



Dormice on Road Verges

Dr Lincoln Garland, MIEEM &
Michael Woods, CEnv, MIEEM

Introduction

Dormice *Muscardinus avellanarius* are primarily arboreal, typically inhabiting woodland, hedgerow and scrub habitat. They are naturally scarce due to low population densities and recruitment, and specialist habitat requirements (Morris, 2004). For these reasons they are particularly vulnerable to habitat loss and fragmentation resulting from agricultural change and other developments. They are now extinct in seven counties of England and their distribution has declined by more than a half during the twentieth century (Bright et al., 1996). Due to its vulnerable conservation status, the dormouse is a UK Biodiversity Action Plan (BAP) Priority species and is a fully protected species under

the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and the Conservation (Natural Habitats &c.) Regulations 1994.

Road developments, in particular, are blamed for the severance of hedgerows and woodland, fragmenting dormouse populations and inhibiting their dispersal (Morris, 2004). On the other hand, the total area of road verge habitat in Britain was estimated in the 1970s to be 212,000 ha (Way, 1977), approximately 1% of the land area. This amounts to a linear area of grassland, scrub and trees approximately the size of Berkshire (The Wildlife Trusts, undated). Roadside plantation and scrub might therefore provide important permanent habitat for dormice and also a means of dispersal between populations that are on the same side of the road. For these reasons the first part of this paper investigates the ecological function of verge habitat along motorways and trunk roads for dormice.

The dormouse is also a Highways Agency (HA) BAP Priority species. Despite this, few highway schemes have considered the dormouse fully due to limited data on their distribution and a lack of understanding of the variety of habitats they utilise (HA et al., 2001). Detailed advice on dormouse mitigation, in relation to new roads and major road



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IEEM Office: 45, Southgate Street, Winchester, Hampshire, SO23 9EH.

Tel: 01962 868626, Fax/Ans: 01962 868625.

Email: enquiries@ieem.demon.co.uk

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G8 Again

The papers in the coming weeks are certain to feature the G8 summit, being held at the Gleneagles Hotel, near Auchterarder. It could be a momentous occasion and there could be real environmental benefits – but have we heard that before?

As editor of In Practice, I sometimes get invited to events as a journalist. Now seems the time to report on my excursion to the meeting of the Environment and Development Ministers of the G8 Countries at Breadsall Priory near Derby – also a golf course.

An experience it certainly was – but in many ways very unsatisfactory. Security was tight to say the least – 3 layers of barriers, hundreds of police and all geared up to face the protesters who never materialised. As reporters, we were 'holed' up the whole time in the clubhouse. There was no chance to see any of the proceedings and precious little opportunity for any interviews. Not surprisingly, reporting of the event was muted! Environmental correspondents for the national newspapers who were there, tended to report on the security issues in the absence of anything else. But there were some positive outcomes and the UK government certainly deserved marks for trying. On the impact of climate change on Africa, Ministers:

- noted that African countries are particularly vulnerable to climate variability and climate change and, like many developing countries, are already experiencing more dangerous climate effects;
- discussed the urgent need to assist Africa to reduce vulnerability by building resilience to climate variability and by developing capacity to adapt to climate change; and
- committed to supporting the need for an effective international response to build scientific capacity and integrate measures to address the impact of climate change in international development assistance and national development plans.

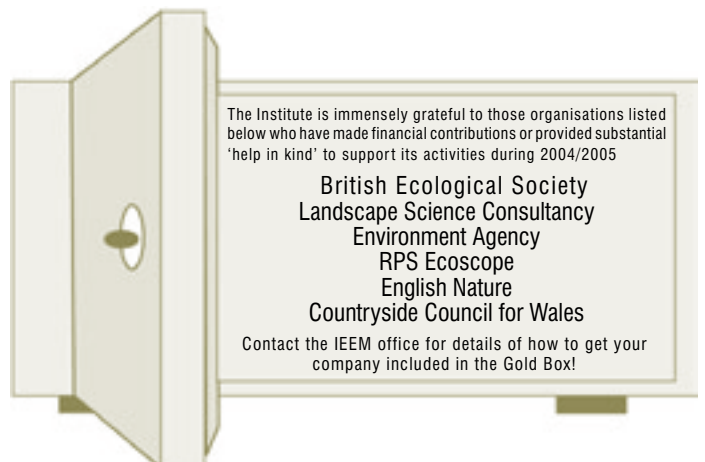
On illegal logging, Ministers agreed to tackle both the supply of and demand for illegal timber by:

- taking steps to halt the import and marketing of illegally logged timber, for example through border control and voluntary bilateral agreements;
- doing more to support developing countries' own efforts to enforce forest law and improve governance;
- using government procurement to ensure that governments do not contribute to the problem of illegal logging; and
- reviewing progress on these commitments next year.

In addition to the agreed statement there were some positive practical steps agreed by the British Government – a further £100K towards regional predictions of climate change for Africa and £400K over the next three years towards a new multi-country initiative on advancing knowledge, capacity and networks in support of climate change in Africa. DEFRA is also granted £1 million for forestry biodiversity projects under the Darwin Initiative.

If Bob Geldof and other ageing performers can shame world leaders into more positive action it must be a good thing. But the vibes from the other side of the Atlantic are not good. I await the news but – another day in a golf course club house – no thanks!

Jim Thompson



improvements, is provided in the Design Manual for Roads and Bridges (HA et al., 2001). However, only limited specific advice is provided in the case of minor roadside tree and shrub clearance resulting from routine soft estate management, e.g. cutting to maintain sight lines, and minor roadside works such as cabling. Both activities could result in unlawful disturbance and fatalities of dormice, and also fragmentation of their habitat. Consequently, the HA's Managing Agent for motorways/trunk roads in south-west England (Area 2), has undertaken a number of dormouse surveys along the M5, M4 and A303 in relation to these activities, and also HA BAP objectives (HA, 2002). Drawing on this experience, this paper also provides detailed mitigation advice in relation to dormice and relatively minor roadside activities.

Methods

Survey Protocol

Ecologists carried out dormouse surveys along the M5, M4 and A303 in 2004/05. Surveys involved erecting dormouse nest tubes in scrub and plantation, and where hazel was present, checking fallen hazel nut shells for the distinctive gnaw marks of dormice. Surveyors checking dormouse tubes had English Nature dormouse survey licences or were accredited agents to the licence holders. Local Biological Record Centres in the region were also contacted for dormouse records within 500 m of each road.

Habitat Size Estimate

When estimating the size of suitable habitat available to each dormouse population, the area of contiguous woodland, broadleaf plantation, mature hedgerow and scrub (including bramble) on the road verge and on adjacent land was approximately calculated. In a few cases a habitat size range is given, the maximum estimate also including suitable habitat in the near vicinity but not directly connected by trees and shrubs (gaps no greater than 5 m); and connecting sub-optimal habitat, such as roadside spindly ash woodland with limited shrub understorey.

Population Estimate

A mark and recapture study is needed to provide the best estimate of dormouse abundance at a site. However, population size can be estimated on the basis of habitat size and quality. As an approximate guide 4-10 adults plus associated juveniles may be expected within 1 ha of optimal habitat, which is defined as diverse deciduous woodland with abundant shrub understorey (P. Bright, pers. comm.).

A number of the sites were relatively close to one another but were considered distinct as they were separated by inhospitable habitat, e.g. a motorway or long section (>250 m) of predominantly grassy verge habitat.

Connectivity

How well each site was connected to suitable habitat in the local area was subjectively categorised as 'reasonable' or 'poor'. Sites were considered to have reasonable connectivity if they were linked to other sizeable woodlands or roadside plantation, by coniferous woodland (including some broadleaved trees), relatively unbroken hedgerows or narrow strips of contiguous roadside scrub. Sites with poor connectivity were either isolated by roads or only linked to other suitable habitat by gappy hedgerows or rough grassland/patchy scrub habitat (on road verges).

Results

Evidence of dormice was found at eight sites along the M5, M4 and A303. These sites are described in Table 1. The size of suitable habitat

available to each dormouse population ranged from 1 ha to 20 ha and on average was 4.8 ha. On average road verge habitat represented 45% of each population's available habitat. In three cases, the road verge was estimated to amount to between 60-100% of available suitable habitat. On average 19-49 dormice were estimated to be present at each site.

Site number	Location	Habitat description	Total size of dormouse habitat	Proportion of habitat on verge	Population estimate (verge and adjacent habitat)	Connectivity to other suitable habitat
Site 1	M4 West Berkshire	Predominantly old woodland, including abundant hazel coppice. Connecting roadside scrub and plantation.	4.7-5.1 ha	15-28%	19-51	Poor
Site 2	M4 West Berkshire	Roadside plantation and scrub habitat. Very limited hazel	0.8-1.2 ha	100%	3-12	Poor
Site 3	M4 West Berkshire	Roadside plantation and scrub habitat. Very abundant hazel.	1.3 ha	100%*	5-13	Reasonable
Site 4	M4 West Berkshire	Predominantly broadleaf and mixed woodland. Overgrown hedgerows extend from woodland and connect to roadside plantation and scrub habitat. Very abundant hazel.	5.0 ha	37%	20-50	Reasonable
Site 5	M5 Somerset	Predominantly roadside plantation and scrub habitat. Connecting stream with scrub covered banksides. Limited hazel.	1.7-1.9 ha	60%	7-19	Poor
Site 6	A303 Somerset	Predominantly old woodland, including abundant hazel coppice. Connecting roadside plantation and scrub.	20 ha	2%	80-200	Reasonable
Site 7	A303 Somerset	Predominantly old woodland, including abundant hazel coppice. Connecting roadside plantation and scrub.	3 ha	15%	12-30	Reasonable
Site 8	A303 Wiltshire	Predominantly old woodland, including abundant hazel coppice. Connecting roadside plantation and scrub.	1.7 ha	23%	7-17	Reasonable
All sites			Mean 4.8 ha	Mean 45%	Mean 19-49	

* - the size of the habitat available to the dormice at Site 3 might have been larger if the population was also utilising the sub-optimal coniferous plantation, fringed by broadleaf species, which connected to the verge at one end

Table 1. Description of dormouse sites recorded on the M5, M4 and A303

Discussion

Road Verges as Dormouse Habitat

Seven of the eight dormouse sites described in the present study were previously unknown, which supports the view that dormice are under-recorded in many areas (Eden & Eden, 1999) and perhaps in particular along road verges (HA et al., 2001).

Dormice are strongly associated with managed ancient woodlands

(Bright, 1996). However, dormice have also been found in a range of other habitats such as patchy scrub, continuous gorse, coniferous plantation, reed beds, heathland and culm grassland (Eden & Eden, 1999; Chanin & Woods, 2003), although the relative importance of such habitats has yet to be assessed in detail (HA et al., 2001). It is not therefore surprising that dormice also inhabit relatively young roadside plantation/scrub, particularly if sites are well connected to old managed woodlands. Roadside plantations usually consist of a wide variety of different trees and shrubs, often including hazel *Corylus avellana*, the fruit of which can be an important food item for dormice. Such diversity is important for dormice in providing a sequence of nectar, mast and insect-rich foods during the changing seasons (Morris, 2004). Bramble *Rubus fruticosus* agg. is also very abundant along road verges, and because it flowers and fruits over a long period, is a key source of food for dormice (Hurrell & McIntosh, 1984; Bright et al., 1996; Eden & Eden, 1999).

Given the relatively small scale of the study and the fact that seven dormouse populations were discovered, roadside plantation and scrub might thus constitute an important component in the habitat of many other dormouse populations. In the case of Sites 2, 3 and 5, three of the four smallest sites, the majority of suitable available habitat was on the road verge. Evidence of dormouse presence at Sites 2 and 5 might have been a consequence of dispersing juveniles rather than a resident population. No dormouse tubes were erected at these two sites and evidence of dormouse presence was found from only a small number of dormouse gnawed hazel nut shells, concentrated around the limited hazel that was present. Nevertheless, Site 5 was on the edge of the Blackdown Hills in Somerset, where examples of dormice inhabiting small recently established woodlands are not uncommon (Bright, 1996). There are also many examples of dormouse populations in sites that include little or no hazel (Eden & Eden, 1999; Chanin & Woods, 2003)

At Site 3, connectivity and the quality of the habitat was better than at Sites 2 and 5. Hazel was abundant and large numbers of dormouse gnawed nuts were found at numerous locations. For these reasons it can be more confidently asserted that a resident population was present.

Viability Of Dormouse Populations

It is estimated that at least 20 ha of optimal habitat is required to support a viable dormouse population in the long term, although smaller areas can be viable if well connected to other suitable sites (Bright et al., 1994). Sites with less than 20 animals are also thought to be vulnerable to extinction (Morris, 2004). In the present study, only Site 6 included 20 ha of suitable habitat. Although the quality of available habitat at most sites was good, with a variety of interlocking trees/shrubs, due to their small sizes most of the populations could be vulnerable to extinction. Such sites probably support sink populations rather than source populations. A source population is defined as a net exporter of individuals, whereas a sink population is dependent on a net import of individuals. However, it is difficult to prove evidence of extinction and recolonisation, as this can usually only be detected over decades (Bright, 1996). Alternatively, dormice might occur at higher densities and/or be viable in smaller habitats than was previously thought, although the present study does not include the necessary data to test these hypotheses.

Sites 4 and 7 were among the larger sites found and were reasonably well connected to other suitable habitat, and so probably include more

viable populations than most of the other sites. Although Site 1 was 5.1 ha in size and included good quality habitat, it was isolated from other suitable habitat by the M4, 'B' roads on two sides, and a wide lane on the other side. There were no other woodlands within this road-enclosed area and hedgerows connecting to the site were gappy, further restricting dormouse movement and so the viability of the population.

Dormouse Dispersal In A Fragmented Landscape

Dormice are very reluctant to cross small gaps in hedgerows and woodland within their established home range (Bright, 1998) and continuous arboreal links are considered vital for dormouse dispersal and the maintenance of dormouse distribution on a regional scale (Bright, 1996). Nevertheless, dormice can cross small gaps in hedgerows and woodland (Bright, 1998) and have been recorded crossing open areas as large as 500 m during dispersal (Büchner, 1998). Bright (1998) has shown that dormice translocated into a woodpile refuge in a grass field, were capable of rapid terrestrial movement across the field toward adjacent hedgerows. Until recently dormice were only known to cross single-track roads (HA et al. 2001), although a recent survey along the A30 dual carriageway in Cornwall found dormice inhabiting broadleaf plantation in the central reservation (L. Sadler, pers. comm.).

In Dorset, dormice have been found in hedgerow habitat with no significant areas of woodland within 2-3 km, and also in coastal scrub with very poor arboreal connectivity to other suitable habitat (Eden & Eden, 1999). In the present study, half of the sites were not adjacent to old woodland habitat. Although two of these sites, Sites 3 and 4, were well connected to old hedgerows with abundant hazel and conifer/mixed woodland, in the case of Sites 2 and 5, connectivity to local woodlands and overgrown hedgerows was poor. Given that the roadside plantation/scrub habitat was relatively young, approximately 30 years old, dormice appear to have colonised these seemingly isolated sites recently and are not relic populations (assuming the evidence of dormouse presence was not from dispersing individuals). An assessment of the local landscape suggests that dormice colonised Site 2 from an established population 1 km away (Site 1). In order to reach Site 2, dormice would need to have travelled partly at ground level, crossing a 'B' road and a 250 m section of grassy verge with only patchy scrub. This assumes, however, that there has been no major change in landuse between the time of colonisation and time of survey.

Mitigation, Compensation And Habitat Enhancement For Dormice On Road Verges

The HA Species Action Plan objectives for dormice (HA, 2002) include commitments to:

- Avoid impacts of new road schemes or improvements on dormice and their habitats.
- Mitigate unavoidable impacts on dormice and/or their habitats.
- Develop greater knowledge of the distribution of dormice on the soft estate.

Guidance on dormouse mitigation in relation to substantial habitat loss resulting from new roads or road widening is included in the Design Manual for Roads and Bridges (HA et al., 2001). However, this paper provides below, detailed mitigation advice in relation to more limited tree and shrub loss resulting from routine soft estate management, e.g. to retain driver sight-lines, and minor verge works such as cabling close to the hard shoulder. Minor clearance is defined in this paper as 'no severance of dormouse habitat, and tree/shrub loss not exceeding 5% of available suitable habitat'.

Where To Survey

Within the natural range of the dormouse, it is recommended that road verge surveys should be undertaken in:

- a) Contiguous roadside plantation and scrub 1 ha or above in size, even where poorly connected to local woodland (e.g. where arboreal routes are severed by gappy hedgerows, patchy scrub and minor roads), providing there are dormouse records in the local area or potentially good dormouse habitat.
- b) Roadside scrub and plantation less than 1 ha in size where directly or reasonably connected (limited gaps in arboreal connectivity) to known or potentially good dormouse habitat.
- c) If hazel is limited, absent or not fruiting, and so it is not possible to carry out a detailed search for dormouse gnawed hazel nut shells, dormouse nest tubes should be erected.

The above criteria should be used only as a guide and do not guarantee that dormice will be absent from other habitats.

Licensing Requirements

- a) English Nature and the Countryside Council for Wales issue licences to permit otherwise unlawful actions, such as catching and handling dormice, for scientific, educational or conservation reasons.
- b) DEFRA and the National Assembly for Wales issue dormouse development licences under the Conservation (Natural Habitats & c.) Regulations 1994 to permit otherwise unlawful acts where it is considered to be imperative for reasons of overriding public interest. A development licence should only be obtained if a proposed activity is reasonably likely to result in an offence (DEFRA, 2004). The consultant ecologist will be required to include a detailed Method Statement with their application. If the proposed activity is reasonably unlikely to result in an offence, no licence is required (DEFRA, 2004).
- c) In relation to licensing, detailed reference should be made to the relevant legislation. DEFRA, the National Assembly for Wales, English Nature and the Countryside Council for Wales are not required to advise on whether a licence is needed for a particular activity/development. This decision should be made by the consultant ecologist.
- d) Where dormice are present in the vicinity of works but a DEFRA/National Assembly for Wales licence is not considered necessary, as a precaution it is still advisable for the consultant ecologist to prepare a Method Statement to:
 - Ensure that contractors are aware of the presence of dormice in the vicinity of works.
 - Minimise the risk of accidental damage to dormouse habitat.
 - Ensure the agreed scope of works does not change without consultation with the consultant ecologist.

Investigation Of Alternatives

- a) Before considering mitigation in relation to activities that could have a detrimental impact on dormice and their habitat, the feasibility of alternative solutions should be fully investigated.

Tree And Shrub Clearance

- a) From October until May dormice are predominantly in hibernation at ground level, typically under moss or loose leaf litter. In order to minimise fatalities and disturbance of hibernating dormice, trees and shrubs should be coppiced near to ground level during winter (including March unless conditions are unusually mild, in which case dormice might be active). In spring, any dormice that have

been hibernating in the working area will come to the surface, discover that their cover of trees and shrubs has gone and move into the adjacent unaffected plantation/scrub habitat. By May it should be possible to undertake the necessary works within the cleared corridor.

- b) Tree/shrub stools, soil, leaf litter/moss filled depressions, woodpiles and other potential hibernacula should not be disturbed during coppicing. As a general rule trees and shrubs should not be cut lower than 10-15 cm above ground level.
- c) Cut material should be carried to vehicles by hand without dragging, and then transported off site. A small amount of cut material should be left on site alongside cut stumps to protect hibernating dormice and maintain their microclimate.
- d) Hand tools only should be used during coppicing.
- e) No vehicles should be used or plant and materials stored in known dormouse habitat during coppicing.
- f) This two-stage approach (cutting in winter and commencement of works in May) is the ideal but is not always possible when timing constraints require more rapid access. It should be possible to clear small areas (e.g. up to 0.01 ha in dense scrub or 0.1 ha in young plantation (3.5 m high) with limited understorey) by careful pre-inspection - hand searching for dormouse nests before plantation/scrub is carefully cut back. Nesting birds can be sought at the same time. This work should only be carried out by skilled and dormouse licensed personnel and for short periods only, as concentration can be lost over protracted searches.
- g) During hand searching it is useful to have several dormouse nest boxes to hand in case dormice are found in their nests, which can then be moved directly into boxes and placed on adjacent trees. A DEFRA/National Assembly for Wales licence must be obtained before moving dormice from one location to another.
- h) The hand searching for nests method should only be used between May-June inclusive. Nests may include breeding dormice and vulnerable young between July-October inclusive and so should not be disturbed.
- i) On completion of the hand search, and removal of any dormice present (see point 'h'), tree and shrub clearance and other works should then be undertaken as soon as possible. If there is any significant delay in works following the hand search, the area would then need to be searched again.
- j) In clearance areas a continuous connection of trees, shrubs or bramble should be maintained to facilitate dormouse movement along or across the verge.

Compensation And Habitat Enhancement

- a) An appropriate mix of trees and shrubs, including oak, sycamore (for its large biomass of insects, notably aphids), hazel and honeysuckle should be planted in adjoining habitat to compensate over the longer term for any losses. Bramble should quickly colonise naturally on most road verges, although if absent should be added to the species mix.
- b) Where possible, new planting should link between hedgerows that connect with the road verge and between fragmented roadside scrub and plantation. In order to achieve this, large and spreading nursery plants should be selected and planted more densely than is standard, in order to create rapid arboreal connectivity.
- c) Adjoining landowners should be made aware of the presence of dormice as this may enable them to apply for Higher Level Stewardship (HLS) under the new agri-environment scheme (launched 3 March 2005) and thus enlarge the areas managed for the benefit of dormice. They may be persuaded, for instance,

to defer adjacent hedge cutting for an extra year or more, thus providing additional food sources very quickly.

- d) Nest sites, rather than food supply, may be the constraining factor on many road verges where the plants are comparatively young, so lacking in nesting opportunities but providing plenty of flowers and fruit. Bramble may be crucial in providing the sort of cover and matrix of stems that enable dormice to build suitable nests. Often, bramble scrub is the dominant species found at the front, highway side, of the roadside planting and is the first to go when sight lines are cleared or other works carried out. Replacing these probable nest sites with dormouse nest boxes may be crucial in maintaining the dormouse population at a favourable conservation status. They also facilitate future monitoring.

Site Supervision, Toolbox Talks And Exclusion Fencing

- a) To prevent development creep, the landward boundary (as opposed to highway boundary) of the working corridor should be clearly delineated by conspicuous and soundly constructed exclusion fencing.
- b) Toolbox talks, emphasising the vulnerability of hibernating dormice and their requirement for arboreal connectivity, should be given to contractors prior to the clearance of vegetation and other works. Enlarged photographs to assist with the identification of dormice will encourage a sympathetic response rather than the reaction “we are doing all this for a mouse!”
- c) A dormouse licensed Environmental Clerk of Works should supervise the scheme.
- d) Contractors undertaking the tree and shrub clearance and other works, should also produce their own Method Statement for their employees well in advance of works, to demonstrate they fully understand the required procedures. Their Method Statement should be agreed with the consultant ecologist prior to the start of works.

Conclusions

- Road developments have been responsible for the severance of hedgerows and woodland, fragmenting dormouse populations and inhibiting their dispersal. However, plantation and scrub along motorways and trunk roads can also provide important permanent habitat for dormice and a means of dispersal between populations that are on the same side of the road.
- Dormice are thought to be under-recorded in many areas and in particular along road verges. Motorway and trunk road plantations usually consist of a wide variety of different native trees and shrubs providing a sequence of foods for dormice during the changing seasons. Bramble is also very abundant along road verges and is a key source of food and cover for dormice.
- Contiguous roadside plantation and scrub as small as 1 ha can constitute the principal component in the habitat of some dormouse populations, although such sites probably support sink populations dependent on continued immigration for their long-term survival.
- Although dormice are reluctant to cross small gaps in hedgerows and woodland within their established home range, they do appear capable of crossing minor roads and grassland with only patchy scrub during dispersal along road verges.
- Minor roadside tree and shrub loss resulting from routine soft estate management and minor roadside works can potentially

result in disturbance and fatalities of dormice and fragmentation of their habitat. A DEFRA/National Assembly for Wales licence should be obtained if the proposed activity is reasonably likely to result in an offence under the Conservation (Natural Habitats &c.) Regulations 1994. A detailed Method Statement should be included with the licence application. Where dormice are present in the vicinity of works but a DEFRA/National Assembly for Wales licence is not considered necessary, as a precaution it is still advisable for the consultant ecologist to prepare a Method Statement. This is to minimise the risk of accidental damage to dormouse habitat and ensure the agreed scope of works does not change without consultation with the consultant ecologist.

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Dr Lincoln Garland is a Senior Ecologist at Atkins Environment. Michael Woods is Principal Ecologist at Michael Woods Associates and Chairman of The Mammal Society

What Are The Consequences Of Our Non-enforcement Culture?

Alison Fure, CEnv, MIEEM

Last year I was involved with over 32 breaches in wildlife law, bylaws or failed Section 106 agreements. These included damage to bat roosts, badger setts and damage to protected areas. Of great concern were the many failures to implement S106 agreements of benefit to wildlife. None of these cases met with any type of enforcement. In some instances police involvement was frustrated by convolutions in wildlife law, but in many instances were additionally thwarted by our failure to report and communicate robustly and efficiently i.e. lack of evidence and being 'out of time'. Many of these breaches were brought to the attention of prosecuting authorities by people on the ground, members of the local community bat groups or local wildlife trusts, not the paid statutory officers/consultants (although they had more precise knowledge of the problems). Should those who pay rates and taxes for protection of our open spaces and our wildlife expect more from those charged with doing so?

Licensing

This is the legitimate way by which operations may be carried out, ensuring the least damage to a protected species, as long as conditions are adhered to. But in cases of damage to roosts and setts of protected species where licences have been breached, terms are often so complex that there is no logical way of an outside agency deciding with whom responsibility lies. Licences held in one company name may be performed by another. Once the services of the consultant 'liaison' are dispensed with, momentum to fulfil these obligations is lost. So whose responsibility is it to see the terms and conditions are enacted?

The licensing authority is not the enforcing authority so what happens when there is no consultant in employment to drive the process. In one example a licence required to carry out works wasn't applied for, police found (after consultation with English Nature) that technically there is no offence to 'work without a licence' even where one is required. In all these cases honorary/voluntary groups and individuals were the 'drivers for enforcement action' bringing the cases to public attention. A DEFRA licensed consultant questioned as to why they had not made any representations to a breach said that they were not on 'charge time'.

A licence to operate a 5 ha landfill site for the benefit of drainage and other improvements on the boundary of Ashted Common, SSSI and National Nature Reserve has been exceeded substantially and shown that wildlife improvements were never intended (Fig 1.). This had been well known and documented in the press, but several months later no enforcement action has been taken as the authorities cannot seem to agree who should take the action. Formerly, this farm was a unique site in our borough for its substantial wintering and breeding populations of lapwing, skylark, chaffinch and yellowhammer highlighted in the Local Biodiversity Action Planning process as being a significant site.

Protected Areas

Recent unauthorised felling of mature trees in ancient woodland

described as a site forming a 'key strategic framework for biodiversity in London' was reported to the responsible metropolitan authority. The site has an 'exceptionally large population of ramsons which supports a rare hoverfly at its only known London site. Felling had been occurring over a 5 month period according to local residents. The regional authority had contacted the local authority for an explanation, not forthcoming, during which time trees continued to be felled. Months later the response was that the authority 'has no power of enforcement in this case'. Officers responsible for the woodland accept public money, which may be subject to further grants for its management, so should a swifter more pro-active stance be expected rather than the whispering channels this went through?

Not so far away a SSSI suffers under the full onslaught of a local quad biking outfit who have built a camp complete with seating areas, platform cum tool stores and barbeque (Fig 2). This noisy and destructive enterprise is so well established it begs the question as to who is looking after the site.



Fig 1. Landfill site near Ashted Common

Planning Controls

One local planning authority regularly fails to address PPG9 and recommend appropriate surveys for developments with resulting dire consequences. It is unfortunate when the occasional bat is found during demolition operations. It is downright outrageous when whole shoeboxes of bats are rescued during works, especially when all the indications for a survey were clearly presented when the application went through the full rigors of the planning system (located within 1 km of two rivers and the presence of nearby woodland). Whilst training has been available from some organisations (local wildlife trusts and BCT) as to when surveys should be asked for, these courses do not target local authority planning officers who often make the decisions in these cases.

Section 106 Agreements

Section 106 agreements agreed after grants of planning permission, if enacted are too often varied from the original impressive mitigation. Lagoons and reedbeds to replace lost filter beds are sometimes superseded by varying the conditions at a later stage. Some of the green concrete surrounding former utilities sites has little to do with waders and warblers and far more to do with the habitat of new residents colonising luxury housing developments. Manicured lawns are cheaper to sacrifice should subsequent 'chancer' planning applications be

successful. My own borough until recently had 500 outstanding S106 agreements going back to 1992, often the same two large landowners/developers featuring. Can we do more here to ensure that the mitigation we spend so much of our time designing is not frustrated by 'variations on greed'.



Fig 2. SSSI Encampment.

Responsibilities

Why are we so bad at safeguarding through reporting and enforcement when we occupy the key positions with a clear mandate from the public to conserve and protect? We are the trained observers, the privileged holders of specialist knowledge, the designated guardians of sites and the recipients of a mass of intelligence from members of the public. Yet there is great reluctance on the part of those working within industry and local authorities 'to blow the whistle' for fear of consequences or loss of a client. Why do we walk away and leave it to the unresourced local wildlife groups to struggle through the mire of agencies and regulations or leave it to the responsibility of the line manager/department head when we are charged with an individual responsibility? In fact why do we not make enforcement and safeguard of our precious and diminishing assets our work priority of each day? We clearly do have large responsibilities and obligations enshrined in the following:

- Our professional membership
- In our use of public funds
- A moral obligation

Members of IEEM are expected to conform to the objects of the institute which include 3.1.2: To further the conservation and enhancement of biodiversity and maintenance of ecological processes and life support systems essential to a fully functional biosphere. This means that when a bat roost or a badger sett is threatened by development in contravention of a licence, or unauthorised tree removal occurs, or a S106 is flagging, the option to do nothing doesn't exist. If you're worried about 'charge time' you may be in the wrong field. If you're worried about consequences (and unfortunately there may be some) IEEM can give very useful advice.

Gains through publicly funded Biodiversity Action Plans (written by a wide cross-section of the local community) or UDP reviews (which have gone through a democratic consultation process) containing a 'No net loss of Biodiversity' policy, can be negated in one fell-swoop by a failed S106 agreement or a licence breach. I confess to not knowing the answer here, but tenacious efforts towards enforcement by the tweaking of work plans would be a start. Public funds used within any of the processes described above carry responsibilities and accountability. Ecology officers, paid from public funds, (often still working at the BAP

"Big and Pretty" end of wildlife issues) hardly see a planning application and are continuously frustrated by the remoteness of their planning colleagues.

Far more wildlife conservation could be effected if work plans prioritised the planning application over a launch-lunch; if we followed a stepped emergency procedure for a breach; kept local groups informed of progress, it's what the public expect. Democratic processes are continuous to keep the communication flowing.

As most of us would report suspicious behaviour such as a suspected burglary or street crime to the police, why do we act so coyly or embarrassed when we suspect a wildlife crime? Don't leave it to the line manager, be afraid of blowing the whistle, worry about 'charge time' or use the screen of client confidentiality. It can be done anytime – it doesn't have to fit into the work-plan. Wildlife crime incidents will be recorded by all police forces in England and Wales. The scheme was brought into effect on 1 April 2005 and has commitment from all police forces. This is an indication that these offences will be treated more seriously by the police and policymakers, but only if we take them seriously.

Conservation, enhancement of biodiversity and maintenance of ecological processes are not just about attracting big funding to promote a new £X,000 facility on an existing reserve or designing mitigation within a new development. It is also about preserving what is already there and protecting it from unauthorised threats to its conservation status. This means tenacity, swift action, widespread consultation and liaison, persistent communication, site visits (with photographs) and rigorous following through. As we fail to address these issues another site is lost or damaged.

Alison Fure is a self employed Ecological Consultant in Surrey.



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The World Conservation Union in Europe

Andrew Terry

The maintenance of ecosystems, species, genetic variability and ecological processes requires the integration of all the scientific, political and socio-economic factors that impact on biodiversity. In Europe, possibly more than anywhere else in the world, the state and future of biodiversity is closely intertwined with human political and socio-economic processes. In this article I would like to take a look at the state of biodiversity in Europe from this policy perspective and use it to frame the activities of IUCN's Regional Office for Europe, across this continent. I will discuss some of IUCN's major initiatives and its key goals for the future as it enters a new Programme period for 2005-2008.

The IUCN Regional Office for Europe (ROfE) is responsible for the largest geographic region within the IUCN network. Activities under the European Programme are carried out from Greenland in the West to Kamchatka on the far eastern coast of the Russian Federation. This vast programme region is home to an extraordinary biodiversity, and to try and respond to the needs and challenges of this region IUCN has four Programme offices that make up ROfE; Brussels, Warsaw, Belgrade and Moscow. The location of these offices corresponds closely to the socio-economic/bio-geographic demands of working in Europe.

At the 3rd World Conservation Congress held in Bangkok in November 2004, IUCN passed its new global and regional programmes for 2005-2008. In the following sections I will discuss some of the major drivers of biodiversity change in Europe in the context of IUCN activities within its new European Programme. I hope that by the end, the reader will have an idea of how IUCN is addressing the different demands for the conservation of biodiversity and the sustainable use of natural resources in Europe and how it hopes to meet the challenges of the coming years.

IUCN's European Programme

The European Programme is wholly focussed towards the goal of halting the loss of biodiversity by 2010. Although to many this is an unobtainable goal, it is nonetheless one to which the governments of Europe have committed themselves, either through the EU Gothenburg Council of Ministers in 2001 or through the Kiev resolutions on biodiversity agreed in 2003. These commitments provide the necessary focus to draw high level political attention towards biodiversity issues. Our activities in Europe are designed to support the realisation of this goal and to aid institutions such as the European Union meet their commitments.

The main tool being used to deliver projects towards this goal is the Countdown 2010 initiative. The Countdown 2010 (www.countdown2010.net) is a broad alliance from all sectors committed to achieving the 2010 biodiversity targets. Currently the partners include governments, state agencies, international organisations, NGOs and private sector companies. These partners work together on a Steering Committee, for which IUCN manages the secretariat. Since its launch under the Irish Presidency of the EU in Malahide 2004, the work of the secretariat and the partners has seen the full endorsement of the Countdown by the EU Council of Environment Ministers as a key tool to meet the 2010 target and the support of EU institutions. The initiative is also receiving support from the national level as Norway will implement the Countdown and several other countries including the UK

have expressed interest. The Countdown's main advantage is that it is an inherently simple and clear message that provides 'one voice' for the activities towards halting biodiversity loss. In the coming year we hope to see the Countdown go from strength to strength with the active participation of more countries and regions.

Linking IUCN and Europe

Europe is an important region for IUCN. It is home to the global headquarters of the organisation in Gland, Switzerland, and a number of thematic or specialist offices such as the Environmental Law Centre in Bonn, its Publications Unit and Red List Programme Office in Cambridge and the office for Mediterranean Cooperation in Malaga. Europe also has the largest share of the Union's membership base with over 370 governments, state agencies and non-governmental organisations, and in 2003 received over 50% of its core funding from European states. However, until recently, IUCN maintained a small presence for the European Programme and had no office to liaise with the EU. In January 2002 the Regional Office for Europe was relocated to Brussels, to fill this gap. The Brussels office of ROfE, has two major functions; 1) to manage IUCN's activities in Europe and relate them to the global IUCN network and 2) to act as an 'embassy' for IUCN towards the European Union institutions.

IUCN's two major strengths are its membership and its Commissions of expert volunteers. Together these two entities form the strongest knowledge base on conservation and sustainable development in the world. Until recently ROfE had not been able to engage properly with European members and this had led some members to question what IUCN was doing for the region. Since the office relocated to Brussels, we have been working very hard to develop strong links with our membership base. This process started in earnest with the consultation over the draft European Programme in 2003. Here members were able to identify their priorities for action in Europe and from this a draft Programme was developed. Following consultation with members this programme was finally adopted at the WCC in Bangkok. Another major tool for communication with our membership has been the ROfE newsletter, which is sent to all IUCN members in Europe and contains news, information on projects and interviews with members. The newsletter has been a great success and is now translated into French and Russian (available for download at www.iucneurope.org). Our office has also just launched a new Members Portal online, which is designed to allow members to engage more with each other as well as the secretariat. It is a demanding task to work with a membership base as large as that found in Europe and IUCN is also seeking to increase the connections with its National Committees in European countries as a means of streamlining links with members.

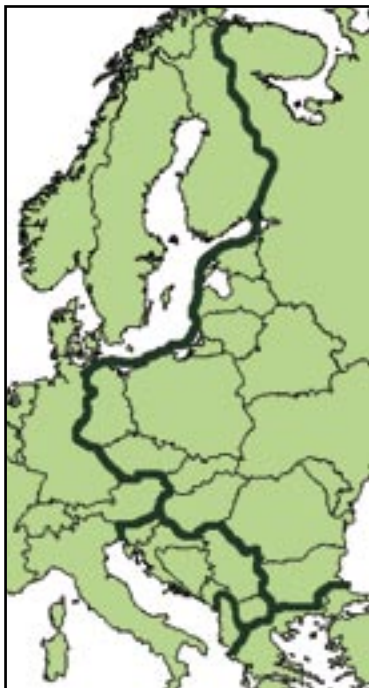
The other major source of added value in Europe is through IUCN's six specialist Commissions. These Commissions advise on Protected Areas, Species, Environmental Law, Education and Communication, Ecosystem Management and Economic and Social Policy.

The New European Union

The EU as an entity has by far the single greatest impact on biodiversity, both positive and negative, within continental Europe, and therefore is also a major focus of work for IUCN. In general all the major sectoral policies of the EU have an impact on biodiversity and natural resources, whether it is directly through policies such as the Common Fisheries and Agriculture Policies (CFP and CAP, more on these later), or indirectly through policies governing social cohesion and economic development (part of the so called Lisbon Agenda). The EU's effects also extend far beyond its borders and it has a significant impact on biodiversity and sustainable development around the world, both as the world's largest provider of overseas aid and development assistance and also as the

world's largest trading bloc, its trade barriers have had equally negative impacts on local populations, economies and biodiversity. Through the activities of our EU-Liaison Unit, ROFE tries to have an active influence on the development of EU policies.

The accession of 10 countries to the EU in May 2004 has placed the region in a new and unique position and will have a major impact on their biodiversity. The EU presents unparalleled opportunities to implement progressive nature protection legislation through the Birds and Habitats Directives and the Water Framework Directive. But it has also allowed these countries to benefit from large support mechanisms for infrastructural development such as large transport networks. These countries are quickly "catching up" to the EU level in terms of economic development, and most of this is not sustainable in environmental terms. Although the EU-15 countries have largely been able to decouple their use of natural resources from their economic development, as economies continue to grow, the use of natural resources has not increased at the same rate (this is not necessarily sustainable), the new EU Member States are far from reaching this objective. IUCN is working with these countries to ensure the successful implementation of environmental policy and issues under sectoral policy such as the rural development measures under the CAP, which offer a valuable tool to support communities and biodiversity in rural areas, and the integration of Natura 2000 with agri-environmental programmes and rural development schemes.



Green Belt route

As the Central European countries become part of the EU, IUCN is focussing attention on South-Eastern Europe and Eastern Europe. For example, as one of two biodiversity hotspots in Europe, the Caucasus is biologically a very important region, and through our Moscow office, IUCN has started to look at ways in which we can have an added value there. The Caucasus spans 500,000km² of mountains in Eurasia between the Black Sea and the Caspian Sea, including parts of Georgia, Armenia, Azerbaijan, and small portions of Russia, Iran, and Turkey. The region is a junction of temperate and sub-tropical zones and combined with its rich and diverse cultural history has a remarkable flora and fauna richness. Since 1992 the conservation situation in the Caucasus has deteriorated due to the social and economic crises that

have plagued the Region, which restricted the state's ability to fulfil key functions, and as a result highly unsustainable land and resource use practices have increased. Generally funding for the implementation of conservation and sustainable use is highly limited and the region urgently needs support to develop and implement Action Plans for their biodiversity, to facilitate the dialogue between governments and civil society and to strengthen the integration of local communities into the management of natural resources.

Looking Beyond Europe's Borders

A major concern for ROFE is how Europe and the EU impact on biodiversity elsewhere in the world. Our office is active here through three major areas; 1) facilitating the work of IUCN offices and members around the world, 2) working with countries to support the biodiversity in their overseas territories and 3) advising the EU on their policies for overseas development aid. A good example of this work comes from efforts to support Europe's seven Ultra-Peripheral Regions (UPRs) and 21 Overseas Countries and Territories (OCTs). These regions contain an extraordinary biological diversity, for example the Dutch Antilles have over 200 endemic species, compared with the Netherland's one.

Understanding The Main Drivers Of Biodiversity Change

European biodiversity in most terrestrial parts of the continent has been closely linked to human settlement and development for many thousands of years. In the three hundred years since the Industrial Revolution, the patterns of natural resource use fundamentally changed with a switch from a rural agricultural economy to an urban industrial one. The Europe we occupy now is characterised by a high diversity of the socio-economic conditions faced by its population and the biodiversity within Europe is characterised by the links between human habitation and nature. Now in Europe, although the population is not growing, the continued development of economic wealth coupled with technological innovations are driving the impacts on our ecosystems.

Given that Europe's biodiversity is so closely linked to Man's patterns of resource use we can briefly look at the main areas of use. First and foremost is agriculture, which covers approximately 46% of European land, which was significantly bolstered in the EU through the implementation of the Common Agricultural Policy and its drive to increase agricultural productivity. Clear links have been shown between intensive farming practices promoted within the CAP and biodiversity declines. Similar effects also occurred outside the EU, for example the socialist regimes of Central and Eastern Europe countries dramatically intensified their agricultural practices and used highly unsustainable levels of chemical input and landscape modifications. This process was cut short when these regimes went through major economic and societal changes in the early nineties. Closely linked to the intensification of agriculture and the shift towards large 'farming industries', is the demise of extensive agricultural practices and the abandonment of traditionally cultivated lands. Much of this land is becoming afforested, either through the implementation of national afforestation plans or uncontrolled natural succession, which can have both positive and negative effects for biodiversity. For IUCN the main areas of activity have been to provide input into the Reform processes for the CAP and to assist where possible the full implementation of environmentally beneficial elements of the financial incentives. This includes the agri-environmental measures under the second pillar of the CAP. Unfortunately it seems that new member states are currently far from implementing the measures necessary to ensure that they do not allow the same impacts of the CAP that were witnessed in the EU-10 states.

Similarly the Common Fisheries Policy (CFP) of the EU has witnessed

all the fisheries within EU Member State waters become over-fished or over-exploited. The EU's fishing fleet remains at overcapacity and scientists constantly recommend sweeping cuts be made, with some fisheries needing to be closed to allow stocks to recover. More work is required to further integrate biodiversity concerns into the Common Fisheries Policy (CFP) and to improve monitoring information on species trends.

Forests cover approximately 36% of Europe and represent an important natural resource in social, economic and ecological terms. Unlike the other major areas of resource production, the EU has no single policy governing forestry, leading to difficulties in generating accurate inventories and monitoring data. However, there has been a long history of sustainable forest management and Europe saw its forest cover grow throughout the last decade. Forests contain large stores of European biodiversity, but are threatened by factors such as degradation and erosion, illegal logging, air pollution, wild fires and climate change. Generally, although forest cover has been growing, forest condition has been decreasing throughout the nineties.

Given this background of resource use impacts on biodiversity, are we closer to halting the loss of biodiversity and understanding how changes to these pressures will change biodiversity? Although Europe can consider itself one of the most biodiversity data rich regions of the world, we still have many major gaps in our understanding concerning the drivers of biodiversity change. We have a good understanding of impacts and responses at the local level identifying impacts, anthropogenic or otherwise, but scaling up to understanding the large-scale impacts on biodiversity and the inter-relations with ecosystem functioning is poorly understood. Yet this sits at the heart of our conceptual understanding of how biodiversity does and will respond to human activities.

We must also spend more time looking at the fact that ecosystems and biodiversity are inherently dynamic both spatially and temporally. Generally this is something that is not considered in conservation or protected areas policy, even though with the compounded impacts of climate change, species distribution patterns and movement patterns are likely to become more dynamic than less. This has to be reflected somehow in the policies that govern efforts to conserve biodiversity. This is a tall order and significant financial resources will have to be dedicated to the study of natural ecosystems and their inter-relation with socio-economic drivers. As the need for targeted and policy-relevant research is as high as ever, there is a real pressure to ensure that biodiversity research is adequately supported at the European level. IUCN is working with European research institutes and the Directorate General for Research to ensure that biodiversity remains a research priority for the 7th Framework Programme of the EU.

Taking A Broader Approach To Biodiversity Conservation

In Europe, as biodiversity is so closely linked to human activities, biodiversity conservation must be fully integrated with land use and management practices. In this sense conservation no longer becomes an additional or limiting factor on resource use, but an integral part of resource and land management. This need is exemplified by the role of protected areas in conservation. We can be very proud that in the past 50 years the world has seen an exponential increase in protected areas, with over 30,000 listed by the IUCN World Commission on Protected Areas, covering some 10% of the Earth's terrestrial surface (Phillips, 2000 in Crofts, 2004). But as biodiversity continues to decline are protected areas operating effectively for biodiversity? Protected areas specialists in Europe and those developing and implementing protected areas legislation must now look towards the full integration of protected areas into their surrounding landscapes (and societies) and connection

of protected areas to each other. The most effective tool for this is the Ecological Network concept and Europe is the region where this concept is most developed and implemented. European Environment Ministers endorsed the implementation of the Pan-European Ecological Network in Kiev in 2003 and the concept has been integrated into land planning policies of several Central European and Baltic countries.

For this to be effective, the mechanisms that allow communities and authorities to benefit from biodiversity have to be fully explored. The ways in which this can be implemented are many and diverse and include major economic sectors such as tourism and infrastructure development. ROFE is working on this approach through an initiative called the European Green Belt, which aims to link protected areas, biodiversity conservation and sustainable rural development along the route of the former Iron Curtain in Europe (see www.greenbelteurope.org). IUCN holds the secretariat for this exciting new initiative. It takes a multi-level approach by addressing the local community level to support the development of mechanisms that integrate biodiversity conservation and economic benefits, and moves up through the regional, and national levels to the European level. Here it is hoped the initiative will aid the implementation of the different networks of protected areas (e.g. Emerald Network, Natura 2000) and international conventions.



The Future Of Natura 2000

Natura 2000 has been mentioned several times during this article and is the flagship of the EU's Birds and Habitats Directives. The goals for Natura 2000 set out in the Habitats Directive are highly progressive and incorporate concepts of connectivity between sites and the facts that sites cannot act in isolation or exclude human activity. Unfortunately it has been the translation of the Directives into national legislation that has led to many of the problems. The new Member States have had to implement the Directives (and many others), in a very short period of time, and ROFE is working hard to ensure that this implementation is effective. Indeed in the coming years, work on protected areas and policy will have to concentrate on the development of Marine and Freshwater protected areas (especially within the framework of Natura 2000), the full implementation of Natura 2000 (both within the EU-15 and EU-10), the connection of Natura 2000 into a real network and trans-boundary cooperation between countries and protected area networks.

Of major concern at the moment is the future of Natura 2000 funding. As the needs of Natura 2000 shift from implementation of the Directives to managing the network, the European Commission is going to change the financial mechanisms that fund Natura 2000. Previously

implementation of Natura 2000 has had a dedicated fund through the LIFE Nature Programme. But it is estimated that Natura 2000 costs some 6.1 billion per year to manage, and to increase funding, the European Commission is looking to integrate Natura 2000 into other much larger funding programmes, in particular the Rural Development funds (DG Agriculture), the Structural and Cohesion funds (DG Regional Policy), and the Fisheries funds (DG Fisheries). The integration of funding sources for Natura 2000 does present new opportunities that will bring the EU closer to the goals laid out for Natura 2000 in the Habitats Directive, but without guarantees to ensure that money must be directed towards Natura 2000, stakeholders are concerned about the future implementation and management of these protected areas.

Conclusions

In the above article I have tried to lay out some of the main issues that IUCN is addressing in Europe and the inter-relations between conservation policy and practice. Depending on who you speak to in the policy world, biodiversity is slipping (has slipped) from the political agenda and is losing the imperative it gained in the early 1990's. This is certainly true if you look at the willingness of donor organisations to fund projects and the ability of biodiversity issues to gain media and government attention. Also the Ministries and agencies responsible for biodiversity conservation are, in many cases, seeing their powers diluted or their structures weakened. However, a potentially powerful 'shot in the arm' for biodiversity came through the conference held in Paris earlier this year under the title, "Biodiversity: Science and Governance" which had the aim of seeing how biodiversity conservation could be placed back at the top of the political agenda and the necessary scientific and political steps be taken to meet the 2010 targets. This meeting was at the invitation of President Jacques Chirac himself and during his address he called on the biodiversity community to establish a representative body that could parallel the IPCC for biodiversity issues. It remains to be seen whether a highly visible panel of this nature, could either capture the impact that the IPCC has achieved or re-invigorate the political process for biodiversity. But it certainly is a topic that will be widely discussed and explored in the coming months.

RoFE will be working in the next four years and beyond to remind European countries of the commitments they made to halt the loss of biodiversity by 2010, and will be assisting them wherever possible to realise this commitment. It is hoped that this period will see integration become a major theme for biodiversity activities, through the integration of biodiversity into sectoral policies, the integration of scientific knowledge into policy and the integration of different fields of study to address all the different drivers that impact on biodiversity. It is going to be an exciting four years!

Sources

This article is a result of work carried out by all the IUCN staff in Brussels, Warsaw, Moscow, and Belgrade. Additional information sources used include:

Crofts, R. 2004. Linking Protected Areas to the Wider World: A Review of Approaches. *Journal of Environmental Policy & Planning* 6(2): 143-156.

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Andrew Terry is the Project Officer: Protected Areas and Species at the IUCN Regional Office for Europe

Local Biodiversity in Ireland

Richard Nairn, MIEEM

The terms 'Local Wildlife Site' or 'Site of Interest for Nature Conservation' are a familiar concept to ecologists in the UK. These sites have contributed to the creation of ecological corridors and stepping stones between nationally and internationally important conservation areas, as well as recognising locally important sites in their own right. These sites are typically managed either by the local authority, wildlife trust or private owners.

In the Republic of Ireland there is now also a well-developed upper tier of protected areas including SACs and SPAs, with the nationally important sites, Natural Heritage Areas (NHAs), receiving much needed legal protection under the Wildlife (Amendment) Act, 2000. However, there is currently no lower tier of protected sites in Ireland. Understandably, there is some resistance to the idea of further designation of locally important areas, as this has major implications for planning and development control. The designation of SACs under the EU Habitats Directive met with strong opposition from farming organisations and other powerful political lobbies.

Nevertheless, all the evidence suggests that local wildlife habitats are coming under increasing pressure with an accelerating pace of development. This is well illustrated by the national road development programme which involves the construction of over 900 km of new motorway and dual carriageway in the period 2002-2006. In assessing the impacts of these schemes, ecological consultants inevitably document, map and evaluate many locally valuable sites, such as small woodlands, wetlands, watercourses, grasslands and other habitats which are never likely to join the front ranks of nationally or internationally designated sites. In a small sample of route selection studies for six national road schemes, over 80% of the ecological sites listed were undesignated. Similarly, a recent survey of peatlands in one midland county found that only a quarter of the sites identified were listed as designated areas.

Unfortunately, there is no National or Local Biological Records Centre in place to even record the existence of local sites of importance for biodiversity, never mind giving them legal protection. The idea of preparing Local Biodiversity Action Plans is just taking root, primarily because of the statutory Heritage Council and of recently appointed Heritage Officers in most of the local authorities. This is the most likely channel through which sites of county or local importance for wildlife will be listed in local development plans for the future.

Because Ireland is essentially starting from scratch with local sites, an opportunity exists to establish common standards and criteria for the selection of such sites and for their evaluation. By contrast, the UK already has a bewildering range of local site designations and selection criteria, although there are recent attempts by DEFRA, South Wales Wildlife Sites partnership, and the Scottish Wildlife Trust, to unify and rationalise these. A pilot study to develop selection criteria and identify local biodiversity areas in several local authority areas in Ireland is being undertaken in 2005 by NATURA Environmental Consultants, with support from the statutory Heritage Council. The project manager, Faith Wilson, would be pleased to hear from any ecologists, environmental managers or local authority officials in either Britain or Ireland, with experience of such local wildlife sites. She would be particularly interested in:

- receiving guidelines on best practice in identifying local sites,
- mechanisms for protecting them, and
- examples of best practice from other European countries.

Please contact her at fwilson@natura.ie, by telephone at 00 353 404 64020 or at NATURA Environmental Consultants, Enterprise Centre, The Murrough, Wicklow, Ireland.

Richard Nairn is the Managing Director of NATURA Environmental Consultants

Strategic to Specific – IEEM Conference Report

*Nick Jackson, AIEEM &
Linda Yost, CEnv, MIEEM*

The ecological impact assessment theme of the Institute's 21st conference proved to be a popular one. Held on the 19th May 2005 in London, Dr Chris Spray chaired the best attended one-day IEEM conference held to date, attracting nearly 200 delegates. Nine speakers gave informative presentations on issues ranging from impact analysis and practical lessons in strategic impact assessment to the problems of recruiting skilled ecological and environmental management staff.

Jo Treweek, began the day with an overview of impact assessment (IA) at a national and international level. After a brief introduction to the overall process of Environmental Impact Assessment (EIA) and how it can link in to Strategic Environmental Assessment (SEA), she emphasised the importance of getting ecology and/or biodiversity into IAs in the screening or scoping stages of the assessment. The barriers to good practice, which include: policy directions and legal requirements, insufficient data and lack of co-ordination of data were considered. To establish good practice it will be necessary to have biodiversity recognised as a fundamental issue, a clear policy framework and priority actions, using well-established partnerships, good information management and reliable data. These issues were well illustrated with examples from projects in Somerset, South Africa, Costa Rica, Peru and India.

Our next three speakers addressed the interpretation and practicalities of Directive 2001/42/EC, on the assessment of the effects of certain plans and programmes on the environment.

Peter Davis from Entec outlined the objectives of SEA as being: high level protection of the environment, integration of environmental considerations into plans and programmes and the promotion of sustainable development. Its key stages include: setting the context, establishing a baseline, deciding on a scope, consulting on the draft plan and monitoring and implementing the plan. The "do's" and

"don'ts" of baseline data and scoping, the contents of an environmental report and good practice for monitoring were outlined. The publication "Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners" prepared jointly by the Countryside Council for Wales, English Nature, the Environment Agency and the Royal Society for the Protection of Birds in June 2004, was recommended as a good source of information on SEA.

Jo Hughes from Scott Wilson focused on lessons learned from practice. Through audience participation her experience was substantiated; they too identified the main problems as restricted baseline data, token mitigation, inadequate consideration of cumulative effects and the lack of monitoring.

SEA as an important tool for promoting the conservation and sustainable use of biodiversity should promote strategic thinking, focus on the longer term and larger scales, promote partnerships, suggest effective mitigation strategies, establish monitoring, collation and collection of baseline data and help to ensure wider countryside conservation. Success though, was not guaranteed as absence of guidance, lack of expert involvement, inadequate resources and a lack of vision are all seen as barriers to successful implementation.

Mike Barker from Entec rounded off the SEA session with practical examples from the water sector using the Low Flows Solutions Project. There are a large number of water plans, both at the national and regional level, but they differ somewhat between water authorities. A number of water companies now have to undertake low flow studies on sites where abstraction may be causing damage to Natura 2000 sites; this data will feed into the Environment Agency's review of consents under the Habitats Regulation. These low flow studies are due to be completed by 31 March 2008. At present there is an established Water Resource Planning process, based on the economics of balancing supply and demand, comprising a 14-stage process. Mike outlined how the combination of Water Resource Planning and SEA processes can be effective, and noted current progress, potential benefits and challenges for the future.

The conference then moved on to address EIA and Ecological Impact Assessment (EclA). Mike Oxford addressed the draft Planning Policy Statement (PPS9), which together with its accompanying circular covering statutory requirements and a good practice guide (yet to be drafted), will replace Planning Policy Guidance note 9 (PPG9): Nature Conservation (1994).

PPS9 is a statement of national planning policy for biodiversity and geological conservation in England; its purpose to ensure that



Panel of Speakers from the morning session

the planning system plays its part in delivering Government policy on biodiversity as set out in 'Working with the grain of nature - the biodiversity strategy for England' (Defra 2002).

Mike Oxford outlined its positive approach in providing a new planning system with a "statutory duty to promote sustainable development" and a new agenda for informing screening for environmental impact assessment (EIA). The PPS should lead to better quality planning applications; better control over implementation of planning proposals and provide a role for the British Standards Institute. The key principles from PPS9 (information, maintain and enhance, a strategic approach to the wider environment, permitting biodiversity enhancing development, considering reasonable alternatives, mitigate, compensate and promote benefits) and its key topics (international sites, national sites, regional and local sites, ancient woodland, networks of habitat, previously developed land, biodiversity within developments and protected species) were considered. These were clearly demonstrated by a jaunt through the 'land of Hobbiton' and the development proposals of the 'Orc Holdings PLC'; an entertaining approach to the topic of national planning policy for biodiversity and geological conservation and spatial planning.

Dean Kerwick-Chrisp from the Highways Agency (HA) gave its perspective on EIA. Through their responsibility for strategic national, international routes and regionally important roads the HA manages 7,709 km (4,818 miles) of motorway and trunk road, valued at £65 bn - the Government's single largest asset. Although this only represents a total road length in Great Britain of 2%, these roads carry 31% of the total road traffic (as a % of all kilometres travelled in Great Britain). This also represents a total length of journeys undertaken annually of 151 billion vehicle kilometres/94 billion vehicle miles. The HA is responsible for an area of 'soft estate', the size of the Isle of Wight, including 15,000 hectares of wooded land across England, 18 priority species and 9 priority habitats.

HA projects include: targeted programmes of improvements (costs greater than £5m); smaller schemes for making better use of roads, local network management schemes, research and maintenance. UK regulations implementing European Directives require the assessment of environmental impacts; appraisal of projects is a requirement of the financial delegations from Treasury. The HA sees these assessments and appraisals as a 'consequential process' of screening and scoping followed by a rapid assessment and concluded through a detailed assessment; the whole process taking into account habitat destruction, fragmentation, habitat and species types, wildlife kills, pollution (short/long term), habitat protection, connectivity, obstacle removal, mitigation, wildlife protection, pollution treatment.

The work of Ecological Impact Assessment (EcIA) Steering Group, lead by Karen Colebourn, has reached final draft stage. John Box and Mike Wells, members of the steering group, presented an overview of the document. The EcIA guidelines set out a process for identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. If properly implemented it provides a scientifically defensible approach to ecosystem management.

EcIA aims to provide decision-makers with reliable information on the likely significant ecological effects of a proposal. The EcIA can be undertaken as part of a formal EIA, or as a supporting statement to a consent application, or to guide a development brief and management plan. An EcIA is always valuable because opportunities for net ecological enhancements should always be sought.

The guidelines will be an important resource for policy setters and

advisers, scheme proponents, competent authorities and regulators, consultees and the public. For ecologists they help to clarify their role in: seeking net ecological gain in development, providing objective and transparent assessments, consideration of all interested parties including the public, a review of national, regional and local policies, in facilitating objective and transparent determination of consequences and in ensuring satisfaction of legal requirements for ecological resources.

Alison Carroll from Nicholas Pearson Associates looked at the two separate but highly interrelated 'products' - EIA and Environmental Statements (ES); the process of carrying out the assessment and then the process of reporting the results. Firstly, the screening and scoping stages of EIA were addressed; the areas where the judgement of individuals comes to bear more than the scientific rigour that the guidelines suggest. Two recent local authority examples of screening options were used to highlight the issues in assessment. Scoping focuses the EIA/ES on important issues and avoids those that are considered to be less significant. The IEEM guidelines provide a good overview of the factors to be considered at the scoping stage, and will assist project ecologists, competent authorities and Statutory Bodies.

Secondly, the production of good ES was considered. This could be achieved through being objective and writing for the reader whilst retaining the scientific rigour. It was stressed that it should be a focused document limited in size, whilst integrating information well in the document.

John Rose from Sheffield Hallam University completed the day with a look at where, and indeed if, the skills to carry out EcIA's and SEA's are going to be available in the future. The Lantra Skills Foresight Report (2001), identified difficulties in recruiting skilled staff by over 50% of the land-based employers questioned. This was shown to be compounded by the current applications for, and the provision of, environmental courses by UK universities - with a swing away from traditional biology towards zoology and with courses such as botany becoming nearly 'extinct'. A fundamental issue is whether ecology and environmental management are viewed as attractive subjects with young people aware of ecology and environmental management as potential careers

Clearly skills such as ecological identification cannot be learned from universities; they must be learnt over time. IEEM's Training, Education and Career Development Committee is looking at ways of how these skills can be provided to postgraduates. It is currently considering documents for outlining learning outcomes for universities (what a graduate should know to become employable), as well as opportunities for an incremental, habitat based, field skills accreditation scheme.

IEEM's Ecological Impact Assessment Guidelines are due for final consultation with the statutory agencies shortly and are expected to be published in November.

We would like to thank all the conference speakers for their time and presentations and that hope that the delegates found it a useful and interesting day.

The next IEEM conference will be held in Bournemouth on 15-17 November 2005 and will be on the subject of Development and Ecology. Details will be posted on our website. If anyone has any suggestions for future conference themes/locations/speakers then please contact nickjackson@ieem.demon.co.uk.

Nick Jackson is the Education and Professional Development Officer at IEEM

Linda Yost is the Deputy Executive Director at IEEM

One great benefit of having secured (for an undisclosed sum) the sole rights to Professor Basil O'Saurus' column for In Practice is that IEEM members have an exclusive insight into the mind of someone widely acknowledged as an expert at extracting large contracts from multinational corporations. Today, our resident tauro-scatologist tells us about a new initiative coming to a supermarket near you very soon. What is it today, Prof?

It's really such a simple idea that I'm amazed that no one has thought of it before. I was stocking up on life's essentials at my local supermarket a few weeks ago and, halfway between the espresso coffee and single malts, it suddenly struck me that, despite more and more products now being marketed as 'fair-trade', 'organic' or even both, and many of us being prepared to pay a little bit more for these, one product is never branded with these labels.

And that product is...?

Petrol. We all use cars to go to work and most of us use them to go shopping. We load bags stuffed with fair-trade, organic products into the boots of our cars, feeling suitably smug that we've done our bit, then blast another slug of carbon dioxide into the atmosphere on our way home. Fairly-traded organic petrol is just what we need to salve that part of our conscience that still feels guilt about not using public transport more.

Cue some industrial-strength tauro-scatology...

Not at all. What is petrol if not an organic compound? Think back to your chemistry lessons at school: octane is a hydrocarbon and contains just hydrogen and carbon atoms arranged in a long chain. And, let us not forget, it is extracted from crude oil, a natural product derived, ultimately, from marine algae. We have organic wine, which is simply extracted from another natural product, so why not have organic petrol? I thought that 'Ocean's Harvest' might be a good name for the new brand...

But what about the additives that they put into petrol?

Well, they used to put lead into petrol, so that clearly couldn't be marketed as 'organic', but these days the oil companies are more enlightened and use benzene as an anti-knocking agent instead.

Isn't that just as bad? I read that there are health and safety concerns about benzene too.

But, once again, benzene is an organic molecule: just carbon and hydrogen. All we have to do is find a source of benzene that is free from artificial impurities or, better, a plant or microbe that manufactures benzene naturally. There must be one somewhere: lots of plants manufacture phenol, which is much more complicated than benzene. Even the humble banana produces ethylene, for goodness sake.

Enough, enough. I'll take your word for this. Tell me about how you intend to obtain fairly-traded petrol.

Do I detect a trace of cynicism in your question? Think about it ... most petrol comes from either multinational corporations or state-owned entities in far-flung parts of the world. Since the fall of the Iron Curtain, many state-owned entities have been turned into private ventures and a few individuals have made vast fortunes. If oil production had been kept in the hands of small co-operatives selling directly to altruistic not-for-profit Western charities we would all have been spared one thing.

What is that?

Roman Abranovitch. Just think how much more interesting the Premiership would be if he hadn't bought success for Chelsea?

I'm almost convinced. Tell me more.

Well, we follow all the tenets of sustainable development and perform extensive surveys in advance to make sure that oil production is the venture that subsistence farmers in Venezuela really want to supplement their income from agriculture and provide a little cash for medicines and to educate their children. This is easier than some people think: we use exactly the same questionnaires as Survival International but just ask the questions in a different order. By the end of the survey, they're all nodding furiously and... hey presto... another oil production co-operative is born.

As simple as that?

Not quite. We have to lend them power tools to clear-fell enough virgin rain forest to set up a few nodding donkeys, but otherwise... a lot easier than importing green beans and flowers from Kenya, for example. No one notices if their petrol isn't fresh.

And have the big supermarket chains bought your idea, Prof?

Well, like many of these radical ventures, they were a bit sceptical at first, so we did a public opinion poll for them, ran a few focus groups ... got some high-profile marketing consultants onto the case and soon won them around.

So is it really true that these chains are slowly changing from profit-hungry behemoths to altruistic, caring organisations?

No, but once we convinced them that they would, actually, make more long-term profit from this strategy we were able to recommend a firm of consultants who will help them convince the public that they are altruistic, caring organisations.

Once again, Prof, you are an inspiration to us all. That's your bike outside, I presume?

But of course: what do you think I am? A hypocrite?

‘ENGLISH-GERMAN, GERMAN-ENGLISH INTERPRETING & TRANSLATING SERVICES

offered by experienced sci-tech translator and conference interpreter (BSc Environment & Heritage, BA Hons, Member of the Institute of Translation & Interpreting) with 30 years experience in a wide range of fields including water research, game biology, ornithology, and now also environmental impact assessments, offers language services in these fields.

For fees, conditions and availability contact Brigitte Geddes at

bg@allezweb.co.uk, 44(0)1955 605055 or 606394, mobile 07748-598460.”

In the Journals

Compiled by Jim Thompson



British Ecological Society

I. J. Gordon, A. J. Hester and M. Festa-Bianchet.

The management of wild large herbivores to meet economic, conservation and environmental objectives.

Journal of Applied Ecology 2004, **41**: 1021-1031.

This is a useful review paper of an area having significant, social, economic and environmental components. Wild large herbivores provide goods and income to rural communities, have major impacts on land use and habitats of conservation importance and yet, in some cases, face local or global extinction. As a result, substantial effort is applied to their management across the globe.

Long-term population dynamics research has revealed fundamental differences in how sex/age classes are affected by changes in density and weather. Consequently, management must be tailored to the age and sex structure of the population, rather than to simple population counts.

Herbivory by large ungulates shapes the structure, diversity and functioning of most terrestrial ecosystems. Recent research has shown that fundamental herbivore/vegetation interactions driving landscape change are localized, often at scales of a few metres. Localized impacts on vegetation have cascading effects on biodiversity, because changes in vegetation structure and composition, induced by large herbivores affect habitat suitability for many other species.

The management of wild large herbivores must consider different spatial scales, from small patches of vegetation to boundaries of an animal population. It also requires long-term planning based on a deep understanding of how population processes, such as a birth rate, death rate and age structure, are affected by changes in land use and climate and how these affect localized herbivore impacts.

Correspondence: e-mail iain.gordon@csiro.au

B. C. Robertson and N. J. Gemmell.

Defining eradication units to control invasive pests.

Journal of Applied Ecology 2004, **41**: 1042-1048.

Pest eradication is an important facet of conservation and ecological restoration and has been applied successfully to invasive rat species on offshore and oceanic islands. Successful eradication requires the definition of a target population that is of manageable size, with low recolonization risk. The authors applied a molecular genetic approach to the identification of populations suitable for eradication to provide a new tool to assist the management of brown rats *Rattus norvegicus* on South Georgia (Southern Ocean).

A single eradication attempt on South Georgia (4000km²) would be an order of magnitude larger than any previously successful rat eradication programme (110km²). However, rats are demarcated into glacially isolated populations, which could allow sequential eradication. Genetic variation was examined to identify gene flow between two glacially isolated rat populations.

Genetic diversity in 40 rats sampled from each population showed a pronounced level of genetic population differentiation, allowing individuals to be assigned to the correct population of origin. The study suggests limited or negligible gene flow between the populations and that glaciers, permanent ice and icy waters restrict rat dispersal on South Georgia.

Molecular definition of eradication units is a valuable approach to management as it (i) provides a temporal perspective to gene flow, which is important if dispersal events are rare; (ii) allows an eradication failure (i.e. surviving individuals) to be distinguished from a recolonization event, opening the way for adaptive management in the face of failure; and (iii) can aid the management of pest species in habitat continua by resolving meta-population dynamics, so guiding pest eradication/control strategies.

Correspondence: e-mail bruce.robertson@canterbury.ac.nz

G. Decocq, M. Aubert, F. Dupont, D. Alard, R. Saguez, A. Wattez-Franger, B. de Foucault, A. Delelis-Dusollier and J. Bardat.

Plant diversity in a managed temperate deciduous forest: understory response to two silvicultural systems.

Journal of Applied Ecology 2004, **41**: 1065-1079.

Disturbances and resource availability are key factors affecting plant diversity in managed forests. As disturbance regimes vary among silvicultural systems and may simultaneously affect different types of resources, effects on biodiversity can be unpredictable.

The authors compared the effects of two silvicultural systems on understory plant diversity, including species composition, structural attributes and functional organization. One hundred and thirty-five phytosociological relevés were sampled from 27 forest stands managed under either a traditional coppice-with-standards or a 'close-to-nature' selective cutting system.

Post-logged coppice-with-standards stands shared some compositional and structural characteristics with selectively cut stands, including high species richness and a dominance of early successional species. However, the species pool for all coppicing areas was higher than for selectively cut areas, suggesting that the high disturbance frequency occurring in the latter may progressively eliminate the most sensitive species.

In the selective cutting system, the high proportion of light reaching the forest floor induced a spectacular spread of blackberries *Rubus fruticosus* agg., which decreased species richness. It also caused shifts in guild composition: graminoids and ferns grew strongly to the detriment of true forest species.

The results suggest long-term negative effects of selective cutting on both structural and functional plant diversity, compared with coppice-with-standards. Retaining remnants of old coppice woods and extending rotations to at least 50 years are recommended where biodiversity conservation is a goal of forest management.

Correspondence: e-mail guillaume.decocq@u-picardie.fr

R. Brys, H. Jacquemyn, P. Endels, G. de Blust and M. Hermy.

The effects of grassland management on plant performance and demography in the perennial herb *Primula veris*.

Journal of Applied Ecology 2004, **41**: 1080-1091.

The effects of different management strategies (grazing, summer and autumn mowing, and no management) on plant performance and population dynamics of *Primula veris* were experimentally studied. Data were collected between 1999 and 2003 in a species-rich calcareous grassland.

Early grazing (May) resulted in low population growth rates and a mean annual population decline of 11%. Under these conditions, both the proportion of flowering individuals and flower and seed production per plant were low, resulting in seed limitation overall. However, when grazing started later in the growing season (early July) flowering probability and overall seed set increased, as did population growth rates.

Mowing in autumn (October) was the most favourable management scenario resulting in high proportions of flowering individuals and a large seed output. Furthermore, this management yielded optimal conditions for recruitment and seedling establishment during the next growing season.

Summer mowing (mid-July) resulted in a similar increase of flowering and overall seed shed to autumn mowing, but recruitment rates were lower because of a dense and tall vegetation structure at the time of germination. Consequently, population growth rates were lower compared with the autumn mowing regime.

No management of the grassland resulted in low growth rates and a mean annual population decline of 35%, because of high mortality rates of each life stage and a lack of recruitment. Recruitment rates were strongly reduced by lowered flowering probabilities and limited germination possibilities.

Correspondence: e-mail Rein.Bryns@instnat.be

R.K. Smith, N. V. Jennings, A. Robinson and S. Harris.
Conservation of European hares *Lepus europaeus* in Britain: is increasing habitat heterogeneity in farmland the answer?

Journal of Applied Ecology 2004, **41**: 1092-1102.

Habitat changes are thought to be the main cause of the decline in numbers of European hares, *Lepus europaeus*, throughout Europe. In Britain there is greater potential to increase hare numbers in pastoral landscapes than in arable landscape. Hares in pasture have lower population densities, poorer body condition and breed less than in arable habitats. The paper aimed to investigate how pastoral landscapes could be managed to benefit the species.

Hares selected fallow land and pasture grazed by cattle in preference to arable crops throughout the year, except during the winter when crops were suitable as forage. Pasture grazed by sheep was avoided in all seasons but winter.

Hares selected habitats with taller vegetation during the spring and summer. Many of the habitats selected were heterogeneous in structure mainly due to cattle grazing, and hares avoided short homogeneous vegetation in all seasons. Hares are more likely to be limited by habitat in terms of cover than food in these landscapes.

Increasing habitat heterogeneity at the farm scale may benefit hares, especially in highly homogeneous, intensively managed landscapes. However, managers of pastoral farmland should aim to increase habitat heterogeneity at the within-habitat (or within-field) scale in particular, to provide better cover throughout the year. Agri-environment schemes should target the regeneration of heterogeneity in pastoral landscapes, by encouraging changes such as an increase in fallow land and a reduction in livestock density.

Correspondence: e-mail r.k.smith@durham.ac.uk

A. H. Hirzel, B. Posse, P.A. Oggier, Y. Crettenand, C. Glenz and R. Arlettaz.
Ecological requirements of reintroduced species and the implications for release policy: the case of the bearded vulture.

Journal of Applied Ecology 2004, **41**: 1103-1116.

Species undergoing reintroduction offer a unique opportunity for clarifying their specific niche requirements because they are likely to colonize the most suitable habitats first. Information drawn from the individuals released first might thus be essential for optimizing species' policy as reintroductions proceed.

Bearded vultures disappeared from the European Alps about a century ago. An international reintroduction programme using birds reared in captivity was launched in 1986; up to 2003, 121 individuals had been released at four different locations. Subsequent dispersion throughout the range has resulted in a clumped occurrence of the first breeding pairs within three main zones that do not necessarily coincide with release areas.

In order to discern ecological requirements the authors performed a geographical information system (GIS) analysis of bearded vulture sightings collected in Valais (Swiss Alps) from 1987 to 2001. This area contained no release site but has been visited by birds from all four release points.

During the prospecting phase (1987- 94, mostly immature birds), the

most important variable explaining bearded vulture distribution was ibex biomass. During the settling phase (1995 - 2001), the presence of birds (mostly maturing subadults) correlated essentially with limestone substrates, while food abundance became secondary.

The authors suggest that population restoration would be more efficient if releases were concentrated within large limestone massifs. This case study of the bearded vulture illustrates the need for continual adaptive management in captive release programmes.

Correspondence: e-mail raphael.arlettaz@nat.unibe.ch

S. C. Votier, S. Bearhop, N.Ratcliffe, R. A. Phillips and R. W. Furness.
Predation by great skuas at a large Shetland seabird colony.

Journal of Applied Ecology 2004, **41**: 1117-1128.

Skuas are top predators in marine ecosystems and may have detrimental effects on seabird communities they prey upon. However, predation rates are poorly understood and poorly quantified. Using a bio-energetics model the authors estimated seabird predation by great skuas, *Stercorarius skua*, at a large UK colony (Hermaness, Shetland); investigating the influence of dietary specialization and fishery management on predation and exploring the effect of experimental removal of specialist bird predators.

Great skuas at Hermaness required 491.5×10^6 kJ and 546.6×10^6 kJ of energy in each of two breeding seasons. Breeding skuas fell into one of two groups: a small proportion (5%) of specialist bird predators or the vast majority (95%) that fed opportunistically on birds or specialized on fishery discards. During 1999, great skuas consumed 80,000kg of fish, which increased to over 90,000kg in 2001. About 13,000 seabirds were consumed by great skuas each year, with 26-29% being consumed by specialist bird predators.

Great skuas appear to be having a negative impact on seabird populations. Availability of fishery discards is an important factor influencing seabird predation rates, but predicting the effect of changes in fishery management may be difficult in the short term. Specialist bird predators consume large quantities of seabird prey, but this is less significant at the population level. Although experimental removal of specialist bird predators may reduce predation at a minimal loss of skuas, it is unclear whether conspecifics may replace them and retain high rates of predation.

Correspondence: e-mail s.votier@bio.gla.ac.uk

M. Frederikson, S. Wanless, M. P. Harris, P. Rothery and L. J. Wilson.
The role of industrial fisheries and oceanographic change in the decline of North Sea black-legged kittiwakes.

Journal of Applied Ecology 2004, **41**: 1129-1139.

Marine predators can be adversely affected by human activities in several potentially interacting ways. Industrial fisheries can affect predator populations adversely through competition for shared prey, and marine environmental change has also been implicated in population declines. In the North Sea, black-legged kittiwakes, *Rissa tridactyla*, have declined by > 50% since 1990, a period during which a lesser sandeel, *Ammodytes marinus*, fishery was active and profound oceanographic changes occurred. The authors studied the role of fisheries and oceanography in kittiwake declines on the Isle of May, south-east Scotland, where sandeels are the main prey.

Breeding success and adult survival were low when the sandeel fishery was active (1991- 98) and were also negatively correlated with winter sea temperature, with a 1-year lag for breeding success. Modelling indicated that the population was unlikely to increase if the fishery was active or sea temperature increased, and that the population was almost certain to decrease if both occurred.

Sandeel recruitment is reduced in warm winters, and the authors suggest that this explains the temperature effects on kittiwake survival and breeding success.

Poor breeding success of kittiwakes was associated with warm winters

and the presence of a local sandeel fishery. Reversing the trend towards warmer winters may be impossible and, at best, would be a very slow process. Therefore, to safeguard kittiwake populations we recommend that the current closure of the commercial sandeel fishery remain in place indefinitely. This study shows that adequate monitoring of the effect of a fishery or of environmental change on seabird populations needs to include survival as well as breeding success.

Correspondence: e-mail mfr@ceh.ac.uk

S. S. C. Harrison, J. L. Pretty, D. Shepherd, A. G. Hildrew, C. Smith and R. D. Hey.

The effect of instream rehabilitation structures on macroinvertebrates in lowland rivers

Journal of Applied Ecology 2004, **41**: 1140-1154.

Many lowland rivers in Western Europe have been substantially modified to aid land drainage and support the intensification of agriculture. Although there have been many attempts at rehabilitation, few have been systematically evaluated on ecological criteria.

Macroinvertebrates were assessed in 13 UK lowland rivers containing in stream rehabilitation structures, seven with artificial shallows and six with flow deflectors (intended to increase flow, depth and substrate heterogeneity within the channel). In each river, invertebrates were compared between stretches of river with and without rehabilitation structures.

Neither artificial shallows nor flow deflectors had any significant impact on the taxon richness of the benthos or of the rehabilitated stretch of the river as a whole. Invertebrate diversity of rehabilitated stretches related closely to that of reference stretches, indicating that larger scale factors constrained any impact of rehabilitation.

Local rehabilitation structures appeared to have minor biological effects in lowland rivers. The authors suggest that post-project appraisal should be more rigorously applied to rehabilitation schemes, measuring success against more clearly defined goals. There should be a greater emphasis on large-scale riparian, floodplain and catchment rehabilitation, rather than small-scale channel rehabilitation. Such a change in approach needs more effective cooperation and collaboration between all catchment users.

Correspondence: e-mail s.harrison@ucc.ie

S.L. Krauss and J.M. Koch.

Rapid genetic delineation of provenance for plant community restoration.

Journal of Applied Ecology 2004, **41**: 1162-1173.

This paper deals with minesite revegetation in south-west Western Australia and although the location may limit the application in the UK, the underlying principle merits further consideration. Best practice in native plant community restoration and/or revegetation recognizes the importance of using material of local provenance. At the practical level, various guidelines exist but these have limitations. The challenge is to deliver accurate provenance information rapidly to the restoration industry.

The authors demonstrate a novel approach to the rapid delineation of genetic provenance by utilizing minimal sampling, the power and efficiency of the AFLP DNA fingerprinting technique and a multivariate spatial autocorrelation analysis for four species.

Correspondence: e-mail skrauss@bgpa.wa.gov.au

L. J. Elliott, D. C. Mason, M. J. Wilkinson, J. Allainguillaume, C. Norris, M. Alexander and R. Welters.

The role of satellite image-processing for national-scale estimates of gene flow from genetically modified crops: rapeseed in the UK as a model.

Journal of Applied Ecology 2004, **41**: 1174-1184.

There is concern over the possibility of unwanted environmental change following transgene movement from genetically modified (GM) rapeseed *Brassica napus* to its wild and weedy relatives.

The aim of this research was to develop a remote sensing-assisted methodology to help quantify gene flow from crops to their wild relatives over wide areas. Emphasis was placed on locating sites of sympatry, where the frequency of gene flow is likely to be highest, and on measuring the size of rapeseed fields to allow spatially explicit modelling of wind-mediated pollen-dispersal patterns.

Remote sensing was used as a tool to locate rapeseed fields, and a variety of image-processing techniques was adopted to facilitate the compilation of a spatially explicit profile of sympatry between the crop and *Brassica rapa*.

This study used rapeseed in the UK as a model to demonstrate the value of remote sensing in assembling empirical information at a national level.

Correspondence: e-mail lje@mail.nerc-essc.ac.uk

S. S. Walls, R. E. Kenward and G. J. Holloway.

Weather to disperse? Evidence that climatic conditions influence vertebrate dispersal.

Journal of Animal Ecology 2005, **74**: 190-197.

Dispersal is regarded as critical to the stability of existing populations and the spread of invading species, but empirical data on the effect of travelling conditions during the transfer phase are rare. The authors present evidence that both timing and distance of ex-natal dispersal in buzzards, *Buteo buteo*, are strongly affected by weather.

Dispersal was recorded more often when the wind changed to a more southerly direction from the more common westerly winds, and when minimum temperatures were lower. The effect of wind direction was greatest in the winter and minimum temperature was most important in the autumn. Poor weather did not appear to initiate dispersal.

Dispersal distance was most strongly correlated with maximum temperature during dispersal and wind direction in the following 5-day period. Combined with the sex of the buzzard these three variables accounted for 60% of the variation in dispersal distance.

These results are important for conservationists who manage species recovery programs and wildlife managers who model biological invasions.

Correspondence: e-mail sean@biotrack.co.uk

J. L. Hierro, J. L. Maron and R. M. Callaway.

A biogeographical approach to plant invasions: the importance of studying exotics in their introduced and native range.

Journal of Ecology 2005, **93**: 5-15.

This is a thought provoking essay review on a highly topical subject.

Most theory and empirical research on exotic invasions is based on the assumption that problematic exotics are much more abundant in the regions where they invade than in the regions where they are native. However, the overwhelming majority of studies on exotic plants have been conducted solely within the introduced range. With few exceptions, ecologists know surprisingly little about the abundance, interaction strengths and ecosystems impacts of even the best-studied exotics in their native range.

It is argued that taking a biogeographical approach is key to understanding exotic plant invasions. Quantification of distributions and abundances of exotics in native and introduced ranges is crucial. Experiments conducted at a biogeographical scale are also necessary to elucidate the mechanisms that enable highly successful exotics to occur at substantially higher abundance in their introduced vs. native communities.

The leading hypotheses for exotic plant success are summarized. Tests of these major hypotheses for invasions (the natural enemies, evolution of invasiveness, empty niche and novel weapons hypotheses) require comparative biogeographical approaches.

Correspondence: e-mail jose.hierro@umontana.edu

M. Stastny, U. Schaffner and E. Elle.

Do vigour of introduced populations and escape from specialist herbivores contribute to invasiveness?

Journal of Ecology, 2005 **93**: 27-37.

Plant species may become invasive due to a lack of natural enemies (e.g. herbivores) in their introduced range. Absence of herbivores may result in selection for the loss of costly herbivore-resistance traits, which are expected to show a trade-off with vigour or competitive ability. The authors compared herbivore resistance and vigour of *Senecio jacobaea* plants exposed to the specialist flea beetle *Longitarsus jacobaeae*, for four populations originating within the native range (Europe), and four from regions where it had been introduced (New Zealand, USA) and was unaffected by *L. jacobaeae*. The predictions were that, compared with plants from the native populations, plants from introduced populations would experience greater herbivory (due to loss of resistance traits), and exhibit more vigorous growth.

Introduced *S. jacobaea* grew larger, and had greater reproductive output, than plants from the native range. Larger plants experienced more feeding damage and introduced plants also exhibited a greater relative ability to reproduce after damage was sustained, i.e. higher tolerance to herbivory.

Contrary to predictions, however, plants from introduced populations had higher total pyrrolizidine alkaloid production (chemical defence against herbivores).

The results imply that increased competitive ability (vigour) of invasive plants may be associated with changes in resistance as well as tolerance to herbivory, and both types of anti-herbivore defence may need to be examined simultaneously to advance our understanding of invasiveness.

Correspondence: e-mail ms489@cornell.edu

F. J. G. Mitchell.

How open were European primeval forests? Hypothesis testing using palaeoecological data.

Journal of Ecology 2005, **93**: 168-177.

Large herbivores are supposed to have maintained an open landscape in the primeval landscape of lowland Europe. The hypothesis was tested in this paper using palaeoecological data which suggests that the high abundance of *Quercus* and *Corylus* apparent in European pollen diagrams could not have derived from a landscape dominated by closed canopy forests. If natural forest landscapes were indeed more open, current forest conservation management policy across Europe would need to be reconsidered.

Relative proportions of *Quercus* and *Corylus* pollen are compared from regions which supported large herbivores with data from Ireland, where large herbivores were excluded. Similarity between the two data sets indicates that large herbivores were not required to maintain these taxa in the primeval landscape.

Fine spatial resolution pollen data from small hollows in Europe and eastern USA were also reviewed. Data from moss polsters show that percentage arboreal pollen is a reliable indicator of canopy openness in these sites. The palaeoecological data demonstrate that open canopy forest has only ever been maintained by human exploitation.

Large herbivores in Europe do not therefore appear to have maintained an open landscape in primeval times although evidence suggests that they would have influenced the species composition of the forest canopy.

Data sources other than pollen should be explored as proxies for past forest structure to test this hypothesis more thoroughly.

Correspondence: e-mail fraser.mitchell@tcd.ie

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No Agency CVs please.

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News in Brief

Botanists see Red

The latest Vascular Plant Red Data List for Great Britain is now available. This new list is the result of an analysis of the whole of the British flora. This is the first time this has been attempted and there are many species included that have never appeared on any threat lists before, but nevertheless are in rapid decline. The report shows that out of 1,756 taxa, 345 (19.6%) are currently threatened. The work was carried out by a partnership co-ordinated by JNCC, and including the Biological Records Centre (within CEH), Botanical Society for the British Isles, Countryside Council for Wales, English Nature, Natural History Museum, Plantlife, Royal Botanic Garden, Edinburgh and Scottish Natural Heritage.

For more information please contact Chris Cheffings, JNCC - 01733 866805.

Go Native!

Are you involved in a creative conservation project – to restore a damaged habitat or create a new one? If so, your project could be eligible to apply for a prestigious Go Native! Award.

Flora locale and IEEM have launched an award scheme to recognise those that have used best practice throughout their planting project. The awards are open to ecologists, environmental managers, rangers, farmers, foresters, community groups, landscapers, and anyone else that has planted in the countryside in the last 10 years. This award scheme proves to be an exciting competition and an ideal opportunity to promote the hard work carried out throughout the UK.

Judges will be looking for projects that have used native seed or plants of appropriate origin or have encouraged natural regeneration. Other aspects of good practice, as outlined in the Flora locale publication 'Go Native! Guidelines for planting projects in the countryside', will also need to be demonstrated.

For more information contact Liz Manley lizmanley@floralocale.org or 01488 680 458

Island Mink Eradication

The 'Hebridean Mink Project' was established to eradicate American mink from North Uist and Benbecula and to dramatically reduce their numbers in South Harris. The Project is being carried out in the interests of nature conservation, namely to protect threatened bird colonies of international significance. It has been underpinned by community liaison on the main issues and detailed research in the form of a feasibility study carried out by Central Science Laboratory. The project is crucial in determining how the larger task of eradication throughout Lewis and Harris should be approached.

The latest report from the Hebridean Mink Project shows that there is a steady reduction in the mink population in the Uists. There is an 80% decline of mink in the area compared to the previous year, giving a clear sign that mink are being eradicated successfully. The significant reduction of mink numbers in South Harris is successfully preventing recolonisation from the north.

For further information: Mairi Gillies, SNH Inverness, 01463 723134 www.snh.org.uk.



Scottish Botanists Scoop Top Book Prize

A prestigious prize for Britain's best botanical book of the year has been awarded to the six authors of *An Illustrated Guide to British Upland Vegetation* (reviewed in IP 44). Much of the guide focuses on Scotland's rich variety of upland plant groups and will be an important tool to help study the impacts of climate change. The authors include two staff from Scottish Natural Heritage (SNH), Dave Horsfield and

Des Thompson MIEEM, as well as Ben and Alison Averis, consultant botanists based in East Lothian, Marcus Yeo from the Joint Nature Conservation Committee in Peterborough, and John Birks, based in Bergen University, Norway.

The book, which is published by the Joint Nature Conservation Committee, was selected by the Presidents of the Botanical Society of the British Isles and the Wildflower Society for its accessible style and comprehensive summary of upland plants in Britain. It includes descriptions of 99 British upland vegetation types, such as a group of Scottish alpine plants found only in snow-beds. It is the only book of its kind to summarise Britain's upland plant communities. The book is available from: Natural History Book Service (www.nhbs.com) or 01803 865913 at a cost of £25 plus post and packing.

Ireland's Biodiversity Under Threat

Ireland's biodiversity is under severe pressure according to the Heritage Council. A serious national effort is urgently required and the Government, local authorities, industry, farmers and the general public will all need to make rapid changes to halt the decline. Pollution, pesticides, household and industrial chemicals, intensive farming, loss of natural habitats such as hedgerows, natural grasslands and wetlands are some of the reasons for the loss of biodiversity.

95 bird species such as the barn owl are threatened or in serious decline. The corn bunting has become extinct in Ireland since 1990. At least 120 plant species are endangered and many would now be extinct but for cultivation and breeding programmes in the National Botanic Gardens. The pearl mussel which is protected under the EU Habitats Directive is under serious threat. A study carried out 2004 in the South East shows that it is now facing extinction due to water contamination and loss of habitat.

Ireland along with the other EU member states has agreed a target to halt biodiversity loss by 2010. The government published the National Biodiversity Plan in 2002 and the Heritage Council has called for increased funding for projects to meet the actions outlined in the plan.

Rare Thames Birds Get Legal Protection

The heaths and woodlands in the Thames Basin, near London, which support large populations of rare birds such as the Dartford Warbler, the Nightjar and the Woodlark are to be upgraded to a Special Protection Area (SPA) under the a European Birds Directive.

The Thames Basin Heaths SPA contains wet and dry heaths, bogs, and a variety of woodlands which are all ideal habitats for three rare bird species listed in Annex 1 of the Birds Directive - 28% of Great Britain's population of Dartford Warblers, 10% of woodlarks, and 8% of nightjars are found there.

For more information about Heathlands in southern England please visit:

<http://www3.hants.gov.uk/biodiversity/heathland/heathland-visiting-heathland.htm>

Environmental Information Regulations Seminar

10th May 2005 University of Stirling

Crona O'Shea

Almost 40 delegates gathered at the University of Stirling to discuss the issues encountered with the newly imposed Environmental Information Regulations. Guest speakers from SNH, Lothian Wildlife Information Centre and BRISC (Biological Recording in Scotland) introduced the delegates to the technicalities involved and the uncertainty that still surrounds EIR. Representatives from SEPA, academia, NGOs and environmental consultancies participated in a useful discussion after the presentations and many continued into the evening over a very enjoyable dinner. Issues included providing open access to data, controlling access to environmentally sensitive data, charging, complying with the wishes of data owners, and the general conditions of EIR. Ways in which IEEM Scottish Section could assist to inform the members of EIR related issues were also discussed and it was decided to post information on the website. An excellent evening was had by all and the seminar format is certainly one that IEEM Scottish Section will employ again. Many thanks to the delegates who joined us and the speakers Sara Hawkswell (LWIC), Jennifer Davidson (SNH) and Alan Cameron (BRISC).

Institute News

Who's Who in IEEM - 2005

Unfortunately there was an omission in the list supplied last time, Hilary Ludlow continues to play an active part in the Professional Affairs Committee although she is no longer Chairman - hilary@ls-consultancy.co.uk

Kim Harding has resigned as Treasurer of the Scottish Section.

The TECDC is pleased to welcome Dr Fred Slater – slaterfm@cf.ac.uk

Professional Development Programme

Now is the time to think whether you would like to offer a course in the Professional Development Programme for next year.

We will be getting all the contributions together in the Autumn with the idea that they will be ready for the November Conference. This programme has become quite a feature of IEEM and Nick Jackson deserves much of the credit for its development, but of course it could not happen without contributions from members.

IEEM Website and Directory

I am surprised that a number of members who might benefit have still not yet signed up to the Commercial section of the Members Directory. It is never too late to do this. We get several phone calls every day asking for members to undertake work and these are routinely referred to the website as IEEM cannot recommend one member over another.

Membership Rates

The Finance and General Purposes Committee will be reviewing the membership rates shortly. Those paying by Direct Debit incurred no increase in fees last year but should there be an increase for next year, an advantage to paying by Direct Debit is likely to be maintained. So now is the time to sort out that Direct Debit Mandate.

IEEM November 2005 Conference – 2nd Call for Papers

As reported last time the conference will be held on the 15 – 17th November at the Carrington House Hotel in Bournemouth. The theme will be the effects of housing and other developments on ecology and also how we can consider the contributions of ecology to modern housing and development. There is still time to offer that paper, as it is always good to have contributions from members.

SocEnv – the deadline approaches!

CIWEM past president Professor Peter Matthews has been elected to Chair the Society for the Environment and will succeed the current Chair, Will Pope, at the end of June 2005. Peter Matthews is one of the founder-Directors of the Society, a board member of the Environment Agency, a CIWEM Council member and a Board Governor for Anglia Polytechnic University.

The Vice Chairman will be Dr John Brady of IEMA.

Applications to become a Chartered Environmentalist are still being received on a regular basis. Do not forget that the Grandparenting period will finish on 23rd September so anyone who has not submitted their application by then will be subject to the full admission process. As warned last time, this is going to be much more rigorous and is likely to incur a considerable fee to cover interviewers' travel expenses and other items – you have been warned – again!

The list of those who have been admitted since the last In Practice is included below:

Ms Leonie Alexander, Mrs Penny Anderson, Mr Damian Aubrey, Mr Philip Baarda, Dr Leo Batten, Mr Stephen Betts, Dr Janine Bright, Mr Luke Bristow, Mr Nicholas Brodin, Mr Peter Burston, Miss Emma Burton, Miss Karen Butterworth, Ms Elaine Cameron, Mr Geoffrey Carr, Dr Andrew Cherrill, Dr Patrick Coker, Dr Mark Crane, Ms L. Elspeth Cranston, Mr Peter Currell, Mr Edmund Darby, Mr Neville Davey, Mr Christopher Davis, Mr Michael Dean, Mr Dominic Driver, Ms Lorna Edey, Mrs Karen Edwards, Mr Hugh Ellacott, Mr Dominic Farmer, Mr

Richard Farmer, Mr Sean Flynn, Mrs Nicola French, Mr John Gallacher, Mr Simon Geary, Mr Daniel Gotts, Mr Gary Grant, Mr Jonathan Gulson, Mr Michael Hall, Ms Helen Hamilton, Ms Jane Harris, Mr Jonathan Hart-Woods, Mr Nicholas Heasman, Mr David Hoare, Mr David Hunter, Mr Keith Hutcheon, Mr Stuart Ireland, Ms Kate Jeffreys, Mr Julian Jones, Mr Matthew Jones, Mr Thomas Keatley, Ms Kathy Kennedy, Mr Mark Lang, Mr Shane Larkin, Mrs Penelope Lewns, Mr Mark Mifsud, Mr David Morgan, Mr Philip Morgan, Mr Roger Morris, Mr Stephen Muddiman, Ms Mieke Muyliaert, Dr Timothy Norman, Dr William O'Connor, Mr John O'Reilly, Dr Duncan Painter, Ms Sarah Pemberton, Mr Simon Phipps, Mrs Lizbe Pilbeam, Dr Helen Read, Mr Neil Redgate, Mr Glenn Richards, Dr Lynsey Robinson, Mr Benedict Rose, Ms Rowena Scott, Mr Ian Tanner, Mr Reuben Singleton, Ms Hilary Smith, Mr Duncan Watson, Miss Alison Williamson, Mr Richard Wilson, Mr Michael Woods.

Consultations Update

EAC has responded to several consultations since the last update In Practice namely: Review Of Part I of The Wildlife And Countryside Act 1981 and the Quinquennial Review Of Schedules 5 & 8 of The Wildlife & Countryside Act 1981. Both responses are available to view on the IEEM website <http://www.ieem.org.uk/Consultations.htm>

New Constitution

For those of you who were wondering what had happened to the new Constitution (and I get the feeling that there were not very many!) I can report that there has been a delay and the proposals are now expected to be approved by Council at its next meeting. They will then be put to the membership for approval at the Conference and AGM in November. It is probably better to get a Constitution right even if it takes a little longer, rather than to have to modify it later.

New Member of IEEM Staff

The Institute is very pleased to welcome a new member of staff. At the beginning of May, Mrs Linda Yost joined the current four members of staff at its office in Winchester in the new post of Deputy Executive Director. In this new role Linda's main responsibilities - to begin with - are to service the Professional Affairs Committee, which deals with the Professional Code of Conduct and to work with and support the development of the Geographical Sections. Once the Grandparenting route for registration as a Chartered Environmentalist comes to an end in September this year, she will also take on the management of applications for Chartered Environmentalists.

Linda recently returned from India having spent nearly a year volunteering with an Indian NGO working with tribals on sustainable development. Prior to this she worked for Scottish Natural Heritage and at the Joint Nature Conservation Committee covering a range of duties from European and international issues, sustainable development to Natura 2000. Linda is one of our Chartered Environmentalists and has qualifications in Applied Environmental Economics and Animal and Plant Ecology.



Linda (right) at the Taj Mahal

Recent Publications



Wind Power - A guide to the key issues surrounding onshore wind power development in the UK

Author: Sustainable Development Commission

Available from: www.sd-commission.org.uk

Wind power development arouses strong opinions. For the general public, a high level of support nationally for wind power can be contrasted with huge opposition at the local level.

The aim of this report is to outline the main issues relating to onshore wind power. It is also to develop the argument of how wind

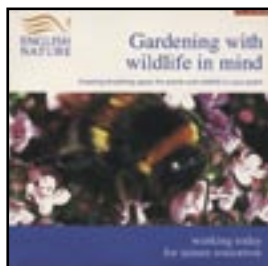
farms fit within the UK's Framework for Sustainable Development.

With commitments towards a 60% reduction in CO₂ emissions by 2050, one could argue that the UK's wind resources are more than enough to meet current renewable energy targets.

The report is comprehensive and examines many aspects of wind farms as a sustainable source of energy from Cost Benefit to Aviation and Radar. The report freely discusses the environmental impacts of this carbon free source of energy.

In this report there is a good section on the wildlife and ecology impacts, discussing the interaction between wind farms and wildlife, birds and natural systems. The report maintains that the impacts are highly site specific. Wildlife and habitat impacts are best mitigated through careful project location, design measures and appropriate construction techniques. The report goes on to discuss why Environmental Impact Assessment is necessary for all major wind projects and states that strategic planning is important to ensure the most sensitive sites are avoided.

This report will be of interest to local planners, councillors, consultants, and communities with the difficult task of assessing the needs of the wider environment against local concerns. It summarises a lot of information about the complexities of wind power generation from: costs, intermittency issues, effects on the electricity network, noise, ecological and landscape impacts among others. It also has many useful case studies and examples; gives you a very good starting point and is well recommended to help with your considered decisions.



Gardening with Wildlife in Mind

Author: English Nature

Cost: £9.99 (add £1.50 for postage and packing)

Available From: Plant Press, 10 Market Street, Lewes, East Sussex, BN7 2NB, Tel 01273 476151.

Interest in gardening for wildlife in the UK has never been higher. English Nature has launched a CD Rom, 'Gardening with wildlife

in mind' to help make the UK's green fingers greener.

This CD is aimed at gardeners who want to attract more wildlife into their garden. This doesn't necessarily mean leaving areas of the garden an unkempt wilderness. There are many beautiful photographs of over 800 different species of flora and fauna. It shows which creatures favour which plants and what the distribution of each species is throughout the UK. This feature enables you to track down the right plants for the birds, mammals and insects that you want to attract to your garden and whether they are distributed in your area.

'Gardening with wildlife in mind' has hundreds of tips about gardening, advice about habitat creation and a useful bibliography for further reading. With over 15,000,000 gardens in Britain, there is a huge area of fragmented habitat out there. With this CD you could help reduce this fragmentation and bring back a wide variety of species to your garden including bees, dragonflies and birds.

The CD is not, and does not claim to be, the definitive guide to all the gardening for wildlife, but it focuses on a relatively small number of species that are both distinctive and desirable. It also includes some of the species most gardeners would rather not have, such as slugs and snails, emphasising the valuable role they play in attracting species that people enjoy seeing, such as song thrushes, slow-worms, frogs and toads.



Speaking a Common Language: The uses and performance of the IUCN System of Management Categories for Protected Areas

Authors: Kevin Bishop, Nigel Dudley, Adrian Phillips and Sue Stolton

Cost: £14

Available from: the JNCC Order No. B2199
ISBN: 1-902647-48-3, 2004

In 1994 after decades of development, IUCN published guidelines for protected area management categorisation. This guidance remains the only widely recognised international system of protected area

categories. The system of protected area management categories lies at the centre of IUCN's work and its mission; their effective use is of fundamental concern to the Union and its members. This report takes a look at the successes, failures, strengths and weaknesses of the categories after a decade of use.

The IUCN categories were originally developed as a common language to help communities and reporting on protected areas. In the decade since publication in 1994, several things have happened to stretch and perhaps sometimes distort this original aim. It seems that what began as a simple classification system has assumed a far greater political importance.

The Speaking a Common Language Project was reviewed at the 5th World Parks Congress in 2003. IUCN and a range of organisations supported the Speaking a Common Language Project to undertake two main tasks.

- To establish the impact and effectiveness of the 1994 IUCN category system and the previous version, in terms of the adoption and influence of the system, nationally, regionally and internationally.
- To examine what needs to be done to develop and promote the objectives based system of protected area categories itself, leading to proposals to IUCN and its World Commission on Protected Area (WCPA) about future development of the category system.

The report suggests that overall the project has reaffirmed the conservation values and the importance of the 1994 category system. It has confirmed the general recommendation from WCPA that no changes should be made to the 1994 category system. However, several ways were identified in which the interpretation and the application of these systems could be improved. These general conclusions have been supported by a recommendation initially prepared by the project team and then modified and endorsed by a workshop at the 5th World Parks Congress:

- to alert government to the importance of protected areas;
- to encourage governments to develop systems of protected areas with management aims tailored to national and local circumstances;
- to reduce the confusion that has arisen from the adoption of many different terms to describe different kinds of protected areas;
- to provide international standards to help global and regional accountability and comparisons between countries;
- to provide a framework for the collection, handling and dissemination of data about protected areas; and
- those engaged in conservation.

While many of these goals have been achieved. It seems not all have been as successful as had originally been hoped.

This report goes into detail about the various successes and failures of the project. It will be of interest to ecologists and environmental managers who deal internationally with protected area management and also to those who want to understand the world standard in classification of protected areas.

Prospective members of IEEM

IEEM is pleased to welcome applications for membership from the following:

If any existing member has any good reason to object to someone being admitted to the Institute, especially if this relates to compliance with the Code of Professional Conduct, they must inform the Executive Director by telephone or letter before 22nd July, 2005. Any communications will be handled discreetly. The decision on admission is usually taken by the Membership Admissions Committee under delegated authority from Council but may be taken directly by Council itself.

Full Membership Applications

Mr David Allen, Mr Ron H. Allen, Mr Olu U. Andah, Mr Jonathan Barnes, Mr Benjamin M. Benatt, Mr David Bevan, Ms Bronwen Bruce, Mrs Alison Carroll, Mr Dominic C. Coath, Mr John Darbyshire, Mr Christopher E. Dogbey, Mr Peter M. Dullaghan, Dr John Feltwell, Ms Victoria G. Fletcher, Ms Shona Gentry, Miss Charlotte Harris, Dr David S. Hubble, Mr David Inman, Mr Philip Macari, Mr Peter J. Marsh, Miss Sian McDonald, Mr Guy D. Morrison, Mrs Jane L. Nordstrom, Miss Leela E. O'Dea, Dr Paul O' Donoghue, Ms Dawn A. Phythian, Mr Alan D. Preece, Dr Ingo Schuder, Miss Nicola Tallach, Mrs Angela M. Walker, Ms Catherine A. Weightman and Miss Faith Wilson.

Associate Applications

Mrs Melanie J. Ashton, Mr Richard J. Belt, Mr Nigel H. Bousfield, Mrs Jennifer R. Bowles, Mr Tom Chambers, Miss Suzanne Cooper, Miss Jennifer R. Davis, Mr Barry C. Embling, Miss Ruth C. Fletcher, Miss Hannah Graves, Mr Richard C. Harris, Mr Andrew B. Karran, Mr Conor Kelleher, Miss Katie Lawrence, Miss Morna C. McBean, Miss Kim A. Olliver, Miss Helen M. Parish, Mrs Nicola M. Rivers, Mr Craig Sandham, Mr Joe Stevens, Ms Alexia Tamblyn, Mr Kenneth Taylor, Miss Catherine E. Warner, Miss Jennifer M. Weaver, Miss Lauren West, Mr Joseph W. Whittick, Miss Hannah K. Wilson-Smith and Miss Clare Wyllys.

Admissions

Full Members

Miss Alison B. Allen, Mr Michael J.S. Armitage, Mrs Amanda Baker, Ms Ione Bareau, Dr Jonathan Benghe, Mrs Judith E. Bennett, Mrs Joanna V.E. Brooks, Mrs Louise Brown, Ms Julie A. Bywater, Ms Joanne Castile-Roberts, Ms Aebhin Cawley, Dr Paul D. Clack, Mrs Helen L. Crook, Miss Helen I. Demopoulos, Dr Jonathan S. Denton, Mr Paul A.T. Doyle, Mr John Drewett, Miss Clare D. Du Heaume, Mr John L. Durkin, Ms Michelle Edwards, Dr Catherine A. Farrell, Mr Sean P. Gallagher, Dr Lincoln Garland, Mr Paul R. Gregory, Mr James Hale, Miss Victoria J. Hale, Dr Judy E. Halpin, Dr Jacqueline M. Hay, Dr Gabriel E. Hemery, Miss Emma-Rose Herrera, Miss Anita Hogan, Mr David Jones, Mr Steven J. Judge, Dr Dorian M. Latham, Mr Andy Lees, Dr James Littlemore, Dr Theo Loizou, Mr Paul Losse, Dr Antony D. Martin, Mr Paul R. Massey, Mr Benjamin P. McFarland, Dr Christopher McMullon, Dr Kathryn A. Medcalf, Mr John E. Messenger, Miss Lysbeth B. Muirhead, Miss Rosalyn C. Park, Dr Philip D. Putwain, Mr Jonathan C. Riley, Ms Lesley A. Rippon, Mrs Sarah Robertson, Mr Gary S. Rushworth, Mr Ciaran Ryan, Mr Mark Smith, Mr Nicholas A. Steggall, Mr Desmond J. Sussex, Mr Giles O.J. Sutton, Miss Georgina Terry, Mr Stephen Trotter, Mr Andrew Virtue, Ms Amanda L. Vivian-Crowder, Mr Andrew S. Waller, Mrs Kate L. Warr, Miss Elaine C. Weller, Mr Christian Whiting, Mr Michael Wilson and Mr Mark E. Winder.

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Mr Nicholas Aldus, Mr Edward Austin, Miss Karen Banks, Miss Alison S. Bennett, Mr Geoffrey E. Billington, Miss Rebecca Bohane, Mr John A. Booth, Ms Liz Brandon-Jones, Miss Carole A. Brind, Ms Ania S. Campbell, Miss Ceri A. Crofts, Miss Katherine A. Degenaar, Miss Harriet H. Dennison, Mr Stephen R. Dixon, Mr Pat Doherty, Mr Benjamin J. Fisher, Dr Joe Franklin, Mr Mark A. Goddard, Mr Richard J. Gotheridge, Mrs Deanne Gow, Mr Trevor J. Hall, Mr Simon J. Hirst, Miss Claire E. Hopkins, Dr Clare L. Hughes, Miss Katie L. Jones, Miss Ruth E. Jones, Mr Donald Kernott, Mr Andrew D. King, Dr Alan D. Kirby, Mr William Lever, Mr Kris Long, Mr Christopher P. Matcham, Miss Jill McCormick, Dr Peter M. McEvoy, Ms Marie-Claire McKenna, Mr Christopher McPake, Miss Caroline M. Mellor, Mr James S. Mepsted, Mr Gary Noble, Mr James R.M. Patmore, Mr Philip Pearce, Miss Julie Powell, Miss Laura C. Prosser, Miss Clare E. Pugh, Mr Steven D. Ralph, Mr Sven N. Rasmussen, Miss Georgina C. Reynolds, Miss Nadine A. Rolls, Mrs Colette Sales, Miss Beth E. Seldon, Ms Susan Slamon, Miss Laura S. Smith, Mr Philip J. Smith, Miss Laura M. Steele, Miss Lucy Stuart, Mr Andrew C. Taylor, Miss Mary H. Toomey, Miss Sarah J. Tunstall, Miss Beatrice Underwood, Miss Rebecca J. White and Dr Liat P. Wickramasinghe.

Affiliates

Mr Roger L. Jones, Mr Richard A. Kingston, Miss Rosemary J. Parker and Ms Jean Roberts.

Students

Mr Michael J.H. Brown, Mr Howard J. Fearn, Mr Daniel T. Foster, Mr William Gaudie, Mr David P. Goddard, Mr Nicholas J. Henson, Mr Philip W.E. Knott, Miss Amy V. Limb, Mr Adam J. Lockyear, Mr Daniel W. Neave, Mr Martin O'Connor, Mr Johan T. Oler, Mr Martyn Perkins, Miss Nicola Pyle, Mr Kevin Scott, Mr Don Thompson and Miss Genevieve E. Winters.

Upgrades – Associate to Full

Mr Nicholas J. Bonsall, Mr Thomas Clarkson, Miss Janet H. Collins, Mr Ian Craft, Dr Peter J. Gilchrist, Miss Angela M. Graham, Mrs Ruth F. Hadden, Miss Alexandre Harper, Dr Glenn Langler, Miss Kristina A. Lewis, Mr Nick Mott, Miss Sarah Ryan, Mrs Susan M. Searle, Mr Christopher I. Slack, Miss Tracy Stanley, Miss Susie Udall, Miss Natalie Walker, Miss Harriet S. Webb, Dr Charlotte C. Webbon, Mrs Jackie Webley, Dr Andrea Wilcockson and Miss Clare L. Williams.

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

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

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

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

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

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

12-14 July. IASME / WSEAS International Conference - Energy, Environment, Ecosystems And Sustainable Development. Vouliagmeni, Athens, Greece.
Details from info@wseas.org.

13 July. Water Framework Directive Diffuse Pollution - A Reality Check of the Key Challenges. SOAS, London.
Details from Bob Earl bob.earl@coastms.co.uk or 01531 890415.

19 July. Paving the Way for Sustainable Drainage. Manchester. This one-day course will assist construction professionals with the specification and design of pervious pavements.
Details from Ciria 0207 549 3300 or www.ciria.org/workshops.htm.

21 July. Involving Communities through Consultation. Doncaster. Methods of involving people in decisions which affect their environment and lives.
Details from etn@btcv.org.uk or 0121 507 8390.

5 September. Biomass – Willow and Grass energy Crops for Heat and Power – a joint Event between EMBLI and IEEM. Nottingham..
Details from Bob Edmunds Tel: 01773766020

5 - 7 September. BES Annual Meeting. University of Hertfordshire, Hatfield, UK. As well as the usual sessions there will be thematic topics on marine conservation, freshwater biodiversity, fungal ecology, diversity and conservation in the tropics, agri-environment schemes and individual-based modelling, all with invited keynote speakers.
Details from info@BritishEcologicalSociety.org or 0208 871 9797.

7 September. Bringing the Bittern back to Leighton Moss – NW Section Meeting. RSPB Leighton Moss Reserve, Carnforth. Start time 11.00am. The event will consider EU Life-Nature projects to restore and link wetland habitats of particular importance for the Bittern.
Details from Paul Rooney rooneyep@hope.ac.uk or 0151 291 3933.

7 - 8 September. Energy 2005. National Motorcycle Museum, Solihull, Birmingham. Energy 2005 will offer a unique and invaluable opportunity to demonstrate the products and services available to UK buyers and specifiers of energy products.
Details from <http://www.energy2005exhibition.co.uk/>.

13-15 September. Resource 05. Building Research Establishment (BRE), Watford. This three-day programme of seminars, workshops, demonstrations and visits reviews the latest low carbon technologies and shows how they can be integrated into buildings.
Details from <http://www.resource05.com>.

20 July. Controlling Japanese Knotweed (and other invasives) in Swansea. Ecology, surveys, action plans and control methods will be investigated with visits to a number of Swansea's infamous 'knotty sites'. Part of the IEEM CPD Programme.

7 September. Protected Mammals in Ecological Impact Assessment. Stirling Area. This workshop will give a general overview of how to deal with protected mammals in Ecological Impact Assessments. Part of the IEEM CPD Programme.

8 September. Delivering Integrated Coastal Zone Management (ICZM). Newcastle upon Tyne. This workshop will introduce the principles and status of ICZM and the key environmental and institutional barriers to successful ICZM. Part of the IEEM CPD Programme.

14 September. Seeds of Local Provenance and North East Section AGM. Durham Wildlife Trust, Rainton Meadows, Chilton Moor, Houghton-le-Spring. Start Time 5.00pm and AGM 6.30pm. To consider the importance of genetic conservation and the pro's and con's in using local seed sources. How local is local? To include the Regional AGM with a local social event afterwards.
Details from Steve Pullan steve.pullan@virgin.net or 0191 266 1769.

15 September. Lake and Reservoir Management. Carsington Water, Derbyshire. The course will offer an introduction to the management of lake and reservoir sites, looking at wetland ecology, habitat design and creation, recreational zoning and the impacts of fluctuating water levels. Part of the IEEM CPD Programme.

23 September. Paving the Way for Sustainable Drainage. Edinburgh. This one-day course will assist construction professionals with the specification and design of pervious pavements.
Details from Ciria 0207 549 3300 or www.ciria.org/workshops.htm.

27 September. Envirenergy 2005 for Yorkshire and the Humber. Royal Armouries Museum, Leeds. There will be up to 50 stands in total this year and exhibitors cover a wide spectrum of energy and environmental companies.
Details from <http://www.envirenergy.org.uk/EnvYH2005.html>.

10 October. Habitat Classification and Mapping. National Botanic Gardens, Dublin. The venue is quite handy for Dublin Airport, being on the north side of the city.
Details from Richard Nairn rnairn@natura.ie or 0404 64020.

15 - 17 November. Development and Ecology. Bournemouth. Looking at the Impacts of Housing Developments on Ecology and Ecologists.
Details from Nick Jackson nickjackson@ieem.demon.co.uk or 01962 868626.

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