

The Bulletin

YOUR MAGAZINE FROM THE BRITISH ECOLOGICAL SOCIETY



British Ecological Society

inFOCUS

Photo: Benjamin Magana-Rodriguez

Long exposure photograph showing the Cardon Pachycerus pringlei with star trails in the clear night sky



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August 2014

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PUBLISHING IN THE BES BULLETIN

The *Bulletin* is published four times a year in March, June, August and December. Contributions of all types are welcomed, but if you are planning to write we recommend you contact one of the editorial team in advance to discuss your plans (Bulletin@BritishEcologicalSociety.org).

Material should be sent to the editor by email or on a disk in Word or rtf format. Pictures should be sent as jpeg or TIFF (*tif) files suitable for printing at 300dpi.

Books to be considered for review should be sent directly to the Book Reviews Editor Peter Thomas.

Cover: This photo of a rock agama by Mick Hanley was entered for a previous BES photo competition. Entries are now open for the 2014 edition of this popular event.

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WELCOME

So, what has the BES done for us?



It is hard to believe that a year has already gone by since the International Congress of Ecology was held in London. INTECOL was not the largest gathering of ecologists in 2013, but it drew delegates from the widest range of countries and offered the most illuminating band of plenary, thematic and other speakers of any meeting in recent times. I wonder how many new ideas were fomented, what new collaborations were instigated, how many students went home committed to a career in ecology and how many senior ecologists were reinvigorated by the enthusiasm all around them? The Congress was a central plank of the Society's centenary celebrations and naturally features as a focal point in Council's report to the members for 2013, which begins on p58. Yet the meeting takes up quite a small proportion of the report because of the many and varied activities that your Society pursues: publishing; promoting ecology and ecologists; supporting an ambitious and varied portfolio of meetings; supporting and contributing to education and capacity building; promoting the use of ecological science in policymaking; building partnerships with like-minded Societies and groups; all while ensuring the long term stability of the organisation. It is brilliant that so many of you support the BES with your subscriptions, by submitting your papers to our journals, by giving time to serve on committees or to attend BES meetings. If you take the time to read the report and accounts you'll see what an outstanding effort the Council and executive staff are doing to run an effective, efficient and innovative Society.

Elsewhere in this issue Bill Sutherland focuses on the role of monitoring in a time of rapid change (p5). There is a substantial group of Science Policy contributions beginning on p10 and these segway into the Special Interest Group news via James Pearce-Higgins' report (p16) on the launch meeting for the Climate Change Ecology SIG.

In the June Bulletin Peter Thomas urged readers to consider ways in which ecologists can take their subject to a wider audience; by coincidence Peter Levi contacted me to ask if we could publicise his survey of how and why ecologists communicate our science outside the ecological peer group. Peter will report back on

the findings of this international survey so I'm happy to encourage you to participate in the survey: see page 29 for details.

You'll see from the Council report how important journals are to the BES. To provide a bit of background to the publishing that underpins the scientific credibility and financial strength of the Society, Emma Sayer undertook to conduct a set of speed interviews with BES journal editors. 'Speed interviews' are so called because the questions are short and few in number, in keeping with asking a favour of busy people, and we rather hoped that these would arrive in time to be included in the December issue. The velocity with which responses arrived back astonished us (p30). If you want to know what it takes to be super efficient, at the forefront of research and have the judgement of Solomon, read on. I think it is sheer coincidence that the next article is Emma having a Rant (p33); don't miss Buzzword bingo provided for your amusement during future meetings. There are also a couple of responses to earlier rants; Keith Alexander offers what might best be described as a robust response to last December's 'Leave it Alone' (p36) followed by Mick Green's rather gentler views on the earlier contributions.

Simon Queenborough wrote a fascinating series of pieces for the Bulletin on the secrets of successful ecologists, profiling some of our most productive colleagues in the search for a secret formula. I miss those contributions and for anyone with similar views Richard Hobbs' latest musing may fill the gap (p39). It takes considerable effort, intellect and skill to hone a stellar career spanning Scotland, California and Australia (Richard tells me), but serendipity and the willingness to take a chance clearly lends a hand. Young ecologists in search of a career path, read and take inspiration. And make sure you read the footnotes (p41).



Alan Crowden / Editor

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The British Ecological Society is the oldest ecological society in the world, having been established in 1913. Since 1980 it has been a Registered Charity limited by guarantee. Membership is open to all who are genuinely interested in ecology, whether in the British Isles or abroad, and membership currently stands at about 5500, about half of whom are based outside the UK.

The Society holds a variety of meetings each year. The Annual Meeting attracts a wide range of papers, often by research students, and includes a series of informal specialist group discussions; whereas the Annual Symposium and many other smaller meetings are usually more specialised and include invited speakers from around the world.

Proceedings of some of these meetings are published by the Society in its Ecological Reviews book series. The Society distributes free to all members, four times a year, the *Bulletin* which contains news and views, meeting announcements, a comprehensive diary and many other features. In addition the Society produces five scientific journals. The Journal of Ecology, Journal of Animal Ecology, Journal of Applied Ecology and Functional Ecology are sold at a discounted rate to members. Methods in Ecology and Evolution is free to BES members. The Society also supports research and ecological education with grant aid. Further details about the Society and membership can be obtained from the Executive Director (address inside back cover).

The *Bulletin* circulates exclusively to members of the British Ecological Society. It carries information on meetings and other activities, comment and other topical items. Unsigned commentaries are the responsibility of the Editor and do not necessarily represent the views of the Society.

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PRESIDENT'S PIECE

Monitoring change



William J Sutherland / President of the British Ecological Society
@Bill_Sutherland

Monitoring is the bedrock of ecological research. The current research on applied topics, whether agricultural change, climate change or deforestation, is typically a result of the concern resulting from a detected change, while monitoring, for example of long term studies, has proved central to understanding the fundamentals of ecology and evolution. Monitoring itself is facing revolutionary change on a range of fronts with exciting opportunities but also challenges.

Following visionaries, such as John Ray and Gilbert White, there has been a long tradition of identifying and recording. The pioneering plant atlas of the British Isles published in 1962 led to a need to retain the data, which in turn led to the creation of the Biological Records Centre; this has just celebrated its 50th anniversary (happy birthday BRC!). The Centre now has nearly 100 million records and has printed atlases covering over 10,000 species.

The importance of monitoring can be illustrated by the peregrine survey showing catastrophic declines, which alongside Derek Ratcliffe's classic research on eggshell thinning contributed to the ban in the use of DDT. In turn, the British Trust for Ornithology's bird monitoring was set up partly to detect the direct impact of pesticides, but then revealed changes in farmland birds. This then led to extensive research on farmland birds and changes in policy and practice.

There are a series of current technological developments that seem likely to transform our subject. I will describe three.

Citizen science is well established, but digital technology is revolutionising the subject. For example, the popular birdwatching package *Birdtrack* enables you to add sightings through an app on your phone and have all your field notes stored in one location. The revolution is that increasing numbers of birdwatchers are using such packages (another, *iRecord*, covers all taxa) to record all of their field notes rather than scribbling unreadable hieroglyphs in never to be retrieved notebooks. This approach is remarkably popular with some contributing many more surveys than days in the month!

In a different approach *iSpot* uses citizen science to identify submitted photographs with a sophisticated means of assessing the credibility of those who name the species based on their previous identifications. With BES funding they have placed some species within their food chains.

The digital revolution is resulting in a host of new portable means of monitoring, including automated bat call identifiers and means of recording many environmental measures. For example, the Norfolk Bat Survey enables members of the public to sign up to borrow recorders from 21 centres (often libraries). Over 400,000 bat records have been collected each year since 2013, compared to 1000 per year before the project began. Two widely discussed goals are to modify speech recognition software to identify the songs and calls of birds and use the pattern recognition software that identifies faces on the internet to identify species (as *Leapsnap* does with some success for tree leaves). Both goals are proving technically challenging. This leads to the interesting question of how automated we want identification to be; would we still do natural history for pleasure if our optics could identify everything for us?

The final development, Environmental DNA, may prove to be the most serious game changer. Samples of air, water or soil have been analysed by microbiologists for some time identifying the microbe community from the DNA. Vertebrates shed DNA, for example through faeces or skin cells, so water samples have been used to monitor invasive bullfrogs or fish or to determine which ponds contain great crested newts (a species protected by European legislation). These studies

show how small water samples can be collected by a non expert and, in the case of the newts without a need for a newt licence, yet can detect species that would be challenging to reliably detect with field studies. The technology is rapidly developing with swaggering talk of categorising communities from simple samples. This leads to a host of issues; as one trivial example, would we accept records of rare migrant waterbirds if just detected from the DNA they had left?

As with any technological revolution there can be casualties, such as the handloom weavers seeing their trade disappear during the industrial revolution. Consultants concentrating on detecting bats or freshwater vertebrates, may well need to change their game.

This revolution will lead to remarkable opportunities. The volume of data on species and communities, including for understudied groups, must enable us to answer a host of new questions. A major current issue is the absence of a record in an area may be due to a lack of monitoring; these methods will provide far more information on effort. We are likely to need new tools to collate and analyse this mass of data. It will lead to new requirements, initially in field testing, determining bias and error rates, but especially in creating new means of collating and storing such information and interpreting results. The BES community should embrace the opportunities.

With the current fervent rate of change I am sure we can guarantee that when BRC celebrates the next fifty years we will have unrecognisable methods with unimaginably exciting opportunities.



BES and SFÉ Joint Annual Meeting

9–12 December, Lille, France

OVERVIEW

#AM14 BritishEcologicalSociety.org/AM2014

Your favourite Oral Sessions and Posters

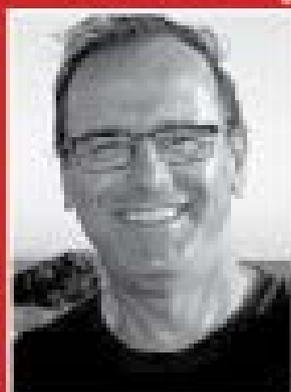
- Ecosystem Ecology
- Climate Change & Ecosystem Services
- Soils & Agricultural Ecology
- Forest and Aquatic Ecology
- Evolutionary and Physiological Ecology
- Biodiversity, Conservation & Ecosystem Services
- Parasites, Pathogens, Predators, Pollinators and more Ps!

JOIN US!

Workshops and Social Events:

- Special Interest Groups from France, UK and more
- Careers, Grants, Policy, Publications, Statistics etc. Workshops
- Gala Dinner with Warblefly (live music)
- Innovative, fun networking events

Keynote Speakers:



Pedro Jordano:
Heads Spanish panel for the National Research Plan, Ministerio de Ciencia e Innovación



Anne Larigauderles:
Head of Science in Society at the International Council for Science



Camille Parmesan:
In her capacity as a Lead Author, she shared the 2007 Nobel Peace Prize to IPCC

10 Thematic Symposia:

- **Ecological networks: from descriptions to predictions**
Comp. Mod., Dispersal, Pollin., Dispersal & Soc. Net.
- **Eco-evolutionary feedbacks: theoretical and empirical perspectives**
Reserve, Dispersal, Tropical Rainforest
- **Ecological Implications of Tree Diseases**
Abiotic Health, Glom. Spores, Root-Microbes, Andy Taylor
- **Pan-European Parasite Ecology: Linking Early-Career Researchers**
Jon Balby
- **Ménage à trois: ecological consequences of intricate interactions between plants, microbes and insects**
Agnès Hone, Folia Populi
- **Accelerating ecology and biodiversity research via ecometagenomics: species, communities, and environmental DNA**
Holly Giblin, Simplex Crust, Genomic Parasitology, M. Kelly Thomas
- **Reforming and implementing the Common Agricultural Policy, the role of science and the need to understand policy-making**
Andreas Balm, Tom Crickmore, Guy Peat, Peter Woodard
- **Biological impacts of climate change: Reconciling macro-scale patterns with local-scale processes**
Richard Stanton, Blair Turner
- **Extending freshwater management beyond shorelines by linking aquatic and terrestrial ecosystems**
Andrew J. Twardochleb
- **Genomics in marine monitoring: New opportunities for assessing marine health status**
Marcelo Ojeda, Elizabeth Payson

THE BES PHOTO COMPETITION 2014



Photograph by Hamish Campbell

PRIZES:

Overall winner: £750
Overall runner-up: £250
Student winner: £100

Winning category entry that is not one of above: £40 Oxford University Press voucher

Winning student category entry that is not one of above: £40 Cambridge University Press voucher

We would like to thank the Oxford University Press and Cambridge University Press for kindly sponsoring £40 worth of book vouchers to category winners.

All winning entries will be exhibited at the BES-SFE Joint Annual Meeting in Lille.

NEW JUDGE

We are delighted to announce that BBC Wildlife Magazine's Picture Editor, Wanda Sowry, will be joining our judging panel for this year's competition. Wanda has worked for BBC Wildlife since 1999 and her passion and experience of wildlife photography will be a great addition to our panel.



CATEGORIES

1) Ecosystems and Communities

Photos should show the dynamics within an ecosystem or community.

2) Whole Organisms and Populations

Photos should take a unique look at a species in its environment either alone or as a population. There can of course be other species in the picture, but the emphasis should clearly be of one species.

3) Ecology and Society

With around 80% of the UK population and 2/3 globally living in urban environments, photos submitted in this category should be an original look at how society affects and interacts with their environment and wildlife. This could include pictures of how species have responded to societal structures or practices.

4) Ecology in action

Photos should be of an inspiring scene relating to the practice of ecology. This could include pictures of teaching/learning ecology, ecological experiments/fieldwork or any other picture that shows ecology in action.

HOW TO ENTER

The competition is open to current BES members. Entries will now be made online via Flickr™. For detailed competition rules and instructions of how to submit your image via Flickr™, please download the guidelines available on the BES Website: www.BritishEcologicalSociety.org/photocomp

Although copyright remains with the photographer, by entering the competition applicants agree to give the BES the right to freely use their image(s). Photo credits will be used where possible. By using our Flickr™ group, your images will be shared with the BES online community.



Bob Smith, Zoe Davies and Freya St John.



Food, glorious food



A conservation success story!



Amy Hinsley winner of the poster competition in both the judges' opinion and the popular vote



*Some of the enthusiastic conference delegates
Photograph by Simon Tollington*



Considering the Future of Conservation



Alan Crowden / Bulletin Editor

In late June the University of Kent was the venue for a joint British Ecological Society-Durrell Institute of Conservation and Ecology symposium which had the ambitious objective of examining future directions in conservation. Was the meeting a success?

For those concerned with the future wellbeing of the natural world it can be easy to fall into a state of perpetual gloom. Most of the news is bad; generally speaking, conservation scientists are dealing with species in decline, the economic situation encourages those who take the view that economic growth should be pursued at any cost, and a (considerable) number of countries have leaders who appear to be utterly devoid of any sympathy for the notion of responsibility for the future of the planet. Yet against that backdrop there are individual conservation successes, where species declines have been arrested, where land use change is being moderated with efforts to retain crucial habitat, or where basic scientific advances are being incorporated into agricultural or industrial practice to mitigate the harm being done to endangered plants and animals. Conservation scientists in need of a bit of encouragement have been able to gain a modicum of consolation by reading Andrew Balmford's excellent anthology of some recent conservation success stories *Wild Hope* (University of Chicago Press 2012). Another way of recharging the batteries is to attend a conference with like-minded folk to talk and exchange ideas about key issues and the recent symposium at the University of Kent seemed to register with all the delegates I spoke to as another conservation success story.

Organising a good conference requires the skills of an alchemist; the ability to take everyday components (speakers, audience, lecture room, food and

drink) and somehow produce an event apparently sprinkled with gold dust to fire up the imagination and enthusiasm of all those attending. Zoe Davies, Freya St. John and Bob Smith of the University of Kent's Durrell Institute of Conservation and Ecology (DICE) produced a bit of magic with their organisation of the joint BES DICE symposium held in Canterbury in June.

Making conference organisers report on their meeting to a *Bulletin* deadline that passed even before the first delegate arrived counts as cruel and unusual treatment, but we hope to have a report from the organisers on the substance of the academic output of the meeting in December. But I can't send this issue to press without noting that the first BES symposium of 2014 was acclaimed by delegates as a roaring success. The speakers took to their allotted tasks with obvious relish and in my 40 plus years of attending conferences I've rarely been to one where the standard of presentation has been so uniformly high. Starting and ending a conference with speakers of the calibre of Peter Kareiva and Camille Parmesan is a pretty smart move but filling the slots in between with talks that kept the standards at the same level throughout is a rare achievement. We were treated to all the traditional delights of an ecologically-based conference but conservation specialists of the future have to take a wider view, and as well as biology we got the influences of corruption, the prospects for conservation gaming, the influence of celebrity advocacy and a tour of the ways

that the political and social landscape affect conservation. We got global scale conservation issues, and Yorkshire (which, in the opinion of my late father in law, has the status of an entire Universe).

Ecologists cannot live by talks alone. Those of us concerned with the inner person were able to browse on generous lunches, breaktime cookies, and cakes. The walls were lined with an excellent array of posters and by force of personality (aka bullying) the organisers encouraged 86% of the delegates attending to vote in the poster competition. Amy Hinsley of DICE can be very proud of being nominated as winner by both the judges and the popular vote. Social events involving Kentish beer and barn dancing were greatly enjoyed by the delegates, who distinguished themselves by a) turning up en masse to the first talk of the day the morning after the social evenings and b) by still being present in large numbers of the last talk of the conference, despite the temptations of the early train home. The audience rarely gets a mention in conference reports, but the delegates enhanced the atmosphere of the symposium with their astute questions, engagement with discussions and enthusiastic reception for the wide range of topics presented in the course of the meeting. A large proportion of the attendees were on the younger end of the spectrum, which augurs well for the future of a discipline that will need to be smart, focussed and persistent if we are to tackle the problems of an ever growing human footprint in the natural world.

SCIENCE POLICY

Providing evidence to policy makers: we host a workshop

Cheryl Pilbeam / Policy Assistant
cheryl@britishecologicalsociety.org/@BESPolicy

It's clear that ecologists are well-placed to give scientific advice to Government and Parliament. Experience of working across multiple disciplines, understanding concepts at a landscape scale, and a history of applying knowledge to give solutions to problems are all traits that can help policy makers understand the context and consequences of decisions.

Starting down this road of providing advice and analysis to policy makers can be daunting. How do the processes within Government work? Who do I contact? And how can I get their attention? To help solve these mysteries and enthuse the next generation of scientific advisers, we held a policy training workshop at BES HQ at the start of April.

Ultimately, participants' needs directed the specific content of the day. After an initial dose of coffee, attendees were tasked with putting their fears and challenges in communicating with policy makers into words, giving us the 'wall of challenges' to work from. Fears and challenges were organised into themes, including communicating complexity, confidence, and not understanding how policy making works. Our challenge was then to address all these issues in just one day! We were confident though – we had the help of an excellent team of speakers and our expert facilitators, Sarah Cruise and Jackie Wrout from Psyscess.

An introduction to policy making in the UK, as well as how it really works in practice was given by our first speakers – Sasha Leigh (NERC), Jonny Wentworth (Parliamentary Office of Science and Technology), and Richard Benwell (RSPB). Timeliness, objectivity, and forward-planning were all highlighted as key aspects for getting involved in the policy process.

Understanding how to package your evidence and communicate complexity is vital to engage with policy makers. Andrew Pullin (Centre for Evidence Based Conservation) spoke about his work with the Collaboration for Environmental Evidence and providing evidence for policy decisions. Helen Bayliss (Imperial College London) advised participants that knowing your audience is crucial to communicating evidence effectively. Helen was called to give oral evidence to a select committee inquiry on invasive species at the start of 2014 and was able to give an account of her experiences and explain how she got involved.

Exercises focusing on communication, the policy making environment, and linking your research to everyday topics (including a box of chocolates!) were interspersed between speakers to allow participants to solidify knowledge from the sessions and put new skills into practice.

By the end of the day the pub beckoned and we were able to return to our wall of challenges to see how far we'd come. It was great to see so many passionate people who wanted to find out how to communicate their science and influence policy decisions, and we hope everyone was able to take something away from the day. Hints and tips have been pulled together in our 'top 10 tips' guide to effectively engaging with policy makers (see opposite page). This is also available to share online at bit.ly/top10pm/.

In collaboration with our Scotland Policy Group, we will be holding a policy training workshop in Edinburgh on 2 October. This will be followed by a one-day biodiversity conference, allowing participants to put their knowledge into practice. More information is available on our website.





TOP 10 TIPS FOR ENGAGING AND COMMUNICATING WITH POLICY MAKERS

Getting your scientific research across to those within policy can be a daunting process. Conveying your message not only requires finding the right people to engage with but also using the right tools to do it effectively. We've put together this 'top 10' list of tips, based on advice generated at our 2014 Policy Training Workshop, to provide you with our guidance for how you can get the most out of your interactions with decision makers and communicate your science in an effective and impactful way.

GET INVOLVED!

Policy makers are continually looking for trusted sources of evidence. Make yourself known to those who need evidence by using existing platforms and organisations, networking at events which host different stakeholders, and branching out to work with others in different specialisms. Be reliable and willing to engage and, in time, you will begin to be recommended by others.

UNDERSTAND THE POLICY ENVIRONMENT AND STAY UP TO DATE

If you want to be taken seriously and effectively engage with policy makers, you need to be aware of how policy works, who is who and what issues are on their current agenda. Take the time to research the people you'll be interacting with. Wrongly naming the current environment minister or being naïve about the way decisions come about may make you seem uninformed, and could affect the way you and your message are received.

BE TIMELY

To grab the interest of policy makers and make your interactions most effective, get involved with policy and decision making processes early on. Telling policy makers what they should have done or what their options are after key decisions have been made is not a useful use of your time, and it is far less likely they will be willing to listen to you.

PLAN YOUR APPROACH

Once you've decided to engage, plan how you are going to do it and what steps you need to take. What do you want to achieve? What issues does your audience care about and what are they motivated by? Different policy makers work at different levels so you will need to tailor your language and message appropriately to connect with them. Planning your move will help focus your efforts as well as understand how to balance doing this alongside your normal workload.

TELL A RELEVANT AND ENGAGING STORY

To make it easy for policy makers to understand and connect to your message, create a narrative to bring your research to life. Create human interest with stories, case studies and graphics that are relevant to them and try to build a connection by linking your message to the issues or areas that they work on – the more recent the better. But, remember to keep your messages clear and concise and reduce or explain scientific jargon.

BE A GENERALIST AS WELL AS A SPECIALIST

Having a specialism is great and can offer important insight into complex problems, but you need to be aware of the wider developments, problems and current understanding in your field. Policy makers won't necessarily always expect, need or want to know about the minute details of a particular study, but instead the wider areas of your subject. So read around and be aware of what's going on (you probably do this anyway!) and be prepared to talk about this.

RID YOURSELF OF IMPOSTER SYNDROME

You may not feel like an expert, but the fact is, you're going to know a lot more than most of your audience. More importantly, policy makers don't expect you to know everything. If you find

this is a problem that stops you getting involved in science policy, find people who can give you advice and support – there are many people who can help.

BE CERTAIN ABOUT UNCERTAINTY

Uncertainty in science exists. Big deal. And the truth is, policy makers know this. It can be difficult but communicating uncertainty in your results, approach or even the known unknowns is essential and you shouldn't shy away from it. Be clear and open, use language that is easy to understand and try not to make it into the big issue you may think it is.

BE OBJECTIVE

You may be asked to provide recommendations or options for a future policy direction. In these situations, presenting a balanced and objective case is essential. Make it obvious when giving your own personal opinion or when using a scientifically informed one. Referring back to what the evidence says can add clarity to your answer and highlight that you are acting as a knowledge broker.

REMEMBER, SCIENCE IS NOT EVERYTHING

Policy makers are influenced by a huge array of factors, and will not always take the decision you think they should based on the scientific evidence. Science only forms part of the argument for or against a particular policy and the ultimate decision on a policy is usually a political one. As long as you can convey the message as best you can and give them evidence that can be used to inform their decision, that is all that can really be expected of you.

For more information visit www.britishecologicalsociety.org/public-policy

NB: when we refer to policy makers, this can include (but not limited to) parliamentarians, ministers, parliamentary committees, civil servants, scientific or political advisers and members of regional assemblies and local authorities.

SCIENCE POLICY

Natural Capital Initiative – Valuing our Life Support Systems

Daija Angeli / Society of Biology

It's been five years since the Natural Capital Initiative (NCI) held their inaugural 'Valuing our Life Support Systems (VoLSS)' symposium. From 29th April to 1st May 2009, NCI, now a partnership of the Society of Biology, the British Ecological Society, the Centre for Ecology and Hydrology and the James Hutton Institute, brought together around 200 representatives from academia, the public sector, business and the not-for-profit community to discuss how ecosystems and the services they provide could be better managed and protected.





Leading experts in the natural, social and economic sciences and key figures in government and business gave key note speeches that explored natural capital from different perspectives. Facilitated workshops focussed on the concept of natural capital in rural land use, urban planning and the marine environment respectively.

One of the main outputs of the event was a set of key messages for policymakers, communicators, researchers and business to act on:

- With regards to policy, we identified a pressing need for government departments to work together to safeguard natural capital; something which underpins and influences all areas of our economy. It was suggested to integrate ecosystem valuation into fiscal policies and departmental targets. However, we also identified the importance of non-monetary valuation. Urgent action was and still is required to protect our natural capital – we cannot wait for perfect knowledge to act.
- We urged communicators and educators to address the growing disconnect between people and nature. Natural capital is the foundation of our

well-being, and safeguarding it is vital part of growth. Better communication is needed to embed this in the public conscience. We also determined a need for a new and more accessible language to talk about natural capital.

- We called upon researchers, including those from the arts and humanities, to develop new tools to include natural capital in decision making. Collecting, collating and integrating data from different disciplines is essential in order to facilitate environmental assessments. We identified a need for spatial models and ecosystem services maps to inform land management decisions on the national level and in the national planning framework.
- We prompted businesses to take responsibility for accounting for natural capital, instead of waiting for government requiring them to do so. An unpredictable supply associated with unsustainable exploitation of natural resources poses real risks for businesses and it is in their best interest to take urgent action.

Much progress has been made since we made these recommendations. For example, the Government is now advised

on the sustainable use of England's natural capital by a Natural Capital Committee and the Office for National Statistics (ONS) has developed a road map to Natural Capital accounting. Many pilot schemes based on science-informed common sense showed how natural capital can be protected and enhanced using innovative mechanisms such as payments for ecosystem services (PES). The Ecosystems Knowledge Network (NCI is a partner) shares these lessons in a language accessible to a broader audience. It also showcases many projects that use a landscape-scale approach to ensure a seamless transition between urban, rural, freshwater and marine planning.

Multi-disciplinary collaboration resulted in the UK National Ecosystem Assessments, the first analysis of the UK's natural environment in terms of the monetary and non-monetary benefits it provides to society. Other examples of collaborative research include the Valuing Nature Network (VNN) and the Biodiversity & Ecosystem Service Sustainability (BESS) project. Ecosystem service maps are now widely developed by environmental consultancies and spatial maps and models have been developed to facilitate planning on a landscape scale.

Finally, many businesses have realised their dependence on natural capital, started incorporating this in their accounts and work in partnership with the not-for-profit sector, for example in the Natural Capital Coalition and the Natural Capital Declaration.

To review progress in the natural capital arena and to reflect on the recommendations we made five years ago, NCI will be hosting a Valuing our Life Support Systems natural capital summit (#VoLSS14) on 6th and 7th November 2014. The event will be uniquely characterised by an emphasis on science and the application of evidence by the wider community. We will discuss newest research findings with leading experts in the fields of environmental science, economics, nature conservation, human health, as well as hear from the broader community of business leaders, senior NGO practitioners, and influential public sector professionals.

Learn more about VoLSS 2014 on our website, www.naturalcapitalinitiative.org.uk

SCIENCE POLICY

Formidable formicidae

Gabrielle Flinn / BES Policy intern, February-May 2014

Increasingly, humans are learning about their reliance on ants and taking inspiration from these ecological and mathematical marvels. This inspiration has led to innovations that aid a variety of industries from space exploration to emergency route design. As the human world evolves rapidly and dramatically, nature continues to inspire and aid technological adaptation – through the medium of the ant colony.

The total biomass of all humans is approximately equal to the total biomass of all ants. 25% of all insects, the largest and most populous group of animals on the planet, are ants and they are found within almost every single terrestrial ecosystem on the planet. The overwhelming influence that these small but mighty creatures have on global terrestrial ecosystems is astounding but under-represented in current literature. The Amazon rainforest, for example, shares an intricate and essential relationship with leaf cutter ants that if removed would cause the extinction of an immeasurable number of plant and animal species (Wilson and Hölldobler, 2008). The influence of ants, however, is not restricted to their direct ecological interaction.



Ants perform valuable ecosystem duties. Photograph courtesy of Andrey Pavlov

Ants are necessary for many ecosystem maintenance duties, many of which impact primary producers and the organisms that rely on them. Soil turnover, bioturbation, forming the

structure of the soil, nutrient distribution, and population control of grazers are all benefits that ants provide to ecological communities. In addition, ants (and termites) have been shown to contribute greatly to agricultural yields – particularly in warmer and more arid climates where the role of earthworms is reduced. In wheat fields, through increasing water filtration and enhancing the nitrogen cycle, ants have been shown to increase crop yields by up to 36% (<http://bit.ly/1qUsgE7>).

The integral relationships ants have with their ecosystems is emphasised by their use as bioindicators. A bioindicator is a species, community or even a biological activity that indicates the ecological health of an environment and how an environment is changing in relation to a stressful disturbance. Ant communities have been used to assess the health of forest ecosystems (<http://bit.ly/REJIS5>) and to measure restoration success in environments that have experienced disturbance due to mining in Australia (<http://bit.ly/1j7fubH>). Bioindicators can also indicate natural disturbances. At the Universität Duisburg-Essen in Germany, the impact of seismic activity on the behaviour of ants is investigated. Results from a preliminary study show that wood ant behaviour signposts earthquakes hours before they happen (<http://bit.ly/TWtyA4>).

The benefits that humans obtain from *Formicidae* stretch beyond agriculture and their use as bioindicators, and they are increasingly being used to the benefit of humans in a diverse way. Ants can form an essential part of a human diet, as is observed with the growing popularity

of entomophagy as an alternative to less sustainable protein sources. Further to this, they also have the potential to be important contributors to the pharmaceutical industry due to the microbial defences they produce to protect them from pathogens. Ants are already used as medicine by some communities and have the potential to be farmed as a mini-livestock for pharmaceutical purposes (<http://bit.ly/1gOGxhD>).

The overarching manner in which the phenomenal nature of these organisms has been tapped is through understanding and taking inspiration from their behaviour. Nature is a source of human inspiration for innovation and the complexities and intricacies of ant communities provide a fount of ideas. Ant colonies have within them groups of individuals assigned to specific tasks, ranging from nursing young to protecting the colony from threats. However, they all act together working towards the unified purpose of caring for and ensuring the production of new sisters and (eventually) reproductive brothers and sisters who will ensure the survival of their genes. This collaborative structure and division of labour echoes of how a body works to ensure its own survival. For example, the streams of foragers delivering and distributing food throughout the colony – much like a blood circulatory system distributing nutrients to all the cells in a body. This organisation, alongside foraging behaviours and decision-making processes within and outside the colony have given rise to ideas that aid with a variety of services such as the parcel delivery systems and even space travel.



Ant colony optimisation (ACO) algorithms have been used to put this understanding of ant foraging behaviour to use [Figure 1]. ACO algorithms use the foraging strategy and natural algorithms used by ants – when locating food sources and communicating routes using pheromone trails – and translate it into a computer programme based on this decision making process. When foraging ants find a food source they lay a pheromone trail to the source and then one back to the nest. The return journey is usually shorter and more direct as they are no longer scouting. As more and more foragers leave the nest to find this food source, a more efficient route is established. This route is strengthened by an increasing number of foragers choosing it and reinforcing the pheromone trail that communicates the route and food source location. Eventually all other, less efficient routes evaporate. This is how ACO works with the correct decision being made as more and more digital ants follow the route with the most efficient and therefore the strongest trail. On a basic level ACO is used as a problem solving tool and has been applied in a large range of industries. This includes delivery companies who wish to increase efficiency of the delivery of packages as well as companies involved in space exploration. ACO has been used to generate the most effective space exploration routes (<http://bit.ly/1tWgLKA>) using ‘Multiple Gravity Assist’(MGA) and wire micro-satellites (<http://bit.ly/1IX2GWZ>) which have components that are too small and complex to design and arrange manually.

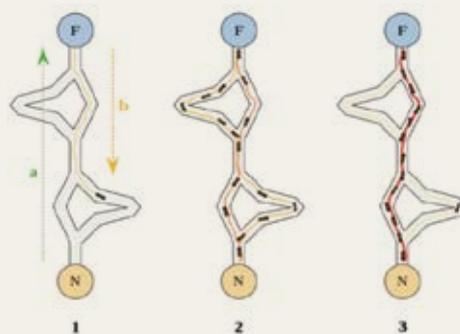
In addition to foraging behaviour, emergency behaviours of ants can be utilised to create ACO algorithms.

Groups of ants move in a similar way to crowds of humans and can give insights into how to manipulate and manage crowds of humans safely and efficiently. By inducing an alarm response from small ant colonies, entomologists are able to assess how ants locate the best route of escape in the quickest way possible. Understanding this behaviour can then be translated and applied to human circumstances. Translating these behaviours into ACOs also helps with the design of exit routes within buildings to ensure that residents can escape quickly and safely (<http://bit.ly/1jzUJ8K>).

There are countless algorithms to be found by understanding the behaviours ants use to optimise their survival and reproduction. In fact, the algorithm used by the inventors of the internet is almost the same as a foraging algorithm used by specific ant species. There are 13,000 ant species in the world, living in a great variety of environments. As such there may be a great diversity of ACO opportunities to discover and utilise where ant colonies find ways of adapting to the resource availabilities and environmental challenges they face. New research opportunities are currently arising from this field (<http://wrld.cm/1myrdmU>) such as using ACOs to understand the spread of cancerous tumours (<http://1.usa.gov/1pDFxg5>) and designing rescue robots (<http://bit.ly/1nJZ5jv>). By understanding how some species of ants use ‘collecting resource’ algorithms, ecologists can help engineers to design robots that are designed for search and rescue purposes after natural disasters such as earthquakes.

As ecosystem engineers and inspiration for innovators, ants are unique in their ability to influence the natural and anthropogenic world. It is therefore essential that these diverse organisms are fully appreciated in scientific literature and by science- information outlets so that the inspiration and ecosystem services they provide are fully realised. To date, their use as bioindicators and role in providing ecosystem services has not been fully recognised. In the media, they are often represented as pests. It is important that knowledge of their incredible value is built upon and disseminated so we can continue to be positively influenced by them and ensure their essential roles are protected.

FIGURE 1



*Decision-making and Ant Colony Optimisation:
Diagram 1: Ant takes a long explorative route (a) to a food source (F) from the nest (N) and takes a short route home. Diagram 2: Some ants take longer exploratory routes whilst others find shorter, more efficient routes. They lay down a pheromone trail as they do so. Diagram 3: As more ants start to choose the shorter route – due to its efficiency – the pheromone trail is strengthened and recruits even more ants. Old trails eventually begin to evaporate leaving only the best option.*

SPECIAL INTEREST GROUP NEWS

Successful launch of the new Climate Change Ecology special interest group

James Pearce-Higgins / British Trust for Ornithology (BTO)

On the 25th April, the British Ecological Society's youngest Special Interest Group (SIG), on climate change ecology, was launched at Charles Darwin House. The meeting, which was attended by almost 100 people, provided an opportunity to reflect on the latest IPCC fifth assessment reports from Working Group II, on impacts and adaptation, and Working Group III, on mitigation, that have been published recently. To help us with this, we were joined by five lead or contributing authors of chapters from the latest assessments, who gave an excellent series of presentations outlining the process and some of the resulting key messages.

The day was kicked off by Mike Morecroft of Natural England, who introduced the SIG, and reminded us of the importance of climate change as an issue for the UK as well as for us as ecologists. Not only can we monitor the impacts of climate change upon species and ecosystems, but ecology has a lot to contribute to the disciplines of adaptation and mitigation. The National Adaptation Programme, published in 2013, has set out national priorities and commitments for adaptation across a wide range of sectors, which presents significant challenges for ecologists. Ecologists have also contributed significantly to mitigation, by estimating the contribution that Land-Use, Land-Use Change and Forestry (LULUCF) in the UK may play in climate change mitigation – currently a sink for 3.3 Mt CO₂e.

Four fascinating presentations followed, from chapter lead authors of the IPCC fifth assessment. Richard Betts from the Hadley Centre started by considering climate change projections, which are fundamental to our thinking about the future. In the context of recent debates about the cause of recent slowing in the rate of surface warming, Richard directed us to consider three potential sources of

uncertainty in future projections. Firstly, the amount of external forcing is unclear and dependent upon future greenhouse gas emissions. Total emissions are strongly linked to total warming. We need to limit these to less than 1000 PgC, so the later we cut emissions, the deeper those cuts will have to be in order to achieve this. Secondly, there is uncertainty in the response of the climate system, which accounts for the spread of projections from different climate models. Thirdly, there is a high degree of natural variability in the system due to the chaotic behaviour of the atmosphere, which means that periods of apparent slow-down in warming are likely. This all means that trying to work out exactly what will happen in the short-term for adaptation purposes can be extremely difficult.

Richard was followed by Josef Settele from the Helmholtz Centre for Environmental Research, Germany, who gave an illuminating account of the IPCC process and the sorts of negotiations that are undertaken when agreeing the final text of the summary documents which governments sign-up to. Although there have been few species extinctions to date as a result of climate change, terrestrial and freshwater species face

increasing extinction risk with increasing magnitude of climate change – further reinforcing the need to cut emissions. Such effects will not just be direct responses to climate change, but also the result of interactions between climate change and other stressors. In relation to other stressors, Josef highlighted two particular sources of uncertainty: the ability to attribute expansions in invasive non-native species to climate change is low, and the magnitude of potentially negative effects on biodiversity of renewable energy, particularly biofuel expansion, require quantifying and urgent consideration at the policy level.

We then turned our attention to Europe, where Sari Kovats of the London School of Hygiene and Tropical Medicine discussed the European chapter. This considered four sectors: infrastructure and settlements, food, fisheries and forestry, health and well-being, and environmental quality and conservation. Sari emphasised key risks of climate change to these sectors being associated with heatwave, drought and flood events, of which there have been multiple examples across Europe in recent years in sectors as diverse as nuclear power and air pollution, and

longer-term issues of water scarcity. She highlighted particular concerns associated with multiple stressors combining to cause systematic failure of infrastructure and society, and the potential vulnerability of marginal rural landscapes to these pressures. There may also be legal and cultural limits on the adaptation measures that can be taken.

Finally, Jo House from the University of Bristol turned our attention to mitigation and the potential role of land-based emissions from LULUCF. Deforestation is a key driver, which currently accounts for *circa* 8% of global carbon emissions. Like Richard, she emphasised the challenges of effective mitigation and the need to achieve negative emissions – for example, using bioenergy and carbon capture technology – but re-emphasised that the most effective land-use solution is to avoid deforestation. Importantly, she provided some hope that rates of deforestation and emissions from such sources have reduced in recent years, although further work is required to increase the precision of these estimates.

After lunch, when there was time to view the range of posters presented, three further presentations explored in more detail the impacts of climate change on biodiversity. Jane Hill, University of York, reviewed the evidence for distributional change in response to climate change, contrasting strong latitudinal responses in northern temperate systems with evidence for altitudinal shifts in the tropics of Borneo. Such changes have potential impacts on the biological importance of protected areas although, in practice, evidence is building that protected areas provide important sites for range-shifting species to colonise. The challenge is to prevent habitat fragmentation from limiting the ability of species to do so. Next, James Pearce-Higgins, British Trust for Ornithology, reviewed climate change impacts on natural populations and communities, demonstrating the importance of winter cold and summer drought as key periods for UK biodiversity, and illustrating how recent population trends of a range of taxa may be related to climate change. He also emphasised the challenge of correct attribution of changes to different causes. This theme was picked up by Camille Parmesan, Plymouth University, who argued against the value of attempting such attribution as a result of non-additive,

unpredictable and interacting impacts of climate change, but did point out that other potential drivers of change should be acknowledged. Camille particularly discussed the rapid pace of change in the marine environment, where shallow temperature gradients mean that warming drives greater range shifts than on land and some species have moved both deeper into the ocean and polewards.

After tea, Andrew Watkinson, University of East Anglia, provided an engaging and passionate call to action, focussing on the need to reduce energy demands across society and the challenges of doing this within the current governance structures. He emphasised that implementing the necessary changes will be tough to achieve, particularly given the challenges and uncertainties associated with using geoengineering options to achieve negative emissions. His presentation led nicely into a final panel discussion session chaired by Sue Hartley, University of York, with the panel comprising Georgina Mace (UCL), Andrew Watkinson, Camille Parmesan and Pam Berry (University of Oxford). At first, this discussion focussed on identifying knowledge gaps. Given the complexities of ecological responses to climate change, it was suggested that we take a risk-based approach to the problem, to identify and focus on where the greatest risks occur, and particularly to identify likely tipping points of ecosystem collapse. However, given these complexities, there was some debate about how realistic it was to identify system thresholds before they are crossed. As a result of these uncertainties, we also need to develop adaptation solutions that work in a range of different futures. The need to understand the potential biodiversity consequences of geoengineering solutions to climate change was emphasised, so that we can make informed decisions. Several participants emphasised the need for inter-disciplinary research to address this problem. Sue then directed us to consider how we as a scientific community could help to stimulate change. The need for the effective promotion and communication of science was repeatedly emphasised, using a variety of media and reaching a range of audiences from policy to commercial to wider society; the challenges of communicating through journalistic media were discussed, leading to more direct means of communication being

suggested. Scientists need to effectively communicate in an easily understood way – it was suggested that even the summary IPCC reports required further simplification and synthesis. Presenting examples of impacts and adaptation action was agreed to be a valuable means of helping people engage with the issues, whilst citizen science may also help wider public engagement with the identification of change and provide a willing audience to receive and promote the key messages from that science more widely. The panel concluded with agreement over the need to understand the impacts of climate change, including the many cross-linkages between both earth systems and societal sectors (particularly adaptation and mitigation), and then to effectively communicate that knowledge to society and policy makers.

Clearly there are many important areas for this special interest group to engage with, to help the BES have an impact in this crucial arena for society and the environment. Get in touch to join us in this endeavour, and look out for further events and activities organised by the Climate Change Special Interest Group.

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ECOLOGICAL GENETICS

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During the recent EGG conference in Newcastle, it dawned on the delegates that the group has a significant anniversary beginning to appear on the horizon. In 2016 EGG will hold its 60th annual conference. This is planned to be held jointly between the University of Aberystwyth and The National Botanic Garden of Wales, Aberystwyth being the location of the original meeting in 1956. Given it is such an occasion – there can't be many academic groups boasting similar longevity – it is intended to make it a special event. One aspect of this is to be a celebration of previous meetings through programmes and photographs.

The EGG secretary and organisers are particularly keen to acquire any photographs of previous meetings, especially the excursion, which is a fundamental part of the meeting. If you have such photographs can you please contact the secretary (email above). All will be acknowledged.

Before the 60th must of course be the 59th meeting. This will be held at Edge Hill University, Lancashire, more details to follow via the BES website and *Bulletin*.



British Ecological Society
Computational Ecology Group

DOWNLOAD FROM THE COMPUTATIONAL ECOLOGY SIG

Dylan Childs, Nick Golding, Matthew Smith and Rick Stafford

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It's been an exciting 6 months for the Computational Ecology SIG. This year we changed our strategy to prioritise our largest user-group: those who want to learn how to use and apply computational methods. We realised that our most appreciated efforts

were those that aimed to educate the "masses" about the "basics" – whether that be species distribution models, good coding or spatial analysis. So we decided to move beyond just workshops and into something that will be longer lasting and updatable over time (though we're still doing workshops!). This led to the idea to develop a new "Field Guide to computational methods in predictive ecology", known to us as just the "Field Guide". The goal with the Field Guide is have a one stop online resource for those wanting a high level overview of different computational and mathematical methods used in ecology. Target audiences include those who utilise the outputs of computational methods in ecology or are planning to: for example, in Government these might be people consulting papers on an area of interest, or interpreting results or information they have been sent, or it may be when deciding who to grant money to from a set of grant applications. We'd like people like that to be able to go somewhere and see a brief overview of what the method is, how it is typically applied and what are the things to look for in terms of good and bad practice. Other target audiences are early career scientists, or simply those who want to get a high level overview of certain methods. It seems like there is nothing like it about.

Our efforts began with a meeting in Microsoft Research, Cambridge on March 12th to discuss the aims, scope and form of the Field Guide. You can read the results from that on our blog site at <http://bescomputationalecology.wordpress.com/field-guide-for-ecological-models/>. In that draft you will see a few different methods such as "Individual Based Models", "Correlative Species Distribution Models", "Gap Models" and "Differential Equations".

We have already tested the idea of the Field Guide out on our Conservation Ecology SIG colleagues in our joint CE-CE SIG event on "Computational Landscape Management for Conservation Applications", held at Charles Darwin House on May 20th. There we shared problems and solutions in landscape-management oriented conservation. It was quite clear from the event that something like the Field Guide could be of great benefit but that the form of such a guide needs to be

heavily influenced by both producers and users of computational methods. We're now taking the lessons learned from that event to decide on how to evolve the Field Guide further. Next public outing will hopefully be at a workshop at our annual meeting in Lille.

Along the theme of education we're also looking forward to a Software Carpentry workshop with the Macroecology SIG on July 10th and a mini workshop on the Statistical evaluation of IBMs using ABC (Individual Based Models; Approximate Bayesian Computation) on July 11th, both of which will have happened by the time you read this, and another event in October 1st with the Royal Statistical Society and Biometric Society (two different organisations) on a subject yet to be finalised but most likely being something like "New concepts to connect mechanistic models to large ecological datasets". You can receive updates on these in myriad ways: join our mailing list at www.freelists.org/list/bes_comp_eco; we're on Facebook at www.facebook.com/BESComputationalEco, on Twitter at @BES_CE_SIG and you can email us directly at Computational@BritishEcologicalSociety.org.

On a final but important note. We're recruiting! We're very keen to recruit early career ecologists to help drive our SIG forward; proposing ideas for new activities, organising events, and communicating to the wider world. We're keen to keep the group fresh and full of new ideas, so please do get in touch if you would like to help us in the running of our SIG. We're keen to hear from you.



**British Ecological Society
Parasites and Pathogens Group**

**PARASITE & PATHOGEN
ECOLOGY & EVOLUTION GROUP**

Andy Fenton
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Meeting report: Ecology sessions at the British Society for Parasitology Spring Meeting, University of Cambridge, 6th-9th April

Over recent years The British Society for Parasitology Spring meeting has been infiltrated by ecologists, to the extent that there is now an established 'ecology' theme running throughout the meeting, organised and supported by the 'Parasites & Pathogens' SIG – and this year was no exception. The ecology theme kicked off with a session on 'Bridging scales', followed by sessions covering topics such as Local Adaptation and Coevolution, Disease Transmission, the Genetics, Ecology and Evolution of Host-Parasite Interactions, and even a session on 'Global Weirding' (relating to invasive species and parasitism). All sessions showcased an impressive array of talks at the interface of ecology and disease, covering the full range of approaches from pure theory through to ecosystem-scale empirical studies. What was particularly impressive was the standard of talks by the postgraduate students – the clarity, enthusiasm, and timekeeping of the student talks were exceptional. As in previous years, we offered prizes for the best ecology student talk and poster, and this year they went to Jessica Stephenson (Cardiff University) for her talk on 'Parasites of Trinidadian guppies, *Poecilia reticulata*: evidence for sex – and age-specific trait-mediated indirect effects of predators', and Cassandra Raby (University of Liverpool) for her poster on 'Seasons of disease: using baboons in a seasonal environment to predict changes in disease risk due to climate change' [Cass also won the overall prize for

best poster at the conference]. Many congratulations to both of them.

As ever, a key component of the meeting was the socialising – and as in previous years we organised a social event at a local pub (the Anchor, for anyone who knows Cambridge) after the first day's sessions. This was very well attended, and allowed SIG and non-SIG members to discuss their favourite parasites in an increasingly-relaxed atmosphere. On behalf of the committee, thank you to everyone involved for their organising, presenting (and socialising) skills.

Future events

Later this year we will be running two events:

1. Workshop on Public engagement

Following the success of last year's early-career event, this year the SIG will organise a 1-day workshop on public engagement, scheduled for the Autumn. This will be a great opportunity for PhD students and researchers in their first couple of Post-Docs to get the necessary skills to communicate their science to the general public. If you are interested in being involved in organising, attending, or have any suggestions then please get in touch with Ines Fontes (i.fontes@nhm.ac.uk).

2. Themed symposium at the BES-SFE Annual Meeting in Lille

We are organising a symposium entitled "Pan European Parasite Ecology – State of the Art and Looking Ahead" for the upcoming BES-SFE Annual Meeting in Lille (9th-12th December). The symposium will include talks from six early-career stage researchers from across Europe, with the aim of highlighting recent developments in the research of parasites and pathogens, and providing a showcase for the high quality of research in this subject area. As ever we will organise a social event to accompany this symposium, and the whole meeting should provide a real opportunity to engage with like-minded researchers from across Europe. Registration for the meeting is now open and we encourage those interested in attending to check out:

http://www.britishecologicalsociety.org/events/current_future_meetings/2014-annual-meeting/meeting-outline-and-symposia/

You can keep up to date with all our activities by joining our mailing list (which is archived as an RSS feed on our Facebook page <https://www.facebook.com/pages/Parasite-Pathogen-Ecology-Evolution/409655852380316>). The list is also used by the community to advertise events, post job information and make requests. We hope you will be excited to join us and be part of this growing community. You can sign up to our mailing list very easily by filling in your details at: <https://www.jiscmail.ac.uk/cgi-bin/>



**British Ecological Society
Tropical Ecology Group**

TROPICAL ECOLOGY

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In August 2014, TEG is welcomed by the University of York for the 7th Early Career Researcher Meeting. This year's meeting is themed 'Tropical Ecosystems: from process to policy'. Day one focuses on ecology and ecosystem processes, while day two looks into practical applications and links to policy and development. The broad scope means there will be something for everyone and will provide ample fodder for interdisciplinary discussion during the evening social event.

TEG also looks forward to supporting the SEARRP (South East Asia Rainforest Research Programme) discussion meeting at the Royal Society on 6-9th October 2014. The meeting is on the topic "Threats to tropical rainforests in an era of rapid environmental change – a global synthesis" and aims to provide a comprehensive review of rainforest science integrating biodiversity, ecosystem functioning, carbon cycling and atmospheric chemistry, examining commonalities and differences across tropical biomes and identifying knowledge gaps, whilst also looking at threats, responses to environmental

change and opportunities for their conservation, sustainable management and restoration.

We are always thrilled to hear from people wishing to organise an event, develop cross-society and institutional links or to become involved in the work the committee does. If you have ideas, please contact us via our e-mail, tropical@britishecologicalsociety.org. We are currently looking for a student representative, so if you are enthusiastic about your subject, passionate about science communication and want to promote the needs of your peers, get in touch. Keep up to date with our events and news via our Facebook group and Twitter @BES_Tropical.



**British Ecological Society
Macroecology Group**

MACROECOLOGY

Tom Webb
@besmacroecol

At the time of writing, we are busy organising our early July annual meeting in Nottingham. Look out for a report in the next *Bulletin*.

Further ahead, we are really looking forward to hosting a Data Deficits workshop with the Citizen Science SIG at Charles Darwin House on 22nd September. The use of data collected by volunteers underpins many macroecological studies, and the purpose of this workshop will be to bring together professional ecologists, 'citizen scientists' and third sector organisations to consider challenges and opportunities for collaboration. Further details will be published in the usual places (Macroecology Facebook Group, @besmacroecol on Twitter, BES macroecology ([http://www.britishecologicalsociety.org/getting-](http://www.britishecologicalsociety.org/getting-involved/special-interest-groups/macroecology/)

[involved/special-interest-groups/macroecology/](http://www.britishecologicalsociety.org/getting-involved/special-interest-groups/macroecology/)) and UK macroecology (<http://macroecologyuk.weebly.com>) websites, with registration live here: <https://www.eventbrite.co.uk/e/bes-data-deficits-workshop-tickets-11988442755>

Still further into the future, we are really excited to announce that next year's SIG annual meeting will bring together macroecologists from across Europe in a joint venture with the German GfO Macroecology Group and the Copenhagen Center for Macroecology, Evolution and Climate (CMEC). CMEC will host the meeting in the Copenhagen, where we all hope to welcome you to EUMacro2015.

MEETING REPORT

'Challenges in Macroecology: Scaling the Time Barrier' at the Natural History Museum, London on 1st April 2014

Phil Jardine
The Open University

Victoria Herridge
The Natural History Museum

Isabel Fenton
Imperial College London and The Natural History Museum

Adriana De Palma
Imperial College London and The Natural History Museum

Palaeoecologists work on ecology in the past, and neo-ecologists are getting increasingly interested in longer timescales. But how often do they actually collaborate, or even meet each other? On 1st April 2014 67 ecologists and palaeoecologists met at the Natural History Museum in London for the 'Challenges in Macroecology: Scaling the Time Barrier' meeting. The meeting, which was co-funded by the British Ecological Society (through the Macroecology Special Interest Group) and the Palaeontological Association, aimed to bring together neo- and palaeoecologists for talks, discussion and networking. The day was co-organised by Phil Jardine (Open University), Victoria Herridge (Natural History Museum), Isabel Fenton and Adriana de Palma (both Imperial College London and Natural History Museum). It was built around four talks by invited speakers, sessions of 5 minute 'lightning talks' that were open to

delegates, and two networking exercises: a speed dating session and breakout discussion groups.

Registration was accompanied by a challenge: self-identification of the time period worked on, via the medium of coloured stickers (blue for deep time, green for shallow time, red for modern day, and yellow for other) that were attached to name badges. Some people went ahead and identified themselves with more than one time period, which was very much in keeping with the cross-timescale, multidisciplinary nature of the day.

After an introduction and welcome by meeting co-organiser Victoria Herridge, Andy Purvis gave the first talk on 'What is Macroecology'. At about 25 years old it's still a relatively young field, and Andy took us through the development of macroecology in that time, from descriptions of large scale patterns of abundance, diversity and body size (often with birds) to more process orientated studies that seek to explain these and other patterns, with an ever-increasingly complex set of analytical tools.

Our next invited speaker was David Jablonski, who focused on spatial patterns of diversity in bivalves through time, and especially the latitudinal diversity gradient (LDG). David showed how the temporal processes of speciation, extinction and dispersal have underpinned the LDG from throughout the Cenozoic, and explored the interplay between climate, range size and extinction.

The next session was chaired by Isabel Fenton. Our third invited speaker, Lee Hsiang Liow, opened the session with a talk entitled 'Inferring paleoecological and evolutionary dynamics by separating process and observation'. Lee Hsiang showed how ecological modelling approaches (capture-recapture and occupancy modelling), that model detection and ecological processes separately, can be applied to the fossil record to reconstruct patterns of turnover and occupancy in the face of incomplete and variable sampling.

We then moved into our first set of lightning talks. David Nicholson spoke about macroecological responses of turtles to environmental change in the Mesozoic and Cenozoic, and David Hawksworth reminded us that the big

obvious organisms aren't always the most ecologically interesting by exploring the macroecological aspects of fungi. Andrés Baselga showed that biotic spatial ranges are fractally structured. Anne Magurran demonstrated that while alpha diversity in ecological assemblages has remained stable through the 20th century, the composition of those assemblages has changed dramatically. Both Ellinor Michel and Viv Jones spoke about palaeolimnological datasets, for studying community change and carbon cycling respectively.

The morning ended with academic speed dating, with delegates targeting people working in different time intervals using the coloured stickers on their name badges, and Victoria marking the changeovers with her trusty tin whistle. This got everyone mixed and mingling in time for lunch, and a bit more networking.

Adriana De Palma chaired the third session, which was opened by Kathy Willis with a talk on 'Earth's testimonies: how the past can inform the future in biodiversity conservation'. This talk made a strong case for using palaeoecological data to set baselines for conservation and to test forecasting methods such as species distribution models.

The next set of lightning talks was kicked off by Graeme Lloyd, who showed the impact of incorporating fossils into Evolutionary Distinctiveness metrics. Paul Barrett invited the ecologists in the audience to offer ideas for deciphering diffuse coevolutionary patterns in the fossil record, and Carola Gómez-Rodríguez explored the relationship between climatic niche width and diversification rate. Bill Austin spoke about morphological variability and functional morphology in foraminifera, and was followed by Andrew Johnson who, complete with scallop shells as props, discussed productivity and extinction in Plio-Pleistocene bivalves. Amy Waterson closed the session with a return to turtles, and the spatial dimension of macroecological change.

It was then time for the breakout discussion session. We had already split the delegates into eight discussion groups to ensure thorough mixing across time intervals and career stages, and approached a number of delegates to act as chairs. We asked each group

to produce lists of the five main challenges and solutions to integrating questions and data across timescales, and the five key research questions that we as a community should be addressing. These lists were handed in at the end of the session, to be brought together for further discussion at the end of the meeting.

Phil Jardine chaired the final session of the day. Stewart Edie opened the third set of lightning talks, with his research on the effect of taxonomy on large-scale biodiversity patterns. The next three talks took us back to the latitudinal diversity gradient. Philip Mannion showed that pronounced gradients may only be present in ice-house climatic phases, and Mark Bell explored tetrapod latitudinal diversity in the Cretaceous. Meeting co-organiser Isabel Fenton spoke about her research on modern and past latitudinal gradients in planktonic foraminifera. Richard Field then presented research on elevation and isolation as important factors in enhancing plant speciation, and Thomas Guillerme ended the session with a talk on missing data in phylogenies that include both extant and fossil taxa.

During this session of talks Victoria had been busily compiling the lists from the discussion groups, which formed the framework for a final open discussion. Major points to come out of the discussion groups were the importance of data sharing and access, and more communication across disciplines and timescales, especially in terms of integrating terminology and the analytical tools used. The meeting closed with a wine reception, sponsored by BMC Ecology.

Thanks to all those who attended the meeting and contributed with ideas and talks, and thanks to the British Ecological Society, the Macroecology SIG, the Palaeontological Association, and BMC Ecology for providing funding.



Neo- and palaeoecologists get to know each other across the time barrier during the speed dating session.



In breakout discussion groups the delegates identify the challenges and potentials of cross-timescale macroecological research.

PEATLAND RESEARCH

Ian Rotherham
Peatlands@BritishEcologicalSociety.org

Wilder by Design: Report on the 2014 conference and advance notice and call for papers for September 2015

The excellent, high quality presentations at the recent Wilder by Design conference held in Sheffield covered a range of perspectives, as shown in the conference abstracts. This facilitated some interesting discussions, which raised issues and challenged thinking for both delegates and speakers alike. Fundamental questions were posed about our understanding of the concepts, the language that we use to discuss them and how this is represented and communicated to the wider world.

Creating and designing a 'Wilder' landscape is not a simple or uniform concept. Whether on the small-scale, urban dimension talked about by Richard Scott (Landlife) and Anna Jorgensen (University of Sheffield), or on the larger rural scale of Charlie Burrell's Knepp Estate, there is a range of approaches and techniques to be applied. In the discussion of Oostvardeplassen by Jamie Lorimer

(Oxford University) there were links to ideas presented by Nick MacGregor (Natural England) with a description of a research project reconnecting woodlands in a wider landscape. Both perceptions and approaches change over time and the 'wilder' concept has a deep-seated eco-cultural component. This needs to be recognised and used in future planning as both Jan Woudstra (University of Sheffield) and Ian Rotherham (Sheffield Hallam University) showed in their presentations. Peter Taylor (Ethos / Leeds Wildland Research Institute) touched on some key themes and added both a personal-human dimension discussing 'rewilding' ourselves, and a global multi-cultural perspective, championing its rich diversity.

Chris Thomas (University of York) also took a global perspective in discussing human influences effecting 'wilder' landscapes and species changes almost by default through decisions made in the global market place, often with unforeseen consequences. The movement of biological species and the ability of species to move and survive in altered circumstances and under human influence were discussed by Jonty Denton and Ted Green (Ancient Tree Forum). They championed the cause of invertebrates and fungi respectively both often overlooked groups but fundamental to high quality ecosystems. Some of these taxa can be heavily dependent on specific grazing regimes whilst inappropriate management adversely affects others. Paul Ardron (BaLHRI), who stepped in at the last minute for the absent Ken Smith, gave a short presentation about the fragility and vulnerability of the physical remains of cultural heritage. He spoke about historical peat cutting in the Southern Pennine uplands and how the archaeological remains may easily be damaged. This is often inadvertent, through inappropriate habitat management and a lack of knowledge of the wider cultural context.

Lois Mansfield (University of Cumbria) gave a presentation on the role that hill farming could play in managing 'wilder' landscapes. She showed the rich cultural heritage underpinning farming in these areas. However, she raised the issue that without a real understanding of the functioning of these communities and robust planning for the future to address problems of an ageing and isolated population, all may easily be lost as declines in farming continue. This scenario

resonates with similar communities in many countries, bringing into sharp focus the need to influence economic, social and political considerations. These provide the framework in which we operate. From the University of Leeds Wildland Research Institute, Steve Carver showed how developing digital mapping techniques could be a powerful tool to inform and influence policy and decision-making. He used an example from work in Scotland taking data from the local / individual-site scale through to setting the context on a global scale. Chris Thomas and Nick Macgregor also gave examples of the power of digital-age science, modelling, and mapping techniques.

The two-day meeting closed with a panel discussion that brought many of the issues together. However, there also was a more fundamental discussion about the values we place on 'wild' and 'design' and the pluralities of meaning which this generates. There was talk of how this should be represented along a continuum of experience. The lively debate raised pertinent philosophical and historical questions and called on the ideas to be placed in a context of transparent and open economic, political, and social dialogues. It was suggested that this could drive forward an agenda for change, which will enable everyone to sign up to a 'wilder' long-term future at least for the next 4,000 years!

The paradigms of wilder landscapes and the interactions between nature and culture, between history and ecology, and between climate, people and nature, will make for a continuing and rich discussion.

A fuller summary of the meeting will be published later together with individual papers in various publications. Photographs from the conference, taken by Chris Senior, can be found at www.flickr.com/groups/syeconet. The conference was sponsored and supported by British Ecological Society, Sheffield Hallam University, JBA Consulting, Thorne & Hatfield Moors Conservation Forum, IUFRO, Landscape Conservation Forum, IPS, BANC, Ancient Tree Forum and the European Society of Environmental History.

The conference organisers intended that the May 2014 conference would help set the scene for the bigger event in September 2015. These expectations were more than fulfilled and the standard has been set high for the second meeting.

The level of interest and enthusiasm to take part in next year's conference means we are looking at an even bigger and perhaps longer event.

The 2015 conference will examine concepts of cultural severance and the nature of eco-cultural landscapes as well as addressing critical issues around (re) wilding. Speakers already confirmed include Mauro Agnoletti, Peter Bridgewater, Adrian Newton, Ted Green, Keith Alexander, Jill Butler, Della Hooke, Rob Lambert, George Peterken, Peter Quelch and Frans Vera. Chris and Anne-Marie Smout will be attending as guests of honour.

The call for papers (oral and poster) is still open. If you wish to be added to the mailing list or want to offer a paper / poster or other support for the 2015 conference, then please email Christine at info@hallamec.plus.com.

In the Bog – The ecology, landscape, archaeology and heritage of peatlands

3rd to 5th September 2014 at the Sheffield Showroom & Workstation, Sheffield, UK.

Professor Ian D. Rotherham and colleagues are organising a major 3-day conference examining the past, present and future of peatland landscapes across the world. The event is bringing together speakers and presentations from a range of disciplines, backgrounds and countries to look at:

- The history of human activity associated with peatland landscapes – heaths, moors, bogs, fens and commons;
- The ecology and archaeology of peatlands;
- The landscapes of peatlands and their neglected heritage;
- The conservation management of peatlands – problems and issues; and
- The future challenges with climate change and carbon sequestration.

There will be papers relating to specific small case study areas, species or suites of species as well as papers that address the issues at landscape or cultural levels. Speakers confirmed include: Jack Rieley, Clifton Bain, Benjamin Gearey, Alper Colak, Andreas Heinemeyer, Simon Caporn, Rachael Maskill, Jaanus Paal, John

Coll, Nicki Whitehouse, Jillian Labadz, Roger Meade, Ian Thomas, Rob Rose and Ian Rotherham. There will be an associated field visit at the beginning of the conference and a poster presentation session on the second day. Offers of posters and displays are still welcome but space is limited.

The event is sponsored and supported by: BES, IPS, IUCN, IUFRO, ESEH, Sheffield Hallam University, Landscape Conservation Forum, Thorne & Hatfield Moors Conservation Forum and JBA Consulting.

Places are limited and pre-booking is essential. More information, the provisional programme and a booking form can be found at <http://www.ukeconet.org/event/in-the-bog-conference/> or email info@hallamec.plus.com or telephone 0114 2724227

Joint British Ecological Society (BES) Peatland Special Interest Group (SIG) Events: Workshops on Identification and Ecology of Sphagnum Mosses

We continue the highly successful theme with three further workshops in 2014 on the Sphagnum mosses. The three workshops will take place 1) at Thorne Moors in the Humberhead levels National Nature Reserve on Monday 20th October; 2) in the Derbyshire Derwent valley; and 3) around Big Moor and Leash Fen in Derbyshire. Places will be limited and pre-booking is essential. More information and a booking form will be available soon from www.ukeconet.org or email info@hallamec.plus.com or telephone 0114 2724227

Then, with the BES's Forest Ecology SIG Waxcaps and Allied Grassland Fungi Symposium, 7th & 8th November 2014 at Sheffield Hallam University, Sheffield, UK
****Note: revised date****

Professor Ian D. Rotherham and colleagues are organising a 2-day event to explore issues around the identification and relationship of waxcap fungi (and their allies) to historical wood-pasture and parkland. This event is seen as both extending the scope of previous workshops, a discussion of their role as indicators and the implications for management of historic parklands and 're-wilding' landscapes. It will set the scene for further workshops and develop one of the themes for the 2016 international

Capability Brown tercentenary conference being held in Sheffield in June of that year. The symposium includes a field visit to the Longshaw estate on the first day and concludes with an expert panel session. Speakers include Ted Green, David Bullock, Paul Ardron, Carol Hobart, John & Doreen Bailey, Neil Barden and David Harries.

The event is sponsored and supported by BES, Sheffield Hallam University, the Ancient Tree Forum and Landscape Conservation Forum.

Places are limited and pre-booking is essential. More information and a booking form is available from www.ukeconet.org or email info@hallamec.plus.com



PLANTS, SOILS, ECOSYSTEMS

Franciska de Vries
franciska.devries@gmail.com

(Franciska is on maternity leave for the next few months: contact Michael Whitfield (michael.whitfield@tcd.ie) or Sarah Pierce (s.pierce11@imperial.ac.uk) for group information in the meantime)

Plants, Soils, Ecosystems is one-and-a-half-year-old BES special interest group on plant-soil interactions, with a focus on biogeochemical cycling, community dynamics, and ecosystem functioning.

Aims

- To promote research on plant-soil interactions and their role in ecosystems through workshops, symposia, and events at BES meetings
- To provide opportunities for networking and collaboration among researchers involved in the study of plant-soil interactions and ecosystem ecology
- To serve as a platform to discuss and share techniques, expertise, and data
- To promote research across scientific disciplines to students, facilitate training

opportunities in different techniques, and provide support for early-career researchers.

Committee

The organizing committee currently consists of Franciska De Vries, The University of Manchester (Secretary: franciska.devries@gmail.com); Ellen Fry, The University of Manchester; Mike Whitfield, Lancaster University; and Sarah Pierce, Imperial College, as student representative. Also affiliated are Emma Sayer, The Open University; Paul Kardol, Swedish University of Agricultural Sciences; Tim Daniell, The James Hutton Institute; and Dave Johnson, Aberdeen University. Richard Bardgett, The University of Manchester, supports the committee in an advisory role.

Plants, Soils, Ecosystems online journal club!
besplantsoileco.wordpress.com

The Plants, Soils, Ecosystems journal club blog has been running for four months now. The idea behind the journal club is to highlight interesting papers in the field of plants, soils and ecosystems (potentially a very broad topic!) and stimulate discussion about the papers. The discussion does not necessarily have to focus on the scientific content of the paper – it could also look at the ways in which papers have been written, or data presentation techniques, for example.

The journal club has attracted over 1800 hits from 56 countries since it started in February. We've had to settle for less-frequent posts due to other demands on our time, but we're still getting lots of interest. If you want to join the discussion, you can always comment on the posts or get in touch on twitter using hashtag #psejclub.

We'd also welcome suggestions for papers to discuss in future posts. If you'd like to see more frequent posts, why not write a guest post for us on paper you find interesting? It's great practice on critically reviewing a piece of literature and writing about research, as well as a good way to raise your profile.

PLANTS, SOILS, ECOSYSTEMS BULLETIN

Plants, Soils, Ecosystems not only sends interesting emails about job opportunities, studentships and meetings regularly to those who signed up for our email list, we also compile a two-monthly *Bulletin*, which involves everything of interest to ecologists interested in plant-soil interactions, and is compiled by our committee member Sarah Pierce. If you also want to stay up to date with everything that is happening in Plant-Soil-Ecosystem world, sign up for the newsletter! But more importantly, the success of PSE depends on you, so keep sending us your jobs, studentships, and interesting facts.

2014 Activities

Two-day PSE-PEPG meeting 'Carbon cycling: from plants to ecosystems', The University of Manchester, UK, 16-17 October 2014.

Registration and abstract submission for the joint Plants-Soils-Ecosystems and Plant Environmental Physiology Group meeting is now open.

This meeting is jointly organised with the BES special interest group PEPG, and will focus on carbon cycling processes from the individual plant level, including photosynthesis and root exudation and their effects on soil C cycling processes, to the ecosystem level, including plant community controls on ecosystem carbon budgets.

The meeting will include three sessions, focusing on carbon cycling at different scales:

1. The fine detail: molecular and microbial processes in the carbon cycle
2. The middle ground: plant-rhizosphere interactions
3. The big picture: carbon cycling at the landscape scale

Keynote addresses will be given by Aimée Classen (University of Tennessee and Natural History Museum of Denmark), Lisa Wingate (French National Institute for Agricultural Research), and Howard Griffiths (University of Cambridge). We hope the meeting will attract lots of interesting science (and scientists!) focusing on diverse organisms and processes at a range of scales, and will

provide opportunities to discuss how we can work together to draw conclusions across scales.

Prices:

Students:	£60
BES members:	£80
Non-members:	£90

Abstract submission and deadlines:

The price of registration includes refreshments and lunches, and a conference dinner. To submit an abstract for a talk or poster, please fill out the form at <http://bit.ly/1prDa2S>. You will also need to register via the BES website <http://www.britishecologicalsociety.org/getting-involved/special-interest-groups/plants-soils-ecosystems/> The deadline for abstract submission is 17:00 on Friday 22nd August, and registration closes on Wednesday 17th September.

If you have any questions, please contact besplantsoileco@gmail.com, and we'll get back to you as soon as we can.

We look forward to welcoming you to Manchester in October!

Talks will also address how global change, including climate change, affects these processes across scales. Registration will open soon. Keynote speakers still have to be confirmed, so keep an eye out for us on twitter (@BESPlantSoilEco) or sign up for our email list (see below).

GSBI Conference in Dijon, France, 2-5 December 2014.

The First GSBI Conference – Assessing Soil Biodiversity and its Role for Ecosystem Services, is organised by the GSBI (Global Soil Biodiversity Initiative) and Ecofinders and held in Dijon, France, December 2-5th, 2014. This will be a dynamic international meeting summarizing the current state of knowledge and recent advancements in the science of soil biodiversity.

The conference will provide a venue to meet and discuss current research efforts in soil biodiversity and its links to earth processes, and to promote interdisciplinary collaboration. The goal of this meeting is promote scientific research on the role of soil biodiversity for ecosystem functions and ecosystem services, and to integrate such understanding into international

environmental agendas, sustainable policy and land management decisions.

Of course, Plants, Soils, Ecosystems will be present and active at this great conference. We will organise an informal drinks reception/ mixer on the evening of Tuesday the 2nd of December, and we are likely also organising a session – keep an eye out for details!

Joint BES-SFÉ Annual Meeting in Lille, France, 9-12 December 2014.

Still a long time away, but as at every Annual Meeting, of course Plants, Soils, Ecosystem will be present this year! Unfortunately, our proposed symposium didn't make it, but keep an eye out for our social activity, which will hopefully take place in an atmospheric French café somewhere in Lille. This is the ideal opportunity to get to know us and to get involved in the special interest group, as we will make plans for 2015 during this meeting. You can have your say!

Get involved!

We are looking for regular contributors to our online journal club (see section above), and for enthusiastic people with ideas for organising meetings, training events, field trips, or anything else interesting within the field of plant-soil interactions and soil ecology. Email us at besplantsoileco@gmail.com if you are interested and have ideas about how to make the special interest group work for you!

Join us!

Sign up for our email list by sending an email to listserv@jiscmail.ac.uk Subject: BLANK Message: SUBSCRIBE PLANT-SOIL-ECO Firstname Lastname, follow us on twitter @BESPlantSoilEco, or like us on facebook.



PLANT ENVIRONMENTAL PHYSIOLOGY

Matt Davey
mpd39@cam.ac.uk

The Plant Environmental Physiology Group (PEPG) is one of the special interest groups (SIGs) within the British Ecological Society and the Society for Experimental Biology.

Plant environmental physiology represents the study of short-term acclimation and long-term adaptation of plants to changing environmental conditions. Our traditional goal has been to integrate leaf and plant-level responses to biotic and abiotic stress under field and laboratory conditions. Increasingly, our focus has been either to set molecular physiology in an ecological context, or to provide a basis for scaling root and shoot level responses to canopy, ecosystem and region in the context of climate change, whether for crops or natural vegetation.

Our remit is to:

- Advance and promote the science and practice of plant environmental physiology
- Integrate the plant environmental physiology community and research opportunities within and outside the BES and SEB
- Support, train and liaise with young plant environmental physiologists

The group holds its Annual General Meeting at the BES Annual Meeting – the PEP group is an informal group for physiologists of all ages and career stages, with as much emphasis on social interaction as on academic subjects. It is an excellent forum for meeting people working in similar fields, for socialising as well as general networking. Members interested in holding conferences, meetings, workshops or field meetings

can apply through the Group Secretary for BES financial assistance and support for student attendance.

The main secretary is Dr Matt Davey (mpd39@cam.ac.uk) liaising primarily with the BES, and Dr Colin Osborne (c.p.osborne@sheffield.ac.uk) within the SEB, both assisted by Prof. Howard Griffiths (hg230@cam.ac.uk).

The PEP website and email discussion list is still popular (with nearly 300 members worldwide this ensures a response to your emails whatever time of day or night you send it!). Messages posted to the list are automatically forwarded to all members. Messages may include research questions/methodology and information, discussion and requests, news of future meetings and PhD/job advertisements. To sign up follow the instructions at: <http://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=env-physiol>

<http://plantenvironmentalphysiology.group.shef.ac.uk/>

Join the Facebook page:

The PEPG Facebook page has been a success, with over 200 followers from 14 countries <http://www.facebook.com/PlantEnvironmentalPhysiologyGroup> or follow us on Twitter: @pepg_sig

PEPG NEWS:

Recent events:

3rd Annual PEPG Young Career Scientist Mini Symposium – Spring 2014 – Sheffield and the Peak District



Lead Rake mining remains and vegetation

This year, our symposium took on a slightly different format, essentially a walk and talk based in the lovely and botanically interesting surroundings of Castleton in the Peak District.

We based ourselves at the YHA Losehill Hall at Castleton, the sunny warm spring certainly made for a good start to the meeting! The first evening consisted of a science quiz where we all excised our public outreach remit by inviting other unsuspecting guests of the YHA to join in, in hindsight this wasn't a good idea as they scored better than some of our teams...



PEPG on top of Mam Tor

On the Monday morning we had a tour of the Buxton Climate Change Field Station hosted by Prof. Phil Grime, this was a fantastic chance to see decent long term experiments and the importance they hold in predicting and monitoring the effects of climate change. We then joined Dr Bec Penny from the Peak District National Park, who showed us some of the amazing archaeological remains of the lead mining industry, which result in a unique floral composition for that habitat. After lunch, the sun came out and we ventured up Mam Tor and down the ridge towards Castleton and back to the YHA where after dinner Prof Grime gave an excellent talk on the history and future of plant ecological physiology.



Professor Phil Grime and the Buxton Climate Change Facility

The Tuesday had a different format where we had a day of high quality talks by PhD and postdoctoral researchers, we even had time for some spontaneous 5 minute flash talks!

A huge thank you to Carla and Marj for organising this successful event – we plan on repeating the format for next year – suggestions for nice locations welcome!

EVENTS TO LOOK OUT FOR IN 2014...

International Workshop on Plant Environmental Physiology techniques September 2014

Last year saw the reintroduction of the international workshop on Plant Environmental Physiology techniques in Lisbon, Portugal. It was a huge success with nearly 100 people being involved during the week. Due to the high global demand for places on this workshop we are going to repeat the workshop in September 2014 – we want to make this *THE* International workshop to attend if you study plant environmental physiology.

Registration is now open:
http://www.essex.ac.uk/bs/conferences/pepg_workshop.aspx

We have secured funding from NERC for this course! If you are a NERC PhD student we may be able to provide you with full travel, accommodation and registration costs to attend this meeting, please contact Dr Tracy Lawson (tlawson@essex.ac.uk) or Dr Matt Davey (mpd39@cam.ac.uk) for more details.

Joint SIG mini-symposium with the Plant, Soil and Ecosystem SIG – “C cycling – from plants to ecosystems” October 2014, Manchester

See Plant, Soils and Ecosystems entry above for more detail of this meeting

COMMUNICATIONS OFFICER POSITION

After two years in post Carla Turner will be retiring as the PEPG communications officer as she completes her PhD, she has been instrumental in setting up the website, Facebook and Twitter feeds, all of which result in our media storms and frenzies during our events, a huge thank you to Carla! If you are interesting in joining our PEPG steering committee as the communications officer please contact

Matt Davey mpd39@cam.ac.uk

Matt Davey
mpd39@cam.ac.uk

Colin Osborne
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Howard Griffiths
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Marjorie Lundgren
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Richard Webster
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Carla Turner – Communications officer

please contact Carla with news and events you would like advertising on our website, email list, Facebook page and twitter @pepg_sig carla.turner@sheffield.ac.uk

AGRICULTURAL ECOLOGY

Barbara Smith
bsmith@gwct.org.uk

- Harper Adams University will be hosting the Agricultural Ecology Group Annual Meeting “Agro-Ecology: linking research, policy & practice.” We are delighted to say that the keynote speaker will be Caroline Drummond, Chief Executive of LEAF. The meeting will be in conjunction with a student / early career researchers day on 17th / 18th September. For further information please contact the principal organiser: Dr Nicola Randall, nrاندall@harper-adams.ac.uk
- There will be a social event for BES and Française d’Ecologie Agricultural Ecologists at the BES Annual Meeting in Lille. Details will be posted on the Agricultural Ecology webpage in September and advertised on the Agricultural Ecology Facebook group – to find us search BES AEG.
- If you would like to share news about your research please do consider the Agricultural Ecology SIG newsletter. News, research updates and pictures are welcome!

OF INTEREST TO MEMBERS

ECOLOGY INSTITUTE PRIZES, 2014

The Ecology Institute Prizes were founded by Professor Otto Kinne in 1984. The ECI Prize is awarded to research ecologists, distinguished by outstanding sustained scientific achievements. The prize gives and takes: it both honours the recipient and requires him or her to serve science and society by authoring a book taking into account ECI's aims, which are to improve communication of ecology and ecological issues among ecologists and particularly to administrators, politicians and the general public. More details are given on the Institute website (www.int-res.com/eci). The book is published in the series 'Excellence in Ecology' (EE) and made available worldwide on a non-profit basis. A considerable number of books are distributed free of charge to libraries in Third-World countries. EE books offer

the authors a chance to express their own views on important ecological issues and to interpret current scientific knowledge on the basis of their own experience and insights, and to criticise freely. Thus, EE books differ from text- or handbooks, which must review objectively defined areas of scientific information. The ECI prize carries an endowment of Euro 6000.

The IRPE Prize (International Recognition of Professional Excellence) is awarded to young ecologists (not older than 40 years) who have published uniquely independent, original and/or challenging research representing an important scientific break through, and/or who must work under particularly difficult conditions. The IRPE Prize carries an endowment of Euro 3.000.

In 2014 the Terrestrial ecology prizes will be awarded.

Nominations for both prizes are invited from research ecologists worldwide and must be accompanied by a CV, publication list and a brief statement, explaining, in the opinion of the nominator, why the person nominated qualifies for the prize. The closing date will be August 31 2014. Nominations should be sent to the Acting Director of the Institute (Prof. Brian Moss, brmoss@liverpool.ac.uk) or, during August, to Ms Angela Fromm (angela@int-res.com).

The Institute will appoint an independent jury to consider the nominations and award the prizes.

ECOLOGY INSTITUTE (ECI), Nordbunte 23, D-21385 Oldendorf/Luhe, Germany.

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E-mail ir@int-res.com

Internet: www.int-res.com/eci



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David Harding

1938-2014



David John Louis Harding was born in Dublin on 18 February 1938. His father was a meteorologist and his mother, who had a Cambridge Ph.D, taught. David went from Repton to Queens' College Cambridge, where he studied zoology. He then served for two years in the R.A.M.C. at Milbank, London, and studied for his PhD at the University of Nottingham. He married Rose Abbott early enough in April 1964 for them to celebrate their Golden Wedding this year. He then worked at the University of Nottingham and East Malling Research Station before, in 1967, joining the staff of Biological Sciences of the technical college that later became the Polytechnic, Wolverhampton. He soon made his mark, playing a prominent role in the Department and nationally in the British Ecological Society, notably in the Education Committee.

He did a great deal of fieldwork with the students, locally in the Wyre Forest and Hilton, and further afield in the Gower Peninsula and many other places. He was particularly pleased when his daughter Sarah studied for an ecological degree at the Polytechnic. He supervised research at both M.Sc. and Ph.D level. David was an effective and entertaining teacher. His erudite humour made the depth of learning he brought to the classroom accessible and enjoyable for all his students. He was profoundly interested in education; an enthusiastic member of the Institute of Biology who helped promote the effective teaching of biology in the schools, colleges and universities of the Midlands.

David was especially interested in mites and in the terrestrial caddis *Enoicyla pusilla*. He was also very good at drawing: one of his best shows a caddis larva on a pine needle in the first of our woodland texts *Ecology of Woodland Processes* (Edward Arnold, 1982). This acted as basis for *Functional Ecology of Woodlands and Forests* by Packham, Harding, Hilton and Stuttard (Chapman and Hall, 1992).

A great family man, he and Rose did a great deal with their four children. David had a lively interest in local affairs, contributing much to the churches in Albrighton and Boningale. He had a lifetime love of church architecture and was an active member of the local Historical Society and the University of the Third Age.

David continued to be active after he retired, keeping up his academic interests in the Woodland Trust, Wildlife Trust, Field Studies Council and the Royal Forestry Society. He did a great deal of gardening and painting the house inside and out, while he and Rose travelled extensively. In 2013 his health deteriorated, however, and on 29 April 2014 he died of heart failure in the Hardings' new home in Wellington, Shropshire, where a well-attended remembrance service was held at All Saints Church on 15 May 2014. There are very many people working the fields of ecology and conservation who remain grateful to him. His was a very productive and worthwhile life and we are all grateful for it.

John Packham and Ian Trueman

Finding the right words: A study of how and why we communicate our science with non-peers.

An invitation to participate in a survey.

Peter Levi / University of Wisconsin-Madison
plevi@wisc.edu



“So, what do you do?” the man next to me asks as the final passengers board the plane.

“Well, I study the gains in ecosystem services from stream restorations in urban catchments.” As I say it, I wonder: ‘Ecosystem services – should I have used a different phrase? Will that mean anything to him?’

“Like water quality and fish?” he asks, after a pause.

“More or less,” I respond, and we swap fishing stories while we wait for takeoff.

I have been trained to have a one-minute “elevator speech” ready to deliver in moments like these, when I find myself talking about my work with non-scientists. But despite the preparation, my mind always races as I search for the right words to describe it – trying to avoid both jargon and oversimplification.

It’s becoming clearer that I’m not alone. The importance of effectively communicating our research, and even science more broadly, has become a more frequent topic among ecological societies, academic institutions, and research centers. The number of seminars, workshops, books, and journal articles on the subject has grown by leaps and bounds in the past decade. For example, the numbers of articles on science communication in *Nature* and *Science* have increased from 3 to 14 per year from the 1990s to the present decade. In the June *Bulletin*, Peter Thomas provided a

timely article, outlining several excellent strategies for communicating our work among non-peer groups.

While we all may acknowledge a need to communicate science more effectively in order to increase the understanding of ecological processes among the general public, fewer of us actively seek engagement opportunities beyond our peer group. This begs many questions. Who among us are communicating their science to non-peers most often – graduate students or late-career professors? What groups are we communicating with – the general public or policy-makers? What is our motivation to communicate, considering that such engagement is often an “extra” on top of our other work-related commitments? These are precisely the questions that my colleagues and I seek to answer in our current research.

We are conducting a survey on the science communication patterns, styles, and expectations of ecologists in various positions, including government agencies, non-profits, academia, and industry. Whether you communicate your science with individuals or groups regularly, occasionally, or not at all, we would greatly appreciate ten minutes of your time to assess how and why we as ecologists engage (or not) with others about science. To take the survey, please follow the link below:

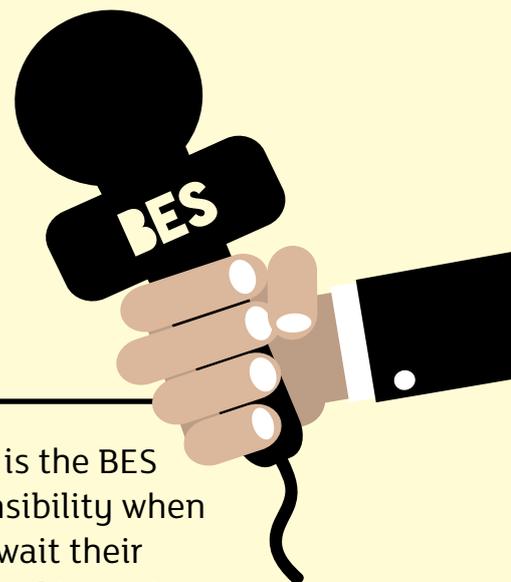
https://www.surveymonkey.com/s/science_communication

The aim of our research is to shed light on the trends of science communication among ecologists. When my colleagues and I met at the Ecological Dissertations in Aquatic Sciences (EcoDAS) symposium, we were nearly finished with our doctoral degrees or just a few months removed

from graduate school. As early-career scientists, we all had an interest in and some experience with communicating our science to non-peer groups, but we also recognized the potential risk that such activities might interfere with other obligations necessary for career success (e.g. publications, research). From our conversations we developed some informal hypotheses: for instance, we suspected that ecologists with research topics that receive frequent media attention, such as climate change or species extinction, may have more opportunities to discuss their work and/or find it easier to do so since the public has at least some awareness of the issue. Our conclusions were merely speculative, and we collectively wondered, *what if we could share this conversation with hundreds of other ecologists around the world?* It was from these conversations that this international survey stemmed.

The survey will be available through September and we would greatly appreciate participation from you and your colleagues, so please share the link freely. We will analyze the results and prepare a manuscript promptly following the close of the survey, and will provide a summary of our findings to the BES and other ecological societies. For more information, please contact one or both of the principal investigators: Peter Levi (plevi@wisc.edu) or Paul Kemp (paulkemp@hawaii.edu). Our research and recruitment materials were approved by the University of Hawai’i Internal Review Board on 07-June-2014 and made possible with funding by the National Science Foundation (#OCE08-12838). We look forward to your responses to inform our current state of science communication and contribute to the growing call for more public engagement.

NOT JUST SPEEDY – *SUPERSONIC!*



Emma Sayer / Associate Editor of the *Bulletin* / University of Lancaster
@panemma

Have you ever wondered about the power behind the throne that is the BES journals? The journal editors have a tough job and a lot of responsibility when they make decisions about the quality of research papers – we await their decision emails about submitted manuscripts with equal dread and impatience.

SPEED INTERVIEWS WITH THE BES JOURNAL EDITORS. PART 1

I wanted to feature the journal editors in the December issue of the *Bulletin* and, as they tend to be incredibly busy people, I sent them 'speed interview' questionnaires with no specific deadline, just a request to send it back at their convenience. I hoped that five or six editors would find the time to respond before, say, October. Little did I know that this little request would reveal one of the reasons why the journals are so successful: the editors interviewed on the following pages all responded within 36 hours (the first response arrived within an hour) – that's a whole new level of speed and efficiency (especially for the *Bulletin*). In the event, there's been such a great response from the editors that we're going to give you two instalments, with Part 2 to follow in the December issue.

I asked the editors:

- What's the best thing about being a journal editor?
- How do you find time to read all those manuscripts?
- Any ideas on the Next Big Thing in your field?
- How would you characterize a good reviewer?
- Which of your own papers do you like the most (and why)?

Here's what they had to say – a whole issue early and ordered by shortest response time:

TIM COULSON

Journal of Animal Ecology
@tncoulson



The best thing about being an editor...

Getting to read so much good cutting edge research in my field, and working to promote animal ecology.

How I find the time...

Insomnia.

The next big thing...

We are on the verge of understanding the genomics of animal speciation in the wild. I think that will be incredibly exciting. I hope *Journal of Animal Ecology* gets to publish the very best of this work.

A good reviewer is...

Anyone who writes a review that is clearly aimed at helping the authors improve their manuscript. A few reviewers seem to think it is their job is to find fault with the paper: they can be overly critical and claim minor issues are major ones. A reviewer's job is to identify ways in which the manuscript can be improved. Errors, alternative interpretations or recommendations for different analyses do not need to be highlighted with critical prose; they can be identified with helpful language. We all get papers rejected, and none of us enjoy it. But a rejection from the editor with a helpful review is easier to cope with than a 'no thanks' with a kick in the teeth.

My favourite (own) paper...

It is always the one I am currently working on. But of those published – probably my 2010 one in *Journal of Animal Ecology*. I'm not saying that because JAE is the journal I edit. I sent it there as I believe editors should send their best work to the journal they work for.

PHILIP STEPHENS

Journal of Applied Ecology
@PS_Applied_Ecol



The best thing about being an editor...

Seeing so many emerging ideas and novel results ahead of their publication.

How I find the time...

I'm still learning about that – but it appears that sleep is overrated!

The next big thing...

I'll resist the temptation to rave about what I'm working on! I'm very excited by the journal's new 'Policy Directions' papers. I'm hopeful that they'll lead to ecologists having much more direct impact on environmental policy – and that could make a very big difference.

A good reviewer is...

Incisive, constructive and – most importantly, well supported. It's very difficult to deal with reviews that tell you exactly what they think of a manuscript but don't really give you the science that underpins that opinion.

My favourite (own) paper...

There are different reasons to like different papers. Curiously, something which means the most to me (perhaps for personal reasons), is a short letter published in TREE (assuming I'm allowed to mention something that isn't in *J. Applied Ecol.*): Stephens, P.A., Pretty, J.N., & Sutherland, W.J. (2003) Agriculture, transport policy and landscape heterogeneity. *Trends in Ecology and Evolution*, 18, 555-556.

The current system of agricultural subsidies favours large landowners, promoting their continued growth and undermining heterogeneity. It's an issue that will become more topical as land sparing vs. land sharing permeates debate about the agricultural landscape.

BEN SHELDON

Journal of Animal Ecology
@Ben_Sheldon_EGI



The best thing about being an editor...

Seeing such a range of research at the cutting edge of Animal Ecology, and helping that research to reach a wider audience

How I find the time...

Late evenings and weekends! Actually, some bits of an editor's role – checking on progress of reviews, correspondence with the journal – fit very well into those little gaps of time one has between all-too-frequent meetings.

The next big thing...

Autonomous data collection and experimentation – combining remote sensing and bio-logging with smart, interactive, devices – are technologies that are going to open new horizons in animal ecology within the next 5-10 years. In terms of research questions, I think an understanding of how we can integrate across scales in ecology (spatial, temporal, phylogenetic) is developing and will further blur the boundaries between ecology and evolution and behavioural research.

A good reviewer is...

A good reviewer reviews in the same way that they would like their own work reviewed: promptly, fairly and constructively. Although reviews remain confidential and – at the reviewer's discretion – are usually anonymous, I think

the best test of whether a review is a good review is whether you'd be happy to see it published with your name attached.

My favourite (own) paper...

The one I'm working on just now of course! Though with my editorial hat on, Wilkin & Sheldon (2009) *Current Biology* 19, 1998-2002, is a good example of how constructive refereeing led us to uncover a novel pattern that wasn't apparent when we submitted the paper.

NATHALIE PETTORELLI

Journal of Applied Ecology
@Pettorelli



The best thing about being an editor...

You get to keep up with all the new cool studies, both inside and outside your research focus! Being an editor is a great way to garner new ideas on possible ways to develop your own work.

How I find the time...

I can expand time – but don't repeat this, mutants do not want to be discovered yet.

The next big thing...

I don't know what it is, but I know some of the characteristics it will have: it's going to be inter-disciplinary and/or it's going to involve some form of new technology.

A good reviewer is...

Fast, providing constructive comments, with a good ability to gauge the manuscript with regards to the journal's niche and scope.

My favourite (own) paper...

The next one to come of course! I get way more excited by the research to come than by the research I've done.

KEN THOMPSON

Functional Ecology



The best thing about being an editor...

The opportunity to see lots of brand-new stuff is great. But the nicest thing is steering a really interesting, exciting, innovative manuscript through to publication. Even better, then seeing it go on to have a big impact and get lots of media attention.

How I find the time...

Honestly, now I'm (mostly) retired from the academic day job, for the first time in my life I have enough time to do the job properly. I can't remember how I managed when I had to work for a living as well.

The next big thing...

I'm going to pass on that. I'm an editor, not an oracle.

A good reviewer is...

One who has good advice on all the questions I want answered. Such as, is this an interesting question? Are the results exciting and/or novel? Is the paper technically sound? How can the paper be shortened? (almost all manuscripts are too long). If there are problems, can they be fixed or not? That's a good reviewer – the perfect reviewer also gets their review in on time.

My favourite (own) paper...

The best moments in science are when you find out that what everyone believes is wrong. So it would have to be the recent paper showing that water-impermeable seeds are all about avoiding predation, not – as everyone has assumed for the last 100 years – about regulating the timing of germination (*New Phytologist*, 2013, 198, 496–503).

JANA VAMOSI

Methods in Ecology and Evolution
@jvamosi



The best thing about being an editor...

Reading exciting and novel manuscripts. Meeting new people.

How I find the time...

I find it can be done quickly as long as I concentrate. Vast quantities of coffee help.

The next big thing...

Geospatial bioinformatics and/or coevolutionary dynamics of interacting trophic levels.

A good reviewer is...

I like reviewers that concentrate on getting at the 'bones' of the manuscript (taking care to understand what question the authors were intending to address) and then respectfully consider whether the approach was appropriate.

My favourite (own) paper...

Heilbut JC. 2000. Lower species richness in dioecious clades. *American Naturalist* 156: 221-241.

It was my first paper and I remember the heady rush of discovery that I had what it took to be a scientist.

RICHARD BARDGETT

Journal of Ecology



The best thing about being an editor...

You get to read some of the most up to date and exciting literature in ecology, and also get to meet with many of the authors. It is also great to work with a team of Editors, Associate Editors, and BES staff who are committed to keeping the Journal, which is steeped in history, at the forefront of its field.

How I find the time...

Like everything, it is about prioritizing time. I mostly do my editorial work first thing in the morning. But, in general, I try to deal with Journal issues as quick as I can to avoid them building up. Even just a few days away from Journal work can lead to quite a build up, but of course this is sometimes unavoidable.

The next big thing...

For me, a fascinating new area of research is the study of eco-evolutionary responses of underground communities to environmental change, and how this impacts community dynamics and ecosystem functioning.

A good reviewer is...

Someone who is clear in his or her recommendation and gives good reason why.

My favourite (own) paper...

When I look at my past papers, I often attach a story or experience to them. This might be about the people I worked with, or simply the place where the work was done. With this in mind, my favourite paper was a study that I did with David Wardle and Lars Walker on patterns of nutrient limitation in long-term chronosequences, which was published in *Science* in 2004. The study involved a journey to some of the most amazing places on Earth with some great people. I learned more during this study than during any other that I have done. Wardle, D., Walker, L. & Bardgett, R (2004). Ecosystem properties and forest decline in contrasting long-term chronosequences. *Science* 305, 509-513.

KEN WILSON

Journal of Animal Ecology
[@spodoptera007](#)



The best thing about being an editor...

Getting to see some really cool ecology before everyone else!

How I find the time...

Good question! It's tricky because we are all really busy people. But usually the job is a pleasurable one because you are reading about interesting research, so I will often do it at the weekend or at the start or end of the working day before or after doing some less interesting administration.

The next big thing...

I am really interested in the potential for new molecular approaches to revolutionise how we do all aspects of ecology. For example, human microbiome studies using next-generation sequencing methods are starting to reveal interesting interactions between gut microbes and their hosts, and I think there is great potential for it to do the same for studies of wild animals. People doing excellent work in this area should, of course, send it to *Journal of Animal Ecology*!

A good reviewer is...

One who carefully and concisely explains the strengths and weaknesses of the manuscript and clearly indicates what revisions need to be done to make it acceptable for publication in our journal.

My favourite (own) paper...

I'm usually most excited by the work I am currently doing, but if I had to choose one of my older papers it would probably be one that I published in *Science* about 20 years ago with my PhD student Sarah Moore. It uses a meta-analytical approach to look at the parasitism cost of sexual selection in wild mammals. The reason I like it is that the basic idea for the paper was conceived over coffee ten years previously when I was a young post-doc at Cambridge Zoology chatting with my peers. When I became an independent researcher, I set this meta-analysis as a short exercise for one of my new PhD students. After about 3 years of hard work and many detailed analyses, we produced a manuscript that has since been cited many times.



Do you *really* think it's a 'major paradigm shift'?



Emma Sayer / Associate Editor of the *Bulletin* / University of Lancaster
@panemma

Buzzword ('bʌzwɜ:d)
noun (*informal*)

a word, often originating in a particular jargon, that becomes a vogue word in the community as a whole or among a particular group.



It's now almost two years since the first Rant and Reason graced the pages of the *Bulletin*, so I suppose it's about time that I joined in with a rant of my own. I think I've also provided a 'reason' (at least in part) but if any of our esteemed readers wish to give a more comprehensive response, please send it in for the next issue... that is, if you can find anything good to say about buzzwords.

I find buzzwords a daily but fairly minor annoyance – anyone who listens to BBC Radio 4 first thing in the morning must be prepared to be showered with terms such as 'robust', 'sustainable', 'legacy', 'hardworking families', etc. before they've even had breakfast. The constant use of these words and phrases is so evident that the BBC website publishes an annual list of the 20 most overused words in the media [1]. Recently, while sifting through a pile of manuscripts and proposals, I felt I could easily compile a similar list for ecology just by picking words out of the first few paragraphs of each document. By the end of the day, I was ready to scream at anyone using terms such as 'major paradigm shift', 'impactful', 'innovative', or 'poorly understood' – and so the seeds of this rant were sown.

"At the end of the day, we incentivize and empower researchers to add value to their deliverables using Big Data, whereas going forward, we should synergise and show enterprise initiative to produce robust, cutting-edge, dynamic science with impact". There are 13 buzzwords/-phrases in that single sentence – it shouldn't even

make sense – and yet many of us will have heard something along those lines during the last departmental pep talk. A lot of the buzzwords we use, like the ones in that dreadful sentence, have been borrowed from corporate jargon. A colleague recently sent me a document for comment that contained a similar number of buzzwords in a single paragraph; without really saying much at all the author had managed to include 'linkages', 'platforms', 'capability', 'stakeholders', and 'sustainability'; 'integration' was mentioned three times in two sentences. The text read like a marketing pitch but left you clueless about what you were being sold.

Buzzwords trickle down from institutions to individuals, via management meetings and strategy documents, and end up being used (no, NOT 'utilized') in proposals and papers. But it's not just corporate jargon that has infected science. The definition of 'buzzword' from the online Collins Dictionary (above) actually gives "*Biodiversity was the buzzword of the Rio Earth Summit*" as an example. Some of our own terms mutate into buzzwords when they become particularly popular. I made an appeal via twitter for the most-hated buzzwords in ecology and was surprised at the number of people who confessed to disliking words they often used themselves. 'Ecosystem services' was by far the most frequently mentioned, followed by 'resilience' and 'biodiversity'; 'tipping point', 'sustainability', 'multidisciplinary', and 'rewilding' also got a few mentions.

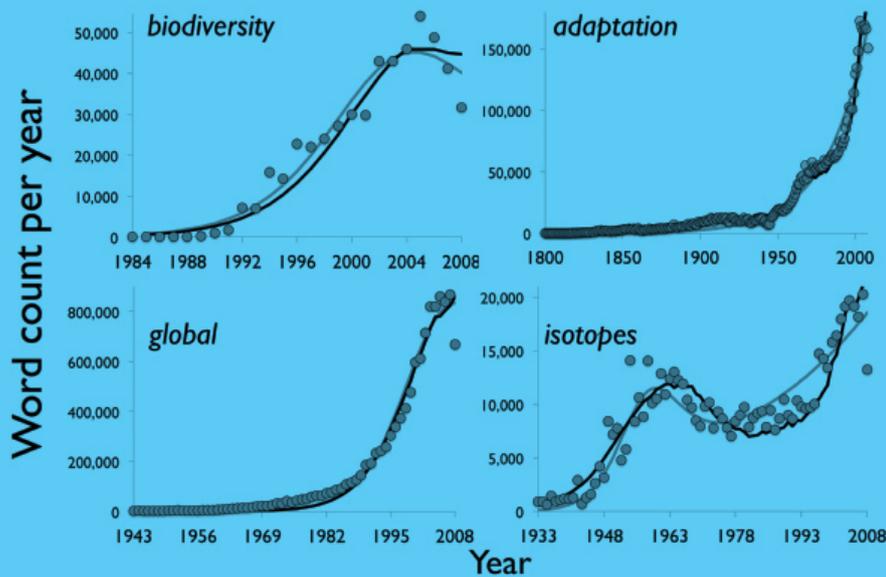


Figure 1. Trends in keyword usage in books on climate science; dots represent word data from the Google Ngram database, lines represent two alternative social diffusion models to predict word use; from [5].

So why does this happen? And why do we keep on using buzzwords?

Many buzzwords start out as innocent words that accurately describe a specific property or characteristic (e.g. ‘robust’, ‘dynamic’) or encompass a complex concept in a simple term (e.g. ‘ecosystem services’, ‘thinking outside the box’). We (mostly) understand them and they help us communicate so we use them again and again, which causes ‘semantic stretch’. Semantic stretch happens when people over-use an idea or concept because it produces a desirable reaction. The first person to use ‘thinking outside the box’ had a cool concept in mind – and it sparked interest. People repeated the phrase to recreate that reaction, and as it gets repeated more and more, it becomes ‘stretched’, diluted, and starts to lose meaning [2]. According to the responses to my entirely unrepresentative and unscientific twitter-appeal, many fairly common terms from ecology are perceived to be buzzwords when they are ill-defined or used in the incorrect context. This misuse combined with overuse will hasten and worsen semantic stretch. It also ultimately defeats the purpose of the buzzword: instead of improving communication, we start using the same term to mean different things.

We also use buzzwords because the best way to make people care about something is to form an association between something they don’t yet care about and something they do [2]. Grant

proposals are a great example for the use of buzzwords in science to create an association with something that is perceived to be important, topical or novel. For instance, I may be interested in studying pollination because I love bees and the whole system is simply fascinating. But I need funding. I realize that pollination is regarded as an important ecosystem service, which is a currently a hot topic... I need to get people to care about my research, and I know they care about biodiversity and ecosystem services, so I put my research in that context in the hope that this will improve its chances of being funded†. A colleague even once told me that he combs through NERC’s science strategy for current buzzwords and makes sure he gets as many of them into his proposals as possible, because this alone forms an association between his research and what NERC wants to fund – in other words, he was making his proposal ‘buzzword compliant’††.

Apparently, using buzzwords might also help you get cited [3], although it’s not entirely clear whether it’s the actual use of buzzwords that help people find your papers or because you are really working on an up-and-coming topic. An evolutionary analysis of published keywords showed that there is clear non-random keyword selection in science. ‘Fashions’ in keywords could be identified by a sharp rise in the frequency of keyword use after the first notable mention (e.g. a highly cited paper) and then a rapid decrease in use after

they had reached some threshold of popularity [4]. A later study used a social diffusion model to show that public usage of climate science keywords rises and falls in a remarkably predictable, mathematical way [5].

So the trouble with buzzwords is given in the very definition of the word: “a word, often originating in a particular jargon that becomes a vogue word...” they’re just fads; they get overused, misused and, after a while, dropped again. We create our own buzzwords by selecting specific terms over others in an attempt to better communicate our science or emphasize the relevance of our work. But buzzwords won’t make a lasting impression, and using them constantly won’t help your ideas to stand out from the crowd.

REFERENCES

1. <http://bit.ly/overusedwords2013>
2. Heath C. & Heath D. (2008) *Made to Stick – Why some ideas take hold and others come unstuck*. Random House Publishing, London.
3. Times Higher Education, August 2008.
4. Bentley R.A. (2008) Random drift versus selection in academic vocabulary: an evolutionary analysis of published keywords. *PLoS ONE* 3(8): e3057.
5. Bentley R.A. *et al.* (2012) Word Diffusion and Climate Science. *PLoS ONE* 7(11): e47966.

FOOTNOTES

- † Apologies for using pollinators as an example, but many of them do make a buzz...
- †† I kid you not, look it up.

★ BINGO ★

***Ecology buzzword bingo for your entertainment
during the BES-SFE Annual Meeting 2014 in Lille;
upon completion, please tweet 'BINGO' to @panemma.***

Resilience	Biodiversity	Sustainability	Ecosystem services
Paradigm	Robust	tipping point	Synergy
Rewilding	Dynamic	Multi-disciplinary	Big data
Natural Capital	Utilize	Up-scaling	Stakeholders

Non-intervention v intervention – but balanced? I think not.



Keith Alexander / keith.alexander@waitrose.com

A RESPONSE TO MARKUS EICHHORN AND KEITH KIRBY'S EXCHANGE IN THE DECEMBER BULLETIN

Markus Eichhorn (*BES Bulletin* December 2013, or 2014 as the far-sighted Contents page has it) claims that 'Leave it alone' is the best approach to forest conservation management, that we should 'leave the trees to it – after all, they had coped perfectly well before humans turned up.' This is a very quaint view, perhaps more of a faith than science. He forgets that 'nature' today is not the same thing as it was pre-people. His mantra has all the characteristics of a faith or religion, rather than scientific understanding. Where is the rational objective scientific argument? As Keith Kirby points out, the eradication of the mega-herbivores was a major perturbation – would natural processes today result in the same thing that natural processes in prehistory achieved? And shouldn't conservation ecology be looking forwards rather than backwards? However he is not correct in suggesting that unmanaged high forest would benefit 'dead wood beasties'. He is a proponent of that other faith, the high forest hypothesis.

Much of ecology sometimes seems to be led by hypothesis, with the facts at best ignored, if not denied. Hypothesis is the reality, not the facts, it seems. While hypothesis testing is an important aspect of ecological science, ignoring the facts should always be unacceptable. Reading Markus Eichhorn's 'rant' and Keith Kirby's 'reason' was very interesting given that both come from the school of what Oliver Rackham refers to as the Tansley

Hypothesis – the high forest hypothesis – a hypothesis that has never been properly tested and which never fitted the facts. Rackham wisely states that conservation should be based on practical observation rather than unstable theory. Both *Bulletin* writers come from the same side of the argument but one is apparently more extreme (ME) than the other (KK). In reality both have been active in promoting the Tansley Hypothesis as reality and have worked hard to convince people that it is actually fact. This is storytelling at its most inventive, expecting readers to suspend disbelief and not question the new reality. To me, the facts are the starting point and hypotheses should be developed which are consistent with all the facts not just a narrow selection. Ecology is supposedly multi-disciplinary but most ecologists study vegetation and plants, and largely ignore other aspects. The Tansley Hypothesis has never actually fitted the botanical facts let alone the wider ecological ones. So why do people persist with blind faith in its accuracy. For this does seem to be about faith rather than reality, all very unscientific.

The basic Tansley Hypothesis is that the natural vegetation cover of what is now Britain was closed canopy forest before humans began to open and clear it for agriculture. Palaeo-ecological studies have shown that the pollen record from this period was indeed dominated by trees, especially oak and hazel. There is a serious problem here however as both oak and hazel are light demanding species and appear incapable of sustaining themselves under

closed canopy conditions. Long periods of closed canopy oak-hazel forest are a biological impossibility. So clearly the palaeo-ecological hypothesis of closed canopy conditions is incorrect. Forcing facts to fit untenable hypotheses is not only a trait of vegetation ecologists and palaeo-ecological vegetation ecologists however. Palaeo-entomologists have developed their own hare-brained hypotheses in order to be consistent with the Tansley Hypothesis. We are expected to believe that the presence of saproxylic beetles such as *Dryophthorus corticalis* and *Prostomis mandibularis* in those same peat deposits which yielded the oak and hazel pollen support the hypothesis, whereas in reality they strongly refute it. Both species require large girth tree trunks containing large volumes of decayed heartwood. We know from modern ecology that closed canopy conditions do not produce such trees. One has only to visit a former wood pasture site that has been left ungrazed for decades to see that the developing young growth overtops the older wood-pasture trees and kills them. Trees with large volumes of heartwood decay will have re-trenched, the crown will have naturally reduced for physiological reasons linked to ageing processes. As I clearly remember George Peterken announcing at the Royal Agricultural Society of England's Ancient Trees Conference in the 1990s, ancient trees are a creation of the cultural landscape as trees could not achieve those ages under closed canopy conditions. But unfortunately he was relying on the Tansley Hypothesis as fact. In reality, the sub-fossil beetles demonstrate that ancient trees were actually a widespread

feature of the early forests and so those forests cannot have been closed canopy. Peterken was right that closed canopy forest and ancient trees are mutually exclusive, but he had the cause and effect back to front – the presence of ancient trees in the early forests, as evidenced by the sub-fossil beetle fauna, demonstrates that they were not uniformly closed canopy but in reality a mosaic of different tree densities. Even the pseudo-scientific stories of ‘gap-phase dynamics’ do not fit these facts and are merely a sub-hypothesis of the Tansley hypothesis, based on observations on how artificially maintained closed canopy systems operate.

I haven’t yet mentioned Frans Vera’s hypothesis – that large herbivores are the drivers of vegetation structure (*Grazing Ecology and Forest History, CABI, 2000*) – as I am aware that many ecologists are brain-washed into dismissing it out of hand, without even reading it. His review of the development of the Tansley Hypothesis is the most interesting and informative that I have read anywhere. Here is a much more credible hypothesis about the dynamics of natural vegetation – credible because it accepts that large herbivores eat vegetation and therefore have an influence on its development. We know that large herbivores were present throughout the post-glacial period, before trees colonised and while trees supposedly dominated the landscapes – to ignore their influence is naïve in the extreme: as George Peterken rightly points out, that in their absence closed canopy woodland develops. But they were not absent of course! Vera’s hypothesis provides a much closer consistency with all of the facts – the predominance of oak and hazel pollen in the sub-fossil record are a key factor in his ideas. Interestingly, unbeknown to him, his hypothesis also fits the facts elucidated by the palaeo-entomologists – once their own unsound hypotheses are dismissed.

So we have the interesting situation where the old unsound hypothesis is so long-established that it has evolved into ‘fact’ in the minds of its disciples, despite its failure to fit the real facts. It has become so engrained in their minds that they have based their careers on it, so that any modern alternative hypothesis is too late on the scene to be regarded

seriously – too late, missed the boat! They go through the motions of ‘testing’ the new hypothesis with the objective of defeating it. They do not test the two competing hypotheses in parallel, to identify the strengths and weaknesses, so that all of us can hear both sides of the debate and form our own independent opinions. They do not examine them in open debate with both groups of supporters equally represented. But are we not scientists? Do we not thrive on developing and testing new hypotheses? Since when has an unsound hypothesis become a religion, dependent on the faithful to worship it and to fight in its defence, irrespective of the intellectual cost? I find it frightening that more than a decade later, the Tansley disciples are still blindly defending an untenable hypothesis, still promoting it as the ‘truth’ in our universities. Yes, Tansley was a hero of the early days of ecology, but that does not mean that his words should be treated as gospel. Knowledge and understanding develop. Was ‘Rant & Reason’ written to amuse the disciples or to stimulate a response?

A FURTHER COMMENT ON DECEMBER’S ‘RANT AND REASON’

Mick Green
mick@gn.apc.org

December’s Rant and Reason raised some important issues. I am fully with Markus when he shouts ‘leave it alone’ – we have intervened for far too long, failed to stop biodiversity losses and spent a lot of scarce cash on fairly useless gardening. I also agree with Markus that Nature is an ‘unbounded liberal spirit’ and that where we can we should ‘walk away, and watch from a distance’.

Keith, in his response, is also correct. We live in a cultural landscape that has been highly managed for centuries. We have pushed nature so much to the margins that we probably have to, at least for now, carry on with some intervention to maintain, in many areas, those small pockets where we have allowed nature to remain.

Getting the balance right is all important and as Keith states we should be looking to “push back the boundaries of where we intervene” even if in some cases we do not always go for non-intervention.

While Markus just said ‘leave it alone’ Keith brought in the phrase ‘re-wilding’. This has become the word for large scale restoration of natural processes, though it is undefined and often misused. As a part of the ‘re-wilding’ movement for some time I have tried to come up with better words or concise definitions but have failed miserably. ‘Re-wilding’ is not about looking back, trying to re-create some pre-human nirvana or prehistoric landscape. It is about large scale ecological restoration and re-establishing natural processes with no (or minimal) intervention. I believe that current conservation is, as Markus states, ‘inherently conservative’. It is always looking backwards trying to preserve some chocolate box image of British (or more correctly, English) wildlife. We look back to the early days of conservation to see what we are trying to re-create – a suite of species based on pre-war agricultural practices. The rosy image of England ‘before the fall’. The species common then were only such due to around 100 years of agricultural practice – of post enclosure, early industrial, agricultural landscapes. These are the ecosystems of our folk memory, present when conservation began to emerge into the mainstream thoughts and which developed the 1949 Act and much of our statutory framework.

I believe that Ian Rotherham (*March Bulletin*) is fundamentally wrong when he equates ‘re-wilding’ with ‘abandonment’. As I have stated above, it is not about looking back, nor is it about separating humans from Nature – it is quite the opposite. It is all about looking forward, restoration and re-acquainting urban humans with wild nature.

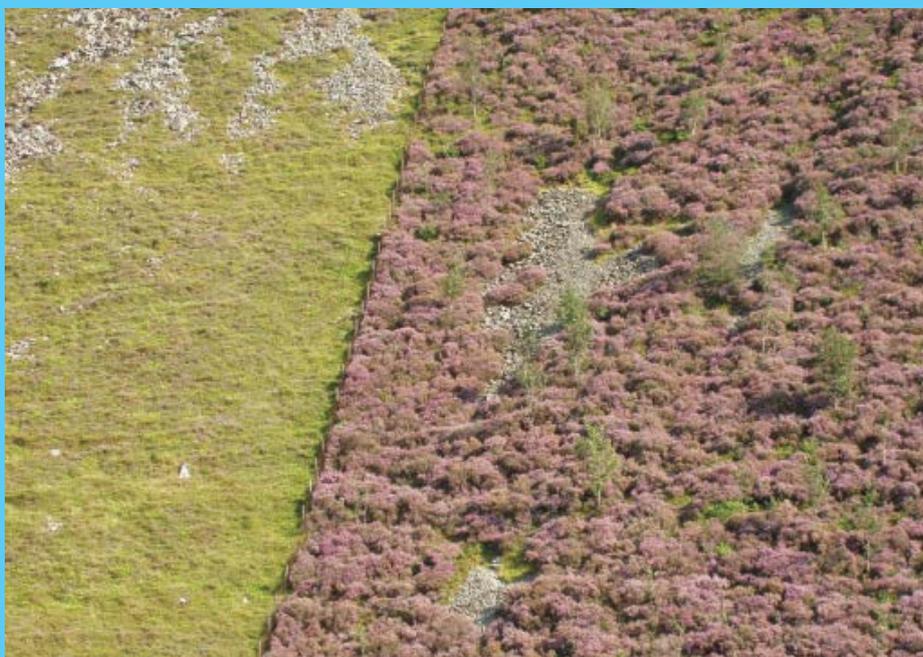
I agree we live in a cultural landscape – one formed by millennia of human intervention. But it is not a static landscape and is not one to be preserved in aspic while species disappear. I have lived in rural Wales all my adult life. I live in a rural ‘community’. It has changed beyond recognition since I came. The mixed farming of sheep and cattle, with some crops and vegetable patches at many farms, has moved to become mainly large-scale sheep ranching. I cannot see anything ‘traditional’ about farming where sheep are round up by ATV as much as dogs, feeding is with big-bale silage, and the area is dominated

by large areas of mono-culture ryegrass. The economic argument put forward by Ian also does not stand up. Farming or other land uses is not the main economic driver of many rural communities. When I first moved here I used to pop round to my neighbour, Rachel, and buy milk and yoghurt from her dairy. You may well now be buying products from 'Rachel's Dairy' in your local supermarket – products now produced in factories run by a multi-national.

Ian is also fundamentally wrong when he states that 'abandonment' will lead to a 'plethora of degraded, species poor, secondary successional endpoints'. No evidence is given for this viewpoint and it goes against the evidence in many areas I have seen. I can take you to many places across Wales where grazing, especially sheep grazing, no longer occurs for a variety of reasons. Without exception these ungrazed or lightly grazed areas have improved beyond all hope. The structure and diversity of the communities has developed and a wider number of species are present. As George Monbiot states, why should we expect our ecosystems to thrive when eaten to death by 'Mesopotamian ruminants'!

I can take you to a hill grazed by a small flock of ponies, where trees have grown up on the 'Ffridd' slopes (bracken slopes of Wales) and in areas that were mainly dominated by *Molinia* bilberry is now establishing itself in the tussocks and is out-competing the unpalatable grass. Overall the wildlife is thriving compared with the 'sheepwrecked' hill next door. The Ffridd is full of tree pipsits, willow warblers, redstart and the like. On the blanket bog plant communities are thriving and a hen harrier was seen recently.

On another site, where there appears to be no grazing, vegetation has been quick to re-establish itself, despite the slow nature of change in the uplands. I can now walk through the site and see plants in flower – a rare sight a few years ago. Alpines not recorded in places for over 100 years have suddenly re-appeared – presumably repressed by grazing though hanging on out of sight under other vegetation. Evidence of small mammals is everywhere and bumblebees are feeding on the blossoms.



Hidden within forestry plantations there are bogs that haven't been managed or grazed for decades. These are some of the best, most diverse looking bogs I can find. These and other examples show that 'conservation grazing' can be a contradiction in terms and that communities can thrive outside of human (and especially agricultural) control.

Large-scale restoration of natural processes is not a threat to wildlife, nor local communities or economies. It cannot be forced – it will only take place under sympathetic ownership, but there must be a move in subsidies to enable it to happen where it is wanted. There are many areas of Britain, especially in the uplands, where farming is, and is likely to continue to be, uneconomic. It is only maintained by subsidy. Why should that subsidy not be directed to restoring more natural ecosystems? I acknowledge that in the crowded lowlands there may be fewer opportunities, but initiatives like the National Forest and the Great Fen Project are already moving forward.

There will always be cultural habitats, such as hay meadows, Rhos pasture or coppice woodland, that are both valuable for their diverse wildlife as well as for their human connections. Nobody is asking to 'abandon' these, or other valued pockets, but isn't it time we at least tried to let Nature have the upper hand where we can?

Editor's note: both Keith Alexander and Mick Green fell victim to a malfunction in the operation of the bulletin@britishecologicalsociety.org email address earlier this year. Keith wrote his piece as a response to the articles in the December issue before Ian Rotherham's response in March, while Mick wrote his piece more recently having read both issues. Our apologies to both Keith and Mick for the delay in bringing their opinions forward.

FROM OUR SOUTHERN CORRESPONDENT



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In July this year, I will have been in Western Australia for 30 years, or exactly half my lifetime to date. This milestone caused me to reflect on what on earth happened.

When I travelled here in 1984, it was to take up a 5 year position with CSIRO to work on a new programme focusing on the ecology of fragmented ecosystems. I ended up staying with CSIRO for 16 years, then moving to Murdoch University for the next 9 years and ending up in my current position at the University of Western Australia from 2009 on. I've thus had the luxury of changing jobs several times but staying in the same city – and indeed the same house – for the past 25 years.

Some may say this shows a degree of indolence, but my excuse is that when it's come to making decisions about whether to take opportunities to move elsewhere, the alternatives have rarely stacked up. Western Australia has proven to be an amazing place to be an ecologist – a huge state, covering a third of Australia, with an amazing Aboriginal heritage, biological diversity and array of ecosystems, juxtaposed with an impressive array of human impacts, threats and management challenges. I frequently whinge about the depressing state of politics in WA and Australia as a whole – and that is certainly centre-stage at the moment – but it remains an amazing place to live and to work as an ecologist.

Eric Bogle, a Scottish-born folk singer who's lived in Australia most of his life, wrote many fine songs – some thoughtful, some angry and some hilarious (including the classic "Nobody's moggie now" about a cat that was run over by a truck). He produced an album called "The Emigrant and the Exile", reflecting the double-edged sword of electing to live somewhere different from where you grew up. I have to confess that I never thought for a minute that I'd end up living much of my life in Australia. As a lad growing up in Scotland, the closest I got to thinking about Australia was having a pen-pal in

New Zealand and singing "Kookaburra sits in the old gum tree", wondering the while what on earth a kookaburra was. It was only after I'd finished my PhD in Aberdeen and was having a jolly time in California as a postdoc that Australia came on the horizon as a potential destination – largely because there appeared to be jobs there.

I probably owe my self-imposed exile to the colonies to former British Prime Minister Margaret Thatcher. The cutbacks she initiated to higher education funding were just getting underway as I completed my PhD at the University of Aberdeen. How universities fared at this time varied greatly, depending in part on how the university executive dealt with the issue. Aberdeen seemed to deal with it incredibly badly, and I have vivid recollections of taking part in protests, including an occasion with staff and students lining the route taken by the senate procession and watching in silence as the university hierarchy paraded past: chilling stuff. Students were revolting across the country, as they often had been in the past: in my undergraduate years we protested about all sorts of things, including nuclear disarmament and the Vietnam war. Anyway, the upshot of the cuts for the department where I did my PhD was a rapid decline in the numbers of staff and postgraduate students in what had been a thriving area. At that time, I had the good fortune to do a postdoc at Stanford University with Hal Mooney. My implicit assumption had been that, at the end of my 2 years at Stanford, I would return to the UK and find a university position somewhere.

Either Maggie Thatcher had a covert operation specially designed to keep Hobbs out of the UK, or her cutbacks were part of a larger plan. Whichever was the case, it was blatantly obvious in the early 1980s that research and academic

jobs were like hen's teeth. (As an aside, where do expressions like this come from? Wictionary helpfully explains that hen's teeth are an "example of a non-existent phenomenon, as birds do not have teeth". Interestingly, they provide as a synonym "rocking-horse shit", because this comes "from the expression 'rare as rocking-horse shit', based on the observation that rocking horses do not produce feces". Amazing what you find when you're scanning the web while thinking what on earth to write for the *BES Bulletin*). Anyway, whether hen's teeth or rocking-horse shit is the operational expression, either was very apt for academic jobs in the UK in the early 80s – a non-existent phenomenon indeed. I'm guessing there must have been some around, but none that I seemed qualified to apply for.

Hence, in the latter half of my postdoc, I found myself applying for advertised jobs in many far flung corners of the Empire and beyond. I applied for several US positions as well, and mostly got polite "Thanks, but no thanks" replies. One memorable response from a university in one of the southern states came on a postcard with the statement at the bottom "XX University is an equal opportunity employer that welcomes women and other minorities". I hope things have improved by now. Anyway, amongst the trickle of adverts in the back of *Nature and Science* (this was pre-Internet, remember), was a position as a plant ecologist with CSIRO Division of Wildlife and Rangelands Research (as it was called then – names change frequently in CSIRO) in Perth, Western Australia. I applied for this along with all the other applications I was sending off at the time and only began to wonder where on earth Perth and Western Australia were when it looked like they might want to give me the job.

And the rest, as they say, is history. I flew to Australia in July 1984, stopping first in Canberra to sign the forms and get my forehead stamped at head office. My first day in Canberra was spent wandering around the town looking at the parrots and cockatoos in the trees and seeing a platypus in the headwaters of Lake Burley Griffin. My first evening in Canberra was spent wandering around the town centre looking for a restaurant that was open (things definitely have improved now – although I don't think there are platypuses in Lake Burley Griffin any more). Then on to Perth, which I had eventually found on a map. Indeed, Fremantle, the port city of Perth where I now live, was well and truly on the map by this stage because those pesky Aussies had won the America's Cup the previous year, ending the total US dominance of the famous yacht race and rendering Fremantle the venue for the next competition.

Perth at that time had the definite feel of being a very, very long way away from everything else. The only local beers were quaintly named "Swan" and "Emu" and both were equally awful. Pre-email and internet, the only links with the outside world were Australia Post, expensive phone calls and telex machines. Most people didn't really seem to care much about the outside world anyway – well, it took such a long time to get there, really. Things have definitely improved in these regards too. Little Creatures and other craft breweries have greatly improved the beer situation. Perth remains the most isolated capital city in the world, but more efficient transport and the internet age has rendered it much more connected. The isolation is partly the cause of the amazing biology of the state, particularly the southwest. It also affected the science in interesting and sometimes weird ways too. Some things in WA appeared to happen with little regard to what was going on elsewhere: for instance the system of vegetation mapping for the state, devised in the 1970s, is amazing both for the extent of work undertaken by its originator, John Beard, and for its completely idiosyncratic approach. But in other ways, the isolation and difference from the rest of the world also engendered a questioning of current dogma and approaches that led to different perspectives – that in turn pushed ideas in new and exciting directions. As connectivity with the rest of the world improved, so the intermixing of these different perspectives was enhanced.

Other things have changed for the better too. When I first worked at CSIRO, I was part of a Division with 125 research scientists – of whom a grand total of 5 were women. Our WA lab was comprised entirely of male researchers, although there were several women in admin and support positions. I'm happy to say that women are far from a minority in my research group at UWA now – in fact the exact opposite. And from being a relatively small and isolated outpost that few had heard of and even fewer visited, we now have people from all over the world visiting and collaborating in trying to understand the weird and wonderful ecosystems we have here and comparing them to other parts of the world. And, truly, we need all the help we can get. It's become clear, as I've discussed earlier in the *Bulletin*, that the ecosystems and species here do differ in significant ways from those found elsewhere, particularly in the northern hemisphere. So, concepts and management prescriptions devised in other parts of the world don't necessarily apply here or at least have to be modified. Indeed, many of the complex management conundrums now being encountered have arisen from the inappropriate transfer of management practices from elsewhere. Hence, figuring out the ways in which ecosystems and species do differ is essential to the development of effective management – but also feeds into attempts to broaden and generalize understanding of basic ecological processes. And while the underlying biology may differ in subtle but important ways, the challenges facing Western Australian ecosystems are similar to those found in many other parts of the world. I hardly need to list these – climate and land use change, development, fragmentation, invasive species and so on.

But perhaps the biggest challenge relates to my ongoing whinge about our political leaders. As a Thatcher exile, I'm now perturbed to see our current government pushing an agenda strongly reminiscent of the Thatcher era. The Washington Post newspaper recently commented that our latest Prime Minister, Tony Abbott is "quickly becoming one of the world's most hated prime ministers" (<http://www.washingtonpost.com/> 22 May 2014), after the government "unveiled a draconian austerity budget that analysts call the most extreme and least popular of the past four decades in Australia". The budget itself is pretty grim, but what's

got up Australians' collective noses is the way in which it completely overturned a raft of pre-election promises – clearly the case even though the PM and Treasurer continue to deny that any promises were broken – and is seen as unfairly targeting vulnerable sectors of society. The budget and other moves by the government indicate a clear policy of erosion of environmental programmes and safeguards (including those relating to climate change), a downplaying of the role of science in decision making, "redirection" of research funding – and radical changes to funding of higher education. Not particularly promising directions – and certainly not the kind of stuff you're looking for to help with the things ecologists are interested in. And students are revolting again after a lengthy period of quiescence.

So, it's been an interesting journey from my first bemused steps into the biological wonderland and weird outpost that was Western Australia 30 years ago to the present day. I've learned a lot along the way, and things have changed mostly for the better. Whether we can muddle through the current political mess remains to be seen – perhaps I'll end up being an Abbott exile back in an independent Scotland!



CSIRO Wildlife & Ecology, Western Australian lab research staff plus Chief of Division, Brian Walker, at a science retreat on Rottneest Island, ca 1988. No sign of "women or other minorities" there.



Kangaroo paw, Anigozanthos manglesii, one of the multitude of endemic plant species in southwestern Australia.

In Defense of Footnotes



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I like footnotes. I think it goes back to my childhood. Both of my parents were professors in the humanities. Most of the books that surrounded me were about art, literature, philosophy, history, and language. They were full of footnotes. Aside from the science fiction that I bought, I don't recall there being a single science book in the house.

When I went to college, I focused on English literature, continuing to read heavily footnoted texts. It was only in my third year of studies that my earlier interest in birds re-emerged. I switched to major in Zoology and started down the road to becoming a scientist, only to discover that those discursive footnotes I had learned to love for their interesting digressions, commentaries, and speculations were nowhere to be seen.

Such footnotes are generally frowned upon in scientific journals and books. They disrupt the text, rather like speed bumps or detours in the flow of scientific prose. Curious readers will wonder what's behind those little numbers and pause to look, while others will ignore them and miss any nuggets they might contain. If they are lengthy,¹ they clutter the page with small type.² They may also express opinions, which, as we all know, are dangerous and by definition unsubstantiated. They have no place in scientific writing.

I would argue instead that by banishing footnotes and leaving no room for personal viewpoints, scientific writing is itself diminished. Although footnotes in literature, history, and the arts were initially used to demonstrate the thoroughness of scholarship^{3, 4}, they soon took on the additional role of providing

commentary, digressions, or opinions, rather like the *sotto voce* asides that figure so prominently in many of Shakespeare's plays.⁵ This is what gives footnotes their particular value and makes them more than just another way of citing sources. The really interesting stuff is often in the footnotes. One cannot fully understand the progression of Sir Karl Popper's thinking in *The Logic of Scientific Discovery*⁶, for example, without reading his footnotes. Legal arguments, which rely on precedents to a greater extent than most other areas of scholarship, often contain copious footnote references to previous case law. But here, also, the asides and digressions in footnotes can be extraordinarily important, leading some to suggest that "the most eagerly studied parts of Supreme Court opinions are the footnotes."⁷

"I would argue instead that by banishing footnotes and leaving no room for personal viewpoints, scientific writing is itself diminished."

Such "wandering footnotes"⁸ are largely absent from scientific writing. Here, however, the prose of Stephen Jay Gould provides a refreshing exception. In his massive synthesis of evolutionary theory,⁹ Gould used standard scientific notation (author, year) for reference citations and parenthetical clauses (or sentences, or entire paragraphs) to embellish a point. His infrequent footnotes, however, provide delightful and astute asides. In a footnote dealing with controversies over the unit of selection in Darwinian theory¹⁰ (p. 598), he observes, "I don't think that mere personal stupidity underlies my puzzlement – or rather, if so, the mental limitations must be largely collective, because other participants share the same struggle and express the same frustrations." He then goes on to wonder if this reflects an underlying wiring of the human brain to deal in dichotomies. Other footnotes refer to his grandparents (p. 684) or to his graduate (p. 1231) or undergraduate (p. 1290) experiences.

In fact, whether and how footnotes are used is one of the clearest demarcations between writing in the sciences and in the humanities – scientists avoid footnotes; humanists embrace them. At one level, this distinction may simply reflect differences in the cultures of sciences and the humanities, reinforced by the conventions of publication

in scholarly outlets.¹¹ We become habituated to the mode of referencing in our respective disciplines—scientists, for example, are more likely to be jolted by the intrusion of footnotes into a text than are those in the humanities, who scarcely notice the skipping back and forth. More deeply, however, there may be fundamental differences in the way scientists and humanists think (or are trained to think). Scientists tend to think linearly, from cause to effect, theory to hypothesis to test. Footnotes, especially digressive ones, represent a shift in thought. They seem symptomatic of disorderly thinking, something to be avoided in scientific writing. Perhaps humanists think differently, pursuing a thought and then thinking of other related things, in a process more closely resembling a fisherman’s net than a taut line. This is the stuff of footnotes. By shunning footnotes, scientists are deprived of an outlet for their interesting thoughts, opinions, and asides.

I realize now that, by my (over)use of footnotes, I may have had an effect opposite to what I intended, distracting you from my main point. Footnotes, by providing a way to separate opinions, speculations, and digressions from the mainstream of a scientific text, allow those opinions, speculations, and digressions to come forth. These “tangentialia” come from thinking about the science, adding a twist or a novel interpretation, or pointing out a relationship that may be the seed of innovation. They should not be lost or suppressed.

There is, of course, some risk in allowing such tangentialia to intrude into scientific writing. When we read a paper in a scientific journal or a chapter in a science book, we expect that what we read has an empirical or theoretical foundation and the work has followed appropriate scientific methods. This is what peer review is supposed to assure. But now, if opinions and speculations are allowed to creep into footnotes, can their inclusion in the main text be far behind? Would such footnotes call into question the credibility of the science in the main text? Would the role of science as an objective arbiter of policy disputes

be jeopardized?¹² Would the use of footnotes further blur the line between science and advocacy?

These are not easy questions. They are not confined to footnotes. The avenues for communicating science are rapidly diversifying through online journals, blogs, podcasts, TED talks, Twitter, and the like.

But I still like footnotes.

“Footnotes, by providing a way to separate opinions, speculations, and digressions from the mainstream of a scientific text, allow those opinions, speculations, and digressions to come forth.”

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FOOTNOTES

- ¹ As some tend to be. The prize for the longest footnote on record apparently belongs to the 165-page entry that John Hodgson, a 19th century British vicar and antiquarian, wrote in the *History of Northumberland*; if you’re really interested, see Creighton (1891), or look it up on Wikipedia. [Bowing to convention, I’ve assembled full citations at the end of this essay rather than including them in the footnotes.] One has to wonder, even with a footnote much less lengthy, whether it is possible to go back to pick up whatever flow of thought was interrupted—as you’re probably wondering right now.
- ² Worse yet are endnotes, which force the reader to flip to the end of the paper, chapter, or entire book to find the information, which (to make things worse) may list citations in the order in which they appear in the text rather than alphabetically, creating even more of a challenge. See *Science or Nature* for examples.
- ³ Grafton (1997).
- ⁴ Scientists do this too, by citing obscure or foreign references or, more often, the works of their close colleagues (or potential reviewers).
- ⁵ See Hirsh (2003).
- ⁶ Popper (1959).
- ⁷ Balkin (1989). Balkin devoted most of a 45-page paper originally published in the *Northwestern University Law Review* to the lasting impact of a single footnote (known in legal circles as “The Footnote”) written by Justice Harlan Fiske Stone in 1938 to an opinion in *United States v. Carolee Products*, which had to do with interstate shipment of a product containing skimmed milk.
- ⁸ Horowitz (2011).
- ⁹ Gould (2002). At 1,433 pages and 5.0 pounds, it is scarcely light reading, despite its readability (Gould wrote in the first person throughout).
- ¹⁰ Interestingly, Darwin did not use footnotes in *On the Origin of Species* (published in 1859), although he did in other works, such as *Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. Beagle, under the Command of Captain Fitzroy, R.N. from 1832 to 1836* (published in 1839) or *The Descent of Man, and Selection in Relation to Sex* (published in 1871).
- ¹¹ A clear signpost of Snow’s *Two Cultures* (1959).
- ¹² Leaving aside the question of whether science really does play this role.

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CIEEM AWARDS 2014

At the end of June over 150 CIEEM members and non-members gathered at the Birmingham Botanic Gardens to celebrate CIEEM's new-look Awards. The event was hosted by broadcaster and comedienne Helen Lederer .

Chris Baines gave an entertaining and thought-provoking keynote speech which reminded us all of the importance of celebrating good ecological and environmental practice.

CIEEM Fellow Dr Keith Kirby was awarded the annual **CIEEM Medal** in recognition of his contribution to driving forward woodland conservation in the UK. Regarded by his peers as the 'oracle on woodlands', Kirby's career has spanned nearly forty years. Dr Kirby currently works at Oxford University in the Department of Plant Sciences where he has been at the forefront of ground-breaking policies in woodland monitoring and assessment.

The joint winner of the **Best Practice Award for Practical Nature Conservation** and the outright winner of the **Best Practice Award for Stakeholder Engagement** was the Medmerry Managed Realignment Scheme in West Sussex. The Scheme is the largest managed realignment of the open coast in Europe. The project, led by the Environment Agency and supported by the RSPB, joint venture partnership Team Van Oord, engineering group Jacobs and built asset consultancy EC Harris, has culminated in the building of 7km of new flood embankments designed to be resilient to sea level rise for the next 100 years. The project included planned mitigation for the loss of freshwater Sites of Special Scientific

Interest and the impact on important populations of protected species by creating an accessible landscape-scale nature reserve in collaboration with the local community including 10km of new, well-managed access for walking and cycling.

The Medmerry Managed Realignment Scheme also won the **Tony Bradshaw Award**, offered in honour of CIEEM co-founder and former CIEEM and BES president, the late Professor Tony Bradshaw. This award is only presented to exceptional projects which demonstrate fulfilment of criteria for two or more Best Practice Awards and set a high standard for industry practice.

The other joint winner of the **Best Practice Award for Practical Nature Conservation** was the River of Life floodplain restoration project at Shillingford in Oxfordshire. This collaboration between the Environment Agency and The Earth Trust has transformed a species-poor area of agricultural land into a matrix of wetland habitats fringed with wildflower-rich lowland meadows whilst maintaining the overall productivity of the site for arable and pastoral farming.

DTA Publications, an environmental planning consultancy, was the winner of two **Best Practice Awards for Innovation and Knowledge-sharing** for the development and publication of the Habitats Regulations Handbook. DTA Publications designed the handbook for regular revision to enable subscribers to keep up to date with the fast-paced changes in fieldwork, methodologies and case law in EU and UK Government environmental legislation and policy.

David Hill of The Environment Bank won the award for the **Most Influential In Practice article** for his article "*Biodiversity Offsetting*" which appeared in the September 2013 edition of the magazine. The *In Practice* Award highlights a contributing article which is clear, concise and engaging in style and which shows a detailed awareness of the subject matter and any surrounding argument and debate.

William Bond, Managing Director of environmental restoration and creation company Alaska Environmental Contracting , won the **Outstanding Professional Award** which recognises exceptional achievements of a CIEEM member who, throughout their career, has been committed to delivering consistently high standards of knowledge, skill sharing and leadership in the field of ecology and environmental management.

Octavia Neeves, an ecologist working for engineering consultancy Atkins Global, won the Promising Professional Award which recognises exceptional achievements of a CIEEM member in the early stages of their career. Octavia was nominated by colleagues for her attention to detail and excellence in the field of ecology which has benefitted both large-scale projects and internal communications.

Jonathan Pearce, a graduate from Oxford Brookes University, won the CIEEM Student Projects award in the **Postgraduate Projects** category for his paper "*Biodiversity Offsetting in Oxfordshire: an assessment of challenges and opportunities*".

Scott Mackenzie, a recent graduate in Environmental Management at Northumbria University won the CIEEM Student Projects award in the Undergraduate Projects category for his dissertation studying different types of land use in Northumbria National Park and the variations this causes in invertebrates' presence in its upland streams.

The NGO Impact Award was won by the RSPB for the Great Bells Farm Habitat Creation Project on the Isle of Sheppey. Working in partnership with the Environment Agency the RSPB has created 160 hectares of new freshwater wetland habitat on arable land using cost saving methods and resources. The project is already seeing a positive increase in figures of breeding wildfowl and wading birds with renewed presence of gadwalls, mute swans, shovelers and avocets. Numbers of breeding lapwings have now exceeded the threshold of supporting a viable population and there has been more than double the number of breeding oystercatchers.

Finally the **Corporate Achievement Award** was won by the University of Greenwich for its work in developing Biodiversity Action Plans for three of its campuses. Bee hives have been installed across three of the university campuses which now produce honey sold in campus shops and bee populations are monitored by students. Areas of meadow have been created and plans have been developed with the Forestry Commission to create woodlands on the university estate.

Congratulations to all our winners and a big thank you to our Awards sponsors **Ove Arup, Atkins, The Environmental Partnership, Green house Graphics and McParland-Finn Ltd.**

AUTUMN CONFERENCE

This year's Autumn Conference will be at the University of Edinburgh's John McIntyre Conference Centre on the 11th and 12th November. The theme of the conference is *'Progress in Effective Habitat Restoration, Translocation and Creation'*.

Further details are available at www.cieem.net



PUBLISHING NEWS

Journals Update



www.journalofappliedecology.org
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We've recently published several interesting review articles; Tuck *et al.* undertook a meta-analysis to review the impacts of organic farming on biodiversity (*Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis. Issue 3, 746-755*) and found that organic farming has positive effects on biodiversity compared with conventional agriculture. The authors also highlight that much of the current research has been undertaken in the developed world and more research is required in tropical and sub-tropical areas. Continuing on the agricultural theme, Edmondson *et al.*'s recent paper (*Urban cultivation in allotments maintains soil qualities adversely affected by conventional agriculture. doi: 10.1111/1365-2664.12254*) shows that high-yield food production on allotments can occur without degrading soil quality. A news article by Ken Thompson featuring this paper was also published in the Telegraph online on 28th April.

The past few decades has seen rapid developments in satellite and remote sensing technology which could aid biodiversity monitoring and environmental management. Pettorelli *et al.* (*Satellite remote sensing for applied ecologists: opportunities and challenges doi: 10.1111/1365-2664.12261*) review the prospects of satellite remote sensing for ecological applications from an interdisciplinary perspective. The review article also discusses the current barriers to the applications of these resources and ways to overcome them.

NEW ASSOCIATE EDITORS

We are delighted to welcome a large group of new Associate Editors. We've been joined by Silke Bauer, Claudia Bieber, Yong Cao, Sarah Diamond, Jeremy James, Ralph Mac Nally, Peter Manning, Henrik Sterblom, Gavin Siriwardena, Tadeu Siqueira and Lara Souza, and we warmly welcome them to the journal team.

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META-ANALYSIS IN PLANT ECOLOGY – SPECIAL FEATURE

In July (issue 102:4) the *Journal* published an exciting Special Feature exploring the use of meta-analysis in plant ecology. The Special Feature consisted of 6 papers, which sought to advance the use of this statistical tool in plant ecological research. Guest Edited by Lorena Gomez-Aparicio and Chris Lortie, this collection of papers is free to access.

HOW MUCH OF THE WORLD IS WOODY?

Journal of Ecology will publish a Future Directions paper in issue 102:5 by Richard FitzJohn *et al.* entitled "How much of the world is woody?" The paper is already available online on Wiley Online Library.

When the authors tried to answer "how much of the world is woody?" they found it very difficult to solicit the data they required from existing databases. Nevertheless, the authors established that 45 – 48% of plants around the world are woody. As a consequence of finding it so difficult to draw this conclusion these researchers have sought to make all of the data associated with their paper archived and free to access so that others can reproduce their results. The availability of their data is also in accordance with the British Ecological Society's data archiving mandate, which came into effect as of 6th January 2014. To adhere with the authors' agenda, the paper is also free to access to promote open science and reproducibility. Visit the *Journal of Ecology* blog <http://jecologyblog.wordpress.com/> to read more about the authors' motivation to make their results reproducible.

JOURNAL OF ECOLOGY "IN THE PRESS"

The Centre for Ecology & Hydrology published a press release on a paper (bit.ly/1g2u5KI) published in issue 102:4 by Lindsay Banin and colleagues entitled "Tropical forest wood production: a cross-continental comparison". This paper is free to access on Wiley Online Library.

ECOLOGICAL SOCIETY OF AMERICA ANNUAL MEETING 2014

Several members of *Journal's* editorial team will be at ESA, including Executive Editor David Gibson and Managing Editor Andrea Baier. They look forward to both meeting and catching-up with North American readers and authors.

WELCOME TO THE EDITORIAL BOARD

The *Journal* would like to welcome Liesje Mommer (Wageningen University), Alison Power (Cornell University) and Akiko Satake (Hokkaido University) to the Editorial Board.

JOURNAL OF ECOLOGY & SOCIAL MEDIA

Don't forget to follow the *Journal* online via Twitter (@JEcology), Facebook and Google+. If you would like to contribute a guest post to the *Journal of Ecology* blog (<http://jecologyblog.wordpress.com/>) then contact the Editorial Office via admin@journalofecology.org with your proposal.

Have you attended a conference over the summer that you would like to review for readers of the *Journal's* blog? If so, please also contact the Editorial Office.

Lauren Sandhu
Assistant Editor
admin@journalofecology.org



www.journalofanimalecology.org
@AnimalEcology

PERSONNEL

After interviewing a number of excellent candidates for the role, we are pleased to announce that Jean-Michel Gaillard (CNRS, University of Lyon, France) has joined Ken, Tim and Ben as a Senior Editor of JAE. Jean-Michel has broad interests across evolutionary and population ecology, although he is particularly interested in elucidating evolutionary processes and life history strategies in vertebrates using comparative analyses. As well as being a prolific reviewer for JAE, Jean-Michel brings extensive previous editorial experience from his previous roles on *Oecologia*, *Ecology Letters* and *American Naturalist*. We are excited to have him on board, and are looking forward to his input in developing the journal.

CONTENT

The latest issue (July; 83, 4) opens with our AE Tom Webb's In Focus article highlighting the paper 'The marine diversity spectrum' by Dan Reuman and colleagues, in which the authors construct a mechanistic model of how diversity varies with body mass in marine ecosystems and test it using widely-available data on the communities living in all of the world's coastal seas. Further highlights of the issue include the paper 'Niche filtering rather than partitioning shapes the structure of temperate forest ant communities' by Fowler *et al.* and 'Behavioural and physiological responses of limpet prey to a seastar predator and their transmission to basal trophic levels' by Manzur *et al.*

VIRTUAL ISSUES

Following on from our highly successfully virtual issue on food webs compiled by Eoin O'Gorman, Simon Leather produced a VI showcasing the journal's recent history in insect ecology to coincide with National Insect Week 2014.



Bombus hyponorum, recorded as new to Britain in 2001

We are also excited about an upcoming VI, put together by another of our AEs, Stuart Piertney, on molecular ecology.

PRESS

We have had a number of papers generating attention in the news recently. Most notably, the paper by Catherine Jones and Mark Brown on the factors underlying the invasion success of exotic bumblebees in the UK. The study caught the attention of BBC News and the Independent, among other news outlets, and also has an accompanying interview with the first author on the JAE soundcloud page. In addition, a paper linking Monarch butterfly declines to habitat loss by Flockhart *et al.* generated quite a buzz in North America.

Peter Livermore

Assistant Editor
admin@journalofanimalecology.org



www.functionalecology.org
@FunEcology

Functional Ecology has appeared in the press recently, with our paper on the adaptation of birds to chronic exposure to radiation at Chernobyl (Galván, I., Bonisoli-Alquati, A., Jenkinson, S., Ghanem, G., Wakamatsu, K., Mousseau, T. A., Møller, A. P. (2014), Chronic exposure to low-dose radiation at Chernobyl favours adaptation to oxidative stress in birds. *Functional Ecology*. doi: 10.1111/1365-2435.12283) being covered in a number of places, including Nature, the BBC, The Economist, the New York Times, Die Welt and Gizmodo. This paper was published in Issue 4, along with a new Review piece from Grace *et al.*, "Causal networks clarify productivity–richness interrelations, bivariate plots do not" and a Perspective from Rezende *et al.* "Tolerance landscapes in thermal ecology".



The stag beetle *Cyclommatus metallifer* features in a new video (see text)

Our latest FE Spotlight in Issue 3 was by Clinton Francis on "Road noise and signal divergence via developmental plasticity in an arthropod" and was inspired by a recent paper from Ulrike Lampe *et al.* "How grasshoppers respond to road noise: developmental plasticity and population differentiation in acoustic signalling". Ulrike Lampe was the 2012 Haldane Prizewinner for Functional Ecology, and this work is a continuation of the research described in her award winning paper. We also have a new video online: Massive armature trumps over running stag beetles (<http://youtu.be/R5TxMP71Ynw>), produced by Jana Goyens, Joris Dirckx and Peter Aerts on their recent paper: (Goyens J, Dirckx, Aerts P, Costly sexual dimorphism in *Cyclommatus metallifer* stag beetles, *Functional Ecology* 10.1111/1365-2435.12294, along with our latest podcasts from Alan Knapp and Robbie Wilson (<https://soundcloud.com/besjournals/sets/functional-ecology-1>).

New to the editorial board are Emma Sayer and Markku Larjavaar. Emma Sayer will already be familiar from her work with as a Council member, her involvement with various special interest groups (including Forest Ecology, Tropical Ecology and Plants, Soils and Ecosystems), her public outreach work as part of last year's Festival of Ecology and, of course, her role as associate editor of the *Bulletin*. Emma's research focusses on determining how interactions between above- and belowground processes affect ecosystem function. Her work includes a wide range of tools borrowed from biogeochemistry, plant, soil, and microbial ecology, so she is also intrigued by the methodological and scaling issues involved in multi-disciplinary research. Markku is based at the University of Helsinki, Finland. His research initially focussed on the forest ecosystems of the North but more recently, has looked at tropical rain forests, which contain such great diversity of woody stem structures. We look forward to working with both of the over the coming years.

Jennifer Meyer

Assistant Editor
admin@functionalecology.org

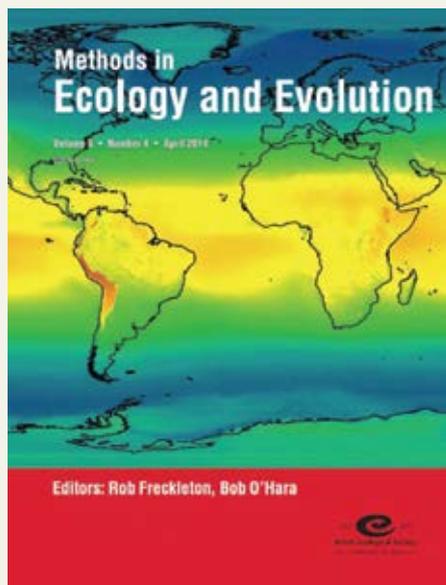




www.methodsinecologyandevolution.org
@MethodsEcolEvol

WELCOMING OUR NEW SENIOR EDITOR

We're delighted to welcome Jana Vamosi on board as our new Senior Editor. Jana is a biodiversity scientist examining the macroevolution, macroecology, community ecology, and conservation biology of plants at the University of Calgary. Recently, she has taken an interest in the conservation of ecosystem function. She often incorporates phylogenetic approaches to questions pertaining to the evolutionary ecology of plant-insect interactions. Frequently bridging different subfields, her research repeatedly necessitates the adoption of new techniques.



METHODS BLOG

There have been a few interesting pieces added to the *Methods* blog recently; Pat Backwell discusses 'Is fieldwork essential?'; David Warton tells us why it's an exciting time to be doing statistics in 'Some stats methods are like Rick Astley – best left in the 1980s'; and Mick McCarthy talks about his paper published in MEE on 'Joint species distribution models' (methodsblog.wordpress.com).

METHODS IN THE NEWS

A few *Methods* papers have been picked up by the press this summer. Michael Beckmann and colleagues from the Helmholtz Centre for Environmental Research (UFZ) used existing UV-radiation data to draw new conclusions about the global distribution of animal and plant species. Steven Le Comber and colleagues from Queen Mary University London demonstrated how the maths that underpins geographic profiling, a tool used by the Metropolitan Police and FBI, can be adapted to target the control of infectious diseases, including malaria. Using data from an outbreak in Cairo, they showed how the new model could use the addresses of patients with malaria to locate the breeding sites of the mosquitoes that transmit the disease. Cameron Turner and colleagues from the University of Notre Dame published the first detailed investigation of just how small (or big) environmental DNA, or eDNA, particles really are, and their results provide important guidance for all eDNA monitoring programs (methodsinecologyandevolution.org/news).

VIRTUAL ISSUES AND SPECIAL FEATURES

We've recently put together a couple of freely available Virtual Issues. 'Top Methods in Ecology and Evolution' highlights our most popular papers to date, and showcases the diversity of topics covered in MEE. 'Ecological statistics are methods too' shows the range of statistical issues that have been covered so far (methodsinecologyandevolution.org/virtualissues). Keep an eye out for our upcoming joint Special Feature with the open access journal, *Ecology and Evolution*, on 'Modelling Demographic Processes in Marked Populations: Proceedings of the EURING 2013 analytical meeting'.

Samantha Ponton
Assistant Editor
coordinator@
methodsinecologyandevolution.org

BES PUBLICATIONS TEAM

The current BES Publications team are pictured below. Catherine Hill is currently on maternity leave.



Andrea Baier,
Deputy Head of
Publications



Liz Baker,
Deputy Head
of Publications



Peter Livermore,
Assistant Editor, *Journal
of Animal Ecology*



Erika Newton,
Assistant Editor,
*Journal of Applied
Ecology*



Jennifer Meyer,
Assistant Editor,
Functional Ecology



Samantha Ponton,
Assistant Editor,
*Methods in Ecology
and Evolution*



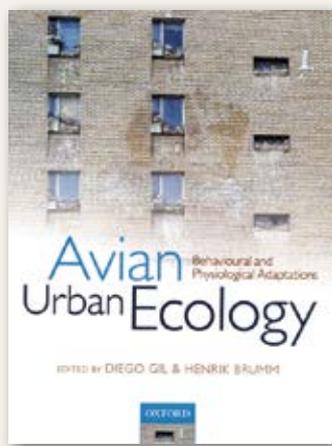
Lauren Sandhu,
Assistant Editor,
Journal of Ecology



Kate Harrison,
Assistant Editor

BOOK REVIEWS

The book reviews are organised and edited by
Peter Thomas and Sarah Taylor



Avian Urban Ecology: Behavioural and Physiological Adaptations

Edited by Diego Gil & Henrik Brumm (2014) Oxford University Press, Oxford.

£75.00 (hbk)
ISBN 978-0-19-966157-2

£37.50 (pbk)
ISBN 978-0-19-966158-9

Those that tuned into 'Autumnwatch' on BBC television last year may have helped with some neat citizen science in the 'cheese versus apple' bird table experiment. Valentin Amrhein calls for more of this to find the answer to whether we should feed birds year round, or just in winter. It's helpful to know; in the UK, enough bird food is sold to feed 30 million great tits, when the actual population is 2 million!

This book is laid out in four parts, with a reference list after each chapter. Part 1 considers the challenges of urban living, focusing on artificial lighting and bird feeding. Part 2 covers behaviour (habituation to disturbance, anti-predator response, impact of noise on vocal communication), and physiology (reproductive phenology and disease transmission). Part 3 deals with evolutionary processes, whilst Part 4 is a series of well-chosen case studies that synthesize the book very nicely.

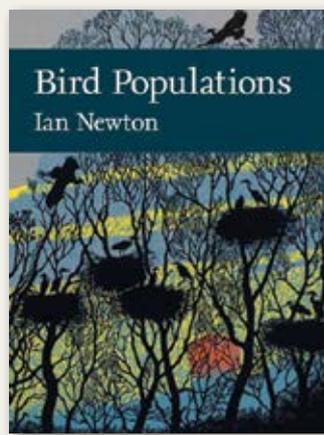
In the Californian chaparral, contrary to prediction, species did not habituate to human disturbance. The authors hypothesize that in biomes where habitat is extensive, species sensitise to disturbance, whereas in small habitat patches, e.g. a wetland, species have no choice. But more testing is needed and the authors hope that the chapter stimulates collaboration between behavioural ecologists and wildlife managers.

As somebody who read Rosemary Jellis' *Bird Sounds and their Meaning* as a kid, I was fascinated by the chapters on vocalisation. Just what is the mechanism for a reduction in species diversity in noisy areas? One study of House Sparrows found that a decline in fledging success could be due to reduced parental feeding when noise masked the communication between parent and chick. However, urban Silvereyes sing slower, with fewer syllables, higher frequencies and more trills than rural birds. This flexibility, learnt across generations, makes them good urban adaptors, able to adjust to the low frequency hubbub of humans.

A minor criticism is that the index is of limited value and it's a pity there is no glossary, e.g. just what is 'Rosenthal's fail-safe number'?! That aside, this book will appeal to students in search of a challenge, and the authors offer a range of hypotheses that need testing. However, practitioners will learn much too, especially from the case studies. In particular, work by Renée Duckworth explains how nest boxes placed 200m apart favoured the Western Bluebird over its sister, the Mountain Bluebird. Co-existence is more likely when boxes are placed at low density. Thus it's really important to consider the

natural ecology of hole-nesters before rushing into artificial box programmes.

Simon Bates



Bird Populations

Ian Newton (2013) The New Naturalist Library, HarperCollins, London.

£55.00 (hbk)
ISBN 978-0-00-742953-0

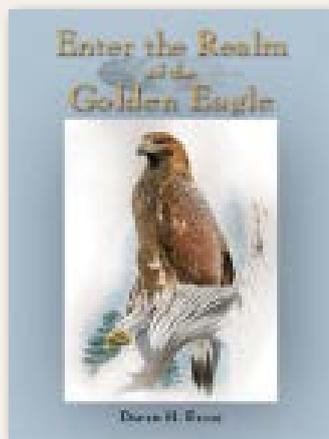
£35.00 (pbk)
ISBN 978-0-00-752798-4

Weighing in at 586 pages this is a blockbuster of a book by one of the world's super heavyweight ornithologists. Ian Newton is a truly remarkable scientist (and former President of the BES) who has the exceptional ability to write simply whilst marshalling evidence drawn from a massive literature (well over one thousand publications cited in this book). This, his ninth book, is concerned with factors governing animal populations. The 20 chapters deal with population regulation, food supplies, nest sites, predation, parasites, competition, interactions between limiting factors and between predators and resources, weather, climate, hunting, and pesticides and other pollutants.

It is a *tour de force*, beginning with characteristic clarity: 'This book is about bird numbers, and about why these numbers vary in the way they do, from year to year or from place to place.' It is a fascinating distillation of the scientific literature, rendered all the stronger by the author's own interpretation of others' findings. Throughout, the text is enlivened by accessible graphs and superb photographs, with concluding remarks neatly closing each chapter.

The final chapter is a timely stocktake on the current state of knowledge, with piercingly simple views on correlative versus experimental evidence on population changes, density-dependence, mortality that populations can withstand, and territorial behaviour. The book begins by paying homage to David Lack's influential book *The Natural Regulation of Animal Numbers* (1954), and ends by reminding us why studies of bird numbers are a scientific necessity. This is an exceptionally important review – stimulating, comprehensive and clearly written.

Des Thompson



Enter the Realm of the Golden Eagle

David H. Ellis (2013) Hancock House Publishers, Canada

\$60.00 (hbk)

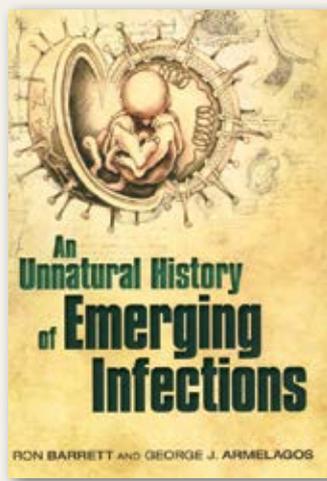
ISBN 978-0-88839-704-1

Written, edited and compiled by David Ellis, this remarkable book has more than one hundred accounts of golden eagles. Just short of 500 pages, the book is a treasure trove of superb photos, drawings, paintings and lore on these great birds. There are modern accounts as well as some historical writings by Seton Gordon, Desmond Nethersole-Thompson and Adam Watson – three of 48 contributors.

The book is divided into 18 chapters, each having up to nine essays. The chapters cover a diversity of topics ranging from the basics of ecology, to eagle intelligence, pioneer naturalists, field methods, hunting with trained eagles, and the eagle in legend and literature. The standard of writing is high (Seton Gordon should be compulsory reading for students of natural history!), and some of the observational essays are nature writing at its best. It is a book which offers some heart stopping moments, and some of the photos and paintings are supreme. Keith Brockie's painting of a golden eagle flying over Ardnamurchan, with Rum in the background, is peerless, and featured on the cover of the late Jeff Watson's second

edition of *The Golden Eagle* (2010). 'Sumptuous' is how one distinguished and sometimes cantankerous ecologist described this book, and I wholly agree with him. Students of birds of prey will find this book deeply inspiring.

Des Thompson



An Unnatural History of Emerging Infections

Ron Barrett & George J. Armelagos (2013) Oxford University Press, Oxford.

£30.00 (hbk)

ISBN 978-0199608294

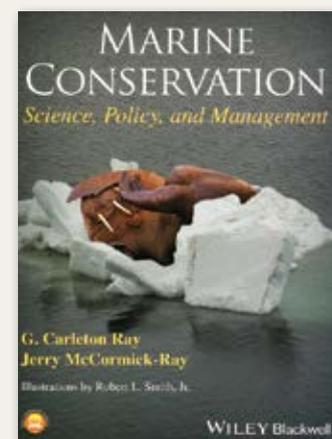
Microbes are the ultimate critics of modernity – what a thought provoking opening line for a book. Despite mid-20th century hubris about the conquest of all infectious disease, the spectre of emerging disease, whether it be SARs or Bird flu remains one of the great global concerns. Barrett and Amelagos tease out how across prehistory and history our modification of nature has influenced the emergence, re-emergence and at times conquest of disease; hence the reference to “unnatural” in the title.

In the 20th century pharmacology came to dominate our thinking about diseases and their control. By taking an historical perspective the authors of this book are able to weave together a more complex and

interesting account of how social, economic, environmental and technological factors have created today's global disease ecology. Some aspects of this are familiar, for example the way in which the transition to settled agriculture increased the range of human disease. The contemporary rise of antibiotic resistance, impact of globalisation on disease transmission and increased contact with wild disease vectors through habitat destruction and bush-meat are familiar topics. I was less conscious of the way in which hygiene transformed the control of disease before the rise of pharmacology; even before disease causality was understood. Nor was I conscious of the fact that most pandemics are syndemics (the aggregation of two or more diseases in a population) due to the higher impact of emerging disease on populations which already have compromised health. So far as emerging disease pandemic threat is concerned we are “all in it together” and the incubation of disease amongst the health compromised young and old of the poorer parts of the world are a ticking bomb.

As the discipline of ecology matures one of the important lessons is that while for many grand challenges we do not have all the answers, nonetheless ecological insights form part of multidisciplinary solutions. This is writ large in the pages of this book and although not aimed specifically at an ecological readership, there is much to interest an ecologist in a very readable style.

John Hopkins



Marine Conservation: Science, Policy, and Management

G. Carleton Ray & Jerry McCormick-Ray (2014) Wiley Blackwell, Chichester. £90.00 (hbk)

ISBN 978-1-118-71444-7

£34.99 (pbk)

ISBN: 978-1-405-19347-4

As the final chapter of this impressive work notes, it is still all too commonly held that the oceans are too big to pollute, too productive to deplete, and too out-of-sight to justify expensive actions. The authors set out to display the folly of this view.

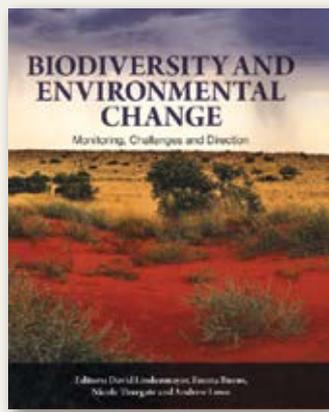
In the hope that a whole-systems approach may lead to a better understanding of the complexity of marine ecosystems (which, in turn, may lead to greater appreciation of the imperilled futures facing so many of them), the authors start by reviewing many of the recent advances in our understanding of the oceans and their inhabitants. The first chapter is a timely reminder of the history of conservation and of how our awareness of the growing problems on land were extended first to the coasts and then to the vastly more complex oceans. Three areas of concern are then distinguished: primary issues (loss of biodiversity, invasions of non-native species, diseases and behavioural changes, and habitat destruction), secondary issues (human activities such as

overfishing, mineral exploitation, eutrophication, pollution and coastal development) and tertiary issues (unintended consequences such as degraded water quality, hypoxia, and the effects of climate change). An excellent chapter reviews mechanisms for conservation (essentially the different forms of legislation and management options available for the marine environment). There is a detailed discussion of marine systems and how they work (useful revision for any oceanography students), and a review of the natural history of marine organisms (again, generalised by systems rather than by taxonomic groups). The final chapters (probably the most useful part for most practitioners and policy-makers) review a number of case studies providing opportunities to consider real conservation issues and possible solutions. These include estuarine restoration in Chesapeake Bay on the American east coast, sea mammal conservation in the Bering Sea between Alaska and Russia, tropical island conservation in the Caribbean, sustaining biodiversity in an island archipelago – in this case the Isles of Scilly off the UK mainland, cooperative management in the Gwaii Haanas Marine Conservation Area off British Columbia, coastal marine conservation in South Africa, and the problems of multi-jurisdiction conservation off the coast of Patagonia. The final chapter summarises the present states of the three most prominent areas of marine conservation activity: fisheries, coastal management and Marine Protected Areas.

This is a complex and multi-dimensional work which combines much basic, traditional, marine biology with modern insights into ecology, management and conservation. There is something here for all students of these disciplines. A strong historical trend runs

throughout the narrative and it is appropriate to consider how a resource once thought both inexhaustible and free to all has become a battleground in conservation. There is a companion website with additional resources, primarily figures and tables from the text.

Ian Lancaster



Biodiversity and Environmental Change: Monitoring, Challenges and Direction

Edited by David Lindenmayer, Emma Burns, Nicole Thurgate & Andrew Lowe (2014) CSIRO Publishing, Collingwood. £96.95/AU\$120.00 (hbk)

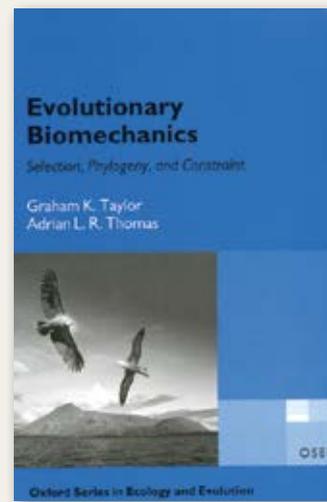
ISBN 978-0-643-10856-1

Such is the concern about environmental change and biodiversity loss in Australia that CSIRO scientists with academics involved in the Long Term Ecological Research Network (TERN) have collaborated to document long-term ecological datasets for Australian ecosystems. Such data sets, and there are 35 core sets, have been collected over time spans ranging from a few years to 88 years with most having been established in the 1990s. As well as making the data public, the objective is to highlight the value of monitoring programmes which facilitate management in a changing world. The four introductory chapters deal with the design of long-term monitoring studies, the Australian context including a general review of Australia's

major vegetation groups and ecosystems plus an annotated list of extant monitoring sites, and the value of such research for the formulation of policy and management. The last emphasises the need for co-operation between the education sector, industry which includes agriculture, forestry and mining, as well as various cultural groups. There are nine data chapters each concerned with specific types of ecosystems: tropical rainforests, tall and temperate eucalypt forests, savannahs, deserts, tussock grasslands, chenopod and acacia shrublands, heathlands, and alpine ecosystems. Each chapter details the distribution, composition, dynamics and threats to ecosystem health. Land clearance has been one of the most widespread causes of ecosystem decline but direct and indirect changes to water and nutrient availability, firewood collection and alterations to fire regimes are significant. There are also biological issues, notably invasive and usually alien plant species along with introduced pathogens and animals (rabbits, deer and cane toads spring to mind) and livestock grazing. Moreover, there are instances where native animal populations have increased sufficiently to disadvantage others and create an imbalance. The long term data have enabled the identification of species which are particularly vulnerable to change. In addition, case studies of conservation and restoration projects linked with TERN are presented. In the concluding synopsis there is emphasis on the actual and potential impact of environmental change, with emphasis on results which were only made possible through long-term monitoring. The lessons the programme presents for the management of carbon, fire, grazing, feral animal populations and native vegetation are also presented. Throughout this book there is an abundance of illustrative

material: maps, photographs, diagrams and tables; mostly in colour this complements an informative text. Given the length and quality of production the price is reasonable and there are lessons for the management of ecosystems far beyond Australia's shores.

Antoinette Mannion



Evolutionary Biomechanics: Selection, Phylogeny, and Constraint

Graham K. Taylor & Adrian L.R. Thomas (2014) Oxford University Press, Oxford. £60.00 (hbk)

ISBN 978-0-19-856637-3

£29.95 (pbk)

ISBN 978-0-19-856638-0

Evolution provides an account of how organisms have faced and solved the complex of demands placed upon them by their environment. Such demands are often conflicting and can be solved only by trade-offs to maximise overall survival potential. Biomechanics, according to the authors, is an area in which it is particularly appropriate to study the physical constraints within which evolution can operate. They illustrate this by reference to pendulum clocks, which may vary in size but which operate on a fixed relationship between the pendulum length and its period. This physical feature constrains the 'design space'

of the clock. All aspects of the biological world are similarly constrained by physics, whether the transpiration rate of a tree or the energy budget of a flying bird. The authors illustrate these constraints by the use of specific examples analysed in detail, such as the motion of a gibbon, whether swinging, walking, or running. The pendulum model also provides an illustration of scaling, shown by the relationship between body mass and metabolic rates in mammals. There is also an historical, or phylogenetic element to the evolution of biomechanical systems, and this is examined in relation to the scaling of wing area in birds. Among the 10,000 or so living bird species there is considerable variation in flight mechanisms, which have involved extensive morphological variation based upon little anatomical modification. Wing area is positively related to body mass and to wing span, although phylogenetic factors come into play, as in the auks, where wing area is small for the associated body mass. In their final chapters the authors develop further the study of wing structure and the aerodynamics of flight and other uses of wings in birds, such as underwater feeding. Bird ecologists will undoubtedly find much to stimulate their thinking in this section where questions of wing structure are related to issues such as soaring, pelagic flight, speed hunting, and migration. The book is aimed at graduate and research level readers. It condenses a considerable quantity of theoretical and practical research data into a very small space, resulting in a dense, and somewhat challenging text.

Peter Moore



Cultural Severance and the Environment: The Ending of Traditional and Customary Practice on Commons and Landscapes Managed in Common

Edited by Ian D. Rotherham (2013) Springer, Dordrecht. £117.00 (hbk)

ISBN 978-94-007-6158-2

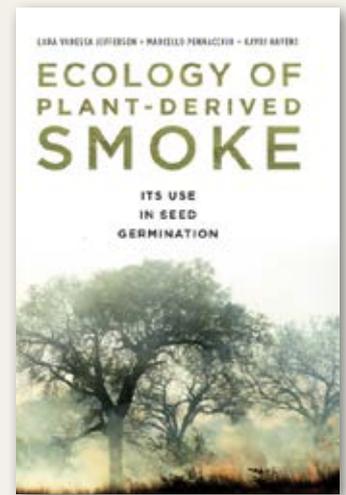
This book comes with an impressive build-up of more than 15 years of meetings and collaborations unpicking the effects of disconnecting people from their cultural landscapes and environmental resources. We are all familiar with Hardin's 'Tragedy of the Commons' and this book attempts to put a great deal of disturbing flesh on that concept with examples from several countries, although with a heavy UK bias. The idea of common ownership and therefore common stewardship of terrestrial resources sits very poorly with the current ethos of global markets and short-term profits. Surely, you might expect, conservation initiatives anywhere would take into account the historical cultural framework which is so often the primary shaper of the modern landscape but for many it would seem the eco-cultural is less important than the ecological. BES members will, I am sure, be familiar with the continuing efforts necessary to protect the commons in

the UK but may be less aware of the situations elsewhere in the Himalayas, Switzerland, Austria, Spain, Poland and the Czech Republic, which provide interesting case studies in Part II of the book showing that this is indeed a global problem. Part III is almost entirely devoted to English examples of the history and use of landscape commons ranging from Cornwall through York and Sheffield to North West England showing that despite the Parliamentary Enclosures in the 19th century some valuable fragments were retained. Parts IV and V are both concerned with initiatives and how we need to act to avoid further losses. Whilst the new approaches of organisations like the National Trust show great promise Rotherham concludes that we need a difficult political shift in planning and in the way we as ecologists see landscapes. This is not simply a problem of how to manage the New Forest but a more general problem of how we value and understand what I would call secondary landscapes – those historically changed and used rather than those protected as national parks – in a world driven by climate change and changing land use practices. As we increasingly urbanise the disconnection between people and the land grows, allowing planning to be primarily driven by economic considerations rather than by a more holistic understanding of land use.

The volume joins a considerable literature on historic landscape management but seems to be the first to focus on the problems of commons. Authored by an eclectic mixture of university academics, those directly concerned with landscape management such as English Heritage and Natural England and individuals with a specialised knowledge of specific areas, it provides a strong case for the eco-cultural dimension. The blending of history and cultural change with the changing economics of

using the landscape makes for some fascinating insights that are probably often overlooked by many ecologists focussed on the flora and fauna of a site. We need to think more broadly and these authors show us why.

David Walton



Ecology of Plant-Derived Smoke: Its Use in Seed Germination

Lara Vanessa Jefferson, Marcello Pennacchio & Kayri Havens (2014) Oxford University Press, New York. £40.00 (hbk)

ISBN 978-0-19-975593-6

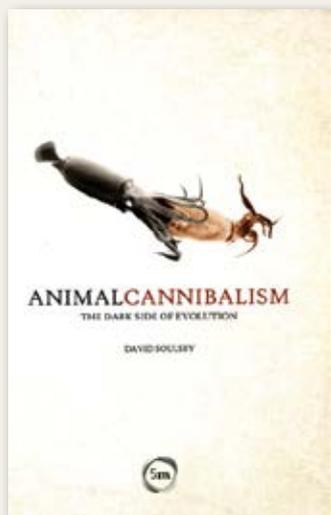
After an interesting preface on the wider cultural uses of smoke (from smoking tobacco, to incense and its use in creating love charms), the book gets down to the nitty gritty of reviewing the role of smoke in the germination of seeds. For hundreds if not thousands of years, in many parts of the world, it has been known that treating the seeds of some species with heat and/or smoke improves germination. As explored in the introduction, a large body of evidence accumulated as to which species responded but it wasn't till 2004 that the primary active ingredient of smoke was identified – a water soluble butenolide named karriginolide (in honour of the Australian Nyungar Aboriginal word for smoke). The rest of the short introduction explores the

possible evolutionary origin of this reaction and how this interacts with and overcomes dormancy.

The next 250 pages catalogue known responses to smoke of 1,355 species across 120 families. Not surprisingly, many Mediterranean-type plants require smoke in various degrees but other plants of fire-prone environments do not. This may be because they have other fire-related triggers such as the heat pulse of the fire itself or fluctuating post-fire temperatures as in many members of the Ericaceae. But there are some surprises such as willowherb or fireweed (*Chamerion angustifolium* – still called by its old name *Epilobium* here) where smoke actually inhibits germination. Since it is an invader of open areas, of which burnt areas are just one type of opening, you might expect it to be neutral but not inhibited. There's a PhD for someone. The book is fully referenced and has comprehensive indices of scientific and common plant names.

While this may not be a book you'd necessarily want to fork out for, unless you have anorakish tendencies like me, this is a mine of information that should be in your nearest library. When you have a need for this information on a species, you can be pretty certain it'll be here.

Peter Thomas



Animal Cannibalism: the Dark Side of Evolution

David Soulsby (2013) 5M
Publishing, Sheffield. £25.00
(hbk)

ISBN 978-0-9555011-6-6

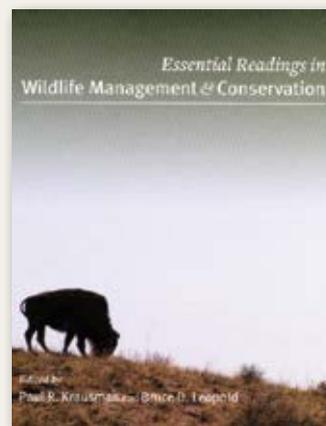
Typically, animals compete more fiercely with members of their own species than with individuals of other species. Sharing resource requirements, they are also likely to come into contact with members of their own species more often than with other animals. Given that all animals need a ready supply of nutrients, it would not be surprising to find that cannibalism is very widespread. This new volume shows that cannibalism is, unquestionably, a very common phenomenon.

Animal Cannibalism is an extraordinary undertaking. Stretching to well over 400 pages (excluding references), it is no surprise that it took the author a quarter of a century to compile. The book is split into two parts, covering invertebrates and vertebrates, respectively. Each part is further split into chapters, covering major taxonomic divisions. In each chapter, Soulsby begins with a general outline of the taxon, and then summarises the documented evidence for cannibalism within that taxon. Where possible, he also gives an account of the

apparent adaptive benefits of cannibalism where it occurs. The book is quite a dense read and is sparsely but strikingly illustrated (the picture of a male polar bear carrying the head of a yearling that he'd killed and eaten will doubtless alter some opinions regarding their 'cuddly' nature). There is, however, a ghoulish fascination in reading page after page of the intricate (and, as the subtitle says, darker) details of species' natural history.

The book is certainly interesting but I was unclear about its intended audience. The detail is arguably excessive for a popular audience but the lack of cross-cutting analysis could be frustrating for behavioural and evolutionary biologists. Soulsby is neither an academic nor a biologist, and the book does little more than document the available evidence. Perhaps that is its specific appeal: it presents an impressive platform from which biologists could build to answer some of the questions prompted by the book. These include questions about the ecological drivers and phylogenetic origins of programmed matrophagy; questions about kin recognition and its importance (or otherwise) in cannibalistic species; and questions about the role of pathogens in limiting the incidence of cannibalism. For anyone seeking to answer questions about this unappealing but widespread aspect of natural history, I suspect this book will represent a major and enduring resource.

Phil Stephens



Essential Readings in Wildlife Management and Conservation

Edited by Paul R. Krausman & Bruce D. Leopold (2013)
John Hopkins University Press,
Baltimore. £26.00 (hbk)

ISBN 978-1-4214-0818-7

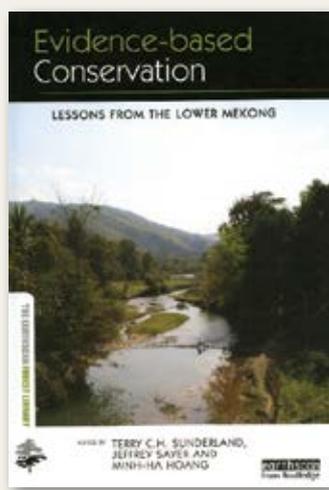
What a clever idea – a book which gathers in one volume 42 of arguably the most influential papers published on wildlife biology, and at an affordable price for 682 pages. Published in association with The Wildlife Society, this book is a joy to have. Well, it has to be with classic papers by Aldo Leopold (Wilderness as a form of land use; The conservation ethic; and Wildlife in American culture), Garrett Hardin (The tragedy of the Commons), Robert T. Paine (Food web complexity and species diversity), Graeme Caughley (Mortality patterns in mammals; Rate of increase; and Bias in aerial survey), Ric Charnov (Optimal foraging, the marginal value theorem) and E.O. Wilson (The biological diversity crisis).

Organised under four headings (Our philosophical roots; Animals, ecology and populations; Habitat; and Human dimensions) the book is a beguiling read. Why? Quite simply because as you skip from one paper to the next, each reproduced crisply from its original journal, you are reminded of your first encounters, in my case in

bustling College and University libraries. The standard of writing is excellent – not just because of the scientific narrative, but in large measure due to the easy and accessible style of writing. The papers are light on jargon, and free of the clutter of reference burdened sentences that essentially tell you the ground is under your feet and the sky is above your head. By and large these are elegantly written papers espousing classic ideas.

Each paper is preceded by couple of paragraphs about the impact of the papers (I would have liked more, but I'm sure the editors would retort that the papers speak for themselves!). Forty years ago The Wildlife Society published *Readings in Wildlife Conservation*, so it is timely that we should have this beautifully produced book – an elegant cornucopia of the some of the best ideas and writing in ecology. Students should be inspired and deservedly spoilt by this unique collection of gilt edged papers.

Des Thompson



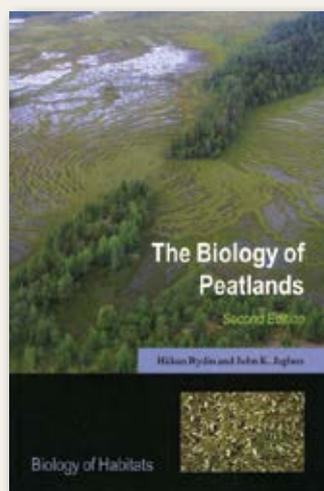
Evidence-Based Conservation: Lessons from the Lower Mekong

Terry C.H. Sunderland, Jeffrey Sayer & Min-Ha Hoang (2013) Earthscan from Routledge, Abingdon. £85.00 (hbk)

ISBN 978-1-84971-394-8

The once remote Lower Mekong Region of Vietnam, Laos and Cambodia, which falls in the Indo-Burma Biodiversity Hotspot and has pockets of extremely high endemism, is being threatened by foreign transport investments and a rapidly expanding human population. The region has been the focus of various aid and conservation projects over the years in an attempt to avert change, but no real assessment has been made to see if these interventions are succeeding. This edited collection uses a systematic review approach to evaluate the effectiveness of conservation projects in terms of their monetary investment and biodiversity protection, and addresses the urgent need for science to inform the practice of conservation. The book is divided into four parts: part 1 introduces the concepts of evidence-based conservation and sets it in the context of the Lower Mekong Region. Part 2 deals with 'experiences from the field' in the different regions of Cambodia, Laos and Vietnam, detailing the types of projects that have been undertaken and the lessons learnt. For example, the Tiger Conservation Project which commenced in 2003 in Nam Et-Phou National Protected Area, which highlights the problems of wildlife crime going underground. Part 3 analyses conservation and development initiatives, with two chapters specifically addressing REDD. Part 4 attempts to learn from these experiences and closes with the cautionary tale of the now extinct Javan Rhinoceros in Vietnam. The key message of the book is that without the evidence from experience in the field, conservation will fail to inform policy and science and vice versa. This book will be of interest to anyone interested in, studying, or practising conservation biology and resource management.

Sarah Taylor



The Biology of Peatlands (2nd ed)

Håkan Rydin & John K. Jeglum (2013) Oxford University Press, Oxford. £56.25 (hbk)

ISBN 978-0-19-960299-5

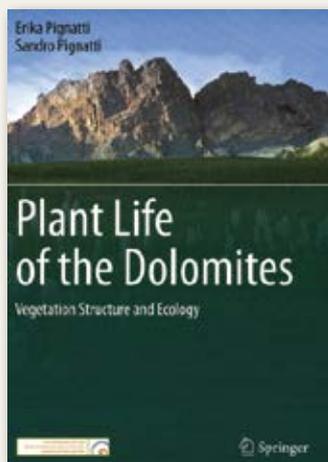
£26.21 (pbk)

ISBN 978-0-19-960300-8

Producing a second or subsequent edition of a text involves both revision and accretion. Revision is needed if past ideas or theories have proved inadequate, or if the presentation of those ideas can be improved or clarified. Accretion is necessary when new data or concepts must be added to the former account. Here, the authors take both approaches. They have retained their basic structure from the first edition, covering peatland habitats, the diversity of life they contain, physiological adaptations of peatland organisms (with particular emphasis on *Sphagnum*, of course), soil features, stratigraphy and peatland succession, the historical archive of peat, hydrology, global variations in peatland types, productivity, conservation and restoration, and finally the relationship between this habitat and climate change. The early chapters have been revised by the incorporation of recent research, which has often clarified, and sometimes complicated, the interpretation of past findings.

The arrangement of text has also been modified to enhance clarity, but sometimes this has resulted in the unfortunate omission of some citations from the references at the end of the book. The addition of a set of excellent colour photographs, mainly of different peatland types and their vegetation, is a very helpful development that will assist students unfamiliar with these habitats to gain a better impression of these remarkable landscapes. But the main piece of textual accretion is the final chapter on climate change, and a very appropriate one in view of the development of interest and research in this area in the eight years that have passed since the first edition. There has been extensive debate in recent years concerning the impact of climate change on peatlands, and the converse effect, the potential impact of peatland changes on climate. The authors describe the complexity of interactions between raised atmospheric temperature, peat decomposition, methane production, and fire frequency, and the consequences involving the addition of carbon to the atmosphere. They also consider the impact of increased nitrogen deposition on the composition of peatland vegetation and the resultant changes in carbon sequestration from the atmosphere. The factors are so diverse that no current model can be regarded as fully reliable, but the account, and indeed the entire book, serves a valuable purpose in drawing attention to these fascinating yet neglected ecosystems. This is certainly the best currently available book on peatland ecosystems.

Peter Moore



Plant Life of the Dolomites: Vegetation Structure and Ecology

Erika Pignatti & Sandro Pignatti (2014) Springer, Heidelberg. £135.00 (hbk)

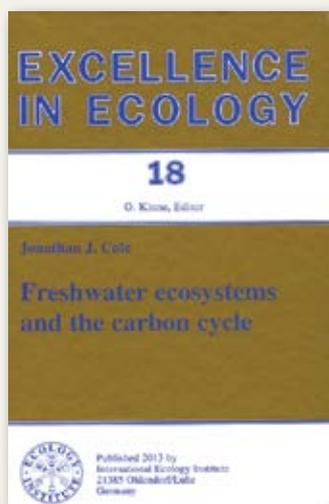
ISBN 978-3-642-31042-3

This large book of over 750 pages represents the accumulated wisdom of the husband and wife team. Erika worked with Braun-Blanquet and, in keeping with European tradition, the book is based around a phytosociological review of communities from low elevation forests, through the human-influenced meadows to the tops of the peaks with particular emphasis on the subalpine and alpine. Each community is described using the same sections, dealing with the flora, vegetation and place in the landscape. This includes an ecological definition of the community, indicator species and habitat description, moving then through the abiotic and floristic characteristics, distribution (both regional and European), and what the future holds through succession and conservation needs. Each is accompanied by a colour photograph of a typical community view and a colour distribution map. All the major habitat types are also headed with a detailed botanical and ecological description.

The amount of information held here is absolutely colossal, written by enthusiasts who

know the area well. Whether you're interested in individual plant species, or in seeing how the communities fit within the wider landscape, there will be something here for you. The love of the area comes through in the writing and there are even three suggested itineraries 'for getting to know the flora of the Dolomites'. A wonderful book to become lost in.

Peter Thomas



Freshwater Ecosystems and the Carbon Cycle

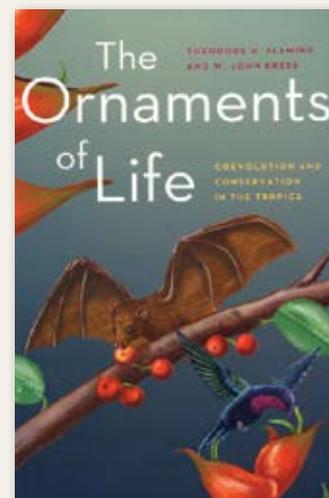
Jonathan J. Cole (2013) International Ecology Institute, Oldendorf/Luhe, Germany. €33.00 (hbk)

ISSN 0932-2205

This is the eighteenth book in the *Excellence in Ecology* series, written by winners of the ECI prizes. Jonathan Cole won this prize in 2003, so the text has evidently experienced a protracted gestation period. Cole sets out the changing narrative of carbon cycling in lakes and streams that has developed over the past 30 years or so. Prior to 1980, the emphasis concerning carbon input into freshwaters was on primary production, tending to neglect or underestimate the importance of carbon from terrestrial sources, in both dissolved and particulate forms. Such carbon sources are available to bacteria that are engaged in a secondary production that may equal or even exceed the primary

production of a freshwater body. Cole's research has focused on the role of bacteria in the carbon cycling of these bodies. The production of carbon dioxide by a lake (its 'ecosystem respiration') may exceed its gross primary production, which is only possible if bacteria (or some physical factors, such as UV radiation) are tapping the dissolved carbon entering the system and generating carbon dioxide. In this book, Cole sets out to demonstrate that a lake does not behave like a mini-ocean in its carbon cycling, but is strongly influenced by terrestrial sources of carbon. He begins by describing general models for the relationships between terrestrial and limnic ecosystems in terms of their carbon economies, including flow rates, reservoirs, respiratory outputs, and the storage of carbon in sediments. He comes to the conclusion that roughly half of terrestrial net ecosystem production (that which remains after all respiratory losses in the ecosystem have been accounted for) ends up in freshwater ecosystems. With tongue in cheek, he asks the question, 'Are fish made of trees?' He goes on to examine in some detail the sources and pathways of allochthonous matter in lakes and its fate, including the use of isotopes to trace carbon movements. One further question that could have global significance for the carbon cycle is how much of this intake of carbon remains buried in the lake sediments, and he devotes a chapter to a consideration of the factors that determine carbon sedimentation rates. He hints that emerging evidence suggests that allochthonous carbon may be selectively preserved in sediments when compared with autochthonous carbon from local primary production. If the book's publication had been delayed a further ten years we might have had a final answer, but even at this stage there are many surprises!

Peter Moore



The Ornaments of Life: Coevolution and Conservation in the Tropics

Theodore H. Fleming & W. John Kress (2013) University of Chicago Press, Chicago.

£87.50 (hbk)

ISBN 978-0-226-25340-4

£35.00 (pbk)

ISBN 978-0-226-25341-1

The title of this book does not immediately reveal its scope and content. It is not about all coevolution in the tropics but relates to the coevolution of angiosperms with those birds and mammals which act variously as pollinators and frugivorous seed dispersers. These mutualisms are explored from both ecological and evolutionary perspectives in this scholarly and very comprehensive treatment; which covers tropical forests, to a lesser extent deserts, in all tropical regions and mutualism coevolution across the Cenozoic.

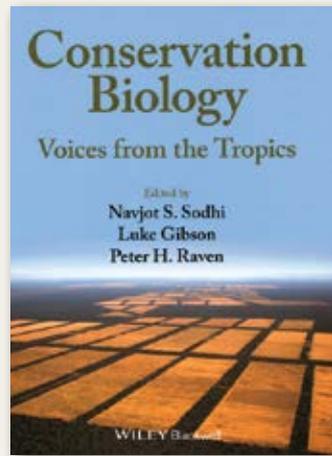
The mechanisms by which diversity begets diversity in the tropics are a main focus of the book. For example convincing evidence of phylogenetically independent evolutionary convergence of features such as flower morphology and fruit colourations in plants with similar animal mutualists is presented. There are also comprehensive reviews of ecological topics such as effect of pollen limitation upon seed

set; the influence of frugivore feeding behaviour upon plant dispersal and establishment; and the relative importance of specialisation versus generalisation amongst plant and animal partners.

However the aspect of this book I found the most intriguing is the diversity of evidence that because the Old World and New World Tropics have been isolated throughout the period in which these mutualisms have evolved, there are also many striking and intriguing ecological and evolutionary divergences. For example secondary succession in the Paleotropics is dominated by bird dispersed plants, but by bat dispersed species in the Neotropics; there are no hovering birds analogous to hummingbirds in the Paleotropics and the timelines for the evolution of frugivory in plant functional groups (trees, palms, lianas, epiphytes) are strikingly different in various tropical regions.

In the final chapter Fleming and Kress consider the future of the rich diversity of vertebrate-plant mutualisms and discuss how due to multiple human impacts, not least the poignant damage of the bush-meat trade, extinctions may beget decreased abundance, range retraction and further extinctions in networks of mutualists. This is a book of impressive intellectual breadth and grasp of its subject and should grace the shelves of every tropical ecologist, whilst many of its topics have a much wider ecological interest. It is also reasonably priced.

John Hopkins



**Conservation Biology:
Voices from the Tropics.**

Edited by Navjot S. Sodhi, Luke Gibson & Peter H. Raven (2013)
Wiley-Blackwell, Chichester.
£50 (hbk)

ISBN 978-0-470-65863-5

All the books I have reviewed for the *Bulletin* have been educational, but this is the first that has left me feeling rather depressed. Nevertheless it should be read by all those who are interested in tropical biology and the conservations of its species. It attempts a global coverage of tropical ecosystems, but does not entirely succeed, partly because some invited contributors felt that to express their opinions might put their jobs at risk. The courage of many authors who have been openly critical of what goes on in their countries is to be applauded.

After an introductory chapter the book is divided into two parts: the first, of four sections, deals with the major geographical areas of the tropics, Africa, the Americas, Asia and Oceania. The second part has seven chapters on some general considerations, such as governance and conservation, but also including a nice discussion of the unifying topic of the importance of pollinators.

Each of the chapters in the geographical section describes the incredible biodiversity of the particular country and is worth

reading for this alone. Most chapters also stress the need for harnessing local knowledge and, in some cases, describe how this has been used to aid conservation, but not always for long. One example is the movement to protect a forest in the Indian Himalayan region of Uttar Pradesh, which was proposed for hydroelectric development. Initially successful, the movement spearheaded by Gaura Devi (who has been compared with Rachel Carson) was manipulated and discredited so that now the former protected valley is given over to hydroelectric generation. On a more positive note, the same chapter describes a move to develop ecotourism. The chapter on Brazil stresses the need for ecologists and managers to work together and yet university graduates lack experience to tackle problems in the real world. Australia is the main developed country with major tropical ecosystems and in assessing the vulnerability of these to climate change the concept of 'tipping points' beyond which irreversible damage takes place, is explored. Invasive aliens also feature in the chapter on the Hawaiian islands.

Politicians in most tropical countries face a very difficult task; that of balancing the need to improve the living standards of their inhabitants, by encouraging economic development, without destroying the nature of its land and the culture of its people. Unfortunately, corruption is rife in many of these countries. On pp 219-220 there is an interesting table of CPIs (Corruption Perception Indices) in which nearly all developing countries score very low marks, with a few exceptions such as Chile, Uruguay, Costa Rica and Puerto Rico. However it is pointed out that Singapore (now considered a developed country) used to be very corrupt, but now heads the list of high CPIs. Perhaps there is room for hope.

The authors of the 30 chapters in this book are from many different countries with many different areas of expertise. They have shed considerable light on the problems of conservation biology in the tropics, giving extensive references. In skilful editing, there has been no attempt to impose a uniformity of style, allowing different approaches, relevant to individual topics, to be used. Highly recommended.

Janet Sprent

ALSO RECEIVED

**Biodiversity Conservation
in Latin America and the
Caribbean: Prioritizing
Policies**

Allen Blackman, Rebecca Epanchin-Niell, Juha Siikamäki & Daniel Velez-Lopez (2014)
RFF Press, Routledge, New York.
£65.00 (hbk)

ISBN 978-0-415-73096-9

An incredibly rich area in species and habitats but with many conservation problems; this book describes the status of biodiversity in this region, the main threats to it, and the policies being used to protect it with an assessment of their effectiveness.

**Multivariate Analysis of
Ecological Data using
Canoco 5 (2nd ed)**

Petr Šmilauer & Jan Lepš (2014)
Cambridge University Press,
Cambridge. £40.00 (pbk)

ISBN 978-1-107-69440-8

A book primarily for community ecologists needing constrained ordination, variation partitioning and the use of permutation tests of hypotheses.

DIARY

THE SOCIETY'S MEETINGS

(meetings of the Special Interest Groups are listed on p00)

2014

DEC 9-12

Joint Annual Meeting British Ecological Society and Société Française d'Ecologie. Grand Palais, Lille, France. Details: http://www.britishecologicalsociety.org/events/current_future_meetings/2014-annual-meeting/

THE SOCIETY'S COMMITTEE MEETINGS 2014

SEP 09

Finance and Management Board

SEP TBC

Membership

OCT 07

Meetings Committee

OCT TBC

Publications Committee

OCT 16

PPC

OCT 23

ETCC (York, Brewery meeting rooms)

06 NOV

Grants Committee

NOV 11

Finance Board

DEC 09

Council (Lille, France)

OTHER MEETINGS 2014

AUG 10-15

From Oceans to Mountains: It's all Ecology – 2014 Annual Meeting. Ecological Society of America. Sacramento, USA. Website: <http://esa.org/am/>.

AUG 14-18

International Marine Conservation Congress. Glasgow, Scotland. Website: <http://www.conbio.org/mini-sites/imcc-2014>

AUG 18-24

26th International Ornithological Congress. Tokyo, Japan. Details: <http://ioc26.jp/>.

AUG 19-22

SCB ASIA 2014 — The 3rd Asia Regional

Conference of the Society for Conservation Biology – Asia Section. Melaka, Malaysia. Details from: <http://scbasia2014.org/>.

AUG 25-30

Combining experimental and theoretical approaches to understand biogeochemical interfaces in soil at the Goldschmidt Conference. Florence, Italy. Details from: <http://goldschmidt.info/2013/>

AUG 31-SEP 5

DIOXIN 2014 – 34th International Symposium on Halogenated Persistent Organic Pollutants. Madrid, Spain. Details from: <http://www.dioxin2014.org/>

SEP 3-5

In the Bog – The ecology, landscape, archaeology and heritage of peatlands Sheffield Showroom & Workstation, Sheffield, UK. <http://www.ukeconet.org/event/in-the-bog-conference/>

SEP 4-5

Meeting the Challenge of a Sustainable Urban Future: the contribution of green walls. Staffordshire University, Stoke-on-Trent. Details from: <http://www.staffs.ac.uk/research/greenwall/conferences/index.jsp>

SEP 7-10

Modern Statistical Methods for Ecology. Fort Collins, Colorado, USA. Information from: <http://www.stat.colostate.edu/graybillconference/>

SEP 8

Ecofil 2014. Ecology of Fish in Lakes and Reservoirs. Ceske Budejovice, Czech Republic. Details from: <http://www.ecofil2014.wz.cz/>.

SEP 8 -12

7th Annual Ecosystem Services Partnership. Costa Rica. Further details from: http://www.esconference.org/ESP_Conference.

SEP 8-11

The Challenger Society for Marine Science 2014 Conference. Plymouth University. <http://2014.challenger-society.org.uk/>

SEP 10-12

EcoHCC'14 – 3rd International Conference on Ecohydrology, Soil and Climate Change. Tomar, Portugal. Website: <http://www.ecohcc.ipt.pt/>

SEP10-11

14th International Fresenius Conference – The Biocidal Products Regulation. Mainz (near Frankfurt), Germany. Further details

from: <http://akademie-fresenius.de/english/konferenz/index.php>.

SEP 1-4

29th ESCPB 2014 Congress – Changing Environments and Threats to the Health of The Biosphere: Consequences for Wildlife and Humans. Glasgow, Scotland. Website: <http://escpb2014.com/>

SEP 9-10

Arabidopsis: the Ongoing Green Revolution. University of Bristol. Website: <http://gamet2014.org/>

SEP 14-18

Aquatic Plants 2015: 14th International Symposium on Aquatic Plants. Edinburgh, Scotland. Website: <https://sites.google.com/site/aquaticplants2015/>

SEP 14-18

Wetlands2014 – Wetlands Biodiversity and Services: Tools for Socio-Ecological Development. Huesca, Spain. Details from: <http://www.wetlands2014.eu/>

SEP 17-18

Disease Ecology – ecosystems, wildlife and human health. British Society of Parasitology Autumn Symposium, Media City University of Salford. <http://www.bsp.uk.net/news-and-events/bsp-events/bsp-autumn-symposium-2014/>

SEP 21-23

Biodiversity and Economics for Conservation. King's College, Cambridge. http://www.bioecon-network.org/pages/16th_2014.html

SEP 22 -23

3rd Annual International Conference on Geological and Earth Sciences (GEOS 2014). Singapore. Website: <http://www.geoeearth.org/>

SEP22-23

Arctic Sea Ice Reduction: The Evidence, Models and Global Impact. The Royal Society, London. Website: <https://royalsociety.org/events/2014/arctic-sea-ice/>

SEP 22-24

First International Conference on Formal Methods in Macro-Biology. New Caledonia. Details from: <http://fmmb2014.sciencesconf.org/>

SEP 25-26

Are There Limits to Evolution? Cambridge, UK. Website: http://www.nature.com/natureevents/science/events/20748-Are_There_Limits_To_Evolution

SEP 28-OCT 3

Ecological Society of Australia Annual Conference, Alice Springs NT Australia
www.ecolosc.org.au/conferences/esa-2014-annual-conference

SEP 29-30

Italian Society for Climate Sciences – 2nd Annual Conference. Venice, Italy. Website: <http://www.sisclima.it/conferenza2014/?lang=en>

OCT 6-8

Biogeochemical Interfaces in Soil – Towards a Comprehensive and Mechanistic Understanding Of Soil Functions. Leipzig, Germany. Details from: http://www.spp1315.uni-jena.de/Meetings+_+Events/International+Symposium+2014.html

OCT 12-16

International World Congress in Marine Biodiversity. Qingdao, China. Details from: <http://wcmb2014.csp.escience.cn/dct/page/1>

OCT 12-15

Experimental Approaches to Evolution and Ecology using Yeast & Other Model Systems. Heidelberg, Germany. Details from: <http://www.embl.de/training/events/2014/EAE14-01/>

OCT 22

New Perspectives on Climbing Plants. The Linnean Society, London. Details from: <http://www.linnean.org/Meetings-and-Events/Events/New+perspectives+on+climbing+plants>

NOV 7-8

Waxcaps and Allied Grassland Fungi Symposium. Sheffield Hallam University, Sheffield, UK <http://www.ukeconet.org/event/waxcaps-grassland-fungi/>

NOV 10-13

International Conference on the Marine Environment of the Red Sea. Saudi Arabia. Details from: http://www.kau.edu.sa/home_ENGLISH.aspx

NOV 16-20

New Zealand Ecological Society Annual Meeting. Palmerston North, New Zealand. Website from: <http://www.nzes2014.org/page.php?1>

NOV 17-21

First MARES Conference Marine Ecosystem Health and Conservation. Olhao, Portugal. Details from: <http://www.maresconference.eu/>

DEC 8-9

Feedbacks on Climate in the Earth System. Royal Society, London. Website: <https://royalsociety.org/events/2014/feedback-climate-system/>

royalsociety.org/events/2014/feedback-climate-system/

DEC 15-17

SEB EPA Symposium: Teaching and Communicating Science in a Digital Age. Charles Darwin House, London. More information: <http://www.sebiology.org/meetings/EPA2014/teaching.html>

2015

JUN 30- JUL 3

SEB Annual Meeting. Prague. Website: <http://www.sebiology.org/meetings/>

AUG 9-AUG14

100th Annual Meeting 2015. Baltimore Convention Center, Baltimore, MD, USA. Website: http://www.esa.org/esa/?page_id=2722

AUG24- AUG29

ISME15 – International Society for Microbial Biology. Seoul, South Korea. Website: <http://www.isme-microbes.org/>

2016

SEP 25-30

Entomological Society of America. Orlando, Florida. Website: <http://ice2016orlando.org/>

TRAINING WORKSHOPS

The Chartered Institute for Ecology and Environmental Management runs a wide variety of workshops for professional development. For further information and availability see www.cieem.net or e-mail workshops@cieem.net.

The Centre for Research into Ecological and Environmental Modelling runs a variety of workshops on a regular basis. For further information and availability see www.creem.st-and.ac.uk/conferences.php

University of Oxford Field Techniques for Surveying Mammals & Reptiles. Online course that can be taken for academic credit (10 CATS points at QCF Level 7) or not for credits. Details from <http://www.conted.ox.ac.uk/ftsmr02>.

Further news regarding skills training workshops funded by the Natural Environment Research Council at the University of Oxford.

We are pleased to announce that following the success of the programme, the University has been awarded further funding to continue to deliver and build upon skills training at doctoral level in the environmental sciences and management.

These workshops were very popular last year and spaces are likely to go very quickly!

Attendance at each workshop is offered to eligible UK-based delegates at no cost, including full-board and accommodation in Oxford. A limited travel allowance within the UK is also available.

The following workshops are available during early 2015:

Introduction to Multivariate Ecological Statistics: Exploring Tools for Ecologists

Mon 12 Jan to Thu 15 Jan 2015

www.conted.ox.ac.uk/MES

Field Techniques for Surveying Freshwater Macroorganisms and Their Habitats: Integrating Field Surveys, Taxonomic Skills, and Hydrochemistry

Mon 16 Mar to Fri 20 Mar 2015

www.conted.ox.ac.uk/freshwater

Introduction to Data Visualisation

Mon 9 Feb to Thu 12 Feb 2015

www.conted.ox.ac.uk/datavis

Insect Taxonomy and Field Sampling Skills

Mon 23 Mar to Fri 27 Mar 2015

www.conted.ox.ac.uk/taxonomy

Priority booking will be given to NERC-funded doctoral students (50% or greater); if there are any spaces left after the priority booking deadline of 30 October 2014 these will be made available to other doctoral students, professionals and ECRs in the environmental sciences on a first come first served basis.

For more information on how to register interest, and what supporting documentation you will need to provide, please visit the links above or contact us on envman@conted.ox.ac.uk and +44 (0)1865 286952. You can also follow us on Twitter @ [ox_environment](https://twitter.com/ox_environment) for the latest updates from the University of Oxford Environment and Sustainability Programme.

Chris Thompson

Administrative Officer
(Environment & Sustainability)
Continuing Professional Development Centre
Department for Continuing Education
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THE BRITISH ECOLOGICAL SOCIETY

Accounts for the year ended 31 December 2013 together with Council's and auditor's reports

TRUSTEES AND ADVISORS

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L Batty
A Beckerman
J Blanchard
R Bardgett
D Coomes: Resigned August 2013
M Crawley: Resigned February 2014
T Ezard: Resigned August 2013
E Goldberg
W Gosling
Diana Gilbert: Appointed August 2013
A Gray
R Hails: Resigned August 2013
D Hodgson
Jane Hill: Appointed August 2013
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Jo Randall: Appointed August 2013
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Office bearers

President: W Sutherland
Appointed August 2013

Past President: G Mace
Appointed August 2013

Vice President: R Bardgett

Hon. Secretary: D Hodgson

Hon. Treasurer: D Purves

Chairpersons of standing Committees (as at date of this report)

Finance Board: D Purves

Management Board: W Sutherland

**Education, Training & Careers
Committee:** W Gosling

Grants Committee: R Bardgett

Meetings Committee: A Beckerman

Membership Committee: A Pullin

Personnel Committee: D Hodgson

Public and Policy Committee: J Vickery

Publications Committee: A Gray

Council's report

For the year ended 31 December 2013

1. FINANCIAL STATEMENTS

The Trustees present their report and financial statements for the year ended 31 December 2013.

2. COUNCIL'S RESPONSIBILITIES

The Council of the British Ecological Society (the Trustees and directors) are responsible for preparing the Annual Report and the financial statements in accordance with applicable law and regulations.

Company law requires the Council to prepare financial statements for each financial year. Under that law the Council have elected to prepare the financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law). The financial statements are required by law to give a true and fair view of the state of affairs of the company and of the surplus or deficit of the company for that period. In preparing these financial statements, the Council are required to:

- select suitable accounting policies and then apply them consistently;
- observe the methods and principles in the Charities SORP¹;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Company will continue in business.

The Council is responsible for keeping proper accounting records which disclose with reasonable accuracy at any time the financial position of the British Ecological Society (BES) and enable them to ensure that the accounts comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the BES and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Statement of disclosure to auditors:

- so far as the directors are aware, there is no relevant audit information of which the company's auditors are unaware; and
- they have taken all the steps that they ought to have taken as directors in order to make themselves aware of any relevant audit information and to establish that the company's auditors are aware of that information.

3. GOVERNANCE: CONSTITUTION, STRUCTURE AND MANAGEMENT OF THE SOCIETY

The BES is a company limited by guarantee (Registration no. 1522897) and has no share capital. As a registered charity (Registration no. 281213), it is governed by its Memorandum and Articles of Association.

Council is the supreme governing body of the BES. Council comprises the President, President- Elect or Past President, two Vice Presidents, Honorary Treasurer, Honorary Secretary, Chair of the Education, Training and Career Committee, Chair of the Meetings Committee, Chair of the Publications Committee, Chair of the Public and Policy Committee, and 12 Ordinary Members. Council is responsible for nominating officer and chair posts and they do so through a ballot. Nomination for Ordinary Members is open to the whole membership. All members of Council are elected by the membership at the AGM. All newly appointed Trustees go through a process of induction which fully briefs them about their roles, responsibilities and the BES.

There are nine committees that report to Council. These committees cover specific areas of work such as education, meetings, publications, finance etc., and comprise Council members and, in most cases, ordinary members drawn from the Society's members.

The Society has a governance document which details the structure, terms of reference and membership of Council and its committees. The work of each committee is supported by a member of staff.

The 2008-2014 strategic plan for the Society provides a framework for the activities in the lead up to and through its centenary year in 2013. During 2014 there will be a strategic review of the Society.

Resources expended on governance = £44,767 (1% of total)

4. STATEMENT OF GOALS AND PRINCIPAL ACTIVITIES

The objects for which the Society is established are to advance the education of the public in the subject of ecology as a branch of natural sciences and to advance and support research in that field, and to disseminate the results of such useful research.

The vision of the British Ecological Society is to advance ecology and make it count. Ecology is the scientific study of the distribution, abundance and dynamics of organisms, their interactions with other organisms and with their physical environment. At a time when finite natural resources are being used at increasing rates, it has never been more important for human society to understand its impact on ecological systems (which includes systems intensively managed or impacted on by humans such as arable farms, pastures and marine fisheries) and their importance in maintaining human health. The BES's many activities include the publication of a range of scientific literature, including internationally renowned journals, the organisation and sponsorship of a wide variety of meetings, the funding of numerous grant schemes, public engagement, education work and policy work. The Society has approximately 5,500 members worldwide, and membership is open to all with an interest in ecology. There is a small membership fee, with discounts for students and those from low income countries.

5. REPORT ON PRINCIPAL ACTIVITIES

The Trustees confirm that they have complied with the duty in section 4 of the Charities Act 2006 to have due regard to the Charity Commission's general guidance on public benefit. All trustees give their time voluntarily and do not receive any private benefit. Details of trustees' expenses and remuneration are disclosed in notes 5 and 15 respectively.

To achieve the Society's vision of advancing ecology and making it count, the BES aims to:

- Develop ecological science and scientists
- Improve the quality of education and capacity building
- Promote the use of ecological science
- Build collaborative partnerships
- Ensure financial sustainability
- Improve efficacy

The first three of these aims provide clear public benefits, whilst the final three define the ways in which the Society gains greater leverage from its finite resources and ensures its long-term sustainability.

The BES portfolio of grants covers all of the Society's aims. It can be divided into several broad categories; research, training & travel, outreach and support for ecologists in Africa. The BES funds grants with the aim of promoting ecology as widely as possible and hence individual awards are generally of relatively small value, although many awards are made.

5.1 Develop Ecological Science and Scientists

Publishing – Resources Expended = £1,360,282 (36% of total)

Publishing plays an important role in the activities of the BES as it helps to promote and disseminate ecological science. It also constitutes the Society's main income source. In 2013, income from publishing decreased slightly in comparison to the previous year to £2.7M, primarily due to 2012's income being unusually high because of a bonus for renewing the journal

publishing contract. There has been a modest increase in revenues from article processing charges for open access articles published in the journals, in particular for Journal of Applied Ecology and our newest journal, Methods in Ecology and Evolution. Our publisher has put a price adjustment scheme in place that as far as possible avoids charging twice for these open access articles (once via the article processing charge and once via the subscription fee); the scheme has already been applied to lower 2014 subscription prices on *Journal of Applied Ecology* and will also come in effect on the other journals, especially *Methods in Ecology and Evolution*, when 2015 prices are determined.

Open access continues to be a much discussed topic in the UK and in many of our authors' and readers' countries. The BES continues to engage in this debate on various levels: during 2013 members of the publications team have been involved in discussions with ecologists and publishing professionals at scientific and industry meetings, respectively; have carried out a survey of the membership on this topic; have responded to open access-related policy consultations set up by RCUK and HEFCE; and, together with representatives of other societies, are interacting with policy makers in the UK and Europe. All journals are compliant with open access funder mandates, in particular with the RCUK open access policy introduced in April 2013, which favours an author-pays publishing model. Besides making articles available for free to all readers in line with open access mandates, four of the BES journals are included in the new Public Library Service 'Access to Research' initiative. This programme makes many of the world's best academic journals available through UK local libraries and thus grants access to research results to those who often do not have the opportunity to obtain scientific papers via institutional library subscription, e.g. students, independent researchers, small business and the public in general. The BES also continues to offer free online access to published content two years after initial publication and grants heavily discounted or free access to institutions in developing countries via the research4life philanthropic scheme.

The journals are committed to publicising the research they published to the widest possible ecological community and to the general public. In addition to one freely available sample issue per journal, the journals also published 9 Special Features (collections of new articles on topics of current interest) and 8 journal-specific and 5 cross-journal Virtual Issues (a mixture of recent and older articles collated to support other journal or society activities). All Special Features and the majority of Virtual Issues were freely available online either throughout the year or for at least several months after publication. Research published in the journals was also highlighted via press releases and featured in a number of news outlets, both print and online, such as BBC News, BBC Radio 4, LA Times, The Guardian or The Times.

Publishing also contributed to the Society's centenary year celebrations at the INTECOL conference: a *Guide to Peer Review in Ecology and Evolution* aimed at early career researchers was produced as a give-away and an electronic version of it has been made available free from the BES website; it has subsequently been added to reading lists for ecology courses in several institutions. The publications team also held author workshops available to all delegates on writing for researchers whose first language is not English and on maximising the impact of a research paper. In addition, the journals funded audio recordings of the keynote talks of the journal-sponsored symposia and made the podcasts freely available via the BES Journals Podcast channel. Individual journal apps available for members and anyone with a personal or institutional subscription were also launched at this meeting.

Finally, the journals issued a preprint policy allowing authors to post the unreviewed version of their article on publicly available preprint servers. In 2013, the journals also started recommending the archiving of the raw data that supports the conclusions presented in the articles published in the journals and moved to mandatory data archiving at the beginning of 2014. While the authors can choose the most suitable repository for their data, the BES is funding the archiving of data in DRYAD, a well-developed data archive for ecology and evolutionary biology.

Research – Resources Expended = £317,875 (9% of total)

In 2013 the Society received 295 applications for funding across its grants portfolio (excluding Training & Travel) and funded a total of 53 applications.

The majority of our awards went towards funding scientific ecological research projects; we supported small projects with new and innovative ideas as well as larger projects which aim to help early career ecologists to establish an independent research career in ecology.

We also supported a number of ecologists in developing countries through our Ecologists in Africa grant. This scheme recognises that ecologists in Africa face unique challenges in carrying out ecological research and aims to provide them with support to develop their skills, experience and knowledge base as well as making connections with ecologists in the developed world.

As the importance of public engagement of science is emphasised within the community, the volume of Outreach applications over the last year has increased. These grants aim to promote and engage the public with the science of ecology and/or improve skills in science communication.

In addition, in 2013 the BES used a generous legacy from the estate of the late Dr James Parkyn to support 42 students from low income and lower middle income countries to attend INTECOL 2013. The BES matched the legacy, enabling us to support a further 110 students, some from higher income countries, to attend INTECOL. The Parkyn Bursary awardees were represented within a dedicated poster area at the meeting, allowing their work to be recognised by their peers.

2013 Success Rates

Grant Type	Number of applications	Number of awards	Success Rate
Large research	44	6	14%
Small Research	74	29	39%
Outreach	114	11	10%
Ecologists in Africa	63	7	11%

In 2013, the Grants Committee recognised the importance of the Committee’s activities being transparent and therefore, in line with similar grant funding bodies, made the decision to make all grant success rates publically available on the BES website. The 2013 success rates can be seen below.

We have awarded a number of prizes to outstanding individuals in recognition of their contribution towards the science of ecology, including our annual Anne Keymer student talk prize and Poster Prize at INTECOL 2013.

The BES continues to support the Gratis Book Scheme, the aim of which is to provide ecology and conservation books to those from outside Western Europe, North America, Japan, Australia and New Zealand who would otherwise be unable to obtain them. The simple purpose of this scheme is to spread ecological knowledge as widely as possible. This scheme is a collaboration between the British Ecological Society (who pay for the postage), the nhbs.com bookstore (who co-ordinate and organise the distribution) and the publishers and authors of the books (who provide the books for free). In 2013, our £5,000 contribution to the Scheme enabled 550 books to be dispatched to 70 countries. BES funding of £10,000 allowed 29 young biologists from 26 European Universities/institutions, spanning 15 countries, to attend Tropical Biology Association Field courses in Tanzania, Borneo and Madagascar.

Meetings – Resources Expended = £1,017,688 (27% of total)

The exchange of ideas and networking that happens at scientific conferences and field trips are vital ways in which science advances and develops.

Although the BES charges a registration fee to attend, the Society subsidises events to ensure fees are low for students and unemployed members.

In 2013, the Society’s Annual Meeting was subsumed into the centenary flagship event, INTECOL. The event ran from 18-23 August and was held at London’s ExCel centre and attracted over 2,200 delegates from 65 countries. There was an incredibly busy programme, which incorporated 580 posters and 1,080 talks spread over 16 sessions, ranging from Marine Ecology to Modelling, Climate Change to Community Ecology. The series of eleven plenary lectures provided a backbone for the event, including presentations from Sandra Diaz (Cordoba National University, Argentina), Bojie Fu (Chinese Academy of Sciences, China), Ove Hoegh-Guldberg (University of Queensland, Australia) and Martin Nowak (Harvard University, America).

The Congress enabled the Society to try new initiatives, including Pecha Kucha sessions (a presenter shows 20 images, each for 20 seconds. The images advance automatically and the speaker talks along to the images), speed science (very short oral presentations) and an integral use of social media – questions for plenary speakers were only accepted through Twitter (enabling people to participate, no matter where they were on the planet) and the #INT13 hashtag was so popular that it trended in Europe throughout the whole meeting.

INTECOL also provided 30 workshops throughout the week, giving delegates opportunities for personal and professional development with themes included Funding, Policy, Outreach and Technology. To ease delegates through such a crowded week, the Society provided numerous social events in which to relax and network, those included: fieldtrips (including Kew Botanical Gardens, Millennium Seedbank and Rainham Marshes), the welcome mixer (with line dancing!) London sightseeing tours, Special Interest Group mixers, poster and wine sessions and, the highlight of the congress, the Society’s Centenary party. Almost 800 people celebrated the Society’s birthday at the beautiful Old Billingsgate venue by the Thames; celebrants enjoyed an evening of fine food, silhouette artists, informal networking, amazing views of the capital and lots of dancing. The Society

produced five videos throughout the Congress, illustrating the dynamic range of events and enjoyment of INTECOL 2013.

In addition, as part of the Society's centenary celebrations, meetings on three key topics were held around the UK, aimed at encouraging interdisciplinary approaches to ecological research: A public marine symposium in collaboration with Marine Alliance for Science and Technology for Scotland (MASTS), which formed part of the Edinburgh Science Festival. Held at the National Museum of Scotland and hosted by BBC Radio 4 presenter Quentin Cooper, this attracted approximately 50 delegates.

Global Change and Biosphere Interactions; a two day conference held at the University of York, which also formed the launch of The York Environmental Sustainability Institute (YESI). This had an excellent international programme, with keynote lectures from Professor Johan Rockström (Stockholm University) and Professor Georgina Mace (Imperial College London). Around 180 attended the meeting (Inc. staff/speakers) and there was good media representation.

Evolutionary Ecology of Infectious Disease, a one day conference held at Charles Darwin House, London, highlighting the ways in which ecology impacts on the evolution of and evolutionary implications of infectious disease with an international programme attracting 95 delegates. The Society's Special Interest Groups have, again, grown and now total fifteen. They have been incredibly active in furthering ecological research, but also in promoting ecology to the public across the country. The BES subsidises these events and promotes them through all of its communication channels. The newest groups include Citizen Science (which launched at INTECOL), Plants, Soils and Ecosystems and the re-launched Aquatic group.

We have an even busier programme of events planned for the upcoming year.

5.2 Improve the Quality of Education and Capacity Building – Resources Expended = £241,782 (6% of total)

The Society supports the ecological education of people of all ages and aims to support ecologists at each stage of their career development through providing advice and opportunities for professional development

In 2013 the Society produced two wall charts relating to freshwater ecosystems and extreme events supporting and communicating the policy work of the Society to students and teachers, and marine ecology, developed in collaboration with the Marine Biological Association. These were distributed free of charge through existing teacher lists, education conferences and events and through direct marketing to science departments. Both wall charts are supported by online and freely accessible teaching and learning resources.

Throughout 2013, the Society worked alongside the Society of Biology and SCORE to support curriculum development with respect to GCSE, KS4 biology and practical science. The Society also contributed to the Department for Education consultation on A-level Biology content and the concurrent Ofqual consultation on A-level assessment. The Society contributed to responses submitted by SCORE with a focus on practical science assessment and content. Additional specific fieldwork responses to both consultations were developed in collaboration with the Association for Science Education Outdoor Science Working Group.

In 2013, the Society invited 10 undergraduates to participate in the Undergraduate careers scheme with a further group deferred until 2014, the group was provided with support and mentoring in developing their careers and were sponsored to attend INTECOL. The Society again held a very successful and oversubscribed careers conference for 100 undergraduates. Careers provision was expanded to include Masters students with a student scientific symposium and a PhD progression conference. Both were well received and oversubscribed.

The Society funded 5 A-level students to participate in In2Science, a scheme aimed at supporting young people from underrepresented groups to access higher education. The scheme successfully saw one of its students accepted to HE science courses in 2014. All students were invited to attend a celebratory event to meet the society and collect careers resources. Funding has been doubled for 2014.

Our successful mentoring scheme continued in 2013. 22 participants from across the world and at a range of career stages from across academia, ecological consultancy and the NGO sector took part, and were able to provide support and guidance for individuals in similar situations. All participants benefitted from specialist training, which was deemed either useful or excellent by the majority of attendees. Most mentoring relationships in the scheme lasted for 6-12 months, and nearly all participants felt that the experience had improved their confidence and helped them tackle new challenges.

As part of the centenary celebrations the Society held a competition for schools, the poetry competition being especially successful and resulting in a compilation booklet, all winning entries and runners up were invited to a celebratory ceremony in Birmingham. Students were invited to enjoy the winning menu from the food competition as their lunch for the day and those students who submitted winning entries for the Radio broadcast were provided with opportunities to produce their own broadcasts and hear them played through Funkids Radio.

5.3 Promote the Use of Ecological Science (policy) – Resources Expended = £490,088 (13% of total)

The Society seeks to promote the use of ecological science in decision making and provides scientific evidence to inform policy across a number of areas that affect the natural environment. In 2013 we have worked with policy makers in the UK and England, and have increased our interaction with devolved environmental policy in Scotland. We have also taken steps to explore similar action in Wales.

Over the course of the centenary year, we delivered a number of projects to engage policy makers, our members, and the general public. In June, we jointly ran an evening discussion event on natural capital with the Royal Geographical Society. This was open to all members of the public, attracting over 90 attendees. June also saw the relaunch of the Society's Ecological Issues series, first published in 1990. The newest document, *The Impact of Extreme Events on Freshwater Ecosystems*, sought to provide a synthesis of the scientific evidence available on this topic. The document, along with a short policy brief, was launched in both the UK and Scottish Parliaments, and distributed to a number of freshwater management organisations. It is now available for download on our website.

We responded to a number of government consultations relating to ecological science and the natural environment in 2013, which would not have been possible without the comments and views of our members. Our responses were evidence-based and represented the views of the ecological community – some of which were highlighted by the Government in their responses to the evidence. We have improved our impact and coverage of consultations and policy statements by working more closely with umbrella bodies and other learned societies.

Working with CIEEM and the Scottish Biodiversity Strategy's Science and Technical Group, we co-hosted a one-day scientific conference for researchers and policy makers in Scotland in September. This featured talks and discussions on how to deliver the Scottish Government's ambitious biodiversity strategy. Individuals were charged a nominal fee for registration and travel grants were available for students to attend to the event. We will continue to support this event in 2014, and will also offer a policy-training workshop focused on decision making in Scotland for attendees.

In 2013, we continued to offer a range of training opportunities for our members to engage with policy makers and the decision making process. Our POST Fellowship Scheme gave a PhD student the opportunity to work with the Parliamentary Office of Science and Technology to produce a briefing note

on an ecological topic for MPs and Peers. Our shadowing scheme gave six early-career researchers the opportunity to shadow elected representatives in the European, Welsh, and UK Parliaments, gaining a unique insight into decision making. We will offer both of these opportunities again in 2014, again at no cost to participants. A policy training workshop to improve members' knowledge of parliamentary processes and the role of science within these was run in May. Another workshop will be held in 2014, which will focus on communication skills to equip members with the appropriate skills to effectively communicate their science to the policy making process.

Our policy blog has allowed us to successfully disseminate policy updates and developments relating to ecological science to both Society members and the general public in 2013. Over the year, over 80 posts were published, with an average hit rate of 4000 views per month. Our views and analysis on key topics were disseminated further by our trustees, who provided comments to respected scientific publications such as *Nature*.

Through the Natural Capital Initiative (NCI), a partnership project of the BES, we stimulated discussion about natural capital at the World Forum on Natural Capital in November. Delegates at the international ecology conference, INTECOL, in August were also able to take part in a workshop that focused on natural capital's role in human health. In 2014, NCI will hold a dialogue session on flooding, a joint event with the Parliamentary Office of Science and Technology, and a summit – *Valuing our Life Support Systems* – in November.

5.4 Build Collaborative Partnerships

By working with others the Society can have greater leverage than working alone in certain areas. The Society has much to offer collaborative partnerships as well as benefiting from them. There are many potential partners in the ecological and wider communities that could help us to achieve our vision and we will work with such partners when it is strategically possible. All BES committees consider the possibility of collaborative partnerships when developing initiatives.

In 2013 the BES continued working with a wide range of partners across

the whole spectrum of our activities. Of particular importance is our continued collaboration with the Biochemical Society (BS), the Society for Experimental Biology (SEB), the Society for General Microbiology (SGM) and the Society of Biology (SoB) which co-own Charles Darwin House (CDH) along with the BES. CDH generates revenue for the BES though the rental of spare office space and the hiring out of the conference suite. As well as running joint meetings the five co-owners continue to explore ways of working more closely and expanding the hub of biological sciences that is CDH. Given the lack of space and conference facilities since the move of SGM to CDH it was therefore decided in 2013 to purchase a second building, a few moments walk from CDH. The building will be refurbished in 2014 and will provide additional office and conference space.

The benefits of joint working are also demonstrated by the Festival of Ecology organised by the BES as part of our centenary celebrations. We worked with 65 organisations to deliver outreach events to 80,000 members of the general public which showcased the science of ecology.

The Natural Capital Initiative is another great example of how the BES has come together with others (in this case the Centre for Ecology and Hydrology, the James Hutton Institute and the SoB). Further details of this work can be found in section 5.3.

5.5 Ensure Financial Sustainability

We have a duty to ensure the long term viability of the Society. During 2009 BES Council co-invested in Charles Darwin House to provide new office space for the Society, shared with several other organisations with complementary aims (i.e. the Society for Experimental Biology). The building has also generated income from office leases and hire of the conference facilities and this will be expanded with the purchase of a second building in 2013.

In 2013 we continued to develop and support the BES Journals to further enhance their standing so that they remain a sustainable and significant income stream for the Society in the near future, despite uncertainties over the impact of open access and the world recession.

5.5.1 Financial Management and Control

During the year the BES Committees undertook a wide range of activities in pursuit of the Society's charitable objectives. It is therefore necessary to have budgets and clearly written policies about what activities will be funded and how, and to communicate these clearly to all involved.

The Finance Committee considers quarterly management accounts at its meetings through the year, with a narrative provided by the Honorary Treasurer and Executive Director, as appropriate. The narrative focuses on reasons for variation against budget. The quarterly management accounts are also circulated to budget holders.

Annual budgets for the following year are drawn up in the fourth quarter and are approved by Council at its meeting in December.

The BES has a set of Financial Regulations which must be followed. These Regulations are reviewed annually by the Finance Committee.

In 2013 £443,381 (12% of resources expended) was given away in grants. This substantive sum requires careful management by the Society. Applications are reviewed against specific, published criteria. The BES has established a Peer Review College to review grant applications. This ensures that the Society uses the most appropriately experienced reviewers for each grant application. The only exceptions to this are the Travel & Training Grants. These are reviewed by BES staff and awards are made if the applicant meets the published criteria and there are sufficient funds available.

5.5.2 Investment Policy and Performance

The listed investments held by the BES and managed by Barclays Wealth grew by 23% to £2.4M and is in-line with appropriate benchmarks. Income from cash investments decreased reflecting the decrease in cash holdings. The investment managers produce a quarterly summary of performance for the Honorary Treasurer and Executive Director. The investment managers attend one meeting of the Finance

Board a year to discuss performance and general strategy. Day to day investment decisions are delegated to Barclays Wealth in accordance with the agreed mandate. The BES has spread its risk as far as practicable by part owning its headquarters building and holding some of its reserves in long-term deposit accounts as well as in equities, bonds and trust funds.

We have continued to use the services of the Ethical Investment Research Service (EIRIS) to provide us with information, based on a long list of criteria and a scoring system, on the environmental performance of FTSE listed companies. This information is updated twice annually and is used to screen out companies with the worst environmental records and policies from our portfolio. This gives a more objective and consistent basis for excluding companies. Full details are available from the Honorary Treasurer or the BES Office. A policy of this sort is consistent with the ethos of the BES and is important to maintaining the support of members and the wider ecological research community. In 2014 we intend to review the criteria used by EIRIS to ensure that they reflect the aims and objectives of the Society.

5.5.3 Financial Performance

The accounts show a surplus of £227,136 (surplus of £562,627 in 2012) before unrealised gains on investments of £255,734 (gains of £140,427 in 2012). Council set the 2013 budget to make a modest loss and use funds to support the wide variety of centenary celebration activities. Several factors, including the repayment of a loan made to the BES Trading Company, contributed to the surplus in 2013. Total funds of the Society were £7,456,454 at the end of 2013 (£6,973,584 at the end of 2012).

5.5.4 Reserves Policy

The Society holds reserves for three purposes. The first is to generate income for its operations needs and to act as a buffer against uncertainties over future journal publishing income (the Expendable Endowment Fund). This is held as a designated fund and stands at £4,500,000 (£4,000,000 in 2012). Continuing concern over the stability of academic publishing pricing models and uncertainty over the impact of the global recession suggests that there is

significant insecurity over this major source of income for the Society. The expendable endowment will allow the Society to gradually accumulate funds to provide greater long-term stability without affecting its day-to-day activities. It is the trustees' intention to build the fund to approximately £10,000,000. The income from this sum will help to mitigate the possible future decline in publishing income, allowing the Society to continue its work, and provide funds to invest in future income-generating projects.

The second is that funds can be set aside for specific major projects. The designated tangible fixed asset fund comprises the net book value of fixed assets held by the Society, principally the Society's office in London and as such it is not available to meet the general running costs of the Society. This year the Society has utilised £745,164 of its Centenary fund to help fund projects and activities planned for the Festival of Ecology which took place in 2013 to celebrate the BES's 100th birthday.

The third is to ensure that the BES can meet its operational needs and working capital requirements (the free reserve). These are currently £777,490 and represent approximately 4.5 months operating costs, excluding third party operating costs and grants. The Society aims to hold between 6 and 12 months operating costs as free reserves. The level of reserves and the Society's financial strategy is regularly reviewed and monitored by the Trustees. The reserves policy is reviewed annually at the Finance Board meeting in September and any recommended changes are considered by Council in December of that year.

5.6 Improving Efficacy

We need to ensure that the Society is in the best shape possible to efficiently and effectively deliver the Society's vision. We work within a sustainability policy to minimise the environmental impact of the Society.

In 2013 we continued to review ways in which co-location with the four other learned societies in Charles Darwin House could provide opportunities for more effective use of BES resources.

5.6.1 Risk Management

The BES has a risk register. It is reviewed in detail each spring by the BES Committees and then approved by Council in June. The risk register identifies areas of risk, ranks them in priority ordered according to impact multiplied by probability, states who or which Committee is responsible for each risk, states how the risk is currently mitigated and what actions remain outstanding.

Some of the major risk areas are:

A major loss in income from journals resulting from a change in publication models or a decrease in impact factor: Income from journals is a very significant proportion of the Society's funds. There is continued uncertainty regarding publications models and the timeframe in which this might happen. This risk is being mitigated in a variety of ways. We have a reserves policy which would provide a sufficient buffer to allow a gradual scaling back of the Society's financial commitments. The Society has a Head of Publications to deliver more effective and efficient journal management and to ensure that the Society keeps abreast of the latest developments in journal publishing. The internal publications team structure changed in 2012 to provide better support for our Journals. We included an Open Access journal in our portfolio, Ecology and Evolution, by partnering with Wiley. This will bring very useful expertise and understanding into the BES on how to run an Open Access title. Each journal has a strategic plan identifying ways in which it can increase its reputation and standing. In 2014 we will complete a major strategic review of our publishing activities and agree a long term vision for the journal portfolio.

A sustained decline in attendance at the Society's meetings: The difficult funding situation in Higher Education could have a significant impact on the ability of academics to participate in BES meetings. There is now a timetable for publicity for BES Symposia and Annual Meetings, for both the Bulletin and website, to ensure the ecological community is informed of meetings well in advance. The Annual Meeting will move back to its traditional December slot now that the INTECOL Congress has passed and there is much interest in the 2014 meeting being held jointly with the French Ecological Society in Lille, France.

A sustained decline in membership:

The Society's Membership Committee receives regular reporting on membership numbers and trends. Council regularly discusses the role of learned societies such as the BES in the 21st century and reviews the activities of the organization to ensure we provide excellent services that are wanted and needed by the ecological community. In 2013 we used the centenary celebrations to focus work on a membership drive to increase membership by 1,000 people which was successful. The challenge for 2014 is to retain these new members and turn them into long term supporters of the Society.

6. THE SOCIETY'S ENVIRONMENTAL IMPACT

The purchase a new office for the Society in 2009 offered an unprecedented opportunity for the Society to lead the way with regards to reducing our environmental impact. Discussions with the other learned organisations lead to agreement that we should aim for a BREEAM rating of Excellent, the second highest possible rating and a tough objective for a building designed and built in 1959. BREEAM is a method of calculating the environmental impact of a building. Progress has been excellent. The aim of achieving the BREEAM Excellent rating was made fundamental to the refurbishment project and had a major influence on decisions ranging from how to run recycling onsite during the demolition stage through to the choice of mechanical and engineering solutions, selection of the final fixtures and fittings, and the development of a staff transport plan. We were delighted to achieve a BREEAM Excellent rating in 2010. The refurbishment of the newly purchased property represents the same opportunity and we are again aiming for a BREEAM Excellent rating.

The move to Charles Darwin House has created a new base line for resource consumption from 2010 onwards, although the increase in occupancy of the office floors to rent during 2010 and into 2011, the second phase of construction in 2010, the significant increase in the use of the conference suite over this time period and a significant increase in the number of staff working at CDH in 2013 have influenced electricity consumption.

Year	Energy Consumption at CDH
2010	391,352 kWh
2011	372,939 kWh
2012	394,633 kWh
2013	407,474 kWh

7. FUTURE DEVELOPMENTS

Details of some of the wide range of activities planned for 2014 are given under the headings of the Society's principal aims.

One very significant activity for the BES in 2014 will be the strategic review of our activities, including a detailed review of our publishing work. As the Society embarks on its second centenary it is opportune to reflect on what we do and how we do it to ensure that the organisation continues to thrive and support the ecological community. Given that we have a finite resource to work with, it is important that we ensure it is used to the maximum effect and the strategic review will help us to do that.

Successfully growing the BES membership by 30% in 2013 was a great achievement and our challenge now is to convert those people into long term supporters of the organisation. All departments within the Society will work together in 2014 to help achieve that aim.

The purchase of a new building very close to CDH represents a significant investment by the BES so an important strand of work during 2014 is to ensure the refurbishment programme runs to budget and time, and that the new resource is used most effectively.

8. AUDITORS

In 2013 the BES auditors were Mazars LLP.

This report has been prepared in accordance with the provisions applicable to entities subject to the small companies' regime.

This report was approved by the Council on 3 June 2014.

**Professor William Sutherland
Member of the Council**

Independent auditor's report to the members of The British Ecological Society

For the year ended 31 December 2013

We have audited the financial statements of The British Ecological Society for the year ended 31 December 2013 which comprise the consolidated statement of financial activities, the consolidated and charity balance sheets and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

Respective responsibilities of trustees and auditors

As explained more fully in the Trustees' Responsibilities Statement set out on page 3, the trustees (who are also the directors of the charity for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's (APB's) Ethical Standards for Auditors. This report is made solely to the charity's members as a body in accordance with Chapter 3 of Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the charity's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the charity and the charity's members as a body for our audit work, for this report, or for the opinions we have formed.

Scope of the audit of the financial statements

A description of the scope of an audit of financial statements is provided on the Financial Reporting Council's website at www.frc.org.uk/auditscopeukprivate

Opinion on the financial statements

In our opinion the financial statements::

- give a true and fair view of the state of the group and of the charity's affairs as at 31 December 2013 and of the group's incoming resources and application of resources, including its income and expenditure, for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006.

Opinion on the other matter prescribed by the Companies Act 2006

In our opinion the information given in the Council's Report for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which we are required to report by exception

We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept, or returns adequate for our audit have not been received from branches not visited by us; or
- the financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of trustees' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit;

- the trustees were not entitled to prepare the financial statements in accordance with the small companies regime and take advantage of the small companies exemption in preparing the Report of the Trustees.

Alistair Fraser (Senior Statutory Auditor) for and on behalf of Mazars LLP

Chartered Accountants and Statutory Auditor

Times House, Throwley Way, Sutton, Surrey, SM1 4JQ

Date: 16 July 2014

Consolidated statement of financial activities

Incorporating the income and expenditure account

For the year ended 31 December 2013

	Notes	Unrestricted £	Restricted £	2013 £	2012 £
Incoming resources					
Incoming resources from generated funds					
<i>Voluntary income</i>					
Legacy & Donations		189	-	189	10,000
<i>Activities for generating funds</i>					
Investment income	2	95,712	-	95,712	98,920
Profit on disposal of fixed assets		95,963	-	95,963	-
Other income		176,388	-	176,388	48,156
		368,252	-	368,252	157,076
<i>Incoming resources from charitable activities</i>					
Publications		2,788,911	-	2,788,911	2,811,432
Income from conferences		705,352	-	705,352	154,032
Subscriptions		145,343	-	145,343	150,562
Total incoming resources		4,007,858	-	4,007,858	3,273,102
Resources expended					
Cost of generating funds					
Investment management fees		2,079	-	2,079	3,175
<i>Charitable activities</i>					
Publications		1,350,282	10,000	1,360,282	1,515,024
Meetings		1,017,688	-	1,017,688	288,829
Research		317,875	-	317,875	258,005
Education		241,782	-	241,782	104,746
Policy		490,088	-	490,088	296,715
Bulletin and other services		306,161	-	306,161	192,631
<i>Governance costs</i>		44,767	-	44,767	51,350
Total resources expended	3	3,770,722	10,000	3,780,722	2,710,475
Net incoming resources		237,136	(10,000)	227,136	562,627
Net gains/(loss) on investments	9	255,734	-	255,734	140,427
Net movement in funds in year		492,870	(10,000)	482,870	703,054
Fund balance brought forward		6,961,599	11,985	6,973,584	6,270,530
Fund balances carried forward	13	7,454,469	1,985	7,456,454	6,973,584

All of the above results derive from continuing activities. There are no gains and losses other than those disclosed above. The accompanying notes form an integral part of these financial statements.

Balance sheet

Company number: 1522897

As at 31 December 2013

	Notes	Charity 2013 £	Group 2013 £	Charity 2012 £	Group 2012 £
Fixed assets					
Tangible assets	8	2,176,979	2,176,979	1,777,210	1,777,210
Investments	9	4,252,769	4,252,767	4,377,411	4,377,409
		6,429,748	6,429,746	6,154,621	6,154,619
Current assets					
Debtors	11	770,504	692,375	825,189	755,231
Cash on deposit and in hand		534,214	636,670	390,190	477,132
		1,304,718	1,329,045	1,215,379	1,232,363
Creditors: amounts falling due within one year	12	(278,012)	(302,337)	(396,416)	(413,398)
Net current (liabilities)/assets		1,026,706	1,026,708	818,963	818,965
Net assets		7,456,454	7,456,454	6,973,584	6,973,584
Represented by					
Unrestricted funds					
General fund		777,490	777,490	439,225	439,225
Tangible fixed assets fund		2,176,979	2,176,979	1,777,210	1,777,210
Expendable Endowment fund		4,500,000	4,500,000	4,000,000	4,000,000
Centenary fund		-	-	745,164	745,164
Restricted fund		1,985	1,985	11,985	11,985
	13	7,456,454	7,456,454	6,973,584	6,973,584

These financial statements have been prepared in accordance with the provisions applicable to entities subject to the small companies' regime.

Included in the above reserves are unrealised gains of £395,842 (2012 gains £266,864).

The accompanying notes form an integral part of these financial statements.

The accounts on pages 21 to 34 were approved by the Council on 3 June 2014 and signed on its behalf by

Professor William Sutherland
Member of the Council

Notes to the accounts

For the year ended 31 December 2013

1. ACCOUNTING POLICIES

a) Basis of accounting

The accounts have been prepared under the historical cost convention as modified by the revaluation of investment assets and are in accordance with applicable accounting standards and comply with the Statement of Recommended Practice, 'Accounting and Reporting by Charities,' published in March 2005 and with the Companies Act.

b) Consolidation

The BES and its subsidiary, BES Trading Company Limited, comprise a small group. BES Trading Company Limited has been dormant in the past so consolidated accounts have not been prepared. In 2013 this company commenced trading. Consolidated accounts have therefore been prepared for the first time in 2013 and both group and charity comparative figures have also been disclosed. The charity has taken advantage of the exemption available in accordance with FRS 8 "Related party transactions" not to disclose transactions with its wholly owned subsidiary company.

c) Cash flow statements

The accounts do not include a cash flow statement because the BES, as a small reporting entity is exempt from the requirement to prepare such statements under the Financial Reporting Standard 1 (revised) – Cash flow Statements.

d) Income

- i) Subscriptions income: All subscriptions income is accounted for in the period to which it relates.
- ii) Other income: All other income has been accounted for on a receivable basis.

e) Expenditure (including grants)

Expenditure is classified under the principal categories of charitable and other expenditure rather than the type of expense, in order to provide more useful information to users of the accounts.

Charitable activities comprise direct expenditure including direct staff costs attributable to the activity. Support costs have been allocated to activities based on the average staff time spent. Governance costs are those incurred in connection with the management of the Society's assets, organisational administration and compliance with constitutional and statutory requirements. Support costs are allocated on the basis of time spent on each activity.

Grants payable are charged in the year when the offer is conveyed to the recipient except in those cases where the offer is conditional, such grants being recognised as expenditure when the conditions attaching are fulfilled. Grants offered subject to conditions which have not been met at the year-end are noted as a commitment, but not accrued as expenditure.

f) Depreciation

Depreciation has been calculated to write off the cost of assets over their expected useful lives as follows:

Freehold property – 2% per annum on cost

Furniture, fixtures and equipment – 25% per annum on a reducing balance basis.

The Society's policy is to capitalise assets purchased over £500.

g) Investments

Investments are stated at market value. It is the BES's policy to keep valuations up to date such that when investments are sold there is no gain or loss arising. As a result the Statement of Financial Activities only includes those unrealised gains and losses arising from the revaluation of the investment portfolio throughout the year. Disclosure is made in note 9 of the difference between the historical cost and the sale proceeds of the investments sold during the year.

h) Foreign currencies

Monetary assets and liabilities denominated in a foreign currency are translated into sterling at the exchange rate ruling on the Balance Sheet date.

Transactions in foreign currencies are recorded at the rate of exchange prevailing at the date of transaction.

All exchange differences are taken to the statement of financial activities.

i) Operating lease

Rentals payable under operating leases are charged against income on a straight line basis over the lease term.

j) Fund accounting

General funds comprise the accumulated surplus or deficit and are available for use at the discretion of the Council in furtherance of the general objectives of the BES.

Restricted funds are funds subject to specific restrictive covenants imposed by donors or by the purpose of the appeal.

Designated funds comprise funds which have been set aside at the discretion of the Council for specific purposes.

All income and expenditure of the BES has been included in the Statement of Financial Activities.

2. INVESTMENT INCOME

	2013 £	2012 £
Income from listed investments	43,116	44,273
Interest receivable	52,596	54,647
	95,712	98,920

3. ANALYSIS OF TOTAL RESOURCES EXPENDED

	Direct Staff Costs £	Other Direct Costs £	Support Costs £	TOTAL 2013 £	TOTAL 2012 £
Cost of Generating Income	-	2,079	-	2,079	3,175
Bulletin & Other services	91,364	52,987	161,810	306,161	192,631
Publications	350,086	855,747	154,449	1,360,282	1,515,024
Meetings	76,490	895,430	45,768	1,017,688	288,829
Research	26,745	271,407	19,723	317,875	258,005
Education	88,589	100,439	52,754	241,782	104,746
Policy	137,275	242,190	110,623	490,088	296,715
Governance	28,662	7,580	8,525	44,767	51,350
	799,211	2,427,859	553,652	3,780,722	2,710,475

Support Costs	2013 £	2012 £
Non salary staff costs	31,634	25,906
Property	153,862	38,070
IT costs	58,168	35,950
Venue Costs	7,659	9,063
Publicity	25,210	20,192
Fees / Affiliations	27,661	39,415
Office running costs	60,527	40,002
Depreciation	41,747	42,948
Bulletin	87,964	-
Outsourced finance & payroll	25,057	22,851
Legal & Consultancy	16,729	18,226
Bank charges	17,434	8,927
	553,652	301,550

* Support costs are allocated on the basis of time spent on each activity.

4. GRANTS

Grants were awarded by various committees of the BES as follows:

	2013 £	2012 £
Grants committee	244,025	221,247
Public & Policy committee	166,176	119,284
Education, training and careers committee	50,759	42,189
Meetings committee	23,410	12,293
Write back of grant commitments no longer required	(40,989)	(78,053)
	443,381	316,960

Grant commitments are as follows:

	2013 £	2012 £
Grant commitments at 1 January	162,590	128,487
Awards made during year	443,381	316,960
Payments made during the year	(451,172)	(282,857)
Grant commitments at 31 December	154,799	162,590

Details of significant grant awards are detailed on the BES's website. The majority of grants awarded are to individuals. Grants to institutions are relatively few in number and low value.

5. NET INCOMING RESOURCES

is stated after charging:

	2013 £	2012 £
Depreciation	41,747	42,948
Auditor's remuneration		
- audit services	7,489	5,250
Operating lease payments	-	-

Other than disclosed in note 15 members of Council did not receive any remuneration during the year. Expenses reimbursed to 17 (2012: 18) Members of Council in the year equalled £16,849 (2012: £7,595).

6. TAXATION

The BES is a registered charity and as such its income and gains are exempt from corporation tax to the extent that they are applied to its charitable objectives. There is no corporation tax charge for the year.

7. EMPLOYEES

The average number of employees during the year was 23 (2012: 18.9 {full time equivalents}).

	2013 £	2012 £
Membership	1.9	1.5
Publishing	9.8	9.8
Conferences / Meetings	4.5	3.1
Research	0.3	0.6
Education	1.8	1.0
Policy	4.4	2.6
Governance	0.3	0.3
	23.0	18.9
	£	£

Staff costs during the year amounted to:

Wages and salaries	684,533	668,632
Social security costs	73,083	67,011
Employer's pension contributions	41,595	38,098
	799,211	773,741

One (2012: one) employee earned £70,000-£79,999 during the year. The figures above includes 1 editor (2012: 1) retained on the payroll.

8. TANGIBLE FIXED ASSETS

Group & Charity	Freehold property £	Furniture, fixtures and equipment £	Total £
Cost			
1 January 2013	1,910,774	56,937	1,967,711
Additions	961,210	766	961,976
Disposals	(568,682)	(4,319)	(573,001)
31 December 2013	2,303,302	53,384	2,356,686
Depreciation			
1 January 2013	148,121	42,380	190,501
Charge for the year	32,651	9,096	41,747
Disposals	(49,296)	(3,245)	(52,541)
31 December 2013	131,476	48,231	179,707
Net book value			
31 December 2013	2,171,826	5,153	2,176,979
31 December 2012	1,762,653	14,557	1,777,2108

During 2009 the charity purchased a part share (36.1%) in the freehold 12 Roger Street as its new headquarters. It shares the ownership of the building with other biological focused charities and the property is held by a nominee company on trust for the Co-owners as tenants in common.

During 2011 the charity had disposed of 6.1% of the freehold in 12 Roger Street to the Society of Biology in accordance with the original plan to share the ownership of the building with other biological focused charities. This transaction resulted in a gain on disposal of £69,498.

During 2013 the Charity completed the purchase of a part share (21.1%) in the freehold property of 107 Grays Inn Road. As part of this transaction the Charity disposed of a part share of its interest in 12 Roger Street, reducing its interest in that property from 30% to 21.1%. It shares the ownership of the buildings with other biological focused charities and the property is held by Charles Darwin House Limited on trust for the Co-owners. This transaction resulted in a gain on disposal of £95,963.

9. INVESTMENTS

	2013 £	2012 £
Market value 1 January 2012	4,377,411	4,134,484
Additions	642,191	862,094
Disposals proceeds	(443,543)	(912,467)
Net investment gain	255,734	140,427
Movement in deposits	(579,024)	152,873
Market value 31 December 2013	4,252,769	4,377,411
Historical cost at 31 December 2013	3,856,927	4,110,546
Accumulated unrealised gains based on historic cost at 31 December 2013	395,842	266,865
Realised gain in year based on historic cost	128,978	92,787
Represented by:		
UK equity shares	828,109	724,752
Overseas equities	774,107	694,296
UK fixed interest	383,418	386,085
UK Other	411,903	138,022
Market value of listed investments	2,397,537	1,943,155
Investment in associated undertaking	300	300
Amounts held in cash	1,854,930	2,433,954
Group Total	4,252,767	4,377,409
Investment in subsidiary undertaking	2	2
Charity Total	4,252,769	4,377,411

10. SUBSIDIARY UNDERTAKINGS

The BES holds 100% of the issued share capital of BES Trading Company Limited, a company registered in England and Wales. The sole activity of BES Trading Company Limited was to organise the 11th International Congress of Ecology in August 2013. At 31 December 2013 the Share Capital and net assets of BES Trading Company Limited amounted to £2 – (2012(£1,799)).

During 2009 the BES acquired 36.1% of Charles Darwin House Limited, a company set up to manage the building. During 2011 shares representing 6.1% were disposed of leaving a remaining interest of 30.0%. During this year shares representing 8.9% were disposed of leaving a remaining interest of 21.1%.

At 30 June 2013 the net assets according to the audited financial statements were £1,000.

10 SUBSIDIARY UNDERTAKINGS (CONTINUED)

	2013 £	2012 £
Income and Expenditure:		
Turnover	735,123	-
Cost of sales	(622,127)	-
Gross profit	112,996	-
Interest Received	-	-
Net result	112,996	-
Profit gift aided to parent	(111,195)	-
Profit for the year	1,801	-
Accumulated losses brought forward	(1,801)	(1,801)
Accumulated losses carried forward	-	(1,801)

	2013 £	2012 £
Balance Sheet:		
Debtors	42	64,722
Cash	102,456	80,806
Creditors	(102,496)	(147,327)
Net Assets	2	(1,799)
Funds		
Share Capital	2	2
Reserves	-	(1,801)
Net Assets	2	(1,799)

11. DEBTORS

	Charity 2013 £	Group 2013 £	Charity 2012 £	Group 2012 £
Trade debtors	445,891	445,935	555,925	568,084
Other debtors	46,141	46,141	70,098	75,601
Prepayments and accrued income	131,663	131,663	74,066	111,544
VAT Refund	52,932	68,636	-	-
Loan to trading subsidiary	93,877	-	125,100	-
	770,504	692,375	825,189	755,229

12. CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	Charity 2013 £	Group 2013 £	Charity 2012 £	Group 2012 £
Trade creditors	50,684	49,772	86,115	86,547
Social security & other taxes	18,148	18,148	49,003	45,557
Other creditors	11,604	11,604	7,516	7,516
Accruals and deferred income	42,777	68,014	91,192	111,188
Grants payable (note 4)	154,799	154,799	162,590	162,590
	278,012	302,337	396,416	413,398

13. MOVEMENT IN FUNDS

	Fund balances brought forward 1/1/2013 £	Income £	Expenditure £	Net gains on Investment Assets £	Transfers £	Fund Balances Carried Forward 31/12/2013 £
Restricted Group & Charity						
BEVC	111	-	-	-	-	111
Alex S Watt Breckland Research Trust	1,874	-	-	-	-	1,874
Policy Assistant Fund	10,000	-	(10,000)	-	-	-
Total unrestricted funds	11,985	-	(10,000)	-	-	1,985
Unrestricted funds – Charity						
General	439,225	4,007,858	(3,025,558)	255,734	(899,769)	777,490
Designated						
Expendable Endowment fund	4,000,000	-	-	-	500,000	4,500,000
Tangible fixed asset fund	1,777,210	-	-	-	399,769	2,176,979
Centenary fund	745,164	-	(745,164)	-	-	-
Total Charity unrestricted funds	6,961,599	4,007,858	(3,770,722)	255,734	-	7,454,469
Unrestricted funds – Group						
General	439,225	4,007,858	(3,025,558)	255,734	(899,769)	777,490
Designated						
Expendable Endowment fund	4,000,000	-	-	-	500,000	4,500,000
Tangible fixed asset fund	1,777,210	-	-	-	399,769	2,176,979
Centenary fund	745,164	-	(745,164)	-	-	-
Total Group unrestricted funds	6,961,599	4,007,858	(3,770,722)	255,734	-	7,454,469

DESIGNATED

Tangible fixed asset fund – represents the net book value of tangible fixed assets in use by the Society and therefore not available to the Council to meet future expenditure. A transfer is made each year to reflect the change in net book value.

Expendable Endowment fund – represents the value of investments that the Trustees believe they need to hold, to protect income in the longer term, in order to ensure that the society can carry out its mission and thrive. The Trustees believe the fund should be £10,000,000 in order to provide sufficient long-term income. This is because most of the society's income is from academic publishing, the profitability of which is widely expected to begin to decline significantly within the next few years. The society has just begun formal long-term financial modelling to assess the balance of income expenditure against the risk of future income declines.

Centenary fund – these are funds set aside to provide for projects being developed to mark the Society's centenary year in 2013. This fund was fully utilised during 2013.

RESTRICTED

Restricted funds of £ 1,985 at 31 December 2013 are represented by cash on deposit (2012 – £11,985).

BEVC: British Empire Vegetation Committee – represents amounts donated for the printing of colour plates in the BES's journals.

Alex S Watt Breckland Research Trust – funds administered by the BES in the memory of Alex Watt to provide funding for small scale research projects aimed to enhance our understanding of the conservation of the Breckland Region.

Policy Assistant Fund – restricted donation to support a staff member to work in the policy area. The staff member was appointed in February 2013.

The Society holds €63,931 on behalf of the European Ecological Foundation. This balance does not form part of these accounts.

14. ANALYSIS OF NET ASSETS BETWEEN FUNDS

Group

	General £	Designated £	Restricted £	2013 Total £	2012 Total £
Tangible assets	-	2,176,979	-	2,176,979	1,777,210
Investments	-	4,252,767	-	4,252,767	4,377,409
Net current assets / liabilities	777,490	247,233	1,985	1,026,708	818,965
Net assets	777,490	6,676,979	1,985	7,456,454	6,973,584

Charity

	General £	Designated £	Restricted £	2013 Total £	2012 Total £
Tangible assets	-	2,176,979	-	2,176,979	1,777,210
Investments	-	4,252,769	-	4,252,769	4,377,411
Net current assets / liabilities	777,490	247,231	1,985	1,026,706	818,963
Net assets	777,490	6,676,979	1,985	7,456,454	6,973,584

15. RELATED PARTY TRANSACTIONS

No transactions have taken place with either Members of Senior Management Team. It is the policy of the BES that Committee members who have an interest in any grant awarding decisions must leave the room at the time the awarding decision is made.

In 2012 Richard Bardgett, the existing Journal of Ecology editor, was appointed as a trustee. He continued to be paid at the fixed editor rate and has received £5,738 (2012 £2,642) since his appointment. He has received no remuneration in his capacity as a trustee.

Emma Sayer – the existing assistant editor of the Bulletin, was appointed as a trustee. She continued to be paid at the fixed rate and has received £1,434 (2012 £347) since her appointment. She has received no remuneration in her capacity as a trustee.

Andrew Beckermann, a trustee of the BES was appointed as an editor of the Ecology & Evolution journal, in which the Society has a minority interest.

16. THE GEORGE JACKSON ESTATE

As part of the George Jackson bequest the Society was left as residuary beneficiary of a revisionary bequest. The property passes to the Society upon the death of the life interest. Because of the uncertainty as to value and timing the value of the property is not included with these financial statements.

Photo: by Nisha Owen



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Looking **BACK**



The latest visit to the Tansley archive yielded this photograph taken during the course of the Fifth International Phytogeographical Excursion in Poland, 1928. The photograph is dated 30 July 1928, and includes Arthur Tansley in the fourth row, second from left. The photograph was taken by Edmund Massalski, Kielce, Poland.

In his capacity as honorary meetings photographer the present Bulletin editor has noted in a previous issue the difficulty of getting ecologists to cooperate with group portraits. For the most part these 1920's vintage ecologists have cooperated nicely, but note the gentleman on the left end of the middle row who could not bear to put his copy of the *Journal of Ecology* down for a moment. And the fellow at top right at the back needs telling to take that cigarette out of his mouth and stand up straight.

It has been great fun sending Richard English scurrying to the archive to find images for the back cover, but we'd like to invite wider participation from the membership. Do BES members have old photos of themselves, their supervisors or other mentors or friends from years gone by that they would be willing to share with the Bulletin? Ideally the images would represent ecology in the past, perhaps using equipment or methods no longer in common use. A note about the location and context of the photo would be really interesting.

For print purposes we need either to borrow a print or transparency, or to receive a high resolution jpeg or tif file. Please contact alan.crowden@ntlworld.com with any possible contributions.



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