construction site? Sustainable development is defined as development which meets the needs of the present without compromising the ability of future generations to meet their own needs and has been likened to a 'three-legged stool' whose legs comprise economic, social and environmental issues. With one leg missing, the stool will fall over and a project is not sustainable. The problem - or the challenge - is that we are all looking for long-term economic growth coupled with better housing, schools and hospitals, more public transport, improved leisure facilities, cleaner air and water, access to the countryside and green spaces in towns.

The Government established a national set of around 150 indicators of sustainable development including fourteen 'Headline Indicators' in May 1999 (UK Government 1999). Populations of wild birds is one of the headline indicators and data since 1970 show the changes in the indices for all species, woodland species and farmland species with the farmland species index showing particularly severe long-term decline. There is a need for the development of guidelines to facilitate the practical application of these indicators. Recently, a *Sustainability Matrix* has been proposed at a workshop organised by the Midlands Environment Business Club in Birmingham which is based on the headline indicators (Hake & Box 1999).

The matrix allows the sustainability of a project, or projects, to be assessed against the 'Headline Indicators' and put into three categories: Red, Amber, Green. Red issues are those which have a significant adverse effect on sustainability - these issues need to be addressed urgently. Amber ones give a warning - in other words, you must try harder. Green is for issues that contribute significantly to sustainability.

A number of specific applications for the Sustainability Matrix have already been identified:

- comparing competing proposals on different sites in terms of their contribution to sustainability;
- comparing different end-uses for a given site;
- auditing a particular design for a proposed end-use to improve the overall sustainability.

It is the last of these options that will be most attractive to developers, planners and environmentalists. There are obvious links to ISO 14001 and EMAS, the EU Eco-Management and Audit System. Sustainability is a cross-cutting issue which, for example, links control of surface water runoff with groundwater recharge and with wetland creation and biodiversity. The matrix allows these issues to be taken into account and real environmental benefits to be derived from a critical examination of a project.

SUSTAINABILITY MATRIX				
HEADLINE INDICATORS		EFFECTS OF DEVELOPMENT		
		RED	AMBER	GREEN
ECONOMIC	Economic growth			
	Investment			
	Employment			
SOCIAL	Educational qualifications			
	Life expectancy			
	Housing quality			
	Crime			
ENVIRONMENTAL	Climate change			
	Air pollution			
	Road traffic			
	Water quality			
	Wild birds			
	Reusing previously developed land			
	Waste			

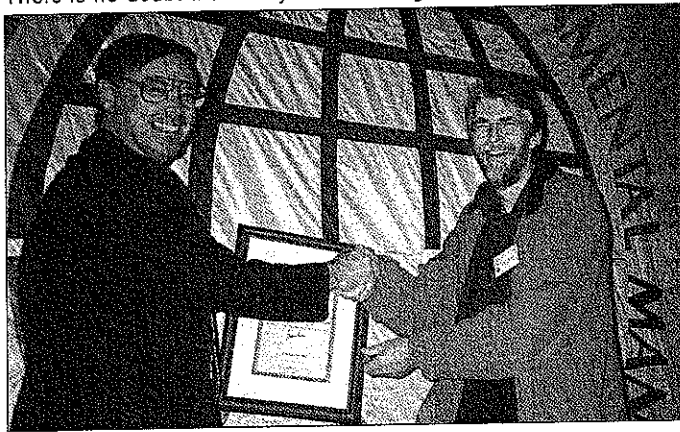
ECOLOGICAL ASSESSMENT & EIA

Environmental Impact Assessment has great potential as a tool that could help to implement sustainable development and the conservation of biodiversity. There are excellent guidelines (Institute of Environmental Assessment 1995) which outline the best practice for describing and evaluating the ecological baseline of an Environmental Impact Assessment - or for that matter any impact assessment involving ecology.

Significant work on an accreditation scheme for ecological surveyors has been initiated by IEEM's Practice Standards Group. The aim is to produce a matrix of potential survey requirements and a set of criteria against which the effectiveness of ecological surveys can be judged. Regulators, development control departments, statutory consultees, and planning inspectors would be able to see how comprehensive and competent the ecological surveys have been.

Ecology is still not taken into account to the same degree as other potential constraints, despite the rigorous scientific underpinning and the wealth of hard data on the ecological requirements of individual species and communities. Much of this is due to ecological assessments often being strong on descriptions of the flora and fauna and weak on the evaluation and assessment of impacts and their significance.

There is no doubt that many of the ecological assessments



John Box receives his Fellows Certificate from David Parker, the President.

undertaken under the various EIA Regulations in the UK are flawed. Over the past few years, Jo Treweek has undertaken a significant and revealing evaluation of the ecological components of Environmental Impact Assessment in the UK in conjunction with Stewart Thompson and colleagues from Oxford Brookes University (Treweek 1996; Thompson, Treweek & Thurling 1997; Treweek & Thompson 1997).

A review of 170 Environmental Statements (ES) produced between 1988 and 1993 (Thompson *et al.* 1997) revealed that ecological information was often limited in quantity or of poor quality:

- only 9% of ES made any attempt to quantify ecological impacts;
- only 45% based findings on new survey information;
- only 48% reported consultations with statutory consultees for nature conservation;
- only 23% described mitigation measures in detail;
- universal failure to make any commitments to monitoring impacts of developments;
- general failure to place species information in any context - local, national, international.

Treweek (1996) also found significant weaknesses and a lack of scientific rigour in the ways in which ecological assessments are

undertaken including:

- a lack of objective methods for measuring and evaluating impacts;
- a lack of definitions of "magnitude", "significant", "important";
- a lack of any indication of the likely success of mitigation measures (including translocation and habitat creation).

What is crucially needed are criteria for evaluating the significance of adverse impacts on ecological receptors as well as data on the likely success of mitigation measures such as buffer zones, habitat creation and species or habitat translocation.

Environmental Impact Assessment often results in a compartmentalised approach where each discipline undertakes its assessment in isolation. The hydrology section may not refer to the impacts of the proposals on the freshwater ecosystem, the noise and dust sections almost certainly will not refer to adverse impacts on flora and fauna, and the ecology section may not refer to the effects of drawdown of the water-table on the habitats on the surface. So often, relevant ecological matters fall down the cracks between different disciplines. Ecological assessment needs to take account of the relationships between organisms and the environment in a more analytical and quantified way.

Planners need to know what losses and gains to the local biodiversity might be expected from a new development. Developers want to be sure of what is expected of them from the start of a project if biodiversity is to be effectively integrated into the design and build process and what it could ultimately cost. The relationship of the planning process to biodiversity and sustainability is a crucial issue where good practical guidance is required (RTPI 1999; Oxford 1999). However, there are few ecologists in local authorities in comparison to landscape architects or archaeologists.

The Association of Local Government Ecologists has 139 members in Britain but not all ecologists employed by local authorities are members (Joy Tetshill, pers. comm.). The Landscape Institute has some 1580 Fellows, Members and Associate Members in local government in the United Kingdom (source: Landscape Institute, 1997 data). A survey of archaeologists in 78 local authorities in England (Association of Local Government Archaeological Officers/English Heritage 1998) found that there were 232 full-time equivalents employed by local authorities (including National Park authorities) on a curatorial basis, providing specialist advice on town planning and site conservation and management. In addition, there were 356 full-time equivalents employed on contracting work (undertaking field projects and archaeological investigations). This works out at an average of 7.5 archaeologists for each local authority in the survey.

GUIDELINES AND REGULATORS

Developers and their advisers appreciate guidelines that are quantified, pragmatic, and may be modified depending on site conditions by agreement with the regulator. For example, English Nature has set guidelines for activities which could cause disturbance of badgers in their setts and which will need licences: hand digging within 10m, light machinery within 20m and heavy plant within 30m (English Nature 1995). These guidelines may have no absolute scientific basis in relation to disturbance, but they are effective for the development of sites with badgers because they have been set by the statutory regulator and relate to the typical length of badger tunnels (10-20 m) (Corbet & Southern 1977).

Comparable guidelines are needed for other species. For example, water vole was added to Schedule 5 of the Wildlife & Countryside Act 1981 in March 1998 in respect of damage to their burrows or disturbance of water voles in the burrow. The initial official advice

on water voles set out in April 1998 in an additional sheet for English Nature's Species Conservation Handbook was that the great majority of water voles confine their activity to within 2m of a waterbody. Subsequent guidelines for developers (English Nature 1999a) refer to leaving undeveloped corridors around ponds and along ditches and streams to within a few metres of the water. However, a recent environmental assessment for a housing development included the advice that there should not be any development within 10m of a watercourse that contained water voles, and that consultation with English Nature would be needed for development within this distance as well as a licence. This advice takes the precautionary principle too far and could have caused the developer problems with the site investigation of the underlying soils and geology as well as the design of the development.

Recently, Wardeil Armstrong undertook an ecological assessment for a residential development adjacent to deciduous woodland, part of which was ancient woodland. Damage and disturbance to woodland adjacent to housing can extend for tens of metres into the woodland and can include proliferation of footpaths, damage to trees and shrubs, and dumping of litter and garden rubbish. A buffer zone of planted scrub species between the edge of the wood and the rear fence of the houses was recommended to minimise the adverse impacts. The developer pressed very hard for the ecological justification for the recommended width of the buffer zone because the site was extremely tight and the viability of the scheme required a certain number of units.

Subsequently, various Government agencies, voluntary bodies and environmental consultancies were asked:

- a) what was known about the ecological justification for woodland buffer zones;
- b) what would they recommend in terms of a buffer zone between residential or commercial developments and an existing broadleaved woodland (if this zone were to be planted with appropriate trees and shrubs) such that the flora, fauna and ecological processes of the adjacent woodland would not be significantly affected?

The answers were as diverse as the problem - so much depends on the development and the nature of the impacts, the species planted in the buffer zone, and the type of woodland. However, it was possible to pick out some important issues: i) a buffer zone is necessary to minimise impacts on the woodland; ii) there are very few ecological studies into the effects of built development on adjacent woodland ecosystems; iii) the presence of a rich woodbank with a diverse flora requires careful consideration if a planted buffer zone is being designed; iv) ancient woodland requires more careful consideration of impacts and mitigation measures than deciduous plantation or recent secondary woodland. Buffer zones could be less for commercial developments or motorway service stations than for residential housing. The idea of a managed ride or woodland glade immediately adjacent to a woodland (which would protect a woodbank) with a barrier of blackthorn and similar thorny shrubs next to the housing (Ian Trueman & Eleanor Cohn, pers. comm.) combines ecological concepts with practicalities.

It is worth noting that the advice produced by English Nature for planning authorities on ancient woodlands (English Nature 1999b) is extremely useful, as it states clearly that ancient woodland is an irreplaceable natural asset which should be protected. This would have been an opportunity to also provide some guidelines for planning authorities and developers on the matter of buffer zones.

Finally, there is a need for the statutory nature conservation agencies to inspect developments where they have issued licences for protected species. Great attention can be paid to the detail of the written proposals, which accompany an application for a licence, but the implementation of the proposals does not usually

have the same scrutiny.

One example is the installation of amphibian fencing to exclude great crested newts from a development site. Plastic amphibian fencing is prone to vandalism, particularly during the school holidays. A sharp blade can do a lot of damage in a very short space of time and angled fences can fall down. Maintenance of fencing is often left to local contractors who are instructed by developers. Any development will have problems, but developers are more familiar with problems involving bricks and mortar than those involving newts and plastic fences. Some developers will repair their fences immediately; others may delay - which could allow newts to pass through the fence. Good ecological practice involves additional costs which developers will pay unless they see their competitors getting away with lower standards. Hence, the need for the regulators to act.

A few high-profile inspections by the regulators (whether statutory nature conservation agencies or planning authorities), together with the possibility of legal prosecutions, would undoubtedly send strong signals to developers that such fencing schemes are necessary and that there is a level playing field in respect of these particular costs. There would be benefits to biodiversity from a few such inspections, which would far outweigh the costs of the staff time involved.

The Countryside Council for Wales has produced guidance on great crested newts (Countryside Council for Wales 1996) which provide guidelines and standards which are very useful to show to developers who have a great deal of respect for regulators who have teeth and are not afraid to use them.

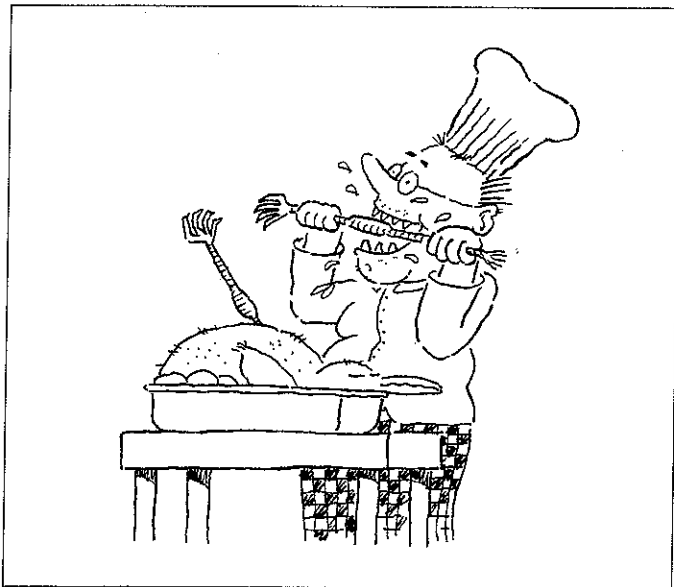
CONCLUSIONS

The widespread need for detailed ecological advice is a measure of the increasing importance of wildlife issues to those involved with land-use changes - whether as farmers, land managers, planners or developers. The impacts of land-use changes on wildlife are no longer a side issue, but are now part of the mainstream with economic as well as political effects. It is a sign of maturity that ecological advice is increasingly subject to scrutiny and challenge.

Ecological and environmental assessments need to evaluate the significance of both adverse and beneficial impacts on biodiversity as quantitatively as possible taking account of good ecological data and relevant legislation and guidelines. Guidelines for development need to be set by the planning authorities and the statutory nature conservation agencies that deal with the relevant aspects of nature conservation, planning and development. Such guidelines would assist in incorporating biodiversity issues into sustainable development.

The IEEM has a crucial role in providing a forum for the exchange of ideas and good practice, in ensuring that ecological advice is based on good research data, and assisting in the formulation of appropriate guidelines and standards. IEEM should be working to:

- be aware of its Members' needs;
- bring together ecological consultants, regulators, land managers and academic researchers in relevant meetings and working groups;
- stimulate appropriate ecological research into the effects of adverse impacts on ecosystems, their significance, and their mitigation;
- comment on draft legislation, official government advice (PPGs & MPGs), and relevant documents;
- work with the British Ecological Society, the Royal Town Planning Institute, the Town & Country Planning Association, the statutory nature conservation agencies, the Wildlife Trusts and the RSPB;
- set out key issues for Department of the Environment, Transport and the Regions in England, the Scottish Parliament and the Welsh Assembly.



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Epilogue

Unexpected guests arrive at the palace and bring a heron as a royal gift. The king welcomes them and declares that the heron will be roasted as the centrepiece of a banquet in their honour. The cook is well versed in cooking all manner of dishes for the king, but he has never cooked a heron before. Imagine his concern to find that no recipe for heron – whether roast or braised or boiled – could be found.

The cook roasts the heron in the same way as any other large bird, but is worried and ill at ease. Firstly, is the bird cooked or not? Secondly, how would a bird that eats slimy frogs and fish all day taste? So he pulls off a leg and tastes it before triumphantly presenting the roast heron to the king with a fanfare of trumpets.

The king welcomes his guests to the banquet with thanks for this unusual gift. Imagine his embarrassment to find that the roast heron is missing a leg. The cook is summoned and the disgraced roast sent back to the kitchens. The king asks for another roast, but there is none. Instead cold meats are hurriedly found and the banquet continues in a subdued fashion.

The cook is a wily and cunning fellow and tries to win back favour by taking the king the next morning to the lake nearby. There amidst the early morning mists, a heron stands on one leg in the shallows. They watch the bird for many minutes. The bird continues to stand on one leg and the cook thinks that he has successfully deceived the king. But suddenly the king claps his hands and the heron flaps away with both legs clearly visible trailing behind.

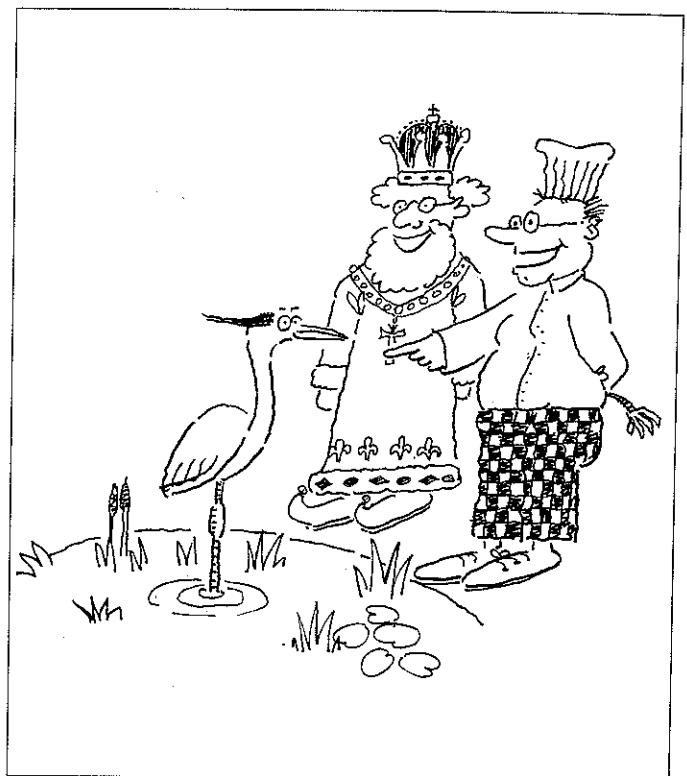
The cook is aghast expecting to be sacked for eating the leg of the roast heron and then trying to deceive the king. But the king is amused, admits that he values the abilities and audacity of the cook, and forgives this error of judgement.

And the moral of this story? It is much easier to cook using a recipe book - or some guidelines - even if you then add modifications from your own knowledge and experience. A good recipe for roast heron would protect a king from the disappointment of bad cooking (or advice) and would allow a cook to draw on the experience of others.

Of course other stories might not have such a happy ending.

This story is adapted from one heard at a story-telling workshop in Bridgnorth (Shropshire) in August 1998.

John Box is Principal Environmental Scientist, Wardell Armstrong, West Bromwich.



CONFERENCE 2000 - ECOLOGISTS AND THE RURAL ECONOMY:

AYR IS CLOSER THAN YOU THINK

Carol Crawford

The Scottish Section is delighted to welcome the annual conference back to Scotland for the millennium. We chose Ayr because: it has a hotel large enough for the conference with diverse accommodation nearby; there are many excursion locations within a half hours drive; and it is easy to reach from the four corners of the UK.

Ayr is an attractive seaside town. The beach is 10 minutes walk from the conference venue: the Station Hotel (there are closer B & Bs) from where there are tremendous views of Arran and Ailsa Craig. There are pleasant walks by the River Ayr with its ancient gorge woodlands.



Culzean Castle and SSSI woodlands from cliff-top walk.

This year's conference focuses on rural issues for the first time and will be of particular interest to members in Wales, Ireland and Scotland and rural areas of England. There will be 3 main sessions:

- Changing Legislation and Rural Policies;
- Agriculture, Forestry and Woodlands;
- Development in the Countryside, including Tourism.

We'll illustrate these topics with excursions to some of the following. Golf can be a good example of green tourism: Ayrshire boasts two Open Golf Championship venues, at Turnberry and Troon, and their Links courses are both with SSSI dune systems. Culzean Castle and Country Park is the National Trust for Scotland's most visited property, the Country Park, established 1965, was Scotland's first. There is a famous cliff-top walk through SSSI woodlands leading to the fairytale castle. Ayrshire has diverse forestry from commercial conifers to native and community woodlands stimulated by the Millennium Forest for Scotland. Agriculture, once the mainstay of the rural economy, is in serious decline. We'll visit a farm in an agri-environment scheme where the farmer can derive some income from conservation. Opencast coal mining is a major countryside development offering challenges to the ecologist at both planning and restoration stages.

We plan to have a ceilidh after the conference dinner (Scottish/Irish music and singing and dancing) and there may be a malt whisky tasting to fit in.....

Ayr can be reached by plane, train, car and ferry.

- The train from Glasgow Central runs every half hour. It takes an hour to reach Ayr, passing near Glasgow and Prestwick airports, journeying down the softly scenic north Ayrshire coast and terminating right next to the conference venue.
- There are trains every 15 minutes from Edinburgh to Glasgow giving an Edinburgh to Ayr journey time of 2 hours. Glasgow is linked by train to Stirling, Perth, Dundee, Aberdeen, Oban and Inverness. Driving from Edinburgh to Ayr takes 1½ hours; from the centre of Glasgow 40 minutes, from Stirling 1½ hours, from Perth 2 hours.
- Those travelling from the south of England may be able to reach Ayr in less time than those from north Scotland! There are regular flights to Glasgow from many airports and six flights a day to Prestwick from London Stanstead. Prestwick is 3 miles from Ayr with buses and trains every half hour. Ryanair, who run the Stanstead to Prestwick service, offer cheap return flights especially if booked from their web-site: ryanair.com. There is an express train from Liverpool Street to Stanstead; total journey time to Ayr 3 - 4 hours. Those flying to Glasgow can pick up the train at Paisley (45 mins to Ayr)
- There is a regular train service from London Euston to Glasgow Central (5½ hours) to link with the Ayr train.
- For those driving from England and Wales, Ayr is about 2 hours from the Border and there is a choice of three routes with different types of scenery
- Ayr is easy to reach from Ireland - Ryanair operates a regular service from Dublin to Prestwick, whilst from North Ireland there are regular ferries from Larne to Stranraer which is just over an hour's drive to Ayr - by a spectacular coastal route - or Seacat from Belfast to Troon. Troon is 15 - 20 minutes to Ayr by train or car.

The conference will end on a Friday so that delegates can spend a weekend here. The Quality Hotel Station can arrange special packages with sister Quality Hotels in Edinburgh, Glasgow, Falkirk and Perth. Perth is the gateway to the Highlands where the most spectacular autumn landscapes are to be seen. The foot of Loch Lomond can be reached in 1¼ hours from Ayr, half an hour more takes you to the magical mountains and seascapes of Argyll. Arran is an hour's crossing from Ardrossan, a ½ hour drive north of Ayr, whilst the Galloway Forest Park begins an hour's drive to the south. Or you could just stay in Ayr for the races!

I'll provide more details of travel and touring options when the conference papers go out. Meanwhile please feel free to email me with any queries: tncr@aol.com. We are going to make this a friendly and memorable conference; diary it now!

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



View from Ayr beach of Arran

In the Journals

compiled by Pat Rae and
Jim Thompson



British Ecological Society

This review continues with recent papers in the Journal of Applied Ecology and starts to bring the Journal of Ecology up to date. With the interests of most members being in the application of ecology, the proportion of papers reviewed from the Journal of Ecology tends to be rather smaller than in the Journal of Applied Ecology.

D.E. Chamberlain, A.M. Wilson, S.J. Browne and J.A. Vickery. **Effects of habitat type and management on the abundance of skylarks in the breeding season.**

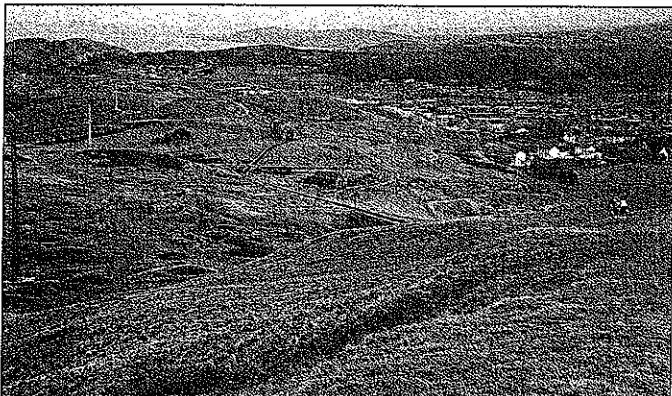
Journal of Applied Ecology, 1999, **36**: 856-870

This paper deals with the disturbing and major decline in skylark populations in Britain. This is usually attributed to agricultural intensification and the changes in cropping patterns. For example the increase in the areas of winter wheat is deleterious due to the sward being too dense for skylarks. Equally the increase in rape, grazing pressure, silage taking and unsuitable crops are all responsible. This decline is also occurring in upland areas and this has been attributed to increased grazing pressure, afforestation and changes in moorland management. This appears to offer a certain amount of hope in the possibilities raised by set aside and the reduced use of pesticides and fertilizers perhaps associated with organic farming and agri-environment schemes.

P.D. Hulme, R.J. Pakeman, L.Torvell, J.M. Fisher and I.J. Gordon. **The effects of controlled sheep grazing on the dynamics of upland *Agrostis-Festuca* grassland.**

Journal of Applied Ecology, 1999, **36**: 886 - 900.

The composition of upland grasslands has long been of concern and this is an interesting attempt to place grazing management in the context of a specific goal. In this 7 year experiment, heavier grazing resulted in the spread of *Nardus stricta* where originally present and removal of grazing encouraged the spread of *Deschampsia flexuosa* and *Molinia caerulea* and dwarf shrubs. Maintaining the *status quo* i.e with special reference to *Festuca ovina* and *Agrostis capillaris* is dependent on managing grazing pressure with the more productive sites being able to take more grazing than the less productive sites.



Nardus/Festuca Grassland, Great Orme

A.C.Gange, D.E. Lindsay and L.S. Ellis. **Can arbuscular mycorrhizal fungi be used to control the undesirable grass *Poa annua* on golf courses?**

Journal of Applied Ecology, 1999, **36**: 909 - 919.

The ecological effects of golf course management are one of the longstanding concerns that ecologists express about new golf course proposals. This is notwithstanding the benefits which may otherwise arise from their establishment in areas under intensive agricultural production. *Poa annua* is considered to be undesirable in golf courses but its control is achieved only with difficulty and reducing levels in turf would greatly reduce the heavy reliance on pesticides and water that currently exists. Allocations of arbuscular mycorrhizal fungi were found to alter the balance of competition between *Poa annua* and *Agrostis stolonifera*, a more desirable turf component. The paper concludes that such applications have the potential to be a much more environmentally sound method of *Poa annua* control than the currently used chemicals.

N. Moore, A.Whiterow, P.Kelly, D.Garthwaite, J.Bishop, S.Langton and C. Cheesman. **Survey of badger *Meles meles* damage to agriculture in England and Wales.**

Journal of Applied Ecology, 1999, **36**: 974 - 988.

This paper deals with the issue of badger damage in England and Wales. The most recent national badger sett survey indicated that an increase of 76% has occurred in the badger population in the last 10 years. The numbers are however unevenly distributed with the lowest numbers in the north and east and the highest in the south west which is estimated to hold one-quarter of the national population.

The paper illustrates clearly that the damage from badgers can be considerable and the estimated total cost of badger damage to agricultural interests across all farms in England and Wales was £41.5 million. The major component of this figure was burrowing damage - £25.7m followed by direct damage to crops £12.5m. Bearing these figures in mind it is clear that there is some basis for the sometime hostile view of badgers taken by farmers. Yet badgers are a protected species and the scope for damage limitation is rightly limited. The damage caused by badgers appears to be very seasonal and in the case of damage to maize, wheat and vines was virtually confined to the pre-harvest period. This raises the possibility of excluding badgers from crops at certain critical times and the use of an electric fence in maize crops has been shown to be particularly effective.

A. Cherrill and C McClean. **Between- observer variation in the application of a standard method of habitat mapping by environmental consultants in the UK.**

Journal of Applied Ecology, 1999, **36**: 989 - 1008.

No reviewer in *In Practice* could resist including a paper which deals with the activities of environmental consultants in the UK and even cites membership of IEEM.

The subject in question, the UK Phase 1 survey will be familiar enough to many IEEM members as a standard method that has been used widely for environmental assessment and management planning. Indeed the Professional Development Programmes have had several courses which deal specifically with this. This is an area of great interest to the Practice Standards Group of the Institute. The purpose of the paper was to test the precision with which environmental consultants apply this technique. The result showed an alarming degree of inconsistency between the surveys undertaken by the separate consultants. The final conclusion is that the current application of the Phase 1 approach by consultants places too great a reliance on decision-making by the (frequently) unsupported lone surveyor in the field. The paper makes several suggestions as to how the quality of the survey might be improved. This is clearly a subject area with which the Institute should be concerned and although the three surveyors

who were Institute members recorded the greatest number of species, the consistency of the surveys between those done by members and the three other consultants were no higher.

F.A.M. Tuytens, D.W. Macdonald, R. Delahay, L.M. Rogers, P.J. Mallinson, C.A. Donnelly and C. Newman. Differences in trappability of European badgers *Meles meles* in three populations in England.

Journal of Applied Ecology, 1999, **36**: 1051-1062.

This paper is interesting in view of the previous paper on badgers and the implications of the connection with bovine tuberculosis. It seems that there can be appreciable differences in trappability between high density protected populations and low density culled populations and it was thought important to investigate some of the factors involved. The trappability did not differ between sexes or adult age classes but significant differences were found between cubs and adults, study areas, seasons and years and various interactions.



S.J. Ormerod and A.R. Watkinson. Journal of Applied Ecology: Editorial.

Journal of Applied Ecology, 2000, **37**: 1- 2.

In a short and appropriate editorial to the first volume of the new millennium (or the last year of the old millennium depending on your desire for absolute accuracy!), editors SJ Ormerod and AR Watkinson set out their mission statement for the *Journal of Applied Ecology* against a backdrop of a very brief history of time and our increasing understanding of *Homo sapiens*' effect upon the globe. Currently numbering six billion, our species' influence is accelerating. The authors list some of the issues whose impacts are becoming critical such as use of agro-chemicals; introduction of species and genetically modified organisms and; waste disposal; global species extinctions; and resource depletion especially of fresh water. The authors go on to discuss four main consequences for ecological research of human ecological dominance: firstly the increasing difficulty of finding unsullied systems to work on, heralding an even bigger swing to applied research; secondly, the application of ecology in management will become more challenging when considering whether populations are fluctuating in response to ecological processes or to side effects of human actions; thirdly the knowledge gained from applied problems will generate more management options; and fourthly and most importantly, applied ecology and successful ecological management will become a necessity, in order, amongst other things to find solutions to sustainable development.

T.A. Heard and S.L. Winterton. Interactions between nutrient status and weevil herbivory in the biological control of water hyacinth.

Journal of Applied Ecology, 2000, **37**: 117- 127.

Water hyacinth, the aggressive floating aquatic weed, creates major economic and environmental problems in the tropics and

sub tropics. Its growth is directly correlated with nutrient concentrations, particularly nitrogen. Biocontrol agents have been widely released, but the plant persists as a problem, especially in eutrophic waters. This study attempts to elucidate the role of the trophic status of the environment on the biocontrol agents themselves. The authors measured growth of water hyacinth at two nutrient concentrations (medium and high) in the presence or absence of two insect biocontrol agents - the weevils *Neochetina bruchi*, and *N. eichorniae*. A parallel study followed a cohort of *N. bruchi* to determine age-specific longevity and fecundity.

The results were, firstly, that the plants produced more biomass at higher nutrient concentrations and secondly both insect species reduced plant growth at medium as well as high concentrations. Both species had a large and similar impact on plant growth at medium concentrations, but *N. bruchi* had a larger impact at the high concentration. The explanation was provided by the life history study which showed that the greater damage at high nutrient concentrations was due to the greater production of offspring, and hence greater larval damage. The authors conclude that biocontrol of water hyacinth is much easier at low concentrations. However, *N. bruchi* will be the more effective control agent at high concentrations, but that if acceptable control cannot be achieved, then the water catchment should be managed to reduce the nutrient status of the water.

G. M. Siriwardena, S. R. Baillie, H.Q.P. Crick and J.D. Wilson. The importance of variation in the breeding performance of seed-eating birds in determining their population trends on farmland.

Journal of Applied Ecology, 2000, **37**: 128 - 148.

Declines in the range and abundance of many species of farmland bird since the early 1970s have caused great conservation concern across Europe. A cited cause has been intensification of agricultural practices and the effects on the availability of nest sites and availability of food.

One approach the authors used was to investigate historical changes in national demographic rates. They did this by analysing the BTO's nest records database which was started in 1962. The results showed that with one exception, most species' declines were not associated with poor breeding performance per attempt, indicating that environmental change could not be a general mechanism for the declines. Therefore management attempts to improve breeding performance per attempt would probably fail to halt the decline. More likely to succeed would be measures to improve overwinter survival, and also breeding season measures to improve floral diversity and invertebrate density. (e.g. by improving invertebrate abundance through reduction in pesticide usage, especially around field margins). These last measures will increase the number of breeding attempts during the season and increase post fledging survival.

J.A. Lee. Unintentional experiments with terrestrial ecosystems: ecological effects of sulphur and nitrogen pollutants.

Journal of Ecology, 1998, **86**: 1-12.

This is the text of the Presidential Address by Professor J.A. Lee now of the University of Sheffield.

The Presidential Address is one of the historic highlights of the British Ecological Society Annual Winter meetings. These addresses, given by an eminent ecologist of the day are as varied as the experience of the ecologists themselves. I wonder if the BES has ever considered producing them in bound volumes? The Presidential address by Professor Lee dwells on the man-made perturbations of the levels of carbon dioxide, sulphur, mostly as SO₂ and latterly nitrogen as NO_x. He records some of the early history of sulphur pollution, the now famous effects of the smelters at Sudbury, Ontario and the work on the degradation of the blanket bogs on the Pennines between Manchester and

Sheffield. From localised effects, the increase in the high level emissions from power stations resulted in much wider dispersal of SO₂ albeit at lower concentrations. Then came the saga of acidification of inland waters in Scandinavia and the much reported and researched effects on forest die back. Enter nitrogen - this is perhaps the key element in much of today's world, having replaced sulphur as that, in most places continues to decline. The ecological consequences of an increase in the overall abundance of nitrogen are profound. Increases in the organic nitrogen concentrations in leaves and roots may increase herbivory both positively and negatively. The decline in abundance and vigour of *Calluna vulgaris* heathland in the Netherlands has been attributed to increased atmospheric nitrogen, particularly NH_x. There are implications for heathland management in Britain as well. Finally he attempts to deal with the cocktail of increased sulphur, increased nitrogen and increased levels of CO₂. Ecologists have grappled for many years with the problems of modelling and measuring such effects. Chambers of many shapes and sizes have consumed copious quantities of research budget but have eluded the aim of the perfect simulation of natural systems. An answer may be forthcoming but we shall have to wait. Finally he draws attention to the effects on soil microbial activities and how these are affected by the changing pollution climate - major challenges of fundamental importance which without these being addressed, the prediction of the effects of future climate change cannot be made with any confidence.

J.E Keeley and C. J. Fotheringham. Mechanism of smoke-induced seed germination in a postfire chaparral annual.

Journal of Ecology, 1998, **86**: 27 - 36.

As an earlier student of the fire maintained chaparral of California, I was under the impression that heat was the key feature. This paper concludes that either oxidising gasses in smoke and/or acids generated on burnt sites play a role in germination of post-fire annuals in chaparral.

A.P. Jano, R. L. Jefferies and R.F. Rockwell. The detection of vegetational change by multitemporal analysis of LANDSAT data: the effects of goose foraging.

Journal of Ecology, 1998, **86**: 93 - 99.

The North American mid continent population of the lesser snow goose now exceeds 3 million birds and is increasing in the order of 7% per annum. The foraging activities of the birds on Arctic breeding grounds are leading to the loss of vegetation and habitat destruction, particularly in coastal areas bordering the Hudson and James Bays.

The multitemporal analysis of the Landsat data was necessary to eliminate a host of variables in looking at vegetation distribution, e.g. height of tides, time of year etc. The study took place from 1973 - 1993 at La Perouse bay and its vicinity, the site of a breeding colony of Snow Geese.

These studies were backed up by work on the ground. Where habitat conditions are sufficiently altered following grubbing in intertidal habitats, the cumulative effect of foraging is to delay severely the rate of vegetational development. Erosion of organic layers and sediments makes it unlikely that assemblages of plants will re-establish within 25 - 50 years.

K.Thompson, J.P.Bakker, R.M. Bekker and J.G.Hodgson. Ecological correlates of seed persistence in soil in the north-west European flora.

Journal of Ecology, 1998, **86**: 163 - 169.

This paper and the references contained in it are a good starting point for those interested in this subject. The paper follows on the publication of a seed bank database for north-west Europe although this is weighted somewhat towards grassland and arable weeds.

Annuals and biennials almost always have more persistent seeds

than related perennials and this difference is most striking where the short lived species have moved away from the core habitat of the family. The results suggest that increasing habitat disturbance always selects for increased seed persistence. This does not necessarily mean increased size but on other physiological traits and many other factors including seed size and shape, likelihood of burial, germination physiology and chemical and physical defences against predators and pathogens. The hypothesis that long lived seeds are characteristic of disturbed habitats and that seeds of short lived species are more persistent than those of long lived species was tested. The answer is clearly no.

Plants of stable habitats generally have seeds with low persistence in the soil. This is most marked in woodland.

Reviewer: Anyone involved in woodland management faced with the strong resurgence of bramble after coppicing may however wonder about this!

G.F. Peterken and E.P. Mountford. Long-term change in an unmanaged population of wych elm subjected to Dutch elm disease.

Journal of Ecology, 1998, **86**: 205 - 218.

Long term studies are often intrinsically of value and this paper deals with the disease on wych elm. This is a common constituent of ancient woods on moist, fertile, neutral and alkaline soils in Britain. The study took place in Lady Park Wood, a mixed deciduous, ancient semi-natural woodland. The wood was established as a natural reserve for research in 1944, since when it has been allowed to develop without direct human impact. Dutch elm disease struck the population in 1972. Most of the canopy and subcanopy stems were killed but a few, slow growing, subcanopy individuals survived unscathed.

Subsequent seedling regeneration and growth of sprouts from infected rootstocks was substantial and vigorous. Twenty three years after the outbreak of the disease the number of elm individuals had increased by about 40%. Disease had however continued to affect vigorous, exposed individuals. The population appears to be differentiating into 1. A large high-turnover subpopulation of fast growing, but repeatedly diseased maiden individuals and sprouts, and 2. A small low-turnover subpopulation of slow growing individuals rooted in suboptimally dry, secluded sites.

Although specific to Lady Park Wood, the paper contains many historical details about the management of the wood both recently and non recently. Such historical bases are often of real value in woodland management and in providing clues as to the most appropriate form of management today.

S.E. Hobbie and F.S. Chapin III. An experimental test of limits to tree establishment in Arctic tundra.

Journal of Ecology 1998, **86**: 449 - 461.

This is an interesting paper in the context of climate change. It seems that climate warming is likely to cause northward tree expansion. One of the limits to establishment is seed germination. In 5 selected species: *Betula*, *Populus balsamifera* and *Populus tremuloides*, *Picea* and *Alnus*, air warming approximately doubled germination in all 5 cases. When the seedlings were subsequently transplanted into three tundra vegetation types the growth, biomass and survival was largely unaffected by previous warming. Reducing competition for the established vegetation did have a positive effect. *Picea glauca* did seem to be the most likely to invade the upland tundra. The species has especially high survival and growth in the tundra especially in treatments that increased air temperature or nutrient availability, two factors likely to increase with global warming.

R.J. Mitchell, R.H. Marrs and M.H.D.Auld. **A comparative study of the seedbanks of heathland and successional habitats in Dorset, Southern England.**

Journal of Ecology, 1998, **86**: 588 - 596.

A paper with obvious practical application to the problem of the preservation of lowland heaths.

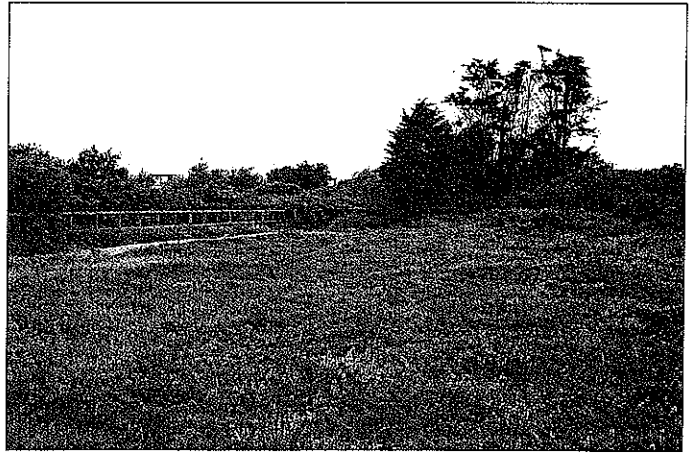
Many areas of lowland heaths are being lost due to the invasion by *Betula spp.*, *Pinus sylvestris*, *Pteridium aquilinum*, *Rhododendron ponticum* and *Ulex europaeus*.

Many areas of heathland are currently subject to restoration work and considerable resources are being spent. The success of this operation partly depends on the content of the viable seed bank of the managed site as this will influence the initial floristic composition of the site after disturbance.

Ten heathland areas where the succession to one or more of the invasive species were studied and the viable seedbanks of the successional sites were compared with those of nearby heathland. The seedbanks of all the successional stages were significantly different from the seedbank of the heath. The seedbank from the *Pinus sylvestris* and *Pteridium aquilinum* successional stages contained significantly lower numbers of heathland species than did the heathlands seedbank although few non heathland species were present. The seedbank from the *Betula spp.*, *Rhododendron ponticum* and *Ulex europaeus* successional sites contained both significantly lower numbers of heathland species and significantly higher numbers of non heathland species than the heathland seedbank.

The study showed that a viable population of *Calluna vulgaris* seeds is present in the soil under all successional sites, albeit at a lower density than in the heath seed bank. The message is that restoration work should start sooner rather than later as the seedbank population declines with time.

Two other points emerge: the need to bring the buried seed bank to the surface to stimulate germination and the need to remove nutrients from the system. Litter stripping is strongly advised as a method. A point to watch is that 96% of the *Calluna vulgaris* seed may be in the top 50mm of the mineral soil so any disturbance should be done with care with the aim being to leave the surface mineral soil intact. It is clear that these processes are likely to be costly and the need for early action will help. In the opinion of the reviewer an additional point is that many lowland heaths are in areas of relatively high human population with recreation activity. Local reaction against large scale tree clearance as part of the restoration process will also be less severe when the restoration work is undertaken at an early stage.



A southern heathland – OK for the moment

N.P. Dunnett, A.J. Willis, R.Hunt and J.P. Grime. **A 38 year study of the relations between weather and vegetation dynamics in road verges near Bibury, Gloucestershire.**

Journal of Ecology, 1998, **86**: 610 - 623.

The second review in this In Practice of a long term study, this time of the annual fluctuations in the abundance of over 100 grasses and forbes in roadside vegetation over the period from 1958 to the present. Monitoring has been carried out every July by the same individual and the data represents a unique long term record of the dynamics of a complete plant community. In the context of climate change records, four of the most abundant taxa were used to determine the effect of climate variability on year to year performance of three selected species. Total vegetation production was positively correlated with minimum spring temperature. In general those species favoured by environmental stress or disturbance were promoted following warm dry springs and summers whereas those favoured by more productive conditions were promoted following a wet growing season. Several of the most frequent Bibury species have been subjected to climate manipulations under controlled conditions and their responses are the same as those observed in the field. The Bibury data set therefore has significant potential in modelling the response of the individual taxa, functional groups and the vegetation as a whole to any future climate scenario.

R.Bobbink, M. Hornung, and J.G.M. Roelofs. **Essay Review: The effects of air-borne nitrogen pollutants on species diversity in natural and semi-natural European vegetation.**

Journal of Ecology, 1998, **86**: 717 - 738.

Attempting to offer a review of a review is not particularly easy or perhaps useful. This paper cites no less than 204 references in this very comprehensive overview. It deals in detail with the effects of nitrogen deposition on fresh waters, on ombrotrophic bogs and wetlands, on species rich grasslands, on heathlands and on species diversity in Forests. The review concludes that increased nitrogen inputs affect diversity in many semi natural and natural ecosystems. The severity depends on the amount and duration of and on the abiotic conditions in a given ecosystem (buffering capacity, soil nutrient status and soil factors that influence the nitrification potential and nitrogen immobilisation rate). Plant communities therefore differ in their sensitivity to airborne nitrogen. As a result of long term nitrogen enrichment, the availability of nitrogen in ecosystems has gradually increased, leading to competitive exclusion of characteristic species by more nitrophilic plants, especially under oligo- to mesotrophic soil conditions. On very nutrient poor soils, diversity has sometimes increased as species that were not tolerant of the original conditions have been able to invade but the native flora has still disappeared. The most severe effects of nitrogen inputs in



Heathland following heavy scrub clearance

highly phosphorus limited vegetation are increased nitrogen mineralization and leaching to groundwater. High inputs of nitrogen have also caused soil acidification especially after nitrification of ammonium in weakly buffered soils. Acid resistant species have then become dominant, and the often rare plants typical of intermediate pH have disappeared. Most global biodiversity is contained within natural and semi-natural vegetation and nitrogen emissions must be controlled to reduce or prevent their negative effects. Much research still focuses on acidification in Forestry stands and in lakes and on the effects on trees, although information on other vegetation is now becoming available.

J.P. Grime. Essay Review: Benefits of plant diversity to ecosystems: immediate, filter and founder effects.

Journal of Ecology, 1998, **86**: 902 - 910.

This is another in the Essay review series and thought provoking. When ecosystems become degraded by pollution or over exploitation to a point where formerly dominant organisms are eliminated, it is often possible to demonstrate a causal connection between losses in biodiversity and declines in ecosystem function and in benefits to humans. A more difficult subject for analysis arises in circumstances where either species poor ecosystems (e.g. boreal forests, bogs, and heathland or species rich ecosystems (e.g. limestone grasslands, tropical forests and coral reefs) remain in existence but experience gradual losses in species or genetic diversity. The question is: does such attrition particularly where it affects species of low relative abundance in communities have major implications for ecosystem function and viability?

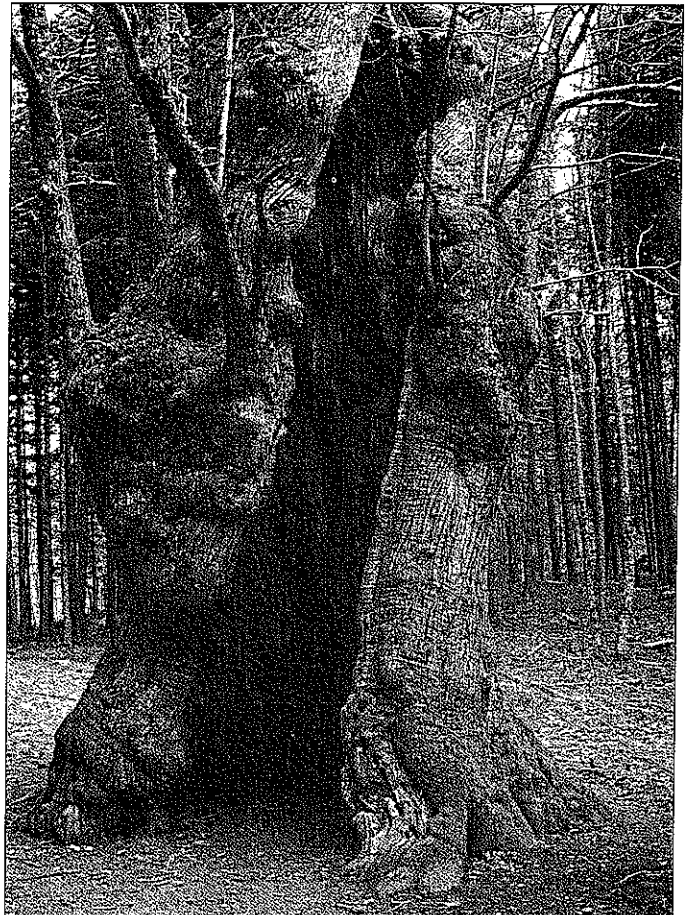
In herbaceous vegetation three elements can be recognised each capable of varying in species richness and taxonomic identity and, in the paper, are described as dominants, subordinates and transients. The dominants are usually few in number, taller and more expansive in morphology and account for a high proportion of the biomass. Many subordinates consistently co-occur with particular dominants and, although they are usually more numerous as individuals than the dominants, they are smaller in stature and form a lower proportion of the biomass. The transients are heterogeneous and lack fidelity of association with particular dominants. A growing body of experimental evidence supports the hypothesis that ecosystem properties are strongly influenced by the characteristics of dominant plants.

It follows that it is then necessary to consider what additional effects may be contributed by the subordinates and the transients and both are considered to have useful roles especially in the control of dominants and in the regeneration of the dominant vegetation. Indeed in much of Europe efforts to conserve Biodiversity often take place in a fragmenting landscape mosaic continuously disturbed by natural events and by urbanisation, arable cultivation, forestry and various forms of grassland management. Successful conservation therefore depends in part on continuous movement of populations and re-assembly of vegetation types and ecosystems. The extent to which communities and ecosystems are rapidly reconstituted is likely to be related to the reservoir of colonisers, many of which should be detectable prior to disturbance as transient constituents of the existing vegetation. The significance of plant diversity in relation to deterioration of ecosystem functions may arise primarily from its effects on the recruitment of dominants rather than any immediate effects of species richness per se. From the reviewers viewpoint this is a paper that needs to be read in its entirety and in particular may be subject to use or abuse in relation to arguments over whether a little loss of biodiversity here or there really makes any difference particularly if it is the subordinates and transients which are affected.

J.G. Mitchell and E. Cole. Reconstruction of long-term successional dynamics of temperate woodland in Bialowieza Forest, Poland.

Journal of Ecology, 1998 **86**: 1042 - 1059.

This is an interesting paper from the viewpoint of tying in with the paper on Dutch elm disease of wych elms and the value of long term records of woodland management. The Forest contains the most extensive stands of old-growth temperate woodland in Europe. It has therefore the potential to provide a model for near natural woodland which is a conservation aim for many sites in western Europe. It is composed of diverse forest communities, principally oak-lime hornbeam and pine-spruce-oak. There is a



An ancient tree in the Casantinesi Forest in the Appenines where monastic records of individual trees go back centuries.

comprehensive literature on the forest going back to 1833 and for added measure a resident herd of European bison. Although the forest has been considered to have been undisturbed it has a history of grazing. Through the use of pollen data it has been possible to reconstruct the long term vegetation dynamics in the communities. Comparison of the recent and older records reveals that anthropogenic impact on Forest composition has been greatest in recent centuries. In particular the unnaturally high grazing densities of the late 19th and 20th centuries have had an overriding influence on forest succession and consequently the composition and structure of the forest today. There is some comment in the context of climate change, where the effects of the Medieval Warm period and the Little Ice age were investigated. The conclusion was that the climate change effects were of insufficient magnitude to be evident when confounded with other effects. The investigation highlights the significant role of history in determining forest stand structure and composition and ends with the statement that elucidation of vegetation community history should be a prerequisite to any serious attempt to evaluate, manipulate or conserve forest ecosystems.

This section is a list of recent publications and reflects a broad range of items which cross IEEM's desk. In this listing we normally include as many details as are available to us. In some cases information on price is not readily available.

Environmental Pollution Studies

Gerry Best, Liverpool University Press. ISBN 0-85323-923-1, £9.95.
A readable paperback covering the overall field of pollution.

Practical Skills in Environmental Science

Allan Jones, Robert Duck, Rob Reed and Jonathon Weyers, Prentice Hall. ISBN 0 582 32873 X. This is a thoroughly useful text for the undergraduate and the rusty graduate covering health and safety, units, sampling and the identification of samples, environmental analysis, analysis and presentation of data and report writing.

World Savannas - Ecology and Use

Jayalaxshmi Mistry, Prentice Hall ISBN 0 582 35659 8
This is a comprehensive treatment of the subject with a detailed discussion of each of the main Savannah systems in the world although the African savannas feature the most. The book finishes with a glossary of terms and an absolutely massive bibliography.

Countryside Recreation 8 (1) Spring, 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' includes: Climate change in the UK, Hypermobility; too much of a good thing, The relationship between Hunting and Country Life and the Windermere 10mph byelaw. 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: 029 20 874 970, Fax: 029 20 874728, Email: cplan-crn-l@cf.ac.uk

Full Government Response to the Fifth Annual Report of the British Government Panel on Sustainable Development, Feb. 1999, Jan. 2000

British Government Panel on Sustainable Development, Sixth Report, February 2000.

The panel on Sustainable Development was first established in 1994 and this is the final report. The Government has announced that the panel and the UK Round Table will be superseded in Summer 2000 by a new Sustainable Development Commission.

Copies of the full Report are available from DETR Free Literature, PO Box No 236, Wetherby, LS23 7NB (Quote Product DCode 99EP0885) Tel: 0870 1226 236, Fax: 0870 1226 237

Biodiversity News, Issue 10, Jan 2000 - A new century of Biodiversity

A useful newsletter and update and quite a store of information on this vital subject. Available from DETR, Biodiversity Secretariat, Room 902D, Tollgate House, Houlton Street, Bristol BS2 9DJ. Tel: 0117 987 6276 Fax: 0117 987 8182
Email: kirsty_andrews@detr.gsi.gov.uk

Towards an Urban Renaissance Conference, 19th November 1999

This is the proceedings of the Conference referred to in the last In Practice and a timely reminder of the value of Urban Ecology.

Available from: English Nature, Essex, Herts and London Team, London Office, Ormond House, 26-27 Boswell Street, London WC1N 3JZ Tel 020 7831 6922 Fax: 020 7404 3369

IUCN Publications

IEEM is a member of IUCN and regularly receives its publications: **Parks for Biodiversity - Policy Guidance** based on experience in ACP Countries. This seem to be similar to the European 'Parks for Life' produced some time ago and will be useful reading for those concerned with protected areas in Africa, the Caribbean and the Pacific.

Integrating Implementation of the Convention on Biological Diversity and the Rules of the World Trade Organization

- David Downes. This is a detailed treatment of the Provisions within the Convention on Biological Diversity, the relevant rules and forms of the WTO including the General Agreement on Tariffs and trade (GATT), and how the two interact.

Report of the eleventh Global Biodiversity Forum - exploring the Synergy between the UN Framework Convention on Climate Change and the Convention on Biological Diversity.

The Future of Forest Conservation in Russia - The challenges Facing Forests and Strategies for Addressing them. Report of a series of workshops covering the Russian far east, Siberia, and the European-Urals region and a coming together in a National Workshop.

Global Biodiversity - Earths Living resources in the 21st century.

B. Groombridge and M.D. Jenkins, World Conservation Monitoring Centre.

This superbly produced volume is available from: Information Office, WCMC, 219 Huntingdon Road, Cambridge CB3 0DL
Tel: 01223 277314, Fax: 01223 277136, E-mail: info@wcmc.org.uk.
ISBN: 1 899628 15 0, £29.99.

Each chapter has a wealth of detail under the following headings - The Biosphere, the Diversity of organisms, Biodiversity through time, Humans and Biodiversity, Patterns and Trends in Global Biodiversity, Marine Biodiversity Terrestrial Biodiversity and Inland Water Biodiversity.

The Blue Revolution - Land use and integrated water resources management.

Ian R. Calder, Earthscan Publications Ltd, London
ISBN 1 85383 634 6 £15.95

This is a handy sized publication. The purpose of the book is to discuss the issues and to provide new information on land use and water interaction and the tools that are now becoming available so that those who are involved and affected by water resource management can make the best decisions on how competing demands for water resources in both the short term and long term should be achieved.

Available from Earthscan Publications, 120 Pentonville Road, London N1 9JN. Tel: 01903 828800, E-mail: orders@lbsitd.co.uk,

ECOFACT Research Report Series

Institute of Terrestrial Ecology and DETR

This series of 3 publications from a team at Merlewood Research Station is deserving of a separate review.

The titles in the series are:

1. **Vegetation of the British Countryside** - £48
 2. **Measuring change in British vegetation** - £10; Technical annex - Ellenberg's indicator values for British plants - £5
 3. **Causes of change in British Vegetation** - £8
- Vol. 1 from DETR, Tel: 01709 891318, Fax: 01709 881673 and Vols 2&3 from ITE Monks Wood, Tel: 01487 772532, Fax: 01487 773590.

Veteran Trees

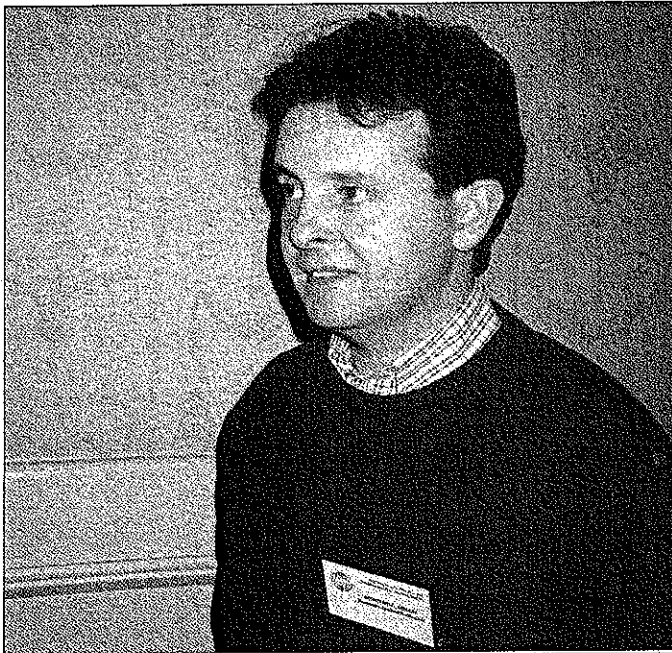
This review would not be complete without reference to the Veteran Trees Series produced by the Veteran Trees Initiative and English Nature and with contributions from English Heritage and the Countryside Agency. This series is a must for all concerned with the subject and contains much valuable practical information for those charged with managing or restoring veteran trees. The main volume is **Veteran Trees: A guide to good management and subsidiary reports: Veteran trees; A guide to risk and responsibility; The future for Veteran trees and veteran Trees: A guide to grants.** These are available from English Nature, Northminster House, Peterborough, PE1 1UA. Tel: 01733 455101.

Harrogate Conference

All members should now have received the proceedings of the Harrogate Conference which was edited with lightning speed by Paul Bradley. The Institute owes him a great debt of gratitude as well as the many excellent speakers. All in all this makes a very useful volume. Thanks also to Yorkshire Water for their sponsorship of the event and the proceedings. The feedback from the Conference was generally very positive and most delegates thought the choice of Harrogate as a venue was good. A number commented that the procedures for the election of Officers and Council were cumbersome and so we shall be looking at how these might be streamlined in time for the next AGM. The AGM saw the retirement of Janet Swan as Treasurer and Jo Hughes as Secretary. By popular request we will try to allow a little more time for discussions in the sessions and afterwards in the bar. During the evening before the Conference proper, we had the First Fellows Lecture - given by John Box. The full text is printed elsewhere in this issue. Most delegates thought that a talk of this nature was a good idea and we shall try and repeat something similar at Ayr. During the AGM Dr David Hill was elected as President-elect. David will be getting up to stream during this year in time for taking over during the AGM in Ayr. He was also presented with his Fellows Certificate after the AGM.



Dr Janet Swan retires as Treasurer



Dr David Hill new President-elect

Professional Indemnity Insurance

Following some high level changes in the insurance world, our Brokers, MacParland Finn have arranged cover with different underwriters. This will not affect the service to members and indeed it may well show some improvement. I would refer all members to clause 5.1.4 in the Code of Professional Conduct which requires all members to be covered for the work that they do. This does not necessarily mean that you have to have your individual Professional Indemnity insurance as many members will find that they are covered by their employers. Take heed however that you may not be covered if you carry out tasks that are not included or covered in your job description. There is concern amongst Council members that the take up of Professional Indemnity insurance appears to be low. Please do not think that this does not apply to you - there could be a nasty shock around the corner! It has been suggested that the renewal form for membership next year will include a statement from members that they are appropriately covered - you have been warned!

Continuing Professional Development.

The Institute has always supported the need for members to undertake Continuing Professional Development but has not so far taken any steps to make it mandatory. The Professional Development Programme is one obvious way of undertaking CPD but the IEEM Conferences would be another and there may be a whole variety of means by which this is achieved. The Membership Admissions Committee has been looking into the membership admissions criteria and will now be looking more closely for evidence of CPD when members upgrade from Associate to Full membership. Stephanie Greshon from the Professional Affairs Committee has developed this theme elsewhere in this edition.

Use of the IEEM Suffixes - FIEEM, MIEEM and AIEEM

There have been some instances recently where Associate Members have been using the MIEEM suffix prematurely. These have had to be referred to the Professional Affairs Committee as a contravention of the Code of Professional Conduct. Please note that all applications to upgrade have to be approved by Council on the recommendation of the Membership Admissions Committee. You will not be a Full Member until you have been notified of the decision by Council and you have received the new Certificate. Although the procedure to upgrade is relatively simple in most cases, it still can take a while to be considered by MAC and then approved by Council. Please note also that the three suffixes are the only designations that may be used. Also Students and Affiliates are respectively Student Members and Affiliate Members of the Institute rather than just members.

Ayr Conference and AGM - Call for Papers

The Institute is making a welcome return to Scotland this Autumn for its next major meeting - **Ecologists and the Rural Economy – What can ecology and ecological management offer?** Carol Crawford explains why Ayr is an excellent choice of venue (page 14) - this promises to be a popular theme and anyone wishing to offer a paper is asked to contact the Secretariat without delay. Papers will be of two types - broader themes - 30 minutes or longer and practical experiences - about 20 minutes. The themes for the sessions are 1. Changing Legislation and Rural policies, 2. Agriculture, Forestry and Woodlands, 3. Development in the Countryside including Tourism. We need to finalize the programme within the next month so don't delay.

Obituary

It is with regret that we report the death last September of Ms Mary Brookes, MIEEM, Partner of Moore, Piet and Brooks and a Member since 1994.

Birmingham Conference

Since the last In Practice we have had the highly successful Conference in Birmingham - Exotic and Invasive Species - should we be concerned?. The was the best attended 1-day meeting in the history of the Institute with over 160 registered delegates. The Conference got off to an excellent start with the opening address given by Baroness Barbara Young, one of our patrons and Chairman of English Nature - more in the next edition of In Practice. Paul Bradley has also kindly agreed to edit the proceedings of the Symposium and work is well underway. It is intended that a complimentary copy of the proceedings will be sent out to all members and it is anticipated that this will be available in late June/ early July. This will be an extremely useful volume for the bookshelf and will also be an extremely topical review of this important issue.

Fellows

During the reception following the Conference, Dr Steve Ormerod was presented with his Fellows Certificate. Steve has actually been a Fellow for some time but the opportunity had not previously arisen to make a formal presentation. Applications are still sought from other members who have made or are considered by their colleagues to have made an outstanding contribution to the practice of Ecology and Environmental Management. If you know someone who should be put forward, please suggest the idea to them. The number of Fellows is now 7 - Dr John Box, Professor Tony Bradshaw, Dr Philip Edwards, Mr Paul Goriup, Ms Monica Hale, Dr David Hill and Dr Steve Ormerod.



New Fellow Dr Steve Ormerod

IEEM Website

The IEEM website - www.ieem.org.uk is gradually developing and now has details of the Professional Development Programme, membership and any meetings that are scheduled or have just happened. The site is updated on roughly a monthly basis so if you have any comments or suggestions do please let the Secretariat know or post them on the site. For anyone casually interested in what the Institute is about it is an excellent place to look.

The 2000 Membership Directory

Work is now well underway in compiling the new Directory. From the viewpoint of the work involved, it is always surprising if not alarming how many members change their circumstances during the year. The response to the request for details has been good but a number of members have not yet responded. This means that there will be some disappointed members later in the year. We can

still fit in late responses if you have not yet done so please send in your return without delay. Also the response for advertising from the many consultancies within the Institute has not been very positive. The deadline has just passed so please send in your adverts if you intend to do so. Following comments by a number of members and review by Council the geographical breakdown of members will be revised so that the regions in England reflect the Regional Government boundaries as currently operated by the DETR. It is anticipated that the new Directory will be sent out to all members in late Summer.

The 2001 Professional Development Programme

The IEEM Professional Development programme has proved to be a very popular feature and has been much appreciated and admired by other Institutes. The programme of short courses for this year is well underway but there are still vacancies on a number of courses. Every year the idea is to offer courses which appear to be popular and for which there is a need and also to offer some new courses. We have probably reached the point where a number of courses have been run for a few years and demand has been satisfied - at least for the time being. Anyone who has any suggestions and who would like to offer a course for 2001 is asked to contact the Secretariat in Winchester - any ideas welcome. As part of a general move to bring the IEEM calendar forward, it is hoped to produce the programme for 2001 by November of this year so it is not too early to start thinking about it. Our thanks go to the many tutors who have agreed to participate in the programme for this year.

Membership Applications

There is currently a most healthy surge in the numbers of completed applications being returned to the Secretariat and also in the numbers of requests for membership information about the Institute. But somewhere out there are a large number of application forms still waiting to be returned. I quite frequently get the comment – oh well I've been meaning to return the form but..... If you know a colleague in that position do please give them a nudge - we still need many more members. The Membership Admissions Committee and Council are also currently looking at ways to streamline some of the admissions criteria but at the same time needing to ensure that any changes will not harm any future bid for chartered status.

Talking with other Institutions

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. It is hoped that this will lead to greater collaboration of practical issues such as CPD, Professional Indemnity Insurance and external consultations. This may also help to meet a need sometimes expressed by government for more readily available views from the Professional Institutions on the environmental issues of the day.

Volunteers Needed!

The Professional Affairs Committee is nearing completion on the work required to establish a system for dealing with contraventions of the Code of Professional Conduct and actions which may bring the Institute into disrepute. Volunteers are needed now for the Disciplinary Board and Appeals Panels which may be called into play if the Professional Affairs Committee considers that there is a case to answer. This is a little like Jury duty and with luck you may never be needed. Self regulation is an integral part of being a professional institution and this would be a great service you could perform for your Institute. Please let the Secretariat in Winchester know by 1st July if you are interested and could be available from time to time.

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, they must inform the Executive Director by telephone or letter before 26 June 2000:

Any communications will be kept strictly confidential. The final decision on an admission is always taken by Council.

F=Full A=Associate ()=Current membership grading

Name		Category applied for	
Dr	Hilary J.	Ash	F
Mr	Ian	Barker	F
Miss	Janine M.	Barrow	A
Ms	Dolores S.	Byrne	F
Mr	Alistair C.T.	Church	A
Dr	Jonathan H.	Cox	F
Mr	Adrian R.	Davis	F
Mr	Peta	Denham	F
Mr	Dominic	Driver	F
Miss	Stephanie	Elliott	A
Mr	Matthew E.	Fasham	A
Miss	Katharine H.	Fisher	A
Ms	Alison	Fure	A
Mr	Kurt D.	Goodman	A
Ms	Valerie J.	Hack	F
Mr	Sean A.	Hathaway	F
Dr	Karen L.	Hay	F
Ms	Anne E.	Heeley	F
Miss	Joanne L.	Hole	A
Dr	Peter D.	Hulme	F
Mr	Andrew P.	Jennings	F
Mr	Andrew C.	Johnson	F
Dr	Katie A.	Joyce	A
Mrs	Jolanda	Keeble	F
Miss	Jennifer E.	Knight	A
Mrs	Lesley	Lawrence	A
Mr	D. Alan	Lewis	F
Miss	Helen	Lucking	A
Dr	Aidan	Marsh	F
Mr	Douglas	Mills	F
Ms	Isabelle R.	Moriera	A
Miss	Kerry	Nicholson	A
Miss	Rebecca L.	Osborn	A
Dr	Mark F	Robinson	F
Miss	Sacha	Rogers	F
Miss	Sarah L.	Rogers	A
Mr	Mark	Rowlands	A
Mrs	Lesley J.	Saint	F
Mr	Martin	Slater	F
Mr	David I.	Smith	F
Miss	Jane	Stott	A
Mr	Patrick	Waring	F
Mr	Derrick W.	Warner	A
MrJ	James	Waterson	F
Mrs	Hazel M.	Willmott	A
Mr	Andrew P.	Wilson	F
Dr	Leander J.	Wolstenholme	F
Mr	Mark C.	Woods	F

New admissions to IEEM

Name		Category Admitted	
Mr	Philip A.	Amies	F
Mrs	Elizabeth	Anderson	A
Mr	Darren	Arkins	A
Miss	Annabelle	Banham	F
Dr	Elizabeth	Barratt	F
Mr	Peter	Beattie	A
Ms	Heather	Bingley	F
Dr	Paul	Chanin	F
Mr	David	Clements	F
Mr	Neil	Coates	F
Mr	Simon	Colenutt	A
Mr	Robert	Craine	F
Ms	Katharine	Duff	F
Miss	Janette	Easton	F
Mr	Mark	Elliott	F
Mr	Max	Ellson	A
Mr	Murray	Ferguson	F
Mr	Toby	Gibbs	A
Mr	Philip	Griffiths	F
Mr	Adam	Grogan	F
Mr	Kim	Harding	A
Dr	Alistair	Headley	F
Miss	Kate	Hollins	F
Mr	Matthew	Hopkins	A
Mr	Oliver	Howells	F
Mr	Richard	James	F
Mr	Gregory	Jones	F
Miss	Sarah	Jupp	F
Mr	Nicholas	Kite	F
Ms	Diane	Madden	A
Miss	Heidi	Mahon	F
Mr	Adrian	Mallia	F
Miss	Suzanne	Marshall	F
Mr	Mark	Middleton	F
Mr	John	Moore	F
Miss	Caroline	Oldroyd	F
Ms	Marina	Pacheco	F
Miss	Emma	Pitcher	A
Dr	Kathryn	Pratt	F
Miss	Louise	Redgrave	F
Dr	Mary-Ann	Smyth	A
Dr	Sandra	Sowler	F
Miss	Julie	Swain	A
Mrs	Terri	Tarpey	A
Mr	Robert S.	Taylor	F
Miss	Elin M.	Thomas	A
Mr	Duncan	Watson	A
Mr	James	Watson	F
Mr	Edward	Wells	F
Mrs	Kakuko	Yoshida-Nagatani	A

The following have upgraded from Associate to Full Membership

Mr	Mark	Barthel	F
Miss	Fiona	Duke	F
Ms	Catherine	Fitzroy	F
Mr	Martin	Fox	F
Mr	Graham	Goodall	F
Mr	Jeremy	Halls	F
Mr	David P.	Holland	F
Mr	Jeffrey	Lunn	F
Mrs	Naomi	Oakley	F
Mr	David	Park	F
Mr	Stuart M.	Smith	F
Dr	Jules	Wynn	F

The Course programmes for the Centre for Alternative Technology, The Field Studies Council, Losehill Hall, Plas Tan-y-Bwlch and have all been received and each offers a wide range of courses that might be of interest to IEEM members. Further information is given below:

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 2000 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 Parks Centre, Castleton, Hope Valley, Derbyshire S33 8WB Tel: 01433 620373, Fax: 01433 620346, E-mail: training @ losehill.u-net.com.

Plas Tan y Bwlch: For further details please contact Plas Tan y Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd LL41 3YU. Tel: 01766 590324, Fax: 01766 590274 E-mail: Plastanybwlch@compuserve.com.

If you can't get enough ecology through your work why not try a BTCV Conservation Holiday? The UK and International programme for 2000-2001 is now available and is remarkably comprehensive.

Details from 24-hour Brochure hotline: 01491 824602, Booking Office: 01491 821600 or try the website: www.btcv.org.

Finally **don't forget the IEEM Professional Development Programme.**

Other Courses/Events in 2000:

19 May. Tomorrow's Countryside, London details from RTP1 and Croner.CCH, Tel: 020 7881 1858.

2 June. Global Action plan: Implementing Sustainable Development, London House, Mecklenburgh Square London WC1N 2AB. Details from Trewin Restorick, Global Action Plan, 8 Fulwood place, London QWC1V 6HG. Tel: 020 7405 5633, Fax: 020 7831 6244, Email: all@gapuk.demon.co.uk

6 June. Breaking New Ground in Sustainable Tourism, York. Details from Countryside Recreation Network. Tel: 02920 874970, Email c-plan-crn-1@cf.ac.uk.

5-7 June. Costing the Environment: Economics and Sustainability. Details from: Mrs P A Savill, Centre for Environmental Strategy, University of Surrey, Guildford, Surrey. GU2 5XH Tel: 01483 879047, Fax : 01483 876671, E-mail: P.savill@surrey.ac.uk.

6 June. Ports, Shipping & the Environment: Developing Practice, SOAS, University of London. Details from: Bob Earll, CMS, Candle Cottage, Kempsey, Glos. GL18 2BU, Tel/Fax 01531 890415

6-8 June. ET 2000, National Exhibition Centre (NEC) Birmingham. This is a major exhibition and series of seminars taking place in UK Environment Week. Details from: Sandie McCoubrey, Reed Exhibition Companies Ltd. Tel: 020 8910 7959 or see ET website at www.et-expo.co.uk. Ticket hotline: 0870 7511 552.

9 June. Sustainable Government 2000 - A major one-day Conference and exhibition dedicated to the role of Government and the wider public sector in sustainable development and greening government. Details from Conference team Tel: 01625 612 112 E-mail: info@sustainable-government.com.

13-15 June. Landscape 2000, Earls Court 2, London. Details on www.landscape-london.co.uk or Tel; 020 7370 8908

29-30 June. Eco-management and Auditing Conference. Hulme Hall, University of Manchester. Details from: Elaine White, ERP Environment, P.O. Box 75, Shipley, West yorkshire BD17 6EZ. Tel 01274 530408, Fax 01274 530409, Email: elaine@erpenv.demon.co.uk.

4 July. Lowry and the Environment. Details from: Marie Entwistle, Conference Manager, University of Salford, Salford, Greater Manchester, M5 4WT Tel: 0161 295 5487/5950, Fax 0161 295 5950, E-mail: m.e.v.entwistle@salford.ac.uk.

27 August - 1 September. Praga 2000 Natura Megalopolis. Details from: Magistrat hl. m. Prahy, OZP, Rasnovka 8, 110 00 Praha 1, Czech Republic. Fax: +42 2 2491 1381, E-mail: praga2000@imip.mepnet.cz.

29-30 August. BES Special symposium: Plants stand still but their genes don't - Integrating ecological and evolutionary processes in a spatial context, Royal Holloway College, Egham. Details from http://www2.open.ac.uk/Ecology/BES_2000/BESprog.htm.

4-7 September. SER 2000, Society for Ecological Restoration International Conference, Liverpool. Details from: SER Conference Secretariat, SJS Business Services Limited, PO Box 17, Newton le Willows, Merseyside, WA3 2FQ Fax: 01942 681700, E-mail ser2000@netcomuk.co.uk.

5-7 September. Aquatic habitats as ecological islands, BES Aquatic Ecology Group, University of Plymouth. details from Dr Simon Rundle, Department of Biological Sciences, University of Plymouth, Drake Circus, Plymouth, PL4 8AA. Tel: 01752 232967, Fax: 01752 232970, Email: srundle@plym.ac.uk.

14-15 September. Restoration of Woodland Landscapes, BES Forest Ecology Group, Heriot Watt University, Edinburgh. Details from: Dr Jonathan Humphrey, Forest Research Northern Research Station, Roslin, Midlothian, EH25 9SY, Tel: 0131 445 2176, Fax 0131 445 7335, Email: jon.hum@forestry.gov.uk.

18-19 September. Business Strategy and the Environment Conference, Devonshire Hall, University of Leeds

9th & 10th November. Ecology and the Rural Community, IEEM Annual Symposium and AGM, The Quality Hotel Station, Ayr.

Details from IEEM Tel: 01962 868626
Fax 01962 868625
E-mail: enquiries@ieem.demon.co.uk
www.ieem.org.uk