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Building a picture of the UK's Biodiversity

Bill Butcher, MIEEM

Introduction

As demand for reliable biodiversity information continues to rise, Local Records Centres (LRCs) act at several crucial interfaces to make such information available. They link biodiversity data collectors and users, local and national, professionals and volunteers, developers and conservation bodies and public and private sectors. This article outlines the current state of Local Records Centres in the UK, their functions in relation to consultants and other users and looks forward to their development in the context of the National Biodiversity Network.

Definition

Local Records Centre can be defined as "A not-for-profit service working in partnership, which collects, collates, manages and disseminates quality information relating to the wildlife, wildlife sites and habitats of a geographical area for the public benefit." (Copp, 2001)

Development over time

Their development has been somewhat organic from a range of origins (DoE, 1995). Figure 1 shows their current status. Around a dozen centres offer a full range of services to users. These are mostly concentrated in southern England with a distinct westerly bias, the south-west region being unique in having a complete network. In Wales the newly established Powys and Brecon Beacons Records Centre is already proving to be a catalyst in moves to complete coverage. In Scotland Fife Nature leads the way while in Northern Ireland CEDaR, the Centre for Environmental Data and Recording is strongly supported by the Environment and Heritage Service and has built a large network of volunteer recorders and satellites.

Elsewhere a number of LRCs are developing to the stage where they can offer a full service. A further group of counties, regions and sub-regions, many of them in the south-east, have partnerships in place and agreed development plans ready to implement. Some of these LRCs are completely new while others entail development of existing under-resourced centres.

Partnership/ governance

Local Records Centres are essentially about partnership between the public sector, private sector and NGOs and between professionals and volunteers. While broad partnership involvement in strategic management is an essential feature the nature of the legal entity is highly variable. Some LRCs are fully independent not-for-profit companies or trusts while others are operated from within Wildlife Trusts or local authorities.

Statutory and policy background to use of biodiversity data

All major forms of use of the environment, including agriculture, forestry, transport, energy production, industry and urban development, have impacts on species and habitats. Information is essential to enable everyone concerned with use of the environment to conform to the law while undertaking their activities. The need for biological records has been explicitly recognised in a statement of Government policies in Biodiversity: the UK Action Plan (1994).

The principal legislation requiring biodiversity to be taken into account comprises The Wildlife and Countryside Act 1981, The Conservation Regulations 1994 (The Habitats Regulations), The Town & Country Planning (Environmental Impact Assessment) Regulations 1999 and The Countryside and Rights of Way Act, 2000. For local authorities these and the Town and Country Planning Act 1990 and The Planning and Compensation Act 1991 are the most relevant. Although there is no direct statutory duty at present on local authorities to maintain biological records the delivery of all of these statutory requirements depends on access to high quality biodiversity data.

There are some explicit references to the use of information in the legislation. For example Sections 11 & 30 of the Town and Country Planning Act 1990 require that surveys of local authority areas should ensure that development plans are based on fully adequate information about local species, habitats, geology and landform.

Requirements are amplified in various Planning Policy Guidance issued by government to local authorities. PPG9 (Nature Conservation) spells out the need for assessment of sites and species in development plans and planning decisions while PPG12 (Development Plans) goes further and describes the need for conservation and enhancement of wildlife habitats and species, including the promotion of biodiversity and environmental enhancements to meet biodiversity action plan targets. The forthcoming revision of PPG9 is expected to make explicit links between the planning system and biodiversity priority habitats and species, as is already the case in Scotland through NPPG14 (Natural Heritage). The House of Commons Select Committee on Biodiversity (HMSO, 2000) stated "The upcoming review of PPG9 (Nature Conservation) is particularly important and we recommend that it should encourage local plans to reflect Biodiversity Action Plan priorities, emphasise the importance of local wildlife sites and give guidance on realising the potential benefits of planning gain for biodiversity generally, and habitat provision in particular."

The implementation in the UK of new European Union directives will add further demand for access to biodiversity information in the next few years. The most significant of these are likely to be the Water Framework Directive (2000) and the Strategic Environmental Assessment Directive (2001) which must be transposed into UK legislation by the end of 2003 and July 2004 respectively.

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Change in the Air?

Something is happening in the market place – jobs being advertised at rates which at last are looking respectable, reports of members being rushed off their feet as never before, demands for staff to do the work abound, but seemingly, suitably qualified and experienced people are difficult to find. All this is perhaps very positive for the Profession and would strike a real chord with the founding members of this Institute. Added to that, membership applications for IEEM are being received at a rate not seen since the original launch of the Institute.

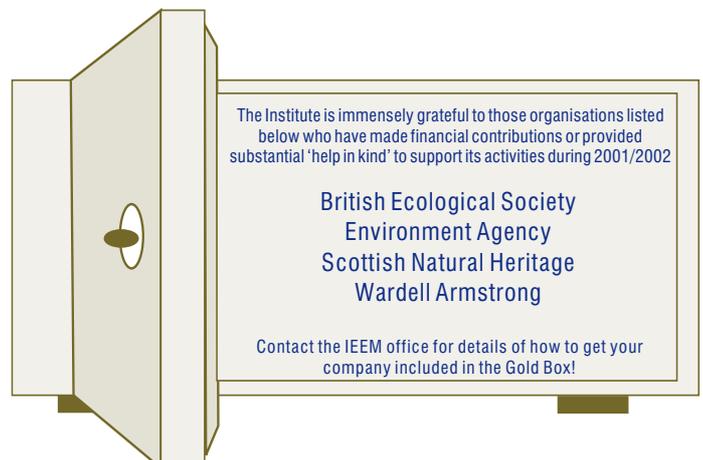
One of the aims of the Institute has always been to gain the sort of recognition as a professional enjoyed by architects, planners and others - so is this the time to act? Those working in the consultancies will know that fee rates are a tricky issue. Could now be the time to raise them and, if necessary, turn some of the work away? Always difficult if the good times do not last or, for example, the demand is being fuelled by work carried over from last year due to the Foot and Mouth outbreak. Public sector/private sector comparisons are always difficult but pressure from the private sector may well be helpful to put up those public sector salaries. Sadly, the standing of the County Ecologist still falls somewhat short of the County Architect, Planner or Surveyor and salaries are of course not the only issue.

One of the features of this profession which, in the main, is not shared by other Institutes, has always been the number of sometimes highly skilled amateur/hobby naturalists. Their expertise may on the one hand be invaluable but to some extent they still seem happy to charge very low rates simply because they enjoy doing the work. But even that may be changing. The increasingly litigious society of today requires that more people take out PI insurance and I have received reports that the rates have risen considerably of late – something to do with September 11th I am told, but the logic of the connection with PII is somewhat beyond me. Be that as it may such issues are bound to have a knock on effect in the market place.

Finally, there is a link here with the debate on identification skills. Universities seem to be producing graduates with less developed identification skills and this is partly because of the demands on time and the fact that lucrative research grants may lie elsewhere. If the demand for ecologists is there as never before, and the salaries come increasingly in line with other professionals, this may well produce a feed back. But it would be a shame to lose that feature which has always been at the heart of the profession - a fascination and deep rooted attraction to the natural world.

The last editorial provoked a few responses on the skills and training debate - any further comments on this issue would also be welcome.

Jim Thompson



LRC Development across the UK, 2002

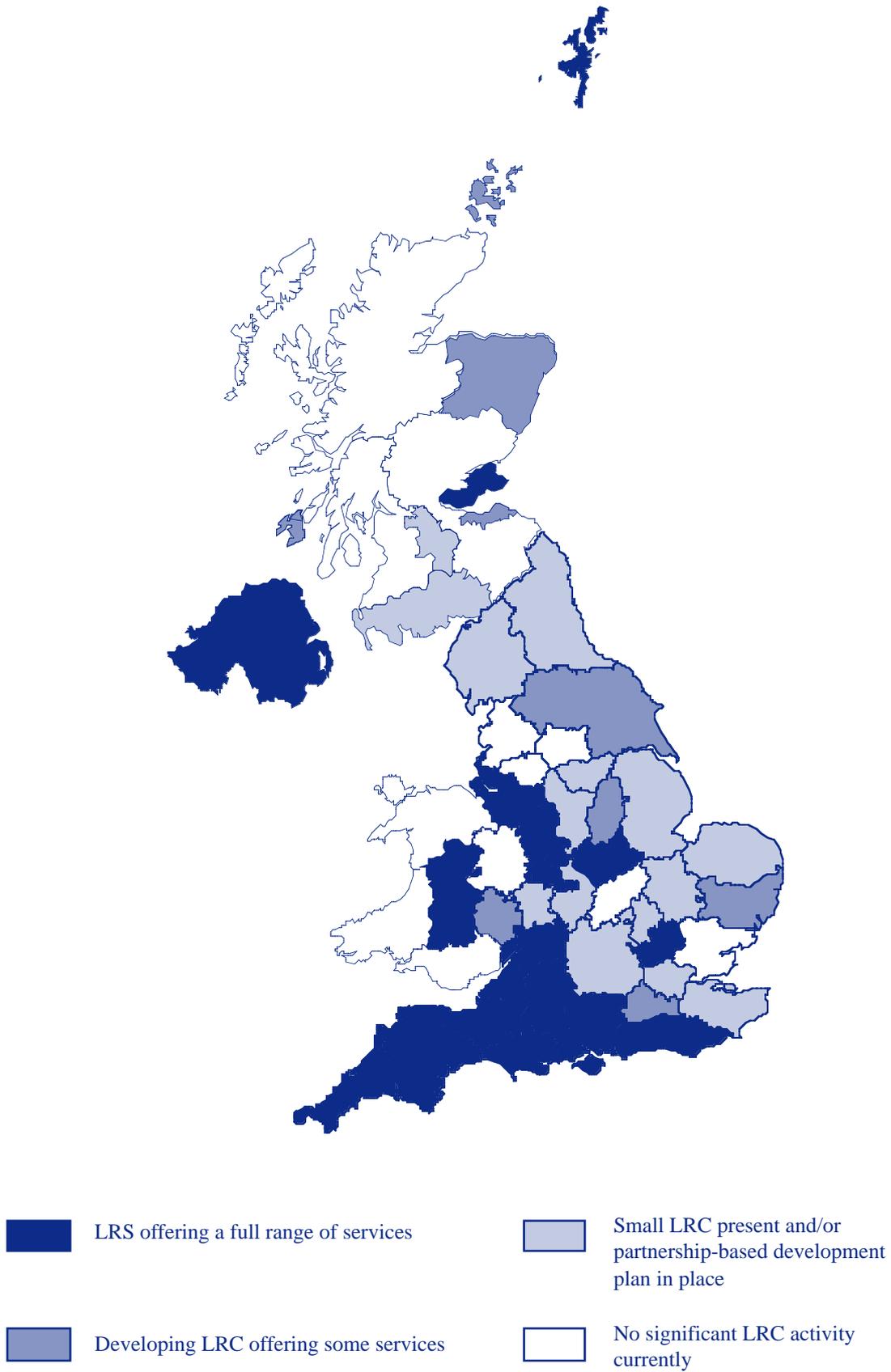


Figure 1
Map based information supplied by Linking LRCs Project, the Wildlife Trusts, English Nature, BRISC and NFBR regional representatives. NFBR June 2002.

LRC Size	Total SW England
Number of staff employed - full-time equivalents	29
Number of voluntary recorders contributing data to LRC	1,540
Data Holdings	
LRC datasets described with metadata	1,212
Site details on computer	42,684
Habitat parcel records on GIS	158,200
Species records on computer	4,295,000

Figure 2: Some statistics for six LRCs in SW England, January 2002

Data Holdings

Figure 2 shows that LRCs store a very large volume of information on wildlife sites, habitats and species. The databases also improve each year as more records are collected and captured, giving a better picture of the distribution and abundance of UK's biodiversity and its change over time. This reinforces the user led nature of LRCs – they are there to meet a purpose i.e. of delivering useful biodiversity information. However LRCs are about far more than an archive of heritage information for its own sake.

Species and habitat priorities

Although perceived as primarily concerned with species information LRCs are increasingly focusing on habitat data. A major part of the South-West National Biodiversity Network (NBN) Pilot project, led by English Nature and implemented by the seven LRCs in the region, is to generate comprehensive inventories of Biodiversity Action Plan (BAP) Priority Habitats across the south-west. The inventories are seen to be a dynamic ongoing resource compiled and maintained in GIS from all available remote sensing and field survey sources that will feed into numerous functions including BAP implementation. Existing data managed at LRCs derived from Phase 1 surveys, Wildlife Site surveys and many other sources contribute greatly to these inventories.

While habitat data is normally generated by professionals, at least 70% of the species records collected in the UK are recorded by volunteers. These may be acting as individuals, as members of National Societies and Recording Schemes or local Specialist Species Groups linked with LRCs. Many LRCs have an important role in training in recording techniques and helping to make the voluntary recording community sustainable over the long term.

Information Products, Functions and Services

The more developed LRCs have generated a range of standard information products for users. These typically include user-defined data searches in GIS, species and habitat distribution maps, site descriptions, species lists annotated with legally protected and biodiversity priority status and context products.

Related services include databasing of information for the local Wildlife Sites system, evaluation of data against objective criteria, information support and monitoring for local and national biodiversity action plans. Some LRCs include a survey function. This is typically a contribution to the strategic survey priorities of its partners and does not extend to reactive surveys that are usually the preserve of private sector consultants. LRCs can also act as a clearing house to help partners to co-ordinate and plan their collective survey priorities.

Application of LRC data

LRCs deliver relevant biodiversity information to a very wide range of applications. A recent survey of the use of biodiversity information in six LRCs in SW England is summarised in Figure 3.

Use of LRC Data	Total SW England
Statutory and Planning Processes	
Strategic policy documents prepared or revised using LRC data	20
Environmental Impact Assessments (including non-statutory), using LRC data	270
Planning applications screened against LRC data	56,350
Planning applications in which LRC data was reported in that case to inform decision	1,740
Site survey, monitoring and evaluation	
Site surveys targeted/informed using LRC	630
Monitoring programmes supported by LRC data	28
Local Wildlife Site evaluations made using LRC data	974
Heritage/nature reserve site acquisitions informed using LRC data	66
Site management plans prepared using LRC data	129
Land Management Advice	
Land management advisory visits/cases using LRC data	471
Grant or agri-environment decisions targeted using LRC data	242
UK or local BAP implementation decisions informed by LRC data	103
Biodiversity/quality of life/sustainability indicators using LRC data	6
Voluntary Recorder Support and Development	
Local distribution atlases prepared informed by LRC data	67
Identification workshops/training led/supported by LRC	30
Education, Outreach and Promotion	
Education enquiries responded to using LRC data	245
Enquiries from the public responded to by LRC/accessing LRC data	2,138

Figure 3: The use of LRC data in SW England, 2001

Ecological Impact Assessment

In their collation of all available wildlife records LRCs are able to provide an invaluable starting point for consultants who need to assess a site and its vicinity in an ecological impact assessment. In the context of the IEMM Guidelines for Ecological Evaluation and Assessment the LRC data can inform the identification of "Valued Ecological Receptors" in the scoping process. This has two key benefits over relying completely on new survey. Firstly, any existing records are likely to have been collected over a period of time and at the right season, something that it is not always possible with new survey. Secondly, information is often available for a wide range of taxonomic groups collected by different specialists, a range of expertise that it is rarely possible to assemble at short notice for a project.

All users of biodiversity data should be aware, however, of its interpretation limitations. Habitat and species recording coverage is far from complete in time and space and further field survey may be required to determine the presence of important features. LRCs can only supply records that have been collected and validated. The ecological condition of a site may have changed since the available records were collected – clearly this is especially the case for older records. The available records may often therefore be viewed as a guide to the present condition of a site or area rather than a definitive statement of its value.

Increasingly LRCs are providing commentaries on the degree of survey coverage as well as the records themselves so that the user can judge the value of the information to the present resource. Almost invariably further survey will be required to supplement the existing data. The existing records can be interpreted in terms of the quality and breadth of the survey coverage and to infer priorities for further survey work based on the probabilities of locating target habitats and species in the search area. It can be as important to advise users on what is likely to be found in an area as to report on what has actually already been recorded.

LRC Role in Support of Advisory Services

By national consensus, LRCs are not advisory bodies although a few have advisory units attached to them. Their role is to collate and maintain an independent source of high quality objective information that can be used to underpin advisory services offered by others, such as the statutory nature conservation agencies, NGOs, local authority ecologists and consultants.

An almost universal view expressed by both data providers and users is that it is critical for LRCs to maintain an independent and objective perspective. It is recognised that there are serious political dangers in LRCs getting too closely involved in providing advice to users on actions or in making representations to decision makers. The concern applies equally to both sides of the “conservation/ development issue”. The private sector and ecological consultants need to see that the LRC is independent of any possible conservation bias just as much as the conservation bodies and individuals need to see that it is not compromised by too close involvement with development issues.

In summary it can be considered to be the LRC’s proper function to compile baseline ecological data from existing data sources for defined areas of search, evaluate existing data in the context of the resource and comment on sufficiency of the data in terms of coverage and up-to-dateness. It is not, however, appropriate for the LRC to assess potential impacts of the proposed development on biodiversity, evaluate those impacts or advise on potential avoidance, mitigation or compensation measures.

Similarly, in relation to land management advice, mechanisms such as Wildlife Sites Advisory Projects use LRC information as the basis for advice but the LRC has no direct role in advising landowners and managers.

Other applications

Increasing resources are now being devoted to positive management of sites and habitats, whether they are managed directly or in the wider countryside through agri-environment schemes. In this work biodiversity information can provide the basis of targeting of efforts to where they can be most effective.

LRCs are well placed to supply data for use in all aspects of the Biodiversity Action Plan process from initial plan drafting through to monitoring and provide the essential knowledge base to underpin actions. This applies equally to national and local BAPs. Focus on BAP priority species and habitats is seen as important by many users and this demand is a significant steer for LRC priorities in activities such as negotiation for external datasets and data capture.

LRCs are also likely to have an expanding function in terms of providing information for use in biodiversity indicators as a contribution to monitoring the state of the environment, sustainability or organisation performance.

One stop shop

For many applications users find that it is very efficient to use an LRC for accessing the information, as it is a one stop shop. They do not need to spend a lot of time tracking down data sources and compiling it as the LRC has already done that. Instead they are able to spend their time more productively using their expertise to interpret the data and apply it in their particular case.

Feedback of consultants’ data to LRCs

Consultants collecting field records in the course of their work should consider the benefits of depositing the records with the appropriate LRC at the end of the contract. This is ultimately in everyone’s best interests as it builds a picture of the biodiversity resource and encourages evidence-based decision making. From the client’s viewpoint it is more cost effective to start from a position of some existing knowledge than complete ignorance; future cases can take advantage of work done on previous cases, quite possibly resourced by other clients. It should therefore be automatic that consultants ask for their clients’ consent to lodge their data with an LRC. Sometimes the client may have valid constraints on access to records, at least in the short term, but increasingly responsible consultants are depositing records with LRCs as a matter of course unless, exceptionally, there are overriding reasons not to do so.

If there is a resource implication for the consultant to extract data for this purpose then it should be a matter of principle to cost this into the tender. It should be noted, however, that it is the raw data that should normally be lodged with the LRC and not the interpretation of the data by the consultant or its application in a particular case. This may be far easier for a consultant to pass on than the full report made to the client.

LRCs should also be the places where monitoring data deriving from ecology related planning conditions and Section 106 Agreements are lodged. Development related survey and monitoring has become a major component of the overall generation of biodiversity data and it is important that these data are brought into the knowledge base rather than lost.

Benefits of easy access to information

The benefits of easy access to high quality biodiversity data are many.

Policies and projects can be based on relevant and up-to-date information, and are therefore more likely to achieve their aims. Politically and in accountability terms the need to monitor and report on the success or failure of policies and projects is assuming increasing importance. Decisions on individual cases should be informed by all of the relevant facts, taking the guesswork out of the equation and making it more likely that the best outcome will be achieved.

By using an LRC some organisations will be able to save a significant amount of staff time that is currently used in attempts to locate and collate existing data. Staff time can be re-deployed on actually putting the data to use. In the planning process access to relevant data at an early stage can frequently avoid unnecessary later problems and conflicts and can even save planning authorities the expense and trouble of a public inquiry.

Biodiversity resources are more likely to be conserved if quality data are available for all decisions made on land use and management.

By working through a Local Records Centre, organisations are able to access all relevant data held by others as well as their own, subject to the necessary application of confidentiality protocols. The collection and management of data is an expensive operation so it makes sense for organisations to work together for mutual benefit.

National Biodiversity Network

In the last few years the development of LRCs has become integral to the progress of the National Biodiversity Network (the NBN), an initiative that aims to link together holders of biodiversity information and promote its use. The NBN, initially a consortium of organisations including the statutory conservation agencies, NERC, the Natural History Museum, the Wildlife Trusts, RSPB and the National Federation for Biological Recording, is now led by an independent charitable trust, the NBN Trust.

LRCs represent the local delivery of the NBN vision. They promote NBN standards and link professionals with volunteers and data providers with data users. They act as a focus for volunteer recording effort at the local level and disseminate biodiversity information held by local organisations throughout the NBN.

The NBN envisages that most users of biodiversity information in the future will wish to gain access to it through the internet. The use of the internet is already radically changing the ways in which individuals and organisations search for and gain access to biodiversity data. Expectation and perception may be changing more rapidly than the capacity of the internet to deliver the expected information products at present and this mismatch risks disappointment and scepticism. While the technology certainly exists to provide internet access to thousands of datasets and tens of millions of biodiversity records there are many difficulties to be overcome before the benefits can be realised. Some of these constraints are resource related, for example, the human resources required to process and organise the

datasets in such a way that can be made accessible through this means. Others are related to policy such as developing mechanisms for handling sensitive data.

There are also a number of organisation cultural issues to be addressed, such as the dependence of some data manager business models on income related to charging for data or related services, and the challenge of finding ways to handle this through the internet or to substitute another mechanism. While the vision is undoubtedly achievable within a decade, a variety of delivery mechanisms will be used in the meantime.

LRCs will increasingly use their own web sites and the NBN Gateway to deliver their products and services to users. Through linking locally held data to extracts of datasets held at national societies and country agencies LRCs will be able to offer the most comprehensive service tailored to local needs.

The completion of a UK-wide network of fully functioning LRCs remains the key strategic priority for the next few years in order to achieve evidence-based decision making in land-use and management throughout the country.

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Developing professional practice – planning, implementing and reporting on ecological surveys

Peter Shepherd, MIEEM and Jacqui Green, MIEEM

Members will be aware that one of the duties of the Professional Affairs Committee is the promotion of professional practice standards. The committee also receives and considers complaints or concerns raised about the professional work of members of the Institute. All complaints received are thoroughly considered and appropriate responses made. To date, more often than not, concerns raised with the committee have related to the quality and standard of ecological surveys undertaken by members. The Institute has not yet provided guidance on maintaining standards in ecological survey. As a consequence to assist members in their work and to establish practice standards within the profession the Practice Standards Group of the Professional Affairs Committee is currently considering future guidance on how to plan, undertake and report ecological surveys. It is hoped that this will be made available to members through the Professional Issues Series of the Institute in due course.

The importance of primary data collection in all ecological work cannot be over-emphasised. Without good survey data the quality of an ecological assessment and any mitigation and compensation proposals will be compromised. Poorly conducted surveys can also raise questions about the quality of other work, whether this is merited or not. One of the difficulties with providing guidance on standards in ecological survey is that there are a wide range of techniques used for different purposes and circumstances and often more than one methodology can legitimately be used. As a consequence the guidance currently being considered by the Practice Standards Group will address basic standards in planning, implementing and reporting on surveys. It is hoped that guidance can also be provided on the range of established survey methodologies that could be used in different circumstances and the basic requirements and experience likely to be needed to use them. This could prove to be a more controversial task and one that is likely to require consultation.

In most surveys there are three distinct phases. These are firstly planning of survey work, secondly its implementation and lastly reporting the results. All are vital to carrying out ecological surveys to a good standard. In many cases one person completes all three phases. In other cases, often where there is a large survey team or where sub-contractors are employed, one person may plan the survey work whilst others undertake the field work and reporting.

Guidance on ecological surveys will therefore need to consider these elements and an initial checklist of the potential tasks associated with each role currently being considered by professional affairs committee is presented in boxes one, two and three. In addition the practice standards group is also developing lists of established survey methodologies and the skills and expertise needed to use them. As an example, the first page only of a table listing established methodologies is presented on page 9, Table 1, together with the remaining headings that will be completed by the Practice Standards Group. Contributions or amendments are welcome, in particular we need help with lesser known species or groups.

The table aims to list the established and generally accepted methodologies for field survey; it does not include other forms of field work such as monitoring techniques. It also should be noted that an experienced surveyor may consider that the prescriptive methods presented in the Table 1 are not appropriate in all cases. For exceptional projects the “standard” method could be tailored appropriately to meet the objectives of the project, and any amendments described in the report. It may also be appropriate to confirm methodology changes with the appropriate statutory agency.

Many of the actions detailed in box 1 and box 2 seem obvious. However, a variety of concerns reported to the Professional Affairs Committee have highlighted that not all of the above actions are taken into account, resulting in questions about the quality of work undertaken by members of the Institute.

Ecological surveying is one of the core activities for many members of the Institute and the Practice Standards Group and the Professional Affairs Committee are keen to provide basic and clear guidance that will provide a basis for maintaining standards in the profession.

Guidance is also needed on the importance of providing quality control for surveys undertaken or planned by members of the Institute. Although this is covered to a certain extent by the proposed actions of survey planners in box 1, it is likely that for large scale surveys or where new surveyors are employed, that additional quality control measures will need to be considered and implemented. Such measures should be aimed at ensuring a high standard of survey is maintained by surveyors and that there is consistency in approach and standards between different surveyors. Surveyors either as employees or as sub-contractors should be subject to quality control measures at the beginning of their work and whenever they undertake new survey methods for which they have received appropriate training, but have yet to develop a good level of experience. It would also be advisable to maintain quality control over time.

Reporting results is a critical part of ecological survey. The need to report in an unbiased, clear and detailed manner is required by the code of professional conduct, but it is felt that guidance should also be given on basic approaches to reporting that will enable an assessment of the quality and reliability of the survey to be made. A provisional checklist of the content of a survey report is presented in Box 3.

This article provides only an outline of the issues being considered by the Practice Standards Group in relation to ecological survey. If any member wishes to contribute to this process or is aware of other current work that is relevant, we would be pleased to hear from you.

Peter Shepherd is Consultant, Baker, Shepherd Gillespie and member of the Professional Affairs Committee.

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Box 1 - Planning Ecological Surveys

Checklist of actions for survey planners

1. Identifying objectives and information requirements

The objectives of a survey will vary greatly from one survey to another. In all cases the requirements of the person or organisation commissioning the survey work will need to be taken into account. At the simplest level it may involve determination of the presence or absence of a particular species. In other circumstances the objectives may be much more complex and demanding. It is important, however, whatever the complexity of survey that the objectives of the survey are defined. Once the objectives of the survey have been identified it is important to determine the information required in order to fulfil the objectives. Some guidance on information requirements for habitats and species groups is provided in the literature (Guidelines for Baseline Ecological Assessment¹ and Developing Naturally²) can provide a guide to the range of information that should be collected. However, there is no accepted standard established for information requirements and it is therefore important that these are identified at the outset.

2. Select possible survey methodologies

This is a difficult area as the methodology and its application to a particular situation will be determined by a variety of factors. However it will be necessary for the survey planner to:

- (a) Assess constraints imposed by season, time frame, personnel, legal requirements and finances on these methodologies*
- (b) Assess impact of the constraints on the effectiveness of methodologies and select most appropriate survey to achieve survey objectives*
- (c) Identify any peculiarities or constraints of the survey area that may affect the effectiveness of the survey*

3. Identify variations to the established survey methodology

This may include, for example, undertaking fewer site visits than recommended.

4. Inform client of the assessment of constraints

The client should be informed of implications for proceeding with the survey

5. Consult the relevant statutory nature conservation body

This is mainly only relevant where the survey affects a protected species.

6. Undertake a health and safety assessment of the survey method

Checklist of actions for survey planners

7. Assess competency of surveyor

This is particularly important when working with a surveyor for the first time. The survey planner needs to be sure that the surveyor has the relevant skills and experience to undertake the proposed work. Procedures that could be followed may include:

- (a) Check training record*
- (b) Check experience of applying the methodology to the circumstances of the survey*
- (c) Check past survey reports if a new surveyor or sub-contractor*
- (d) Check appropriate licences are held if protected species are involved*
- (e) Determine if survey should be supervised and determine quality control requirements*

8. Brief the surveyor

- (a) Provide a description of the survey objective, survey methodology and survey area (including suitable base maps).*
- (b) Identify constraints on survey method and describe how these are to be dealt with.*
- (c) Assess health and safety risks and agree on measures to be followed by the surveyor.*
- (d) Identify access arrangements and provide land owner details.*

¹ Spon, E&FN. (1995). Guidelines for Baseline Ecological Assessment. Institute of Environmental Assessment.

² Oxford, M. (2000). Developing Naturally. A handbook for incorporating the natural environment into planning and development. The Association of Local Government Ecologists.

Box 2 - Undertaking ecological surveys

Checklist of actions for the surveyor

Undertaking surveys to a good standard is not an easy task and requires a variety of skills, training and experience. Each person undertaking surveys should be confident that they have the necessary skills and experience to complete the survey work they are asked to undertake to a good standard. This requires surveyors to be able to critically assess their own abilities and to adopt a thorough approach to survey work.

1. Ensure all necessary information has been provided to undertake the survey.

Each surveyor should ensure that they have all the necessary information to enable them to undertake the survey. This may include:

- (a) A description of the survey objective, survey methodology and survey area
- (b) Identification of constraints on survey method
- (c) Assessment of health and safety risks and measures to be followed
- (d) Access arrangements and site or land owner contacts.

2. Ensure all required survey equipment is available and working

3. Ensure the necessary permits or licences to undertake work are in place.

4. Recording field data

This will vary greatly from one survey methodology to another and from one site to another. However basic practice standards should be maintained. This may include:

- (a) Record basic field data e.g. date, duration of survey, weather conditions.
- (b) Record constraints encountered that may affect the effectiveness of the survey.
- (c) Record survey results in a standard method where appropriate.
- (d) Record data clearly so that it can be read or interpreted by others.
- (e) Record thoughts on recommendations for additional survey work

5. Undertake a final check of required information before leaving the survey site.

Box 3 - Reporting survey results

A survey report should include:

1. Background data

This is likely to include:

- (a) Name of surveyor and where necessary relevant qualifications
- (b) Date of survey
- (c) Time spent on survey
- (d) Weather conditions.

2. Methodology

This should also identify any constraints on the implementation of the survey.

3. Results of survey

- (a) Desk-top survey results
- (b) Field survey results
- (c) Assessment of confidence to be placed in the results arising from the identified constraints. Where further survey is considered necessary this should be reported and a reason given for the need for additional survey

4 Discussion

This section is not always required and will depend on the purposes of the survey.

5. Recommendations

This section is not always required and will depend on the purposes of the survey.

Habitat or Species Surveys	Survey Methodology	Comments
FLORA:		
Habitats - General	Phase 1 Habitat Survey as per: JNCC (1993). <i>Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit</i> . England Field Unit, Nature Conservancy Council.	Experience of a variety of habitats in the field required. A wide geographic range recommended unless practising in a restricted area. Good ID of dominant / indicator species required including lower plants. Knowledge of mapping
	Extended Phase 1 Habitat Survey as per: Institute of Environmental Assessment 1995. <i>Guidelines for Baseline Ecological Assessment</i> .	In addition to above - Understanding of habitat use by faunal groups for target
	National Vegetation Classification Survey as per: Rodwell J S, (Edit.) (1991). <i>British Plant Communities Volume 1. Woodlands and Scrub</i> . CUP Rodwell J S, (Edit.) (1991). <i>British Plant Communities Volume 2. Mires and Heaths</i> . CUP. Rodwell J S, (Edit.) (1992). <i>British Plant Communities Volume 3. Grasslands and Montane Communities</i> . CUP. Rodwell J S, (Edit.) (1995). <i>British Plant Communities Volume 4. Aquatic Communities, Swamps and Tall-herb Fens</i> . CUP. Rodwell J S, (Edit.) (2002). <i>British Plant Communities Volume 5. Maritime Communities and Vegetation of open Habitats</i> . CUP.	Requires good plant ID skills including indicator species including grasses and lower plants (bryophytes etc). Extensive experience of quadrat recording necessary. Years of recording required to interpret field data and allocate to an NVC community. Confidence in relating text descriptions to field conditions required. Use of computer programs (TABLEFIT, MATCH) may be helpful. On occasions it may be necessary to undertake surveys outside the optimum season (this is not recommended). This should only be attempted by surveyors with considerable skills and experience in vegetative plant ID. Adaptation of detailed floristic surveys may include eg., use of DAFOR instead of Domin, highly detailed mapping of small areas for individual plant / species distribution.

Table 1

Setting up a regional Section, The North East Perspective.

Steve Pullan, MIEEM

In the last issue of 'In Practice', Mike Barker reported on the 10th Anniversary Survey of members opinions, which highlighted that 58% of those who replied were willing to participate in local events, while 32% were undecided. Unless the 58% all came from Scotland or from the North East then the idea of regional local meetings is growing in its appeal across the country. As the co-ordinator for the North East section, I have been asked now by a number of members in other regions on what we have done in the North East and here is my reply.

The North East shadow section came into life because Scotland had ignited the touch paper across the border. For those of us who live north of Hadrian's Wall, part of Scotland once, it was felt that a regional section was needed for all the same reasons as the formation of the Scottish section. So what did we do? To start with, it was felt to jump straight into a formal section could have been counter productive and it was agreed that we needed to judge the support for such activities. A small self appointed group organised a number of evening meetings to start with and then a couple of afternoons to test issues like what time of day, when, how, as well as offering interesting topics. It's all been done on good will and IEEM have not paid out a penny. The North East section would like to formally thank both Northumberland Wildlife Trust and Durham Wildlife Trust who have provided their premises free of charge to the North East Section and whose support has been invaluable in getting started. As for appointed officers and a committee, we are to move to that formal state at the AGM this year with the annual conference being here in Newcastle on urban ecology. My overall advice would be don't rush it, try things out, test what support there is and try to build good will among members in the region. Try to find a time and place which are convenient in the region first. Pick some topics of interest and get some local speakers. I would also suggest that you find a local celebrity for the first event, we had Professor Peter Evans from Durham on "Turds or Birds". I personally would like to thank the willing volunteers who helped to make this a success and who felt as I did that it was important to get something going. They are, Robert Mayhew, Andy Cherrill, Heather Tidball, Lisa Kerslake, Steve Lowe and Martyn Kelly, as well as those members who agreed to act as speakers for the range of events organised over the last two years.

So what have we been doing? Over the last year events have been a bit hit and miss due to FMD and the March event in 2001 with Dr Dave Mitchell occurred a year later in March 2002. He gave a guided tour around the Rising Sun Country Park and showed the impact of restoration 34 years on, in what was a major industrially damaged site with serious pollution. The site is now a major Country Park with a range of habitats, some by design others by accident, with species like the bee orchid, which colonised one particular area. The first event it was felt safe to offer in 2001 was in September presented by Peter Samson. He bravely ran the event to a small-dedicated group, just as the FMD outbreak was waning. His topic was highlighting the Upland Management initiative for which he is presently working and its potential in assisting in defining the future of uplands. The discussion over tea in the only café in the Upper Coquet Valley, picked up many of the themes highlighted by the 'Curry' report. The only viable business uses in the uplands were agriculture, forestry and tourism. Also discussed was the impact of subsidy, coupled with diversification and the balance between them. The problem is how to make the environment pay? I suspect a topic that will be repeated by a range of Institute events over the coming years, looking at the balance and addressing the conflicts. In November, Robert Mayhew highlighted the new CROW act and in particular the access part. The process clearly is fraught with problems and it's clear many Institute

members are going to be involved over the coming years as open access starts to happen on the ground. Inevitably the discussion was wide ranging and the problem of dogs and what constitutes, 'under control', to lead or not to lead as well as dogs mess dropped into the discussion! At the beginning of the year, our President travelled north from his home in Swaledale to Durham to highlight the issue of Ecological Assessment. He showed using his own personal experiences from both the UK and Hong Kong how the issues should be addressed. This links with the major theme of the Institute's last Conference in Birmingham on setting ecological assessment standards. Finally the May 2002 event, a car load ventured on to the forest tracks of Keilder forest to discuss the LIFE project with Bill Bulton of Forest Enterprise. He highlighted the range of options being used to clear the forest from these important habitats, which have every designation under the sun. One of the key issues is how government policy has changed in thirty years from plant way to one of forests with multi uses. The discussion ranged over many areas but in particular, it concentrated on the techniques used to clear the trees from the peat bogs and the possible timescales to see real success.

So for further details of the remaining events this year please contact Steve Pullan the present coordinator. Any members in this region who have ideas for site visits, or are willing to offer topics for discussion, please could they contact Steve as well. Remember as IEEM events they will count as structured CPD.

Ref: Barker, M. (2002) The IEEM 10th Anniversary survey feedback: What is IEEM targeting for improvement & what you can do to help. No 35 p9-12

Steve Pullan works for DEFRA and is a member of Council and the Membership Admissions Committee

SENIOR ECOLOGIST

PERMANENT POSITION

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ECOLOGIST

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Contact: Tel: 01908 231125 email: epcad.co.uk

In the Journals
*Compiled by Pat Rae, Peter
 Shepherd,
 Jim Thompson
 and Joel Bateman*



British Ecological Society

R. A. Macdonald.

Resource partitioning among British and Irish mustelids.

Journal of Animal Ecology, 2002, **71**: 185-200.

This study tested the hypothesis that coexistence of the seven mustelid species in the British Isles is facilitated by partitioning of resources according to prey size, particularly mammalian prey items. The research was based on 98 studies of mustelid diets in Great Britain and Ireland reported in the literature. The study set out to test two principal predictions; that larger males ate larger prey than larger females of the same species and that larger species ate larger prey. The relationship between predator size and prey size was analysed using weighted-mean prey mass and species mean body weight, skull length and canine diameter. Prey size compared to predator size was analysed by grouping prey items into small, medium and large prey. The resource partitioning among species was analysed with a principal components analysis conducted on the prevalence of each food category in the diet of British mustelids.

The results indicated that male mustelids ate larger prey items than females of the same species. In contrast to previous predictions the study also found that there was no relationship between the size of the mustelid and the prey items either for all species, or when largely vermivorous badgers or piscivorous otters were excluded from the analysis. The author concludes that the results of this study support the bulk of previous work that differences in diet between male and female mustelids are a secondary consequence of the difference in size between males and females rather than the primary cause of the size difference. The author also concludes that the results do not support a hypothesis of resource partitioning based on prey size between species and that interspecific aggression provides an alternative hypothesis for character displacement among mustelids.

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K.E. Ellingsen and J.S. Gray.

Spatial patterns of benthic diversity: is there a latitudinal gradient along the Norwegian continental shelf?

Journal of Animal Ecology, 2002, **71**: 373-389.

This study set out to examine if the general trend of increasing species diversity from the poles to the tropics on land was also true for marine ecosystems. The study used data collected from a 1958 km transect along the Norwegian coast between 56 and 71 degrees N. The transect also covered a range of depths from 65 to 434 metres and a variety of sediment properties. The survey recorded 809 species of macrobenthos from 1010 sample sites. Of these 36% were restricted to one or two sample sites, 29% were represented by just one or two individuals. None of the species recorded spanned the entire transect and the principal taxonomic groups were polychaetes, crustaceans, molluscs and echinoderms.

Diversity was measured in a variety of ways including simple species diversity, which has been the traditional measure in ecological and

conservation studies. This study used the partitioning of species diversity into alpha, beta and gamma components to characterise aspects or levels of diversity. Alpha and gamma diversity can be measured at varying scales ranging from point species richness (a single sampling site) to species richness at the biogeographical province scale. In this study alpha diversity was sample species richness (taken from a number of sample points) and gamma diversity was assessed as species richness in large areas. Beta diversity measurements unlike alpha and gamma measurements are not a spatial scale of diversity. Beta diversity measurements are based on ratios of species richness of areas of different sizes or differences in faunal composition between sites or areas. Four measures of beta diversity were used in the study.

The results indicate that alpha diversity (sample species richness) was highly variable (35-148 species), but that there is no relationship to latitude or other environmental variables. Beta diversity measures also showed no relationship to changes in latitude, but that it did increase with the level of environmental variability. Change in environmental variables also had a stronger effect on beta diversity than spatial distance between sites. The study also did not find any convincing evidence of a latitudinal trend in gamma diversity.

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K. Weidinger.

Interactive effects of concealment, parental behaviour and predators on the survival of open passerine nests.

Journal of Animal Ecology, 2002, **71**: 424-437.

This study examined the role of parental behaviour and nest concealment on the level of nest predation suffered by yellowhammer, blackcap, song thrush and blackbird. The probability of nest predation was evaluated by measuring survival of paired natural/artificial nests. The range of species selected includes birds with medium sized nests placed on or near the ground and usually well hidden (yellowhammer), small nests on thin branches, moderately concealed about 1.5 metres above the ground (blackcap) and conspicuous bulky nests, often little concealed (song thrush and blackbird). The study was based in an area of farmland in the Czech Republic over a three year period. The local landscape comprises a mosaic of arable fields, settlements and remnant blocks of deciduous woodland larger than 25 ha. Intensive searches were made for nests between April and the end of July and regularly monitored for success or failure and the reasons for the failure. In addition failed nests were baited with artificial egg clutches and blackcap nests from the previous season were paired with experimental nests and baited with artificial eggs. These nests without parent birds were located in habitat as similar to the real nests as possible. Characteristics of all nests were recorded reflecting level of concealment and parental behaviour. The presence of predators was also recorded with the principal predators being rodents and corvids. The ratio of rodent to corvid predation decreased from yellowhammer through blackcap to song thrush and blackbird. An inverse relationship was found between mean annual nest survival and the abundance of the major nest predator for each bird species studied. Predators differed between poorly and well concealed nests in blackcaps with corvids being the principal predator of poorly concealed nests and rodents of well concealed nests.

The effect of parental behaviour and nest concealment on nest survival differed between the bird species. For song thrush and blackbird there was a positive effect of parental behaviour combined with a neutral effect of nest concealment. For yellowhammer there are independent positive effects of behaviour and concealment and for blackcap a neutral effect of behaviour combined with a positive effect of concealment. The author concludes that these results are consistent with the view that relatively larger species with conspicuous nests engage in more vigorous and effective nest defence compared to smaller species that rely more on nest concealment or a combination of defence and concealment.

The results show a positive relationship between nest concealment and survival and that this resulted either from an effect of the nest site itself for yellowhammer or from an effect of parental behaviour in blackcap that was positive when there was a well concealed nest or negative (nest disclosure) when the nest was not well concealed.

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A. P. Møller.

The effect of dairy farming on barn swallow *Hirundo rustica* abundance, distribution and reproduction

Journal of Applied Ecology, 2001, **38**: 378 - 389.

There is much discussion about the effects of agricultural changes on farmland birds. The influence of dairy farming on swallows *Hirundo rustica* was investigated by comparison of their abundance, phenotype and reproduction on the same farms before and immediately after dairy farming ceased, while a control sample of farms without change in farming practice in the same years was used to check for changes unrelated to farming practice.

The abundance of barn swallows decreased significantly when dairy farming ceased, with an average reduction of 48%, while there was no significant difference in the sample of control farms. This was mainly due to a decrease in the abundance of yearling immigrants. The abundance of insect food measured with sweep nets decreased significantly in the absence of cattle, while there was no significant change in the sample of control farms.

Termination of dairy farming reduces local population size, reproductive success and the quality of offspring produced - something to watch in a changing agriculture.

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A.A. Smith, S.M. Redpath, S.T. Campbell and S.J. Thirgood.

Meadow pipits, red grouse and the habitat characteristics of managed grouse moors

Journal of Applied Ecology, 2001, **38**: 390 - 400.

With the important role of red grouse management in the moorland economy, it is always welcome to see some useful papers relating to practical management and the enhancement of biodiversity. High densities of hen harriers can limit grouse populations at low density and reduce shooting bags, with repercussions for grouse moor management and conservation. The abundance of meadow pipits appears to be a good indicator of the breeding density of hen harriers on moorland managed for red grouse in Scotland. The authors asked whether changes in vegetation could alter the ratio of pipits, and thus harriers, to grouse.

Grouse abundance and habitat was studied on 69 sites of 1 km² in upland Britain, with pipit abundance on 36. Similar data were collected on 73 sites of 25 ha within the Langholm estate in south-west Scotland, to make a within-estate and among-moor comparison.

Pipits were the most frequent passerine, but their abundance was not related to grouse abundance. Pipit abundance declined with increasing muirburn and heather, but increased with grass cover.

Grouse abundance was influenced by the regional location of the grouse moor and to a lesser extent by its altitude. Bird species declined with increasing *Calluna* and *Sphagnum* cover and habitat patchiness. Bird species diversity increased from west to east and on moors with more muirburn. Clearly grazing pressures from deer and sheep are likely to affect this situation.

Long-term increases in heather cover and management of this habitat by muirburn on grouse moors may reduce pipit numbers and thus reduce the ratio of hen harriers to grouse. The effects of such vegetation change on other aspects of the upland bird assemblage requires further investigation.

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A.P. Tharme, R.E. Green, D. Baines, I.P. Bainbridge and M. O'Brien.

The effect of management for red grouse shooting on the population density of breeding birds on heather-dominated moorland

Journal of Applied Ecology, 2001, **38**: 439 - 457.

Breeding birds, vegetation and moorland management were surveyed in 320 1-km squares on 122 estates in upland areas of eastern Scotland and northern England where red grouse shooting is a widespread land use. The authors assessed whether population densities of 11 species of breeding birds differed between heather-dominated moorland managed for red grouse shooting and other moorland with similar vegetation.

Estates with a moorland gamekeeper were classified as grouse moors. The mean density of red grouse shot per year was four times higher and the mean density of gamekeepers was three times higher on grouse moors than on other moors. Rotational burning of ground vegetation covered a 34% larger area on grouse moors than on other moors. The composition of vegetation on grouse moors and other moors was similar.

Densities of breeding golden plover and lapwing were five times higher and those of red grouse and curlew twice as high on grouse moors as on other moors, while meadow pipit, skylark, whinchat and carrion/hooded crow were 1.5, 2.3, 3.9 and 3.1 times less abundant, respectively, on grouse moors.

There was a possible positive influence of predator control (assessed using crow density) on red grouse, golden plover and lapwing. The control of crows by gamekeepers is the most probable cause of the low densities of crows on grouse moors. There was evidence of a positive effect of heather burning on the density of red grouse and golden plover and a negative effect on meadow pipit.

The authors also draw attention to the downside in moorland management - the illegal and continuing persecution of birds of prey.

The results provide correlative evidence that moorland management benefits some breeding bird species and disbenefits others in ways that cannot readily be explained as effects of differences in vegetation type or topography.

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P.E. Osborne, J.C. Alonso and R.G. Bryant.

Modelling landscape-scale habitat use using GIS and remote sensing: a case study with great bustards

Journal of Applied Ecology, 2001, **38**: 458-471.

Many species are adversely affected by human activities at large spatial scales and their conservation requires detailed information on distributions. Intensive ground surveys cannot keep pace with the rate of land-use change over large areas and new methods are needed for regional-scale mapping. Sites occupied by bustards showed significantly lower densities of roads, buildings, railways and rivers than randomly selected survey points. Bustards also occurred within a narrower range of elevations and at locations with significantly less variable terrain.

The great bustards distribution is highly fragmented and vacant habitat patches may occur for a variety of reasons, including the species' very strong fidelity to traditional sites.

The authors conclude that AVHRR satellite imagery and GIS data sets have the potential to map distributions at large spatial scales and could be applied to other species. While models based on imagery alone can provide accurate predictions of bustard habitats at some spatial scales, terrain and human influence are also significant predictors and are needed for finer scale modelling.

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P. Stahl, J.M. Vandel, V. Herrenschmidt and P. Migot.

Predation on livestock by an expanding reintroduced lynx population: long-term trend and spatial variability

Journal of Applied Ecology, 2001, **38**: 674 - 687.

Apart from being an interesting story of land management, this paper may provided food for thought in the context of the possible introduction of the wolf into Scotland. In recent decades, the Eurasian lynx, *Lynx lynx* has recolonized former habitat, bringing it into potential conflict with livestock. The paper reports on a study of spatial and temporal distribution of lynx attacks on sheep in the French Jura between 1984 and 1998, during and after its population expansion.

The number of attacks increased from three in 1984 to 188 in 1989, concurrently with the colonization of the main sheep range by lynx. During subsequent years, 66-131 attacks were recorded annually (92-194 sheep killed per year).

On average, 1-6 sheep were killed per attack. Lynx preyed disproportionately on lambs and subadult sheep. A small percentage of flocks (9.5-22.9%) were attacked, most of which (75.2%) were attacked once or twice a year. At the regional level, annual sheep losses to lynx were 0.14-0.59% of the total number of sheep.

The major lynx-livestock problem was due to clustered attacks in a few small areas. Each year, two to six hot spots (33-69% of the attacks) were identified. Roe deer abundance was higher in hot spots and, even here, sheep only made up 3.1% of the lynx diet. These data show that lynx were not killing sheep due to shortages of alternative prey or in response to an increased need for food when rearing young. Further investigation is needed to identify causal factors with a view to eliminating the hot spots. These may relate to landscapes features, animal husbandry practices or the behavioural ecology of lynx. For example the damage in Norway with open grazing systems is higher than in the Jura where sheep are kept in fenced fields.

In future, where large predator reintroductions are planned, the potential for concentrated, localized, impact should be evaluated and mitigation measures put in place. For scattered and episodic lynx damage, financial compensation is the only realistic option at present. In hot spots, the cost-effectiveness of guard-dogs or the selective removal of some individual lynx should be evaluated.

Just a thought - has SNH started a wolf compensation fund yet!

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F.A.M. Tuytens, B. Long, T. Fawcett, A. Skinner, J.A. Brown, C.L. Cheeseman, A.W. Roddam and D.W. Macdonald.

Estimating group size and population density of Eurasian badgers *Meles meles* by quantifying latrine use.

Journal of Applied Ecology, 2002, **38**: 1114 - 1121.

Conservation issues and a potential role in disease transmission generate the continued need to census Eurasian badgers *Meles meles*, but direct counts and sett counts present difficulties. The feasibility of estimating social group size and population density of badgers by quantifying their use of latrines was evaluated.

The number of latrines, or preferably the number of separate dung pits, which were known from bait-marking to be used by members of a social group, was positively correlated with adult group size estimated from mark-recapture studies at Woodchester Park and North Nibley (south-west England). In the latter study area both latrine-use measures were also significantly associated with total group size (i.e. including cubs and adults). In spring 1997 and 1998, latrine use was quantified along strip transects, following linear features across four and five areas in England, where badger density in summer was known from mark-recapture/resight studies.

Seven latrine-use measures were evaluated with regard to their potential to predict badger density. Each measure separately explained between 62 and 91 of the variation in population density in a given year. The simplest measures (latrines km⁻¹ and pits km⁻¹) were most stable between years.

The authors conclude that a badger census technique based on measurements of latrine use has great promise but needs to be validated across a wider range of badger populations, habitats, years, seasons and weather conditions.

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P. Clergeau, J. Jokimäki and J-P. L. Savard.

Are urban bird communities influenced by the bird diversity of adjacent landscapes?

Journal of Applied Ecology, 2001, **38**: 1122 - 1134.

The species diversity of adjacent landscapes influences the conservation or restoration of several animal groups in urban areas, but the effect on birds is unclear. Bird species richness (BSR) and community composition was compared between periurban (area surrounding the town) and urban (suburban and centre areas) landscapes across three spatial scales.

At a large biogeographical scale (temperate and boreal climatic zone), relationships between the BSR of urban areas and their surrounding landscapes were examined using 18 published studies. In general, BSR was negatively correlated with latitude and urbanization. The BSR of suburban and centre landscapes correlated positively with the BSR of periurban landscapes. However, latitudinal effects were also involved, as BSR in urban and periurban landscapes declined as town latitude increased. At a regional scale, winter bird data from several towns within three regions of temperate and boreal countries was assessed. The type of periurban landscape, number of inhabitants and town diameter did not affect BSR which was similar between the cities of a given biogeographical area. Bird communities were more similar between similar habitat types of different cities than between different habitats of the same city.

At a local scale, the influence of proximity to the periurban landscape on BSR in parks of western French towns of different size was tested. Neither BSR nor community similarity changed in relation to the distance of the park from the periurban landscape.

The authors conclude that, at regional and local scales, urban bird communities are independent of the bird diversity of adjacent landscapes. Whatever the biodiversity quality of the periurban landscape, site-specific actions within towns are likely to have a more significant effect on bird diversity.

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Stephen M. Redpath, Simon J. Thirgood and Fiona M. Leckie.

Does supplementary feeding reduce predation of red grouse by hen harriers?

Journal of Applied Ecology, 2001, **38**: 1157-1168.

This study is billed in the Journal as a Priority Contribution. It is well written and clear. The issue overall is the balance between the value of grouse moor in the conservation of heathlands and the conservation needs of predators in their own right – in this case the hen harrier. The simple answer to the title question is yes, supplementary feeding does reduce predation of red grouse by hen harriers – but the grouse did not do any better overall.

The authors conducted a supplementary feeding experiment on Langholm Moor, UK, in 1998 and 1999 to determine whether feeding hen harriers could reduce the numbers of red grouse killed. The experiment was done at two distinct stages of the breeding cycle: prior to incubation (spring) and after hatching (summer). In many raptors, breeding density is correlated with food abundance. In this experiment, there was no significant effect in the breeding density of males or females. Both male and female harriers at nests where supplementary food was available caught grouse chicks at a lower rate (0.5 chicks per 100hr) than harriers at nests not provided with food (3.7 chicks per 100 hr).

Interestingly, the number of grouse chicks lost was 10 times higher than expected from harrier predation rates. Some other, unknown, factor had a strong influence on grouse chick survival in these years. For the adult grouse, a minimum of 78% of the tagged adult grouse that were killed, were killed by raptors. This was not influenced by supplementary feeding of harriers, and the inference is that other raptors were involved, such as foxes, crows and gulls.

Costs of supplementary feeding were estimated at £11,000 per annum compared with an estimated £99,500 per annum for grouse moor management overall. One hopes the authors can get more funding to continue for a more appropriate study length of 5- 10years. Another point - in spite of the overall conservation reasons – someone out there is bound to eventually raise ethical objections to the method of supplementary feeding.

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G. Norbury.

Conserving dryland lizards by reducing predator-mediated apparent competition and direct competition with introduced rabbits.

Journal of Applied Ecology, 2001, **38**: 1350 - 1361.

This paper deals with the complex interactions of predator and prey, which are particularly so when both predator and prey are introduced species. In the case of New Zealand's dry grasslands, the dominant predators are cats and ferrets, which prey mainly on rabbits. Some native prey are taken as by-catch or as secondary prey.

Native skinks in New Zealand's dry grasslands have declined in range and abundance since the arrival of humans. It was suggested that introduced rabbits exacerbate this decline in four ways: a) by supporting introduced mammalian predators for which they are primary prey; b) by sudden declines in abundance that cause predators to switch to skinks; c) by grazing vegetation, thereby reducing skink refuges from predators; and d) by reducing skink food and shelter from climatic extremes. The first three effects cause enhanced skink predation and represent indirect or apparent competition. The fourth effect represents direct competition from rabbits.

The main results of the studies were as follows: Firstly, predation by ferrets and cats accelerated at low skink densities. As skink densities rose, predation became an increasingly less important source of mortality. Therefore, predation could potentially exterminate skink populations if densities fell below some critical range. Secondly, predation of skinks increased markedly after sudden declines in rabbit abundance, because predators remained

abundant but switched to feeding on skinks. Although a temporary effect, repeated cycles of intense rabbit control and population recovery may have chronic detrimental effects on skink population viability. Thirdly, optimal rabbit management for maintaining viable skink populations is likely to require avoidance of large swings in rabbit abundance by maintaining populations at low, stable levels. Fewer rabbits mean fewer predators and greater refuge (less apparent competition), and improved food and shelter (less direct competition). If large swings in rabbit abundance cannot be avoided, the effects of prey-switching could be reduced by controlling predators when rabbit numbers decline.

Correspondence: Grant Norbury, e-mail norburyg@landcare.cri.nz

David M. Wilkinson.

Is local provenance important in habitat creation?

Journal of Applied Ecology, 2001, **38**: 1371-1373.

This and the next review are presented in the Journal under the heading "Forum Papers", a very welcome section for an "Applied" journal. The current topic is one that many involved in habitat creation or restoration will have thought about, but possibly not beyond the principle that use of native species and especially local provenance in such schemes must be "a good thing". This maybe for no other reason than for the good of all the other dependant species in the habitat in question., and for the general use of the precautionary principle. Whether this and the next article will help with hard decisions when there are limitations on resources generally (stock, time and costs) is uncertain, but undoubtedly the discussion is interesting and informative.

The conclusion is that provenance does not matter, particularly for long-lived individuals, and for wind pollinated individuals. This is based on Quaternary evolutionary change and on genetics. A major reason for the use of local provenance is the claimed importance of conserving locally adapted genotypes, which are assumed to show high fitness. But fitness for what? Over time, there are documented regional climatic changes in only 10 years, and certainly over 100 years. Even 10,000 years is only 40 generations of some tree species. On top of that, local microclimate conditions can vary widely in one site. He also uses epistasis as an argument – the mutation of one gene masking the effect of another. This is only likely to be a problem in situations where members of a population receive only genes from other members of the local population. In plants this is more likely to be found in insect pollinated rather than wind-pollinated plants. Based on reports relating to success of a local provenance of Hawthorn, Wilkinson additionally comments that matching habitats may be more important than matching local seed sources. The arguments all seem quite reasonable - but read the next review!

Correspondence: D.M. Wilkinson, e-mail D.M.Wilkinson@livjm.ac.uk

N.R. Sackville Hamilton.

Is local provenance important in habitat creation? A reply.

Journal of Applied Ecology, 2001, **38**: 1374-1376.

Sackville Hamilton agrees with Wilkinson that his observations on fitness are important, correct and deserve wider recognition – and have been noted before by other authors. He then goes on to dispute Wilkinson's conclusion about the importance of provenance. One reason is that the fitness of hybrids is only one of numerous relevant issues. For example, The Convention on Biological Diversity 1992, says in effect that conservation of the patterns of genetic diversity within species is an objective in its own right, and with the same importance as conservation of species diversity. Another issue is the role of the rate of gene flow and genetic diversity on the balance between evolution (or adaptation) and extinction. Sackville Hamilton summarises this point thus: that total diversity and fitness are maximised by limited gene

flow that leads to locally adapted populations, genetically distinct from one another as well as being genetically diverse within populations. Other reasons too complex to reiterate here are argued as well, such as the genetic and geographical distance between populations and the more easily understood “fit” with other dependant species such as birds and insects.

Altogether, Sackville Hamilton concludes that except where the introduction of non-local genotypes is specifically justified in terms of conservation genetics, use of locally provenanced seed should be standard practice, especially in the common situation where we do not have enough knowledge to assess the genetic consequences of introducing genotypes from elsewhere. Thank goodness for that practical insert – as it would seem then for us lesser mortals who have to make the decisions, that the precautionary principle still holds.

Correspondence: N.R.Sackville Hamilton,
e-mail ruaraidh.hamilton@bbsrc.ac.uk

Robert A. Robinson and William J. Sutherland.

Post-war changes in arable farming and biodiversity in Great Britain.

Journal of Applied Ecology, 2002, **39**: 157 - 176.

This article discusses how post war changes in agriculture have influenced biodiversity on agricultural land. 75% of land-some 18.3 million hectares - is used for agriculture. Many major changes occurred out of the 1947 Agricultural Act, promoting British self-dependence, a shift from the importation of many agricultural products from the Americas.

The general trend of populations found on agricultural land is that of decline. Declines by as much as half in plants, a third in insects and four fifths in birds. Many of the remaining species are classed as rare or scarce.

Increasingly intensive farming practices in the post-war period have caused the dramatic reductions in diversity and vibrance of populations. In the wake of the 1947 Agriculture act, there has been a 65% decline in the number of individual farms, a 77% reduction in farm labourers, yet there has been a quadruple increase in yield. Mechanisation, removal of over half the hedgerow stock, more specialised farming, autumn sowing and the number of chemical applications have all contributed to the reduction in diversity on the farmland.

Reduction in habitat quality is now thought to be the most important factor in biodiversity reduction on farmland. As a case study populations of seed eating birds were analysed, the declines found were attributed to a reduction in food supply in the non-breeding season.

While research into the mechanisms underlying species and habitat associations, and their interaction with scale, will be critical in under-pinning management, consideration of farmer attitudes and socio-economic factors is likely to be as important.

It is not only important to address the species/habitat relationship but also the attitude and management techniques of the farmer

Correspondence: R. Robinson, e-mail: rob.robinson@bto.org



APPLIED ENVIRONMENTAL RESEARCH CENTRE LTD

Consultant Scientists, Engineers and Planners

AERC is a multi-disciplinary environmental consultancy providing independent advisory and research services in environmental sciences, engineering and planning. The company employs in excess of 40 staff located at its Head Office near Colchester, Essex and operates throughout the UK servicing a diverse range of public and private sector clients including leading waste management companies, housing associations and local authorities.

The company carries out Environmental Impact Assessments (EIAs) for a variety of development types including infrastructure (roads, flood defences etc.), commercial/industrial parks, sports and leisure complexes, mixed use developments and waste management operations. The EIA Group is seeking to expand its core skills by employing environmental assessors with specialist expertise in air quality and/or noise assessment, and ecology. Candidates should have excellent verbal/written communication skills and be able to demonstrate a real enthusiasm for the work. Consultancy/industrial experience together with some knowledge of the formal EIA process would be an advantage. A full, clean, UK driving licence is essential.

Air Quality and/or Noise Assessment

With a degree in environmental science/health and/or post graduate diploma or degree in a relevant subject you will ideally have one or more years experience of air quality and/or noise measurement and prediction using standard formulae and software.

Ecologist

With a biological science or related degree and/or a post graduate qualification in a branch of ecology, you will ideally have one or more years experience in providing an ecological input to EIAs. You will have developed excellent field survey skills in a variety of estuarine, freshwater, aquatic and/or terrestrial environments, and will be familiar, for example, with River Corridor/Habitat Survey methodologies, invertebrate sampling/identification skills and JNCC Phase 1/Habitat and NVC Surveys. Legislative knowledge and experience in assessing potential impacts on one or more UK protected faunal species would be an advantage.

Applications in writing to: Mrs E McGregor,
AERC Ltd, Tey Grove, Elm Lane, Feering,
Colchester, Essex CO5 9ES.

Ecological Impact Assessment, BIRMINGHAM, 11th April, 2002

Sue Bell, MIEEM

This was my first visit to an IEEM Spring Meeting, but I can see why the Birmingham Botanic Garden has become a favourite venue. There are not many conferences which start with a walk through a fragrant hot house to the accompaniment of wolf whistles from a Mynah bird!



Karen Regini addressing the conference

Ecological impact assessment was this year's theme. Draft guidelines for ecological assessment are currently being developed by a working group of IEEM, and the day provided the opportunity to discuss progress with these.

Formal presentations detailing different perspectives of ecological impact assessment (EcIA) set the scene for the day. Dr Joanna Treweek, a member of IEEM's working group, highlighted a number of relevant international initiatives including progress towards Strategic Impact Assessment, and ways of improving public participation in assessments. She also identified common issues which had been identified during a review of impact assessments in 15 countries.

Complementary views of the statutory approach to impact assessment were provided by representatives of three conservation agencies. Dave Batty of SNH publicised internal EIA guidance, and emphasised the importance of consulting the statutory agencies early in the development process. Rob Cameron set out English Nature's principles for staff involvement with impact assessments, and provided a personal view of recent improvements in impact assessments and where further work was required. In particular he identified the large volumes of material which are produced, the focus on protected species, a lack of clarity of the level of commitment to stated mitigation measures, and post-scheme monitoring as areas where further improvements could be made. David Parker, ex-President of IEEM, and Director of Conservation for CCW elaborated on some of the themes identified by Dave and Rob. He also indicated that some staff of CCW may be spending up to c. 90% of their time on EIA casework, and it was hoped that an agreed set of guidance such as was being developed by IEEM should help to improve the quality of assessments which are produced. He particularly highlighted the need for standardised definitions of terms.

The use of guidelines in providing clarity to developers was highlighted by Mark McLellan a consultant with Middlemarch Environmental and Green Ascent. This theme of standardisation and clarity was further emphasised by Clive Jenkins a Former Planning Inspector. He provided some useful insights into how impact assessments are interpreted at Planning Inquiries and gave useful tips on how to convey the key points. A local authority viewpoint was provided by Andrew Jones of Kent County Council. Andrew also noted that there can be difficulties arising from non-standardised use of terminology, and that the level of commitment for mitigation measures is often unclear. The presentations concluded with a panel discussion session.

The second session was devoted to consideration of the draft guidelines. "Pilot" guidelines were issued to volunteers in January 2002 (and posted on the IEEM website). Karen Regini, on behalf of the working group, provided an overview of how these had been developed, and reported on some of the written comments already received. Workshop sessions allowed participants to discuss some aspects in more detail. These included consultants.

IEEM is particularly grateful to the facilitators for the sessions – Sue Bell, Robin Buxton, Richard Graves, Andy Tasker, Graham Tucker, Stephanie Wray – without whose efforts so much could not have been achieved.

Sue Bell, President Elect of IEEM is consultant, Scott Wilson (Scotland) Ltd, Edinburgh



Speakers representing Agencies and Planning viewpoints



Workshop discussion group

Ecological Skills

Editors Note: *The editorial in the last edition of In Practice has provoked comment and interest and is also exercising the British Ecological Society. The following snippets and responses provide further food for thought.*

From Christopher Betts, MIEEM

I was very interested in the Skills Gap Editorial - something I have been hammering on about for years! I couldn't agree more with you that ecological graduates are not prepared appropriately for a career in ecological consultancy, yet that is where so many of them seek jobs. We have abandoned hope here of finding graduates who can do the practical work of Phase 1 and Phase 2 surveys, for example, and have to train them in house. As for taxonomic skills, forget it, graduates who can identify and name even the most common of our flora and fauna in English, let alone Latin, are like hen's teeth.

There is another problem that you do not mention and which causes us much concern: the lack of good written English. (ed. please see bottom of next column!) Vocabulary, spelling, expression, punctuation and the ability to employ appropriate technical language are almost invariably of a low standard in the graduates we see. That results in draft reports having to have major surgery before submission to clients rather than the few tweaks that might reasonably be expected. Much of this stems from the abysmal standards in state education in Britain. (I will now resist the temptation to dwell on that subject: I become incandescent!)

Hope this feedback is of interest - you did ask!

From a Student at Cardiff University

For the attention of the Secretariat:-

I am writing in response to the editorial article in the March issue of the IEEM bulletin (issue 35). It was concerned with the structure and content of ecology courses currently offered by academic institutes.

I am in my final year at the University of Wales, Cardiff studying for BSc Ecology and Environmental Management. It is a four year sandwich course and I spent my third year in a work placement at NERC Centre for Population Biology. During university vacations I have also had an undergraduate work placement with an environmental consultancy and have been a member of the student conservation group whilst at university. The sandwich option is a good way to make up for shortfalls in the course but is not taken by all students.

Despite this work experience and good qualifications, I have found it very difficult to find a job for when I graduate this summer. I would like to work as an ecologist, preferably in an environmental consultancy, but simply don't have the necessary skills. I have studied modules in Land use and conservation ecology, Biology of polluted freshwaters, Plant diversity, Community and population ecology, to name but a few. However, I have found that my degree has largely concentrated on ecological principles, as the editorial article remarks. We have not been given the opportunity to develop good identification skills and have had no practical experience of the basic ecological classification tools currently being used. Although theory is vital, I feel I would have benefited from a more practical approach. I agree that the majority of ecology courses are producing graduates, which are not meeting the demands of businesses and statutory agencies.

I enrolled on my degree course in good faith and believed that I would develop the necessary skills to pursue a career in ecology. However, as I have progressed in university, I have found that my degree is not really qualifying me for the type of work I want to do. It has also proved difficult to develop skills independently. There are wildlife trusts and nature reserves in the area, but visiting them regularly, while trying to maintain a balance between university work, part time work and social activities is very difficult.

I feel that many universities need to review their courses after consultation with the commercial and statutory world. It is important for graduates to have a good understanding of ecology, but I think it is also a university's responsibility to produce graduates, who have a good chance of finding work. After all most students attend university to improve their opportunities of finding a good job. I would finally just like to thank you for bringing attention to this issue, I feel it is very important that it is addressed.

Best wishes, Clare Pugh.

Linking learning to work

Presentation: Teaching Ecology in Universities, 11 April 2002

Sue Everett, MIEEM

An early and structured introduction to career possibilities in ecology and environmental management is needed, so that students can set themselves career objectives and plan the outcome and direction of their under-graduate, extra-curricular and postgraduate training.

Students need to know what sort of jobs they will be qualified for, how they can enhance their career prospects through extra-curricular activities and whether they will need any further (e.g. post-graduate) or vocational training in order to achieve their career objectives. Such an introduction may also help them plan their final year projects so that they are more applicable to their career outcome.

This introduction to careers and career development needs to be given to first year undergraduates, early in the academic year. This should preferably be a module within the tested curricula. Information on key skills required by employers, the value of professional accreditation, membership of learned societies and the role of volunteering should be provided. Involvement in the latter should be actively encouraged as experience shows it is those students who have a track record of involvement with biological recording or practical conservation work who are most attractive to prospective employers. Follow-up mentoring in Years 2 and 3 should be available to help students progress their career objectives and help those who find it difficult to decide what they want to do.

Ecology courses also need to impart some of the key competences desired of employers, which are usually sorely lacking in graduates seeking careers in ecology outside of the research field. Examples include competence in the identification and evaluation of biotopes, a sound knowledge of the principal laws and policies relevant to nature conservation and knowledge of conservation techniques for habitats and species (2).

Those seeking employment will also need basic generic competences that are not usually part of science-based courses, such as understanding contracts and specifications, health and safety, project management and accounting. These skills could be introduced as a recommended subsidiary examined subject, available to all students, whatever their main course. Professional and trade bodies could be involved in helping to develop this type of generic, but essential, learning and in creating a course module about linking ecological science learning to work.

The academic curricula on offer at undergraduate level also needs to be more flexible, allowing mix-and-match modules across related disciplines, with stated learning outcomes that can be applied to the real world.

1. The IEEM and BES Careers Handbook – Rooting for a career in ecology and environmental management?
2. Institute of Ecology and Environmental Management (IEEM). 1995. The profession of ecology and ecological management: what you need to know – Guidance on fundamental skills and competences held by professional ecologists and ecological managers (Annex A: Checklist of the knowledge and skill base for ecologists and ecological managers).

Sue Everett is a consultant and Member of the Outdoor Writers' Guild

A recent e-mailed membership enquiry!

My name is ***** and I am interested in becoming a member of the IEEM. Please could you send me the appropriate membership pack as I am a student at the moment but graduate in July therefore I am not sure if the student membership is appropriate.

The Channel Tunnel Rail Link - IEEM visit on 12th June

Joel Bateman

A small group of intrepid enthusiasts ventured down to Swanscombe in Kent to visit Britain's largest single development project. The route chosen for the CTRL follows current major transport links such as the A2/M2 and existing rail links. The ecological programme for the CTRL has involved nearly 200 separate identification studies of species with conservation importance, out of a total approaching 320 separate ecological studies. The studies have also provided valuable information on species such as the hazel dormouse, the tentacled lagoon worm and a rare plant, the grey mouse ear that only grows in two places throughout the UK. The ecological issues have been fully integrated into the costing of the project from the very beginning.



The intrepid crew in front of the Thames tunnel opening

Our day started with an introduction to the site at Swanscombe and the methods that were implemented to clear water voles from the area. The area was slowly degraded so that it was no longer favourable for the water voles. This was done by two methods: i). The reduction of shelter, cover and food supply by removing the emergent and bank vegetation within two metres of the waters edge. The water voles were guided towards a sustainable habitat either created or unaffected by the construction. ii). The odour of ferrets, water voles main predator, was spread at two metre intervals on the riverbank in the form of scat (droppings). Quite surprisingly on our tour around the site a very healthy looking water vole was spotted just 30 metres from the main construction site on a watercourse artificially made for them. So the scheme seemed to be successful.

Walking around the Swanscombe site began to give you an idea of the scale of this project but you could see that they were taking the environmental impacts seriously. There were many preventative measures surrounding machines to reduce the environmental impacts. The noise level was strictly controlled with a threshold limit of noise not to be exceeded, drip trays under all machines to prevent oil contamination and there was a gradient slope away from the watercourses occupied by the water voles to name but a few.



A man orchid

On the way round the site Mick showed us a hidden stash of man orchids a rare plant found on chalk grassland. These had been transplanted to a safe place slightly away from the main construction site.

The afternoon was full of interesting sights and brisk walks. The first of these was a look at the transplanted woodland and land bridges. 100,000 cubic metres of woodland soil was translocated to an area of 2655 hectares, out of a total 230 hectares of woodland created along the CTRL. A species mix of plantations has been designed to reflect the trees and shrubs that would have inhabited Kentish woodland. The entire stock of 1.2 million trees and shrubs will be of native UK or Kentish origin. In an area of ancient woodland SSSI located near to the translocated woodland, many dormouse nest boxes had been installed to help the local population.



A land bridge

There were two land bridges with in 500 metres of each other along the Medway stretch of the track. These were to add continuity to the created woodland on either side of the railway. Species of low growing trees and shrubs are to be planted so as not to cause adverse impacts on train timetables... "Leaves on the line". However at our time of visit only a few ash trees had established themselves. The land bridges were constructed to allow the large Kent population of hazel dormice to move either side of the railway, and interestingly deer tracks have been found on these land bridges.

The Ashenbank pond in Cobham, is a woodland pond built to replace the loss of the local Becketts pond. The pond varied in depth to allow a variety of pond life to establish. On our visit, there was an abundance of toad and frog tadpoles, and some great crested newt eggs were spotted.



A slow moving train on the CTRL

Our final destination was the location of the artificial badger sett, designed to entice badgers away from the CTRL and has apparently showed signs of habitation. The day proved interesting and all involved enjoyed themselves. We were even treated to the sight of a train running along the CTRL track, albeit very slowly.

I would like to take this opportunity to thank Mick Hall, MIEEM and Mike De Silva, MIEEM for taking the time to organise the tour of the site.

Institute News

Formal Notice of IEEM AGM

This will be held at the Britannia Hotel, Newcastle Airport at 17.30, Wednesday, 27th November 2002. All members are welcome to attend regardless of whether they are also attending the Conference.

Progress at last in the Negotiations with the other Institutions

After about 2 years of discussions it now looks as though the creation of a new co-ordinating body for the participating institutions will soon be a reality. The new body is to be called the Society for the Environment. The 11 or so bodies that have signed up to it will see their hopes become reality with the setting up of small Secretariat in the Grosvenor Estate Offices. The Secretariat will oversee the co-ordination of the responses to government consultations and promoting the concept of chartered environmentalist with the Privy Council. This is truly a major step forward and will be announced formally in the near future.

The IEEM Constitution

As reported in the last In Practice, work on this is proceeding steadily and we expect to be in a position to put the suggested changes to Council at their next meeting and also to submit the proposed new Constitution to the Charity Commissioners.

Membership Numbers

Readers of In Practice will be familiar with the regular page on new applicants and admissions to IEEM. The rate of new membership applications appears to be accelerating greatly and is now at the highest since the early days of the Institute. This is most encouraging. However, we know that there are many applications out there still waiting to be returned so keep prodding where you can.

External Affairs

Concern was expressed by many of the respondents to the 10th Anniversary Questionnaire that not enough was being achieved in promoting the external profile of the Institute. Following a number of expressions of interest, the External Affairs Committee was relaunched at a meeting on 25th June at the Linnean Society. Alex Tait, the Vice-President chaired the initial meeting pointing out that much of the external work of the Institute recently had been involved with the discussions with the other Institutions on setting up the Society for the Environment. For future meetings, Mike Barker was elected as Chairman with Nicola French as Vice Chairman. The Committee reviewed its remit and then considered how to raise the overall profile of the Institute covering topics such as the website, responses to external consultations, lobbying, the role of IEEM in Europe and The Society for the Environment. This was a very positive meeting which will hopefully result in further progress in this area. The response to external consultations was discussed at length including the need to involve the overall membership where particular areas of expertise are required.

IEEM Directory

It is now some time since the last Directory was produced and the Secretariat is now exploring how the next one might be produced. In response to indications from members it is likely that this will be an on line version available via the IEEM website. This has implications for the Membership Database which will need modification before this can be done. All members will be approached in due course about their Directory entry and the extent to which it might be used for advertising services but it may take some time before we will be in a position to proceed.

Professional Development Programme

The programme for this year is off to an excellent start with several courses

being oversubscribed. Now is the time to consider the programme for next year so if you would like to offer a course, please let the secretariat know. Equally, if you feel that there is an issue which should be considered but which you may not want to do yourself also let us know - there may be a volunteer somewhere. IEEM is once again very grateful to all those course supervisors for their efforts in making the programme a success and to Robin Buxton of the Training, Education and Career Development Committee for his efforts in bringing the programme together.

IEEM Website

Members are encouraged to visit the IEEM Website - ieem.org.uk on a regular basis. This is now regularly updated and any last minute events or changes will be displayed. The current version of the Ecological Impact analysis work is also there.

Translocation Issues

The Department of Transport has recently undertaken a wide ranging study of translocation procedures and practices. This was carried out by Penny Anderson Associates with a steering group including Will Bond, John Box, Peter Buckley and Peter Shepherd all of whom are IEEM members. This is a noteworthy example of work being done by the Institute and the Department of Transport has agreed that it should be posted on the IEEM Website. A number of members will, I am sure, find this of great interest.

Geographic Sections

The Autumn Conference will see the launch of the section in the Northeast, the second of the geographic sections. The idea has been that as the Institute has grown, there would eventually be a number of geographic sections. These would be set up in response to demand from members and where there were sufficient numbers to be viable. There have been offers to try to set up sections in the Southeast, Southwest and Northwest. Members willing to help are:

Paul Rooney, Northwest - rooney@hope.ac.uk

Peter Beale, Southwest - beale@eclipse.co.uk

Richard Graves, Southeast - richard.graves@fabermaunsell.com

Any members having an interest in attending or even better, in helping with locally arranged events please contact the names above so that we can get an idea of the level of potential support.

IEEM Scottish Section

The next Conference of the Scottish Section is to be held in Aviemore on **Friday, 20th September**. The theme is **Biological Monitoring and Surveillance** and it promises to be a most interesting conference with a good range of speakers and excursions either to the Loch Insh Reserve or the Cairngorm Funicular.

Formal Notice of Scottish Section AGM

This will be held at the Loch Insh Water Sport Centre - Aviemore at 12.45, Friday, 20th September 2002. All Scottish Section members are welcome to attend regardless of whether they are also attending the Conference.

Shadow Northeast Section

One of the reasons for holding the next 2-day Conference of the Institute in the Northeast is to launch the section there as a fully fledged section in its own right.

The programme for the rest of this year is as follows:

Bats in the Hexham Valley

Dr Veronica Howard, MIEEM

Bat watching around Prudhoe Castle and the riverside

Please come appropriately dressed to be out in the early evening!

Date 11th Sept 2002 Time 7.00pm

Venue: Tyne Riverside Country Park visitor centre car park, Prudhoe

Environmental Impact Assessment Handbook
A practical Guide for Planners, Developers and Communities.
Barbara Carroll and Trevor Turpin
ISBN: 0-7277-2781-8

An addition to the literature on the subject, the 'Environmental Impact Assessment Handbook' is an approachable and practical guide, with illustrated explanations and examples. The handbook is written from the practitioner's perspective. The handbook approach has been designed with cross-referencing and checklists, which makes the guide a valuable introduction text.

The handbook aims to:

- Present the requirements of EIA according to the UK EIA regulations in a readily usable and practical way.
- Inspire and share experience towards good EIA practice by a practical handbook format illustrated with case studies.
- Inform and guide the use of EIA early and effectively in the development design and land use planning processes
- Demonstrate the advantages of improvements in EIA practice to facilitate better informed planning decisions

It includes a review of the procedures, an introduction to addressing environmental topics in EIA, and the approach to assessing a range of development types.

Environmental Impact Assessment Handbook will be useful for planners, designers, engineer's architects, surveyors and developers, and other professionals working as project managers on development proposals. It will also be a handy guide for students and community groups. The book is priced at £40.

Available from Thomas Telford Publishing, Thomas Telford Ltd, 1 Heron Quay, London, E14 4JD. Tel: 020 7665 2464, orders@thomastelford.com

Green Parties in National Governments
Edited by Ferdinand Müller-Rommel and Thomas Poguntke
ISBN: 0-7146-5264-4 (hardback)
ISBN: 0-7146-8240-3 (paperback)

A quarter century ago green and alternative movements emerged in many European countries. Since the beginning these groups have challenged the established political parties at a local level. They were only interested in single issues such as the provision of parks and cycle tracks; they protested against urban renewal, new highways or the construction of nuclear power plants. Heavily influenced by the debates on the stationing of Cruise missiles in Western Europe, these movements launched the foundation of green parties in Western Europe. By the late 1990's Green parties had entered national governments in five countries: Finland, Italy, Germany, France and Belgium.

'Green Parties in National Governments' addresses the following questions:

- What are the political conditions under which Green parties have gained executive office?
- How do green parties behave in government?
- What is the impact of Green parties on the policy performance of the national government?
- What is the effect of participation in government on the electoral and organisational stability of the Greens?

This book will be interesting and inspiring to those who have followed green politics in Europe or would like to know the arguments and achievements of the 'greens' across the channel. Hard back version costs £42.50 and paperback cost £17.50.

Available from Frank Cass Publishers Crown House, 47 Chase side, Southgate, London or on tel: 020 8920 2100 and email: info@frankcass.com

Water wise

Good for business and good for the environment
 A new publication from the Environment Agency. Water efficiency not only has financial impact, but an environmental one as well. Although England and Wales are often considered to have a wet climate, high population density means that some parts of the country have less water available per person than parts of Africa. This publication shows the relevance and the method of employing a water management plan. This booklet is applicable to all businesses not just large water users such as conventional printers.

For more information contact the Environment Agency on tel: 01454 624 400 or www.environment-agency.gov.uk

Urbio
Urban Biodiversity and Human Nature

English Nature's Urbio publication is a very relevant booklet for the IEEM November conference on Aspects of Urban Ecology. The publication examines case studies from butterflies to corridors for wildlife.

Urbio is published three times a year by English Nature. Contact Emma Clifton from English Nature on 01733 455200 or emma.clifton@english-nature.org.uk

Green Apple Environment Awards for Environmental Best Practice.

The Green Organisation is an independent, non-political, non-activist, non-profit making group dedicated to recognising, rewarding and promoting environmental best practice among countries, companies, council and communities.

The best practice awards are presented to local authorities, commerce and industry. There are different grade: bronze, silver and gold, presented for schemes of environmental best practice.

To find out which companies have been awarded Green Apples from: www.thegreenorganisation.info

SSSIs

English Nature has published a new guideline and information booklet for Special Sites for Nature. The booklet describes the prerequisites for SSSI processes of notifying the responsibilities of the people who own the land and public responsibilities.

It is an informative text and touches briefly the management of SSSIs. Details from www.english-nature.org.uk

New Articles Needed

Articles for In Practice are always needed.

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

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

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

It is hoped to maintain future editions at 20 or 24 pages but this will be to some extent dependent on covering costs through advertising, sponsorship and other means.

A new approach to sustainability

Gallery Oldham is pioneering a new path to educating the public about sustainable development. The "Sussed" exhibition is a collection of 29 different artworks delving into many different issues surrounding sustainability including farming, genetics, globalisation, biodiversity, altruism amongst many others.

The exhibition features many forms of art from wall painting through to sculpture; all provoke thought on social and environmental aspirations and responsibilities. "Our biggest challenge in this new century is to take an idea that seems abstract - sustainable development - and turn it into a daily reality for all the worlds people" Kofi Annan, Secretary General of United Nations. The curator of this exhibition Bruce Langridge was also the co-editor of Oldham's Local Agenda 21.

Also at the gallery are role-play computer games involving decisions to be made on particular issues on the theme of sustainability, which should boost the imagination of today's 'computer youth'. There is an online version of this at www.sussed-exhibition.co.uk, which is well worth a look.

Financial bonus for people and wildlife

English Nature is soon to launch their biggest grant scheme yet. Everyone from community groups through to local councils will be eligible for a portion of the £10 million's worth of support.

The money comes from the Aggregates Levy Sustainability Fund, which was announced in the annual budget, in April. The money raised from tax on every tonne of rock taken from quarries, will be used to benefit local communities to boost biodiversity and geological conservation around quarries from Kent to Cumbria.

The first of the grants will be up to a maximum of £350,000 and could be awarded as early as July. Projects from woodland restoration, through to creating reed beds and heath land.

The money is only available until March 2004, Sir Martin Doughty, chair of English Nature, is encouraging local groups to contact English Nature as soon as possible.

Details from www.english-nature.org.uk

Sad whale tale

A sei Whale carcass was found stranded at the head of Morecambe Bay recently. This is only the fourteenth sighting of this species in British waters since 1900. Many local people visited this thirteen-metre spectacle. The cow was seen with another sei whale just off the West Cumbria coast a few days before, she died of natural causes. It was decided to remove the carcass before the odour drove off tourists, but the bones are to be displayed at the Fleetwood Museum.

Butterfly Conservation expansion

Butterfly Conservation is a charity dedicated to the conservation of butterflies and moth species and habitats. Butterfly Conservation has been given a welcomed cash boost from the CCW to help conserve nine species of endangered butterfly including the high brown fritillary and fourteen species of moth including the belted beauty that are at risk of extinction in Wales. Butterfly conservation holds 59 workshops though out the year on butterfly species, habitats and conservation and also give advise to farmers who have these butterflies and moths on their land.

Details from Butterfly Conservation 01792 642972

Proyecto Hapalopsittaca

The BP conservation Programme has given out awards to many of the projects it supports. The study of two endangered species of parrot in the oak forests of the Columbian Andes were awarded Gold. These two enigmatic species are virtually unknown in the wild and are restricted to threatened mountain ecosystems of the Northern Andes.

Proyecto Hapalopsittaca has been established to quantify population status and produce a threat appraisal for Rusty faced parrot and the Azure winged parrot.

Details from Jorge Velasques (Project Leader) hapalopsittaca@proaves.org or visit www.Proaves.org/hapalop.htm



Winston Churchill Travelling Fellowships

These are available to applicants of any age and from all walks of life irrespective of academic or professional qualifications. If you are a British citizen and have an individual project you want to undertake overseas, you may wish to apply for a Fellowship. One of the categories for 2003 is 'Conservation and the Environment'. The closing date is 30th October, 2002. Grants usually cover a stay overseas of 4 - 8 weeks. For outline applications visit the website: www.wcmt.org.uk

Winchester

ecologists and herpetologists

Mott MacDonald is a leading engineering and management consultancy engaged in a wide range of projects and disciplines, employing 7000 staff world-wide. As part of our highways divisions' continued development, we currently have vacancies within our landscape and ecology section.

ecologists – responsible for providing ecological survey, assessment and impact mitigation expertise for a range of projects. You'll have a first degree and preferably an MSc in Ecology or a closely related discipline. In addition at least two years relevant experience will be required – knowledge of highways related projects would be helpful but not essential.

herpetologists – responsible for expert input to a wide range of projects to ensure that all legal obligations are satisfied. You'll hold relevant professional qualifications and licenses, and preferably be able to offer expertise in related specialist areas such as other groups of protected species and habitat assessment.

These positions may include work in other parts of the UK involving short periods away. You'll need a full driving license, computer literacy and a willingness to undertake all activities associated with a modern, professional company. These are excellent opportunities to develop a career within a friendly team environment.

If you're interested please send a CV, an indication of salary expectations and a covering letter to Gareth Evans at:

Mott MacDonald
Capital House
48-52 Andover Road
Winchester
Hampshire SO32 7BH

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e gje@nm-winc.mottmac.com
t 01962 893100

The Human Individual and Community in the Conservation and Sustainable Use of Biological Resources

The Darwin Initiative Lecture given on 14th March by Tewelde Berhan Gebre Egziabher (Ato Tewelde) from Ethiopia, winner of the Right Livelihood Award for leading the negotiations on behalf of developing countries in the Cartagena Protocol on Biosafety Protocol on Biosafety. The speech delved deep into the philosophy behind the use of biological resources and their relevance to poorer local communities. Ato Tewelde compared the differences between western state approaches and philosophies to those of local poor communities found through out the third world.

Ato Tewelde stressed that the poor "South's" methods of farming were being corrupted by the "North's" (western) approach: "The land is corrupted: it has acquired the taste for bribery. We have to bribe it with chemical fertilizer in order to produce anything.' This is the way that globalization from the rich corporate North is entering into community agriculture in the poor South."

Ato Tewelde also talked about the irrelevance of western farming methods, the promotion of input dependence thus their lack of sustainability and their irrelevance to poor local communities in Africa: "Assuming that these purchased replacement agroecosystems can achieve the same level of homeostasis as the natural ones, there would be an objection to them: why pay cash when you can take the same free from nature by merely using your labour? And when rural labour is so plentiful? And with virtually no alternative employment? The suppliers of these replacement agro ecosystem components are from industrialized countries, it is clear that, irrespective of

labour consideration, the Southern farmer is getting into dangerous dependency." Ato Tewelde went on to dismiss claims of the significance of genetically modified crops to the third world: "If transgenic crops can grow in an environment under destruction, it were bad enough since it would lull us into accepting degeneration until it is too late to reverse it. As it is, so far, genetically engineered crops have been used only to put more disruptive factors into the agroecosystem: poison to invertebrate animals in the case of Bt transgenic crops, and universal poison to other plants in the case of herbicide tolerant transgenic crops. The claim that genetic engineering will feed the South is irresponsible. It is not lack of good seed that is starving the South; it is global structural defects..."

"... There has not been one transgenic crop variety that has been statistically compared to the best non-transgenic variety for yield in any place. The claim for GM crops raising yields in the South is, therefore, a mere hype."

Ato Tewelde praised Mr. Blair's attitude to the south and his support of sustainable local communities: "...uplifting it is to hear Mr. Tony Blair talking lately so sympathetically of the plight of the local community-based south, especially of Africa"

This speech was powerful, the message clear and refreshing. It graphically portrayed the exploitation of the Africa and the dangers of imposing western philosophies of agriculture and capitalism onto communities that could not sustainably manage these methods.

ATKINS ENVIRONMENT

ATKINS

Atkins is a multi-discipline organisation providing professional and technical services to a variety of clients in the public and private sector.

Senior & Assistant Ecologists

We are looking for Senior and Assistant Ecologists to join the Ecology and Environmental Assessment team of one of the UK's largest consultancies. We work for private clients and local and national government, including the Highways Agency, Environment Agency, Countryside Agency and English Nature. We therefore offer a varied workload, as part of both ecological and multi-discipline teams, in a number of sectors including transport, regeneration, commercial and industrial, power, water, oil and gas, both in the UK and overseas.

Opportunities are available countrywide including Epsom, Bristol, Birmingham, East Anglia, Leeds, Manchester and Warrington.

Candidates for the Assistant Ecologist posts should have a degree in a biological subject with two - three years' experience in ecological survey and assessment. In particular, applicants should have proven experience with NVC and Phase 1 and 2 habitat survey techniques and preferably skills in survey for one or more protected animal species. Good report writing skills are essential and a working knowledge of EIA procedures would be an advantage.

Candidates for the Senior Ecologist posts should have similar qualifications and skills and at least five years' experience. Working knowledge of statistical analysis packages would be an advantage.

Principal Environmental Consultants

We are also looking for Principal Environmental Consultants to work on Natural Resource Planning and Management Projects and Environmental Assessments in the UK and overseas, especially candidates with international experience of working for development agencies and/or in the Oil and Gas sector.

Candidates for the Principal Environmental Consultant posts should have a first or higher degree in a natural or environmental science and at least 10 years' experience, including work on international projects. Positions are also available for candidates with an engineering background and experience of Health Safety and Environmental Impact Assessments (HSEIAs). You will be UK-based, preferably in Epsom, but must be willing to work overseas on short to medium term assignments.

To apply, please send your CV, specifying which post/location you are interested in and your current salary, to Natasha Stringfellow, Human Resources, Atkins, Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW, or email: environment.jobs@atkinsglobal.com quoting reference L50.

Closing date: 19th July 2002.

www.atkinsglobal.com committed to equal opportunities

Prospective members of IEEM

The following people have applied for membership of IEEM. If any existing member has any good reason to object to someone being admitted to the Institute, especially if this relates to compliance with the Code of Professional Conduct, they must inform the Executive Director by telephone or letter before 7th August 2002. Any communications will be handled discretely. The decision on admission is usually taken by the Membership Admissions Committee under delegated authority from Council but may be taken by Council itself.

Name	Applied for Full (F) or Associate(A)		
Miss Victoria A.	Allen		A
Miss Victoria M.	Allen		A
Miss Elizabeth	Baillie		A
Mr Richard C.	Bennett		F
Dr Jane A.	Burch		A
Dr Helen J.	Byron		A
Mr James	Calow		F
Mr Rory T.	Canavan		F
Mr Ian M.	Cappitt		F
Miss Clare	Cheeseman		A
Dr Martin	Christmas		F
Dr Matthew J.	Clarke		F
Ms Fiona E.	Corby		F
Dr Matthew J.R.	Cowley		F
Miss Lisa A.	Curtis		A
Mrs Dorothy M.	Dahl		A
Mr Graham S.	Davison		A
Miss Michelle J.	Dear		A
Miss Louise	Denning		A
Miss Judy A.	England		F
Mrs Alison M.	Espie		F
Mr Derek	Finnie		F
Mr Sean P.	Flynn		A
Mr Martin P.	Fuller		F
Ms Isobel M.	Girvan		F
Mr Gary	Grant		F
Mr Giles M.	Groome		F
Ms Lorna	Hall		A
Dr Jeremy M.	Hills		F
Mr Paul	Holton		F
Miss Rachel L.	Hoskin		A
Miss Pamela J.	Hudson		A
Mr Adam M J	Ingleby		F
Mr Russell A.	Lisk		A
Mr Christopher J.	Lowe		F
Mr Benjamin C.	Lutyens		A
Miss Heather L.	Mansfield		A
Mr Roger K.	Martindale		F
Mrs Pauline	Michell		A
Mr Jol	Mitchell		F
Mr Stuart D.	Moodie		F
Dr Evelyn A.	Moorkens		F
Miss Samantha	Munslow		A
Dr Laszlo	Nagy		F
Mr William	O'Connor		F
Mr Micheal R.	Outhwaite		F
Miss Jennifer	Park		A
Mr Stephen	Parnwell		A
Mr Christopher R.	Parry		F
Mr Julian R.	Perrett		F
Mr Philip J.	Pope		F
Miss Hannah J.	Powell		A
Mr Neil T.	Punchard		F
Mr Martin	Schofield		A
Miss Caroline J.	Soubry		A
Mr Guy	Stone		A
Mr Peter J.	Stronach		A
Mr Clifford C.	Stuckey		F
Ms Sofie A.	Swindlehurst		F
Mr Philip B.L.	Tamuno		A
Miss Diane	Taylor		A
Mr Hayden	Torr		A
Miss Charlotte C.	Webbon		A
Mr John P.	Wenman		A
Miss Nikki	West		A
Mr Andrew R.	Westgarth		F
Mr Steven M.	Williams		F
Miss Sandie D.	Wilson		A
Mr Stuart F.	Wilson		F
Mr Michael D.	Wood		A

New Admissions to IEEM

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

Name	Grade admitted	
Mr Damian	Aubrey	A
Mrs Sharon	Bayne	F
Mr Tom A.	Billingham	F
Mr Matthew J.	Bowell	F
Mr Paul F.	Burgess	F
Mr Philip D.	Clark	F
Mr Matthew J.	Clegg	A
Mr Iain N.	Corbyn	F
Mrs Stephanie V.L.	Cramer	A
Mr Jonathan R.	Cranfield	A
Mr Ian J.	Crowe	F
Mrs Helen J.	d'Ayala	F
Ms Milena	de Jongh	F
Mr Charles	Dewhurst	A
Miss Kathryn J.	Doughty	F
Mr Neville J.R.	Drummond- Makan	A
Mr Richard C.	Dyer	F
Mr Nigel T.	Dykes	F
Miss Helen L.	Eastman	A
Miss Celina	Gio-Batta	A
Mr Phil	Green	F
Mr Andrew S.	Guy	F
Mr Kevin	Harrington	A
Mr Andrew L.	Harrison	A
Mr Jonathan C.	Hart-Woods	F
Miss Pamela	Hill	A
Miss Caroline	Hillier	A
Dr Stephen	Holloway	F
Mr Mark A.	Jackson	A
Mr Geoffrey A.	Jones	F
Mr Mark J.	Jones	F
Mr Scott M.	Knowles	A
Mr Nick W.	Lutt	F
Miss Louise C.	Mapstone	A
Mr Ryan	Mellor	F
Mr John D.	Moorcroft	F
Ms Linda	Moore	F
Mr Philip L.	Morgan	A
Mr Peter	Oakenfull	A
Mr Tim	Palmer	A
Miss Anita	Parry	F
Miss Gayle A.	Pearson	F
Mr Ellen	Pisolkar	F
Mr David J.	Pollard	A
Dr Robert	Rowlands	A
Mr Stuart A.	Shaw	F
Mr Jonathan A.	Smith	F
Ms Caroline E.	Steel	F
Mr Robin	Stephan	A
Miss Julie	Stubbs	A
Mr David R.M.	Sykes	F
Mrs Mary J.	Trump	F
Dr Alexandra	van der Sleenen	F
Miss Sarah M.	Wallbank	F
Mr Richard	Wardle	A
Ms Clare L.	Williams	F
Ms Juliette K.	Young	A

Upgrades

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

Mr Ian Bond, Miss Caroline R. Arkley, Miss Claire Cornish, Mr Christopher Damant, Mr Roger S. Griffin, Ms Nicola Hawkeswood, Mr Nicholas Owen, Miss Gail Quartly-Bishop, Miss Victoria Russell, Mr Derek W Warner, Mr Simon J. Weymouth, Mr Ben Wild, Mr Michael J. Woods

Students

IEEM is pleased to welcome the following as new student members: Mr Daniel Ahern, Mr Andrew Bailey, Miss Angela K. Bond, Mr Stephen Byrne, Mr Barry Embling, Miss Kirsty E. Jones, Mrs Margaret A. Kaye, Mr William T. Matier, Miss Claire May-Miller, Mr Robert C. Morley, Miss Frances S. Orr, Mr Stewart Parsons, Mr Jonathan A. Rhodes, Miss Claire A. Rogers, Miss Kirsty Stocks, Miss Anna Swift, Miss Susan J. Taylor, Miss Sarah Wilson

The Course programmes for 2002 for the Centre for Alternative Technology, The Field Studies Council, Losehill Hall, Plas Tan-y-Bwlch and BTCV are all now available. Each offers a wide range of courses that might be of interest to IEEM members. Information from: **Centre for Alternative Technology:** Further details about each course can be obtained from Joan Randle, Tel: 01654 703743, Fax: 01654 703605, E-mail: joan@cateducation.demon.co.uk.

Field Studies Council: For a copy of the FSC Courses 2002 brochure, contact FSC head Office, Preston Montford, Montford bridge, Shrewsbury, Shropshire, SY4 1HW. Tel: 01743 850 674, Fax: 01743 850 178, E-mail fsc.headoffice@ukonline.co.uk.

Losehill Hall: Details from Losehill Hall, Peak District National Park Centre, Castleton, Hope Valley, Derbyshire S33 8WB Tel: 01433 620373, Fax: 01433 620346, E-mail: training@losehill.u-net.com.

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

BTCV Courses: - practically based. Details from: BTCV Training Programmes Unit, Red House, Hill Lane, Great Barr, Birmingham B43 6LZ. Tel: 0121 358 2155, Fax: 0121 358 2194, E-mail: ETN@ukgateway.net

8-10 July. Science for Plant Conservation - An International Conference for Botanical Gardens. Dublin.

Details from Mary Foody, Email: mfoody@tcd.ie or tel: +353 1608 1274

9-11 July. Micro Science International Conference and Exhibition. Focusing on all the latest microscopy and imaging techniques. Oxford.

Details Tel: 01865 248768. Email: info@rms.org.uk

14-18 July. Joint Conference of the Society for conservation Biology and the BES. Conservation Ecology Group. University of Kent, Canterbury. Details from, Andrew Pullin, email: a.s.pullin@bham.ac.uk.

17 July. Field Margins - Establishment, management and wildlife benefits. Little Wittenham Oxfordshire. IEEM Professional Development Programme: Details from the IEEM office or on the website.

23 July Neglected Freshwater Flora and Fauna: What Do All The Species Do? Joint conference of the Freshwater Biological Society and the Aquatic Ecology Group. Manchester.

Details from Sarah Lee, email: sage@fba.org.uk.

17-21 August. 4th International Symposium on Ecosystem Behavior. University of Reading.

Details from Dr. Hanna Prior, email: h.prior@reading.ac.uk or tel: 0118 975 5865

4 September. Grasshoppers and Crickets. Wicken Fen, Cambridgeshire. IEEM Professional Development Programme. Detail from the IEEM office

5-8 September Butterfly Conservation's 4th International Symposium - Landscape and Lepidoptera Conservation. Lancaster University.

Details from: Butterfly Conservation, Tel: 01929 400209, Fax: 0192940210 Email: info@butterfly-conservation.org

9-11 September. GMO's - Ecological Dimensions. Warwick.

Details from: Mrs C. Millman, carol.aab@hri.ac.uk or tel 01789 470234.

10-13 September. 11th IALE Conference. Avian Landscape Ecology: Pure and Applied Issues in the Large-Scale Ecology of Birds. University of East Anglia.

Details from: Dan Chamberlain, e-mail dan.chamberlain@bto.org or from IALE web site: www.iale.org.uk/avian1.html

11 September. British Ecological Society Annual Meeting. Manchester Metropolitan University. Title TBA. The British Ecological Society.

Details from Tel: 02088719797 or Email: general@ecology.demon.co.uk

16-17 September. University of Lancaster. Modular short courses for professionals. Exploiting the leaf, Atmosphere interface.

Details from www.Lancs.ac.uk/depts/ps or tel: 01524 592784

18-19 September. Restoration of Replanted Ancient Woodland.

University of Warwick.

Details from Richard Smithers email: richardsmithers@woodland-trust.org.uk

20 September. IEEM Scottish Section Conference and AGM. Biological Monitoring and Surveillance. Loch Insh Water Sports Centre. Aviemore.

Details from Julie Dewar julie.dewar@edinburgh.gov.uk or from the website

25 September. Executing Environmental Projects on the Ground. Poole area, Dorset. IEEM Professional Development Programme. Details from IEEM office.

3 October. Making Management Plans That Work For You. Merseyside. IEEM Professional Development Programme. Details from IEEM office.

16 October. Environmental Education and Interpretation Pitlochry. IEEM Professional Development Programme. Details from IEEM office.

17 October. Earthwatch Europe Lecture. The Earthwatch Balloon Debate: Threatened Habitats.

Details from: Earthwatch institute Europe email: info@earthwatch.org.uk

22-23 October. The Environmental Conference. National Agricultural Centre, Warwickshire.

Detail from The Environment Agency Press office: Tel: 02078638710 or www.environment-agency.gov.uk/aboutus

22-24 October. Sustainable Energy EXPO. Olympia, London. Websites: www.sustainable-expo.org or www.energy-expo.org, Tel: 02079155171

23 October. Stakeholder Analysis. Telford area. IEEM Professional Development Programme. Details from IEEM office.

6-9 November. International Conference, Nature and People – conservation and management in the mountains of Northern Europe.

Scottish Natural Heritage. Pitlochry. Details from Helen Forster tel: 0131 446 2420 or email: Helen.forster@snh.gov.uk7

27-28 November. IEEM Annual Conference and AGM. Aspects of Urban Ecology. Location: Newcastle Airport. Britannia Hotel. Details and Booking Forms available soon on the IEEM website or from IEEM Office.