Rewilding

ECOS Writing on wildland and conservation values

ed. Peter Taylor

Part 1: Issues

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Frontispiece: Hunter with lynx in Norway (Peter Cairns/ Northshots)

Rewilding

Introduction and history of the Wildland Network

Part 1: Issues

Part 11: Projects

Projects

Knepp
Weald
Essex coastal
Fens
North East
Ennerdale
Tweed Rivers
Carrifran
Glen Affric
Mar Lodge
Alladale
Snowdon
Holland

Part III: Species

Beaver
Boar
Wolf
Lynx
Bear
Big cats
Water vole
Big birds

PART I

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Special thanks for photographic material are due because ECOS does not keep the original illustrations and we have had to ask for authors and organisations to help with originals or other suitable photos: to Keith Kirby of Natural England; Chris Robbins and Carl McKie of Derek Gow Consultancy ; and Peter Cairns and Mark Hamblin of Northshots; Hans Kampf in Holland.

Introduction

There is a wealth of information and experience among wildland projects. much of which is recorded but dispersed in ECOS articles and in the notes and proceedings of Wildland Network meetings. This volume meets the growing need for a single source for this and related rewilding material for students, journalists and writers. WN felt it important to have a source book that reflects the very special work in Britain compared to the large scale projects and planning in the US and the special circumstances of continental Europe.

There has been a 'rewilding' movement in Britain since at least the mid-1980s (thinking in particular of the Trees for Life project in Glen Affric) but it has received far less publicity than American schemes. This rewilding has emerged from our own roots and circumstances, with a philosophy appropriate to a crowded island, rather than on a continental scale. The US dictum, 'cores, corridors and carnivores' has relevance, but we are some way from bringing back large carnivores - at least deliberately, whereas cores and corridors have been central to conservation thinking in Britain for several decades.

As this text has come together, one thing has struck me forcibly – the great range of topics and individuals, organisations and strategies involved, representing a formidable amount of work – truly a 'new wave' in nature conservation thinking. But perhaps *most* impressive of all is the range of on-the-ground projects with their histories. This is not a revolution of thinking alone, but a quiet practical unfolding of new and more creative ways of extending reserves and managing land

In this, the role of WN has been simply to network thinking and practical experience. Since its inception in May 2005, we have brought a very large array of people together from every major conservation organisation in Britain. I can recall a time when ecologists within government agencies in England knew very little of the pioneering work of Trees for Life in Scotland, or the significance of the Ennerdale project and its cooperative model engagement between major land-owning bodies such as the National Trust and Forestry Commission.

At the outset, a small number of people meeting as the 'wildland group' decided that a network structure would best facilitate what was effectively already under way. Our task would be to facilitate dialogue, mutual learning and opportunities to see things from other points of view in a 'neutral' space. Such a non-membership structure has the limitation that it cannot so readily lobby or campaign and this concerned some of us, but that limitation more readily supported a wider participation, with no one organisation or individual needing to fear being compromised by campaigns and press statements – whether calling for the re-introduction of carnivores or opposing wind turbines in wild and beautiful places.

We also did not get embroiled in academic issues of definitions – it was wilder to have none! Though the pages of ECOS did rehearse the issues, there was a wide church and we accepted that any practice that made things 'wilder' was relevant, and thus although there was always a core interest concerned with large-scale land management and restoration of ecosystems. our interests stretched to smaller scale rewilding of river systems and urban areas.

As editor of this volume, I have focused on issues, projects, and candidate species for re-introduction. The book is therefore in three parts, with an introductory history of the Network itself. This latter brief review covers eleven meetings and issue-based seminars in England, Scotland and Wales between 2004 and 2009 – the first being preparation for the launch of the Network in 2005 and the last being the launch of the Wildland Research Institute (WRi) in October 2009, after which the Network felt that its primary work was done. This historical section constitutes, among other things, a guide to activism that I hope students of conservation will study in itself, because conservation – much as I would personally like to replace a term that embodies conservatism, if it is to advance, *requires* active engagement in policy. Such engagement takes many forms: it requires hours of dedicated and dull work setting up meetings, booking venues, organising speakers, food and accommodation, controlling expenses and then writing it all up and disseminating the results. In this, I have been fortunate to work with some extra-ordinary individuals in the core-group who do not feature large in the writing of articles – the ECOS editor Rick Minter, alongside Alison Parfitt, have been stalwart organisers and facilitators, with Alison taking on a huge amount of work in the write-ups; Mark Fisher has held the website together; on a regional level, Simon Ayres and Mick Green have networked in Wales and Dan Puplett and Alan Watson Featherstone in Scotland; Toby Aykroyd has taken the message into the upper echelons of European bureaucracy under the Wild Europe initiative; and in the later years, Steve Carver with the help of Mark Fisher brought together the academic element as the Wildland Research Institute at Leeds University, just four years after we had our launch there.

In any appraisal of the schemes over the past twenty years, students should note above all that change has come through the actions of key individuals – champions *on the ground* and in their own community. David Russell, head forester with the National Trust, was hugely influential in pioneering a more 'hands off' approach to large areas under the Trust's management; Gareth Browning, beat forester in the western Lake District, took on the task of maintaining the Ennerdale vision. Keith Kirby at Natural England (and all its predecessors!) engaged with the many facets of this growing public desire for rewilding. Respected academics such as Jules Pretty at Essex University and Adrian Phillips at Cardiff University have chaired meetings that have helped raise an ill-defined movement toward respectability in the corridors of government. Simon Ayres, a forestry consultant, organised meetings in Wales and latterly founded the Wales Wild Land Foundation and the Cambrian Wildwood Project. Progress in Wales has been slow and as with any shift in an old paradigm, movers and shakers face a lot of inertia.

At the start of 2011, members of the WN founding and coordinating group still network. However, they have realised that their earlier aspirations to raise awareness, bring people together to share and develop learning and experience have in large measure been achieved. Therefore a new phase of wilding and developing wildland is now needed. At this stage it is worthwhile to reflect on things that are missing from the picture or early aims that have not manifested. We had hoped to have had more detailed maps of potential wildland, 'opportunity mapping' of landscape scale projects and habitat restoration, corridors, barriers and conflicts (such as renewable energy developments). There are at present several such maps 'on paper' within organisations such as the Wildlife Trusts and the RSPB, but still no overall national picture or point of contact. This is work that WRi would be able to co-ordinate.

We had hoped to have seen greater levels of cooperation between the larger voluntary bodies such as the National Trust, Forestry Commission, the Woodland Trust, Wildlife Trusts and RSPB in creating core-areas and corridors – in particular through the strategic purchase of land. However, none of these organisations is entirely free to embrace the wildland ethos even as a subset of its broader strategic aims. Some of us would like to see a new organisation that would take on this task – of mapping the potential and then marshalling resources for strategic purchase. Just 10% of the income stream from the major voluntary bodies would exceed £20million/annum and there would be a good chance that government or lottery funds would match that investment.

In the immediate somewhat austere future, the Heritage Lottery Fund has an undiminished amount available and an enthusiasm for landscape scale projects - witness Neroche and the Great Fen project, but with that source also comes the need for access, interpretation and maintenance of a cultural heritage that does not readily embrace rewilding. I would still argue as I did in the book *Beyond Conservation* for three flagship core-area rewilding schemes in England, Scotland and Wales. And I note, that, as then, we know very little of developments in Northern Ireland and the Irish Republic.

There is also still much to be learned about European and US projects. In this volume we have pulled together a good few articles on the Dutch experience, which has great relevance for crowded, largely urban environments, and also on species re-introductions in Europe that may have lessons for Britain, but there is much more to document. Given the pace of development unleashed by the EU's intended remedies for climate change – turbines, barrages, biofuel plantations and hydro-schemes, with their attendant roads and pylons and all in wild places, we need to know much more about what is happening in Eastern Europe, Greece, Spain and Portugal.

We also need to know more about prospective changes to the EU's agricultural support schemes. They are currently being revamped and although many organisations are involved in lobbying, including Toby Aykroyd's 'Wild Europe' initiative, it is difficult to get any sense of how successful this process may be. There is an excellent website - www.rewildingeurope.com which features regional initiatives in Spain, the Carpathians, Croatia, and the Danube delta, all of which aim to bring wild grazers to open landscapes threatened by abandonment (see also www.largeherbivore.org).

Finally, there is a sense – expressed recently among BANC council, that with the 'new austerity' and the shifts in consciousness that go with it, that the constituency of conservation is also likely to shift. We are seeing a growing involvement of the health and education sector in wildland issues as well as in 'nature' generally. There is a public hunger for closer contact with wild nature – contact that has spiritual and therapeutic motives that are not necessarily met by the strictly scientific criteria and targets applied to key habitats (see the articles by David Russell, Samantha Ellis and Hannah Pearce).

The 'issues' we have covered in Part 1 are diverse: the nature and role of 'aliens' such as grand old Douglas Fir, Norway and Sitka Spruce...which the public have grown to love; grey squirrels; feral boar and big cats; preparing for climate change; the 'common' and popular (such as elder/blackthorn scrub) versus the rare and largely unknown (such as Large Blue butterflies). Indeed, love itself is gradually daring to speak its name as conservationists come out from behind their analyses of ecosystem benefits and EU Habitats Directives, and start to celebrate this broader world of public perception and desire. Wild nature still offers succour to the jaded souls of a crowded land and a competitive world and in this, the future constituency for rewilding is very large.

ECOS has always encouraged writing at the interface of conservation science, public policy and public perception, without necessarily elevating science above the world of appreciation and feeling. However, the more clearly poetic and artistic does not feature large and rewilding has a lot more to offer than traditional conservation practice in this respect. I would personally like to see more of a marriage in our work between the left and right hemispheres of the brain as evident in our gathering at Findhorn and in the *Forest Schools* approach at Neroche.

In Part II we present an amazing variety of projects. One of the great services that BANC and in particular Rick Minter has performed is the pulling together and presentation of this work in ECOS and in the commissioning of *Beyond Conservation.* I never fail to be impressed by the diversity of approaches – from private landowners such as Charlie Burrell at Knepp, who has little interest in a commercial project, compared with Paul Lister in Alladale, who envisions a touristic safari-park; to collaboration of large organisations like the Forestry Commission, National Trust and United Utilities in Ennerdale – all land-owners, some with tenant farmers, or the collective purchase by subscription of marginal grazing land in the Southern Uplands, by the Carrifran initiative and the Borders Forest Trust. Organisations such as the RSPB are engaged in large scale habitat restoration – such as reedbed and fenland as well as coastal marshes, and we could have liaised more in the past to pull this together and showcase it here, as also with the Wildlife Trusts' regional initiatives. The role of government agencies and funders in relation to all of these projects would also make an interesting research topic as it is clear that Natural England and the Forestry Commission have worked to bend the rules that presently favour the old paradigm of domestic grazing. The Heritage Lottery Fund is becoming a key funding source and we should know more of it values and modes of decision making.

On species reintroductions, reviewed in Part III, there are more problematic issues to report. At the time of writing, Scottish Natural Heritage look to have actioned a capture and eradication scheme for escaped beaver on the Tay, whilst supporting a pilot but well-contained release project in Knapdale. We document the mixed reception that escaped wild boar have had and the dilemma that Whitehall faces. Government is still in (public) denial about the existence and possible breeding of feral big cats in Britain, despite mounting evidence and an admission from the Forestry Commission in the Forest of Dean that they have monitored panthers as well as wild boar in their woods. Several police forces accept the presence of the cats. I am still waiting for my first personal sighting (an impressive video of a distant running black panther was taken only a week ago in Westernzoyland, only a few miles away!), but donning my zoologist's hat, I have examined undoubted big cat kills in Wales – and many trusted friends have seen both black 'panther' and puma. There are many reports of lynx in mainland Britain.

We are thus faced with ongoing 'rewilding' as much by accident as design and a rather confused government response. Much is made by scientists of provenance and genetics – which a public admiring charismatic animals cares little about, and this surfaced with 'escaped' eagle owls breeding in Northumberland. Even the RSPB were unenthusiastic about this powerful predator. That ultimate symbol of the wild – the wolf, would be well received by large sections of the public, but governments respond to entrenched and often ignorant and irrational attitudes from both the farming and game-shooting communities, despite evidence that wolves in Europe and the US do not compromise the economic well-being of rural communities and may bring much-needed visitor revenue. If we ever get to an introduction of bears in Scotland, we will know not only that attitudes have fully revolved, but also that habitats have been extensively restored to support them.

And finally, from a privileged position of having either worked with or met many of the people engaged in this movement and featured in this book, I know that the rewilding process is very much a matter of the heart. In this, science takes its rightful place as a tool-kit. We are not here just to study or conserve nature, but to transform it! We are thus working as co-creators. Yet, nature reserves were set up very largely as laboratories for scientific study – representatives of ecosystems and habitats and assemblages of species in areas of *special scientific interest.* Only later, with the large scale transformation of agriculture and road transport, did they become islands besieged. They were not designed for this purpose. There is a need for larger scale reserves, corridors, core areas and re-introductions of species that in themselves transform and sustain habitats – such as beaver, wild grazers and their predators. We are perhaps one-fifth of the way forward on the ground, and perhaps as much as half-way in the shifting of paradigms.

Peter Taylor
May 2011

Development of a Wildland Strategy: a short history.

The concepts and practices of rewilding did not start with the Wildland Network, of course, but antecedents are not well traced. Certainly, the full rewilding ethos was articulated in the mid-1980s by Alan Watson Featherstone and the Trees For Life group which he founded at Findhorn. They pioneered the long process of looking for potential large areas, talking to landowners and managers, and getting volunteers on the ground – in this case to restore tree cover to the Scottish glens. TfL also mastered outreach and communication and was rewarded after more than twenty years of hard work in the field, by donations sufficient to buy their own land and build toward a core area.

By the turn of the Millennium there were many initiatives seeking funding for large area schemes – the Borders Forest Trust being notable, with a strategy for direct fund-raising and shares in the scheme at Carrifran. The National Trust and Forestry Commission were already mapping out the Wild Ennerdale Project. This work had built upon several initiatives of the 1990s – the National Trust Centennial Conference in 1995 at which 'wildland and wilderness' ethos was first discussed; BANC's Wilderness Britain conference at the Open University in that same year; a major conference at Newcastle University in 1999 on rewilding the National Parks; and the ESRC funded Seminar Series 1999-2001 on *Wilderness Britain: social and environmental perspectives on recreation and conservation* which were attended by government and NGO practitioners.

Thus, as the first meetings of the 'wildland group' began to form a network - finalised in the autumn of 2004, for a launch in May 2005 at Leeds, there was already plenty to network. In September 2004, the core-group met at Alison Parfitt's home in Hatherley Road, Cheltenham:

- Adam Griffin and Chris Layton travelled up from Dartmoor and introduced Moor Trees – the project inspired by Trees for Life and active on Dartmoor since 1997, with a major conference in 1999. It was a small start with tree nurseries, educational outreach and mobilisation of volunteers in what was a huge challenge to prevail against current land-use interests that kept the moor entirely barren and prevented the National Park from investing in wider restoration.

- Toby Aykroyd presented plans for a Wild Britain initiative that focused on economic benefits and outlined his busy schedule of meetings with directors of government and voluntary bodies in seeking a coalition – something that precipitated much discussion of the value of such top-down approaches compared to the grass roots initiatives. He also outlined plans to create coalitions in Europe.

- We had a student – Peter Parkes, join us, who was engaged upon writing a thesis on wilding projects at Nottingham University – a sure sign that the new thinking had penetrated academia and a good example for us of the value of the network, in that we could direct him to practical projects that otherwise he may have missed.

- Simon Ayres had come over from West Wales where he was championing the involvement of Wildlife Trusts and (hopefully then) the John Muir Trust in a rewilding of the North Cambrians – an area faced with massive expansion of wind turbines.

- David Russell, then chief forestry advisor to the National Trust, led a discussion on issues of intervention, public relatedness to and growing commodification of nature, targets and over-management based on species action plans – and how we can negotiate through this mindset.

Alison Parfitt, Rick Minter and myself, with Steve Carver at Leeds, then formed a core group to organise a launch at Leeds in the following year – when we also would launch *Beyond Conservation* – a compilation of issues and projects that I had worked on with a commission from BANC over the previous two years. We realised from the diversity of views and values within our own group, that diversity itself was a strength! There was still some unease that we would focus on networking rather than campaigning – against for example, quarries, turbines, roads, pylons, or CAP reform, but my own argument was that networking did not rule out any individual or participating organisation from campaigning and that the network would in that respect support and facilitate such political work. Our main focus would be the restoration of landscape and habitat, species re-introduction and the human value of nature and wildness – we would network 'best practice' through regional seminars, national conferences and special editions of ECOS. I was to work on a Wildland Manifesto that would be published on the Ethos website.

Our focus for 2005 was to be a North West regional meeting in the Lake District as a follow-up to the launch at Leeds. Toby Aykroyd would organise a gathering at the Royal Geographical Society to host the Dutch specialists in rewilding the polders and a trip would be organised to Holland in the autumn.

The launch of the Wildland Network at Leeds University, May 2005.

Forty two people attended the launch, with participants from English Nature, The Grazing Animals Project, the Wildlife Trusts, the Countryside Agency, BANC, John Muir Trust and National Trust. Steve Carver led the proceedings in which I introduced the book and its list of projects; Toby Aykroyd led a workshop on economics and land use; Steve Carver and Simon Bates (of Natural England) on the value of mapping, Rachel Yanik of the National Trust at Ennerdale took on an overview of projects and Derek Gow on re-introductions.

The publication of *Beyond Conservation*: *a wildland strategy* was delayed and copies were not available for the launch, but the book was published a month later. I was able to outline is contents – the first wider publication of the large range of projects as well as discussions of the major issues.

Visit to Oostvaadersplassen in the Netherlands

The Network organised a study-tour to the Dutch project on the polder of Oostvaadersplassen during May 2006. This 5000 ha reserve has been managed as wildland with the instigation of more natural grazing regimes using red deer, wild cattle (Heck – reconstituted Aurochsen) and wild horses (Konik from Poland). This was an opportunity to discuss issues arising in relation to natural processes of death, disease, and intervention policies with wild herbivores, vegetation dynamics, biodiversity indices, absence of predators, connectivity, etc., and the site visit and lessons are reviewed by Alison Parfitt and Steve Carver in Part II.

Regional seminar in the North-West: Newton Rigg, Cumbria, October 2005

Over fifty people attended this fist regional seminar with a wide range on involvement from government agencies, community groups, individuals and voluntary organisations.

There was a small Scottish contingent and Robert MacMorran an advisor to Scottish Natural Heritage outlined the *Wild Scotland* initiative (he was later to found the Scottish Wildland Group and newsletter). Peter Samson of the North Pennines Area of Outstanding Natural Beauty, outlined a range of projects in the north and with Gareth Browning of the Forestry Commission, led a discussion on flexibility within government grant schemes for supporting wilder grazing (at this stage, not Aurochsen, wild horses and more deer, but more cattle on the fells and in the woods!). James Fenton of the National Trust and Martin Lester from NT's Wicken Fen project outlined the problems of welfare and fencing of livestock – NT was using Polish *Konik* ponies at Wicken Fen.

We asked Charlie Burrell, a farmer and landowner in Sussex, to speak about his pioneering project to return cropland to wild grazing with Exmoor ponies, semi-wild breeds of pig and long-horn cattle. Thus, participants from the wilds of the Lake District and Scotland could hear of the successes in adapting single farm payments and the economics of farming on boulder clay. Toby Aykroyd, who had joined the management group at the Alladale wilderness-park project, was able to discuss fencing, access, welfare and attitudes to danger. Adam Griffin came up from Dartmoor and contributed to discussions with Hugh Chalmers of the Borders Forest Trust on community initiatives, fund raising and purchase of land.

In all, eight small working groups -facilitated (and later documented) by Rick Minter and Alison Parfitt, discussed the practical challenges of wilder grazing regimes, animal welfare, land acquisition, revenue, species re-introductions, show-casing benefits, landscape quality and resilience. After the seminar, there was a BANC AGM hosted by Wild Ennerdale and a guided tour of the Lakeland project the following day.

The *ECOS* volume 25 (3/4) *Wilder Landscapes, wilder lives?* was published in the autumn – which provided an update on the projects outlined in *Beyond Conservation* as well bringing more projects into a data base that was being built for a WN website to be hosted by Mark Fisher and Steve Carver in Leeds.

Rachel Oakley of Wild Ennerdale briefing the group, September 2005.

Wild herbivores at the Royal Geographic Society

Under an initiative of Toby Aykroyd, specialists from the Dutch ministries and the Large Herbivore Foundation (LHF) were invited to present their projects and experience at the RGS on October 26th, and this gave an opportunity for a wider public to appreciate the cooperation between Dutch ministries and voluntary

bodies such as the Lottery Heritage Fund in advancing large scale rewilding.

'Wilder landscapes, wilder lives?'

This was the title of an issue of ECOS (Vol. 25. 3/4) in 2005 in which members of the Network outlined their projects to the general conservation community.

Wild Boar – welcome back? National Seminar on DEFRA consultation, December 2005.

The network organised a national seminar on the issue of feral wild boar, hosted jointly with BANC and held at *Nature in Art*, Wallsworth Hall, Gloucester. Rick Minter and Alison Parfitt facilitated discussions with Charlie Wilson, Senior Wildlife Advisor at DEFRA, which had put out a consultation document on the issue.

Briefings on issues of biology, provenance, behaviour, diseases, farming conflicts, access and safety as well as impacts on woodland management were made by Martin Goulding – author of *Wild Boar in Britain*, Derek Gow – consultant ecologists, Derek Booth and Ian Horrell of the British Wild Boar Association and Jenney Farrant, a farmer with regular experience of boar on her family farm.

Over fifty participants came from Wildlife Trusts and AONBs, farmers, landowners and marketers. The day was organised into three groups dealing with the diverse issues such as intrinsic value of the species to Britain and the complex costs and benefits of their impacts. (These issues are reviewed in detail under the Wild Boar section of Part III dealing with re-introduced species).

Wildland in Wales: regional seminar held April 7th, 2006, Plas Dolguog, Machynlleth.

This seminar was organised by Simon Ayres and followed two morning presentations by Steve Carver on mapping wildland and criteria for wildness, and Derek Gow on the issues of beaver re-introduction. It was a relatively small gathering that was not well supported by the Welsh government agencies – who had felt that 'rewilding' might be too forceful an approach in an area of strong tensions between the farming community and conservation organisations.

There was much discussion of what was 'wild' and 'natural' and how perceptions varied in the locality. Scale was a key factor in wildness – along with the absence of roads and light pollution. On beavers, various myths were laid to rest on precisely what beavers needed and what impacts they could have – for example, that in Europe they seldom built dams. The experience at Ham Fen, Kent was rehearsed, where prolonged DEFRA licensing requirements had caused beavers to die in quarantine and at the Lower Mill estate at the Cotswold Water Park, where containment by sophisticated electric fences had been a requirement for release. (Editor's note: the Welsh Wild Land Foundation has just received a lottery grant of £5000 to prepare a beaver introduction site in Cwm Einion, close to their planting project).

There followed discussions led by Jeremy Wright of Powys County Council, on the value of branding and 'gateway' species such as the red kite, that could aid in eco-tourism. He pointed out that local people were more globalised than might be expected from the indigenous stereotype and that many hill farms wer facing a bleak future of an ageing population, falling incomes and financial indebtedness. Wildland could offer a range of ecosystem services as well as more direct uses for health and educational programmes. There was an issue of how to conserve wildland values and at the same time promote their use – and the need for sensitive developments, such as bothies in barns, was emphasised. Wilder grazing regimes and organic meat production were earmarked as ways to integrate wildland values and support a faltering upland economy.

We heard that the Countryside Council for Wales was planning for large-scale landscape restoration projects – but sadly at the same time, the Welsh Assembly was planning to open the Forestry Commission holdings to wind farm development – the North Cambrians had been selected as a major search area. We decided to make a review of the wind issue with respect to the Nant y Moch search area (on Plymlimon) and to lobby against its inclusion in the turbine search areas (I was commissioned by WN to prepare the background on wind turbines for a submission to have Nat-y-Moch excluded from the search zone). The over-arching message of the seminar was that the tranquility and beauty of the Cambrians needed to be positively promoted and marketed as the best defence against invasive development.

We all felt that the agencies were behind the times and a later invitation for me to give a presentation at a gathering of the Welsh section of the Grazing Animals Project – which was proving a successful partnership between the agencies, Wildlife Trusts and farmers, showed that many had realised rewilding was an advancing practice and should not be ignored.

Bringing back the Beaver: a joint conference with the Cotswold Water Park Society and Derek Gow Consultancy, May, 2006.

The purpose of this Network meeting was to further the cause of beaver re-introduction in England. I recall that Alan Featherstone, Rick Minter and I had travelled to France in 1991 to explore r-introduction issues, and yet, fifteen years on, only the Scottish government was making moves toward introduction. Simon Pickering at the Water Park organised a register of interests (he has since moved but maintains his involvement - simon.pickering@ecotricity.co.uk).

During the meeting, a range of issues were addressed: such as, do beavers' activities at sites with public access

present a health and safety issue? What are viable populations for beavers and what distances will beavers travel to access nearby cropland?

It was noted that the Environment Agency was interested in catchment scale re-introduction for England, as a trial, but it remained a challenge to get awareness and interest in beavers into mainstream professional thinking and practice. A recently launched Wetland Vision (a joint initiative with DEFRA and NGOs) was discussed as a vehicle for focusing a commitment on re-introduction – in particular whether a beaver trial would be able to illustrate the benefits for water management as well as any problems.

There was already ample evidence from overseas and beaver's role in water retention needed clarifying and promoting to policy makers and politicians. A key reference on this aspect is Frank Rosell, et. al. 'Ecological impacts of beavers and their ability to modify ecosystems'. *Mammal Review* 35 (3-4) July 2005.

Scottish Natural Heritage already had much information on the benefits and the effects of beavers which could be used by practitioners elsewhere in UK and it was agreed there was no point in duplicating the information and research already produced. Duncan Halley offered to show people beaver habitat and management issues in Trondheim, Norway:

The situation in Scotland was indicated as open for partnerships of relevant bodies to propose demonstration projects which would show the consequences of beaver activity in different situations. In the Cairngorms written and e-mail support for beaver reintroduction would help back the case for including this in the Cairngorms Management Plan.

In Wales, Toby Aykroyd reported there was ongoing consultation amongst all stakeholders in relation to beaver reintroduction and his 'Beavers Mean Business' initiative was trying to catalyse action and interest in relation to the benefits, including for tourism. There were varying views about timescales for action with a feeling among some 'we now need to get on with it', whereas others felt there should be more time to persuade and involve bodies so that they have a chance to be on board.

Scary or what? September 2006, Cirencester.

A meeting to discuss the re-introduction of species generally was held at an organic farm's small conference centre near Cirencester. It was a joint initiative of WN and BANC and chaired by Adrian Phillips of the University of Cardiff – who is also an IUCN commissioner. Seventy six people attended with wide representation from English nature, the National Trust, the Wildlife Trusts, DEFRA, the RSPB, the Countryside Council for Wales, the Welsh Assembly and the Council for the Protection of Rural England. Troy Bennet traveled from France to contribute to wolf discussions and Robin Rigg from Slovakia. Dan Puplett and Alan Featherstone came down from Scotland to contribute their perspectives on the potential at Glen Affric.

Presentations were made by Roy Dennis on the experience of 40 years of bird re-introductions, especially of sea eagles and kites; Derek Gow on the issues of beavers; David Hetherington on lynx; Martin Goulding on boar; Peter Taylor reviewed bear and wolf introduction programmes in Europe and the USA; and Matthew Oates and David Bullock of the National Trust reviewed experiences and opportunities with wild herbivores. Group discussions were facilitated by Rick Minter and Alison Parfitt.

Big cats in Britain.

Following the Cirencester meeting, a seminar to specifically address the issue of feral big cats in Britain was convened at Oak Hall, Keynes Country Park at the Cotswold Water Park on 10th September. Thirty seven people attended with Rick Minter convening what had become, for him, after his own personal sighting of a black panther in Cumbria, a special area of interest.

Rick Minter introduced Jonathan McGowan, of the Bournemouth Natural History Museum, who had spent over ten years tracking animals in Dorset and Wiltshire. He presented the mounting forensic evidence for breeding populations of melanistic leopard and puma. Chris Moiser, a zoo keeper and Frank Tunbridge, who had tracked and encountered animals in and near the Forest of Dean, gave presentations. Discussion groups then fed back to the plenary.

Jules Pretty OBE, Professor of Environment and Society at University of Essex, chaired the meeting and summed up proceedings. Evidence had mounted that viable populations of big cats existed and this was accepted by numerous police forces (and confirmed by a spokesperson for the Forestry Commission in 2009. ed.). If damage mounted and in particular, anyone were injured, there would likely be calls for an eradication programme. There was clear evidence of melanistic leopard (or jaguar), puma (possibly also melanistic forms) and lynx. WN should be prepared for the eventual 'outing' of the cats and present information of their potential benefits to the ecosystem – in particular upon deer numbers. Jonathan MacGowan had been convinced that predation on deer and badger had altered behaviour and browsing patterns. His work was published in ECOS and there is a section under species re-introductions.

Rewilding Middle England, 22 November, 2006 at Cropston Visitor Centre, Leicester Wildlife Trust.

This meeting was organised by Micheal Jeeves of Leicester Wildlife Trust and chaired by Jules Pretty. Sixty six people attended with discussions ranging across the

nature of the 'black hole' for wildlife in the Midlands, to habitat restoration projects, with Chris Gerrard of the Great Fen Project reporting on this large scale reedbed and grazing marsh initiative. Sam Lathaway reported on the progress of the new National Forest and Ruth Needham on the Trent Project of rewilding the river. Kieth Kirby of Natural England, Andrew Halston of the Environment Agency and Jonathan Spencer of the Forestry Commission presented the outlook of government agencies. There was representation from managers of the Wildlife Trusts, the Grazing Animals Project, the National Forest and National Trust's Wicken fen.

Rick Minter and Alison Parfitt facilitated discussion groups and feedback on reintroductions, wild herbivores, Biodiversity Action Plans and 'ecosystem services', with Michael Jeeves and Peter Taylor summing up the day. An article by Michael Jeeves was published in ECOS and is represented in Part II.

Making wildland pay – a review of markets and enterprises from wild land and rewilding. A one-day workshop hosted by the Knepp Estate and WN in Sussex, 12 April 2007.

This event brought together practitioners with examples of markets and enterprises based upon wildland. Thirty five people attended with representation across the government agencies, wildlife trusts and individual projects.

Jason Emrich, project manager at Knepp, outlined the estate's programme and experience to date – with the main purpose being to return several thousand acres of former farmland to wildland and use near-natural grazers such as Tamworth pigs and English Long Horn cattle, which would also provide an income from organic meat production. Exmoor ponies and fallow deer added diversity to the grazing regime.

Frans Vera of the Dutch Forestry Service and author of the seminal 'Grazing Ecology and Forest History', presented 'Fascination will Pay', an appraisal of the economic benefits from wild cattle, deer and horses grazing the Dutch river floodplains and the polder at Ooostvaadersplassen. Views from the UK Forestry Commission (Alison Field) and Environment Agency (Bill Watts) were also presented, discussing the FC's experience of managing visitors and rewilding its forestry practices, as well as the more general economic benefits of wildland ecosystem services in flood control and water quality.

Discussions facilitated by Rick Minter and Alison Parfitt centred on key questions: such as the economic drivers for wild land: what are the priorities and how can they be sustained? In what ways can wild land add value and offer a brand to farms, estates, nature reserves, forests and related ventures ? How can Government bodies assist enterprises linked to wild land? e.g. through payments, advice, training, etc

I was commissioned by WN to write a review of the UK experience of relevant economic ventures – such as income and jobs created by visitor centres or branded marketing of wildland products, health and educational usage etc.. A report 'Wildland Benefits' is available for download on the Ethos website.

Wild, free and coming back? The return of key species to Scotland....what, where and how? 16-17th September, 2008. Followed by optional visits to Alladale's large mammal project, 18 Sept; Glen Affric 19 Sept - Caledonian ecosystem restoration, & wild boar experiment; Carrifran wildwood, 20 Sept - whole ecosystem restoration in the Moffat Hills.

This conference was hosted jointly by the Wildland Network and Trees for Life at Findhorn, Forres. The meeting was held in the Universal Hall at the Findhorn Foundation and field visits were made to Alladale, Glen Affric and the Carrifran project. Alan Watson Featherstone of Trees for Life and Steve Carver introduced proceedings and Rick Minter and Alison Parfitt facilitated discussions and working groups. Sixty eight people attended, with many traveling from England and some from the continent. There was a wide representation of interests, with many students, individuals and managers from voluntary bodies such as the John Muir Trust – though fewer from the government agencies than WN would normally expect. The field trips were well attended with staff of the Alladale project hosting a day of briefing and walking into the glen; staff of the Forestry Commission and Alan Featherstone of Trees for Life hosted the tour of Glen Affric and Philp Ashmole and Hugh Chalmers took us round Carrifran.

Hugh Fullerton-Smith briefs the group at Alladale, October 2008.

On the first morning, Roy Dennis of the Highland Foundation for Wildlife gave a presentation on the history of bird introductions – with Scotland's extensive experience of sea eagles in particular. Iain Valentine, head of animals, education and conservation at the Royal Zoological Society of Scotland, relayed progress and prospects on beaver re-introductions in Scotland. Peter Cairns spoke about 'facing the predator – are we ready?' and his organisation 'Tooth and Claw' also organised an

exhibition of high quality photographs on this issue. Alan Featherstone covered targets and visions for the return of Scotland's missing mammals and there was then a discussion on targets and time-lines. The afternoon was then split into discussion groups on species issues: beaver, lynx, wolf, herbivores and birds. In the evening, the conference was treated to a performance of 'Where the Wild Things Were' by the storyteller Margot Henderson.

On the second day of what was WN's first residential conference, Hugh Fullerton Smith, manager of the Alladale Wilderness Reserve, Philip Ashmole and High Chalmers of the Carrifran Wildwood project and Alan Watson Featherstone with Liz Balharry of Trees for Life, gave presentations on the theme of restoring whole ecosystems – 'what's happening in Scotland'. There then followed a presentation by Kenny Taylor on the 'Lore of Fauna Celtica'.

The gathering thus wove a thread between the science, public perception and folklore of animals and the issue of re-introduction, particularly of predators. David Hetherington, Britain's leading expert on lynx, chaired discussions on perceptions of predators, in particular the barriers created by myths as well as apparent economic interests. Simon Ayres chaired discussions on the potential livelihoods in the tourist or educational potential of introduction schemes; Chris Marsh chaired a session on farming issues and David Blake presented issues related to game shooting; I chaired a session on community-based re-introduction projects led by Roy Dennis, and Tony Whitbread chaired a session on ecosystem restoration and how it might be driven by key re-introductions.

A number of key questions arose:

- Is it best to promote reinstatement of iconic species in their own right, or to promote restoration of entire ecosystems, with reinstatement of keystone species as a necessary component?
- Can we identify specific parts of Scotland where large-scale habitat restoration could create conditions for reinstating particular iconic species?
- How can we mobilise support from politicians, agencies, NGOs, and private individuals to establish rewilding as the primary management objective in particular large areas?

The general feeling from the workshops was that species reintroductions and ecosystem restoration needed to be pursued in tandem – and that key species could drive restoration, for example, of wetlands by beaver or open forest by wild grazers. There was already a well-developed appreciation of habitat networks and opportunities, and although there was a rising level of awareness of wildlife generally, there was little public appreciation of the missing species or the scale of ecosystem restoration required. It was agreed there was a need for concerted action with regard to public perceptions and also a need to seek common ground among the conservation organisations**.** There was still a need for more detailed mapping of opportunities and more integration of objectives among disparate organisations with regard to wildness and the need for ecosystem restoration.

On the question of how to mobilise support from politicians, agencies, NGOs and private individuals, the general feeling was that more could be done to establish rewilding as a primary management objective in some large area schemes. Thoughts on target audiences ranged from a rewilding 'task force', for example through Scottish Environment Link or the RSPB, and that a rewilding NGO needed to be created that could channel funding.

On the issue of farming it was evident that communication lines were not well advanced and that this community and perhaps also the game and fishing community, were far less aware of the potential balance of positive with negative impacts than was the case with forestry. There was clearly a need for economic support (subsidy) to include wildland objectives, such as payments for wild grazing regimes. Detailed examples of impacts in European communities that managed beaver, boar and predators in particular, should be communicated.

With regard to livelihoods from reintroductions, group discussions identified the following key issues:

- there would be a need for infrastructure to gain revenue, for example as happened in Yellowstone National Park, USA, with regard to wolf watching;
- land managers should be involved at a very early stage, for example, learning lessons from sea eagles on Mull;
- There are numerous indirect spin-offs from tourism and a need for a Farming and Wildlife Advisory Group form of service on rewilding – particularly with regard to keepering and the game community.

However, there were questions regarding the sustainability of car-based tourism and the dangers of 'commoditisation' of nature. A long term strategy would need to be in place for sustainable tourism, with better prospects if overseas travel became more expensive.

There was detailed feedback from the groups discussing perception of predators and general agreement that lack of public knowledge and education was a key issue and should be addressed well in advance of any plans for reintroductions. The role of the media is likely to be crucial – with a tendency to polarise views where there could readily be common agreement. It was important to establish common ground amongst all stakeholders. Experience-base education would be invaluable – for example, at wildlife centres where people can see wolves and lynx. Lessons needed to be learned from European experience – for example of opposition to reintroduction

of bears in the Pyrenees or the positive approach in Sweden where government rewards landowners for the presence of wolves, lynx or bear (in contract to more negative government responses in Norway).

Often, predators had an 'image' that was far from the reality, with a tendency to be 'demonised' – these polarities could be offset by a strong programme of public education, starting in schools. The work of 'Tooth and Claw' in this respect was highlighted – and it was agreed that TfL with a contribution from WN would co-fund a DVD production for educational use.

The conference discussions raised many more questions than could be answered, and it is useful to re-iterate some points here as they show a certain level of critical self-reflection and realism, rather than an ungrounded enthusiasm: for example -

- The restoration work at Carrifran is taking place in a policy vacuum: the project has its own targets but these do not relate to any formal conservation policy context;

- Biodiversity Action Plans (BAPs) are about setting objectives for conservation policy and targets. But, rewilding points to further products beyond those within a conservation policy context. Rewilding could thus inform an evolving BAP policy.

- Conservation policy is wedded to a species-specific mindset. It needs to be shifted to embrace a wider awareness of what matters in nature and become more flexible.

- In their early stages, Trees for Life struggled to have any influence in conservation policy related to their interests. Thus they decided to get on and do it, as a way of actively demonstrating their philosophy. The practical results of TfL's work have served to influence both policy and practice.

- Are we humans and policy makers willing to give up control of nature? Rewilding challenges us to explore this.

- Beavers are a hybrid in policy and organisational terms. How can we learn lessons from the success of lobbying for birds and bird habitats?

- Can we achieve a mammal-based message about the worth of reintroductions, which matches the relative success of bird conservation?

- Who is 'we' in these discussions? When making recommendations and when taking things forward, it will help to be clear who 'we' is (this re-iterates the point about a rewilding advisory group)

- European legislation dictates many of these conservation-related issues and can take 10 years to take effect. Need to recognise this when planning ahead on these issues.

- What about setting up a large lobbying group to push for the return of key species, especially as a follow-up to this event?

A number of points arose after Kenny Taylor's presentation that do not often get addressed within the conservation community – for example, that we need a closer relationship with nature (eg. as when solo in the wild) and to reconnect with ancestral knowledge and feeling for nature that would have been more right-brain than left. There was a need for *new* stories about the creatures we want to bring back that would re-create the *power* of the old stories which existed within a shamanic consciousness – as in the power of totem animals in tribal cultures such as the American Indians. There was an argument that we have lost the knowledge of how shamanic journeys and the power and presence of animals can help us get round obstacles - including the limitations of old style conservation thinking! A signpost example is Jerome Bernstein's book *Living in the Borderlands*, *The Evolution of Consciousness and the Challenge of Healing Trauma*

see: www.borderlanders.com/index.html

about the cultural issue and loss of experience - a work that underlines the need to understand that eco-restoration sites can be healing for us as well as healing for the earth and for a cross over between the 'felt experience' and science/facts – this should be what environmental education does and for this there was a need for the right images and cultural engagement, especially with children and it is we (grown ups) who don't realize this connection. The idea arose of creating a prize for a children's story which explores a positive / mysterious / respectful / magic relationship with nature – the Good Wolf Prize (i.e. not the big bad wolf again)

Four workshops discussed and reported upon reintroduction of beaver, lynx, wolf and wild herbivores. Each group heard an outline of context, and questioned and commented on that, before discussing three questions. 'Visitors' from other groups then had time to review and contribute before key points were chosen.

The beaver group concluded that most large river systems in Scotland would be suitable and that reintroductions should be on a catchment scale. There was a need for openness and honesty with the public and education was crucial in avoiding misinformation and lobbying by uninformed special interests. The issue of sub-species and the 'right' kind of beaver was less important than establishing genetic diversity and adaptability to modern conditions – thus mixing populations from Norway, eastern Europe or Bavaria should not be seen in a negative light.

On the question of lynx, uppermost was the simple fact that the public does not know lynx - we are working with a blank slate and need education to win hearts and minds. Habitat is already suitable and available but there would need to be an ecobridge/connectivity across the Central Lowlands to link up with border forests and Northumberland. There was a need to target landowning organisations & advisers, prepare the ground for creating incentive payments – rather than compensation/profit and foregone payments. There would also be an issue of hunting versus protected status issues eg. at what stage to control. There was a general feeling that following an educational programme lynx was very feasible – habitat and prey animals were available, Eurasian populations could provide animals and there was practical experience in Europe of relocating animals. the key requirement would be to get a group or landowner and the Forestry Commission of Scotland on board to champion a project. The first such site might become iconic and would provide a potential 'branding' for local lynx-friendly produce, as occurs in parts of Europe. Political support would be essential and in this respect, learning from previous release projects would provide better understanding. A schools' education pack could provide the background.

On wolf reintroductions there was a clear need for **a**n advocacy group for all large carnivores. Advocacy and education is more important than more information and an education & demonstration centre would be invaluable in this regard. But there was also a realistic sense that a paradigm shift would be necessary –a change in ourselves and attitudes with a need to rethink the whole question of risk.

On the issue of source population and viability, whilst there is general agreement on the availability of habitat and prey, the most appropriate source population might be from those habituated to red deer (perhaps in Scandinavia). There would need to be a robust management policy of dealing with individuals wandering from core areas of wildland, such as in the Cairngorms National Park.

There was an obvious marriage possible between conservation & ecosystem issues and the charisma of an animal with considerable tourist potential. We needed a European 'map' of experience with wolf; to study socio-economic, psychological & cultural as well as ecological issues, particularly with regard to conflict areas such as traditional hill farming – although current framing trends could create an economic opportunity. What was needed was imaginative communication with initial stakeholders in forestry, tourism interests and heritage and an incentive rather than a compensation approach.

On the question of herbivore reintroductions there was a feeling that Scotland had too many wild herbivores and among conservationists that domestic breeds would better deliver management objectives – with less complications for management! There was a pressing need to reduce deer populations and little understanding of the complex interactions between different wild herbivores – for example, wild cattle, moose, wild horses and wild boar. Feral goats were also an issue – as non-natives, should they be encouraged or eradicated? In certain areas there would be conflicts of interest – for example, for ground-nesting birds. It was not clear where specific sites existed or where there might be interest in a broad spectrum of grazers – Trees for Life has experimental pens for wild boar, as did Alladale, where moose were also kep in an enclosure to begin a breeding programme. There was a clear potential for economic benefits from eco-tourism, hunting and marketing of wild meat.

Participants were asked what they would like to see within ten years – here are some post-it notes from the conference discussion board:

"The first Lynx from Slovenia or Norway brought over by SNH/Forestry Commission/Tress for Life!"

"Cranes displaying near beaver ponds beside forests with Lynx roaming free"

"That reintroductions as a common talking point – schools, newspapers and acceptance!"

'White tailed eagle around all Scotland's coast. Red kite everywhere. Beaver pilot successful and spreading widely. Lynx reinstatement well underway"

"Common Cranes breeding up Scottish straths"

"Scottish Gov recognition through laws protecting <u>all</u> reintroduced species"

"Wildcat population stabilised & expanding. Beavers a success. Boar & Lynx started"

"Beavers properly established in the wild"

"Beavers fully reintroduced. Licence for Lynx trial"

"Beavers & Lynxes living widespread in a habitat that can support them indefinitely"

"Wild cat, Pine Marten & Polecat returned to the Southern Uplands"

"Wolves West of the Great Glen"

"Field study week an integral part of every school year through to the top year. A wilderness week to feature at least twice in every pupil's education"

"A public receptive to ecological restoration and hungry to see it happen"

"A Species Action Plan for Lynx"

"Beavers, wild boar, and Moose established. Realistic

proposals for Lynx and serious discussion about Wolf"

"Political will & resources to meet EU obligations re reintroductions"

"A fresh perspective with our lost fauna and each other & a more Biodiverse UK"

"Beavers successfully reintroduced. Lynx reintroduced. Current species doing well eg Wildcats"

"More productive and integrated ecosystems with prolific runs of salmon feeding other animals along streams in Scotland. Greater awareness, understanding & examples of people living together with wildlife"

I was asked to make a summary reflection on the proceedings. Perhaps the key aspect was the need to avoid polarisation through advance planning, participation and above all education. There was work to be done showcasing the experience from projects in Europe and the USA and there was a cultural shift required in the general public's relationship and appreciation of wild nature, predators and risk – as well as a paradigm shift in management practices of control and focus upon specific objectives. The role of science, though essential, should not take precedence over the cultural elements of a closer relationship to nature – and in particular, there was a need for an understanding of nature as healer and educator, with each species having a certain 'medicine' or meaning, as they formerly had in shamanic cultures. It was clear that there was enough habitat and perhaps also enough goodwill in the conservation and forestry communities – it was less clear where the game conservationists would stand, and it would seem farming interests were implacably opposed, though largely out of ignorance and fear of economic losses. Education was the most important 'next phase' and in particular making use of pilot schemes and examples from Europe.

In this respect, there was an agreement to set up species working groups and begin production of educational materials {ed. note: we did not manage to follow up the species working groups in a productive way but Peter Cairns and 'Tooth and Claw' did produce the DVD and their work with photography and the book 'Wild Europe' has carried through the first phase of the public education). Rob MacMorran has set up a Scottish Wildlands Group with a newsletter.

Wildland Research Institute (Wri) launch, Leeds University, 21st Oct 2009

The WRi launch was the culmination of a 'wild' week of celebration in Leeds. The first day saw the opening of a stunning exhibition by the wildlife photographers who are Tooth & Claw and the week ended with a first staged performances of Samantha Ellis's play *The Last Wolf in Scotland*. In between, primary and secondary school children came into the University to do workshops as well as see the exhibition. And both Roy Dennis and Jay Griffiths gave thought provoking talks as part of an evening debate with an audience young and old who had come from both sides of the Pennines.

The launch day itself was a seminar for nature agencies, national parks & conservation NGOs as well academic representatives and activists to set some early research priorities. About 50 people worked through an agenda including:

- sketching out trends and drivers for wildland
- 3 presentations about national and European context & agendas
- detailing wildland issues
- imagining good and bad futures for wildland 50 years on
- back-casting what could, should happen to get us from here to 50 years on
- and then thinking of what we want and need to know to enable those changes.

The three presentations enlarged the context for the day, which were summarised as:

1. Working towards better protection of Europe's wilderness.

Zoltan Kun, Executive Director, Pan Parks Foundation, gave a briefing about wilderness/wildland in Europe, e.g. the EU Prague conference resolution (Apr 2009) and the Wilderness Think Tank and Pan Parks network.

2. Wild Europe, Turning Ideas into Policy.

Toby Ackroyd, who has developed the Wild Europe Initiative, sketched the formative steps and detailed an action plan for the Wild Europe Initiative as well as finishing with next steps for more wildland in the UK

3. Current projects, Intent and Implication.

Keith Kirby, Chief Woodland Conservation Officer for Natural England, talked about wildland as a continuum and what it might look like. Then he offered a framework which relates degrees of wildness and scale. This very helpfully allowed us to see notions about wildland past and present and position current projects, e.g. Knepp, or species reintroductions, e.g. Red Kite, in relation to each other. It provides a helpful overview for what can be a confusing diversity of projects and intent which are broadly more wild.

Delegates suggested that 'heaven', for those of us alive in 2060 and wanting more wildland, would mean that there is green space in every neighbourhood and wildland in every region. Other aspirations gave us 30% of all land will be near natural and that the National Wildland Network would be complete, connecting uplands and lowlands, urban and rural. Sketching out steps in decades between then and now revealed a range of thinking or prophesy which included:

2040 - 2050

- Large scale Government buy-out of non viable farms to allow landscape scale wildland project
- Network of IUCN II sites designated
- Education provides courses for 'new' land stewards

2030 – 2040

- Culture of 'wild nature' as normal and is universally accepted
- Individual landowners cooperate & create core areas
- Changes of attitude after official reintroductions of species (lynx especially)
-

2020 – 2030

- Flagship report proposes PAN Park network & identifies sites
- Tourist Boards accept value of re-introductions

The Key research questions that emerged were:

- How do we deal with the switch from human control to natural process?
- What does this cost – in economic and cultural terms? Currently any cost benefit analysis is skewed by what we do not know.
- Would economic interests loose competitive edge by doing this? And how?
- What is the cost benefit of ecosystems?
- Need to look at the climate change effects on ecosystem delivery.

I personally argued against a standard academic research agenda and for greater focus upon *ways and means analysis* - i.e. What do we need to know, for instance, to achieve 10,000 sq kms of wildland in England, in Wales and in Scotland? This would involve weighing costs against benefits to arrive at cost efficiencies and current experience is too short a time to evaluate e.g. six years of Wild Ennerdale cannot tell us enough, yet, about benefits. So how do we value? How do we use numbers to value? But a ways-and-means approach could also be complimentary to a cost benefits approach: What areas do we have now that could be wildland ? What can we learn from schemes to date and can we identify gaps and assess transferability of overseas examples. What is determining how rewilding is taking place in different countries across Europe? How is this happening? Who is making this happen?

The issue of monitoring arose, as it always does in a research environment – what are the successes and failures? What data do we need – as there is little data about protected landscapes and reserves efficiency.

From these discussions the meeting moved to considering what are the best tools, strategies, and methodologies to influence and campaign for more wildland and how can we achieve core wildland areas in England, Wales and Scotland? We also need to identify what could prevent this, ie. talk to all stakeholders (social science research) to identify potential conflicts along any route we take to achieve this goal

A complete record of the seminar and the presentations is available on www.wildlandresearch.org<http://www.wildlandresearch.org/>

Gathering at the entrance to Carrifran, October 2008.

Since then!

In December of 2009 the coordinating group of WN met to review progress and consider its future work. It was agreed that the 'network' phase had delivered on its key objectives – to further communication among practitioners and to raise awareness on rewilding issues. In that year, 'rewilidng' as a term had been heard on the lips of an environment minister giving a keynote speech, yet there were significant areas of work that still needed addressing. Prime among these was reform of the EU Common Agricultural Policy that supported domestic grazing regimes for conservation purposes, but had no payment scheme that would properly support 'wild grazing'. Although there was evidence that UK agencies would bend the rules in this respect, the situation needed improving at a European level.

We can feel happy that there is a beaver 'reintroduction' pilot project, but not at the limited scale, nor the negative response of the Scottish government to the discovery of a free-living population of beaver on the river Tay. There is only a limited enthusiasm for the Dutch model of combining free-living 'wild' horse, red deer and

wild cattle. On the other hand, there appears growing acceptance of wild boar and growing realisation that Britain has a population of feral big cats that appear to be breeding. We are likely to see more small beaver projects – for example, with the Wales Wild Land Foundation in the Cambrian mountains.

The 'new austerity' has already seen the abandonment of a sea eagle project in East Anglia, but moves are continuing to repopulate the east coast of Scotland.

The 'species group' idea has seen little activity, but there is an overall agreement that the lynx should be the main target species. In this regard the work of 'Tooth and Claw' and the WN-sponsored DVD is a step in this direction.

There is still a need for more coordinated thinking and planning between the main players on large scale management schemes – for example, the RSPB, the Wildlife Trusts, the National Trust, Woodland Trust and the Forestry Commission, and we have yet to see a government initiative in the form of a 'challenge fund'. Political developments may not favour government participation and it is to be hoped that whatever happens to the public land resource, key elements of forward thinking in the Forestry Commission and Natural England will be retained in the 'public service'. The voluntary organisations who might be expected to take up the cause – if government disposes of its forestry and conservation responsibilities to the private sector, are not yet well-practised and disposed toward cooperative schemes. The major public-private initiative in Ennerdale has depended a great deal upon the foresight and sensitivity of public servants within the Forestry Commission and it would be a great risk to have to fund this entirely from the private or voluntary sector.

The Wildland Network may have completed this phase but there is still a need for conferences and sharing of experience, and BANC will take up that role – an autumn conference is planned for 2011 at the Neroche project, led by the Forestry Commission, at which many of these themes will be discussed and networking can continue.

PART 1: ISSUES AND DEFINITIONS

Towards a wildland strategy

ECOS editorial 25 (3/4) 1-3. (2004)

PETER TAYLOR

It has taken almost two decades, but conservation is finally moving beyond protectionism and towards the strategic creation of wildlife habitat. We may be a far cry from the US Wildlands Project strategy of 'cores, corridors and carnivores' linking protected areas and restoring natural predator-prey relationships, but we do have some candidate core areas, and fledgling corridors – with our necessary British priority of restoring enough vegetation for natural herbivores to be sustainable.

Alan Featherstone's vision of a large core area in the western Highlands is demonstrating the practical reality of ecological restoration, with its mix of planting programmes, fencing out deer, and natural regeneration. It is also demonstrates the power of example and persistence of a dream – spawning Moor Trees on Dartmoor. It is part of an expanding wave of purchases by voluntary bodies and private initiatives aimed at large scale restoration of native vegetation, such as Carrifran, Mar Lodge, and Snowdon in the uplands, and the Cambridgeshire fenland project – all of which are featured in this issue.

This process of strategic purchase and enlargement is wider than these examples – we could have included the Woodland Trust's work at Glen Finglas (3,000ha), the Royal Scottish Forestry Society at Cashel (3,000ha), the RSPB in Abernethy, and its strategic creation of reedbed and heathland in southern England; the work of Scottish Natural Heritage in the regeneration of natural vegetation patterns on some of their larger reserves, such as Ben Eighe; and the recent moves toward 'coastal retreat' in Essex and East Anglia. There is a long list of projects, and we shall feature these in future wildland pages of ECOS. There are no collated statistics on this progress towards larger areas and natural processes – and to this end, BANC has sponsored a book, available from Earthscan in April 2005, Beyond Conservation - a Wildland Strategy. The book attempts such a review, and addresses the obstacles to further progress. It recommends three major core area initiatives to be taken up by government, and it outlines a strategy of habitat networks making use of river catchments, river re-wilding and riparian woodland regeneration. The latter is much like the experience of the Tweed Forum, described in this issue by Luke Comins.

Some of the practitioners and thinkers involved in these projects have recently formed a network for swapping experience: The Wildland Group - hosted at www.ethos-uk.com (ed. in 2005 the network created its own website www.wildland-network.org.uk) The group is building upon Steve Carver's 'wilderness' quality mapping and assessing the potential social and economic dimension to large scale conversion of marginal agricultural land, explained here in Toby Aykroyd's 'Wild Britain' proposal. It will develop an open forum in 2005.

Within the Wildlife Trusts, there is a move toward landscape-scale networks, such as the Sussex Wildwoods described by Tony Whitbread who first drew attention to the Dutch experience of re-introducing large wild herbivores to nature reserves as management tools (much as the smaller scale beaver project does in Kent – see ECOS 23 (2) 23-26). Adrian Colston reports on the National Trust's plans to do something similar with large but tame herbivores in the Cambridge fens, and Simon Bates argues for the Dutch 'nature map' approach across our own landscapes. English Nature has followed these developments closely, as Keith Kirby reports on its wild grazing projects. Links have been made with the Large Herbivore Foundation in the Netherlands, and there is now a steady flow of Konik horses to English projects, although Joep van Vlassaker of the Large Herbivore Foundation is puzzled at this choice, considering the presence in England of Europe's most primitive wild pony, the Exmoor. Perhaps the charismatic reconstituted aurochsen will follow!

Will we ever be able to move to that ultimate wildland experience – the presence of large carnivores and the re-establishment of natural predation? As we have seen in ECOS, lynx and puma are already at work in the English countryside, but Manuela von Arx of Switzerland's successful lynx re-introduction project, urges caution – any deliberate re-introductions need to be carefully planned, and much attention given to education. Ilka Reinhardt describes the problems of the re-appearance of a large carnivore such as the wolf in a pocket of wildland on the border of Germany and Poland, and Geog Rauer demonstrates how difficult a bear re-introduction programme can be. In this case, the problem was guarding the honey, but recent reports of three

mushroom pickers fatally attacked by a bear on the outskirts of the large city of Brasov, highlights the risk that this top predator would pose.

Whether voluntary groups will be able to follow the outstanding example of restoration of natural vegetation at Carrifran given by Philip Ashmole and Hugh Chalmers, and purchase whole valleys by subscription, may depend on a more strategic direction in support from major funds such as the Lottery.The immediate future will doubtless involve small steps toward natural processes operating over larger areas, and particularly cooperative projects between major landholders embracing a wilder land ethos – as demonstrated with Wild Ennerdale, a project of the National Trust, the Forestry Commission and United Utilities. This may prove a model for development of the English and Welsh uplands, with some areas under domestic grazing regimes and small scale local-use forest products, and other areas left to be reworked by natural processes. Such projects prompt a philosophical quest as to the true nature of human activity, natural or not? At the tamer end of the spectrum, these areas may involve hardy breeds such as Highland cattle and Exmoor ponies, rather than fighting aurochsen and the return of red deer herds, wild boar, and beaver, with their challenges for current agriculture and forestry.

We are a little further than the beginning – but much work has to be done to both explain and promote wildland values. Gareth Browning and Rachel Yanik explain the philosophy at Ennerdale, where the natural forces of the river mean that geological action is not being held back. Meanwhile, the experience of the National Trust at Mar Lodge and in Snowdonia shows the difficulty of making radical moves beyond traditional land uses that provide some local employment. There is, as yet, no full social and economic assessment of what wider scale wildland would entail, although Steve Carver and Peter Samson report that wildland cannot compete with subsidised upland grazing – unless, of course, it is also subsidised as an integrated land-use. We need a study that looks not at how wildland might currently compare – when there are no support systems for wild grazing, nor credits for carbon sequestration, water quality or flood control, but at what support systems would be necessary to foster wildland with such benefits as well as a role for those currently employed in traditional uses.

As government moves toward a joined up land management agency for England and the CAP is reformed to create a safety net for rural communities on the margins of agricultural production, there is potential for such support systems to emerge. To this end, we might begin to draw some lines on a map of the projects outlined in this edition – of where future forests, river restoration and other habitat initiatives might be more strategically located.

A wildland strategy will not be a people-less agenda – the Moelyci initiative (see *ECOS* 24 (2) 51-56) demonstrates what can be achieved by people wanting livelihoods from wilder land, perhaps servicing the health, education and activity sectors advocated here by Toby Aykroyd. The National Trust's fenland wild corridor, outlined by Adrian Colston, will reach right to the edge of Cambridge, providing recreational and educational outlets. The 'Future Nature' of Bill Adams' book for BANC is beginning to take shape. We have moved beyond conservation and can look to a time when near-natural areas expand across the uplands, snake out across lowlands, and even penetrate towns and cities.

By 2050, if it is a land wild enough in the heart as well as in wildlife, with extensive herds of deer, wild horses, aurochsen, boar, and beaver in the core areas, we may then find a welcome for our competing but unquestionably more charismatic predators.

Cores and connectivity - the potential in Britain.

Wild thoughts…

What are the meanings of wildness, wild and wilderness, and what are the implications for land management, or non land management, for conservation groups? ECOS *asked three practitioners to argue it out… Each contributor read each other's essay and produced a follow up note in turn. Whether you side with any of them or not, their debate helps focus on this slippery subject…*

A new paradigm for the uplands

ECOS 25 (1) p 2-5 (2004)

JAMES FENTON

The Oostvarrdersplassen in Holland, where large herbivores are left to roam free, is widely accepted as visionary conservation thinking, and we in Britain are actively discussing how to create our own ' Oostvarrdersplassens'. But maybe, without realising it, we have them already in the uplands – and are now losing them owing to 'conservation action' arising from the mindset that grazing is a bad thing and the climax vegetation should be woodland.

'Wild' - the Dutch or English models?

As part of a recent conservation conference at Lancaster University, we went on a field trip to the Pennines where staff of English Nature proudly showed us an experiment in the 'wilding' of the eastern flanks of Ingleborough. To them being 'wild' meant removing all grazing and planting some trees. The next day we were back at the University to hear inspirational thinking from Frans Vera about returning wild nature to Holland – at the Oostvarrdersplassen,[1] – and we heard even grander plans to create large-scale wildlife corridors from there to Germany and France.

The essence of these Dutch schemes is the reintroduction of wild herbivores. Being 'wild' in Holland does not mean excluding grazing, but the introduction of a range of large herbivores, in this case wild cattle, horses and red deer, and seeing what happens. These animals, of course, have a major impact on the vegetation pattern, the only constraint on their numbers being the amount of forage available in winter.

Is woodland the climax vegetation of the UK uplands?

Frans Vera argues convincingly in his book *Grazing Ecology and Forest History*[2] that large herbivores have always been part of the natural ecosystems of Europe, with the result that the natural vegetation of temperate lowland Europe would not have been closed high forest but a mosaic of forest, parkland, scrub and grassland: grazing prevents woodland from regenerating under its own canopy, which thereafter cycles to grassland and thence to thorny scrub. Trees can only regenerate in this thorny scrub, which subsequently reverts to woodland. This theory is fine for fertile, lowland Europe, but what happens if you apply the same principles to the infertile uplands of north and west Britain, where the thorny scrub species of hawthorn and sloe are rare or absent? What is there to protect the trees from grazing?

Another recent book *A Highland Deer Herd and its Habitat*[3], which looks at the impact of deer on the Letterewe Estate in Wester Ross, argues that there is no such thing as 'overgrazing' where wild herbivores such as red deer are concerned, because grazing levels are naturally constrained by the winter availability of forage. Likewise, on St Kilda, where there have been feral Soay sheep for centuries, if not millennia, sheep populations go through a four-year cycle, with high mortality when numbers exceed winter food supply.

Although there are pockets of native woodland, upland Britain is largely treeless, and the general mindset to date has been that, as woodland is the climax vegetation, the uplands must have become treeless through human activity, and remain largely treeless through 'overgrazing'. Hence a lot of current conservation effort in the uplands is devoted to reducing grazing levels and planting trees. In the Scottish Highlands, for example, it is argued that a grazing level of four red deer per square kilometre is needed in order to achieve natural regeneration of woodland, although this low figure is considerably less than that which the vegetation can support.

Is moorland the climax vegetation?

If, on the other hand, it is a general principle that the number of herbivores is limited to what the vegetation can support, then perhaps, in upland Britain, we need to remodel our whole mental landscape: we need to get away from the 'woodland as climax' model. Maybe our upland landscape is relatively natural in terms of vegetation pattern, albeit natural grazing by red deer having been replaced by domestic sheep in many places?[4] And lack of winter feed will still have limited the number of domestic stock on the hill (as did the presence of wolves in the past).

Hence there is a possibility that the current vegetation pattern of the unenclosed areas of upland Britain is within the range of possible natural variation.[5] Pollen analysis indicates that there were more trees in upland Britain in the distant past, but natural soil deterioration over the past few thousand years (leaching, iron pans, lack of worms, mor soils, etc.) has perhaps made conditions less suitable for tree regeneration, so that even a relatively low grazing pressure will keep the landscape open.

Woodland can still be a component of upland vegetation, particularly on crags and in gullies where soils are better and grazing less. Likewise, Wistman's Wood on Dartmoor and Keskadale Wood in the Lake District, and a much greater range of examples in Scotland, indicate that woodland can regenerate in the presence of grazing; and, in any complex upland landscape, grazing will vary temporally and spatially, giving some opportunities for localised woodland. For example, in some areas of the Lake District oak can be seen regenerating in bracken, and, in Scotland, rowan and birch can be seen regenerating in gorse and oak and birch on slopes of deep heather. Hence, even with heavy grazing, trees will persist in at least some upland landscapes, but perhaps our mistake is to expect lots of them!

If there has been anthropogenic woodland loss, it is most likely to have taken place on the steeper, well-drained valley sides, but even here can we be certain that any anthropogenic loss has changed the natural endpoint of a mostly treeless landscape? As peatland and mor soils spread over much of the flatter ground, herbivores tend to become restricted to the remaining better soils, resulting in a direct competition between woodland and animals. In other words, if, instead of a 'woodland as the climatic climax model', the 'natural decline' model fits the facts better, humans may only have locally accelerated an existing trend.[4]

Are the uplands our ' Oostvarrdersplassens'?

At the conference referred to above, there was much talk of how to create our own Oostvarrdersplassens in Britain. But maybe in much of upland Scotland at least, we have had our Oostvarrdersplassens all along – large tracts of land with significant numbers of indigenous herbivores, resulting in a relatively natural vegetation pattern. Maybe, we have them *throughout* upland Britain, the only difference being that sheep have replaced red deer. It is a common observation in Scotland, that, if sheep are taken off a hill, red deer come in – perhaps confirming the perfectly reasonable theory that forage availability determines grazing levels.

However, if we already have our upland Oostvarrdersplassens, we're also in very real danger of losing them, as the demand from conservationists is to reduce grazing to

very low levels, and large-scale native woodland planting schemes have been created that fragment the predominantly open landscape.

At the Oostvarrdersplassen there are wild cattle and horses in addition to deer. However, what is not certain is the range of natural herbivores upland Britain would naturally support, for the Oostvarrdersplassen has very fertile soil whereas much of upland Britain is infertile and may not be able to hold such a range of species. Likewise, it is hard to say whether, in general, carnivores keep herbivore numbers down to below the vegetation's carrying capacity. In Yellowstone Park, for example, both wolf and red deer numbers are going up simultaneously![6] There were wolves in upland Scotland until 300 years ago, and the landscape has been largely treeless since way before then, which suggests that the presence predators has not kept the grazing to a low enough level to allow woodland to be the dominant vegetation.

Norway is often given as a model of what the UK uplands 'should be', but that country has a complex landscape and a different ecology; for example, unlike oceanic climates, the presence of winter snow-cover both protects vegetation from grazing and keeps herbivore numbers down.

A new paradigm for the UK uplands?

Moving away from the idea that woodland is necessarily the climax vegetation on our unenclosed hills opens up whole avenues of new thinking. It also means we would have to rethink our conservation action: if the vegetation pattern of our hills is relatively natural, then maybe there is little short-term conservation action that is needed – other than ensuring that grazing continues and burning is within the bounds of natural variation; long-term there are possibilities of reintroductions of native large mammals, although we need to be careful that the ecological conditions are right.

There may be some areas where grazing is obviously way above the natural ecological carrying capacity (eg. parts of Wales or western Ireland), but on the whole perhaps we should let our uplands be wild, and let the vegetation pattern develop under the influence of grazing, and concentrate our action on areas that really need more wildlife and are fertile enough to take it – the lowlands. And the current large-scale plans for Wicken Fen and Epping Forest give us cause to hope that the lowlands of Britain can be made wild.

For the uplands, though, we need to stand back and rethink their whole ecology, so as to ensure that well-intentioned 'restoration' does not end up making them less wild and turn them into designed landscapes. Letting our hills be wild means having no predefined outcomes, but letting nature decide the vegetation pattern – under the influence of grazing which is ideally from indigenous herbivores, but in their absence maybe sheep are as good a species as any.

Britain's wild horses on Exmoor's heathland. (Toby Hickman)

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Self-willed land: Can nature ever be free?

ECOS 25 (1) p 6-11 (2004)

MARK FISHER

Lessons from the natural world

I like wildflowers and so I seek out landscapes that contain the distinct habitats in which those wildflowers can exhibit themselves in their natural communities. I encourage my garden design class to observe wildflowers *in habitat*, hoping that they will recognise that many of the wildflowers that they see locally have cousins in garden use. This has two lessons: that garden plants grow best within the cultural conditions of soil, moisture and light availability that their wild form enjoys (right plant in the right place); and a transfer of aesthetic through observing how wildflowers grow in self-supporting communities and adopting this pattern in their plans for garden planting.

Plantlife[1] recently promoted a book that is a celebration of the wild flowers of Britain and Ireland. It's a book of superlatives, but it deserves careful analysis if it is to be used as a measure of the natural state and abundance of our wildflower populations. Where these are magnificent in the book, the habitat shown is distinctive and has a common property – it is outside the margins of our productive or settled land. Where examples are given from productive land, the habitat characteristics have been smoothed out over the centuries by tree clearance (more of which later), ploughing, land drainage and mineralisation. Thus the flush of meadow flowers shown is dependent on the influences of historical management, and on its contemporary management by livestock grazing to keep it free of scrub. In what has become the modern paradox, the sheer brilliance of this meadow display is obscured unless livestock are removed before flowering time, and we now compensate the landowner through stewardship schemes for this privilege.

I have been less content in recent years with the wildflower experience of Britain, seeking instead landscapes that show less influence from humans and their livestock, and more so from wild nature. It's a sad reflection that there is little part of Britain that is considered to have been untransformed by people and their activities[2], and it is our systemised productive use of the land – agriculture in the main - that is to blame. The western and north-western extremes of Ireland are lightly used and thus offer some solace, but it is in America that I have observed the better state of nature, its reverence for its own sake by its people and its abundance of distinctive habitat and wild flora. A corollary to this abundance of wild flora is the presence of all the other components of wild nature in the wild animals, birds, predators and other forces of nature that go together in shaping a natural landscape. To the Americans, this is the land of wilderness, a self-willed land where they have chosen to remove their influence and allow nature its own dominion.

Learning from the wilderness experience

Wilderness[3] in America is defined in the Wilderness Act (1964) by a simple requirement:

> "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognised as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."

The Act enabled the American Congress to set aside nine million acres of publicly owned land in their national forests, parks, wildlife refuges, and other federal lands to be kept permanently unchanged by humans. More bills have followed and there are now 105 million acres in the National Wilderness Preservation System. It is worth noting the characteristics of wilderness defined in the Act:

> "Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which:
>
> (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
> (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
> (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
> (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

I am struck by the term primeval character as it speaks to what I believe is the difference between America and Britain. The history of our landscape in Britain is contested. One view, from Oliver Rackham[4], is that a massive transformation began after the arrival of agriculture from the Middle East. Our aboriginal ancestors drew their existence from forest, river and sea, but the early farmers living side by side some 6000 years ago progressively reduced an abundant tree coverage either through uprooting, or through grazing pressure from concentrating livestock. We lost half of our natural woodland by the early Iron Age (500BC) with the clearance continuing so that there is no real wildwood left today (i.e. self-sown, self-regenerating and unmanaged) and actual woodland coverage is sparse. Along the way, we extirpated our larger indigenous animals, including predators, and made it impossible for a primeval approach to life to continue. Thus a post-aboriginal culture, with its methods of systemised production, has been around in Britain for some 5-6000 years and it has reshaped everything in its path. In North America, by contrast, the pressure on their landscape was imported with its *discovery* by Europeans as recently as 500 years ago. North America still has some landscape that bears testimony to its original state[2]. We, however, have to be satisfied with our inheritance of entirely human-made landscapes.

With no true wilderness left to preserve, it is unsurprising that we have no Wilderness Act nor any ethos that gives wilderness its value. We do have legislation that provides for National Parks, inspired originally by the American example, but we did not follow their ethos of removing human influence. England and Wales's National Parks (save for the recent hybrids of the Broads and the New Forest) are in upland areas: all of them are populated and subject to agricultural activity. The Parks are distinguished by their restrictive planning laws, but many commentators regard the biggest threat to be overgrazing by livestock, something for which there is no legal constraint. The *woolly mower* thus reaches every part of our island, holding back natural succession and successfully maintaining it as an artificial landscape.

Peter Marren[5] has well described the history and effectiveness of our National Nature Reserves and Sites of Special Scientific Interest. He points out the obvious – these land protections rely on co-operation between the conservation agency and owner/occupier. He accepts the reality of the land being populated and under systemised productive use, and he makes the case that our wildlife is dependent on this for its survival. Thus isn't it true that our appreciation of wildlife is predicated on species that are maintained in these almost-certainly-artificial landscapes? The fact that these landscapes need managing (i.e. external intervention by grazing animals) indicates that they are not self-willed, and that we may have become entranced with plant and bird species that will not have such a key presence if our land was allowed to rewild. Marren again notes this, predicting a significant drop in diversity if land is left to manage itself, but is he basing this on observation of a few poorly featured nature reserves (how could they now be otherwise in Britain) and over a relatively short period?

Further proof of our skewed appreciation is that nature conservation is rarely about wild mammals. Where re-introductions are contemplated, the hue and cry from landowners is utterly predictable. It was ever so because wild mammals pose a greater threat to agricultural productivity than wildflowers and birds. The pilot program to re-introduce beaver into Scotland[5] is hedged with cautions that could see it halted if reaction from land users becomes too heated. Will we have to compensate landowners to tolerate the planned re-introduction of beavers?

Long horizons

Can we exclude the influence of people and embrace rewilding?

I believe that a desire for self-willed land will only gain acceptance if it is universally appreciated that it has to be without human influence and that there are opportunities to experience it (as a visitor only) within the reach of most people. With no extant wilderness, the task will be to rewild a significant area of farmed landscape (removing livestock would be a start) but the result is unlikely to be true wilderness. Sadly there is no guarantee in present circumstances that the land will regain a full complement of nature's species.

Should we need inspiration, we can look to the Wildlands Project[6], set up in America some 10 years ago. The Project aims to build on the 662 wilderness areas of the National Wilderness Preservation System by restoring more of the natural heritage of North America through the establishment of a connected system of wildlands. Their approach is simple - to allow the natural recovery (rewilding) of whole landscapes in every region of North America and to link them into a continuous wildlife corridor. They believe that recovery on that scale will take a 100 years or more, but the Project has a clear idea of what it seeks: a wild home for unfettered (self-willed) life.

There is a concern for self-willed land in Britain. The John Muir Trust[7] was founded with the object of conservation and protection of wild places. The Trust interprets wild to mean places: "where the presence of people and the influence of human actions is not predominant, … and where other non-human influences such as weather, landscape and wildlife prevail." One aim of the Trust is to "renew wild places, where they have

been damaged, by encouraging natural processes." The Trust believes ownership is the only way to protect wild land and so it has bought parcels in seven areas in the Highlands and Islands of Scotland, totalling 20,000 hectares. These are not unpopulated or unused areas, but they are some of the least populated and by degree the least managed.

The National Trust for Scotland and Scottish Natural Heritage have both issued policy statements on wild places, but perhaps the most significant event is the recognition of wild land by the Scottish planning system[8] (NPPG 14): - it is defined as "uninhabited and often relatively inaccessible countryside where the influence of human activity on the character and quality of the environment has been minimal."

I consider that the habitat least affected by people in England is the coastline between low and high water mark. It is a short distance from there to the sand dunes and the coastal cliffs, both of which have no use in agriculture, but which exhibit some of our best wildflower displays. I am encouraged that coastal areas in England are also providing a test bed for one form of rewilding of our landscape. The Environment Agency[9] proposes to restore the natural landscape around the estuarine outlet of the Cuckmere River on the East Sussex coast. The banks of the canalised river are now in poor repair. By deliberately breaking a bank on one side, it is envisaged that a salt marsh of around 113 acres will develop, forming a haven for waterfowl and protecting the valley against future flooding. DEFRA[10] has also recently put out a proposal on wetland creation to compensate for areas of saltmarsh and mudflat destroyed by port developments on the East Coast in the 1990s. Low-lying farmland on Wallasea Island is thought to be suitable for creating new wetland through managed coastal realignment.

Facing a future in the wilderness

In the future, the quality of our landscapes will depend on whether we can trust ourselves to live in rural areas without imposing our will on every square foot of it. Aldo Leopold[11], a founding member of the Wilderness Society in America, foresaw this problem when he wrote: "Ability to see the cultural value of wilderness boils down, in the last analysis, to a question of intellectual humility. The shallow-minded modern who has lost his rootage in the land assumes that he has already discovered what is important." Leopold's concern led him to propose a Land Ethic in which people become an integral member of the wider community of plants, animals and the land, rather than have dominion over it.

I am a professionally qualified Permaculture designer[12], and I learnt from this earth science that wilderness has value in providing lessons on how we can design enduring self-regulating processes based on natural systems. Permaculture embodies a land ethic in similar vein to that espoused by Aldo Leopold. Land-use design using Permaculture principles will allocate areas of decreasing influence and affect (i.e. decreasing intensity of use) and will seek to include some regenerating self-willed land where observation is the only activity.[13] We can then advance from the self-willed land on individual holdings – where nature is gifted back part of the land to non-productive use - towards a collective will to gift land back to nature in larger publicly owned preserves.

There is an internal consistency within the Permaculture approach that is important - we may be able to regenerate and conserve self-willed areas, but they will become merely museum pieces always under threat if they are surrounded by overworked and degraded landscapes. Moreover, whilst at first sight the advocacy of self-willed land could be dismissed as another 'highland clearance', there is the recognition that the Permaculture approach to land use can sustain a greater rural population than there is at present.[14]

Self-willed land becomes a greater prospect every day that we see the profitability of farming in marginal areas unravel and that there is a growing public will to have a collective view about future landscapes.

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To wild or not to wild: the perils of 'either-or'

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PETER TAYLOR

In so much of the debate about wilderness, wild land, conservation priorities, management and intervention, a certain aspect of the rational scientific mind inevitably surfaces – I do not have a fine word for it, other than 'either-or-thinking'. It affects policy as well as scientific research and conclusions. In the latter it leads to an inability to consider multiple causative factors. Its opposite can be summed by the even less erudite term 'both'. Perhaps some sociologist will provide a suitably long word, and the phenomenon will get the recognition it deserves.

In this debate it would mean that any statement regarding removal of management, use of wild or domestic herbivores, climax vegetation versus managed grazing regimes, and any new theory or paradigm, would not be generalised across all our nature reserves. Thus, we could argue for a *spectrum* of regimes, from core areas dominated by 'natural' processes, buffer zones of suitable economic activity (e.g. multi-purpose forestry, low-intensity grazing) corridors of less-intensive agricultural regimes, wild-river corridors, urban corridors, wild estuaries, headlands, and so on.

Degrees of natural

This principle also applies to the dodgy term *natural*. Despite being central to what we as nature conservationists are attempting to conserve, it is fraught with confused meaning. Mark Fisher strikes a chord when he finds fault with Peter Marren for a supine acceptance of domestic grazing regimes in our national 'nature' reserves. James Fenton, on the other hand, citing Franz Vera, offers us a paradigm of acceptance where domestic stock help us maintain open landscapes in the uplands in the absence of the natural grazers that would have kept them almost as open in pre-agricultural times.

As domestic stock are agents of human intervention (and benefit), this is perhaps a polarity based ultimately upon the way we see ourselves. *Either* humans as interveners in the landscape are natural *or* not, when we could be *both*, depending upon our definition. The work of paleontologist Tim Flannery[1] (see for example *ECOS* 24 (2), pages 85-88), suggests that even more natural humans have been exerting major landscape scale influence for the past 60,000 years at least, largely through the extinction of mega-herbivores in the last glaciation (and see next point about 'deep time' perspectives). Thus, no landscape, not even in the Americas, is now without past human influence, and a thick European forest devoid of elephant and rhino, riverine hippo and beaver, is clearly not in its natural dynamic. Nor are the National Parks of the USA, now devoid of mastodon, giant sloth, and their sabre-toothed predators.

Would we define that great mega-faunal extinction as 'natural'? Or were those paleo-Indians with their flints and bone tools in some sense unnatural? And further back, the aboriginal colonisation of Australia some 60,000 years ago, not only caused the extinction of a celebrated marsupial Serengeti, but wrought enormous changes in Australia's forests which became more prone to fire and favoured fire-resistant species. At what point in human history did humans cease to be natural?

At the other extreme – few would want to categorise the megafaunal depletion of the oceans, where 500,000 great whales were taken, causing widespread ecosystem changes, and driven by profit and a market for whale-oils, as part of the natural scheme of things, but as with all spectrums, where you draw the line is a matter of what exactly you wish to separate.

Perhaps the answer lies therefore in the degree to which humans, being apparently dominant, *surrender* that dominance to *natural processes*. Clearly, if we remove keystone species, prevent migrations, eliminate dangerous animals, or otherwise deter major natural processes for our own benefit, we have not surrendered that dominance.

In a forthcoming BANC book on rewilding, I propose *Areas of Natural Sanctuary* where nature, in the sense of that process which gave birth to us, is honoured by as little intervention as possible. Permaculturalists do this by devoting 10% of any holding to nature's wild processes, partly for observation and learning, and sometimes, partly as a sacrament. I have very largely dropped ideas based upon the ethos of ecosystem restoration which I started with, after becoming aware of a deeper time perspective.

Deep time perspectives

A deep-time perspective, such as Flannery's, gives us two conclusions that have yet to be factored into modern conservation thinking. Firstly, few ecologists realise just how severe human impact has been upon the temperate forest fauna. This fauna evolved over two million years, during which the current genera of herbivores and their predators and their inter-relations with each other and the plant kingdom were constituted. This evolution of form has been determined very largely by the processes of *climate change* inherent in periodic glaciations. In those fluctuations, huge swathes of European forest periodically contracted to glacial refuges, accompanied by massive fluctuations in numbers of forest and open country herbivores. There were also significant changes elsewhere in the amount of tropical rainforest and savannah. I recommend Derek Yalden's recent *History of British Mammals* for the local scene[2], and Turner and Anton's *The Big Cats and their relatives*, especially the chapter on climate changes, for insights into herbivore and predator guilds.[3]

The complex grazing regimes that emerged at the end of the last ice-age, and to which many refer to as a 'natural' pre-agricultural base-line, varied across Europe, according to latitude, altitude, and soil-type (the main determinants of tree species). However, this base-line was already massively compromised by the extinction of mammoth, forest elephant, forest rhino, and the decimation of horse and bison, which had both open country and forest eco-types, and would have profoundly affected forest dynamics. Thus, no European forest, however large it was and however minimal the human intervention, could today be regarded as 'without human influence' or 'true wilderness' with a potential for the 'full complement of nature's species' as Mark Fisher might hope. What then of the forest being 'self-willed'?

Franz Vera's 'new theory' has been a long time in the coming – conservation professionals are just waking up to what paleo-ecology has suspected for several decades. Referring to this new thinking, James Fenton now proposes, in the absence of the original herbivores guild, that sheep and cattle can do a decent job of mimicking natural processes, and further suggests that the current British uplands – virtually our only remaining 'wild' land, and for which rewilding conservationists have been urging a retreat from economic use - might *already* sufficiently represent the *natural* balance of vegetation. Again, this does not acknowledge the potential for several solutions, each appropriate to different landscapes. It also skates over the detail of 'natural' processes and over-simplifies the ecological elements of the landscape. The post-glacial herbivore guild (i.e. already denuded of European elephant, rhino and hippo) had a particular structure – one species of cattle, one large deer or moose, one or two medium sized and one small deer, one forest pig, one beaver, one bison and one horse (the last two with various ecotypes). Each member of this guild grazed and browsed in different forest niches (the terrain-altering hippo grazed as far north as the Yorkshire Ouse in the previous only slightly warmer interglacial). Moreover, the presence of predators, whilst not necessarily affecting total population size, would determine spatial density and hence grazing and browsing pressure. The ecological consequences for shrubs, berry crops, field layers, germination patterns, insect pollinators, avian diversity, dung recyclers etc, would have been great and complex.

Either grazing on the left, or no grazing on the right - Snowdonia (Peter Taylor)

Thus, whilst it is not now possible to re-create or restore a full-spectrum 'natural' ecosystem in Europe, it can be done by degrees of naturalness that will depend both on the restoration of natural processes and the presence of keystone species or their substitutes. A British moorland of low-intensity Cheviots and Welsh Blacks, a balance of heather and grassland, a scattering of rowan on the slopes, oak and ash in the valley hangs, will have much to satisfy urban wanderers, and will clearly contain some natural processes and support an abundance of birds and insects. Much as this may be an appropriate management choice as a 'nature reserve' under many circumstances, it is a far cry from wildland proposals that would restore a broader herbivore guild, predators, and natural processes of disturbance and succession.

Furthermore, the current spate of tree planting, while hardly a natural process at its outset, is but the beginning of a restoration process for denuded soils. Once established, new forests would mature into a habitat network, aided by both human intervention in the early stages, and the re-introduction of wild herbivores or their rare breed equivalent. In some places, ancient British cattle and Soay-type sheep may be appropriate, and they would be accorded normal veterinary protection, in other larger areas protected by buffer zones, wild Heck 'auochsen' and primitive ponies, (the Large Herbivore Initiative thinks Exmoor ponies are more primitive than Poland's Konic) could be left to fend for themselves.

Cultural elements of a wild heart

We have seen little discussion of the cultural reasons for doing the things we might do at each end of the spectrum, and these are the real drivers of policy. Our current nature reserves exist, as both James Fenton and Mark Fisher point out, courtesy of agreements with landowners who need to make a living from their land. Furthermore, these largely unconnected semi-natural lands are isolated agricultural lands, and are not viable in the long term for reasons of genetic vulnerability and climate change.

I would agree with Mark Fisher, that there is no scientific derivation for an ethic of action. We might suppose that our own species' ecological stability depended upon a fully functional ecosystem, but at a prospective 10 billion people in the next decade or so, that planetary ecosystem is not going to resemble anything that went before! Self-interest might just conserve sufficient forest for tigers and gorillas, but it will not bring elephant and lion back to European temperate ecosystems! We might ascribe a 'right to survive' to re-constituted aurochs and tarpan, but we still have to find them enough genetic and migratory room for that survival, and then agree they have a right to slow death by natural diseases, death by combat, or predation by big cats. Even the laudable effort of the Dutch at Oostvarrdersplassen failed to get the first of these, despite getting the second, and is a far cry from bringing back the northern European lion!

Choosing our risks

In my view, it comes down to how wild we want the world to be. I value the presence of dangerous animals and the element of risk. I am happy to walk in forests where an encounter with a bear is a possibility. I am not so brave (or foolish?) as to do the same in a lion or tiger reserve, though I am quite happy in leopard or puma country. Bears, leopards and puma regularly kill people, as do cattle, horses, and even sheep, even in England, but the humble wasp is England's biggest wildlife threat. We accept some risks and not others. Different people accept different risks. There is a huge amount of hypocrisy too. Hunters and fishermen over-hype the effects of predators. Farmers play up sheep losses. Neither refer to the natural losses of disease, or to deaths from cars, renegade sheep dogs etc.

Where we go with this will be a matter of culture and, ultimately, not just of eco-spirituality, but also of its translation into market realities. A great deal of debate and education needs to take place about risk, as well as the economics of subsidised farming, and from this we can perhaps derive a better perspective on the benefits of a spectrum of wild land, core and corridors.

On the nature of that spectrum we might conclude that:

- natural processes occur at all levels in all ecosystems and that how far they predominate is a matter of degree and ultimately, a human decision.
- some natural processes cannot be replicated at all because essential species are extinct, or only in large areas, and even then, with some level of human-induced substitution; for example, the myriads of ecological processes created by forest elephants and rhino, river hippos and beavers.

Thus, a corn field with no hedges and no margins, no weeds, and genetically modified strains enabling broad spectrum herbicides, is very far from natural; whereas one with a hedgerow, unploughed marginal strips, farmed with natural strains, harvested with rotations to build up soil structure and fertility and under organic standards with no pesticides is a lot more natural in its use of nature's processes, and will have a greater diversity of the creatures we care about, such as butterflies and birds. Even so, it would present a barrier to migrating herbivores, but not an insurmountable obstacle if a river corridor of un-farmed land existed nearby.

Sanctuary in Britain

With regard to core-areas that could be connected by corridors, we could single out one large area of moorland (my book proposes one each for England, Scotland and Wales), with its current 1-2% of relic native woodland, no through roads, no other major human artefacts, where we could create something at the wildest end of the spectrum. In Scotland, Alan Featherstone has suggested an area of some 1500 km^2 west of the Great Glen, where natural processes would predominate. Studies in this area have already shown that deer numbers do suppress the vegetation and prevent regeneration. The

forest is already out-of-balance. However, reducing deer numbers currently depends upon culling, that is, human intervention. Ideally, deer would compete with the larger spectrum of herbivores – and here, wild cattle, 'tarpan' like ponies, re-introduced moose, boar and beaver would restore something approaching the natural grazing and browsing regime. Predators such as bear (largely vegetarian but a regular predator of fawns and foals), wolf (deer and moose) and lynx (roe deer and hare), would, if not affecting numbers, at least affect spatial density sufficient to influence tree regeneration. The presence of predators can prevent deer remaining in one place, and herbivores avoid wolf-denning areas – all elements of the natural forest dynamic. We could add beaver to that picture, with their coppiced willow water meadows and luxuriant emergent vegetation.

In the smaller areas of England (North Pennines or Dartmoor) we might find 200-400 km^2, and a similar area in Snowdonia (the Rhinogydd) in which a more diverse herbivore guild could operate, but with perhaps only lynx and the hint of a naturalised panther to represent the carnivores.

The establishment of several large *Areas of Natural Sanctuary* could certainly be achieved by cooperation of a few landowners and organisations within current conservation thinking. A recent inter-agency Land Use Policy Group initiative to develop *New Wildwoods* proposes 'forest habitat networks', with National Trust and Forestry Commission holdings providing the starting points.[4] The main focus of the initiative is to kick-start a failing forest recovery plan by broadening the rationale of tree cover to encompass rewilding objectives. The proposals include conversion of plantations to native species but have yet to seriously address mammalian re-introduuctions. There are problems with wild herbivores that can harbour commercially damaging diseases, and prospering carnivores will export their progeny to areas where domestic stock graze.

Finally, as the Europeans are discovering, none of these 'core areas' makes much sense unless the animals can move between them, and thus rather extensive corridors are required and all that implies for the infrastructure of industrial areas, intensive agriculture, energy, water management and transport. Without such corridors, genetic isolation would threaten the large mammal populations, and in the longer term, where would they go when the ice comes back?

References and notes

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see also www.caemabon.co.uk

Wild thoughts followed up…

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JAMES FENTON

I agree with Peter Taylor that palaeocological studies are essential in understanding the nature we have today: Jared Diamond in *The Rise and Fall of the Third Chimpanzee* argues that there never was a Golden Age when humans were 'in balance' with nature, citing the extinctions of large animals that took place when humans colonised new areas. Thus, as Peter argues, we can never return to a pre-human complement of species, or distribution of vegetation.

The ancient guild of herbivores in the pre-glacial forests of Britain - Straight tusked forest elephant, moose, forest rhino, aurochs, tarpan, and wild boar - with red deer, roe deer and hare still present. (Peter Taylor)

The argument of what is 'natural' is basically a semantic one: humans have coined the word 'natural' as a contradistinction to 'artificial' - it is a useful way of looking at the world to separate that which is given *a priori* and of which humans are not in charge (i.e. nature), and artefacts. If the world 'natural' is used to include humans, then everything we do is, by definition, natural - even making species extinct - and no consistent rationale for conservation will be possible (this is not to deny that we have not evolved from nature, and there will have to an arbitrary cut-off point as to when humans became a species). I find it a very useful word, as it helps us make sense of the world: before humans existed, everything was natural - now there is a mix! And, of course, it is rarely black or white: I might create a pond, for example, i.e. an artefact, but its ecosystem could be natural (i.e. is identical to a natural analogue). If the word 'nature' is dodgy, as Peter states, then all of us involved in nature conservation might as well give up and go home!

Additionally, one needs to be very careful with the word 'natural processes': nutrient cycling and chemical pathways, for example, are natural processes, although the origins of the chemicals can be anthropogenic; eg. loss of species by adding fertiliser (eutrophication) is a 'natural process', as is global warming from increased anthropogenic CO2 emission. On analysis, what is meant by 'natural processes' becomes synonymous with 'processes with no human involvement', which, in my view, becomes synonymous with 'wild' - 'letting nature be in charge'.

If we are to let nature be in charge in certain areas, i.e. be wild, we have to mean what we say, and get rid of our preconceptions of how the system should operate: we must have 'undefined outcomes' with respect to habitat and species composition. As indicated above, we cannot return to an earlier 'natural pattern'. This is not to say, though, that we should not be seeking an understanding of natural systems, so we can get an idea of how natural systems operate: I was arguing that such an understanding leads to the perfectly reasonable hypothesis that, in the infertile uplands, natural successional trends (in the presence of grazing) lend greater credence to 'the natural decline' woodland model, than the alternative models of 'woodland as climax' or Frans Vera's 'cyclical model' (although all will have validity at a given location). Lee Klinger, for example, has argued that peat bogs are often the endpoint of succession as they are more self-buffered against environmental change (although there is evidence that blanket peat itself has a limited life time).

I would thus argue, in contradiction to Mark and Peter, that much of upland Britain, particularly in the far north and west, *are the 'wildernesses' that they say we do not have in this country* (albeit lacking some of the mammals, although this has not affected the vegetation pattern): it is just that their preconception, or mental image, of the 'wilderness as woodland' is incorrect - at least in infertile upland Britain. And such infertile areas (low potential biological productivity) will not support such a range of species, including large mammals, as in lowland Britain. Hence one must be very wary of generalising across the UK. My fundamental point for upland Britain is that, even if humans have modified the natural processes of grazing and burning, the uplands would look much the same even if they had not: i.e. the current vegetation pattern lies within the range of natural variation.

Likewise, in Scotland, and naturally (through chance) their natural species complement would vary: some may have had large herbivores, some predators, some none, etc, so we cannot say "the system should have this or that complement". *Perhaps letting things go wild means getting rid of the word "should"?* However, the fact that Scottish moorland vegetation appears pretty uniform, regardless of its history, implies that the general successional trend has been towards open moorland. Also, I do not think size is always relevant, as Mark suggests: some of our most perfect 'wildernesses' could be very small off-shore islands that have never experienced human impact (other than global warming and input of air-transported anthropogenic chemicals). Likewise, I have created pond in my garden, but I am not in charge of the underwater ecosystem: the balance of amphibians, invertebrates, plants, etc in it is probably indistinguishable from a nearby natural pond, and is, in effect, a wilderness! (I have been watching pond skaters on my pond, and their social system appears to be a more liberal democracy than, say, ants or bees. However, the great diving beetle appears to have eaten them or chased them away, which shows how liberal democracies can be upset by bigger, violent bullies!)

I do not think either Peter or Mark are willing to fully let go, or 'let nature be in charge': they assume that 'having nature be in charge' will automatically mean more species and diversity: this may or may not be the case at a given locality. Allowing nature to be in charge may well result in bracken invading a species-rich sward, or foxes and crows being more common than other species: *we have to get rid of value judgements - accepting things we do not like as much as things we do like*. This, though, is where size does become important: the bigger the geographical area, the more scope for conserving the full range of species.

Peter states that "deer numbers suppress vegetation and eat regeneration." I would argue strongly that different grazing pressures result in different vegetation patterns, and generally, in upland Scotland, evidence suggests that the greater the grazing level the greater the number of *vascular* plants (which is not to say they will all be flowering as, for, example in a Yorkshire hay-meadow, which is perhaps a cultural artefact and the wrong model to hold in one's mind!). Deer have been around for millions of years, and have always been eating trees, and trees just have to put up with it! If they cannot, they become rare! It is a difficult to answer the question "what is the natural grazing level", as people argue either way that predators affect herbivore numbers. I prefer the theory that grazing is limited by forage availability in the limiting season (e.g. cold or dry). Perhaps the only way to find out is to stop managing and see what happens, adding missing species where possible: culling deer because we perceive there are too many to me appears the opposite of letting nature be wild!

In upland Britain, my fear is that we already have a (relatively) natural, wild network of moorland core areas, that we are replacing with woodland corridors - based on a dubious reading of the ecological history. Woodland corridors are also ideal conduits for the spread of introduced species like grey squirrel and sika deer: our approach to alien species, though, deserves a whole new debate, but in my view, conserving biodiversity means conserving the full range of species and habitats indigenous to an area.

I have been arguing for a long time that nature conservation is a broad church, and that different approaches are necessary in different places (see, for example, my article in *La Canada* No17, spring 2003):

1. wild areas are those with no predetermined ecological outcomes;
2. nature reserves are prescriptive, with defined outcomes;
3. in the rest of the countryside, nature has to fit in.

I believe that in wild areas or wildernesses, we have to let go our preconceptions, as well as nature!

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MARK FISHER

Perhaps another two words can be joined together to convey a meaning for Peter Taylor's 'either-or-thinking': I would choose the similar sounding, but with opposite meaning AUTARCHY-AUTARKY. Autarchy means absolute sovereignty, and is what I think characterises our approach to land management in Britain. The recent observation of the Herpetological Conservation Trust that pheasants released for gaming purposes may be driving down snake and lizard populations is yet another manifestation of the range of our intervention. On the other hand, autarky means self-reliance, something we

deny wild nature and that which I seek to return to it. While Peter may juggle with our pre-history, I'm not sure I want to set myself up to be the judge of whether my species has intervened past the point of return. I do, however, accept responsibility to act in good faith in restoring species where they still exist in European refuge, and accept willingly any risk that is posed.

The causative factors that Peter speaks of are either happenstance or they are contrived. I cannot deny a role for the human species when the part we played in the extinction of mega-herbivores would certainly have exerted an influence on planetary flora. But would we have foreseen that at the time, and would it have been our conscious intention? My time perspective for our species must therefore date from the point of removal of happenstance, when our drive for survival saw a merit in maintaining the existence of those we depended on. As a mark of our increasing sophistication in reasoning, we contrived a landscape to suit our purposes and chose which species to exterminate when they posed a threat to it. Are we not also the only species that harvests the lactation of others?

It is this analysis that tells me that the American approach to self-willed land, of excluding the influence of people and their productive activities, is the best hope for giving that self-reliance back to wild nature. It is a necessary counter to the incorrigible weakness of compromise that infests our modern day approach to conservation. If it will help, I think of it as an atonement to wild nature, to the species we have extirpated and to our autochthonous ancestors. For those who revolt at the agricultural improvements and enclosures of more recent history that led to landless labour in rural England (and a clearance of the populace in Scotland) then the removal of some of that land from agriculture into publicly owned wild nature will at least sever it from that tainted inheritance.

Culture and metaphysics aside, Peter's proposals for *Areas of Natural Sanctuary* at least have an element of reforestation about them. On the other hand, James' new paradigm for the uplands is a maintenance of the status quo and would perpetuate the enforced coexistence of wild nature with agriculture. On the nature of this agriculture, Peter gives us idealised visions of two different farming systems. The current trend is for us to consider that it is more acceptable for a co-existence of wild nature with the superficial attractions of organic farming, while overlooking such inherent drawbacks as loss of soil carbon from tillage and mineral depletion, neither of which coincidentally would affect his other farming example. These contested approaches to farming are the 'either-or' of the moment, missing the leavening of Peter's *spectrum* of regime, and reaffirming to me the need for a separation between wild nature and agriculture. I would, however, put in plea that we now look seriously at other no problem with Vera's challenge to a primeval blanket of climax wildwood approaches, such as integrated farming systems, agroforestry and Permaculture.

It was only a matter of time before the theories of Frans Vera in his *Metaphors for the Wilderness* would end up in a justification of agriculture in nature conservation, though James does only apply it to upland areas. I have across Europe because instinct suggests that it is too simple an explanation, and it belies evidence from other continents showing a variety of grassland, scrub, and open and closed woodland. But if we go with Vera's theory, we have to examine the range of weather and soil conditions, the dynamism (turnover) in tree population, the stage at which wild herbivores exerted their influence, and their population size (would it have been equivalent to the 10 million cattle, 30-40 million sheep and untold rabbits and horses that we have now?). We would then try to predict what the situation would have been at steady state.

There are co-dependent and independent variables in there that stretch my capability for modelling. Thus in the absence of such proofs, I have to rely on the observations I make every time I walk the millstone grit and limestone landscapes of Yorkshire. In a natural system that has co-species plants, herbivores and carnivores, the balance for our temperate climate and soil conditions would be more area of woodland of various types compared to the area of open grassed spaces, even in most of our upland areas. It then becomes a circular argument as to whether the herding and concentration of livestock by a post aboriginal population is the driver that led - through grazing pressure - to a reverse in the ratio of woodland to open space, or if it was assisted by farmers clearing the woodland themselves to provide carrying capacity for livestock and for growing crops. Either way, the diminutive woodland coverage of today is the end result, along with a landscape wholly fashioned by people. I think wild nature can do better and I am willing to give it a chance.

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PETER TAYLOR

I will take some convincing that 'upland Britain is within the range of natural variation'. I would like to tackle that issue first, because James' view, if accepted, would be at serious loggerheads with the whole 'wildwoods' strategy of Forest Habitat Networks, corridors, and core areas. There are, however, some misunderstandings regarding that strategy:

i.) we are not talking about continuous canopy woodland as a 'climax' vegetation, but of a *mosaic of habitat* where woodland might occupy about 40%, with

open heath, blanket bog, wet flushes, rocky ground, and glades the rest (and that very much building upon and respecting the current conservation value of key upland areas), and I feel, intuitively, this would be closer to the habitat we would now have had human not interfered so much. That is nowhere near the case for large areas of the current British uplands. We should also take care not to generalise - the 'uplands' vary enormously, from almost treeless areas of blanket bog, to equally treeless areas of bracken and heather or acid grassland, all of which would respond differently to being left alone, or afforested with an added complement of indigenous grazers and browsers.

ii.) there is a problem with infertile upland soils having probably had less tree cover under natural herbivores - even poor soils and exposed conditions will support woodland, - Wistman's Wood being a good example, and if the soils *were* originally impoverished, they would have attracted fewer herbivores and thus have been less open. Given the propensity of rowan, birch, juniper and willow to hang on it the most exposed places, and colonise ungrazed sites close to seed sources, I cannot see that the current pattern is likely to reflect past patterns.

iii) the problem with letting nature take over and thereby *losing* biodiversity may be an artefect of size and time scale - small reserves of species rich grassland would become less diverse in flowering plants - though who counts the beetles and thrips? And even if the insect fauna of twenty hectares of woodland that replaced downland *were* more diverse - on a national scale, the country might lose diversity (though not the continent!). But if nature reserves were larger, then natural processes of disturbance and grazing might safeguard that diversity. Initial losses might be time-dependent, being made up as the ecosystem matures.

iv) culling deer is not necessary, of course, if the endpoint is the current open moorland and limited natural regeneration of forest - they will find their unnatural limit, sans predators, sans competitors, but it is clearly necessary if the aim is to re-establish a more forested landscape (from 1% ancient woodland to 40%, for example, over a large area such as Snowdonia, Dartmoor or Caledon); with regard to aliens, such as grey squirrel, sika, muntjac and the like - these are likely to prosper, but they are also a fact of the globalised present (and not dissimilar in *process* to invasions caused by land-bridges on an evolutionary timescale).

Ultimately, these issues *do* challenge what we have called *nature conservation!* Nature, as natural, as not artificial, no longer exists. But rather than pack our bags and go home, we could be honest about that - the emperor of nature conservation science may have a few clothes left, but they are decidedly ragged. Better to admit that, and develop a new ethos - that we will conserve what we like for no other reason than we like it. That liking might include a purely economic motive - such as deer for trophy hunters, or even an economy based upon visitors to the scenery. There are utilitarian and aesthetic values in nature conservation, but curiously, supposedly scientific values of biodiversity, ecosystem stability, and even naturalness, currently hold sway. It is rather like a reverse of the demise of religion - the old paradigm was flawed, a result of special interests, and as the flaws become more widely understood, new values are emerging. The challenge for conservationists is to adapt to these changes. One crucial adaptation will be a pluralistic process, with different management models, involving many interest groups, with the mix varying from place to place, and where participation in the setting of values is paramount. The kind of changes that the National Trust and Forest Enterprise are working in re-wilding Ennerdale, for example, where plantations are being made more natural, grazing reduced, river and lakeshore rewilded, but economic activity maintained, would complement another wilder core-area in the eastern Lakes or Northen Pennines, where sheep were removed, woodland regenerated, deer allowed back, and a few lynx re-introduced.

Likewise, Alan Featherstone's proposals for Caledon, would contrast with other areas, such as Knoydart, where crofters would have a presence in the relatively wild landscape; and in Snowdonia, the National Trust are extending the treeline on the flanks of Snowdon with reduced grazing, and this will always be a high recreation area of open landscape, whereas the Rhinog lends itself to core-area status, few visitors, and the re-creation of a large oak forest.

Connectivity and networks

Thinking big – a better deal for connecting nature

ECOS 31 (3/4) 18-24 (2010)

The Lawton Report, Making Space for Nature*, offers a more bold and creative approach to wildlife conservation. Conservation groups must press for its endorsement in the coming White Paper.*

TONY WHITBREAD

Nature conservation has traditionally focused on conserving the most important parts of our natural environment. Find the best areas, protect them and then look after them through some form of conservation management – this has generally appeared to be our conservation strategy. However, even right from the start this has not really been the case. Different generations may have had different words, but these special places have often been seen as reservoirs, or hot-spots, or centres of colonisation, or core areas. The picture is not one of isolated living museums; it is more one of important parts within a much wider ecological network.

Gains but net losses

The environment of tomorrow can only evolve out of what remains today, so there must be no question of any new approach sweeping away the hard-won levels of protection for our most important nature conservation assets. Special areas (Nature Reserves, Sites of Special Scientific Interest, and Local Wildlife Sites etc) are important in their own right. But they become far more effective if they are part of a much wider system of functional ecosystems.

In 2008 the House of Commons Environmental Audit Committee concluded that the UK had failed to halt the loss of biodiversity and that we were not going to meet our 2010 Biodiversity Objectives. The EU has now set a new target "to halt the loss of biodiversity and the degradation of ecosystem services by 2020." Another firm commitment but what are the chances of success if we just try to do more of the same? Indeed time and again we hear firm political commitments to nature conservation, whether it is the Wildlife and Countryside Act, the Convention on Biological Diversity, commitments to deliver Biodiversity Action Plans, or warm words in local authorities' Local Development Frameworks. We may think we are getting somewhere but in practice the gains are at best small. Loss of biodiversity continues, at global and local scales, unfortunately confirming that we are indeed in the middle of the sixth global mass extinction event.

Economics – friend or foe?

Evidence from studies such as The Millennium Ecosystem Assessment (2005), The Economics of Ecosystems and Biodiversity (TEEB) and now the UK National Ecosystem Assessment (NEA) are confirming what ecologists have known for decades – nature provides the services on which we depend for all aspects of human well-being (The TEEB material will be reviewed in the next ECOS by John Bowers). Ecosystem services are provided by a healthy, functioning environment but at present many of these are unknown and unvalued. This is already having direct economic consequences. TEEB, for instance, has estimated that the economic loss through damage to ecosystem services from the degradation of forests alone is far greater than the economic losses experienced during the worst of the recent recession. As ecosystems degrade further, these losses will increase.

In brief, nature is continuing to be degraded but we rely entirely on a healthy, functioning nature for our economy, sense of well-being and ultimately for our very existence. Whilst past approaches to nature conservation have had some success, the failure of the current system to reverse the long-term trend of biodiversity loss indicates that we need a paradigm shift in the policies and approach we adopt for our natural world.

Pressure for change

Before the general election the Wildlife Trusts lobbied the main political parties to create a major new driver for the natural world to achieve a Living Landscape. One result of this, in September 2009, was the formation of a review group to look at England's ecological network by Hilary Benn, the then Secretary of State for the Department for Environment, Food and Rural Affairs. 'Making Space for Nature: a

review of England's Wildlife Sites and Ecological Network', was therefore set up and chaired by Professor Sir John Lawton, a highly respected ecologist from York University. Even as the Lawton review was underway we turned our efforts towards gaining cross party commitment for a White Paper, with the support of other Non Government Organisations. The General Election and subsequent change of government in May 2010 could otherwise have put paid to this, but the new Secretary of State, Caroline Spelman, was totally committed to the White Paper.

The completed Lawton Report[1] was submitted to the Secretary of State on 16 September 2010. The Lawton review asked the basic question "do England's wildlife sites comprise a coherent and resilient ecological network?" In essence it asks whether our current approach can deliver an ecological network where "biodiversity is enhanced and the diversity, functioning and resilience of ecosystems re-established in a network of spaces for nature that can sustain these levels into the future, even given continuing environmental change and human pressure." An ecological network should restore species and habitats to levels better than in 2000, restore the ecological and physical processes that underpin ecosystems, enhancing the capacity to provide ecosystem services, and provide accessible, wildlife rich, natural environments for people to enjoy and experience.

Our environment faces huge challenges, from demographic change, economic growth, new technologies, societal preferences, and changes in policy and regulation, for example. All these will have huge consequences on the environment. Establishing a coherent and resilient ecological network will help wildlife to cope with these changes. It will also improve the ability of our environment to provide the range and quality of ecosystem services upon which we all depend.

The Lawton agenda

The review essentially concluded that **our current scatter of wildlife sites does not comprise a coherent and resilient ecological network**. Perhaps this is not a surprise, but it is significant that a government commissioned report, drawing on a wide range of evidence and expert opinion came to this conclusion.

The Lawton review then sets out 24 recommendations for what needs to be done in order to make the coherent, resilient ecological network that we need. Together these recommendations provide a key check-list for what we should be expecting from the new Natural Environment White Paper.

First, the review recommends that ecological networks should be identified and protected. Looking after what we have is the basic starting point. Importantly, however, this includes areas for ecological restoration, and thus not solely focusing on the areas that are currently of high quality.

A key theme is the delivery of landscape-scale ecological restoration. This, it proposes, should be done through the establishment of Ecological Restoration Zones (ERZs) - "large, discrete areas within which significant enhancements of ecological networks are achieved, by enhancing existing wildlife sites, improving ecological connections and restoring ecological processes". It also promotes making space for nature along river catchments through the expansion of wetlands and the restoration of natural processes. Coastal management should also take full account of the natural dynamics of the coast, thereby allowing habitats to move and evolve.

The proposals were summarised in four words – "more, bigger, better and joined."

The review suggests that the process should start with the development of 12 Ecological Restoration Zones around the country. The Wildlife Trusts view is that this would be far too minimal; indeed to limit ambitions to just 12 ERZs would be to ignore a large amount of work that has already taken place. As a comparison the biodiversity partnerships in the South East of England have got together to develop a map of large scale Biodiversity Opportunity Areas (BOAs). This process has involved a large number of partners, extensive consultation and is now accepted as the basis of the South East Biodiversity Strategy. It did feed into the South East Plan (before it was abolished by the new government) and should now feed into the more local strategies that replace it. So a lot of work has been done. In Sussex alone we have identified some 75 BOAs.

Ideas into action – large or small?

Sometimes it is helpful to think of a real area in order to put some 'meat on the bones' of some of these general strategies so I'll talk briefly about one such location in Sussex. The Sussex Wildlife Trust has a West Weald Living Landscape project in a large area on the Surrey-Sussex border, to the south east of Haslemere. This is an agglomeration of Biodiversity Opportunity Areas that can broadly be described as a forest matrix, containing within it some of the most important ancient woods for nature conservation in Europe. We know the nature of the ecosystems there, and partnerships of key organisations have been established and landowners are involved. This has all led to a good understanding of the ecological processes at work and the various ecosystem services delivered. Work is underway here already, although better support would see far more achieved. The point, however, is that this could provide a model for future ERZs.

In practice, Ecological Restoration Zones should surely be on a scale similar to that of the West Weald Landscape project. If so then ERZs must ultimately be identified in every part of the UK and therefore there should be a large number of them, all interlinked to form what truly is a coherent ecological network. Just 12 such projects scattered around the country will be far too few to have much positive effect on a failing country-wide ecological network.

The Lawton Report does not claim to offer accurate estimates of the cost of its recommendations but it does touch on how they might be implemented. Current financial mechanisms (such as Environmental Stewardship and tax incentives) need to be improved, and new ones brought in. Economic approaches are needed that favour conservation management by stimulating new markets and payment for ecosystem services, to ensure that the values of a wide range of ecosystem services are taken into account in decisions that affect the management and use of the natural world.

Nature paying its way?

Payment for ecosystem services is a growing theme. It was addressed in the Lawton review and options and examples are currently being researched by Defra. The UK National Ecosystem Assessment aims to describe the state and value of the UK's ecosystem services. If this value is properly understood, then the need for healthy, functioning ecosystems should also be recognised. The natural environment should then start to have due primacy in policy, legal and economic decision making.

There are, however, dangers in ascribing an economic value to the natural world; there are more fundamental, over-riding ethical considerations that justify nature conservation at a higher level than its utilitarian value. Some scientists described an economic valuation of ecosystem services as a "poor approximation of infinity" – how can you put a price on something that you can't do without. Furthermore I would argue that our economy is not the over-riding system we imagine it to be. It is essentially a sub-system that relies totally on the whole system which is the environment itself. It is odd to value the over-riding system (the environment) according to the values of a sub-system (the economy). Thus whilst economists may ask us to justify the environment in terms of its economic worth we should rather be asking the economists to justify the economy in terms of its environmental worth. Furthermore, such ecosystem services are essential, non-tradable and required by everyone, so should largely fall above economic value.

Nevertheless, it is difficult to express the essential worth of the environment in a world so heavily biased towards economic value. As Pavan Sukhdev, leader of the TEEB initiative, has said, putting a monetary value on something does not mean you are creating a market for it. Furthermore, when economic evaluations of nature are carried out TEEB shows that economic benefits of environmental protection are often between 10 and 100 times greater than the costs.

The value of nature therefore needs to be embedded into decision-making at all levels. The current link of damage to ecosystem services and biodiversity loss on the one hand with economic growth on the other is in practice a market failure of greater severity even than that which has led to climate change. Indeed the need to disconnect economic growth from negative environmental impact is perhaps the greatest challenge of our time. Re-internalising the costs to nature and the benefits from nature into policy and practice will help set the basis for an economic structure that is symbiotic with nature rather than parasitic upon it.

The work of the UK NEA could provide a framework in this respect, categorising ecosystem services into a hierarchical structure:

- First are the **Primary Ecological Functions** fundamentally supporting all subsequent ecosystem services. These include all supporting services and the major regulating services.
- Second are the **Final Ecosystem Services** including the remaining regulating services and all cultural and provisioning services. These underpin the goods we receive.
- Third are the **Goods** themselves which have a financial or non-financial value to humans.

In order to avoid double counting, 'value' is attributed at one stage – usually from the 'goods' received at the end of the hierarchy (and even then some goods are valued while others are not). In practice goods are often seen as competitive, with any area of land providing one or another good. Even worse a 'good' may be seen as competitive with its underpinning ecosystem services and even with the primary ecological functions that support all services. Intensive food production is an example of the bias in the way we currently evaluate services. In this case food is the only good that is evaluated. All other goods provided by that area of land are either degraded, unvalued, assumed to be free or assumed to be infinite. Food is an essential provisioning service but if produced at the cost of all other goods then it is a very inefficient use of land, and if it is provided at the cost of the ecosystem services and ecological functions on which it depends then it is ultimately self-destructive.

Furthermore, with our valuing system so biased towards a small number of goods, biodiversity can be relegated to a small, special interest in a sub-group behind one of the goods (a sub-set of recreation perhaps). In practice, however, biodiversity

- forms the basic building blocks of the ecosystems that underpin ecological functions;
- is an indicator of ecological health;
- is valued by people; and
- provides genes and species for crops and other products.

Building up credit

A key principle from an ecosystem approach should be the delivery of multiple ecosystem services from an area of land; any forces acting on that area should be supportive of rather than counter-productive to ecosystem service delivery. A consequence for the forthcoming White paper could be that all activities should be ecosystem and biodiversity 'proofed'. If an activity negatively impacts on biodiversity or ecosystem services then it should pay a realistic cost to reflect that impact, but if it has a positive effect then it should receive some form of ecosystem or biodiversity credit.

When ecosystems are seen as not only essential but also providing an economic benefit, then this might put a rather different complexion on the apparent 'costs' of implementing Lawton's 24 recommendations. Instead of being seen as costs perhaps it should be seen as paying for the benefits we are (or should be) receiving from healthy ecosystems. If we don't pay for them, we may not get them. That will have much larger economic consequences.

I suggest there are two main themes that come out of the Lawton review and the UK National Ecosystem Assessment:

- First: **Major landscape-scale ecological restoration** – Ecological Restoration Zones, river catchment restoration, re-instatement of natural processes and a large 'ecological network' philosophy. England has failed to meet its 2010 biodiversity objectives so we need to scale-up the future action.
- Second: **Recognising the value of functional ecosystems** because of the ecosystem services they deliver and so developing financial mechanisms to pay for them. We can no longer ignore the value of what nature provides for us.

Both these elements must be fully addressed in the forthcoming Natural Environment White Paper. If successful this should create a paradigm shift in our attitude towards the natural world, returning primacy to environmental quality rather than economic growth. We must aim high.

Reference

1. Lawton J, Brotherton P, Brown V, Elphick C, Fitter A, Forshaw J, et al. (2010) Making space for nature: a review of England's wildlife sites and ecological networks. London: Defra.

Lakeland valleys and Somerset hills - a tale of two managements

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Just as there can be a world of difference between two Lakeland valleys depending on their management, so apparently can there be between regions of the same organisation.

PETER TAYLOR

At the end of September 2010 I had the pleasure of walking Ennerdale in Cumbria with its custodian managers of the Forestry Commission, the National Trust and United Utilities (who own the lake), surveying the evolution of habitats since the whole valley was subject to landscape-scale 'rewilding' at the turn of the Millennium. At the head of the valley the changes were hardly discernible – reduced sheep numbers had been augmented by cattle, and the longer term aim under discussion was a cattle-only option. The sward was still cropped low and streamside tall-herb vegetation showed no sign of recovery. But the problem with reducing sheep numbers is that neighbouring flocks then invade the valley and defeat the manoeuvre! Then there were the areas of clear-felled Sitka – some showed no regeneration of this exotic and were sprouting a new native wildwood of birch and rowan, whilst others were rampantly regenerating another Sitka stand. Such outcomes depended on the age of the stand when cut and the latent seed-bank. Should the battle be waged further, or simply surrendered? And further down by the lake, old meadows were now grazed only by cattle, which also had access to the old conifer woods along the valley sides – they were rougher and wilder and much fencing had been removed. Most exciting of all, the river Liza had been allowed to breach her old containment and wander across the valley bottom, creating new meanders and pools. The pace of change is slow – rather painfully slow for the rewilding faithful on the management advisory group, but there is something in the slowness that is very educational.

The River Liza in Ennerdale - in the process of carving out a new channel. (Peter Taylor)

Floods and ecosystem services

As Alison Parfitt pointed out at our meeting, this part of Cumbria is a tale of two rivers. The one at Cockermouth last year, just over the valley watershed, that flooded the town, took out a bridge and claimed the life of a local policeman. That valley was grazed flat and the river totally contained along almost all its courses. When so highly charged, like an angered deity, the river had retaliated with enormous power. In this valley, Liza had reclaimed her wildness and was a subject of awe to us all, as if her wild spirit got under the skin and we all realised just how much we gained from sitting with her and simply watching and listening.

Is there a lesson for other valleys? How so when the economy of hill farming requires every inch of valley in-bye land for bringing the sheep down off the hill? Generations of farmers have cleared the boulders and built the levees, and the sheep have razored the banks as well as the fields. Long gone are the breeding lapwing and curlew and the flower-rich meadows, even within the borders of a National Park. It doesn't have to be like that, of course, but an alternative would require a major cultural shift – a surrender of hard-won grazing land, uneconomic cattle instead of uneconomic sheep, restoration of streamside vegetation and meandering pools, and all to be paid for under a system of ecological service provision (water quality, flood alleviation, carbon sequestration and increased biodiversity). That is not so difficult, considering the whole upland sheep economy is paid for by the EU taxpayer anyway. All that is required is a shift in what the recipient is expected to provide. And of course, as the Lawton report

may presage, such a shift is underway – conservation has finally found a way to package the whole lot into the service economy.

At the pace of cultural change

But of course, a cultural shift is required, and this is slow. That's why the National Trust keeps sheep on the hill in Ennerdale and it is Galloway cattle that come when you whistle in the woods, and not the scary-horned and potential health-and-safety nightmare of an aurochsian Heck, or a wild moose or wood bison. Cultural change is slow, and here the National Trust is committed not just to consultation with local communities, but actually implementing their wishes. The locals like the elderly and majestic Spruce and Larch and so they remain. Paths and bridleways are maintained.

The radical in me wants to lobby for a fully wild valley, ethnically cleansed of its aliens, with beaver, elk, aurochs, and boar. And if the neighbours can be convinced to keep cattle on the fell instead of sheep, then lynx would be feasible. But as we sit around the table, I know that everyone else knows that this is for future generations to decide and we will proceed slowly. I like it when I am invited and listened to, and it is nice to give something back and experience some open-minded and progressive conservation.

Walton Hill, SSSI

I returned then to my own patch of the wild. Across the little B-road outside the house, lies Walton Hill, owned by the National Trust and managed in conjunction with local grazers – who kept the rights, and as part of a small landscape-scale project to maintain the Polden Hills – a string of sites of limestone grassland knolls and a mosaic of woodland that bisects the Somerset Levels. I have been walking the same few hundred metres of path around the hill for over ten years. Here I found my first bee orchid. One early spring, I watched as a goshawk pair completed their almost suicidal diving courtship, and though the wood is narrow along the side of the hill by the old windmill, there is a corner where it is dense with under-storey and I never did locate their nest from which I know they reared two or three youngsters. One year I was annoyed that sheep were staying later on the hill and would eat all the orchids. I contacted the Trust's ecologist – he told me there was not much he could do, that the grazer was tricky to control. I discovered that the original agreement was with Clark's estate (the shoe people) and a simply letter was dispatched about responsibilities to nature (the site is also an SSSI, but I did not know that at the time). The sheep left the very next day.

Earlier this year, I noticed that the brush-cutter's van was parked much longer than usual – long after he had cut back the brambles, nettles and old thistle stands. A little walk confirmed my fears – the chainsaws had been at work on the other side of the hill. Gone were the thickets under and around the goshawk's hide-out of oak, maple and ash in that little quiet corner. Thirty or forty-year old hawthorns had been neatly sawed into piles. All the blackthorn and similarly aged elder had been cleared and burned. Some had been just a metre from the boundary fence which was now neat and open for all to see. Even where some thorn trees had been left at the top where they had been in open ground, they had been cleansed of bramble and their aged clematis and honeysuckle lianas hung limply a few feet from the ground. I guessed the site was being returned to "favourable condition" – the key goal for any SSSI.

Walton Hill: Clearing of scrub to add a few percentage points for limestone grassland (Peter Taylor)

This had been my favourite spot. It had long ceased to be a quiet place – the farm below the wood had been converted to a skeet-shooting business, day in day out the hill now sounded like a battlefield. It complemented the now ever-present helicopter gun-ships built down the road at Yeovil Westlands. The B-road now suffered from the curse of Sat-Nav and there is a daily rush hour that starts at 7am. Lorries trundle past throughout the night and there is a patch of road that causes them to bump and rattle

their contents, as well as the foundations of the house. I often think of its former life, when the windmill provided flour and the house was a bakery for the nearby villages – it must have been so quiet!

And now, after so many years, the National Trust was another enemy of that which I love. At first sight of the clearances, I found the chain-saw ecologist on the hill and asked him about the cleansing. I didn't talk much because my heart was beating part of anger part of grief. I made a plea for the rest of the hill and especially the stand of older sloe bushes which always put on such an amazing display. And I pointed out the forty-year elder and hawthorn and how much we in the house loved their spring show. He responded that they needed to protect the grassland which was very special but he would take into account what I had said.

Informing not consulting

So – early in this October, I was concerned to see a note in the local paper that the Trust would meet with local residents one Saturday morning to outline their plan for the hill. It did not speak of consultation. My sister and I were the only people to show. The ecologist and a naturalist from Millfield, who also manage woodland nearby, were there to explain the plan. I asked if it was a consultation. They looked perplexed. No - they were outlining their plan. And he then went on to explain about limestone grassland and the rare and threatened species it contained. I said I understood a little about the issues - and was there not a debate about the common and the local, public values and pleasure and how to balance that with professional scientific, target-led conservation?

Apparently not here on Walton Hill. It had already been decreed and here was a map. It showed how in nineteen sixty-something the hill had been grassland all the way to the fence and so a lot of rare habitat had been lost. All they were doing was restoring it to its previous condition.

No amount of persuasion was going to alter anything. The key man was going to brazen it out and the other just kept smiling. I pointed out that they might get an extra 5% more grassland, that the grass would be shaded still by the bigger trees left standing and by the boundary wood, and that the soil where the thickets had been was already enriched. I pointed out that in ten years, the brambles had not encroached and that the grazing regime was the key to maintaining a balance. I emphasised the word balance. I talked of nest sites for blackcap and thrush, long-tailed tit and bullfinch; of feeding for bees and countless insect species; of the thrill of the spring show of elder, may-blossom and blackthorn, summer clematis and honeysuckle....how though these were all common species, you would have to walk miles to find anything like the show we had here. No avail, not against the chalk-hill blue (one of a dozen small blue butterflies that all look the same to the uneducated eye) and the Lady's bedstraw (we already had a fine meadow of these this summer and that is dependent on the right grazing regime). And they knew what they were talking about with regard to what they expected to achieve – with lots of experience at restoring grassland...and I said, 'Okay, I am a generalist'. What do I know but from a practised ecological eye? And then at the end, the smiling man said, 'well, if after 40 years we don't get it, we can change the plan'.

Of course! The longer term. And here was I concerned about my own selfish patch and the next 10 or 20 years of my enjoyment. My sister remarked, 'So, like he said, it is all an experiment'. No, I told her, 'It is a target from headquarters. There will be a grant system somewhere. A box to tick.' And I thought, that box will be called 'returned to favourable condition'.

I had said to the Trust's man, as a parting plea, 'instead of hyper-managing this last little patch of wild hill, why not buy the next one along – right next door, a meadow and hillside that would add 50% to the reserve?' But, apparently the Trust has no spare money.

And then, as I resigned to the loss, with a little prayer as we passed the blue-berried beauty of the old sloe that he might spare that one if I made a very special plea (he didn't – the other day it lay on its side still loaded with berries), I realised this was not the National Trust I knew. That other Trust would have remembered where I lived, that I was a local resident who cared and showed an active interest and would have visited and shared their plan and asked for feedback and listened and compromised, even if it were just for that one fine old blackthorn.

Fresh woods and pastures new

ECOS 25 (1) 26-33 (2004)

Is the way that nature conservation is carried out going to alter in response to CAP reforms and new agencies, or will organisations continue to focus on small-scale site protection measures?

KEITH KIRBY, HEATHER ROBERTSON & REBECCA ISTED

There is a growing feeling among conservation practitioners that nature conservation needs to be large-scale, rather than just site-based, if we are to conserve successfully wild plants and animals. Non-mobile species in small isolated sites may face an uncertain future if their climate space changes around them.

In addition many practitioners consider that there should be more emphasis on allowing natural processes to operate, rather than relying on prescriptive management regimes[1,2,3] that have been the traditional means of treating small sites (see also articles in *ECOS* 16(2), 18 (2)). This article considers some of the ways that English Nature has been taking forward these ideas, particularly with respect to woodland conservation.

Keeping habitats as they are – the recent history

In parts of the world it may be possible to set aside large areas of perceived wilderness, where human impacts are minimal, and then just leave the wildlife to get on by itself. However, when the government conservation service was established in 1949, the starting point, especially in England, was a managed landscape in which farming and forestry were the primary land uses. Key habitats and species tended to have survived in relatively small patches that were dependent on direct intervention by farmers or foresters for their continued survival.

Different types of protective mechanism evolved, from legally-protected sites to changes in general land-use policy.[4] The Nature Conservancy and its successors, initially concentrated on the protected-sites series, although the damaging changes elsewhere in the countryside were all too obvious.[5] Increased protection for special sites, through legislative changes (most recently the *Countryside and Rights of Way Act*[6]), tended to shift the balance of effort away from broader landscape conservation, in part because of the accompanying checks and balances on how the legislation operated.

Nevertheless the wider landscape was not ignored. From the late 1980s onwards, agri-environment schemes have spread conservation effort considerably beyond statutory sites. English Nature's Natural Areas programme[7], the Habitat Restoration Project[8], policy inputs to CAP reform (Agenda 2000 and the recent Mid-term Review)[9] were all aimed at trying to improve the prospects for wildlife in the countryside as a whole - not just special sites. Much work is being done on habitat restoration and creation as part of the Biodiversity Action Plan process. However, for the most part, these programmes still assume an interventionist approach. For instance, a large block of new heathland will subsequently be managed to keep it as heathland.

In the past one reason for intervention was because conservation had to be tied in with farming and forestry practice, but these are changing. The impact of the recent CAP reforms is as yet unclear but combined with tough world market conditions could lead to major changes in British agriculture. Forestry has struggled to be profitable and much of the publicly owned forests now have public access and enjoyment and nature conservation as key objectives rather than just timber production. Therefore, as well as larger scale conservation projects, perhaps we can now be less prescriptive in our conservation management.

Levels of intervention in nature conservation management

What scope is there for giving natural processes more opportunity to operate? There are problems of defining what is 'natural', such as considering if humans have a role, and whether we are considering past or future natural conditions.[10] Consequently it might be better to pose the question: How widely are we prepared to set the acceptable limits of change for a site (or landscape) in terms of habitats, species and processes, before we deliberately intervene to shift the balance back towards our preferred outcome?

In most Sites of Special Scientific Interest there are key features that we wish to maintain and often there are set prescriptions to keep these features within quite tight limits (Figure 1a); in a totally natural system there might be no limits at all (Figure 1c). This latter is not likely to be an option in England, except perhaps with respect to some coastal and marine features. In between, however, are sites and landscapes where the limits could be broadened to various degrees (Figure 1b), so that most, but not quite anything, goes.

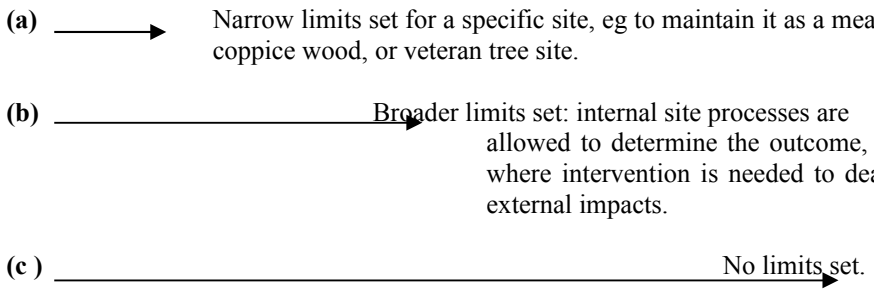

Figure 1. *Possible extents of acceptable change in (a) a cultural (b) a naturalistic and (c) a natural system.*

The degree to which the limits can be widened may depend on the size of the site: small areas usually require very tight limits of acceptable change if they are to maintain their interest. This may be the case in large sites as well - some large heaths are managed with quite precise prescriptions for heather cover - but there is at least the option of having broader limits. An explicit assumption with having more dynamic systems, with broader limits, is that within these limits, species or habitats or processes may fluctuate quite wildly, or even disappear. If we are not prepared to let this happen then we are not accepting the natural process.

Widening the limits of acceptable change in woodland

There are many woods where the emphasis is on maintaining or restoring 'traditional' management regimes (coppicing, pollarding, controlled-grazing) or some modern variant of these regimes. This may be because there is evidence that these regimes will produce the combination of habitats and species that are desired or simply because traditional management is felt to be a worthwhile option in itself, and part of the character of the place. In other woods new treatments such as continuous cover forestry are applied, because they are expected to produce the desired outcomes and may be better adapted to modern economic systems. Implicitly or explicitly quite tight limits are set (Table 1a).

This prescriptive approach is often essential, but may be based on little direct evidence that it is actually necessary in the longer term. What would happen if we were less prescriptive and interventionist? For some sites an alternative 'minimum intervention' approach has therefore been adopted, perhaps most famously at Lady Park Wood in the Wye Valley.[11,12]

Lady Park Wood and other long-term study sites have provided us with considerable insight into the dynamic processes that may influence the structure and composition of woods, from one-off events (1976 drought, 1987 storm) to longer-term changes such as increasing deer pressure. A more coherent and organised system of minimum intervention areas should be part of the process of improving our understanding of the impacts of management (whether traditional or modern) and of longer-term changes (eutrophication, climate change) that may be masked in other sites by the more immediate management effects.[12,13]

Some intervention may be agreed to be necessary from time to time; most commonly this has related to the impacts of invasive non-native species, or of increasing browsing by deer. Often, because most minimum intervention woods are relatively small (<50 ha), the impact is a consequence of changes in the surrounding, managed landscape. The logical move therefore is to enlarge the 'minimum intervention' area so that more of the processes can be internalised, and hence the intervention may become unnecessary.

The New Wildwoods project

There is uncertainty about the future of the upland areas of England and Wales, particularly in the light of changes in agricultural subsidies and the collapse of the commercial timber market. The conservation agencies therefore decided to explore the scope for a substantial increase in woodland cover with a higher proportion of native species, more reliance on natural processes for regeneration and more dynamic boundaries between open and closed habitats.[14,15,16] These studies considered not just the nature conservation aspects of such a change, but possible implications for agriculture, tourism and broader environmental questions such as soil and water conservation (Table 1).

Table 1. *Examples of possible benefits/disadvantages from developing 'new wildwoods' in the uplands.*[14]

Sector	Possible benefits	Possible disadvantages
Conservation	Increase in woodland and mosaic species	Possible loss of some open ground species
Recreation /tourism	Diversified landscape Improved recreation opportunities Increased visitor numbers	Some loss of long distance views Some areas become less accessible
Farming	Possibilities for diversification Improved shelter for farmland Locally available wood-products	Increase in pests (foxes, deer) Reduced agricultural output
Forestry	Small quantities of quality timber or other wood products	Loss of bulk wood production
Shooting	Improved options from wood-open mosaic	Some loss of grouse shooting
Water resources	Improved quality of water Possible reductions in some flood risks	Possible changes in water yield Possible increase in damage to bridges from trees

During the discussions about this work the potential for taking a similar approach in the lowlands was also raised. It might be on a somewhat smaller scale (hundreds rather than thousands of hectares) but there are a number of recent initiatives that are shifting lowland farmland out of agricultural production, for example the Great Fen project in East Anglia. A key part of the discussions was the idea that the new landscapes would be a mixture of open and closed habitats with some grazing continuing within the woodland. Indeed grazing could be the key to management of such landscapes.

A new interest in naturalistic grazing

Frans Vera's book, *Grazing ecology and forest history* [17] was published in English while this other work was in progress. Vera proposes that the former natural woodland cover was more like a modern wood-pasture than closed high forest, as a consequence of the activities of large herbivores such as bison, wild horse and aurochs. That the role of large herbivores in past landscapes has been underestimated is now widely accepted, but there is still debate as to whether the pre-Neolithic landscape was really that open or functioned in the way that Vera proposes.[18,19,20] English Nature has recently commissioned a study, looking particularly at the fossil invertebrate record, to explore further the evidence for the structure of the past natural forests.

However even if Vera is wrong about the role of large herbivores in the past, his ideas may still be relevant to their use to create and maintain a mosaic of different habitats and conditions outside of conventional agricultural or forest management. Initiatives such as the Grazing Animals Project have already brought together considerable information on the practicalities of using grazing under relatively controlled conditions.[21] Re-introduction of grazing to enclosures in the New Forest, at Sherwood Forest and Epping Forest has been carried out as part of initiatives to help deliver the Wood-pasture and Parkland Habitat Action plan, while large-scale heathland grazing regimes are being explored for example at Ashdown Forest.[22,23] These grazing regimes are still largely tied to creating or maintaining specific habitat conditions – for example if grazing animals don't lead to more heathland vegetation at Ashdown, then other management measures, such as burning, may have to be introduced.

Controlled grazers in Hatfield Forest (Keith Kirby, Natural England)

Table 2. *Some issues associated with developing a large-scale reserve managed by naturalistic grazing regime (not exhaustive!)*

What size of area is needed?	The larger the area the less the intervention that may be needed.
What species and numbers of animals are introduced?	Is the aim to mimic the Atlantic period fauna, for example with Heck cattle, or to use purely domestic breeds?
How are animal numbers to be controlled?	What methods, what time of year, how many animals, and what is the basis for deciding which to take?
Are there any current habitats or species that must always be present, and at what levels?	If the area starts with a high degree of semi-natural habitats, is it acceptable if some of these are lost; is there any limit on, for example the extent of openness, or the extent of forest?
Are there start-up works needed?	Are there habitat management works to be done before initiating the regime, eg removing non-native invasive species?
Are there public safety issues?	Are there public rights of way, or rights to roam across the site, adjacent roads, water courses that might be contaminated by dead animals etc.?
What is the animal welfare situation?	If the animals come under domestic stock regulations then there are a series of legal requirements (water, regular checking) that may not apply if they are wild. Even if wild animals are involved would sick/starving animals be just allowed to die on site?
What is the 'escaped animal' contingency plan?	What happens when (not if, remember Jurassic Park!) an animal escapes - even domestic cattle if they are not regularly handled may present safety problems particularly if they get on to roads.
What are the 'contagious diseases' emergency plans?	What will happen if there is a Foot and Mouth (or some other contagious stock disease) outbreak?
What monitoring is needed to tell if the system is producing the expected benefits?	Monitoring systems need to be put into place to show that this approach is providing more cost-effective biodiversity and other benefits than alternative systems.

Is there scope for going a step further and creating something closer to the situation at the Oostvaardersplassen Reserve in the Netherlands,[24] where feral and wild herbivores are not controlled, and where the vegetation and species mosaic that develops is completely unpredictable? Could state forests be rejuvenated to provide areas that recreated a wilderness experience?[25]

Understanding the science and practice of naturalistic grazing

A different type of conservation philosophy and approach would be required for such a landscape than that which we currently apply (and would need to continue to apply) to most other reserves and managed landscapes. Even if the land is available, and there is public and institutional support, it is not simply a case of putting a fence round the area, chucking in a few beasts and stepping back (Table 2). English Nature is exploring what the potential is for taking further steps down the naturalistic grazing road by addressing these issues. We would welcome views via a web-based discussion site set up by CEH at http://forums.ceh.ac.uk:8080/~naturalised-grazing.

Conclusions

For the foreseeable future most conservation is likely to take place in small sites constrained by their surroundings; therefore closely specified habitat or species targets and management regimes will remain common. However there is a need to have sites where these limits are relaxed to varying degrees to ensure that our management is achieving what was expected and to pick up unpredictable events and longer-term trends.

English Nature also believes there is scope for developing lower-intervention landscapes, with naturalistic grazing regimes. We expect these will have a high biodiversity value, albeit some of the habitat and species mosaics may not be ones that we are familiar with today. For such landscapes to develop they will need sound scientific backing, as well as public and institutional support. The research and demonstration work that English Nature is undertaking should provide the information needed to generate this support.

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Rewilding and the role of large herbivores

ECOS 25.3/4 59-62 (2004)

This article looks at the role of large herbivores in rewilding processes: what animals can be used, how do we balance gains and losses of habitats, and how do different interest groups react?

KEITH KIRBY

Nature conservation in England is largely about maintaining habitats and species that are survivors of former farming and forestry systems. Often the best way to protect them is to try to continue with something like the past management practices. However we can and should explore the scope for allowing alternative systems to develop that depend less on direct and regular human intervention.[1]

There are no situations in England where human influence can be withdrawn completely, although on the coast, sea-walls have been breached to allow the development of salt-marsh as part of managed retreat programmes. Inland, more limits are likely to be set on the degree to which natural processes are allowed to determine the outcome.

'Rewilded' areas may end up bearing some resemblances to 'original-natural' landscapes but will be moving towards a 'future-natural' state. This will create new patterns and assemblages of species, which raises some interesting questions in terms of current target-driven approaches to nature conservation.

Rewilding and domestic stock

Domestic stock, particularly cattle, have been suggested as part of rewilding projects as substitutes for lost herbivores such as the aurochs.[2] If they are to be included in rewilding projects their role needs to be clear. It is quite distinct from that in conventional farmland (where they are essentially a product or producer) but also from that in most nature reserves where they are used as management tools, for example to prevent tree regeneration on heaths or maintain short turf conditions on chalk grassland (Table 1). If domestic stock are themselves to be part of the 'wild' system then we need more information about their ecology and their impact under such low-intervention conditions.

Table 1. How grazing animals fit into different types of system

System	Role of animals	State of most vegetation	State of animals
Intensive Farmland	Primarily agricultural output – potential for nature management too	Highly productive, low conservation value	High yield important, healthy, productive
Semi-natural habitat management	As management tools to produce desired habitat	Desired semi-natural habitat present	Yield less important, basic health and welfare rules apply
Re-wilding areas	Integral part of the ecosystem. Large herbivores are essential drivers of ecosystem processes.	Whatever the grazing and other processes produce	Health and welfare guidance adapted for self-reliant animals

What numbers and sorts of animals do we use?

Cattle and ponies grazing a landscape will generate a different vegetation dynamic than cattle alone: if small numbers of animals are used then a different pattern of vegetation is likely to develop than if a larger herd is established at the outset.

To some extent these decisions will be influenced by whatever 'vision' there is for the expected outcome of the rewilding project. If the expectation is that a relatively open landscape should be produced (for example a 50% open park-like landscape) the tendency may be to encourage a high density of animals initially; if the expectation is that woodland should predominate then the starting numbers may be lower. There is unlikely to be one inevitable outcome on any one area – the starting conditions will influence the result - so the reasoning behind the initial stocking decisions should be stated.

Is the rewilding area meant to have some similarity to the Atlantic period landscape – a 'Holocene Park'? If so we might exclude ponies because Yalden considers they had died out in Britain by that time.[3] We would also need to consider eliminating more recent additions such as rabbit and fallow deer: is this feasible? The cattle (aurochsen mimics) would be chosen for their wildness. If we are not interested in the analogue with the past and also want to attract people to the area, then we might deliberately include ponies, and the cattle might be chosen from breeds that look 'wild' (eg Highland) but are not too aggressive. Again the reasons for choosing one set of animals over another need to be clear because it will influence the outcome.

Losses and gains

Rewilding is likely to lead to changes in habitat and species assemblages, so the balance of gains versus losses needs to be assessed. An area with a diverse mix of habitats and species to start with has more potential to develop new interesting assemblages and patterns than one that is poor to start with. However, the potential losses are also higher from a rich starting point.

For example the Sussex Wildlife Trust has an area of farmland that is being shaped via grazing into a more mixed mosaic of habitats: the current interest of the actual fields is low. A relatively low level of grazing is proposed initially, but there is little to be lost if the scrub develops more rapidly than expected (see Tony Whitbread's article in this issue). On a site with a high current interest, for example extensive heathland communities, there would be potentially more serious nature conservation losses from rapid scrub. Therefore a high initial density of animals might be used to ensure the maintenance of at least a minimum area of heathland. In the spread of scrub in the North Pennine, the losses of some open ground waders might be more acceptable under a rewilding project if black grouse colonise and spread than if they do not.

So should we be looking for areas of intensive farmland to rewild on the grounds these can hardly fail to improve in wildlife terms, even though the potential of the area may be limited by high soil fertility levels and poor current species content?

Wherever is chosen, an adequate system of monitoring the gains and losses needs to be put in place to justify what has been done.

Perceptions of rewilding

The third area that needs to be explored is the social acceptability of rewilding. It is taken as read in this article that any area can only be taken forward for rewilding with the full support of the land owners and managers.

However even in raising the concept of rewilding in discussion, there has been criticism that it is sanctioning 'land abandonment', 'land nationalisation', 'dereliction', 'rural depopulation', 'spread of unsightly scrub', 'production of only boring secondary woodland'. Each of these perceptions and complaints can be countered, but they reflect the passions that are raised and the care with which this idea needs to be pursued.

People have concerns for the countryside because of its appearance and historic elements such as field patterns and ancient monuments, and for many other values. Rewilding could lead to changes that may not be welcomed. Cattle and ponies are not wild animals in legal terms and the appropriate welfare and disease control legislation must be adhered to. It may be that special allowances can be agreed for the animals in a particular site, but this cannot be taken for granted. Even if legal agreement were reached, public opinion is strongly against allowing what might be perceived as allowing animals to suffer.

People are injured and sometimes killed by domestic stock at present. There is a risk that animals allowed to graze under more naturalistic conditions could present more of a potential threat because they are less used to people. Areas considered for rewilding will probably either have public rights of way across them or be 'open access land' under the *Countryside and Rights of Way Act*. So we will need to build support for the concept with for example walkers.

Stimulating public interest

English Nature is interested in the rewilding concept. We have been researching the use of naturalistic grazing regimes in landscape conservation and will be reporting on the results in 2005. Developed carefully, it has the potential to catch the public imagination and to generate new landscapes and patterns of wildlife.

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Uncontrolled grazing in Oostwaadersplassen (Keith Kirby)

Ecosystem effects of wild herbivores – lessons from Holland

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This article discusses the effects of wild herbivores in the Dutch National Ecological Network and the Oostvaardersplassen.

NEIL HARRIS

Wild and large herbivores have been used in the development of the Dutch National Ecological Network in a variety of ways. The choice of species has been guided by factors including public opinion, public use of the land, neighbouring agricultural considerations, and the style of land management.

In the wetlands and grasslands of the Oostvaardersplassen, animals have been introduced which are more suited to the passive, hands-off management techniques and natural processes which sustain the ecology of the site. Heck cattle, Konik ponies and red deer were introduced whilst roe deer were already present on the reserve. Wild boar have not been introduced in Oostvaardersplassen because of the neighbouring pig rearing industry and the possible risk of introducing swine fever.

Surprises and indirect habitat effects

The area grazed by the cattle does not have open access to the public allowing the choice of a de-domesticated, potentially dangerous (in terms of conflict with members of the public) breed of cattle. Population dynamics are still evolving as the herbivores find their own place within the ecosystem and create their own surroundings by influencing the development of vegetation. The populations of the introduced herbivores have grown steadily since their introduction and each species exerts a different influence on its surroundings. There are many examples of the cattle, deer and horses both directly and indirectly influencing the habitats available to other species. For example, elders are palatable to red deer which is preventing regeneration of this species. Should the red deer population decline, an increase in stands of elder is the likely result. Similarly, willows are eaten by deer and horses which keep them in check. The large herbivores have created extensive areas of low grassland vegetation which is particularly attractive to geese, swans and waders. The tens of thousands of geese which have returned to the reserve to graze the grasslands also feed on young reeds during the

moulting season, keeping the marshlands open. Carrion from dead carcasses provides food for white-tailed eagles and ravens.

The Veluwezoom heaths

In the heathlands of the Veluwezoom, a more active style of management is carried out in the semi-natural landscapes, for example tree removal on some areas of heathland, but large areas are managed as a nearly-natural landscape using natural processes. Twenty years ago cattle and horses were introduced to the woodlands and heathland of the area to prevent grass invasion and create a mosaic of open spaces and woodland. The area is open to the public through a network of walking and cycling trails and this has influenced the choice of cattle introduced. Highland cattle were chosen for both their hardiness and also their passive nature. Where natural processes are being allowed to develop on previously managed areas, changes in the vegetation result from the grazing and browsing preferences of the herbivores present. Some areas of heathland within the Veluzoom are no longer being actively managed and these areas are being colonised by conifer saplings which are unpalatable to the cattle, horses, deer and wild boar present. In time, conifer forest will replace the existing heathland. This has led to debate on the introduction of European bison which could be capable of tackling conifers. Carcasses of fallen animals (apart from cattle and horses which are removed if their location is known) are tackled first by the wild boar and subsequently by birds and insects.

Beavers, birds and eco-bridges

In the Biesbosch National Park, a freshwater tidal area, cattle are used to graze the polders and other areas to retain their openness and prevent natural succession back to forest. Because the Biesbosch experiences large seasonal fluctuations in water levels, cattle are required to be housed in the winter months. This type of management is more comparable to traditional agricultural practices. Beavers have been successfully introduced to this wetland site and have had an impact on the landscape and ecology. Beavers are capable of cutting down large trees to get at the tree-bark and leaves of the branches which are their preferred food item. They act like coppicers, creating glades in woodland where successional scrub develops, increasing habitat diversity. Bird species like nightingale and marsh warbler move into these temporary areas, as do many species of invertebrates.

Large herbivores and other mammals in these wild areas would live in ecological isolation without the creation of wildlife corridors to connect them up. The ability to migrate and disperse from one area to another via, for example, ecoducts and eco-bridges under and over main roads, and via ecological corridors, and to encourage genetic variation, is the path being used in the Netherlands to construct complete ecosystems. Visitors to, and residents of these nature areas have been involved in planning processes. This has led to a wider public support of the message that grazing management plays a positive role in healthy ecosystems.

Heck bull and deer in Oostwaadersplassen (Hans Kampf)

UK wildlife and climate change

Nature's disaster or dynamics?

ECOS 28 (3/4) 33-39 (2007)

Are our professional instincts on how wildlife responds to climate change better than any available modelling, and how should we protect wildlife from the impacts of climate change mitigation measures?

PETER TAYLOR

How to assess the impact of climate change on UK wildlife? There are perhaps two approaches: one would be to ask experienced naturalists to assess what they have seen over past decades and project this into future decades assuming the same progression of climate changes. That would be fraught with difficulty – they would have to make selections to reflect the changes, and how would they isolate other factors, such as the intensification of agriculture? The other approach would be to build a computer model using more 'objective' indices.

As far as I know, significant government resources have only been put behind the computer model approach – and the MONARCH project[1] is the most extensive review of the potential impact of climate change on Britain's fauna and flora – taking seven years, involving four major research bodies and consultancies (ADAS, CABI, BTO and ERM) and funded by a partnership of just about all the relevant government departments and agencies from the Forestry Commission, the JNCC, SNH, CCW, NE, Defra, and voluntary bodies such as the National Trust, the Woodland Trust, WWF and RSPB, plus the UK Climate Impacts Programme at Oxford.

Having read the conclusions of phase 1 of MONARCH and as a practising ecologist with some responsibilities in advising on land management and climate change strategies, I have to say that it is next to useless. But, as an independent consultant, how to say this to just about every hand that might ever feed me? And why do so when the recommendations for action support the goals of the more creative approaches to biodiversity that many of us have been advocating over the last decade? My only answer is my belief that we need an awareness of the limitations of our methodologies. Otherwise these studies could backfire and endanger the goals of landscape-scale conservation that everyone acknowledges is required to make our wildlife more robust to change.

To be fair, the MONARCH study states some of the important limitations of the methodology it has chosen – selecting a relatively small number of species not for their particular susceptibility to climate change, but because good data existed across Europe that could be used with the model chosen to calculate an index called 'climate space'. This index determines how much room a particular species has in Britain to 'move'. But only in so far as climate factors are concerned – it does not address actual habitat or a species' ability to physically move across or through any biological barriers it might encounter. The only biology used is a measure of climate adaptability drawn from knowledge of the species' range in Europe.

But there are greater problems than the ones acknowledged and which would challenge any methodology. The first relates to the degree of confidence in largely computerised and hence un-validated predictions of future climate regimes; the second involves the way in which UK biodiversity is measured and valued; and the third to the timescales for the effects of any policy initiatives such as adaptation might direct. The fourth is the horseman of mitigation strategies and their impact on the very biodiversity they are meant to protect. Unfortunately, MONARCH assumes an unjustified progression in future climate regimes, accepts UK BAP targets and definitions with little reflection on their wider bioregional significance, and fails completely to model the interaction of mitigation responses with adaptation strategies.

Uncertain climate futures

Despite the prevalence of 'best guess' projections – as advanced by the UK Climate Impacts Programme with its use of regional computer models (either based at University of East Anglia's Tyndall Centre or the Met Office's Hadley Centre in Exeter), there is considerable scientific uncertainty as to the future unfolding of UK climate in a 'warming' world.

This is the case even without any major critique of the 'global warming' model driven by carbon dioxide. The translation of the so-called consensus model to regional levels is still very uncertain. Accelerating warming in the Arctic could potentially lead to a cooling of the NE Atlantic region as the Gulf Stream is slowed by freshwater inputs to the northern end of the 'conveyor' system. Other models of the main climate driver, not favoured by the IPCC, are based on giving greater weight to solar cycle changes and their link to cloud cover. Some solar scientists expect a rapid downturn in northern hemisphere temperatures in coming years. Despite the opinion of the UN and the majority of science institutions, including, it would seem, all the funders of this study, it is a *political* decision to exclude this model, not a scientific one. It is based upon the needs of the policy makers for a single answer.

Thus, any reviewer is faced with choices:

1) provide projections for change in either direction,
2) provide projections for the 'best guess'
3) provide timescales based upon various global emission scenarios
4) provide timescales based on solar cycle projections.

In practice, there are forces militating against exploring the first and last of these scientifically valid choices. Funding bodies do not like uncertainty and policy makers likewise – so exclusions are made. Thus, the only major study of climate impacts on UK biodiversity provides only UKCIP's 'consensus' model with three timescales (2020, 2050 and 2080) and two global emission scenarios and all the other non-specialist bodies on climate in the MONARCH consortium collude with this.

UK Biodiversity indices and values

There has been a long running debate within *ECOS* on the values inherent in the UK Biodiversity index and its Action Programme, but despite such intelligent critique the BAP remains as the central plank of UK policy. Its limitations are doubly highlighted when used as a basis for climate impact studies.

Firstly, the UK BAP, despite the provision for habitat plans, is species focussed and most importantly, relates to species that are already *threatened* – that is to say, in decline or in vulnerable small populations. The list of BAP priorities is also strongly representative of professional scientific conservation interest – wherein there has been little self-reflection on the *value* of species, not only in relation to ecosystem function, but to the wider public psyche. As I have argued in *Beyond Conservation,* a scientistic approach to nature conservation has probably contributed to its ghetto status, especially with respect to governmental priorities.[2] There has been a failure to translate the public affection for nature and wildlife into effective indices and actions.

When climate change is considered, the species focus compounds these problems. Many 'rare' species are limited in their UK distribution because they are already on the edge of their range. They are not necessarily threatened with respect to their wider distribution. That wider distribution is also likely to have a climatic component to its limits. The British Isles is a maritime climate province bordering the wider continent, thus, in the north and west of the island, there are habitats and species that are restricted to this maritime border, with some smattering of endemic species or subspecies and some very important major populations – some of which are abundant and not particularly threatened (e.g. seabirds, coastal heath flora). However, the south and eastern parts of the island touch the range of continental species adapted to drier environments; whereas the northern provinces may capture the southernmost populations of essentially northern and often circumpolar species.

Within this context, each species also faces threats in the modern era from other dynamics – especially agricultural intensification and loss of habitat, plantation forestry, water extraction, disturbance, persecution and invasive introductions. This compounds attempts at identifying climate change as causative in any past changes in distribution, and hence predicting future responses.

On a biological level, it is hardly ever recognised by conservation programmes that species are always 'threatened' with extinction or under pressure, some more than others at any particular time. Species are the sacrificial front-line troops of the evolutionary process and like the generals in the rear, it is the *Genus* that usually persists and hence evolves. Species come and go as the environment, including the climate, changes, or new competitors come along. For example, there are several *Fritillary* species in the genus, all hardly distinguishable by lay observers – the same for leaf warblers of the *Philloscopus* genus, but whatever happens to the climate and niches they occupy, some of them will likely make it and the genus will survive and potentially radiate another supply of species. What is nature conservation doing when it interferes with this process? I am not saying here that conservationists should do nothing, only that they make their interventions transparent, especially to the public that pay the salaries and put up the research funds.

The nature of the 'threat'

Thus, any map of rare and threatened species of Britain and Ireland will not necessarily reflect that species' global status nor its vulnerability to climate change. When it comes to evaluating species' response to change, there seems little awareness of the way in which 'rarity', 'charisma' and 'nationalistic' values come into play. In some sense *all* species are going to be affected by climate change, and obviously not all species from nematodes to fritillaries are equal, whether to the conservation scientist or the public mind. In this respect, the bluebell is of observedly higher value than the cudweed. But it is the cudweed that features in the shortlist for MONARCH.

Timescales for adaptation and mitigation

In the orthodox scenario, the UK climate warms to 2080 by as much as 2 C. But what will this mean for habitats and species? The projection is for drier and hotter summers and warmer and wetter winters – but as the summer of 2007 demonstrated, the average

can be punctuated by extremes – in this case of flooding. There is also a potential for late frosts and gale damage. These are not easily factored into the model. Sea temperature changes and resultant food chain effects may also be marked. It is not clear that these kinds of uncertainties are reflected in the simple index drawn from a species' wider distribution.

Some changes are already evident. Spring has advanced by two weeks and the growing season is longer. Winters are warmer and wetter (though some have been very dry) and summers drier with a marked drying out of upland habitats and eastern agricultural land. Larger insects have noticeably declined in abundance. But isolating effects upon fauna and flora is not easy: the past two decades of warming (previously the globe cooled from 1945-1980) have also coincided with major agricultural change – in particular the winter sowing of wheat, early cutting for silage, grass monoculture and loss of species-rich meadows; new and powerful veterinary biocides have been introduced that affect dung-fauna and have wide-reaching knock-on effects. There may also have been major habitat changes in the winter range of summer visitors such as warblers.

These changes make it difficult to ascribe current declines to climate change. Conversely, some 'gains' are clearly climate related – such as the colonisation by little egrets of the southern and western estuaries and marshes.

It is not an easy matter therefore to identify potential changes in a warmer or cooler Britain as individual species' responses are not well understood – but certain generalisations on habitat (using the orthodox warming model) could be made:

- there is likely to be further loss of wet pastures, particular in river valleys in the south and east; and upland (and coastal) heath and grassland will be drier and more susceptible to fire damage;

- there will be a gradual retreat of the sub-alpine zone on northern hills, with some habitat being replaced by scrub.

One does not need a computer model to draw these conclusions – any competent naturalist could do so. And equally, most naturalists would be able to estimate 'climate space' and then add on the crucial element of how much real habitat exists within that space. But computer modelling is a modern necessity if studies are to bear weight.
And actually, naturalists with a feel for their particular birds, bats or butterfly ecotype distributions usually know enough genetics to be cautious in the assumption that just because a species occurs in Caledonian and Balkan pine forests the former will have genetic access to the latter's climatic adaptation – this seems to be a fundamental flaw in the concept of 'climate space' upon which the MONARCH study depends.

However, there is one further factor mentioned at the outset – the widespread impact upon habitats that mitigation policies may bring. The recently announced EU biofuel targets will likely lead to widespread intensification of agriculture and forestry in the UK; wind turbines already threaten raptor populations, such as the sea eagles in the Hebrides and kites in Wales; and estuarine barrages will impact upon waterfowl habitats. Which mitigation strategies are going to save *our* redshanks and lapwings that have been so recently decimated by agricultural intensification is far from obvious, but the growing global demand for woodchip to burn is certain to suck in habitat as far away as Latvia; likewise biodiesel and ethanol targets will affect Brazil and Indonesia.

In its final analysis of 32 species the MONARCH report identifies, as one might expect, a proportion of losses (8), gains (15), and no change (9), though it warns the proportion is not representative so no conclusion can be drawn. Despite this, the report then concludes that *"loss or shift in climate space for British and Irish wildlife will be more severe unless greenhouse gases are cut"*. It recommends more conservation effort, better habitat management, and the creation of a more resilient and permeable landscape. The study purports to have identified the potential consequences of *"failing to reduce emissions and strengthens the case for action"* such as the *"need for the conservation sector to advocate the development and implementation of a robust mitigation policy"*.

The latter conclusion is dangerous political and ideological polemic dressed up in the guise of a scientific and objective study. It goes way beyond the science and in particular the very limited science of MONARCH's methodology. At the outset the study talks neutrally of impacts – but by the end it drops into the ideology of 'threats'. How have they evaluated the gain of a little egret in the Somerset Levels – which I watched with great pleasure today, against the loss of an obscure bat that I and 99.9% of the public are never likely to be able to distinguish from any other bat? The same argument will apply to all the families and orders affected.

And what business is it of the likes of WWF, RSPB, Woodland Trust, Natural England, SNH, CCW and the National Trust to call for mitigation strategies when they provide no study of the likely impacts of these (which are huge!), and no analysis of the timescales for mitigating actual climate change (at least 50 and probably 100 years before emissions can be stabilised at *current* levels which are apparently already driving the changes).

More rigour, less collusion…

Of course we need action to address human welfare needs and environmental stability in case climate change becomes more severe. But in my view there has been an unacknowledged collusion of government agencies, NGOs and other parties in assuming climate change is strictly bad news for the UK's fauna and flora in all situations. This is a grossly simplistic outlook. They make an *a priori* assumption that the balance of impacts can only be a net *loss*, despite there being little solid evidence in their analysis to support this. They seek to justify the targets of emission reduction in order to mitigate such losses but with not even a reflection upon the impact of those mitigation strategies on the biodiversity it sets out to protect.
Even though there is an equally forceful call for adaptation strategies such as larger scale habitat creation, this collusion doe not serve the wider public campaign for nature. The report is transparently weak and as such unlikely to influence policy makers engaged in what is perceived as a battle to save the planet. At a time when Friends of the Earth and other environmental NGOs argue for major sacrifices of Britain's few remaining wild areas to wind turbines, I doubt we are going to convince anyone that *biodiversity* matters with these kind of studies. There is a complete absence of treatment of recent and high profile gains, especially to the nation's much loved avian fauna – such as little egret, purple heron, and great egret, and spoonbill may follow (the great bustard and sea eagle have come from re-introductions and enhanced management).

I would argue that the main drivers for enhanced biodiversity are habitat creation, agricultural extensification and raised public awareness and willingness to pay for these programmes – climate change is in my opinion virtually irrelevant. By joining on the climate bandwagon and ignoring the scientific uncertainties and inherent problems of indices and value, more support may be gained for habitat creation, but there is a real danger of backlash once all of this becomes transparent, and more particularly if the carbon dioxide model has been overplayed. A little more circumspection and critical appraisal of modelling would not go amiss.

References

1. MONARCH – Modelling Natural Resource Responses to Climate Change - *A synthesis for biodiversity conservation*. **www.ukcip.org.uk**

2. Taylor, P. (2005) *Beyond Conservation* Earthscan, London

Abbreviations
ADAS: Agricultural Development and Advisory Service consultants
BTO: British Trust for Ornithology
CABI: Commonwealth Agricultural Bureaux International
CCW: Countryside Council for Wales
Defra: Department for the Environment, Food and Rural Affairs
ERM: Environmental Resource Management
JNCC: Joint Nature Conservation Council
NE: Natural England
RSPB: Royal Society for the Protection of Birds
SNH: Scottish Natural Heritage
WWF: World Wide Fund for Nature

A response to key points in this article has been made by representatives of the MONARCH consortium. This can be viewed on the Blog section of BANC's web site at *www.banc.org.uk*

Scary or what?

ECOS editorial 27 (1) 1 (2006)
GEOFFREY WAIN

A female beaver emerged from her release pen in the Cotswolds last October. She ambled around for 10 minutes, nibbled some willow, and returned to her pen to sleep, oblivious to the hordes of watching cameras. Minutes later she and five others were released at a lake at Lower Mill Estate. Around her was a scrum of TV crews and tabloid reporters. No matter that an electric fence encloses the lake, which is what allowed the Defra licence - something charismatic was coming home to the British landscape and the country's media were desperate to see.

The rest of Europe would be amazed at such a fuss. The beaver can be found even along dykes on German golf courses, yet beaver reintroduction in Scotland was blocked last year after rigorous trials in Knapdale, and much public support. Ambushed by establishment figures, the Scottish Executive used the fine print of law on Special Areas of Conservation to halt progress on beavers.

Much of this edition looks at prospects for reintroduced species and their potential for reinvigorating our ecosystems. Reintroduced species will be exciting for both the ecology and the economy of remote places. Tracts of Scotland could be branded as Lynx Country, and beaver could help parts of Wales become rewilded and rejuvenated. Associated new wildlands could involve regenerating woodland, better water retention, and carbon-absorbing soils.

Years of debate and feasibility work have kept government bodies busy dallying over reintroductions, but meantime private landowners in England and Scotland are already on the blocks with projects involving wild herbivores and carnivores. Elsewhere, nature and humans have also conspired to make reintroductions real, because the boar, and, wait for it, possibly the lynx, have bolted. Clusters of wild boar are now free-living as we know, and big cat researchers have told ECOS that lynx are breeding in Scotland, and possibly in SW England, following escapes and clandestine releases. Yes, this top predator may already be back and influencing deer numbers.

Views on reintroductions vary – conservation, farming and game organisations all have different enthusiams and anxieties amongst their members, sometimes over the same candidate species. From the rednecks to the strictest BAP-minded ecologists, all the parties must be engaged if we're to make headway on reintroductions - the incentives, the compensation, the visitor management, the public information, and the role of game organisations must all be addressed.

It's easy to get paranoid over the effects of creatures we have parted company with for a few centuries, such as wild boar. But our European neighbours cope with these creatures and their disease potential and agricultural disturbance. These are management issues that come with the deal. They are not reasons to be scared of rediscovering our wilder roots, and shaking up Britain's bland ecosystems

Britain's predators in tooth and claw

ECOS 27 (3/4) 17-22 (2006)

The tale of Bruno the brown bear who wandered the German-Austrian border in spring 2006 gripped audiences across Europe, until the decision to shoot him in June. In Germany the media prioritized the story over the country's World Cup campaign. Predators capture our imagination and release deep emotions…

PETER CAIRNS

Faced with the vastness of North America's rolling plains, early Puritan ministers were quick to remind European colonists of their Christian obligation to "destroy that which is wild and make something of the land". In 1756 John Adams wrote: "This continent is one dismal wilderness, the haunt of wolves and bears and more savage men". The ecological destruction that unfolded across America over less than two centuries, redefined a deep-seated prejudice embedded in the western mind. Where towns were built and forests felled for pasture, there was no room for mountain lions, coyotes, bears and wolves. No one knows how many predators were killed across America during the nineteenth and early twentieth centuries, but estimates run into millions. Between 1883 and 1918, 80,730 wolves were bountied in Montana alone.

Conservation-minded Britain?

It is too easy to blame previous generations for their apparent disregard of nature's wealth. The concept of ecological niches and recognition that all life is inter-dependent, is a relatively modern science and the preserve of educated, affluent societies. American settlers based their attitudes towards nature on what they read in the bible: man was placed on this earth to have dominion over the rest of creation.

In these more enlightened times, it is hard for us to imagine such mean-spiritedness towards creatures like wolves. We no longer have to compete with these animals for food and our increased ecological awareness has nurtured a greater tolerance towards natural predator-prey mechanisms. Or has it?

In conservation-minded Britain, we are quick to jump to the defence of India's tigers, Africa's lions or closer to home, Europe's increasing wolf populations. We expect the working rural people of these countries to accept the difficulties that large predators bring and condemn the apparent obsession with which some species are hunted down and killed. But where are our wolves? Where are the bears and lynx who once stalked our forests? Our perception of and benevolence towards predatory species is still, at best, fickle.

For many, the sight of a hen harrier quartering a remote moorland or a peregrine stooping into a swirling wader flock are spectacles of nature, key components in the ecological integrity of our countryside. For others, predators are nothing more than an inconvenience, a financial drain on rural businesses. Predators undoubtedly mean different things to different people but very few with an interest in the British countryside remain indifferent.

The fact that predators need to kill to survive sets them apart. What they kill and how they do it influences how we feel about them, how our emotions respond. Our increasingly suburban and regulated existence has changed our relationship with nature. For the most part, our needs are easily met and we perceive no need to engage with the natural world; we consider ourselves spectators on, rather than part of, natural processes. Predators strike at the very heart of our notion of civilization – they threaten our sense of control. This, rather than religious conviction or an instinctive need to eliminate competition simply to survive, is now what shapes our attitudes and perceptions.

Additionally, species like foxes and seals have become political symbols, pawns in battles between different socio-economic or special interest groups, each filtering selective information to the public which best serves their particular agenda, often at the expense of biological fact. The complex issues surrounding predator management embrace a web of social politics: rich versus poor, town versus country, national policy versus local tradition.

Managing predators in Britain today is rarely about the animal itself – it is about managing people's perceptions – what we believe, what we value and how we look upon our dependency on nature.

Predators and their consequences – the debate

So how does modern Britain really feel about predators and how do those feelings continue to be influenced by culture, myth and economics? Can the shooting of birds of prey to protect human leisure interests ever be justified? Should the impact of pet cats on small birds and mammals be controlled? Should we really consider returning wolves to our wild areas having worked so hard to eliminate them?

Tooth & Claw (www.toothandclaw.org.uk) is a photo-journalistic project which sets out to find the answers to these and other questions. The project's authors are photographers and writers, not biologists. They wanted to get under the skin of contemporary predator issues and explore different facets of our lives alongside those animals that kill other animals. "We want to know how the British public feels about predators - to reach beyond corporate policy and speak to those who encounter the actions of predators on a regular basis – farmers, keepers, researchers, tourism operators and recreationists" says Mark Hamblin, one of Tooth & Claw's photographers.

Eurasian lynx (Peter Cairns/Northshots)

Tooth & Claw is independent and non-judgmental. "We want to encourage a wide range of people to relay their experiences and feelings. We also want to nurture greater empathy between different viewpoints and move away from the culture of conflict which continues to divide rural policy. Ultimately, our role is to inform and inspire rather than persuade" continues Hamblin.

Through a series of case-studies, Tooth & Claw is bringing predator issues to life. Using imagery and anecdotal contributions, the project is exploring various aspects of our relationship with predators. "Although we are looking at different species from varied viewpoints, there are common themes which crop up" says Ian Rowlands, the project's journalist. "It is the inconsistency in people's attitudes that belies a deep misunderstanding of predator biology. We have had many contributors who are outraged at raptor persecution yet detest sparrowhawks for their 'audacity' of raiding garden bird tables. Another contributor had watched an otter drowning a mallard and considered himself privileged at witnessing such an event. The same man – an educated gamekeeper – was then livid when a pine marten raided *his* goldeneye box and killed *his* incubating female. Feelings change when it becomes personal."

It is hardly surprising that value judgments are made instinctively when there is such apparent inconsistency in predator management. An obvious illustration is the persecution of hen harriers for their impact on red grouse. This is not only almost universally condemned but now attracts a custodial prison sentence. The shooting of foxes to protect ground-nesting birds however, is a commendable act of conservation, carried out routinely by the RSPB and others. Legalities aside, these are not dissimilar routes down the path of selective management. Tooth & Claw is ultimately a project which explores our changing relationship with nature. It asks questions of all of us; it exposes our fears, our inconsistencies and our prejudices. We are reminded of our own place in nature as the most powerful predator of all.

Priority species

It is less than 20 years since pine martens were protected by law and they have since enjoyed a rapid increase in numbers. For many people this improves the chances of an encounter with an elusive nocturnal predator, and entrepreneurial wildlife tourism operators have been quick to recognise this opportunity. The marten's 'success' however, comes at a price and not everyone welcomes their return. Pine martens prey on other rare (nationally at least) species such as red squirrels. This raises the thorny issue of priorities. Is one species more important than another? Should martens be 'controlled' to protect red squirrels? Some people think so.

Pine marten (Carl McKie/ Derek Gow Consultancy)

Scottish wildcats (Chris Robbins/ Derek Gow Consultancy)

Living room lions

The British public love cats – an estimated 8 million of them. They provide companionship, contact with 'nature' and for some enthusiasts, are an extension to their own personalities with visits to the hairdressers and 'cat boutiques' quite routine. This is an animal that polarizes opinion however. Their impact on garden birds and small mammals is estimated at 250million annually, making it by far our most significant 'wild' predator. For all the millions of cat supporters, there are just as many who resent this toll on our native wildlife. Behind the politics that rage over domestic cats, their wild ancestor is in serious trouble. Statistics are patchy and research inadequate but some biologists suggest there are now only 400 pure-bred Scottish wildcats in existence. Despite huge budgets spent on other flagship species, it seems the wildcat has been forgotten – an irony indeed.

Sea eagle in Scotland (Mark Hamblin/ Northshots)

The return of iolaire suil na greine

The sea eagle's return to Scotland's west coast is one of modern conservation's landmark successes although the restoration has not been without its setbacks: egg theft and illegal poisoning remain a threat even today. But amidst the furore surrounding the tourism potential of this icon in places like Mull, there is a danger of forgetting that not everyone welcomes the prospect of living next door to a powerful predator. Crofters have lost lambs and game interests perceive a threat to their quarry. There was also opposition, verging on "militancy" according to the National Farmers Union for Scotland, to the reintroduction having been *forced* on rural communities by a national government headquartered 600 miles away. Although it took some time to engineer, Scottish Natural Heritage's Natural Care scheme now provides financial incentives to Mull's farmers to look out for eagles. Does this provide a possible template for greater tolerance of predators elsewhere? According to wolf biologists working in Germany, there is no doubt. They told Tooth & Claw: "If society wants predators, society must be willing to pay."

A wolf at the door?

A century on from the systematic persecution of wolves by American settlers, this animal has become one of the most studied on the planet and its recent return to America's northwest has been globally scrutinized and widely celebrated. Yet bizarrely, the wolf remains widely misunderstood and continues to embody fundamental divisions in our feelings towards predators. Here in Britain, despite theoretical public support for wolf restoration, we have not yet been asked to once again live alongside this or any other large terrestrial predator. Things may change but scratching under the surface of our relationship with foxes, hen harriers, seals, peregrines… in fact any predator with any impact on our lives, it is apparent that we are far from equipped to deal with an animal that would place such demands on our political and social infrastructure.

For predator supporters this consideration should be taken seriously. Science should rightly inform predator policy but a more imaginative engagement with a wider, mainstream audience is essential in order to influence decision makers. The public is entitled to consistent evidence and information but they must also be excited by nature, and inspired to celebrate the processes that come with it. It is not the law that will ultimately protect Britain's predators, it is the people.

A problem bear or a problem for society?

Finally, back to Bruno the Bear, Europe's most famous predator of 2006, who didn't follow the script when he was part of a project to reintroduce brown bears to northern Italy. He ventured into Austria and Germany, where he killed sheep and even roamed into villages. He was the first wild bear seen in Germany since 1835, and Europe's media closely followed his adventures from May to June.

After efforts to stun and capture Bruno, Bavaria's environment ministry announced in June that he could be shot because he was getting too close to humans as he searched for food. He was shot in late June near the town of Zell in southern Germany by an unnamed marksman. Italy's Environment Minister Alfonso Pecoraro Scanio was angered by the killing saying the bear, a protected species, should have been shot with tranquillisers and transported back to Italy. He also demanded the return of Bruno's body to Italy. Two Bavarian villages close to where Bruno was shot also vied to have his stuffed remains on show, no doubt aware of the potential visitor revenue. But Bruno's corpse is destined for the Museum of Humans and Nature in Munich.

Bruno's killing provoked intense reaction. Members of the public filed legal complaints against the Bavarian ministry, memorial websites were created, and many

newspaper web sites across Europe developed long discussion threads from readers' e-mails. Bruno's innocent offences in the wild and the struggle of the authorities to cope with him pricked many people's conscience. Maybe he will prompt Germany to once again co-exist with bears, and as we address predator issues in Britain, perhaps we should take heed of the passion over Bruno played out in Bavaria.

Euopean brown bear (Peter Cairns/ Northshots)

The return of large carnivores to Britain – the hunters and the hunted

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The return of iconic species like lynx and wolf to Britain will affect hunters and the success of any such projects may depend on them. This article explores the pivotal role of game interests in the debate on reintroductions.

DAVID BLAKE

The September 2008 conference at Findhorn on species reintroductions, 'Wild free and Coming back?' included a specific workshop on game interests. I have a strong interest in wildlife management through natural processes and my first professional training was as a gamekeeper and deer stalker, so I was pleased to convene that particular session of the event. In what follows, I reflect on some of the main discussion in the workshop and on reactions I have had from fellow hunters since the event. I have included them because I would not want anyone to be in any doubt as to how many, perhaps even the majority, of game managers and hunters will react to the proposals to reintroduce large carnivores to the UK.

We started the conference game session off by describing the parameters for the discussion and setting some definitions: The introduced predators could be lynx, wolf, or wild boar, but also a predatory bird such as Sea Eagle or a fish species. It was also useful to differentiate between those people with a professional or commercial interest in hunting and those for whom it is a sport or part of their way of life. During the discussion we used the term "Game manager" to mean a professional, in full or part-time employment as a gamekeeper, or a land agent, landowner or contractor providing a hunting or culling service. We used the term "Hunter to mean a private individual who hunts for sport and food and for whom hunting has a deep cultural significance. This could be a recreational deer stalker, a fisher or shooter.

I had prepared a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to form the basis for the discussion, as set out below. The fact that the Weaknesses and Threats out-weighed the Strengths and Opportunities, served to emphasise how difficult and contentious any reintroductions would be for the hunting and land-owning community.

Reintroductions and game interests – a SWOT analysis

Weaknesses

- In the UK, it is the land owner that receives financial support via agri-environment schemes and the Single Farm Payment and makes any game management decision. Hunters and game managers are not often consulted on long-term land-use policies and estate management decisions that affect the land over which they work and hunt. They are therefore peculiarly powerless to effect long-term change and this encourages short-term thinking and planning in all aspects of game management and hunter attitudes to resource protection.

- It would be very easy for a land owner who cooperated in a reintroduction to pass the cost of the predator's impact (such as loss of game birds) and any control of that impact (such as additional fencing) on to the hunter. Hunters and game managers could then experience rising costs as well as a deterioration in the availability of game.
- Any reintroduction programme would have to meet the requirement and cost of training hunters and game managers to understand the threats, opportunities and technical adaptations to their operations regarding the introduced species.

- Behavioural predictions for introduced species must be treated with caution, predators have been introduced to many ecosystems, often accompanied by an expectation that they will have some positive effect, sometimes with disastrous results.

Threats

- The reintroduction would be another predator of game when game managers have their hands full coping with the ones we have got already, such as carrion crow and red fox, not to mention the protected species such as badger, buzzard, hen harrier and raven.

- The reintroduction would be another predator of game that did not have a predator before, such as roe deer.

- There would probably be conflict with wild game conservation, such as red grouse and grey partridge, and species conservation programmes on land managed for game, such as capercaillie and stone curlew.

- The reintroduction could be a vector of current or novel disease, such as internal parasites. This is already an issue with wild boar in the South West of England.

- If game managers are not fully supportive of a reintroduction programme, then they would be able to halt the programme by killing the reintroduced individuals.

Opportunities

- The reintroduction would be another game species to generate additional revenue and greater sporting opportunity, this has happened with the arrival of wild boar in South West England.

- Land that has a low sporting value, such as upland forestry plantations, may become enhanced by a new sporting opportunity, such as wild boar hunting.
- Game managers would be of great assistance in any reintroduction programme, providing information, technical expertise, human and financial resources and local political support.

Strengths

- The reintroduced species might occupy a higher trophic level than the current predators of game species, such as lynx predating red fox, thereby assisting in the conservation of wild game such as grey partridge and red grouse.

- The reintroduced species may provide new or enhanced ecosystem services, such as hunting opportunities, wildlife tourism, enhanced germination of tree seeds or beneficial grazing.

- While there are many records of failed or misguided reintroductions (introduced predators have been responsible for the total extinction of 61 avian taxa, 33 of which were caused by the introduction of the domestic cat to novel ecosystems, most of the others were caused by the deliberate introduction of Small Indian Mongoose to unsuspecting island fauna[1] , there are also some very successful ones, such as the otter being welcomed back onto chalk streams fisheries in southern England.

The workshop group was then asked to consider three questions, as highlighted below, and I have recorded the answers, as bullet points below, that we came up with.

1. What factors will encourage game interests to embrace a reintroduction programme?

- Will land and sporting values increase or decrease with re-introductions? There must be a clear economic benefit for any reintroduction programme to gain the full support of the land owning and game management community.

- Reintroduced large predators would have to be added to current Firearms Certificates to allow humane and safe culling of individuals.

- Any reintroduction programme should consider the inclusion of hunting activities such as wild boar drives and the sport hunting of large mammalian predators, such as lynx.

2. What can game interests and other stakeholders learn from each other, when considering potential re-introduction projects?

- We could learn from the successes and challenges of the otter's return to intensively managed fisheries.

- We could learn from the informal development of hunting activity in South West England that has occurred after the return of wild boar. This could inform a planned development programme to run alongside future reintroductions.

3. What can game interests contribute to reintroduction projects, and how can these benefits be harnessed?

- A vital contribution would be the innovative and pragmatic approach that game and land managers are used to adopting as they have to constantly adapt techniques and plans to changing circumstances.

- Land owners and game managers would be able to contribute vital local knowledge and be of great influence in the formation of opinion amongst their neighbours, and their peers and contacts, both locally and nationally.

- Game managers would want to see a long term commitment from the reintroduction programme that would safeguard their earnings, livelihoods and culture.

The voice of hunters

Since the conference at Findhorn, I have tested the idea of reintroducing large predators to the UK by starting a discussion thread on a web site devoted to all kinds of hunting with contributors from all over the world. I wanted to get an impression of the gut reactions of hunters not just in the UK but from people who live with, cope with and hunt large predators within the species' current range. This exercise was not at all scientific, but below I have relayed some of the responses, heavily edited by myself, which I think are pertinent, or typical, or offer food for thought.

In response to my suggestion to reintroduce lynx, the following came from a Swedish hunter:

"You must be either joking or, and this I am saying with the utmost respect, be a few cards short of a full deck. ... In Sweden the return of the four large predators, wolverine, bear, wolf and lynx, causes a great stress on the relationship between rural and city, between hunters and conservationists ... I would sooner turn loose rats, rattlesnakes and roaches in my house than to do anything that would increase the local wolf and lynx population. I am dead serious and not saying that to be cute. The roaches and snakes are far easier to kill. Your forefathers eradicated lynx and wolves for a reason. Well, as I typed that I realized mine did too. But now the government gives them protection. I have noticed that the president and governor do not have wolves, lynx, bears, and bobcats in their backyard as I do. If they lived here for a year they would change the law to put a bounty on the beasts ... I don't think any one should be punished by having the lynx back in the wild."

Also from Sweden:

"I don't think the animal fanatics would really care [about the damage to game and rural interests]… *but when you have had enough and want to shoot them, the whole world will 'care' ... a couple a years a go when they shot 3-7 wolves here ... freaks from all over Europe came to protest"*

There was a great deal of anecdotal evidence given for lynx and wolf having a disastrous impact on populations of wild and reared game, how hunting becomes

difficult due to the timidity of quarry species increasing when a predator is in the locality, and the dangers of using dogs such as retrievers that could run into a lynx or wolf. There were also some links to government web sites that gave up to date figures for losses of domestic livestock to large predators.

Conversely, this message was left by a hunter from Estonia:

"Here in Estonia we have all of the animals you pointed out, lynx, wolves, bear and wild boar. All those species have their part in our environment. I'm hunter and I'm really lucky to be a part of such rich nature. So it would be better to ask from someone who has experience before making such untrue statement [that lynx and wolves ruin hunting]. Regarding lynx and roe. Our lynx population hasn't been so numerous for a long time and the same goes for the roe at the same time. So where is the truth?"

But the response from hunters in the UK was mostly negative. This was more positive than most:

"It is often the case that animals now lost to our lands were eradicated for a reason. Something that may not be immediately apparent to someone without an understanding of all the facets of sharing your ground with a new species. I love the concept of a 'wild Britain' but contact with German and Scandinavian hunters has given me a better understanding of what it actually means to have wild boar, lynx, wolf and bear on your hunting grounds. Sometimes I long for the chance to regularly see pigs on my ground - but seeing the damage a sounder will do to pasture in just one night convinces me that perhaps our countryside is already ideal for the hunter, farmer and sporting shooter."

These were more typical:

"I have to say that the proposal to reintroduce the wolf to the UK is a lunatic scheme as a) domestic stock would be easy prey, b) they need a huge territory which would cover many estates and c) they would have to be European Wolves which are scarce and almost impossible to harvest for reintroduction. The proposal for the lynx is slightly less lunatic but I think we have to be very very careful before reintroducing a top predator back into these islands."

"There are too many people in this country that claim to want to re-establish predator populations both mammal and avian without thinking about the consequences. The RSPB, the leading bird charity here, is spending (and raising) huge amounts of money in order to re-establish various raptors. We have releases of Buzzards near us and they are releasing harriers and all manner of other raptors on the northern moors. No one pays attention to the overall damage any single species conservation attempt does to biodiversity."

A hunter from Switzerland left this interesting post:

"I'm not going to try to argue one way or the other on the issue of lynx re-introduction. But I would like to point to the experience with that exact endeavour here in Switzerland. For whatever reasons or with whatever background, the western part of Switzerland (most notably part of the Jura mountains and the Canton of Bern) had lynx reintroduced some decades back. Apparently, reintroductions were both planned (legal) and unplanned (illegal), the latter presumably done by "well meaning" greenies...

For the hunters in the areas concerned, this has turned out a VERY controversial issue. No, it is not like the lynx have eaten every living roe or chamois (on top of more than a few domestic sheep etc). Rather, the game animals have become extremely shy and almost impossible to hunt. Needless to say, the introduction of the large predator has not been to the liking of the hunting community. This in turn has resulted in more than a few (illegal) shootings of the lynx - some of which have been radio collared. That in turn has generated more bad blood, and needless to say, the press has had a field day being able to portray the hunters as blood thirsty outlaws, and themselves (and associated greenies) as shining examples of nature conservation.

Much to the consternation of the hunters, some lynx were even resettled from the now too large population in the original release area. Mind you, the intended area of settlement has been rejected by the lynx, who have sought out their own territory. Proving yet again, how successful man often is when planning 'controlled' releases of non-indigenous game."

The reality check

I am grateful to my fellow hunters for taking the time to respond to my thread. Their comments come from a self-selecting sample of people who have definite opinions based on varying amounts of experience and knowledge. Most of them are expressed in a second or third language. Of course the above quotes convey some strong views, and we do not know how representative they are of game interests across Britain. However, they give sufficient indication of the strength of feeling that prevails in some quarters of the hunting fraternity. This feedback has taught me was that the discussions we had at the Findhorn event were not too far off the mark and that if any

reintroduction of a large predatory mammal was seriously proposed it would have to have the enthusiastic support of the hunting community, and gaining that support will take an enormous effort. I would particularly draw the attention of *ECOS* readers to the comments about how the reintroduction and protection of predators has exacerbated the friction between those who are wary of coexisting with large carnivores and those who advocate the reintroduction of these predators, many of whom would not have to experience the consequences. In addition, the topic of carnivore reintroductions needs handling sensitively, otherwise it could drive a wedge between 'conservationists' and 'hunters'. I would hope that any move to reintroduce large predators would not leave any group of people feeling disenfranchised, forgotten or under-valued.

There was a strong consensus at the conference that any plans for reintroducing iconic species like lynx or wolf should not be foisted upon people. The views from the hunters above have proved this thinking is wise, and that efforts to bring them on board are vital. I would urge proponents of returning predators to consider the following steps, in collaborating with game interests to consider programmes for returning predators:

- Invite game managers to become involved in the programme.
- Design the programme so that game interests are at the very least preserved and enhanced if possible.
- Treat the input of game managers and hunters with respect and value it as highly as that of conservation organisations.

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1. Jackson, JA, 1977 Alleviating problems of competition, predation , parasitism and disease in endangered birds *Endangered Birds pp75-84, Madison, Univ of Wisconsin Press*

Aliens among the British mammal fauna

ECOS 26 (3/4) 63-71 (2005)

As we debate the consequences of alien mammals we need to factor in the effects of the human species and the land-use consequences of its domestic farm stock.

DEREK YALDEN

When the Channel was flooded about 8,500 b.p. to turn Great Britain into the British Isles, we had a mammal fauna of about 48 terrestrial mammals plus two seals. We have since lost eight of these, including the largest rodent, artiodactyls, and carnivore species. These losses have been numerically more than compensated for by the introductions of at least 21 alien species that have established breeding mainland wild populations, plus at least two others on smaller islands. Some of these were accidental (house mouse, black and brown rat, plus Orkney vole and Scilly shrew); some were food animals (brown hare, rabbit, fallow deer); some were fur-bearing (mink, muskrat, coypu); or specifically for amenity value (edible dormouse, grey squirrel, sika, muntjac, water deer, wallaby). Two of these were subsequently exterminated, and two are now very scarce or nearly extinct.

About 50 percent of the biomass of British wild species of mammal is now contributed by the alien species. It is not surprising that we notice the impact of the aliens when they get too numerous, but in such debates the impact of the domestic stock (and ourselves) tends to be forgotten. The largest impact has come from the introduced domestic mammals, whose collective biomass now outweighs the combined wild species by about 18 times. Our own biomass too s about 11 times that of the wild species.

The ebb and flow of climate and species

18,000 years ago Northern England was actually periglacial, if not under ice. None of the terrestrial fauna or, indeed flora that we have now could have existed here. Therefore, what we have now has happened since then and we know from the pollen record that this started about 15,000 years ago. A warming led to birch scrub invading Britain. There was a cooling, the younger Dryas period at about 11,000 years ago, which caused the birch to retreat and the tundra-type vegetation to expand and then at about 10,000 years ago it really got warm, with 8 degrees centigrade warming of summer temperatures in 50 years or less. Because of the warming, first the birch re-

invaded, then the hazel, then the pine and a bit later, oak and elm and alder. Therefore, for a period the country was essentially deciduous woodland. On top of this, because the whole climate was warming up so fast, ice caps were melting, sea level was rising, and the world sea level curve rose to about 34 metres, 8,000 – 9,000 years ago, so cutting Britain off from Europe.

Thus, what had been a continuous land mass across the North Sea, with Britain a sort of peninsula of modern Europe, got flooded, and the British Isles formed. The mammals that had got into Britain, and most of the terrestrial plants that had got into Britain by then, were the natives.

The concept, of course, does not apply so well to perhaps insects, birds and bats that can fly and a few plants that can also 'fly'. Some, such as the tongue orchid that has recently arrived, are still doing so and for some plants the Channel is no barrier. Nevertheless, for terrestrial mammals what we had then are the native mammals and what we have since are aliens.

My guess is based in part on a couple of early archaeological sites that we know well and a little bit of interpolation for the small mammals. These are not terribly well recorded in archaeological sites. I suspect that we only had 33 or so native terrestrial mammals: 5 insectivores, 10 rodents; a hare, interestingly more species (11) of carnivore than there were rodents, and then half a dozen large ungulates.

Of course, the list is not what we are used to historically - we have lost some of them, including Reindeer, and, though we are not sure its history here, wolverine. We think we lost elk about 4,000 years ago. The root vole survived at least on the Scilly Isles until Bronze Age times, and aurochs disappeared in about Bronze Age times. Brown bear certainly survived through to Roman times. Lynx actually got through into Anglo-Saxon times. Then in historical times, we have lost beaver, wild boar, and wolf. We can lose aliens as well. We have managed both to introduce and then to eliminate two alien mammals: coypu and muskrat. It is possible. It has been done, and might give us some hope.

Native terrestrial mammal species at 9,000 b.p. (Extinct species in italics) Based on Star Carr, Thatcham, etc. (from Yalden 1999[1])	
HEDGEHOG	WEASEL
PYGMY SHREW	STOAT
COMMON SHREW	POLECAT
WATER SHREW	PINE MARTEN
MOLE	OTTER
	BADGER
MOUNTAIN HARE	*GLUTTON*?
	RED FOX
BEAVER	*WOLF*
RED SQUIRREL	WILD CAT
DORMOUSE	*LYNX*
BANK VOLE	
FIELD VOLE	*WILD BOAR*
ROOT VOLE	ROE DEER
WATER VOLE	*ELK*
HARVEST MOUSE	*REINDEER*
WOOD MOUSE	RED DEER
YELLOW-NECKED MOUSE	*AUROCHS*

Losses and gains

We have done rather too well at making up for all those losses, for those extinctions, by introducing species that clearly are not native. At the top of a list of 22 aliens there are 4 early-Neolithic, farming-introduced, livestock and a little bit later the horse as well. A point to which I will return, that sheep and goats are not native to Europe at all; they were most certainly introduced. Almost certainly, the cattle and the domestic pigs that were introduced came with them from the Middle East. They are not descendants of their native wild relatives - the aurochs and the wild boar respectively.

We do not know exactly when Orkney voles came to Orkney or when lesser white-toothed shrews were introduced to the Scilly Isles, but they have been around for about 4,000 years. Those two came in from the south, probably by accident. The house mouse probably also came in by accident but originally from the Middle East, again with farming but taking a bit of a long time to get here, arriving in Iron Age times. 10 years ago brown hare would not have been on this list but we now know that it was introduced, again in Iron Age times. Genetic evidence confirms what we have come to

believe, but we are not sure why it was introduced, but possibly as a cult animal. Romans introduced black rats, again by accident, from India but through the Middle East. They might have died out after that and were re-introduced about 1100 AD.

We do know that the Normans introduced the fallow deer and the rabbit. The botanists, I think, would identify these as “archeophytes” or, I suppose, archaeozoons; that is as ancient, well-established animals. But they are not native. The rabbit is native probably only to Iberia and the fallow deer is not even native to Europe. It comes from the Middle East, probably from Anatolia, from Turkey. In New Zealand, the brown rat was introduced before the black rat and the black rat replaced it. In Britain, the black rat was introduced before the brown rat and the brown rat replaced it. Something odd is going on there - it is something to do with relationships between climates and ecophysiology. The black rat is a more southern species than the brown rat and it sounds like the New Zealand climate suits it fine. The British one does not. Then, more recently of course, many species were introduced for amenity, or in some cases for fur.

Some of these introductions have had a massive effect on the fauna, and on the ecology in general. Maps show the native range of the wild sheep in the Middle East, as well as archaeological sites where early wild sheep were discovered, and from there they were taken first across into Greece about 8,000 years ago and spread up through Western Europe. In that part of the world as well, fallow deer were introduced about 8,000 years ago.

Soay sheep (archive)

Species introduced since 5,500 b.p.		
SHEEP	5400 b.p.	FOOD
CATTLE	5400 b.p.	FOOD
GOAT	5400 b.p.	FOOD
SWINE	5400 b.p.	FOOD
HORSE	4000 b.p.	TRANSPORT
COMMON VOLE	4500 b.p.	ACCIDENT
LESSER WHITE-TOOTHED SHREW	4000 b.p.	ACCIDENT
HOUSE MOUSE	2500 b.p.	ACCIDENT
BROWN HARE	200 b.p.	CULT?
BLACK RAT	200 A.D.	ACCIDENT
FALLOW DEER	1100 A.D.	FOOD
RABBIT	1150 A.D.	FOOD
BROWN RAT	1728 A.D.	ACCIDENT
SIKA	1860 A.D.	AMENITY
GREY SQUIRREL	1876 A.D.	AMENITY
EDIBLE DORMOUSE	1902 A.D.	AMENITY
REEVES’ MUNTJAC	1922 A.D.	AMENITY
MUSKRAT	1927 A.D.	FUR
RED-NECKED WALLABY	1940 A.D.	AMENITY
COYPU	1944 A.D.	FUR
CHINESE WATER-DEER	1945 A.D.	AMENITY
AMERICAN MINK	1958 A.D.	FUR

I have explained that fallow deer and rabbit were Norman introductions for food. Coneys, adult rabbits, were kept in warrens initially, carefully protected, and did not become a pest for 500 years or so. Fallow deer were introduced to parks, for venison on the hoof. The Fallow is a more suitable animal for parks than either red deer, which are a bit too big and suffer if they're overcrowded, or roe deer because they are woodland browsers and territorial. Fallow are grazers, and live in herds, so they were an ideal park animal. They were also protected but some were introduced to hunting forests like the New Forest and Epping Forest, and others have since escaped. They established themselves over the last 200 or 300 years, and of course in England they are now the most common deer.

The landscape amenity introductions

Leading on to the amenities, we may mention grey squirrels and sika as two of the later aliens, and again these are animals which are increasingly common. They were introduced because they looked nice, and have done very well thank you.

The black rat had massive historical impacts, since it was the one that carried the fleas that carried the Black Death, the Bubonic Plague, in 1348, then again in 1665. The brown rat did not displace it until some time after, but that too can carry some nasty diseases and they are two aliens we certainly would prefer not to keep. Having said that, the black rat is now so rare it only occurs on a few offshore seabird islands – see Helen Meech's article in this issue.

Deliberate introductions

Deliberate introductions are much more numerous than the accidental ones. In particular, many deliberate introductions have made massive pests of themselves. The edible dormouse was released at Tring Park in 1902. It is a species very much of beechwoods, so the Chilterns make an ideal habitat for it, and it has not spread very much. In a wonderful paradox, it is illegal to release edible dormice back into the wild, as a Schedule 9 Alien Species under the *Wildlife and Countryside Act* 1981. As a dormouse, it is a member of the Gliridae, and it is therefore protected under the *Berne Convention.* It is a bit of a pest of houses and nests in the attic or raids food stores. It also hibernates, usually underground in drains and the like. Of course, they are strictly nocturnal and they are a bit bigger than ordinary mice, so half a dozen of them thrashing around in the attic tend to be noticed. You are not allowed to kill them, and you are not allowed to return them to the wild either. Consequently, people take them to places where they should not occur at all and surreptitiously let them go, like the New Forest. I expect this is a species which is going to do considerably better, and which we might be worrying more about it in the future. It has on occasion damaged commercial forestry.

An interesting contrast is between Reeve's muntjac and Chinese water deer, which are similar-sized deer. There is a concern that the world population of Chinese water deer is not very big and that we have about half of the mainland race and about 15% of the world population, even though this is very limited. Reeve's muntjac, which is a Chinese muntjac, is not at all well known there in the wild. It has done very well here, particularly turning itself into a deer of suburban countryside, frequenting gardens and eating roses. It can live inside bramble patches, on railway embankments, and it is a frequent road casualty. Its introduction possibly started about 1920 with escapes from Woburn Park. Muntjac do not turn up in far away places, such as up into Scotland, as a result of natural spread from Southern England. However, they are quite often hurt in road accidents, taken in and rehabilitated and the RSPCA, who ought to know better, take them elsewhere to let them go. This is illegal, but nobody ever stops the process. It is illegal to release grey squirrels in the wild, but they do that too. The Duke of Bedford, who had muntjac originally in his park, was also deliberately spreading them into the wild. He would take groups of five or so and let them free at places some distance from Woburn Park to make sure they survived in the wild. One introduction in Kent did not work, but I think that muntjac will get there shortly anyway.

Does it matter?

Should we get uptight about aliens? It matters, I think, very much in several senses. First, part of the interest of British mammal fauna is that it is 50 separate species. It does not improve the biodiversity of the world in general to bring in alien species from all over the place and produce a mish-mash. If we are not careful, we will have a world mammal fauna that includes house mouse, brown rat, black rat, fallow deer, grey squirrel, rabbit, brown hare, and little else. That is not improving the world's biodiversity and I do not think it's improving Britain's biodiversity, or the importance of this fauna and flora, to bring in every 'rubbish' species from anywhere around the world and add it on top.

Second, we do not always succeed in adding it on top. We think we have improved our biodiversity by having two species of squirrel. But we are actually getting one, which is an alien species we should not have, and we are losing the other. It took us a long time to realise this. Monica Shorten did point out in 1945 that there seemed to be a strong correlation between the places where grey squirrels had been established in and around London by 1930, and places where red squirrels had gone by 1945. Nevertheless, the link was not taken seriously. It might have been possible, for instance, if people had taken it seriously, to have got rid of, say, the Scottish grey squirrel.

The grey squirrel was a pest but no-one took much action, and through the 1970s we saw the grey squirrel spreading even further, particularly into Wales. It had not spread into East Anglia at that point, but by the end of the 1970s it had and, sure enough, the red squirrel continued to decline. The maps show the picture in 1990. That is now considerably optimistic. We lost the Peak District ones; the last one was seen in 1994, but unfortunately in the talons of a goshawk. The grey squirrels were taking over and the red squirrel was already on its way out. The Cannock Chase population went at the same time, as did the Suffolk heathlands population. Craig Shuttleworth in his paper to

the *Loving the Aliens 2005 Conference* gave details of red and grey squirrels, in Wales. The ranges shown for Wales are certainly optimistic, and the red squirrel has certainly retreated from the southern Lake District as the grey squirrel has continued to expand. I do not see that as a good replacement. It will take a while longer yet, but unless we do something serious about it, we're going to lose red squirrels completely.

Mink and Voles

Another case is the American mink, first reported breeding in the wild in 1956. The Ministry of Agriculture, Fisheries and Food said there was no problem. We are now all aware of the major impact of mink on water voles, so there is the relationship between water vole latrine counts and mink occupation across the country. Water vole has done very badly, where mink are numerous. However, it is actually the last phase of a much longer decline. As you go back to Neolithic and Bronze Age faunas, water voles are at least as common as field voles. Two of those other aliens have also had a massive impact on water voles. Water voles in continental Europe are not confined to water. They are known much more widely to be an agricultural pest. They occur in pastures, in meadows, and in apple orchards. Here in Britain they seem to be confined to waterways. We think this is because sheep and especially rabbits also eat the grass, the cover that water voles need. So three aliens have had a massive impact on water vole numbers in Britain, and part of the interest of Britain should be that water voles are very common, but they are not and mink are just the last straw as far as water voles are concerned.

More on deer and cats

Sika is a Japanese relative of the red deer and does very well in plantations of another alien, sitka spruce. Sika have done moderately well, for instance, in the Dorset/Hampshire/Poole Basin area, and they are particularly abundant in the Scottish sitka plantations. They are very difficult to shoot to cull in dense forestry plantations, so they have done really well.

Unfortunately, sika is also quite closely related to the red deer, though the two species do not normally hybridise. Rather obviously, red deer is a lot bigger, with sika about the size of a fallow deer. Sika stags do not stand a chance of rivalling red deer stags when both species are around. However, when they are not, then sika stags will try and mate with the first year red deer hinds because they are fairly small and they sometimes force themselves. What does happen is that hybrids are then fully fertile both ways. So hybrid red/sika deer could be anywhere between sika and red deer in phenotype, and quite indistinguishable. The consequence is that the remaining population of red deer is almost certainly doomed. There will not be red deer in Scotland in 50 years' time and the advice of the geneticists is that changes have already gone too far to be reversed. Though I do wonder whether that is true as no one has tried reversing it. I suspect, of course, the hunting lobby prefer to shoot large red deer stags. That is actually the worse thing they can do. What they should be shooting is small sika stags, but that will not happen and I suspect that, yes, we have already lost the red deer as a mainland species. It will take 200 years, but it seems we will lose our largest mammal.

A similar problem exists between wild cats and feral moggies. They are more closely related than red and sika deer are. The domestic moggy is almost certainly descended from the African race of wild cats. Nevertheless, released into the wild it can certainly interbreed with Scottish wild cats. Since the wild cat is now in such small numbers, a migrant moggy and migrant wild cat are more likely to meet each other than wild cats are to meet other wild cats. We have an estimate of 3,500 wild cats in Scotland, but they may comprise about 1,000 wild cats and 2,500 hybrid cats.

A wider perspective

Therefore, there are a number of cases where these aliens really are problems. Because we have so few mammal species to worry about, the mammal ecology and conservation people certainly have been recording these changes and are concerned about them. They hope to turn that concern into positive action.

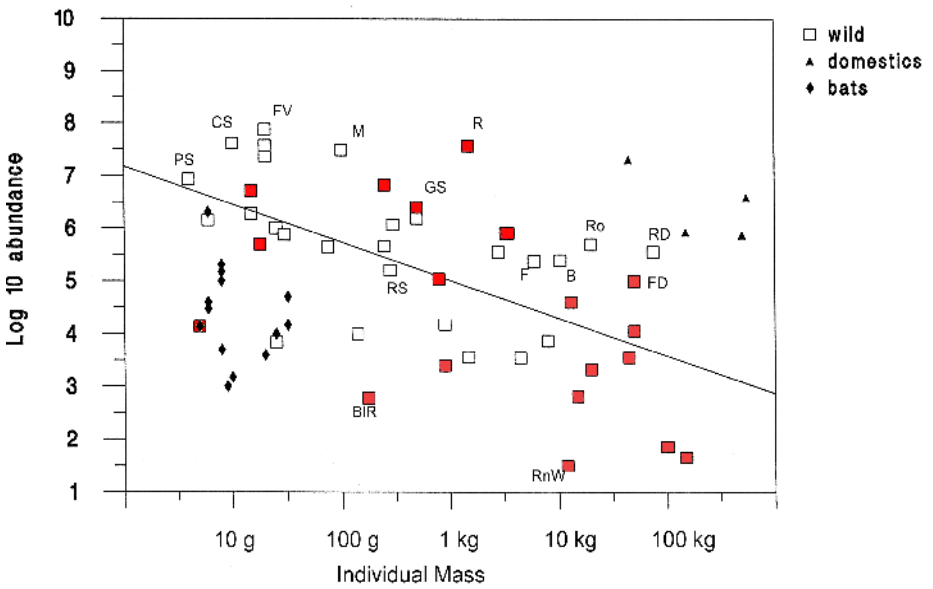
A plot of individual body masses against abundance for all the British terrestrial mammals shows a negative relationship (see diag). The regression line is not quite 2/3 (0.67), it's more precisely 0.72, but this is the relationship between abundance and individual mass for terrestrial mammals. It leaves out the bats, because bats clearly ecologically belong to a very different category. We do not know what a native bat is because some of them certainly have crossed the Channel. They actually fall on the bird line which is parallel to but lower than the mammal one.

I have also left out domestics, for which I'll return later. The point is, of course, that you'd expect a small mammal to be more numerous than a big one - so indeed pygmy shrew, common shrew, field vole, for example, are at the upper end and at the other end is our largest, terrestrial, native mammal, red deer. Scarce mammals include black rat, wallaby, and small feral populations of reindeer and wild cattle. Therefore, there is a

relationship, which tries to quantify how abundant small mammals should be or how abundant large mammals should be on a common scale. What we want to know is where the aliens fall on this. The message is that mostly these aliens fall in with the native mammals. Some of them are restricted because they were introduced into small areas, like lesser white-toed shrews on Scilly, red-necked wallaby, or only survive in small areas, like black rats. But notice particularly how abundant rabbit is compared with mammals in general. Some other aliens have done quite well, for instance fallow deer and sika. Look how much more successful grey squirrels are now than red squirrels on the estimates that we have.

So how does this compare with how things were in the Mesolithic, when all we had were native mammals and farming had not interfered with things? It's estimated there were 535 million Mesolithic mammals, and the biomass of 300 thousand tonnes of mammals was very much dominated by the big ungulates, the aurochs, elk, red deer, roe deer, and the wild boar, many of which have gone extinct. There were rather more large rodents around then because there were beavers as well as a lot more red squirrels. The native species are now reduced around half numerically, to 222 million and by mass to a fifth, 61 thousand tonnes. But the introduced species, collectively, number about 57 million, while the deer, rabbits, and brown hares mostly, provide about the same amount of biomass, 68 thousand tonnes, as what's left of the native mammal fauna. That is bad enough, but remember that I left off the four domestics of farmed sheep, cattle, horses and pigs and we could add, perhaps, a spot there for ourselves.

Collectively we and the domestic ungulates number 68 million, but contribute a biomass of 6,614 million tonnes, over 50 times the biomass of the wild (native and alien) mammals. Of course, we notice when either native species or, indeed, the introduced species, get rather more abundant than we think they ought to be because, basically, the resources have been taken up by ourselves and domestic stock. One of the main messages here is that there's not much habitat left for wild mammals.



Labelled species:
B Badger; BR Black Rat; CS Common Shrew; F Fox; FD Fallow Deer; FV Field Vole; GS Grey Squirrel; M Mole; PS Pygmy Shrew; R Rabbit; RnW Red-necked Wallaby; Ro Roe Deer; RD Red Deer; RS Red Squirrel.

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Future Natural – the unpredictable course of wild nature

ECOS editorial 27 (3/4) 1 -3 (2006)
Without any target or action plan to drive it, Britain is witnessing a re-wilding of its landscapes. These transformations are enriching ecosystems and bringing lyrical power to the land.

MARK FISHER

In the conclusion to his book *Fenced Paradise*, Richard Mabey identifies a missing zone from amongst the many specialised habitat domes at Cornwall's Eden Project. His recommendation would be for a new, uncovered area of the quarry to be left to re-vegetate from the surrounding native species. His experience of that location and the re-vegetation of similar disused industrial sites, suggests that furze (gorse) would be an early returnee, which would produce a characteristic landscape that he delightfully labels the garrigue of Cornwall.[1]

I think Mabey's prescription for the Eden Project should be one for all areas of Britain, missing as they are - for the most part - landscapes that are given the opportunity to decide how they will clothe themselves with vegetation, and to whom they will give sustenance. The exciting aspect of that prescription is the prospect of watching nature do its own thing: the quick returns that are ephemeral; the later returns that stick around; and the opportunistic but inappropriate directions whose moments of glory may succumb to an ultimate course.

Wild action – documenting the projects

Examples do exist in Britain of landscapes regaining greater self-determination, and which can give us inspiration. The Wildland Network has recently compiled a database of re-wilding projects, available on its website (see Ward, Fisher and Carver article). It is worth exploring some of these projects as they indicate a range of circumstance in which this greater self-determination can take place.

In woodland regeneration, time-limited exclosure to eliminate grazing pressure is the simple act that often initiates transformation. Trees for Life in Scotland will beguile you with tales of the springing into dramatic growth of native conifers, infantilised from decades of over-grazing, as well as the flush of new seedlings as constraints are removed to the re-formation of the Caledonian Forest.

In Suffolk, an aim is to defragment two ancient woodlands, Spouses Vale and Arger Fen, through natural re-vegetation of the field that lies between them. In the upland areas of the limestone Yorkshire Dales (South House Moor) in the eastern Lake District (Royalty Allotment) and Snowdonia (Cwm Idwal) natural re-wooding is taking place after a few years of a break in livestock grazing.

Water is a potent driving force for native wetland habitat regeneration. The new coastal wetlands at Abbott's Hall Farm and at Wallasea Island, Essex, are a stunning compensation for wetland losses elsewhere (see May, Hall and Pretty article). In smaller scale, Cors Dyfi a new reserve of the Montgomeryshire Wildlife Trust someway inland on the Dyfi estuary, saw a Sitka spruce plantation cleared and the water drainage reversed. A mere eight years on and there is infiltration of wetland again with reeds, bulrush, bog myrtle, flag iris and willow, recolonising from sufficient remnant species around the reserve.

Perhaps outside of a framework of simple transformation, the re-vegetation of a Pembrokeshire coastal farm shows the lengths that have to be taken in realising the return of a particular habitat on farm land – in this instance coastal heath. Fields at Trehill Farm, with their centuries of agricultural improvement, have undergone a stripping-off of topsoil followed by dressing with a sulphur waste product from the local oil refinery to re-acidify the soil. Coastal forbs quickly returned but heath species needed seeding from the brash cut from heathland elsewhere.

The return of natural vegetation cover can accompany the re-introduction of lost mammalian species. Perhaps the example with the highest profile is the Alladale Estate of Paul Lister in the Scottish Highlands (see Roger Sidaway's article). The plan for restoring the original Highland ecology of this former hunting estate began on a small scale to explore the success of habitat recovery, with a replanting of native trees (saplings of juniper, willow, rowan, birch, aspen, Caledonian pine) and a reduction in grazing pressure through a culling of the local deer population. Red squirrel, wildcat, and wild boar will be reintroduced on a 1000 acre site, the aim eventually being to re-introduce these to the whole of the estate, along later with the wild grey wolf, lynx and brown bear.

The estate will be enclosed with high fencing to prevent release of carnivores into the wild, but will the open access provisions that exist in Scotland mean that everyone can benefit from this restoration? This is the main challenge for the project – enclosing

the predators while keeping access groups content. Alladale will be an opportunity to study how the re-introduction of wolves and other native predators in the longer term can restore a natural balance in the deer population without the need for further culling. Lister is seeking the co-operation of surrounding landowners to double the potential area of wild reserve to 50,000 acres. He believes that this area of land could support two wolf packs (12-15 animals in each pack), three pairs of lynx, and up to 30 brown bears.

Predicting nature's accidents

In all these transformations, unpredictability could never be a factor that is obviated, and it is ever so with nature. We trust to the future that giving a freer rein to the forces of nature will pay dividends in improved integrity for ecologically functional landscapes. This future natural state was articulated by George Peterken, when he set out a vision for the natural evolution of new temperate wildwoods in Britain.[2]

Peterken accepted the unpredictability by pointing to the contemporary factors such as extinctions, and climate and soil changes that meant that this woodland would never be a re-creation of the past – the original natural woodland. The concept of future natural is thus wider than just woodland, certainly embracing wetland restoration, and maybe even habitats such as heathland where other factors are sometimes able to prolong its often short existence in the absence of our interference.

It is that latter point – the active involvement and management by people and their instruments - which marks out a divergence in views about how a future natural state can be achieved. Already there is a presumption for natural reseeding and re-wooding over tree planting for new wild woodland, with recourse to the latter only when the location lacks a sufficient seed bank or source. But a different course was given a big push when Frans Vera published his theories about the relationship between woodland regeneration and wild herbivores, and the establishment of a major demonstration project in Holland's Oostvadersplassen (a place which receives much attention in this issue).

Becoming parasitized?

It is easy to see the seductive nature of Vera's theories, as they sit effortlessly within the landscape management orthodoxy of conservation professionals in Britain. Not unsurprisingly, significant progress has been made in a few short years on the animal welfare issues in preparing the ground for adoption of the approach here, as reported in this issue by Matthew Oates. Where perhaps less effort has been applied is in understanding and realising the state of landscape vegetation to which this herbivore pressure can be re-introduced, and which has any hope of survival if we contribute to get the balance wrong. Can the balance ever be 'right' or 'natural' if what we have to do is fence in these surrogate wild herbivores rather than allow for their natural passage? I am often reminded of the wisdom of Leopold, writing some 60 years ago, when he said "By grazing all the woods we eventually exterminate the woods".[3]

I should make less of this divergence and instead recruit it to the diversity of transformative approaches that a future natural state can arise from. An important factor for this future natural state will be its relationship with the land around it. As is becoming clear across the world, isolated enclaves of wild nature are less effective than if they are networked together by wildlife corridors[4], and bounded by buffering with semi-natural land.[5] The key for all of these aspects of future natural will be our exploring of it with an open mind and heart, managing our expectations of it, as much as we should resist over-managing the processes themselves.

Returning to Richard Mabey's concluding remarks in *Fenced Paradise*, he throws in a natural horror to his vision of the natural re-vegetation of an area of the Eden Project quarry: the gorse becomes parasitized by common dodder, a climbing and twining plant common to the SW that he likens to a serpent. Dodder barely roots in its life cycle and gives nothing back. Mabey gives us a brutal caution when he says that people have much in common with dodder when we do not consider equably our relationship with the natural world.

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Grazing systems and animal welfare – matters of life and death

ECOS 27 (3/4) 52-57 (2006)

Animal welfare interests and nature conservation groups are working together to address key requirements for extensive and naturalistic grazing systems. This article discusses some of the main issues that confront them.

MATTHEW OATES

Since the late 1970s the UK's nature conservation practitioners have been experimenting in grazing with domesticated stock. Experimentation has been precipitated largely by agriculture's increasing reluctance and inability to deploy stock in the marginal land which expands and contracts according to economic forces. These efforts have been based on some recognition of the role domesticated large herbivores have in driving the ecology of grassland, heathland and pasture-woodland habitats. This role of herbivores has often accompanied activities such as burning, cutting and even drainage.

Conservation effort has at times functioned with natural processes, and in other situations raged against them. Conservation grazing activity has sought local solutions both from within and beyond agriculture. The abilities of a diversity of breeds of cattle, sheep, ponies and goats to help with the maintenance and/or enhancement of sites managed for nature has been explored in a glorious but uncoordinated experiment.[1] The wheel has therefore been invented and reinvented locally, often in sublime ignorance of comparable experience elsewhere. The Grazing Animals Project (GAP, see www.grazinganimalsproject.org.uk) was established in 1997 largely to improve communication on issues relating to grazing in UK nature conservation.

In Agri-land where the shadows lie…

Agriculture has made significant steps towards embracing nature conservation, notably by providing significant funding. Yet, in consequence, and because of our dependency on stock grazing, nature conservation has been invaded by the burgeoning bureaucracy that agriculture has become. We now have to comply (with agri-environment specifications) and cross-comply, and our ability to opt out of, or outmanoeuvre, the agricultural system has effectively disappeared. A great deal of land managed for wildlife is now tied into well-meaning but narrow agri-environment schemes. Moreover, whereas Biodiversity Action Plans help the process of prioritisation, they add another massive tier of bureaucracy.

Agriculture is now firmly the default-setting baseline for nature conservation, and for our engagement with nature and landscape. Of course, it does not have to be that way, as Frans Vera argues[2], but the inadequate philosophical and psychological basis for nature conservation does not enable us to outmanoeuvre agriculture at all easily (Oates, in press).[3] So, our landscapes and their habitats largely reflect agricultural values and endeavour, present and past in that order, and are set now to reflect agricultural bureaucracy.

Past, present and which future?

The real issue for nature conservation is the extent to which our perceptions of the past can and should prime future actions. We cannot answer this 'which past – which future?' debate until that basic philosophical question has been addressed, and we lack a mechanism for doing so. I believe that the thinking around 're-wilding' or, more appropriately, 'wilding' must engage in that debate.

Of course, we cannot go back. Time is forward-bound, and is essentially the dimension within which change occurs. The philosophy of time is, therefore, like nature conservation, strongly concerned with the relationship between past, present and future. However, nature conservation is also primarily concerned with seeking a future for features of significance, for things that people value. It should also be concerned strongly with the relationship between people and nature.

Proxies and analogues

The aurochs has gone forever. A massive amount of perception and mythology has developed surrounding its ecological role in the minds of modern ecologists, but despite admirable recent work (notably Hodder, Bullock & Kirby, 2005) we will never know the true extent to which it functioned as an ecological driver. Frans Vera has developed the concept of modern large herbivores acting as proxies or analogues for extinct ecological drivers such as the aurochs.

But how do we determine the most appropriate analogues for extinct keystone species? At what estimate percentage of approximation should we buy-in to a proxy? Our decisions will be guided by legislation, social perspectives, and the landscape situation within which nature conservation effort functions.

The Grazing Animals Project advocates that for the more challenging grassland, heathland and pasture-woodland habitats, stock of an appropriate 'type' need to be deployed.[5] The key components of 'type' go beyond species and breed, and encompass age, sex (and no sex at all, with castrates) and, most importantly, 'background'. The latter includes husbandry and social group history, and in many conservation grazing systems seems to be the most crucial attribute of 'type'.

Embracing animal welfare

Animal welfare is one of the main contexts within which nature conservation functions. This is not a constraint but something that nature conservation should actively embrace, for positive engagement with animal welfare can only strengthen the nature conservation case with the public and politicians. Furthermore, attending to animal wellbeing enables domesticated stock to function to the best of their ability in challenging situations, and in so doing are most able to make genuine impacts on the vegetation that conservation seeks to control. (In ruminants, this wellbeing is largely a matter of rumen function). Animals whose wellbeing is compromised are less able to perform their grazing function adequately. However, grazing animals should not be perceived or labelled as 'grazing tools'; such terminology sends out the wrong messages to the public and, moreover, is incorrect as grazing animals manipulate vegetation in their own way.

The legal framework for animal welfare is based on avoiding unnecessary suffering, though this obviously involves significant grey areas. The general way round any difficulties here is to endeavour to function within the spirit of the concept. The new Animal Welfare Act now imposes a duty of care, which is likely to encompass animals introduced to naturalistic grazing systems.

The welfare of domesticated herbivores has been further developed through the Five Freedoms, produced by the Farm Animal Welfare Council (*www.fawc.org.uk*) and upon which are based the various Defra codes of recommended husbandry practice. The Five Freedoms are not an impossible council of perfection but are to be used as a practical guide, particularly to identify the strengths and weaknesses of any husbandry system. Stated blandly, they are:

Freedom from Hunger and Thirst.
Freedom from Discomfort.
Freedom from Pain, Injury or Disease.
Freedom from Fear and Distress.
Freedom to Express Normal Behaviour.

At face value the first four Freedoms seem irrelevant to naturalistic grazing, if not to nature itself. In the wild animals regularly experience the first four, often to significant extents. But the fifth Freedom, so readily denied in domesticated systems, often allows them to be able to do something to alleviate suffering. The Five Freedoms are aimed at avoiding situations where an animal's stresses exceed its ability to cope. Most fears are imagined, and stresses can be natural circumstances, and the welfare issue is really over the degree rather than the quality of stresses. It is, of course, difficult to measure stress, though this has been achieved in the case of hunted Red Deer.[6]

The Five Freedoms address both physical and mental welfare and aim to reduce or avoid stress in order to prevent the high degree of suffering that may occur when an animal becomes unable to cope with stresses that have become too severe, complex or prolonged. In particular, an animal will suffer if it cannot take action to relieve or avert the stress it is suffering. A good example here is the fact that animals in the Oostvardersplassen in Holland are contained and cannot escape or migrate when food becomes scarce in winter - which is does. Indeed, the heavy poaching along the eastern perimeter fence there on my last visit, in March 2005, was on a scale reminiscent of images of the Western Front.

The naturalistic grazing movement needs to engage with animal welfare organisations to develop the concept of the Five Freedoms within the context of extensive grazing systems involving free-ranging large herbivores, plus and minus large carnivores.

The process of feralisation

One difficult welfare area which is pertinent to naturalistic grazing systems is the issue of de-domestication, the process of feralisation. At Oostvardersplassen, one of the three introduced large herbivores was already 'wild' – Red Deer – and the other two – Konic ponies and Heck cattle - were chosen in part because they were felt to be breeds most able to bridge the gap between domesticated and feral animals. This was a deeply thought out attempt to introduce animals of appropriate 'type'. However, the ponies and deer are better able to graze the sward closer than the cattle, and to strip bark. They therefore may out-compete the cattle. To an extent, then, the cattle's welfare may have been compromised by human decision, for it was known from the onset that this competition might occur.

It is not easy to devise criteria for determining when animals have become truly wild. The problem here is assessing when and how does our dominion over introduced animals end, if at all? Moreover, animal behaviour patterns in naturalistic grazing

situations always will be influenced by human decision, even if the decision to do nothing has been taken. A further complication would be the decision to add large carnivores, in order to replicate natural systems. The impact of large carnivores on large herbivore dispersion is likely to be of more significance than their role in population control (see David Bullock's article in this issue).

Death shall have no dominion…

The greatest area of difficulty in animal welfare is death and dying. However, most of the animals in the Oostvardersplassen have a better quality of life than many farm animals, though those that effectively die of 'starvation' must experience 'unnecessary suffering' near the end.

In naturalistic grazing systems, there are two possible ways around these problems: through developing criteria for culling, and through the concept of carrying capacity. Neither are easy. Culling criteria are based on our ability to determine that an animal is beyond hope – assuming a marksman can find it, for many animals seek to die in the bushes (which may well say something about their attitude to death). Attempts are being made to fine-tune this thinking at Oostvardersplassen, though the best we can go on is Condition Scoring (which was developed for agricultural systems wherein animals are handled), and different people will set the intervention threshold variously. The difficulties with carrying capacity are, first, that it denies natural population fluctuations and cycles, which clearly influence vegetation dynamics; second, that it inevitably leads to the culling of healthy and young animals; and third, that it is difficult to calculate what a carrying capacity should be.

I would argue that the real issue here is the lack of any coherent philosophy covering death…

Overcoming our fears

Animal welfare and nature conservation need to come closer, because the two movements have much in common, and because both are capable of becoming radicalised and alienated. Animal welfare is primarily about human perception and value judgements, as is nature conservation. The good news is that there is a Conservation Grazing Animal Welfare Working Group, convened by GAP, which brings the thinking of the two movements together to agree, hopefully, through Defra, some form of code to guide naturalistic grazing systems within the spirit of the new Animal Welfare Act. This group can help with the development of the Five Freedoms thinking within the context of naturalistic grazing. Above all, the group is encouraging depth and breadth of thinking, and forward-planning, on issues relating to nature conservation grazing.

The main issue holding back progress towards the eco-system approach to nature is not animal welfare concerns, but the fears most nature conservationists have over loss of valued features (primarily species and habitats), and the bureaucratic processes put in place to prevent such losses. These concerns emanate largely from the lack of any philosophy for nature conservation (and Nature) in the UK: there are no criteria for accepting decline and loss, basic pragmatics apart, and no conceptual thinking for handling the processes of change. We need to engage in such discussions…

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Rewilding the Human

Living on the edge
the risks of going wild

ECOS 24 (3/4) (2003)

Peter Taylor reflects on the experience of nature, parenting, control, safety and rebellion, and the rise and rise of managerial safety.

When I was a teenager, I courted death though I would never have called it that. Out of sight of parental view I explored sea-caves, having to wade chest deep when caught by the incoming tide; slid to the edge of an untimely end down crumbling chalk at the edge of a two hundred foot drop; and there was a near-miss of dislodged rock on an (un-roped) climbing escapade. In my 20s, I was more philosophically aware, and the Eiger in winter, or crossing the oven-heat of the southern Sahara, was clearly a counterpoint to the slow death of office life. I thought then, I pushed the envelope, because to live on that edge was to affirm life – one false move and you were dead! As a parent, life looked decidedly different. It took great effort to allow my children the same freedom, and now I know why I never told my parents of my escapades.

Troublesome teenagers

A Mayan shaman, a teacher for these, my later years, reckons that the Gods of Death stalk teenagers especially.[1] His culture's darker deities hunt down the creative spark of men and can only be appeased by poetry. If they like it, they let you live. But then, you are truly alive, because good poetry can only come from those who really live. For those who fail, those who seek comfort and security, those who would hold on to their life so dearly and try to cheat death, they die. Not materially, of course. Not immediately. The dark Gods have no need of that as ultimately, it happens to everyone and is therefore immaterial. They become the walking dead, and they belong to the Gods of Death.

Other indigenous cultures, perhaps also, our own now distant, have similar understandings, and similar Gods that might gobble up the unwary poet or lop off the head of an arrogant warrior, all to ensure life moves forward with a meaning beyond mere survival. In all of these tribal cultures, young people are initiated into poetic realities, usually at 14 years of age. Here began art, song, music and dance to add to the hunt, to warrior combat, and courtship. Life took on a greater meaning and the risk of life also.

My Mayan friend looks upon our modern troublesome teenagers with delight. They risk all for ecstatic dance or a wild car chase, and rock-and-roll still lives on the city streets. They may get locked up, or worse, but they will have lived on the edge. He sees in that the potential for poetry in all its forms, for the creative spark of human life, at least with the aid of a little mentoring and focus. Oddly, these kids, when faced with an initiation as simple as a night walk in the forest, get truly fearful. The adrenalin still flows, but the mind makes a far bigger deal of the risk!

Initiation - built by teenagers at Cae Mabon for storytelling, poetry, music and nightwalks in the forest (Peter Taylor)

Until recent times, the most trouble from the uninitiated arose from boys. Now girl gangs are becoming more of a problem. Both sexes benefit from encounters with the wild, with the girls just as eager to experience that edge. But indigenous cultures always have very separate initiatory rites, and I wonder not so much as to whether our unisexual approach does any harm, rather, what it is the girls may be missing. There is now little trace of an ancient wisdom on that score, the churches having systematically eradicated the uncooperative 'wise women' healers, diviners, and herbalists of Europe over a 500 year time span.

Nature co-opted

Most children, the ones that do not rebel, are over-parented and un-adventurous. If they get to visit the great outdoors, they are usually accompanied by adults with one eye on the twin Gods of insurance and litigation. They may go white-water rafting, kayaking, mountain biking, abseiling and orienteering, but all hell will break loose if a supervisor is negligent in an unwatchful moment, or their protective gear is not appropriately checked. The mountains and rivers of our National Parks abound with well-zippered goretex. Nature is co-opted in the enterprise. Our young people must be given a wild experience, exposed to some risk, just as long as it is well-managed.

This, to my mind, is little better than the criminal car chase or the pilled-up buzz of the rave. Indeed, it is the same uninitiated craving, but lesser, because it is well managed, and both types of adrenalin junkies, if you left them alone in the forest, by twilight would be crying for mum.[2]

This is a bizarre circumstance. Young people crave risk in an over-civilised society. And their greatest physical risks, from car accidents, drug abuse, or violence, arise within the very bounds of that supposed civility, yet they fear most that which is in the unknown land beyond the city gate. Then they grow up and become managers! Countryside risks get fenced off. Up go the notice-boards. Beware: Deep Water, Falling Rocks. And further – not even a humble beaver allowed to disturb the comforts of fishermen and cattle-grazers, let alone a lynx, a bear or a wolf.

In the pioneering Dutch experiment of turning a 5000 ha polder into a paradise for wild cattle and horses, along with deer and boar, visitors are shepherded around in safe safari vehicles. Perhaps that has to be, but the local authorities soon put a stop to the carcasses lying around, dying variously from disease, starvation, or combat, and left to rot. Too much risk of disease.

The risk averse and the hypocrisy

There occurs within this risk-averse mindset, a curious hypocrisy with regard to natural processes of death, whether by predation or decay. The supposed 'safe' world of civil order, including its agricultural counterpart, is actually very dangerous. City streets, and even country roads are dangerous places, especially for children. Farms and their produce are full of disease and death. Foresters and hunters cull deer, and occasionally, inadvertently, themselves. Yet, I have heard Vosges shepherds and hunters decry with great emotion, the introduced lynx for the deer and sheep they kill, and Norwegian sheepherders likewise the wolf, not only for its livestock depredations, but also for its apparent potential to attack children. This same Norwegian community continually ignored pleas to cull a pack of domestic dogs gone wild, and then lost a child to a grisly death, something regularly documented in civil Europe; whereas no European wolf has ever been recorded killing a human. In the Vosges, cars killed more deer than the hunters, and in Norway, pneumonia kills a good many more sheep than the wolves.

Avoiding the darker Gods

At one time I used to believe this madness was the fault of the Christian God. The Saviour spoke in glorious wisdom of lilies and sparrows, but not a jot about eagles and wolves, and the Divine Mother always hovered around in the background wondering where He was. The Christian feminine deity, ever nurturing of the boy-child God-to-be, is a far cry from Ceridwen the crone, able to shape-shift and pursue Taliesin to the final transformational devouring. Other cultures seemed to understand the psyches need for an accord with death, decay, and mortality, whereas our own sought to cheat all three. Has this now carried over into massive investments in anti-biotic warfare, on the fields and inside the body, where all bacteria, invasive fungi, and pesky insects are subject to military campaigns. Cancer has become a 'big enemy', yet cancer-wards, for all the fear, can be places of immense healing and insight into life.

Rationalist modernity, despite its disavowal of the spiritual, hardly differs in approach, indeed, it takes the whole operation further. After several decades of wielding ever more powerful technological weapons against pests and diseases, the war seems to have made the enemies stronger! When one is knocked down, as with cancer and diseases, another appears. And the pests evolve genetic resilience and come back with supercharged aggression.

We also now have a whole science of risk analysis, to which can be added costs and benefits. Probabilities are ascribed and comparative assessments made. Yet, within that process, the same prejudices operate. The emotional content and meaning of risk is removed and reduced to statistics. One apologist even said that the childhood leukaemia deaths hypothetically ascribed to the discharge of radioactivity to the food chains of the Irish Sea should not be called deaths, rather, 'life-shortening', for everyone dies someday! Such statistical life-shortenings could then be added up and compared to those from burning coal, or getting hit by a truck carrying coppiced willow. Surprisingly, on this level, there is not much difference between one fuel cycle and the other.

Lessons from Romania

The sanctification of 'man apart' by the Christians, and the sanitisation of a desacralised nature by their descendents, I thought at least must be contributory factors to this collective myopia, until I visited Romania. The Carpathian forests are quite salutary. They are replete with bear, wolf and lynx. The former regularly kill people and cattle, the wolves never people, but sheep rather often, and the lynx….well enigmatic as ever, for there is no data, taking a few sheep but certainly, no threat to people. Yet, these tolerant Romanians are as Christian in their history, as any other, despite their hard road under Communism. Some clue exists along the roads and pavements, where extreme caution is necessary. Any hole is simply left as it is for the unwary drunk or over-exuberant child. Some of these gaps in the path are yawning people-traps that would, in any Western country merit a manhole cover, or at least some bright warning tape. Here physical risk seems to be courted, though sadly that also extends to burning the rubbish, plastic and all, in huge open fires on the edge of the town or village.

Romanians milking sheep - traditional pens and guard-dogs protect from wolf, lynx and bear in what is otherwise an Alpine landscape.(Peter Taylor)

Here I had my only encounter with wild bears. Distance 30 feet. Place, Racadau housing estate on the edge of Brasov. Time, 10.30 pm. Circumstances – three bears rummaging in the skips serving the blocks of flats adjacent to the forest, as they do every night, just a service road's width from open windows and TV soaps. The taxi

drivers do good business with tourists who get to hear, and want an encounter. These bears are big, sometimes with cubs, and though nervous, potentially very dangerous, yet there is no oversight and no regulation. Whether conscious or not, the holes and the bears mean that every Romanian learns to live with risk, to take care and watch where they are going.

As I left the Carpathians, the New American Century announced that Romania was their new frontier and they would be building a big new factory for helicopter gunships. In exchange, Romania will get new roads, dams, power stations, PVC windows, satellite TV, and a drug culture, to add to its rampart sex trade. No doubt the streets will be paved, traffic regulated, holes covered, forests fragmented, livestock subvented, and the countryside more managed. Wildlife will have to become economic if its risks are to be tolerated. I had an unsubstantiated suspicion, though, that Carpathian shepherds, hunters and foresters, though well Christianised, had retained some pagan sense of joy and poetic ease with wild nature, and I hoped they would fight to retain it when the new Gods arrive.

The wild bites back

In all this, there is, however, a slow turning. The wild with all its risks, is coming back. There are wolves in the Brandenburg forests close to Berlin, and new tracks in the Cevenne and Pyrenees. Bears have been trans-located from Slovenia to Austria and France. Scotland brought back the Sea Eagle and Osprey. Norway has agreed to tolerate one wolf pack as long as it stays in one place. If we are to re-establish natural processes in our wilder land, with herds of large herbivores such as reconstituted aurochsen and tarpan, boar, bear and wolf, then risks to life and limb will have to be accepted. And along with risks, and with time, perhaps will come benefits to local economies. Even our wayward panthers and pumas, once confirmed as more than mere spectres, might get a fair crack of the symbiotic whip from a public increasingly willing to accept the presence of something wild, unpredictable and potentially dangerous. If so, conservationists might take a few risks themselves, and stick their necks above the office parapet with a bit more of the wild dream.

1. Martin Prechtel, see *Secrets of the Talking Jaguar.*Element, 1998.
2. It is a common experience of those who take delinquent boys into the wild that the hardest often show the greatest fear of the simplest things, like darkness.

(Editor's note: Eric Maddern and co-workers continue to do much good work on initiation and wilderness training at www.caemabon.org.uk)

Wild by Nature: activating the wild psyche

ECOS 26.1 (2005)
In ECOS *24 (3 / 4) Peter Taylor wrote of living on the edge – the risks of going wild. This article explores the edge within our essential wildness and freedom of spirit, which when absent, is an extinction of experience.*

DAVID RUSSELL

The invitation to write this piece was prompted by a chance remark I made at a Wildlands Network meeting. I said it's not just nature that needs to become wilder, but also the psyche. I hadn't given much thought to what now looks like a rather glib remark. Now I have been asked to say what it was I meant.

Wild Nature

I want more often than not to leave nature to itself. One reason that nature matters to me is because it is simply *there*. Wilding, to me, is walking away and accepting and enjoying whatever happens. Why is that so difficult? I guess somewhere behind the idea of such an abandonment lies a different sense of nature. Partly it's this: for me, nature has never been in need of protection because nothing can harm it. Nature encompasses everything, mass extinctions, even annihilation if it is in the nature of the universe to collapse back into a singularity at the end of time. How can such a thing ever be harmed? In fact, it seems to me, we always most hurt *ourselves* in the way that we relate to the world around us. Maybe we need to know more about that hurt. John Fowles, the novelist, wrote about nature in his short book *The Tree*:

> "The subtlest of our alienations from it [nature], the most difficult to comprehend, is our need to use it in some way, to derive some personal yield"

It feels important to me to be able more often to let go of the need to get something from nature or to do something to it. This might seem impossible, after all we need to sustain global biodiversity and management is surely essential. There are also issues around public accountability. I've tried to suggest elsewhere that maybe we don't have to assume that intervening less and giving more space to wild nature will mean less biodiversity. Yes, I do recognise the immense pleasure and inspiration that people get

from working in nature. But giving in to our desire to shape it to our own sense of what wildness should be is an aspect of the alienation that John Fowles describes.

Wild Man

> "There is something in the nature of nature, in its present-ness, its seeming transience, its creative ferment and hidden potential, that corresponds very closely with the wild, or green man, in our psyches."

This is John Fowles, again. I am conscious of the wild man in myself. The Wild man or Green man has been part of the collective psyche from the dawn of consciousness: the close, masculine, correlate of the Great Goddess. He is represented in cave paintings. He seems always to have had a role in the initiation of male children into the world of men. The account of the Iron John legend by Robert Bly, explores the psychological content of a tale in which a young boy releases the wild man, Iron John, from imprisonment in his father's castle using a key stolen from his mother and is then carried away to the wilderness before coming into his inheritance. In the ancient Sumerian tale of Gilgamesh, the help of Enkidu, the wild man, is needed to bring the young king Gilgamesh into his maturity. I also think about the bible story of Jesus going into the wilderness and then encountering John, the hairy wild man who baptises (or initiates) him into his new role.

The experience of the correlation John Fowles describes between inner and outer wild nature is always ecstatic. Something happening outside is experienced inside or vice versa. Wonder and terror are forms of ecstasy. We can be moved to tears or jolted out of shape by our experience of nature. If we need our own creative ferment, our own presence, our own transience, our own hidden potential, we need wilderness and perhaps most of all an encounter with its seeming purposeless-ness. (If there is a purpose it is locked in the mind of God). I have done this now for the past two years on retreat on Bardsey island. Although not really a wilderness, time is the rhythm of the sea and the seasons of the farm, where money is not needed, where there are no vehicles and where it is possible for a while to be purposeless too.

The thrust of modern environmental management and policy making largely misses all of this. It seems to me that managers and policy makers (like everyone else in the world) are increasingly preoccupied with standards and performance targets. Those who are caught up in this will tend to see nature not so much as a presence but a resource; managers manage resources so what else should we expect; even people become human resources in this lexicon. The language engenders a particular and even dehumanising way of understanding and experiencing nature (and people!). I have to allow that I am particularly averse to standardised practices and regulations, so I need to be careful before I generalise, but I am convinced that we are in danger of seriously eroding the real importance of nature of itself. Can we understand and relate to nature as being of itself? Can we allow wonder to guide our actions at least as often as the standards and good practice guidelines? And I would like to think that it is more often possible to leave nature completely alone. Be that as it may, there's still the human spirit to celebrate so let's remind ourselves that it's through inspiration not regulation that we get the big results.

Finding the Edge

I remember some years ago reading a paper given by a senior executive of Shell. I think it was in the context of a discussion about the inner city that he suggested that it's not more policemen we need so much as more poets. I liked that then and I still do. Poets (and not just those who are wordsmiths), the modern day wildmen, are the people that can give us the *impudence* to ignore all the trivial bits of silly authoritarianism, the *insight* to see into the soul and what moves it, and the *inspiration* to celebrate our individual unique human-ness.

Just by chance, after I had written that paragraph, I pulled a book off the shelf. Alasdair Maclean (no not that one!) a poet from Ardnamurchan in Scotland, seems to have captured this notion in the opening verse of his collection called *From the Wilderness*.

> I am not bondsman to your least shout,
> Nor friend; perhaps, if I choose, more foe.
> Only it is my trade to lead you carefully
> Astray in lands where no mapmakers go.
>
> It will not serve to whistle then nor pray
> Nor quote authority nor put on speed.
> What keeps you upright in your shoes, your needle
> To the poem's north, is a sort of greed.
>
> I leave the foothills of the images
> And climb. What I pursue's not means but ends.
> You may come if you've a mind to travelling.
> Meet me at the point where the language bends.

Poets can often find an edge, the point where something bends. What happens if we accept the poet's invitation to flirt at the edge of safety, where authority doesn't serve; the point where something gives; to keep alive our ability to challenge our own fears? If we choose to stay within a comfort zone we can find the edge closing in. Somehow life gets smaller; this is the extinction of experience.

Wild City

It is our wild nature that contains the energy we need if we can dare to maintain our individual unique human-ness. Often images of our wild nature like the green man can seem relatively harmless; a new age symbol of environmental harmony. But, in a quiet garden retreat from seventeenth century Wiltshire we find another manifestation of our wild nature. In the seventeenth and eighteenth centuries it was fashionable to include a wilderness in the formal garden. Here is the wilderness created at Wilton in Wiltshire in the 1630s. Compared to what we think of as wilderness no doubt it seems pretty tame, but perhaps not so far from our ideas of wilderness as we might at first think. Our own wild nature projects, while they contain a core of wildness, are just as hedged around by the neat order of our theories, strategies, expectations, aesthetic preferences and the paraphernalia of funding and public accountability as the core of wild nature at the heart of the wilderness at Wilton. The Wilton Wilderness is still a valid metaphor.

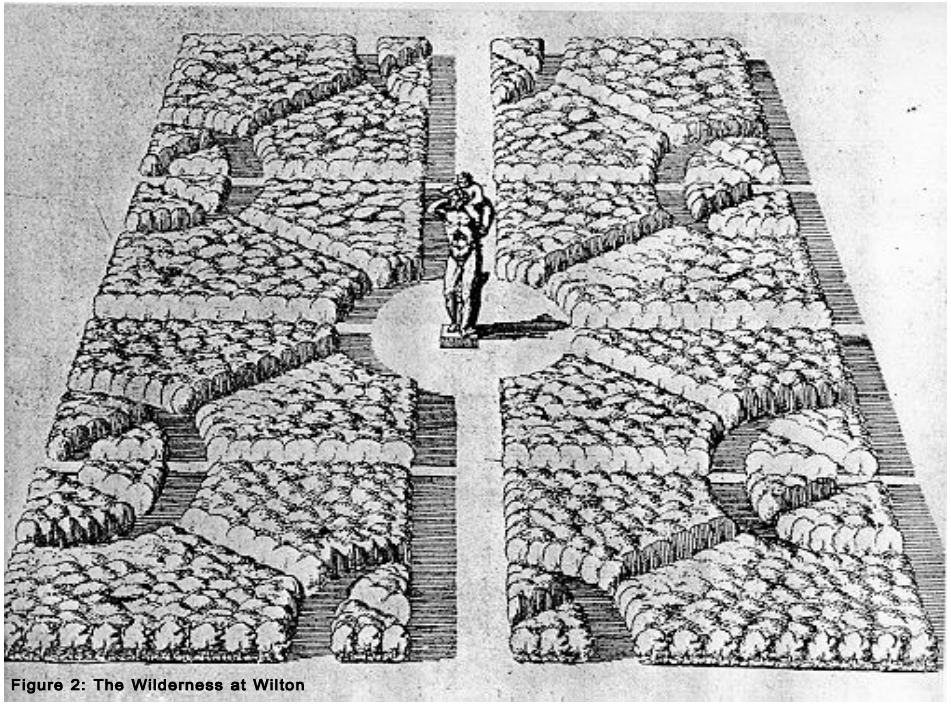
Figure 2: The Wilderness at Wilton

The Wilderness at Wilton with a statue of Bacchus. Engraving from Isaac de Caus, Le Jardin de Wilton, c 1645

The core of wild nature, the figure at the centre of the wilderness, is Zeus bearing the infant Dionysus or Bacchus the god of ecstatic or wild nature; both inner and outer wild nature. He was a principal deity of late classical Greece, a relative late comer. He was one of a wave of new Gods who arrived when the cities were already well established. While many cities allowed the cult and gave space to occasional wild festivals, several cities resisted the cult. One was Thebes. The stories tell of Pentheus, ruler of Thebes refusing to give entry to Dionysus. Pentheus insisted on the rule of reason and the need for security. In Ted Hughes' translation Pentheus is the ruler whose "two eyes … so sharply supervise everything and see nothing." Dionysus rewarded well the rulers who allowed him entry but sought vengeance when he was denied. When Dionysus entered Thebes to punish the ruler Pentheus, he drove the population to

frenzy, binge drinking, gluttony and drugs. His followers, mostly women, ran out into the countryside in violent frenzy, eventually tearing Pentheus apart with their bare hands because they mistook him for a lion.

Myths can be understood at different levels but they often have something to say which is of deep significance for our collective and personal psyches. Oedipus and Narcissus are more familiar examples. In this case we hear that if we allow wild nature in to our collective psyche (and personal psyches) we will be rewarded; the hidden potential, the creative ferment will be ours; if we deny it, something which is in the way will be torn apart. But we can also see that however it happens a new equilibrium is restored; since before the time of Christ, Dionysus was known as Saviour.

It would be reasonable to argue that there is a great deal in life which can challenge the sense of individual unique human-ness. I don't want to give the impression that we're all going under, far from it, but not everyone can keep their head above the rising tide of regulatory systems and the turbulence of ever changing strategies overseen by new watchdogs and other official regulators in Europe and at home. Add to this the tumultuous nature of often spuriously urgent social change, the demands of technology, or the pressures for conformity. As the sociologist Richard Sennett puts it:

> "How can we decide what is of lasting value in ourselves in a society which is impatient, which focuses on the immediate moment? How can long term goals be pursued in an economy devoted to the short term? How can mutual loyalties and commitments be sustained in institutions which are constantly breaking apart or continually being redesigned?"

In the story it is the controlling influence of Pentheus' that has to be torn apart. This allowed the creative and positive space needed for an expression of people's unique human-ness. If we continue to build a highly regulated social order that makes it hard to sustain our individuality we may need either to take dire measures to express it for ourselves in extreme risk or violence or abandon it altogether in the oblivion produced by addictive substances, the denial of experience. Addiction begins with a yearning to belong; to be a real person in a real situation. The moral of Dionysus is that it really is not more controls that society needs but more freedom for the individuality of its members to be realised.

But there are those who insist on the glory of their individual-ness. Free-running is an extraordinary example: athletic, gymnastic and wild. If like me, as a child, you explored the ways to circumnavigate your house without touching the ground, you have been an embryonic free-runner - add a touch of Spiderman and you've got it. It has been elevated to the roof tops. The free-runners move across the city on the wild surfaces; they claim the wilderness of the rooftops, walls and railings. They flirt at the edge of fear. The only rule seems to be never to show off; the only discipline always to know where the edge really is and to respect it. Each free-runner moves and dances in his or her own way. It is an assertion, an act of liberation, a celebration of the individual in him or herself; the Dionysian dance at the edge, a lust to be really alive. It would still be exhilarating but something would change if for example, the roof tops were designed for free-running, or if courses were laid out with marshals or if formal risk assessments were required.

Wild by Nature

The inspiration I feel in free-running comes from the way that the freedom is *claimed,* and individuality is exuberantly celebrated. The wild psyche needs to get us to the places which are not regulated, where we have to be ourselves, where everything depends on knowing the edge and respecting our own capacity as an individual. Not wild by design, but wild by nature.

Wild roots to wild wings

ECOS 26.1 (2005)
The unstructured and unspoken contact we make with nature when small has a profound impact on our values. Raising inter-connected children who can relate well to their own wild-ness is crucial for the wilderness.

HANNAH PEARCE

One of my strongest childhood memories is that of sitting 'encapsulated' beneath the fronds of a large weeping willow tree in the front garden of the house where I lived until I was five or six. In the years before I went to school I spent many hours playing in the sanctuary of backlit colour and subtle texture created by the leaf curtain of that tree.

As an older child I would often prefer to sit through an hour of Quaker silent meeting rather than join the clamor and company of Sunday school. Like the snapshot I hold in my mind of the willow, those recollections have an uncluttered quality where deep silence is suffused by light passing through lace-like tree canopies that fill the expanse of sky visible through the high casement windows set around the room.

Thirty years later I fell in love with and bought a flat that sits at the top of a four storey Edwardian town house and now live - in effect - at the same level as the tree canopy in a set of large sunlit rooms that command a bird's eye view of the entire London skyline.

A childhood outdoors

Until I was seven I grew up to the west of London in the semi-suburban sprawl between Beaconsfield and Slough. Like nearly every other child of my era I walked to school with other children, and spent many long lazy afternoons dawdling home again. We picked daisies, blew dandelion clocks, made posies of wild (and probably not so wild) flowers and were substantially free to move in and out of each other's homes and around the local area with few restrictions. We made dens, cycled everywhere and generally kept our mothers in ample washing.

When I was nine we moved to a more rural village in northwest Essex. We had less garden here but there were many more places in and around the village where I could wander along paths, down lanes, and around the field margins, often for hours at a time on foot or by bike. So like most of my peers I grew up substantially outdoors, literate in weather and seasons, confident, responsible, resourceful, independent, persistent and blessed with great stamina.

Today young people are widely pilloried for lacking these qualities, but is it any wonder given how little freedom and experience they get and how much they are required to remain indoors?

Moving into wildness

My first encounter with truly vast landscape was probably in Kenya where I went on a three week secondary school expedition that took in Naivasha, the foothills of Mount Elgon, a climb up Mount Kenya and a week in the Serengeti. Returning later as a student I was drawn to the east side of Turkana and out into the desert of black volcanic sand around Marsabit.

My fascination with deserts had crystallised in Nevada at the age of 19. After surfacing out of an extended coma sustained in a car accident my native American nurse placed my bed in front of a picture window that provided an unrestricted view across the surrounding desert for a period of several weeks. Through every angle of the sun this offered an array of extraordinary backdrop, but as each day died the horizon would catch fire and transform into a furnace of vivid indigos, reds and purples. Mute, amnesic, riddled with pain and immobile in a shattered body, I duly rejected the valium drip and let my heart-mind find its refuge wandering out into that unrestricted soul of colour.

Journey into vastness

Having a memorable near death experience in a desert while crossing the boundary between youth and adulthood left me with an archetypal taste for vast and unhindered landscapes. I have been riveted ever since by the relationship between internal and the external wilderness, and by what scholar John O Grady once called "the loosening selvage of the ego". It was nearly a decade however before I went somewhere that would ultimately resolve that obsession. In 1992 I was taken by a Tibetan lama to stay with the Kharnakpa, a small community of nomads who herd yak, goat and sheep over a series of valleys to the north of the Zanskar mountain range on the edge of the Ladakhi Changthang.

In his book *Practice of the Wild*, Gary Snyder suggests that the experiential quality of wilderness is that of 'presence'. Walk into Kharnak you would know instantly and instinctively what the man means as you become 'completely encapsulated and insignificant' in the face of nature and the elements.

Wild child

Since 1997 I have lived predominantly in London, raising a daughter, now seven, who is half Ladakhi, though not as it happens half Kharnakpa. Given her mountain background and my job as an environmental journalist I try to ensure that, despite a predominantly urban upbringing, she grows up with a firm understanding of both nature and of the wild. I also believe it is not only possible to do this while living in the city, but essential that more parents make this effort in order to counter and prevent the 'extinction of experience' described so well elsewhere in this issue of *ECOS*.

My daughter loves our allotment. It sits in the middle of a large site completely enclosed by a high fence with locked gates. This is possibly the only place in our locality where since she was four she has been able to wander around at will and without significant hindrance. She can climb trees, build dens and play freely without close supervision. She is now frequently the person to initiate a visit and upon our return she always explains why she appreciated being there.

I also take my daughter at least once a year to Spirit Horse, a valley in Wales where in her own words "I have almost unlimited space to play in the steams, the woods or the meadow and lots of other children to create anything we want with!"

Spirit Horse is now in its fourteenth year and experience has shown that letting the children run free in ways that few if any can do elsewhere is starting to deliver a very out of the ordinary young adult further down the line. Several in recent years have begun to ask the community to create ceremony and rites of passage by which they may pass ritually into adulthood. As part of this they formally leave their parents and move for a year into the home, care and tutelage of other adults within the community. There they undertake a combination of voluntary service, wilderness quest, travel and if possible a period of initiation with spiritual elders from another culture. Those accepting responsibility to serve as guardians for the year are also supported collectively to carry the costs of their obligation.

Spirit Horse Camp in central Wales (www.spirithorse.co.uk)

It's a new and evolving process that has so far supported only a handful of young people but the passion for it from all sides - elder, participant and wider community - is huge and gaining considerable momentum. Moreover, so far the new adults returning from the process have shown an exceptional degree of personal insight, compassion, strength of identity and clarity of purpose. They also possess tightly framed values, strong environmental and social concerns, and clear intent for their futures. Overall, the work provides a small but interesting example of what can be achieved when as adults we rise to the challenge. The Campaign for Leadership expresses this as: “personal and social change through self-determination in the context of a living community and contact with nature”.

Teaching ourselves and believing that we can raise capable and respected young adults skilled at living in a more interconnected manner is the real challenge for modern parents.

The wolf at the door?
Imagine urban nature running wild

ECOS 28 (1) 67-72 (2007)
The current debate on new wilderness in Britain largely focuses on sparsely-populated areas. Are there opportunities for bringing an element of wilderness closer to home, in and around our towns and cities?

MATHEW FRITH & PETER MASSINI

In his book *Beyond Conservation – A Wildland Strategy*, Peter Taylor provides a compelling and powerful argument for the re-wilding of key landscapes in the remoter parts of our islands.[1] His discourse on the return of wild herbivores and (more controversially) wild carnivores and the restoration of ecological processes is matched by a plea to rediscover the 'wildness' within that part of our psyche which is part of, not separate from, nature. Taylor, aptly, in poetry, points out that: "…*we are afraid/afraid of the wild heart/that we will not look into the fire directly/We live in our job-protected lives/behind the ramparts of a life insured/and keep the wildwood at bay*." It is a paean to the unprocessed, to remoteness, to isolation, and a vision that eschews the man-made, the built, the teeming, frenzied, maddening city.

Wild nature on the rebound

We, of course, have been creating the circumstances where the (false) boundary between natural and unnatural is blurred. Whilst the imposition of our settlements onto existing wildlife habitats has, either by design or happenstance, enabled some wildlife to survive and flourish in their new urbanised circumstances, others – having been banished from our immediate environs in the past – are returning. The wild boar populations which are less than 100 kilometres from London and the south coast towns are unlikely to stay put, and the burgeoning peregrine falcon population, together with the apparent attack by a 'panther' in Sydenham, south London, in 2005, suggest that it doesn't take much for nature (or our imaginings of nature) to exploit the opportunities that we create. Elsewhere moose forage in Wisconsin drive-by fast-food outlets, black bears saunter into the fringes of New Jersey, brush-tailed opossums colonise the lofts of Melbourne suburbs, troops of chacma baboons mosey through the gardens of Cape Town's southern quarters, and wolves pad around the outskirts of Leipzig. Nature has a remarkable way of ignoring the strictures of human endeavour and ecological romanticism; that "*there is no true wildlife anymore, only urban and suburban wildlife, adapting to yet another human-warped landscape with terrible patience*" is a notion that is gaining some resonance.[2] Whilst these 'rebounds' in no way compensate for the damage we have dealt to natural environment, they demonstrate the resilience of some parts of nature.

And the creation of special places for nature, re-introduction programmes and escapees will all play their part in re-wilding the urban environment. It maybe only a few years before red kites are seen again in the skies over Kidbrooke (OE; *the brook over which the kites fly* - the location of the Ferrers Estate, where Jamie Oliver went to eradicate turkey-twizzlers), but the country's burgeoning deer population is already making ingress into many conurbations, to the irritation of many gardeners. Indeed, in some countries over the past few decades this process has been accelerated by the establishment of urban biosphere reserves; the creation of relatively large areas of open space at close proximity to cities in which natural processes are allowed to function with varying degrees of freedom, but with benefits for people and biodiversity, for example Kampinoski on Warsaw's outskirts, and Kogelberg outside Cape Town.[3]

Britain's urban areas – getting greener and wilder?

Even in Britain, notwithstanding the continuing developmental pressure upon green spaces and the inevitable impacts of traffic, pets, diffuse pollution, and the like, there have, arguably, been advances for the natural environment within our towns and cities over the past 30 years. The creation of hundreds of urban nature reserves and Community Forests, enhancement in the management of public green space and waterways for biodiversity, growth in gardening for wildlife, and the improved understanding (if not performance) of developers and planners in recognising and providing for biodiversity through the planning process, have all contributed towards this. These actions to improve urban areas for biodiversity are continuing to evolve to meet the demands of early 21st century Britain, through the promotion and adoption of sustainable drainage systems, green infrastructure, green roofs, sympathetic development practices, and questions over the future role of the Green Belt.[4] Policy is undoubtedly largely moving in a positive direction, and we can but hope that practice on the ground follows suit.

The current drivers for adopting these greening practices are twofold; adaptation to and mitigation for climate change, and, albeit more tenuously, health. Multi-functional greenspace, first articulated in the 1990s,[5] is becoming embedded in the jargon and slowly worming its way into policy and guidance. Whilst there are undoubted merits of designing and managing urban areas with a green infrastructure approach, this falls

short in one particular respect when viewed from Peter Taylor's perspective.[6] It appears functional, almost robotic, to be applied to reduce costs for, say, the future management of flood waters, or the supply of valium. Although "*urban [regeneration] experts love the future, they rarely think ahead*", and there is already a danger that an opportunity is being missed, as has been shown in the timidity of some of the future visions of the Green Belt.[7] Where is the 'wild heart'? It seems to have little of the essence that he and others might perceive as 'wild'; no room for nature to be unleashed from our utilitarian straitjacket.

Wild at heart?

Is it a fear of the uncontrollable, or ignorance of the art of the possible, that prevents urban planners, and perhaps conservationists, taking a leap of faith? Surely we must rediscover the 'wild heart' through promoting and encouraging a sense of wild(er)ness in the places where most of us live and work - in our towns and cities? Green infrastructure does not currently include this spiritual component nor the philosophical one of putting nature first, presumably because we think that the wild heart cannot - or more tellingly – can not be allowed to beat here.

But it can. Despite the increasing dominance of glass, steel and concrete in the centres of our towns and cities, and an approach to public space which appears to favour clean-lined squares and fountain-filled piazzas (but not necessarily demanded by the public), the wilding of our towns and cities, as we have seen, is taking place. This is not a wilding which will replace bricks and mortar with flora and fauna. It is one that enables the return of the untamed by restoring some of the ecological processes (naturalising rivers, for example) that will help make our cities more sustainable. It is a wilding that gives time and space to nature, and that celebrates 'the return of the native', as species once banished from the urban environment return to make the wild heart beat faster. For who can gainsay that the peregrine that stoops for pigeons over the Millennium Dome is any less wild than its cousin putting rock doves to flight over Celtic cliff-tops?

Inevitably the wilding of our towns and cities will be less extensive, less dramatic and perhaps less inherently 'natural'. However, it may be, in a botanical sense, more colourful, as plants from both within and without Britain take hold in ever more unusual mosaics - are the remaining sparse prairies of evening-primrose on the wastelands of south Liverpool any more manipulated than the machair of the Scottish isles? The colonisation of post-industrial land in the 1960s and 70s by a wide range of native and non-native plants was, arguably, a wilding (there was little guiding hand from us apart from preparing the canvas). Astutely championed by Richard Mabey for seeing what nature what was doing when we took our hand off the tiller, these places and processes took time for most conservationists to recognise, let alone accept, most probably because they involved species and places that didn't – and possibly still don't – fit in with what is believed to be truly natural. As Mabey remarked, "*no amount of human planning could have produced… the remarkable orchid colonies that [grew] up on the lime-rich chemical tips near the old soda factories of Manchester*".[8] Alas, these and many others post-industrial wildernesses – our 'unofficial countryside' - have subsequently disappeared or been landscaped into 'new' green spaces.[9]

Unless some non-natives cause economic or social problems, matters of a wild plant or animal's provenance will surely be largely academic; they are unlikely to be of concern to the wider public. In short, wilderness is largely about philosophies and processes, and in and around our conurbations any application of wilderness principles should be considering the palettes of wildlife that are already there – and likely to join in – whether they are 'old-school Brits' or 'foreign interlopers'. Purist applications of a wilderness founded on Celtic, pre-Roman or other ancient temporal contexts will undoubtedly fail if xenophobic – or, worse, anti-people – agendas are entwined in what at times can appear to be a distinctly anti-modern philosophy. Wilderness must be about now and the future rather than returning to a 'better' rural past.

And for our conurbations it should be no less wild. Overall the wilderness may be less fierce (but less scary?) than that planned for the remoter wildlands. And this wilderness may be more subtle; understood and appreciated by an experience of natural processes (flood, storms, seasonality, migration, etc.) rather than encounters with wild nature on the grand scale. Ironically, the challenges of climate change perhaps provide significant opportunities; "*it reward[s] imaginative lateral thinking [and an] awareness of the importance of giving nature room for manoeuvre*".[10] With the need to green our cities in order to make them more comfortable and to alleviate the impacts of extreme weather events, wilderness has a role to play if we are willing to take a gamble. Why not large herbivores and the odd, fleeting, parry from a big predator amongst a backdrop of windblown trees, and scrubby out-of-town wilds to bring back a bit of excitement on our fringes? In the Wigan Flashes, Don Valley north of Rotherham, the Wakefield coalfields, the Potteries, Tees Estuary, the Mersey Basin, and even the Thames Gateway, putting a bit of the wild into the mix might make a difference. Although if urban society is as unprepared for a light flurry of snow as it is a tornado or two (as in Birmingham and London in 2006), then the might and unpredictability of nature could kick back at attempts to bring a little wild(er)ness on a more permanent basis.

The debates and initiatives around implementing wilderness within Britain are exciting means to address the future of biodiversity and its relationship to modern society. In particular, the fears of an increasingly individualistic society disconnected from the natural world perhaps indicate that the nature conservation sector's emphasis on protecting what we've got (in short, emasculated, fragmented, e(xc)lusive and not that exciting) may not be that well-supported. Indeed, BBC's *Springwatch*, focusing largely on the familiar wildlife on the doorstep, and the media's attention on scare stories (e.g. leopards in Peckham), suggests that an element of the wild close to the home could be just the trick.

There is, of course, room for both the remote wilderness and the metaphorical wolf at the door. Indeed they are bound together; Taylor's vision for wildlands and his *crie de couer* for the 'wild heart' can only be achieved by encouraging wild imaginings in the urban mindset. For whilst we may never get to have an urban lupine experience within our lifetime, we long for nature's pawmarks in the city to become wild enough to put us in our place.

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Facing the predator – the inner drama

ECOS 28 (1) 51-55 (2007)

A playwright researching a play about the reintroduction of wolves to the Highlands writes about her growing engagement with conservation and its challenges.

SAMANTHA ELLIS

I'm surprised to find myself writing this. A year ago, the world of conservation was a mystery to me—let alone challenging conservation.

I was researching Leviathan for a play I was writing about Noah's Ark when I came across a website on which Aboriginal women were campaigning against conservationists who wanted to reintroduce the crocodile to a nearby river. The women didn't want the crocs back. They'd been glad when the last one was killed. Now they feared for their children.

Encountering the concept of faunal rewilding

It was the first time I'd encountered the concept of faunal rewilding. My Leviathan research had also turned up David Quammen's book Monster of God. He argues that we need the crocodile, and other predators. In caging, fencing and hunting our alpha predators to extinction, we have lost a sense of ourselves as prey, and we have become disconnected not just from the food chain but from the circle of life. He quotes a Transylvanian shepherd who calls the bears, for all they eat his sheep, the treasure of the forest, saying "A forest without bears—it's empty".

There seemed to be a play in all of this—particularly when I found out that faunal rewilding was a possibility closer to home. I'd been vaguely aware of the beaver debate, but only as a half-serious story on the end of the news. I live in London and it's easy to be completely ignorant about conservation. I had no idea that the sea eagle had been reintroduced to Scotland, nor that the beaver debate was still raging, nor that anyone would want to bring back anything else. As I started finding out about this, a

director asked me to come up with ideas for the Edinburgh Fringe. I saved a document on my computer as "faunal rewilding" and I was off.

What attracted me to the subject was that I couldn't understand it. I've always been scared of predators. I'm not even very good with dogs. I've never had a pet apart from goldfish. I've almost always lived in London, far from anything that could be considered to be wilderness or even wild land. So it was really hard for me to understand why anyone would want to reintroduce predators.

Of the creatures on the list of potential reintroductions, it was the wolf that scared me most. I could see that the charismatic megafauna were just that—charismatic—but not why anyone would want to bring back creatures that might kill people. It seemed perverse—a forced return to a harsher, more terrifying past—and I couldn't think about wolves without thinking about Red Riding Hood. They were—they are—our iconic monster. Here are some of the things my friends said when I told them there were people campaigning to bring the wolf back to Scotland:

"Why would we want to bring back wolves? We turned them into dogs…"

"They eat children, don't they?"

"Have these people seen Grizzly Man?"

"Isn't Scotland full of sheep?"

A friend who grew up in the Highlands, when I told him, said that if wolves came back, it would mean that when he went hillwalking, he'd take a gun. Certainly there was no shortage of opinion on why we *shouldn't* reintroduce the wolf.

When I watched *Grizzly Man* I felt much less in sympathy with Timothy Treadwell calling the bears "my animal friends" than with Werner Herzog telling us in voiceover, "I believe the common denominator of the universe is not harmony, but chaos, hostility, and murder." Despite the shock of the film, I couldn't shake the feeling that bears were less terrifying than wolves. But the moment where Treadwell's mother is filmed hugging her dead son's teddy bear got me wondering whether I'd feel differently if I'd been given a teddy wolf as a child.

Learning to like the wolf

I read Barry Lopez's *Of Wolves and Men* on the promise that it would make me see the point of the wolf. I didn't think it likely I would change my mind. Every time I saw the cover with the wolf staring out, its yellow-green eyes wild and strange, I felt chilled. Lopez begins in a cabin in Alaska where *"the cold sits down like iron, and the long hours of winter darkness cause us to leave a light on most of the day"* and takes the reader out into the "gray daylight." He urges us to *"Go out there. Traveling for hours cross-country you see only a few animal tracks. Perhaps a single ptarmigan or a hare. Once in a while the tracks of a moose. In the dead of winter hardly anything moves. It's very hard to make a living. Yet the wolf eats. He hunts in the darkness. And stays warm. He gets on out there."*

I so wanted to resist Lopez's invitation to go into the cold and darkness where the wolves are. I didn't want to like the wolf. But by the end of the book, I began to see why people might be fascinated enough by wolves to want to bring them back to live among us. It was being able to get a glimpse of this perspective that made me think I might have a play.

Next, I re-read Clarissa Pinkola Estés' *Women Who Run With The Wolves*. She's writing counter-myth, recasting the wolf as a symbol of the wildness we (women particularly) have lost. As a teenager, I read it as a sort of self-help book in being tougher. This time round I argued with word of it. She seemed to want me not just to like the wolf but to empathise with wolves. To want to be one. She argues that as wolves were hunted, and paradise was paved, so women's wildness, instincts and passion were preened and crushed and tidied away. *"We are all filled with a longing for the wild,"* she writes. *"We were taught to feel shame for such a desire ... But the shadow of the Wild Woman still lurks behind us ... No matter where we are, the shadow that trots behind us is definitely four-footed."* A few chapters in, I start to see her point too.

I still couldn't imagine why someone would actually want them out there. Not in my backyard. Not even in Scotland. Wolves can run at up to 40 miles per hour. Only when they're on the hunt, only for short sprints, but nonetheless, the Caledonian Sleeper's average speed is only twice that. It wouldn't take long for them to get down south.

I went on to the internet to find the people who really did want to reintroduce the wolf. I wanted to find out why, but I also wanted to know how. Was it, I wondered, possible to do such a thing? Could it happen? If I was going to write a play, I wanted it

to be a what-if play, not a total fantasy. I wanted it to be about something that might actually happen, just as it had in 1995 when wolves were reintroduced to Yellowstone Park.

My thinking on predators was still pretty limited. The word conjured images of slavering beasts with enormous teeth. The Tooth and Claw questionnaire at www.toothandclaw.org.uk points out that Britain's 6 million pet cats kill 270 million birds and small mammals every year. On the Wolf Trust's website, I read that when the last wolf in Scotland was killed in 1743, people still believed in witches—I started wondering whether our fears of wolves are equally ill-founded. And after all, how scared was I of wolves? I was advised to go to the Anglian Wolf Society where people who'd had nightmares about wolves all their lives had found themselves in tears, hugging a wolf. I still haven't been mainly because hours after scoffing at the notion that I'd have a nightmare about wolves I watched Angela Carter's The Company of Wolves. Despite the schlocky sound effects, the animatronic wolves and plastic bats, that night I dreamed a wolf burst through my window.

I'd been talking to people who wanted to reintroduce wolves, calling up and trying to find out why, but it was still a shock to go to the BANC and Wildland Network event 'Scary or What?' and find myself in a room with 80 people who mostly wanted to bring back wild predators. For me, the most startling moment was looking at David Hetherington's feasibility studies on the lynx and seeing that the lynx was, in fact, feasible. When I'd booked my place, I'd feebly booked the field trip to look at the Lower Mill Estate beavers. But when I got there, I realised I had to try and face my fears. A few hours later, I found myself looking for wild boar. I didn't know whether to be relieved or disappointed that the closest we got were some hairs stuck in a tree.

A couple of weeks later, I saw wild boar for myself. I was in the Highlands and I visited the Alladale estate, where the plan is to create a fenced-off wilderness reserve for everything from the red squirrel to the bear. A posse of wild boar were already in residence and I forced myself to walk into their enclosure. I'll admit I was still scared of them but I had done it, gone in among them, and I felt exhilarated.

Endangered Mexican wolf (Peter Taylor)

Why write a play about it?

I was mainly in the Highlands to research the other point of view. I heard sea eagles called “shitehawks”, I visited wolf stones marking the spots where notorious wolves were killed, and most of all, the people I talked to wanted to know *why*. Why would anyone want to reintroduce the wolf? They were asking the same questions I’ve been asking, and am still asking. I’d never want to write a play where I came down firmly on one side of an argument. It’s the trying to understand both sides that appeals to me, and I hope this means that the plays I write end up giving audiences a chance, through the characters, to feel things they don’t usually feel and to think things they don’t usually think, to rehearse choices they might make in real life. Theatre might not be much good in a campaign or in conflict resolution but perhaps it can contribute to what I’ve heard called conflict transformation.

If this all sounds a bit grand, I also think theatre’s an exciting place to explore faunal rewilding because I realised when talking to conservationists in favour of reintroduction that our disciplines are not so very far apart. There is a clear parallel between opportunity-mapping a landscape and asking an audience to imagine they are in another place. The consultation conservationists do before making changes to a place is not a million miles from a playwright inviting an audience to enter into an imaginative complicity.

I wonder how much of the campaign for faunal rewilding is about engaging with imagination rather than intellect. I was fascinated, at BANC’s workshop on big cats and Britain’s ecology, by the tension between the desire to prove that big cats are out there, versus a desire to preserve the mystery. When it comes to reintroductions, members of the Wild Beasts’ Trust have claimed that they have already reintroduced lynxes to the Borders and have wolves ready to go. They say that a guerrilla reintroduction would mean that the wolves would be truly wild—not radio-collared, not GPS-monitored, not counted out by biologists. It would also mean that they were wild in the way that big cats might be. We wouldn’t be certain that they were out there at all, but the possibility might reconnect us to the wild. Maybe we don’t have to reintroduce the wolf at all—maybe we just need to believe that they are out there.

Of course, this is a writer’s view - the view of someone who spends too much time imagining things and too little time experiencing them. I’ve just finished a draft of my play and while I hope I know how my characters feel about reintroducing wolves to the Highlands, I am less clear on my own feelings than when I started. One thing is different, though. All this thinking about the prey and predator relationship and the place of man in the ecosystem and the food chain has changed me. Recently I ended eighteen years of being a vegetarian: I took a bite of beef and became if not a predator then at least a carnivore, and a tiny step closer to the wolf.

A version of this article was first published on www.ashdendirectory.org.uk, an environment and performance website. Please see the website for updates on the making of the play and performance dates.

Native behaviour – the human and land-use implications of returning key species to Scotland

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Feedback from participants at the recent 'Wild, free and coming back?' conference raises a range of issues to do with human-wildlife relationships and points to possible ways forward in returning key species to Scotland.

STEVE CARVER

Chairing a conference as opposed to participating as a delegate can give one the opportunity to step back from the nitty-gritty of the debate and take a wider view from the podium. This article is my own attempt to summarise and make sense of key debates at the 'Wild, free and coming back?' conference, jointly run by the Wildland Network and Trees for Life in September 2008 to consider the return of key species in Scotland. After some thought provoking talks by speakers, delegates considered key issues pertaining to reintroductions in six groups, each focusing on one of the following issues:

- Perceptions of predators
- Livelihoods from reintroductions
- Farming and forestry issues
- Game issues
- Community-based reintroduction projects
- Ecosystem restoration – how reintroduced species can drive it

While it is not possible to summarise here the full breadth of debate on each of these points, below I have pulled together a few of the main themes that give a flavour of the richness of this debate.

Perceptions of predators

The British public has very mixed opinions about its predators. On the one hand we are fascinated by them, being avid watchers of TV wildlife programmes, and are keen that countries with remaining populations of big cats, bears and other top predators do everything in their power to protect and promote their welfare. On the other hand we, by and large, do comparatively little to protect our own indigenous predator species; witness the fate of the Scottish wildcat of which there are only about 400 left. Indeed, we have, as a nation, systematically persecuted our predators over the centuries to worryingly low numbers and in many cases to extinction. Some continue to do so today. There is a clear need for more research on reintroductions, particularly on predator-prey relations, habitat requirements and human-wildlife interactions that will address our lack of knowledge, not only of the species themselves, but also our relationships with them. It can be argued that the stumbling blocks to reintroductions are largely human ones and that the ecological conditions are already fit for lynx[1, 2] and for wolf.[3] Fear, prejudice, and a lack of clear, unbiased information from non-partisan sources are all at fault in creating these barriers. If we are to move forward in predator reintroductions we need to work hard to remove these and create a level playing field for meaningful and productive debate. Finding the common ground (if such a thing is possible) is an essential pre-requisite for reintroductions at any scale. One way to achieve this is through better education as to just what predators are, what they do and how they can help improve the functional landscape of Britain. This should start in schools at a young age, but extend to all demographic levels as needed. This can be achieved in numerous ways such as positive reporting in the media and creative programming on TV and radio, but there is no substitute for direct experience through close contact with the animals themselves, for example through wildlife parks such as *Wildwood* in Kent, and the *Highland Wildlife Park* on the edge of the Cairngorms, or travelling 'wildlife displays' such as the school visits run by the UK Wolf Conservation Trust.

Livelihoods from reintroductions

Whatever education initiatives and targets are pursued it is likely that there will be strong resistance to reintroductions from some, if not many, amongst the farming, forestry and game lobby. This is not without due cause because livelihoods are potentially at risk through economic losses due to livestock predation, crop damage, and the like. The example of the long-running saga of beaver reintroductions in Scotland is a good case in point.[4] The answer here is to legislate for a system of financial incentives that will make the presence of predators in the landscape economically advantageous, for example, through increased tourism and visitor revenues or government grants and payment schemes. This has been shown to be successful in other European countries (e.g. Sweden) and could be successful here.

It is crucial that the necessary infrastructure is built to make the most of revenue potential from wildlife watching. Such facilities will include visitor centres, car parks,

catering services, interpretative trails, hides and captive viewing areas. This should involve land managers from a very early stage to ensure the right facilities are installed in the right places such that they are well placed to capitalise on both direct and indirect spin-offs from increased tourism. Valuable lessons can be learnt from the history of sea eagle reintroductions on the Isle of Mull in this respect where wildlife tours and bird watching safaris have become part of the local business culture. There is a clear need for an advisory service to support the development of local and regional wildlife economies where reintroductions take place. The FWAG (Farming and Wildlife Advisory Group) model of trusted advice may be relevant here. Such a service could provide advice and outreach to farmers, land managers, land owners, businesses and local government on how best to adapt to the inevitable changes that reintroduced species will bring and how to capitalise on the associated opportunities.

Farming and forestry issues

Reintroductions can bring concerns about physical and economic damage to farming and forestry operations, although predator populations are actually more likely to bring associated benefits from reduced herbivore populations due to predation and changed behavioural dynamics. Nonetheless, farming and forestry operations may see new and unexpected costs associated with reintroductions, for example in livestock protection, ensuring public safety and the employment of wildlife rangers or wardens. Farmers are often regarded as stewards of the land and therefore managing reintroductions could be a logical extension of that role, in overseeing changes to the landscape that reintroductions might bring. Connectivity of wildlife habitats is a key issue in creating a landscape that is more 'permeable' to wildlife, that allows free movement of both predator and prey species across the country, along corridors between core natural areas and around or over obstacles such as transport routes, urban, industrial and intensively farmed land. The cooperation of all land owners is essential here together with appropriately designed and located infrastructure (e.g. eco-bridges), though legislation will be needed to modify planning policies and provide the funds for capital projects. This approach has been successfully demonstrated in the Netherlands and adjoining partner countries in the Pan European Ecological Network (PEEN).[7] Nonetheless, experience has shown in regard to existing reintroduction success stories such as the sea eagle, osprey and red kite, that local involvement and commitment is required to ensure a successful and uncontested outcome.

Game issues

In many respects the game lobby promises to be the most difficult nut to crack. For hundreds of years game interests in the British Isles have focused their combined might on eradicating the countryside of its predators and other 'pests' so that man would have no competition in his quest for good game or high crop yields. This started on a large scale with the Tudor vermin laws and has continued largely unabated into Victorian times and up to the First World War. It still persists even today in the hardened attitudes of some old-school land managers who believe the countryside will be better off without its eagles, badgers, otters, pine marten and wild cats. This arises out of the entrenched and erroneous view that less predators equals more game. I am reminded of the words of Aldo Leopold (again) at this point when he realised that fewer wolves did not necessarily mean more deer and hunters' paradise because removing natural predator control merely passes the job onto humans who are unable to keep pace with prey species' birth rates leading ultimately to over grazing and poor quality hunting stock. Of course this is, ecologically speaking, rather a simplistic view but in general, the practical experience usually shows that things never go right for an ecosystem after the removal of the upper tiers of its biotic pyramid.

Despite legislation providing legal protection to the rarer predators, views on predators do remain somewhat polarised and wildlife crime persists in some areas (e.g. illegal poisoning of golden eagles and shooting of hen harriers). It is of course, not all doom and gloom as we have seen some great steps being made toward increasing predator populations. For example, otters are increasing in number and spreading back into their old haunts and are even showing up in urban catchments. Any change must be shown to have clear economic benefits, however, as landowners will not tolerate additional cost, especially under the current fiscal climate. Greater emphasis needs to be placed on new revenue streams such as might be found from improved quality of existing stock, improved quality of the hunting experience and the availability of new target species (e.g. boar hunts). In addition, headway must be made in stressing the beneficial controls larger predators have on the numbers of lower order predator species. For example, it has been shown from research on the continent that lynx can control fox populations[5], while otters have a similar effect on mink. In this manner, the game lobby can and must be brought on board and so become a powerful ally and an informed advisor in species reintroductions. See Dave Blake's article in this issue for a longer discussion on the game issues.

Community issues

History tells us that the reintroduction projects most likely to succeed are not necessarily those backed by good science and strong legislation alone, but those that are organised and led by local communities (e.g. osprey reintroductions). Community owned reintroduction projects are the way forward, as without community backing (including the farming, forestry and game interests mentioned already) the outcome is uncertain at best. For this to work, economic benefits need to be seen to be distributed widely throughout the community be it through government incentives, new

infrastructure, tourism income, trickled-down effects and direct and indirect employment. Again, history has shown that if communities really go for it then they are unstoppable, even in the face of government uncertainty and antipathy, and distributed wealth creation will ensure widespread support.

Ecosystem restoration

Ecologically speaking, whole ecosystem restoration that combines landscape-scale habitat restoration with species reintroductions makes perfect sense, with benefits accruing to all sectors and at all levels. For example, interest in the trial reintroduction of beavers in Scotland has opened up the debate on riparian issues, salmon fisheries, forestry and hydrological processes. Environmental resilience and ecosystem services are two important themes here. Diverse and spatially connected ecosystems that are well aligned and integrated with our productive and urban landscapes are likely to be more robust to external forces such as climate change. Building this kind of resilience into the landscape mosaic will be important in helping both humans and nature adapt to changes as they occur. At the same time, natural areas provide additional benefits in the form of ecosystem services such as carbon sequestration and storage, flood water retention and groundwater recharge, nutrient and sediment stripping and protected clean water supplies, habitat and wildlife protection, environments for tourism and recreation, etc. All these facets of ecological restoration, including reintroductions, need to be packaged and carefully marketed in a way that leaves no doubt that the overall benefits outweigh the costs. In many respects, we already have a good idea about habitat networks and big ecosystem opportunities, especially from lessons learnt abroad, and can therefore be opportunistic in regard to influencing policy development and implementation in the UK. It may be that we can effectively piggy-back whole ecosystem restoration onto higher profile initiatives to reintroduce charismatic species. These are more likely to grab the public imagination than tree planting or river restoration schemes, and yet these will necessarily form part of the reintroduction programmes.

Sooner or later…?

A great deal of expertise and experience was brought to bear on the topic of species reintroductions at the 'Wild, free and coming back?' conference, and these notes are merely a summary of that discussion. Standing in at the edges of some of these conversations it seems clear to me that there is a great deal of enthusiasm among the (albeit self-selecting) people who promote the worth of reintroductions. Looking further afield it is possible to identify a much wider constituency of stakeholders who might not be so enthusiastic or, in some cases, will be down-right hostile. These are the people who we need to engage with in a much wider ranging debate to see if we can identify common ground and establish a consensus based on a clear exchange of facts and exploration of the benefits and opportunities afforded by ecosystem restoration and associated reintroductions. Amongst the general public I feel confident that there is sufficient existing interest and support for wildlife and countryside issues that we might term 'the SpringWatch' factor. Further careful media programming, government backing and education will bring a great many of these people firmly on board in due course, if they are not on-message already.

Two speakers at the conference gave very different challenges on the timing of reintroductions. Alan Watson Featherstone of Trees for Life laid down some carefully considered and detailed timelines for the reintroduction of beaver, lynx and wolf into selected areas of the Scottish countryside. These were based on the idea of 'back-casting' or identifying the milestones needing to be achieved and steps taken in order to reach the overall aim of a successful reintroduction at some specified point in the future (e.g. first wolves reintroduced into the Highlands in 2043). Roy Dennis was more blunt, saying that we just need to get on with it... now. I suspect they are both correct, as the lead times will be quite lengthy as we have seen with the beaver. In the meantime, while we prepare the ground for practical actions on reintroductions there remains much work to be done in conserving current populations of rare and endangered species such as pine marten, wild cat and capercaillie. With limited resources, the question inevitably arises as to how we might prioritise complementary conservation and reintroduction activities. Community-led programmes may well be the most efficient and successful approach so long as they are backed up by clear and strong government policy and well-funded systems of financial support that are underpinned by the EU Habitats Directive and linked legislation. It is then up to the rest of us to provide support 'in kind' be it through giving of our time, muscle, expertise or custom.

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Rewilding the political landscape

ECOS 30.3/4 (2009)
Rewilding has been branded a political gimmick by some. In fact it represents a grass-roots shift in thinking towards creative landscape-scale conservation with multiple benefits.

PETER TAYLOR

Whilst rewilding has seemed too daring for some NGOs and agencies to embrace, politicians have not been so cautious. David Milliband flagged it first in a speech when he was environment secretary, and Hilary Benn, his successor, endorsed the concept as a new way forward in conservation at Labour's 2009 party conference (Jonathan Leake, *Sunday Times*, 27 September 2009). Some journalists dismiss the notion as a political gimmick demonstrating a lack of appreciation of the real issues in the countryside (Terence Blacker, *The Independent*, 30 September).

Over the past five years, the Wildland Network has initiated a series of regional seminars and exchanges to promote the initiatives of the National Trust (e.g. at Ennerdale[1] and Wicken Fen[2]), the Forestry Commission (Ennerdale and Glen Affric), the Woodland Trust, RSPB, the Wildlife Trusts and the public subscription projects of Trees for Life[3] and Carrifran[4,5] as well as individual landowning developments in Alladale[6,7] and at Knepp Castle Estate.[8] Additionally the Network has focussed attention upon the restoration of key species, such as wild grazers and their predators.[9,10,11,12,13] Thus the 'rewilding' wave is not a new political gimmick but a response by government to this new wave. A Wildland Research Institute has been launched at Leeds University and there are ongoing studies at Aberdeen University on the potential for wolf re-introduction in Scotland. (wolvesandhumans.org and see also Paul Eccleston, *Daily Telegraph*, 29 November).

In the agricultural wilderness

In eastern Britain, fenland and coastal marsh restoration projects co-exist with high production wildlife-free zones, creating a potential mosaic. The recent recolonisation of the region by the common crane, a large bird that requires disturbance-free nesting zones more readily associated with Scandinavia and Eastern Europe, is an indication of major progress toward wilder land.

The trends toward intensive agricultural production and the concomitant loss of wildlife on both arable and pasture land can be partly addressed by smaller scale mosaic approaches that make use of wild headland, margins, coastal strips, streamside and corridors, using extensive grazing by special breeds and targeted subsidy. In this strategy, even the wildlife-deserts of the grain-belt can be improved without significant loss of production, employment and changes in rural life. No one is advocating wolves in East Anglia, Dartmoor or Exmoor, but with the Forestry Commission now officially admitting they have feral panthers in the Forest of Dean,[14, 15] and lynx being regularly sighted across Britain, including in the Mendips[16], there must be a case for official return of Eurasian lynx, especially in regions afflicted by an over-abundance of roe and muntjac.[17]

Progress in this area would be made much easier if land-owners could get payments for any acreage taken out of production and given over to this kind of 'neural network' of connectivity.[18, 19] Where such networks acted as corridors between core reserves, the latter might contain wild grazers such as free-ranging cattle, deer, ponies and boar.[20] We would encounter issues of road-safety, disease control, pedestrian safety and public rights of way[21], as well as crop damage and given the over-developed Health & Safety culture, prospects are perhaps not so good, but then rewilding also has to be extended to the human psyche.[22] In Romania in the mixed landscape of the Carpathians, I was struck by the absence of fences and warning signs – even in the towns where road-works presented dangerous holes to the unwary – the whole culture was wilder in the sense of not so incredibly uptight about risks. If you have bears in the woods, the best protection comes from a cultural knowledge (and acceptance) of the risks, not fences with warning signs to the uninitiated.

But again, in the English *farmed* landscape, wolves and bears are not a prospect, and though lynx might be, the main concern is with bird species, flowers, insects, rodents, amphibians and reptiles. The sea eagle in East Anglia might pose more of a challenge given its (undeserved) reputation for taking lambs – but this is (again) more of an issue of education and responsible media-coverage.

These issues are topical. A recent seminar by the British Ecological Society and Flora Locale tackled the theme: would it be better to have separate land for wildlife, or have more wildlife-friendly farming methods? The event took a closer look at the prospects for rewilding agriculture but positing the false dichotomy of reform versus separation. An eclectic mix of speakers attempted to come to some conclusion. It was clear to me that farmers, an example being Robert Sutcliffe near Winchester, who leave large field margins, cut hedges at the right time, eschew silage for hay and who farm for quality – whilst also supplying TESCO, can achieve a great balance. His operations are

clearly economic yet he maintains the biodiversity of farmland typical of three decades ago. He works with satellite-based precision drilling and fertiliser techniques and has reduced nitrogen dressing fourfold.

Tim Benton, presented the million Euro results of his models at Leeds University showing that organic production would not necessarily benefit wildlife – contrary to every expectation drawn from previous studies, and this encapsulates the problem. Defra and the EU fritter ever more funds away on computerised assessments (with dubious methodology) at academic institutions, rather than the footwork of networking best-practice followed by communication at a grass-roots level. What is clearly required is a cultural shift – and neither they nor the academics are capable of leading such or nurturing it.

Equally, a cultural shift in diet and purchasing habits would cause huge differences to the analysis of conflicting land-use for food and biofuels. With world population set to add another billion mouths to the nearly seven billion of today within the next 10 or 15 years, and the EU pressing biofuel targets upon the same cultivation area, the prospects for wildlife on farms and even marginal land, do not look good. However, the degree of intensification required also depends upon the market for meat products – which consumes seven times the land directly needed for vegetable protein. Simon Fairlie presented some intriguing, if rough, calculations on organic/chemical and meat/vegetarian/vegan alternatives. As livestock pastures are lost to arable there are gains for woodland and hence the potential for wildland. Patrick Whitefield showed how highly productive permaculture units as small-holdings could repopulate the land and also create small-scale havens for wildlife.

Climate-change reared its all-pervasive head, with Defra concerned for food security as well as low-carbon farming and ecosystem services such as carbon sequestration and flood alleviation, but there was no detailed assessment of how biofuel or woodchip targets would be met and what impacts are expected – largely because the targets have been set without any such assessment. Agriculture in general aims to reduce its carbon footprint by 30% by 2020, but apart from the advantages of restoring soil carbon and organic/permaculture systems that have less reliance of fossil fuels, mainstream farming is fossil-fuel intensive though mechanisation, fertilisers and pesticides and it is hard to see how production can be maintained as systems revert to less intensive energy use.

The question uppermost in my mind remained unresolved: is it better to separate wildland (and biodiversity issues) from agricultural land – including within the same farm? This boils down to answering how effective have agri-environment schemes been at halting the loss of biodiversity, and from the limited analyses on offer, I could not discern an answer. The higher-level schemes of subsidy are voluntary and still a small proportion of farming operations, whereas the more pervasive entry-level schemes offer little that is convincing. Nothing at this meeting convinced me that separation was not the best way forward – and that this would work either as part of the farm's own zoning, or as a targeted purchase strategy on the part of wildlife groups.

Rewilding and conservation: are they at loggerheads?

In my own neck of the woods in the South West there is a good example of the opportunities for wildlife groups to purchase strategic agricultural land. On the Somerset Levels just west of Glastonbury lies the Avalon Marshes project. In this area of flooded peat workings, the RSPB, Natural England and the Somerset Wildlife Trust own several contiguous patches of land covering several thousand acres. The project has created a nationally significant amount of reed-bed interspersed with open pools, alder woodland and adjacent wet pasture with ditch boundaries. Recently the Hawk and Owl Trust purchased over 100 acres of former arable land adjacent to the National Nature Reserve at Shapwick toward the western end of the marshes.

Is conservation wild enough?

This purchase well illustrates the forces at work that counter wildland initiatives. First, several kilometres of new barbed wire fences were erected and the culverts repaired. A small car-park was created, with new gates and information boards. The arable land was to be grazed by sheep and cattle – domestic, of course. On my last walk down the long and now wired-in drove I was led right up to an ancient oak with a large gabled box conspicuously hammered to the trunk. It sported a neat little perch. All that was missing was a sign saying 'Owl's House'.

The Levels are nationally important for their Barn Owl populations, hence the interest of the Hawk and Owl trust in buying land, with the aid of numerous charitable foundations. A good proportion of the population is maintained by such nest-boxes. I was interested, therefore, to attend a talk given by the naturalist Chris Sperring, conservation officer for the Trust, entitled 'Is conservation wild enough?' In his soul, Sperring clearly didn't think so, but he outlined the advantages of HLS payments per acre of land as long as it was grazed in an environmentally friendly way. The Trust gets an income stream. He felt that this also made scientific sense in that nutrient rich arable land would gradually be depleted and returned to herb-rich pasture. Currently, there are no specific schemes whereby land such as this could be turned over to non-agricultural

use or wild-grazers. It would require NE to bend the rules – which we know it sometimes can, but more, for landowners like the Trust to know what is feasible. For example, Charlie Burrell managed to do a great deal on 3000 acres of the Knepp Estate in Sussex with English Longhorns, Exmoor ponies and Tamworth pigs.

How far could we go in an environment such as the Levels? Or elsewhere in England such as in the Great Fen project. How far is the Knepp estate a useful pilot? What projects might succeed on Dartmoor, Exmoor or the North Pennines, with greater potential for landscape-scale projects? And in Wales, in the Cambrians or Snowdonia? Or in Scotland – with much larger contiguous land-holdings in Glen Affric, Alladale and the Cairngorms, where there are some very significant private sector initiatives.[23]

Wildland values extend beyond biodiversity

The pitfalls of biodiversity indices and targets have been well rehearsed in *ECOS*. Yet, in many discussions I witness there is little appreciation of the limited meaning of the numbers and the operation of species and specialist bias. Thus, the same old arguments resurface about rewilding compromising biodiversity targets. The theme lay unacknowledged in Tim Benton's study which compared organic farms with the same land category, region and farming mix as non-organic – which was probably scientifically accurate, but if the starting base is in the middle of an East Anglian prairie then a farm with lower inputs into such an artificial and wildlife-poor environment could well register less biodiversity. The study aimed at correcting a bias created by most organic farms being in the west and most conventional equivalents being in the east of the country – all very academic, but of little help in deciding whether an organic policy would have overall benefits for biodiversity.

he key issue so often not addressed by groups focussing upon biodiversity and established 'conservation' concerns, is that defining wildlife is a cultural issue as much as a scientific one, and even the science contains often unacknowledged cultural bias. The value of wilder cultural landscapes (as in Ennerdale), rural crafts, traditional farming and forestry, eco-tourism and the health and educational benefits that accrue to people's welfare are as important as the conservation of individual species or habitats. At the other end of the spectrum, there are large holdings of 'wildland' with very little of the original flora and fauna remaining, yet they have strong appeal in the absence of obvious human artefacts - as the John Muir Trust demonstrates. These large wilderness areas are candidates for interventionist rewilding with the return of seed-trees and eradicated species – as in the Trees for Life vision for Glen Affric.

Other large area initiatives demonstrate techniques of wildlife-friendly land use more appropriate to buffer zones and corridors: for example the extensive farming and forestry in Ennerdale, where stands of exotic conifers have been removed and fell-sheep replaced with cattle breeds capable of roaming both forest and moor. This joint National Trust and Forestry Commission plan does not have a fixed end-point. It starts from where the land and the people are now and moves at the community's pace in a generally wilder direction, but it is adjacent to other FC and NT holdings and the prospects are there for a very wild core area to be developed if funds could be made available for a transition from traditional practices to wild grazers and perhaps even the lynx as predator.

There is a recurrent theme in discussions on these potential core areas – a tendency to think *either/or* as if any new idea or pilot implies a complete rethink (and funding scheme) across all sites. It doesn't of course. There is a great deal of sense in targeted grant schemes available for selected areas, such that they do not compromise or interfere with other areas where practices might have other objectives – for example, in the maintenance of heathland by domestic grazing.

Rewilding conservation

So, what are the prospects for a rewilded conservation sector being given a better political environment? People are more questioning of scientific authority when they see it led so often by corporate goals and managerial convenience coupled to specialist interests they cannot comprehend. There is greater popular defence of the grey squirrel than would have been anticipated, as also with Sika deer and other aliens that are well suited to cultural landscapes. As conservation groups have reached out and won broader public subscription they are, perhaps, having to take on public rather than specialist values. This can be a double-edged sword, however, and as with the eradication schemes for hedgehogs in the Hebrides, the balance can be awkwardly tipped by lack of ecological understanding.

The problem with conservation is not just a matter of getting the right subsidy regime – it lies with the mentality of management, goals, corporate structures, econometric minds and the whole language of ecosystem services and the 'customer' paradigm that goes with these times. Bill Adams[23] picked up on this in last edition of *ECOS* and it is heartening to see academia taking a stand, but the conservation sector is now big business, accounting for £500m of expenditure in the countryside (about five times the whole upland subsidy for Wales), and whilst that presents a tremendous opportunity, it also constitutes a major constraint. If we are going to move beyond the

pilot projects we have monitored for the past 10 years, conservationists are going to have to go wild themselves! Someone has to start taking risks, and pursue the prompts from Labour Environment Ministers.

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