The Bulletin

YOUR MAGAZINE FROM THE BRITISH ECOLOGICAL SOCIETY

British Ecological Society

*in*FOCUS

Photo: Danielle Green

Danielle's photo of Mark Browne apparently 'taking a closer look' at the mud of County Donegal appealed to the judging panel for the BES photocompetition. There are more images from the competition on p37 onwards.

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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: Black-browed albatross (Thalassarche melanophrys) in the winning entry for the BES Photo Competition 2013. The photograph is by Zoe Davies of the University of Kent. For more information see p36.

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REGULARS

FEATURES

WELCOME

2013 and all that

It has been a big year for the Society, though I suspect rather few members realise quite how much work has gone into the planning and preparation of centenary events, and how far ahead the planning began.

The International Congress of Ecology did not arrive in London in our centenary year by happy accident; a bid was put in at least 5 years ago, and even before the previous Intecol Congress in Brisbane in 2009 Hazel Norman and colleagues were already engaged in planning for our event. The Festival of Ecology was also the culmination of many months of detailed preparation. Yet there was also some nimble-footed work to add exciting innovations to the programme for the year. Ken Thompson played a big role in getting the BES to participate in the Chelsea Flower Show for the first time; Emma Sayer's idea that the BES should put on a road show at summer pop festivals was rapidly supported by Meetings Committee but required a frenetic burst of energy from Emma and her supporters to get the show on the road. I'm not going to be able to acknowledge everyone who contributed time, energy and ideas to making the centenary year the success it undoubtedly was, but if like me you've benefited from attending a succession of well planned, well organised and superbly executed events, you'll recognise that 2013 has been an exceptional year for the Society reflecting a lot of hard work by staff and members.

This issue of the *Bulletin* reflects some of the excitement of the year with a mostly pictorial calendar of events (p7), an interview with Festival Manager Julie as her time at the BES drew to a close (p15) and a report from the BES Roadies on the magical mystery tour that was Sex & Bugs & Rock 'n Roll (p16). Karen Devine organised a series of competitions for schools in our centenary year and there is a report on the awards ceremony on p25.

While it was hugely enjoyable to celebrate this important year in some style, the Society needs to build on the legacy of the first 100 years to make sure we continue to support the development of our discipline. On page 21-24 we shift the focus with a series of short 'interviews' with some of those scientists who will help shape the development of ecology into the future. The 'official' part of the *Bulletin* continues with some introductions for new staff members and an update on progress of the membership drive (p34-5).

The Special Interest Groups are becoming an increasingly effective way of bringing together ecologists at all stages of their career, so it is exciting to see the re-launch of the aquatic ecology group (p41) and the creation of a new Citizen Science SIG (p43).

There is a varied batch of general interest articles beginning with George Peterken's account of his experience of suddenly being in demand from the BBC (p31), some thoughts on valuing landscapes from James Speed and colleagues (p52), and Stuart Pimm's account of efforts to put carbon offsetting funds to best possible use (p56). Past and present ebb and flow in the next few articles. Caroline Pond's account of making Charles Elton's notebooks accessible to a wider audience (p58) followed by Andy Clarke's reminder of the value of older literature (p62) remind us that looking back can offer valuable insights; John Wiens looks forward to an era of Big Data in ecology while warning that we mustn't lose sight of the value of detailed studies of particular systems.

At the BES/YESI symposium in York last April I met Will Ingram, a chemistry undergraduate and joint editor-in-chief of Spark, the excellent University of York Student Science magazine. I gave Will *carte blanche* to write about his magazine and his impressions of the BES meeting. His view on beards is his own and does not represent the views of the *Bulletin*.

I suppose with so much to be cheerful about it is unsurprising that this is the biggest-ever *Bulletin* issue. I hope you find time and peace to read it over the holiday season.

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 3700, 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

Challenges & opportunities

William J Sutherland / President of the British Ecological Society

The new President of the BES reflects on a successful centenary year and looks forward to an exciting future for our Society.

I look forward to my term as the President of the British Ecological Society. When invited to stand for election I was told being President would be very little work.... I have gained an enormous amount from the BES and am delighted to pay back in return. I still recall the excitement of attending my first annual meeting as a naïve enthusiastic undergraduate and the thrill of becoming a member; in the intervening years the BES has been a key component of many aspects of my career and generated many good friendships.

The BES is in extremely good shape and I thank Georgina Mace for providing such capable stewardship. We have flourishing journals and meetings, we have an efficient and effective team ranging from the permanent staff in Charles Darwin House to the large community who ensure the success of journals, meetings and the running of the Society, we are currently in a healthy financial position, we play active roles in education and policy and Charles Darwin House provides a professional and effective home.

Our centenary celebrations are now over. 2013 has been an exciting year. As described on page 7 the centenary was a huge success, with considerable public involvement. In one action-packed year the BES held events at the Palace of Westminster, the Scottish Parliament, RHS Chelsea Flower Show and many music festivals as well as 160 community activities across the country. My favourite was the Sex & Bugs & Rock 'n Roll extravaganza, which achieved that elusive combination of being enjoyable whilst being genuinely educational (both Georgina and myself learnt some new ecology whilst trying to link 'poo' to animal photos!). Who would have guessed that the BES would be swabbing a policeman's truncheon for microorganisms? At the other extreme was the joint BES/Intecol meeting with over two thousand global ecologists gathered in a small corner of the cavernous Excel Centre. For me it was scientifically exciting, generated new ideas and collaborations and the party was great. We are currently looking at the lessons learnt from the centenary and considering options for the future.

As vice president one of my responsibilities was to chair the membership committee. We faced a gradually declining membership but set ourselves the challenge of gaining another thousand members by the end of the year. Writing in October it looks as if we may achieve that target. The membership is thus at the highest ever (there are also a further 903 members who joined when they registered for Intecol). A large membership has a variety of benefits: ensuring we participate in the lives of a wide community, enhancing our credibility to the outside world and having a larger base (perhaps including other naïve enthusiastic undergraduates) from which to generate active participants in the Society. There are still a few weeks left for our bargain of the century: sign up a new member and your names go into a lottery – the winning pair both get free lifetime membership including all the journals that you subscribe to. Furthermore, sign up two members and you get a £20 voucher for nhbs.com.

It is clearly essential to ensure that the BES is relevant to society. This will be achieved mainly if we generate relevant high quality research and ensure that it is available to those who would find it useful. However, at the same time it is essential that we retain the core of world class fundamental science, both as it may underpin future applied research and that it is simply exciting. This range makes our annual conference stimulating to a wide audience.

In this rapidly changing world there are serious challenges to our traditional means of working: open access publishing challenges the long-established business model for our journals; massive online open courses could question the need for some higher education; the financial crisis and political changes may reduce expenditure on environmental issues; anti environmental movements may reduce our influence; funding models are changing with the traditional single postdoc plus expenses grant becoming scarcer; and the nature of environmental problems is changing.

However this change provides a range of exciting opportunities: open access makes it more likely that practitioners and policy makers can apply our research; there are a range of new means of identifying species and storing the records (hence our support for ispot); the demand for evidence to underpin decisions seems to be increasing; while there are a range of opportunities for ecologists to participate in large interdisciplinary projects.

We need to be nimble to survive and flourish within this world. I believe it needs us to be continually seeking to identify the environmental issues and policy changes on the horizon, ensure we collaborate with policy makers and practitioners from an early stage, ensure we have the capacity to work within large interdisciplinary teams, ensure the environment is taken seriously, ensure there is a wide knowledge of ecological issues at all levels from young schoolchildren to policy makers, ensure evidence is used appropriately and make sure our science is suitable for dealing with future problems. I think that the BES is in a healthy state and well capable of responding to these challenges.

2013: A Centenary year to remember

Georgina Mace / President of the British Ecological Society

The Centenary was celebrated with a wide range of events intended to pursue the Society goals of Advancing Ecology and Making it Count. We planned scientific meetings to advance the science by traditional means, but there was also a significant effort put in to engaging with a wider audience via the Festival of Ecology. There were lots of Festival events across the country and we hope you managed to attend one or two. As our centenary year draws to a close we thought we'd share with you some of the photos that show what a great year we've all had.

It has been a great privilege and a pleasure for me to have been President of the BES in its centenary year. This year's events are the culmination of a great deal of planning and work by many people at the BES; trustees, staff, editors, special interest groups and other volunteers. Everyone can be justifiably proud of what that team has achieved. The wide range of events targeted several different audiences; the scientific community, schools, the general public and policy makers, and we organised activities for each of these as well as being careful to both celebrate our history as well as to look forward to the next 100 years.

We have directly engaged with over 80,000 people during our summer Festival of Ecology and delivered 30,000 schools posters into the hands of people who requested them. We identified the 100 key ecological research questions and highlighted the most influential 100 papers published in our Journals during the century that we have been disseminating ecological research. We have reached out to related scientific fields through a series of interdisciplinary meetings and invited the world's ecologists to celebrate our birthday with us at the INTECOL Congress in London. We have put together some images from 2013 to remind you of what we have achieved.

Your Society faces many challenges; changes in the financial models of academic publishing, funding difficulties in Higher Education, the evolution of academic communication, the need to remain relevant to younger generations and changes in the way that academics identify with subject areas. We continually review what we do and we are actively working to turn each of these challenges into an opportunity. Most important though, with a vibrant and engaged membership, and the outstanding support from our staff, we are confident that the Society will continue to grow and develop. In 100 years' time we expect to still be around and able to support whatever the ecological community then looks like.

Thanks to everyone who has been involved in any way. It has been a wonderful year with many exceptional events. I recommend being 100 years old!

Centenary celebrations: A calendar of events

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JANUARY

Publication of *Identification of 100 fundamental ecological questions* in the Journal of Ecology

27 MARCH

Marine Ecology Centenary Symposium, Edinburgh

8-9 APRIL

Global change and biosphere interactions conference, University of York

12 APRIL

British Ecological Society birthday party

4 MAY

First outing of the Sex & Bugs & Rock n Roll ecological roadshow to music festivals

The Conservation Volunteers Citizen Science day at Ochilfest Menstrie Clackmannanshire

17 MAY

Evolutionary ecology of infectious diseases conference, London

21- 25 MAY

Chelsea Flower Show

15 JUNE – 4 AUGUST

Festival of Ecology

Right image: Festival of Ecology a pop exhibition; the school students who curated the exhibition

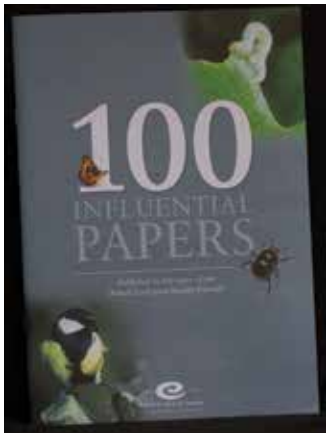
Above: Festival of nature at Manx Wildlife Trust, 15 June 2013

Below: Get wild in Waterloo; at Waterloo Millenium Green London, learning how to identify wildflowers 23 July 2013

25 JUNE

Parliamentary launch of *The impact of extreme events on freshwater ecosystems,* a new Ecological Issue

Launch of *100 Influential papers published in 100 years of the British Ecological Society journals*



18 -23 AUGUST

INTECOL

26 SEPTEMBER

Educational wall chart competition award ceremony

See Ecology Education and Careers p25

The BES Awards Ceremony at INTECOL

The gathering of 2000 ecologists in London provided a bigger stage than usual for the presentation of the BES awards for 2013. The session began with Georgina Mace delivering a talk that doubled as an INTECOL plenary and her BES Presidential Address. After delivering a challenging and inspiring look forward to biodiversity conservation in the 21st century, and answering questions, Georgina then resumed her role as BES President and read citations for every award winner and presented their awards: the text of each citation follows.

HONORARY MEMBERSHIP

Honorary membership of the BES is the highest honour that the Society gives. The primary criterion for honorary membership is a lifetime's achievement in the science of ecology or its application. Other criteria, such as service to the BES, may be brought into play but would not normally merit the award without at least a very strong scientific record. The number of Honorary Members at any one time is limited to approximately 1% of the total membership of the Society. This year, to mark the centenary, we are awarding six honorary memberships.

Professor Sandra Diaz, Córdoba National University

Sandra Diaz is internationally recognised for her important and original work on ecosystem functions and their relationships to biodiversity. In this crowded research area, her particular contribution has been the recognition that defining diversity in terms of functional traits provides both a practical and efficient means to understand the consequences of environmental change for biodiversity and the consequences of biodiversity change for ecosystem functions. She has developed a large and influential research agenda around plant functional traits, and pioneered collaborative data gathering, theory and field based experiments and analyses in this area.. At the same time she has played a very influential role in international projects including the Millennium Ecosystem Assessment, the IPCC 4th assessment report and DIVERSITAS. She advises the World Bank's Global Environment Facility and is a member of the Science committee for the new ICSU Future Earth initiative. For this breadth and excellence of work she is a worthy person to be an honorary member of the BES

Professor Alastair Fitter, University of York

Alastair Fitter has made ground-breaking contributions on the role of mycorrhizal fungae in plant ecology, using pioneering field and laboratory experiments. His early work on bluebells demonstrated for the first time that uptake of phosphorus in the field was entirely dependent on mycorrhizae. He also showed that mycorrhizae are much more species-specific in their plant-associations than previously thought playing multiple roles, including pathogen resistance in their host-plant. More generally, Alastair has promoted work on the ecology and biodiversity of soil organisms, particularly using modern molecular techniques. Alastair is also well-known for his outstanding identification books on the UK flora. *Wild Flowers of Britain and Ireland* (written with his father Richard, and Marjorie Blamey) is widely regarded as the best book of its kind for any region of the world. He has had leadership roles in NERC and the University of York and is a FRS. I am delighted to award honorary membership of the BES to Alastair.

Professor Ilkka Hanski, University of Helsinki

Ilkka Hanski has transformed ecologists' understanding of meta-population dynamics, in a series of pioneering theoretical studies and exquisite long-term field work on the Glanville fritillary butterfly (Checkerspots). Among his many contributions he has shown how two apparently unrelated ecological phenomena (meta-population dynamics and the range-abundance correlation) are manifestations of the

same underlying processes. Other scientific highlights, combining both theoretical and empirical insights, include the demonstration of extinction thresholds for long-term persistence in meta-populations, multiple equilibria in spatial dynamics, the evolution of dispersal rates, the role of inbreeding depression in population extinction, and how molecular-level variation affects population growth-rates. He has gone on to use these powerful insights to promote effective conservation measures for species in fragmented landscapes. He is an international leader in ecology and we are proud to award him honorary membership of the BES.

Professor Stephen Hubbell, University of California

Stephen Hubbell is best known for his development of the neutral theory of biodiversity and biogeography. This fundamental contribution, based on substantial ecological insights, has provoked much discussion and prompted new and revealing approaches to ecological, evolutionary and biogeographical analysis. He has made many other important contributions. He co-led the establishment of the classic 50 hectare forest plot on Barro Colorado Island, in Panama, in 1980, and subsequently the establishment of additional 40 plots in 22 countries leading to the fate of six million tagged trees being followed and subsequent expansion into monitoring temperate plots. In 1988 he set up and ran what eventually became the National Council for Science and the Environment whose stated mission is "to improve the scientific basis of environmental decision-making." This remarkable organisation has over ten thousand members and its annual meetings are an astonishing mix of science, power and influence. We are delighted to award Stephen Hubbell honorary membership of the BES.

Professor Pamela Matson, Stanford University

(Professor Matson was unable to attend to receive the award in person)

Professor Pamela Matson is an outstanding environmental scientist. After research training in forest ecology, she joined NASA and led exceptionally fine research on the atmosphere above the Amazon rain forest, studying particularly trace gases. She studies fluxes of elements through the biogeosphere, and cooperates with hydrologists, agronomists and economists to determine the drivers and environmental consequences of decisions over land use and resource use. She is the Founding Editor-in-Chief of the *Annual Review of Environment and Resources*, a Past President of the Ecological Society of America, is a Trustee of the World Wildlife Fund, and has received many honours, notably Membership of the National Academy of Sciences and an Einstein Professorship of the Chinese Academy of Sciences.

Professor David Tilman, University of Minnesota & University of California

David Tilman is one of our most respected plant population ecologists, whose work has played a major role in explaining how apparently similar species coexist and which has considerable implications for a range of current societal challenges. His early studies involved resource competition in algal communities, and he showed how he could explain patterns of diversity in terms of resource-based competition theory. Following a move to the University of Minnesota his research shifted to examining the causes of diversity of the Minnesota's prairies, and especially in establishing a now classic series of long term experiments at Cedar Creek Ecosystem Science Reserve. His work has involved the interplay of experiments and theory, as illustrated by his comment "I rarely do an experiment that is not inspired by theory and rarely develop theory that is not inspired by an experiment". As one of the most highly-cited ecologists, with his skills of combining elegant theory and penetrating experiments, he is a leading exemplar of how theory and experiment can help understand environmental problems, and we are pleased to award David Tilman honorary membership

PRESIDENT'S MEDAL

The Society's President awards this prestigious honour at the end of each term of office (every two years). This prize was established in 1987 and is the personal gift of the President

Professor Dave Raffaelli, University of York

I am delighted to give this to Dave Raffaelli in recognition of the very broad and deep contribution that he has made to ecology, especially in the UK. As well as playing his part in the BES on several occasions, Dave has been a leader, facilitator and convenor of many significant research projects. His own work on estuary communities remains an outstanding community case study, but he has done also done much to influence the field generally, supporting the careers of many younger ecologists in particular. He has been especially influential in bridging disciplines in ecology between marine and terrestrial ecology, and from ecology to social science. For this wide range of excellent work and his influence on the field I am pleased to award the President's medal to David Raffaelli.

BES AWARD

The BES Award is made in recognition of exceptional service to the Society

Dr Libby John, University of Lincoln

Libby is an outstanding plant ecologist with an exceptional commitment to supporting and inspiring the next generation of ecological researchers. She served on the BES Council 2002-2005 before taking up the chair of the Education, Training and Careers committee between 2009-2012. At a time when UK education is facing some of its most rapid change, her leadership of our education activities has seen the Society make significant impacts on national education policy, implement ever-expanding programmes of support for undergraduates and increase the support the Society is able to offer to PhD students here in the UK and further afield. It is therefore highly appropriate for the British Ecological Society to recognise and thank Libby's contribution with this award.

ECOLOGICAL ENGAGEMENT AWARD

The Ecological Engagement Award is an annual award to recognise an exceptional contribution to facilitating the use and understanding of ecology. The Award is an honorarium of £1,000 plus a certificate.

Professor Simon Potts, University of Reading

Simon Potts is one of the top pollination ecologists in the UK and he is well known for his research on the conservation of pollinators in natural and agricultural habitats. He is also one of the most prominent public advocates for the importance of pollination, both nationally and internationally. This aspect of ecology is hard work, often an uphill struggle, and until fairly recently unrewarded in academic circles, but of paramount important if science is going to make a practical difference outside of the ivory tower. Simon frequently engages with the media on television, radio and in national newspaper articles. In the UK he advises government panels such as the Office of Science and Technology and Defra and internationally he advises the Convention on Biological Diversity, the European Environment Agency and the US National Academy of Sciences. For his contribution to both the science of pollination and for his public engagement work, it is both timely and very appropriate that the British Ecological Society recognize Simon's achievements with this award.

MARSH AWARD FOR ECOLOGY

The Marsh Award for Ecology is awarded annually. It is supported by the Marsh Christian Trust and awarded for an outstanding recent discovery or development which has had a significant impact on the development of the science of ecology or its application. The Award is an honorarium of £1,000 plus a certificate and is open to ecologists from anywhere in the world.

Professor Kevin Gaston, University of Exeter

Professor Kevin Gaston, Professor of Biodiversity and Conservation at the University of Exeter, is one of the most prolific and highly cited ecologists world-wide. He is particularly well-known for his pioneering work on macroecology, spatial patterns in abundance and the underlying causes of rarity, and more recently for his work on urban ecosystems and issues associated with these, such the impacts of light pollution. This novel interdisciplinary research is continuing following Kevin's appointment as Director of a new multi-disciplinary centre at the University of Exeter, the Environment and Sustainability Institute which is pioneering research into improving the relationships between people and their environment. Through his exceptional publishing record, his contribution to the development of these new research areas and his international standing, Kevin is thoroughly deserving of the Marsh Award for Ecology.

MARSH AWARD FOR CLIMATE CHANGE RESEARCH

The Marsh Award for Climate Change Research is normally awarded annually. It is supported by the Marsh Christian Trust and administered by the British Ecological Society. It is awarded for an outstanding contribution to climate change research. The Award is an honorarium of £1,000 plus a certificate and is open to ecologists from anywhere in the world.

Professor Johan Rockström, Stockholm Resilience Centre/ Stockholm Environment Institute

Johan Rockström is internationally renowned in Climate Change research and policy, through his leadership of the Stockholm Environment Institute from 2004-12, and currently as director of the Stockholm Resilience Centre. He has published many papers, amongst which are his innovative ideas surrounding the *Planetary Boundaries* framework for human development in the face of rapid global change. In 2009, he was named "Swede of the Year" by *Fokus* magazine for "engaging and exciting work in sustainable development", and in 2010, he was ranked the most influential person in Sweden on environmental issues. Johan is also vice-chair of the Scientific Advisory Board of the Potsdam Institute for Climate Impact Research and co-chaired the visioning process on global environmental change of ICSU, the *Future Earth* transition team.
For his contributions to Climate Change research and policy, it is appropriate for the British Ecological Society to recognise Johan's achievements with this award.

THE MARSH BOOK OF THE YEAR AWARD

Books can have a major impact in ecology but academic publishing of books brings relatively little financial reward to authors. This award aims to recognise the contribution authors make to the science of ecology.

The Marsh Book of the Year Award acknowledges the important role that books have in ecology and its development. This prize is funded by the Marsh Christian Trust. It is awarded to the book published in the last two years that has had the greatest influence on the science of ecology or its application. The prize is an honorarium of £1,000 plus a certificate and is open to books published anywhere in the world.

Professor Brian Moss (University of Liverpool) for the book published by the International Ecology Institute: Liberation ecology: the reconciliation of natural and human cultures

Emeritus Professor Brian Moss has been one of the most influential freshwater ecologists in Europe during the past three decades and without doubt the world's leading scientist on shallow-lake ecology. Much of his research extends well beyond lakes, for example his identification of alternative stable states, studies on trophic dynamics, and his work on climatic effects on lake ecology. As a teacher, he has been inspirational not only to his students and the very many fellow professionals who have come under his influence, but also to a much wider audience through his writing and public lectures.

Liberation Ecology – this year's Marsh Book of the Year is a further attempt to get ecology across in simple language. It is a book about "everything ecological" and uses everything but scientific jargon involving music, the arts, religion, the Archers, literature and his mother-in-law's washing line. For all of this it is a pleasure to award the Marsh Book of the Year award to Brian Moss.

BEST PAPER BY A YOUNG AUTHOR

The BES awards an annual prize for the best paper by a young author in each of the Society's journals. The prizes are targeted at people at the start of their research career. The awards are named after an eminent ecologist whose research reflects the interests of the journals.

JOURNAL OF ECOLOGY HARPER PRIZE

Dr Simon Doxford, University of Sheffield

Doxford, S. W. and Freckleton, R. P. (2012), Changes in the large-scale distribution of plants: extinction, colonisation and the effects of climate. Journal of Ecology, 100: 519–529.

JOURNAL OF ANIMAL ECOLOGY ELTON PRIZE

Dr Sonya Auer, University of Massachusetts-Amherst

Auer, S. K., Lopez-Sepulcre, A., Heatherly, T., Kohler, T. J., Bassar, R. D., Thomas, S. A. and Reznick, D. N. (2012), Life histories have a history: effects of past and present conditions on adult somatic growth rates in wild Trinidadian guppies. Journal of Animal Ecology, 81: 818–826.

JOURNAL OF APPLIED ECOLOGY SOUTHWOOD PRIZE

Dr Andrew Olds, Griffith University

Olds, A. D., Pitt, K. A., Maxwell, P. S., Connolly, R. M. (2012), Synergistic effects of reserves and connectivity on ecological resilience. Journal of Applied Ecology, 49: 1195–1203.

FUNCTIONAL ECOLOGY HALDANE PRIZE

Ulrike Lampe, Bielefeld University

Lampe, U., Schmoll, T., Franzke, A., Reinhold, K. (2012), Staying tuned: grasshoppers from noisy roadside habitats produce courtship signals with elevated frequency components. Functional Ecology, 26: 1348–1354.

METHODS IN ECOLOGY AND EVOLUTION ROBERT M MAY PRIZE

Sarah Papworth, National University of Singapore

Papworth, S. K., Bunnefeld, N., Slocombe, K. and Milner-Gulland, E. J. (2012), Movement ecology of human resource users: using net squared displacement, biased random bridges and resource utilization functions to quantify hunter and gatherer behaviour. Methods in Ecology and Evolution, 3: 584–594.

ERNST HAECKEL PRIZE

The European Ecological Federation also awarded the Ernst Haeckel Prize to Professor Dr. Ernst-Detlef Schulze.

Ernst-Detlef Schulze (r) received his award from the European Ecological Federation as part of the awards ceremony during INTECOL

INTECOL 2013 student prize winners

While it was not possible to announce all the student prizes during the Closing Ceremony at INTECOL, we are pleased now to announce the following awards:

With over 250 talks and 250 posters to judge, the competition was tight this year for the British Ecological Society's Anne Keymer Prize for best oral presentation and Best Student Poster Prize at INTECOL 2013. Congratulations to all this year's winners for their exceptional presentations and thank you to our judges whose time and efforts made this possible.

Those eligible to enter must present a paper at the meeting and should be a current graduate student, or one who has recently graduated and is presenting work that was completed when they were still a student. If presenting a poster, entrants must be the first author of the poster and have undertaken the majority of the work being presented.

The winner's prize in each case is an honorarium of £250, with runners up receiving £100. Due to the number of high standard presentations at this year's meeting we are also pleased to select five highly commended individuals within each award.

THE ANNE KEYMER PRIZE FOR BEST STUDENT ORAL PRESENTATION

This prize is named in the memory of Anne Keymer and awarded for the best oral presentation by a postgraduate student. Anne herself was one of the first winners of this previously unnamed prize, in 1981. She went on to a career of great distinction, before dying of cancer in 1993, at the age of 36. Anne was a member of the Editorial Board of the Journal of Animal Ecology, and more generally was an exemplary scholar, teacher and citizen of her discipline. In naming this prize after Anne, the BES is recognising a younger ecologist who embodied, to a remarkable degree, the qualities and values we stand for.

WINNER

James Borrell (Queen Mary University of London)

Gene flow between birch species of differing ploidy levels in the UK: Implications for conservation of dwarf birch

(Nian Wang, Queen Mary University of London; Richard Buggs, Queen Mary University of London)

S33: Conservation Ecology; Wednesday, 16:00

RUNNERS UP

Hannah Markham (University of Queensland)

A Centennial-Scale Palaeoecological Study to Disentangle the Effects of Chronic Anthropogenic Pressure on the Wet Tropics Region of the Inshore Great Barrier Reef since European Colonisation.

(George Roff, University of Queensland; Jian-xin Zhao, University of Queensland; John Pandolfi, University of Queensland)

S25: Marine Ecology; Wednesday 09:00

Anna Riach (University of York)

Relationships between insects and their host-plants viewed through metabolomic fingerprints

(Venura Perera, University of Exeter; Hannah Florance, University of Exeter; Steven Penfield, University of Exeter; Jane Hill, University of York)

S12: Herbivore Plant Interactions; Tuesday 16:00

HIGHLY COMMENDED

Ofir Katz (Ben-Gurion University of the Negev)

Environmental conditions and silicification in Asteraceae species

(Simcha Lev-Yadun, University of Haifa – Oranim; Pua Bar (Kutiel), Ben-Gurion University of the Negev)

S12: Herbivore Plant Interactions; Tuesday 11:00

Ulrike Lampe (Bielefeld University)

Staying tuned: Developmental plasticity contributes to grasshopper signal adjustment in response to road noise

(Tim Schmoll, Bielefeld University; Klaus Reinhold, Bielefeld University)

S23: Evolutionary Ecology; Tuesday 15:45

Frazer Matthews-Bird (The Open University)

Understanding the modern distributions and ecological tolerances of the Neotropical non-biting midge (Chironomid) fauna. The potential as a palaeoecological proxy

(William Gosling, The Open University; Stephen Brooks, The Natural History Museum; Angela Coe, The Open University)

S16: Biogeography & Ecology; Tuesday 16:00

Tim Rademacher (University of Cambridge)

Saturation of the land carbon sink at 4°C land temperature change as mean prediction of an ensemble of seven Global Vegetation Models indicates tipping point of the global carbon cycle

(Andrew Friend, University of Cambridge)

S43: Forest Ecology; Thursday 17:30

Rebecca Spriggs (University of Cambridge)

Inferring forest stand structure from LiDAR remote sensing data

(Mark Vanderwel, University of Florida; David Coomes, University of Cambridge; John Caspersen, University of Toronto)

S32: Forest Ecology; Wednesday 15:30

BEST STUDENT POSTER PRIZE

The Society awards a prize for the best poster by a research student at the Annual Meeting and this year at INTECOL 2013.

WINNER

Héléne Prouillet-Leplat, EMG Umeå University

A1.15: Plant 15N signatures integrate herbivory effect on nutrient cycling

(Johan Olofsson, EMG Umeå University; Sari Stark, Arctic Centre University of Lapland)

RUNNER UP

Bethan Burson (Open University)

B6.15: Response of plant communities to volcanic degassing at Masaya, Nicaragua

(Saskia Van Manen, Open University; Micheal Gillman, Open University; Hilary Erenler, University of Northampton; Hazel Rymer, Open University; Steve Blake, Open University; Vincent Gauci, Open University

HIGHLY COMMENDED

Alice Balmer (University of Zurich)

A9.20: Fast food for animals: A comprehensive ecological pollination study of non-flying mammal pollinated proteas

(Dennis Hansen, Institute of Evolutionary Biology and Environmental Studies University of Zurich; Sandy-Lynn Steenhuisen, Biological Sciences Department University of Cape Town; Steven Johnson, School of Life Sciences University of KwaZulu-Natal; Jeremy Midgley, Biological Sciences Department University of Cape Town)

André Frainer (Umeå University)

B3.29: Shifts in ecosystem functioning due to imbalances between resource and consumer stoichiometry

(Jérémy Jabiol, Université de Toulouse CNRS EcoLab; Mark Gessner, Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) Berlin Institute of Technology; Andreas Bruder, Swiss Federal Institute of Aquatic Science and Technology (EAWAG) University of Otago; Eric Chauvet, Université de Toulouse CNRS EcoLab; Brendan McKie, Swedish University of Agricultural Sciences (SLU))

William Hentley (Centre for Ecology and Hydrology)

B3.9: The impact of elevated CO2 on tri-trophic interactions.

(Rosemary Hails, Centre for Ecology and Hydrology; Scott Johnson, University of Western Sydney; T. Hefin Jones, Cardiff University; Adam Vanbergen, Centre for Ecology and Hydrology)

Joseph Hick (University of Leeds)

B8.3: Habitat loss affects parasitism, but not disease prevalence or host density in a host-natural enemy community

(Rosie Hails, Centre for Ecology and Hydrology; Steven Sait, University of Leeds)

Tasha Shelby (Lincoln University)

A9.1: Ditched baggage? Lack of root flavonoids in alien plants suggests chemical profiles may shift in the naturalised range

(Kevin McGinn, Bio-Protection Research Centre Lincoln University; Philip Hulme, Bio-Protection Research Centre Lincoln University; Richard Duncan, Bio-Protection Research Centre Lincoln University)

THAT'S ALL FOLKS!

Julie Hodgkinson & Emma Sayer

At the end of the Centenary year Julie Hodgkinson, Festival of Ecology Manager, talks to Emma Sayer about the Festival, and INTECOL

We've heard a lot about the Festival of Ecology and INTECOL, but what about the person responsible for keeping track of everything that was going on, dealing with last-minute hiccups, and making sure everything ran smoothly? I met Festival of Ecology Manager Julie Hodgkinson for a coffee to get her take on the BES Centenary events.

How did the Festival of Ecology go?

I think it has had a lot of impact and has been very successful, I'm still waiting for a few places to get back to me with numbers but in total around 81,600 people attended the events *[slightly stunned exclamation from Emma]*. We had around 160 separate events around the country with 60 partners. We had a lot of exhibitions, so a lot of the attendees were because people were visiting the exhibitions over the summer. Quite a few things are carrying on too, so Chelsea, for example, is keeping the BES exhibit garden.

I was actually surprised by how many people there were in total. I think partly this was because a lot of the events were outdoors and we had such nice weather this year, so they attracted quite large audiences. One of the good things about going to non-science events is that you get people who don't realize that they're interested in ecology. So at the Chelsea Flower Show we talked to a lot of people about the ecology of gardens and they really liked it.

How influential was the BES in creating the Festival?

Out of 160, about 150 wouldn't have taken place without the BES. The few where they do an annual event and we funded them to do something extra, they would still have held the event but they wouldn't have had the ecology part of it.

Sounds like it really was a big success...

Yes, we've had quite a lot of news coverage as well. National newspapers (one of which was the Daily Mail). Some TV coverage at the regional level. Some of the regional newspapers were great because they put in double-page spreads.

What was your favourite event or the one you think was most worthwhile?

There was one in Birmingham, with the ThinkTank Science Museum, where a group of kids curated an exhibition about the ecology of Birmingham and toured lots of sites around the city. That was a really good example because they engaged with different communities and it reached so many people. The kids were from all over Birmingham, mostly students. They had groups who were keen on a particular subject and got them to curate an exhibition on that subject, so one group was doing river ecology, one was doing something about gardens, ecology of buildings, that sort of thing. They wrote up the exhibition with scientists from the university and then went along to deliver the events. They also developed different fun activities.

One of the most worthwhile things we did was the Chelsea Flower Show, because it attracts so many visitors from all over the world. Oh, and the Roadies' festival events, of course!

Any behind the scenes disasters at INTECOL that we never noticed? (Failure of two plenary speakers to show must have been a bit of a challenge...)

It all actually all went quite smoothly. The missing speakers weren't too disastrous – one of them we knew about the week before, so we had time to sort something out, and David Tilman was happy to step in at short notice for the other. In general, INTECOL was really well received and we had some good feedback – especially about the party.

Did INTECOL break even?

Yes, it did. We needed 1800 delegates and got 2195 in the end – from 67 countries, which I'm very proud of.

Any particular comments on your time at the BES?

It has been really great working with all the members. So many members have got involved and been very supportive of all the events. I went to some events and met BES members there who had got involved without us knowing about it, which was great. It's actually really important that scientists do these kinds of events because they have the knowledge to answer people's questions about ecology, whereas the organisers don't necessarily know much about it.

What's next for a conference organiser once her contract ends?

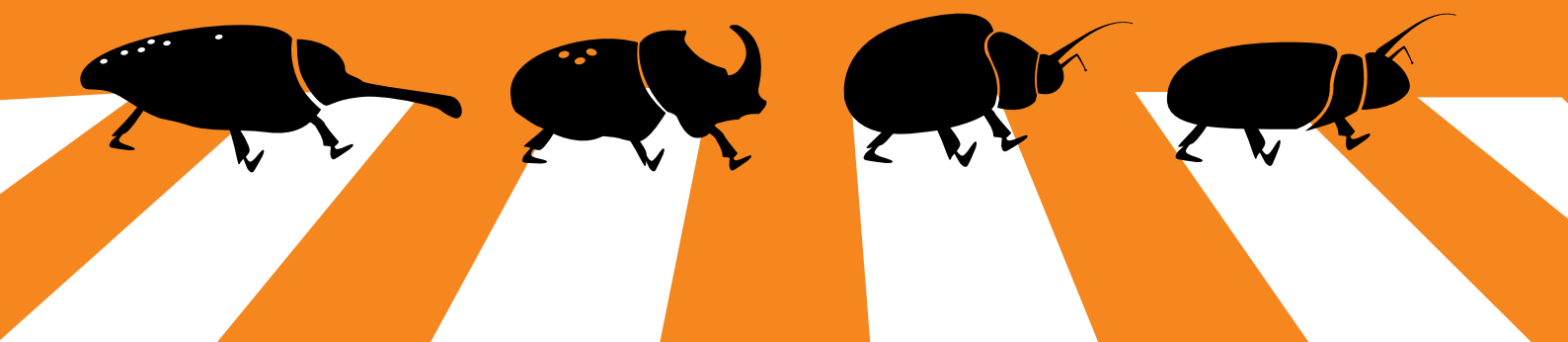
I'm going to take a break! Do a little bit of travelling. I'm not actually looking for a job at the moment. There are quite a lot of things I haven't had time to do over the last 6-9 months that I would like to do. Then next year, I'll probably look for a job doing something similar.

Famous last words?

I think the BES should take advantage of the Festival of Ecology and combine the events legacy with the Roadies' legacy and do more of this kind of thing in future. It just needs members to come forward with ideas and get involved.

The long & winding road

A look back on an exciting and successful festival season with Sex & Bugs & Rock 'n Roll.



HERE, THERE AND EVERYWHERE

Helen Featherstone

What a year it's been! I've had the joy of working alongside the Sex and Bugs and Rock n' Roll project right from the very beginning. I've seen new ideas emerge, existing ideas get refined, skills being honed and festival-goers absolutely loving the opportunity to chat with research scientists.

I joined the team at Imperial Festival, Wychwood and Green Man. Imperial Festival is a one-day festival at Imperial College, London. While we were upstaged by our next-door neighbour 'Impfest' was a taster of things to come. We were swamped with enthusiastic festival-goers some of whom were Imperial College alumni, many of whom were families from the area or who travelled into the city for the day. We met a range of people from those who'd never seen a rabbit to others who were passionate beekeepers. Our activities were thoroughly tested – a few tweaks and the team were ready for the future.

Our handsome next-door neighbour at Imperial Festival

Wychwood Festival is a family-friendly festival held in early May on Cheltenham Race Course. Our visitors came to the tent with their own nature stories to tell – from the little girl who's loved woodlice since she was old enough to spot them, to young adults deciding to take degrees in marine biology, and amateur ecologists who could identify every species they encountered. For those who were less inclined towards nature and ecology the activities and enthusiasm of the team hooked them in with many people returning several times over the weekend to repeat activities or to "complete the set".

At Green Man we were in Einstein's Garden, an area of the festival dedicated to celebrating science in creative ways. We were right by the entrance with a great view of the Main Stage so we had a steady stream of people visiting the stall. The mostly adult audience (young and young at heart) enjoyed talking with the team, seeing what was growing on their festival kit and finding out what species they were. People stayed, chatted and came back for more with one festival-goer telling us "You're the best bit of the festival – there's so much to see and do in one little tent!"

It's been really inspiring to see the team develop the project: ensuring its quality and rigour whilst also making it a lot of fun for the team and for the public they've been interacting with.

I AM THE WALRUS

Frazer Bird

Larmer Tree Festival is held every year in The Larmer Tree Gardens of Rushmore Estates near Salisbury. It has to be the most idyllic location for a festival; it's a Garden of Eden for music lovers. The grass was soft under foot, no crowds at the main stage, no lines for the port-a-loos and no mud; all in all not your average festival. Oh and Van Morrison!!!

The 'Sex & Bugs' team was here for nearly 7 days and it took some getting used to. At most of our other festivals the activities were the stars of the show, return custom for the poo game was not uncommon. This wasn't happening at Larmer Tree, it felt like a very slow start and we couldn't work out what we were doing wrong. The poo game was tried and tested by this point and it worked a treat. But Larmer Tree was a different, perhaps older, crowd. It took us a few days to realise that the main attraction wasn't the activities – it was us, The Roadies. People were genuinely interested in us as scientist and researchers. They wanted to know the specifics of our work and they had some tricky science questions that, even as a team, we couldn't answer. This was a festival where our exhibits and the Bumblebees were the bigger hit. The big blue tent was now more like an expert museum, a bit like the genius counter in an Apple Store. There was a constant buzz of conversation and debate and the Roadies were rushed off their feet.

Larmer Tree showed us how versatile and adaptable 'Sex & Bugs' is. Our message is always the same but the way we deliver the science and engagement is always changing, a bit like cutting edge science itself. Larmer Tree proved to me that everyone loves science but they love it in different ways and we have to be aware of that as scientists. After a long week in the gardens the roadies had shown that scientists themselves are an attraction, all in all 1622 people popped in for a chat.

MAGICAL MYSTERY TOUR

Kate Salmon

"I find you really sexy when you're talking about poo", said a young woman to Will, whilst he was giving clues in "Whose Poos?" A speechless Will pauses in astonishment, "No, please don't stop…"

This is just a sample of the hilarity of Green Man. A relaxed, family-friendly atmosphere, Green Man was the perfect festival to tour the BES Roadshow. Four glorious days (of people, not weather), our stall was located in the beautiful Einstein's Garden overlooking the main stage so we didn't even have to leave the stall to see the action.

Team Open University, made up of Will, Kate and Leanne suffered a minor hiccup when Leanne thought she had tonsillitis but luckily it was nothing that a few ibuprofen didn't fix. We were joined at the festival by Hannah, Tom, Ian and Catherine from Lancaster, Holly from London and Helen from Exeter.

The BES Roadie veterans (aka Will, Helen, Hannah) were pretty slick at setting up the stall so we were ready to go in no time. The slow trickle of people on the first day became more of a torrent by the end and we were glad we had extra people to help out. The bees proved a popular attraction to young and old alike, and many people expressed concern and interest about their future. One person in particular went into detail about her very own bee army. She and her friend collected dead bees and dressed them up in little capes, giving them "weapons" to fight each other. Does anyone else feel a Tate Modern piece coming on?

Friends and families competed against each other at the swabbing station where socks, armpits, hat rims, watch straps, old toys and spectacles were sampled for their diversity of microbes. We got some beautiful cob-webby moulds by the end of the festival. The poo and mushroom smelling games proved so popular that children dragged their parents and friends back to play again and again.

Tom dressed up as a cockroach, which provoked much chasing and stabbing from children with small sticks and as Ian discovered, even worked as a pick-up outfit.

Hannah and I were so engrossed in working that we missed our idol Caitlin Moran walking past the stall. Ian's talent for celebrity-spotting meant we quickly tracked her down again and waited in the shadows trying desperately hard not to look star struck. She signed a BES T-shirt and we got a photo with her, we left in a dreamy daze.

Overall, Green Man was brilliant fun and a great success for the BES. Lots of people were confused as to why they hadn't heard of the BES considering that we were celebrating the 100th anniversary. I hope we managed to change that perception and that we will see them on the 101st anniversary too.

TELL ME WHY

Hannah Griffiths

Going to music festivals in the name of ecology? It seems a little too good to be true, doesn't it? If you like festivals and you like talking, I can't see why you wouldn't want to get involved. The opportunity to chat to non-ecologists about the importance, delights, and annoyances of ecological research in a relaxed and fun environment was amazing. And don't forget about the advantages of the setting – when we were finished working, we were free to join the festival-goers for the evening's entertainment.

As a young scientist, I think being involved in activities like this is really worthwhile, as the more you communicate science with a variety of different audiences, the easier and more effective you'll become at doing so. I certainly feel that being a Roadie has boosted my confidence in talking about my research. Also, when my PhD comes to an end, I hope my involvement will stand out to potential employers as something different from, but relevant to, my academic work, demonstrating that I can do more than just research.

A 'swab plate' with some lovely fungal growth

Tom the Cockroach delights visitors at Green Man Festival.

Kate and Hannah with Caitlin Moran and autographed T-shirt

The Roadies at Green Man, on a Sunny Afternoon

Finally, in addition to the chance to attend festivals, the Roadies put on two workshops in science communication and public engagement. These were informative and useful and something I would have attended even without the chance of a festival ticket at the end!

So in summary, being a BES Roadie provided training, was fun, professionally valuable, and really rewarding! I would encourage anyone to do it next time!

WITH A LITTLE HELP FROM MY FRIENDS

Emma Sayer

We've come really long way from the initial pint-fueled brainwave in the pub and we're very fortunate to be part of a learned society that will take a chance on a crazy idea to see what happens. All the 'Roadies' sacrificed a lot of their spare time to make this work and I think we can safely say that *Sex & Bugs & Rock 'n Roll* been a resounding success: we've talked to over 5000 festival-goers, more than 8500 people have visited our blog and, in addition to the invitations we've had to turn down this year, we already have a long list of invitations to events in 2014.

So many, many thanks to everyone who has supported us* and for all the positive feedback we've received from INTECOL delegates, BES members, festival-goers and event organisers.

I suspect (I know) it won't be the last you hear from the 'BES Roadies'. In fact, why not come along and help us celebrate another anniversary next year? We'll be back at the lovely Wychwood Festival from 31st May to 1st June 2014 to wish them a very happy 10th birthday.

*Acknowledgments: Georgina Mace, Julie Hodgkinson, Amy Everard, Hazel Norman, Richard English, Bill Bewes, Alan Crowden, Andrew Beckerman, Tom Ezard, David Price and science made simple.

BES Presidents present and past try their luck at the Roadie games

FESTIVAL PRIZE DRAW

Win your registration fee for the annual meeting 2014 in Lille!

You may be aware that we've been touring music festivals this summer to celebrate the centenary of the BES by engaging festival-goers with ecology. We have a blog about our experiences http://www.besfest.org and in keeping with the spirit of things, every blog post title since February 2013 is also the title of a rock-, pop-, or folk song.

To enter our prize draw, just list ***the titles of 10 blog posts with the corresponding bands*** and you could win your registration fee to the 2014 BES/SEF meeting in Lille or 1 year's free membership of the BES.

For a chance to win a Roadie T-shirt, include the name of the only band from which we've borrowed two song titles.

Email your entry by 31st January 2014 to BESroadies@gmail.com with the subject line: ***Festival prize-draw***

The competition is open to all current BES members and staff.

THE BES OF THE FUTURE

As the Centenary year draws to a close, **Emma Sayer** asks young ecologists to look forward...

During the centenary year, we've spent lots of time looking back at the achievements of BES members, influential papers from BES journals, and the progress in Ecology over the last 100 years. We've also heard a lot about where we might be heading in the future – but who are the ecologists who will be shaping the BES over the next 40-50 years?

We sent a 'speed interview' questionnaire to early-career BES members, asking them to send short responses to the following questions:

- How or why did you get into ecology?
- What is your area of research and why do you find it fascinating?
- What direction do you think your subject area will take in the next 20-50 years (and where do you want to take it)?
- What do you like most about being a member of the BES?
- Finally, what is your favourite insect (and why)?

So without further ado, please allow us to introduce the BES of the future (in alphabetical order)...

DOM ANDRADI-BROWN

University of Oxford
@dandradibrown

I got into ecology because... I've always been fascinated by nature, particularly marine life. I learnt to dive during a family holiday when I was 14 and have been hooked since! This led to a natural combination of both these passions guiding me through my undergraduate and masters degrees and into a PhD in coral reef ecology.

My research area... It's often stated but coral reefs really are the rainforests of the sea, I find the sheer diversity and abundance of marine life on coral reefs incredible. In particular I'm looking at coral reef fish biomass and population connectivity on mesophotic coral reefs (30-140m depth). These reefs have been rarely studied and yet may act as a depth refuge against many of the anthropogenic impacts affecting shallow reefs. I love the excitement that comes from combining exploration of a rarely-studied habitat with answering fundamental ecological questions about how it functions.

The future is... I think a key question in conservation exemplified by coral reefs is what are natural ecosystems under global change? And how should we protect them to ensure their resilience? Some recent studies suggest that some moderately impacted reefs have greater resilience than some low impacted reefs. Applying knowledge of ecological community changes expected under predicted future impacts I believe will become increasingly important in conservation decision-making.

I♥BES because... The support and mentoring I received as an undergraduate through the BES Undergraduate Fellowship Scheme was great, initially engaging me with the BES and helping me get through my first big ecological conference! (Don't underestimate how scary it is as a student to be in a room surrounded by the people who wrote the textbooks and many of the papers you've been reading!) Since then the BES network has led to many great conversations (over even more glasses of wine) including me getting involved in the Aquatic Ecology SIG.

Favourite insect... I'm going to reinforce the fears of many ecologists that basic taxonomy isn't being taught anymore and pick a crustacean (kinda insects of the sea....). I love mantis shrimps – it's the bright colours, funky eyes and dancing!

FRAZER BIRD

The Open University
@Frazer_Bird

I got into ecology because... I always wanted a job that got me outside and allowed me to travel. I didn't choose ecology specifically – I actually did physical Geography at uni; it gave me a broad view of the environment that has just become ever more focused as I progressed through academia (Undergrad to Masters to PhD).

My research area... I am actually not a true ecologist, I am a Palaeoecologist; I reconstruct past environments and study how they change on longer timescales, 100-1000's of years. I just love

getting out into the field and hunting for new sites that might be that bit older than the last one. It's the closest thing right now we have to time travel!!

The future is... I think palaeoecology will become ever more important in our understanding of current ecological issues. I'd like to see palaeoecologists and ecologists collaborating more. We have the long-term studies and they have the need for the data, we just have to learn what we want from each other.

I♥BES because... It's a very welcoming society, even for an ecological imposter like me. It feels very encouraging and supportive to its younger members. I have never felt inadequate or intimidated which sometimes can be the case at big prestigious societies.

Favourite insect... It has to be Chironomids or midges. Not very glamorous but they are excellent climatic indicators and an increasingly important tool for us palaeoecologists. I am biased however; they are my current research interest.

"It's a very welcoming society, even for an ecological imposter like me. It feels very encouraging and supportive to its younger members."

LYDIA COLE

University of Oxford
@lydcole

I got into ecology because... I grew up on a farm, playing with animals and in the surrounding forest, and have always wanted to save the rainforest!

My research area... Tropical peatland ecology and palaeoecology, and environmental management – broadly tropical peat swamp forest conservation. It's such an important and threatened ecosystem, and thinking about how to manage it sustainably brings in all sorts of disciplines and issues, and people.

The future is... For as long as the tropical peatlands exist (maybe another 20 years!), I think the research associated with it will be quite interdisciplinary and become increasingly political. I think I'll embrace advocacy, but need to figure out a route to being an expert that isn't down the slightly dodgy Jack-of-all-trades path.

I♥BES because... It's a great community of all sorts of nature enthusiasts, and they throw AMAZING parties.

Favourite insect... Probably a shield bug – beautiful and unpretentiously harmless.

HANNAH GRIFFITHS

Lancaster University

I got into ecology because... I've been obsessed with the natural world (especially tropical rainforests) for as long as I can remember. Studying ecology allows me to spend time in amazing environments, learning a little about how they work and having adventures

My research area... Biodiversity-ecosystem functioning relationships, specifically those mediated by non producer organisms. In order to fully appreciate the impact of human activities on natural systems, we first need to understand how plants and animals interact to maintain the processes that sustain ecosystems.

The future is... I would like to continue to study how organisms and their traits shape biophysical processes and provide the services we reply on. I hope that the more we know about the role of biodiversity, the more reason we'll have to maintain it.

I♥BES because... The opportunity to get involved in a diverse suite of activities from conferences to festivals – being one of the Roadies this year was amazing!

Favourite insect... It has to be the lovely Stag beetle. I LOVE them, so big and beautiful. I am always amazed and excited that we have such an impressive insect in the UK.

FEVZIYE HASAN

University of Hull
@fezidae

I got into ecology because... When I was younger every summer my parents would send my older sister and I to Turkey to my uncle who took us camping along the coast. This was definitely the time I became interested in natural history. When you grow up in a flat in east London seeing nature like that is quite astonishing, so I was greatly influenced!

My research area... Entomology. I got interested in termites (Isoptera) from South-East Asia after working at the Natural History Museum. They are the main decomposers in the tropics and I find it fascinating that such small creatures can play incredibly vital roles in ecosystems!

The future is... Conservation biology. I think it is important to study, understand and document insect biodiversity and ecosystem functions as much as possible to help conservation efforts around the world.

I♥BES because... The Undergraduate Fellowship Scheme; I have been able to attend INTECOL and meet a number of influential ecologists. Everyone is super friendly and so helpful!

Favourite insect... Fungus-growing termites because they are like mini farmers! The Coleoptera are my first love though, especially the metallic scarabs, they're so pretty!

ALICE C HUGHES

Xishuangbanna Tropical Botanical Garden
@AliceCHughes

I got into ecology because... I grew up in the countryside, and always knew I wanted to research wildlife in their natural habitats, and try to best protect biodiversity from the myriad of pressures that threaten natural habitats.

My research area... I look at the diversity and distribution of species across Southeast Asia and use a variety of approaches to try to understand these patterns and what effect environmental change may have, so that we can tailor conservation plans accordingly. I do it because it matters, and because it can make a genuine difference to the future of these species, many of which have not even been scientifically described yet (i.e. 50% of Southeast Asian bat species). I see interesting places, encounter interesting species, work with interesting people and actually have the ability to make a difference.

The future is... The same sort of thing-but a lot better, as there are so many things that with time we should really be able to improve!

I♥BES because... I like the structure, and special interest groups – so everyone can find their niche and get the most out of it!

Favourite insect... Tough one, but I think it would have to be moths! They are such a diverse group, so subtly beautiful, yet still so well adapted (and many can hear and respond to bats). Yet like so many species they are often completely overlooked and dubbed "dull", when they are not at all. I've long felt that rather than moths being "the butterflies of the night", it would be a little more accurate to say that butterflies are the "moths of the day"!

SUNITHA PANGALA

The Open University

I got into ecology because... Growing up in the Western Ghats of India, nature was always close to my heart. Whether it was sighting a plant or animal species for the first time or trying to understand the intricate interactions that shape the natural world, I found ecology fascinating. It was no surprise that I chose to study ecology.

My research area... I study greenhouse gas emissions from wetland trees (tropical, temperate and boreal systems). Not only do I get to work in some of the world's most amazing ecosystems (Amazonian rain forests!), my work contributes to understanding a new methane emission pathway that we know very little about. All in all a very thrilling and rewarding experience.

The future is... New forms of knowledge base including both disciplinary and interdisciplinary approaches will be essential to understand the complex scientific and social issues of global change. The next 20-50 years will most likely see many disciplines working together. My research area is no exception.

I♥BES because... It is a really cool society! One that provides an excellent platform to nurture early career members, such as myself, in a very relaxed environment.

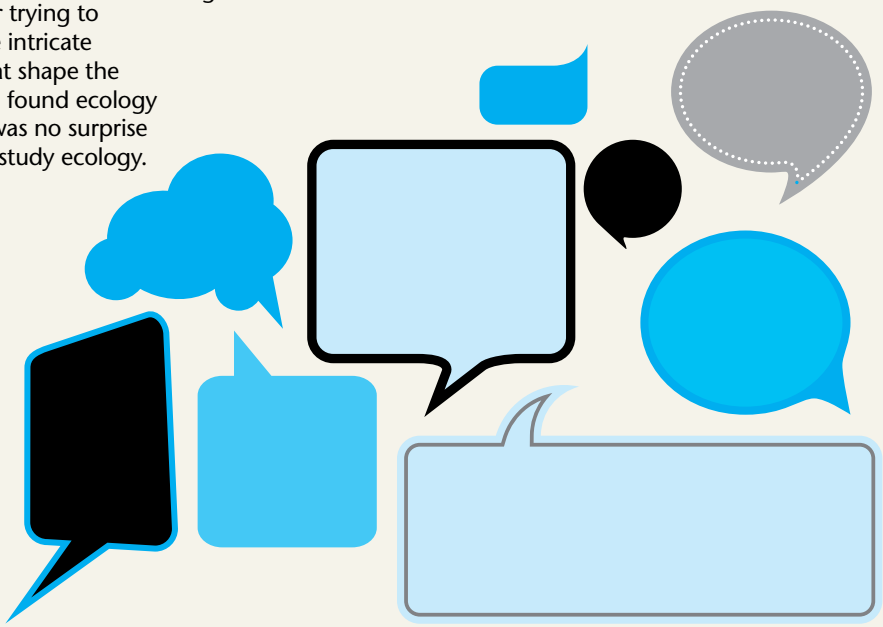
Favourite insect... I have a long list as they are all pretty. Although Dragonflies are my most favourite. The Common Picture Wing and Ground Skimmer in particular, as I grew up seeing them in my garden.

DARA STANLEY

Royal Holloway University of London
@darastanley

I got into ecology because... I've always been interested in Nature and the outdoors, and in university loved learning about ecology and how things work…and it just snowballed from there.

My research area... I work with bees and other pollinating insects, how they interact with plants, and the pressures and stresses they face. At the moment I'm looking at the impacts of pesticides on bees and their behavior. I find this area fascinating as it links something very tangible – food production – with a set of tiny organisms that provide the ecosystem service of pollination. Although it is a very topical area at the moment, there is so much to learn about and we are discovering new things all the time.



The future is... This question is sort of like letting a kid into a sweet shop – there are so many things to do or directions to follow! For me, I like doing something that has an obvious application be it in policy, conservation or in management.

I ♥ BES because... It is wonderful to have a society that provides a forum for ecologists to meet and interact, but also provides support in a number of different ways. It helps you realize you are part of a larger and long-standing community.

Favourite insect... Very hard to pick only one! I love some solitary bees – *Megachile* are pretty amazing! But my favourite bumblebee is *Bombus lapidaries.*

HANNA STOSTAD

University of York
@hannastostad

I got into ecology because... Despite spending lots of time outdoors growing up in Norway, I never realised there was a whole science about how it all fit together. When I found that I could actually study Ecology, that was it!

My research area... Trophic cascades in terrestrial ecology, especially animal habitats and interactions with disturbed areas. That said, I might change paths later seeing as I have just started...

The future is... I think that Ecology will probably focus increasingly on ecosystem services, as these will be under increasing threat. I would like to see more people appreciate these services, but also appreciate that nature and biodiversity are worth protecting simply because it would be sad if it was lost.

I ♥ BES because... I have realised that there are lots of people like me! It is a great inspiration to meet people interested in the same things as me.

Favourite insect... Not very original, but probably bumblebees. They are great looking, important, and you can meet them often!

ALEXANDRA SUTTON

Duke University
@aesutz

I got into ecology because... I have loved wild animals ever since my parents bought me a book on tigers when I was four years old.

My research area... I look for solutions to human-predator conflict problems in East Africa. It's awesome -- not only because I get to hang around with the Maasai and chase lions all day, but also because I can use my science to provide a tangible benefit that saves wildlife and improves people's lives.

The future is... I'd like to get a little more big-picture with my applied ecology work, and start focusing more on science policy & philanthropy. I'm interested in how we, as a global society, legislate and fund scientific innovation and environmental problem solving -- and I'd like to be a driver in bringing that to the forefront of scientific culture.

I ♥ BES because... It's a really great community of ecologists from all walks of life -- students, senior scientists, industry folks -- and everyone's welcome!

Favourite insect... Bees. I love honey!

GAVIN WILLIAMS

University of Birmingham
@drought_impacts
@DriStream

I got into ecology because... My early childhood was spent in a city, and I loved more than anything escaping it and visiting the countryside. I was, and still am, fascinated by wildlife. I guess Environmental Science at sixth-form college really encouraged my passion for ecology and fed my desire to study it further.

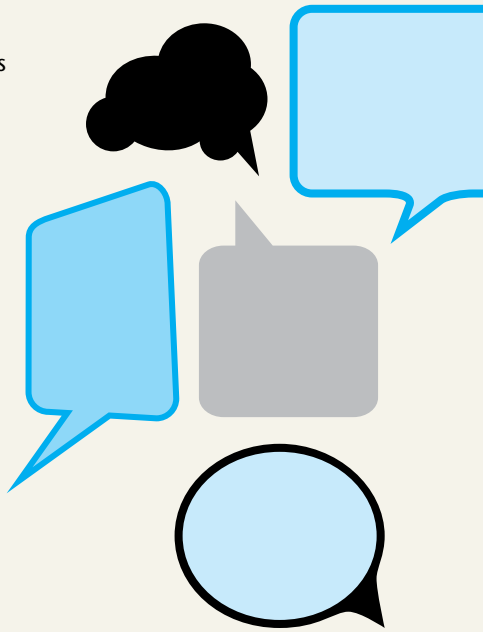
My research area... I am a doctoral researcher studying the impact of drought on stream ecology. In particular, I am investigating how drought stressors affect stream functions. I have, for as long as I remember, always been fascinated by rivers and the critters within them!

The future is... I think my area of research will grow and expand as climate change impacts increase in both frequency and severity across the globe. I think the methods in assessing drought impacts will change as drought becomes an increasing phenomenon within the UK. I hope that even more disturbance ecology studies will begin integrating multiple climate change stressors.

I ♥ BES because... I really like the annual conference held by the BES – it brings together great people, held at wonderful venues, and has great parties! Though, there are NUMEROUS perks to being a member, which I don't have space here to list them all!

Favourite insect... Must I really pick only one! I love insects!! Caddis flies and their larvae are awesome and though this may sound geeky, I just love the challenge of identifying them all! But, dragonflies win here, adults are so bright and amazing, and the larvae are incredible predators – awesome!

"I really like the annual conference held by the BES – it brings together great people, held at wonderful venues, and has great parties!"



ECOLOGY EDUCATION AND CAREERS

Centenary award ceremony

Karen Devine / BES Education Officer
@YoungEcoBES

On 26th September the BES celebrated the achievements of students from across the UK who had contributed to the BES Centenary schools competitions.

Niamh, Grace and Amy presenting lunch for the day

The award ceremony was held at the Think Tank museum in central Birmingham for around 60 guests, many of them young people who had entered the competition.

The event kicked off with an introduction to the importance of food security, young people were asked to devise a menu that could be served up for 200 people. All ingredients need to be sourced from within a 50 mile radius of the school. Niamh Broad, Grace Milner and Amy Stainer of Sandbach High School were the competition's clear winners with a detailed explanation of the local food sources and an innovative menu. Their menu was served to all guests at the award ceremony. All three girls were delighted and surprised to see their own menus served to them on the day.

- Honey Glazed Baked Apple with hazelnut, goats cheese and rocket salad
- Pan fried duck with forest fruits compote reduction, seasonal green vegetables and roasted charlotte potatoes
- Poached Pear in red wine, homemade honeycomb, cinnamon ice cream, dark chocolate ganache.

After lunch, 7 year old Ruby Nunns read her specially commended Haiku poem Hedgehog, before all winning entries presented their poetry and artwork. These are all collected into volume of poems that celebrates the favourite wildlife of children across the UK and is available from the BES office.

The final section of the award ceremony celebrated the imagination of students in the search for life on other worlds with reference to extremophile examples on earth.

Winning scripts had been converted into radio broadcasts by Funkids radio and are now available for all to hear at http://www.funkidslive.com/blog/my-broadcast-from-space-winners/

Alexa Newman and Flora Loveday of Shrewsbury High school won the secondary category, whilst Ryan Smith, Holly Wilkinson and Siobhan Campbell of Kirn Primary school travelled 24 hours from Scotland to claim the primary prize.

Alexa, Flora (Winners) and Emma (Runner up) with Hannah Garrett from the UK space Agency and Greg Watson of Funkids Radio

Sam Watson of Bradford Grammar reading his poem "Bats", praised not just for his use of language but also his dramatic artwork

IN2SCIENCE

In2Science is a scheme that aims support those students from low income backgrounds and often those who might be the first in their family to consider higher education. In the summer of 2013, the BES funded 5 placements for gifted A-level students wishing to gain a taste of life at University, each student was supported for two weeks at the universities of Bath and Oxford and University College London. For the next 12 months they will receive further support from the staff at In2Science as they finish their A-levels and begin the process of applying for university. Whilst the national average or students from low income families to attend university is as low as 16%, the In2Science scheme will eventually see around 80% of their students successfully make applications to Russell group universities.

The BES will be funding further placements in 2014, applications for which will open early in the new year. If you are interested in hosting a student or would like to know more about the scheme please feel free to get in touch in the In2Science founder Rebecca Mckelvey r.mckelvey@in2scienceuk.org or the Education team at the BES.

Top image: Hannah Cooke with Prof Jane Memmot

Bottom image: Bethany Jordan with Dr Alessandro Dupont

Imbalance at INTECOL

Christina Ravinet / BES Education Intern
@C_Ravinet

Why this year's event illustrates the need for inclusiveness in ecology.

With around 2000 ecologists travelling from far and wide to come to the world's largest ecological conference, INTECOL 2013 provided an ideal place to gain some insight into the diversity of ecologists in the wider ecological community. Following the event, a diversity survey, forming part of the INTECOL feedback survey, was carried out in the broader context of a BES project to look at barriers to ecological career progression

The results of the diversity section of the INTECOL survey showed that, overall, slightly more women responded to the survey than men, but women are underrepresented at more senior academic positions (see Box 1). This drop-off in the proportion of women can also be seen in the BES membership profile. Whilst female members are overrepresented at undergraduate and postgraduate level, there are more male post-doc and staff/faculty members than female (see Box 2).

Gender imbalance in science is already well evidenced. Addressing only gender barriers, however, is not the whole picture as underrepresentation occurs in other groups too. The INTECOL survey data suggest that ethnic minorities, particularly black ethnic minorities, are underrepresented amongst ecologists in the UK. It is likely that barriers in ecological careers and education are faced by many people and other characteristics to consider include socio-economic background, disability, sexuality, religion and age. The list could go on.

Learned societies have a significant contribution to make in supporting career progression but it is important that the reasons for ensuring this progression is inclusive are fully understood. In guidelines set out by WISE[1] (formerly the UKRC), maximising talent is cited as the first reason for learned societies needing to show an interest in gender equality[2]. This reason can be applied to any diversity issue, not just gender equality. For ecology and the BES, having as many talented ecologists as possible with a breadth of diversity will strengthen and grow the science. Other benefits of diversity include greater productivity[2] and a more varied and, therefore, open-minded workforce[3]. The BES is currently looking at how more people can be encouraged to take up ecological science and how to help those already engaged in ecological fields to progress to the next stage of their career.

The reasons for increasing diversity are often collectively referred to as the 'business case'. The use of this term suggests that diversity is a commodity which that can be capitalised on for profit. It is crucial that this perception of diversity does not mask the true value of, and moral reason for, inclusiveness. Ecology needs to be free from barriers and accessible to all simply because there is no reason for it not to be.

A curiosity in ecology should be celebrated and nurtured no matter where it comes from.

REFERENCES

[1]WISE – www.wisecampaign.org.uk

[2]UKRC-WISE. Engaging in Gender Equality: Lessons learned from our work with professional bodies and learned societies. Available at www.wisecampaign.org.uk

[3]Campaign for Science & Engineering in the UK, 2008. Delivering Diversity: Making Science & Engineering Accessible to All. Available at http://sciencecampaign.org.uk/

BES MEMBERSHIP

At the time of writing, the BES had 5251 members. Gender information has been captured for 4539 members. For members of known gender:

- 39.9% of members are female, 60.1% are male.

1970 members of known gender are in academia (undergraduate to staff/faculty). Of these members:

- 49.8% are female, 50.2% are male.
- Undergraduates: 57.3% are female, 42.7% are male.
- Postgraduates: 59.8% are female, 40.2% are male.
- Post-Docs: 46.4% are female, 53.6% are male.
- Staff/faculty: 32.95% are female, 67.05% are male.

INTECOL 2013 FEEDBACK SURVEY

Response rate to the survey was 13.7% (267/1948). Diversity questions were optional; the response rate to these questions was 11.6% (225/1948). Questions covered academic career stage, gender, ethnicity and disability.

- 52.9% were female, 44.4% were male and 2.7% preferred not to say.
- PhD students: 66.7% were female, 30.6% were male.
- Post-Docs: 53.6% were female, 46.4% were male.
- Professor/Chair: 31.9% were female, 63.8% were male.
- 77.3% were of a White ethnicity, 6.7% were of an Asian ethnicity, 3.6% were of a Mixed ethnicity, 2.2% were of another ethnicity, 0.4% were of a Black ethnicity and 9.8% preferred not to say.
- 7.1% declared that they had a disability.

SCIENCE POLICY

Holyrood Batman!

The BES's day in the Scottish Parliament

Rob Brooker / James Hutton Institute and member of the BES Public and Policy Committee

With a year to go until the independence referendum, the Scottish Parliament is clearly the place to be.

Juliet Vickery (Chair of the BES Public and Policy Committee), Mary Scanlon MSP who hosted the BES event and Rob Brooker

The BES has managed to get in on the act with a visit by the Scottish Policy Group (SPG) to Parliament. The SPG floated the idea of a visit in the spring, and with the help of the office of Mary Scanlon MSP, it was surprisingly straightforward to get the arrangements in place for a BES event. So on Thursday 19th September there we were, standing in the drizzle trying not to get our smart clothes wet as we waited for Martin (our very patient BES Policy Manager) to tell us what to do.

Once we'd negotiated the huge queue of folk waiting to see the Great Tapestry of Scotland (far more impressive than you might imagine), our day started with a mid-morning tour of the Parliament buildings. For those of you not familiar with the history of the Scottish Parliament, the construction of the new buildings was a hotly debated topic. It was designed by the Spanish architect Enric Miralles who died prior to its completion. Consequently, although some of the thinking behind the buildings is known, for example that the

Juliet Vickery plugs 100 Influential Papers

overall theme is of a tree branch, some of it is a mystery. Interestingly this means that, although only occupied since 2004, the building is starting to build up a mythology of its own. We managed to get a full tour of the building, including a visit to the debating chamber, and a trip down those steps at the bottom of which so many people seem to get interviewed by the press. Personally I was very surprised by how much I was impressed by and liked the buildings – I certainly like the insides much more than the outsides and this seemed to be a common theme within the SPG.

After the tour we took our seats in the public gallery of the debating chamber ready for First Minister's Questions. This was a feisty event, especially so because the previous day had marked the point of there being one year left until the independence referendum. As you might expect, and as will be the case for the coming year, nearly all debate was dominated by or gravitated back to the issue of independence. It was however really remarkable to sit in and watch how FMQs operated. This particular FMQs included discussion of re-nationalisation of the Royal Mail, a debate which made

Rob Brooker looks very grown up against the subtle backdrop of a huge BES poster

the headlines during the evening news and in the following day's papers, and it was exciting to have felt – if only in some small way – in the centre of these things in Scotland.

The tour was then followed by a lunchtime reception hosted by Mary Scanlon. When mulling over the possibility of an event at the Parliament, we'd contacted Mary Scanlon because she is the Parliament's champion for freshwater pearl mussels (as she pointed out, she was quite pleased not to get the narrow headed wood ant). This link chimed well with our aim of basing the lunchtime reception around the BES's recently-released *Ecological Issues* on *The Impact of Extreme Events on Freshwater Ecosystems.* The Policy team, in conjunction with the report's authors, had done a great job in producing a summary of the document focussed on case studies from Scotland, which was really helpful in terms of making the information relevant to a Scottish policy audience. The lunchtime event allowed us to promote the Society by flagging up the Centenary, the *Ecological Issues* publication, and the existence of the SPG. Juliet Vickery and myself did our Georgina-and-Bill double act, and tried to seem grown up. We think we got away with it.

So, that's a run-down of the day. Was it worthwhile? The feedback I received, from both the SPG and those that attended the lunchtime event, indicates that it certainly was. We promoted the Society, made some contacts that will hopefully stand us in good stead for continued and possibly increasing involvement in the future, and learnt a lot about how things work in the Scottish Parliament. One very notable impression is that of openness. From the debating chamber with its curved form, large public gallery and motifs intended to remind MSPs that the electorate is watching, to the ease of arranging our tour and lunchtime reception, the overall impression is of openness and accessibility and this is certainly good news for a learned society like the BES.

Finally the SPG would like to express once again its thanks to Mary Scanlon and her staff for hosting us so well during the lunchtime reception, to the BES for its continued support for the group, and to the Society's Policy team for all of their work in the run up to, and during, the event.

The Scottish executive summary provides specific examples of how extreme events are managed in Scotland. Natural Flood Management (NFM) has been taking place in the internationally important Insh marshes where the RSPB now manage the site for the benefit of biodiversity and protection of the downstream communities from flooding. The reserve adds to the local economy through tourism, while the construction of similarly effective flood defences was estimated at around £1.3M.

In Dunfirmline, considerable industrial and commercial development is underway at a site known as the Eastern Expansion. In an attempt to protect downstream water quality and increase pollution retention onsite, Sustainable Drainage Systems (SuDS) have been put in place to reduce runoff and increase ground water recharge. This has included a network of retention basins, swales, detention ponds and wetlands. This site has enabled much research to take place surrounding SuDS and their potential uses.

Another case study focuses on the freshwater pearl mussel. It is one of the longest lived invertebrates known, but due to exacting requirements throughout its complicated life-cycle it is highly sensitive to the effects of extreme events. Severe floods can remove mussels from their beds and increase build-up of sediments and pollution, while droughts can concentrate pollution, reduce oxygen availability and potentially leave mussels stranded. The principles of Natural Flood Management and SuDS (slow water down, encourage infiltration and encourage natural processes) are therefore likely to benefit freshwater pearl mussels.

Greg Counsell, BES Policy Intern

UK Biodiversity Science Committee – whatever for?

Sandy Knapp / UK BSC chairperson

A UK DIVERSITAS Committee has been constituted and invites active input from the scientific community

Although the UK has an incredibly strong and vibrant community doing the science that underpins global environmental sustainability – biodiversity science – it has been perceived that our voice was not heard as loudly as it should be in international initiatives such as DIVERSITAS. In late 2011 the BES hosted a town hall meeting at the Society of Biology to discuss whether or not the UK needed a national committee in the DIVERSITAS framework (http://www.diversitas-international.org/). The UK had long been represented in DIVERSITAS by individual scientists, including Professor Georgina Mace who is the chair of the DIVERSITAS Science Committee. The consensus of the meeting was to constitute a UK DIVERSITAS Committee, whose role would be to help the UK community have a more prominent international profile. Applications were invited, and 15 members were elected from 51 applications, representing a broad cross-section of biodiversity scientists in the UK. The aim was to have a group that was small enough to work well, but large enough to be diverse – not an easy task! The UK Biodiversity Science Committee (UK BSC) was therefore established in summer 2012 to represent the UK biodiversity science community and to serve as a constituted advisory committee for The Royal Society Global Environmental Research Committee (GERC, http://royalsociety.org/about-us/governance/committees/gerc/). The two previous DIVERSITAS representatives on GERC will be substituted by a representative of UK BSC (normally the Chairperson). Individual members will serve 3 year terms, and new members will be selected through an application and election process that will attempt to maintain the diversity of the Committee.

The UK BSC met for the first time in September 2012, and will meet twice a year in person at the Royal Society, but more often virtually.

Biodiversity science almost defies definition – but in discussing how the UK BSC could help UK scientists we felt we needed to be as inclusive as possible. So for us, biodiversity science is that needed to support the CBD vision of *"Living in Harmony with Nature"* where *"By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy plant and delivering benefits essential for all people."*, and the mission of the new CBD strategic plan to *"take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication"*. The science underpinning these ambitious goals will i) be integrative and link biological, ecological, and social disciplines; ii) take place at local to global scales, and between scales, iii) consider diversity at all levels of biological organisation from genes to species, landscapes and biomes, and iv) involve observations and experiments, as well as modelling and prediction. We hope the work of the UK BSC can help to bring the strength of integrative and insightful science done by UK biodiversity scientists together to make an international impact.

Among the first tasks of the UK BSC is to engage with the UK science community to advance the promotion of biodiversity science as a contribution to both national and international science programmes. We will also scrutinise the biodiversity science content of the emerging Research Framework "Future Earth – Research for Global Sustainability", as individual Global Environmental Change (GEC) Programmes such as DIVERSITAS and the World Climate Research Programme (WCRP) are amalgamated into Future Earth (http://www.icsu.org/future-earth), a ten-year ICSU (the International Council for Science) initiative that aims to bring together research to understand global environmental change and sustainability. These are challenging tasks, and we are only finding our feet and beginning to get to work. Input from the community is crucial to the success of the endeavour to make us more than the sum of our parts – so please get in touch!

We will be establishing a website (http://www.ukbsc.info) in addition to our presence as part of the Royal Society (http://royalsociety.org/about-us/governance/committees/ukbsc/) – where we will post news of funding opportunities and meetings; suggestions for additional content and functionality welcome. Various members of the Committee tweet as Biodiversity Science (@BiodivSci), most recently from INTECOL in London and the BiodiversityKnowledge conference in Berlin. Follow us and join in!

Sandy Knapp, is Head of Plants Division, Department of Life Sciences, at the Natural History Museum in London

Lords and ladies (Arum maculatum), near Wittersham, Kent

English bluebells (Hyacinthoides non-scripta) dominate the understory in early spring; College Wood, near Wittersham, Kent

Ditch at edge of Wicken Fen, Cambridgeshire, England

Yellow pitcher plants (Sarracenia lutea) in the Green Swamp, North Carolina, USA.

UK BSC MEMBERSHIP (2012-2015)

Gary Carvalho, Bangor University

Terry Dawson, University of Dundee

Peter Dennis, Aberystwyth University (Secretary)

Keith Hamer, University of Leeds

Mike Hassell, Imperial College

Alison Hester, James Hutton Institute

John Hopkins, Independent (ex-Natural England)

Richard Gregory, Royal Society for the Protection of Birds

Sandy Knapp, Natural History Museum (Chairperson)

Anne Magurran, University of St Andrews

Jonathan Silvertown, Open University

Paul Somerfield, Plymouth Marine Laboratory

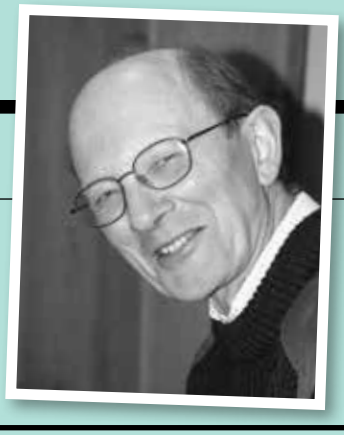
Andy Stott, Defra

Ruth Waters, Natural England

Allan Watt, NERC Centre for Ecology and Hydrology

BES IN THE MEDIA

Today on Radio 4



George Peterken

The BES publicity machine (aka Becky Allen) constantly strives to gain media attention for research published in Society journals. Much of the effort falls on stony ground, but what happens when a story gets picked up for national news programmes? Here are George Peterken's recollections written shortly after his 2 or 3 minutes of fame:

While I can remember the details, here is my recollection of being on Today and BBC Breakfast TV early on 24 July 2013...

Early afternoon, 23 July 2013. I was minding my own business at home, when I had a call from Liam Cavin, who has completed his studies of beech and oak growth in Lady Park Wood. A paper had been accepted for publication in one of the British Ecological Society's journals and the BES publicity people had issued a press release, along with PR's on other papers that they thought might attract wider interest. The BBC wanted to do a feature on BBC1 Breakfast time TV.

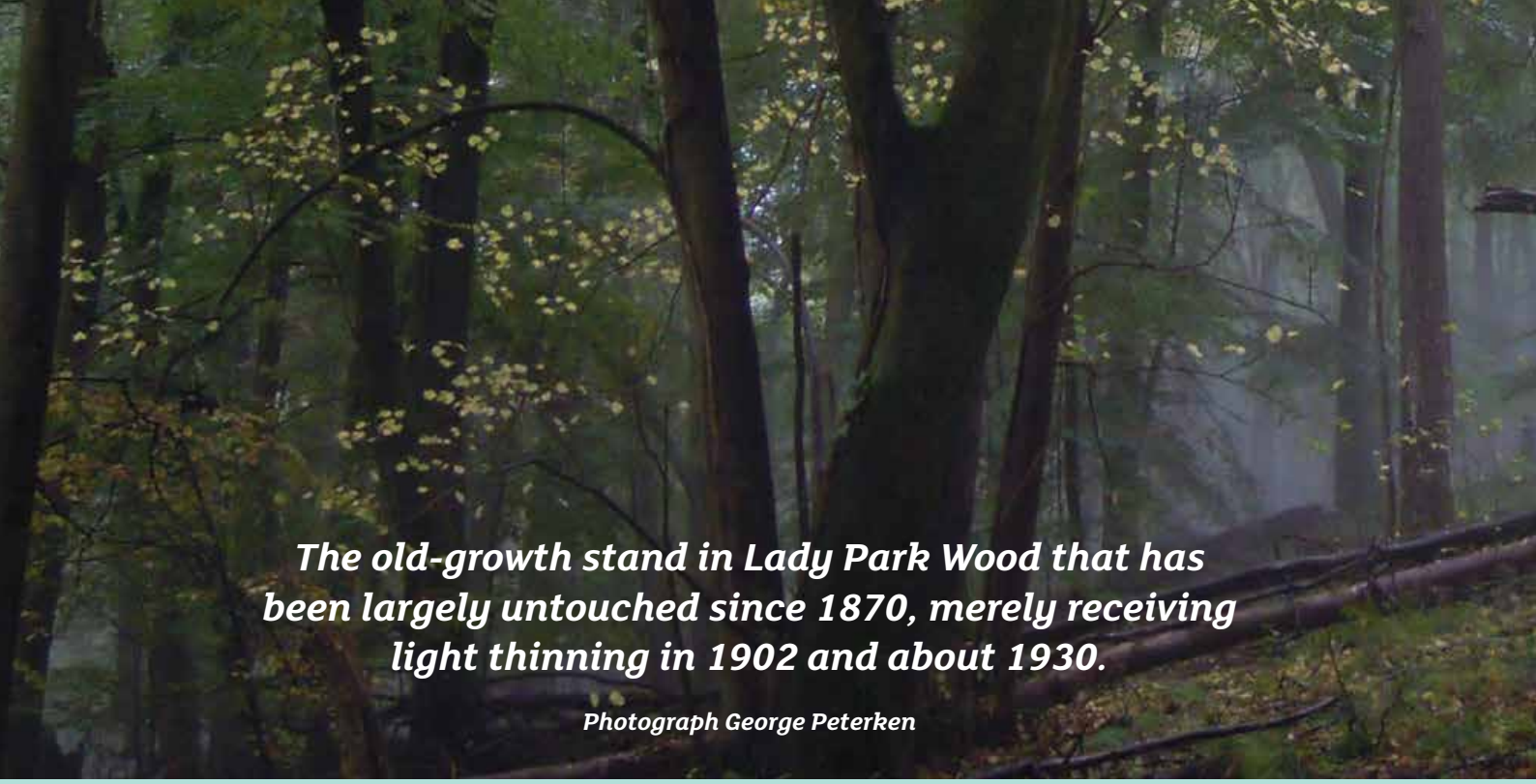
In summary, Liam had used our long-term records at Lady Park Wood and tree-ring analyses from his own cores to study the impact of the 1976 drought. Those beech that had not died had been stopped in their tracks and had never recovered their previous growth rates, whereas the oaks slowed their growth only slightly in 1976 and had actually grown faster thereafter, released as they had been from competition from beech. The outcome was a switch from accelerating beech dominance to a mixed woodland in which oak and other species were holding their own. This was just one example of a short-term event having a long-term impact on the character of a near-natural wood. There are also implications for the impact of climate change and the prospects for growing beech for timber.

A rapid succession of calls from Jack Gill (Today, Radio 4, London) and James O'Hara (BBC1 Breakfast Time, Salford) eventually established, via several changes, that they would want two slots on TV (7.20 and 8.20) and one on Radio 4 (7.40-7.45). I think their idea of what to transmit/broadcast developed as we talked, because my prospective role changed from 'I'll show up' to 'we want to interview you on Today'. The latter was discussed with Alistair Jump, Liam's supervisor in Sterling, who was also to be interviewed, and we agreed that it would be best it I went first and he came second with an account of the research and its significance. Envisaging a joust with John Humphreys, I was relieved to hear that the interviewer would be Sian Lloyd, who would be on site.

This all seemed fine and reasonable until the last call, which said that I would be wanted at the Saracen's Head, Symonds Yat East at 5 am. I think this came about partly because I had warned them that the Wye Gorge might be a difficult location. Getting into Lady Park Wood would be a stiff climb; their mobile studio might not get up the narrow lane at Symonds Yat; and mobile phones don't work in the gorge. I envisaged a horse-box-sized studio stuck below Symonds Yat or in a rut on a forest road. That or a 10 mile drive via Monmouth to travel half a mile to location in the gorge, and then find they could not contact their studio when they got there.

On Wednesday morning Susan prodded me awake at 4 am (which turned out to be before dawn). I took time for tea, then got engrossed in a Sudoku, so I left in a rush and was actually 10 minutes late at the Saracens Head, having passed through St Briavels, Coleford and Berry Hill without seeing another human being. The party was already waiting – Sian Lloyd the interviewer, a chief

"I think their idea of what to transmit/broadcast developed as we talked, because my prospective role changed from 'I'll show up' to 'we want to interview you on Today"



The old-growth stand in Lady Park Wood that has been largely untouched since 1870, merely receiving light thinning in 1902 and about 1930.

Photograph George Peterken

technician and a cameraman, together with Liam Cavin (who had actually done the research) and Rob Wolstenholme (who is the Natural England man-in-charge of the man-in-charge of the Lady Park reserve). I discovered later that Sian had come from Cardiff, the technician and cameraman from Birmingham, Rob from Gloucester that morning, all having got up at 3 am. Liam had stayed overnight in the Saracens Head. None of us had had breakfast, a small irony, given that this was for Breakfast TV.

It had already been decided that we would go to the Biblins bridge to broadcast, so we drove off in convoy. The BBC's mobile transmission van (roughly Ford Transit size) could hardly take the gradient up to Symonds Yat Rock. It was W-reg, rusty round the edges of the doors, and running-in a new engine. By the time we reached the top, Rob was out of sight, so the BBC mistakenly turned into the Rock car park. Fortunately, I was in the rear and could rescue them: we regrouped and drove uneventfully on to the Kells Road entrance and down the forest roads to the Biblins Bridge. This, however, was where troubles became serious, for the technician could not find a signal, wherever he tried – there were too many trees in the way – and I explained, no doubt irritatingly, that I'd mentioned this potential difficulty to the editorial people the previous afternoon.

What they wanted was a clear view to the south and a dead beech tree, so I said they would find both at the top of the wood, pointing to the sky. Faces fell, but I assured them that it would work, though it would be a 25 minute drive to get there, and eventually Sian agreed to move. So we retreated up to Berry Hill, drove round to Staunton and took to the forest roads again, this time arriving at the top of Lady Park Wood. I wanted to drive them on to the edge of the clearing, but had not realised that the last bit of the ride was overhung with low leafy branches, no problem for a car, but difficult for the aerial and dish mounted on the roof of the BBC's mobile studio van. Basically, we crashed our way through, wrenching branches off or aside while the studio van passed, and eventually got clear with the gear on the roof festooned in leafy branches, looking like the army on manoeuvres.

Fortunately, the location was technically OK. While the BBC studio made satellite contact, I took the cameraman to film the dying beech tree (for inserts into the interview). By then people were smiling again, but it was only 20 minutes to transmission on BBC1, the studio editors had already been contacting Sian for 10 minutes seeking a link, and nobody had discussed what would be said on screen.

While the dying beech shots were sent to Salford by satellite, Sian started to rehearse Liam, Rob and the cameraman for BBC1, all the time with messages coming in from the TV studio via Sian's earpiece. Eventually it was choreographed enough for a 3 minute slot to satisfy everyone, and at close to 7.20 Sian put on her smile, walked to camera and I watched while the others played out their charade to camera. The BBC people seemed pleased afterwards and congratulations quickly came back from the editors in the studio.

This left about 20 minutes before I was due on R4's Today programme. We first selected a patch beside the ride where twigs and leaves on the ground could be scuffed for sound effects. Then I went over with Sian what I might say, and we at least rehearsed the first question. All this was done against a background of exchanges between Sian and the Today studio concerning the time we would have on air (constantly changing between 2 and 4 minutes), what form the lead-in would take, and how to manage the pay-off (or hand back?). Suddenly, we were warned to be ready and then off. I talked on autopilot in bullet points and just hoped it sounded coherent, completely oblivious of time passing. Soon I had the horizontal hand wave from Sian, which was the signal to conclude, and we signed off, leaving Alistair Jump in Edinburgh to follow up with a studio interview.

We then had 45 minutes down time, at which point the BBC people realised that neither breakfast nor loos were within reach. Within 15 minutes we had feedback (via earpiece, text messages and email) from the Today editors that they were very pleased with the item, and likewise from the British Ecological Society's publicists, so by then we were relaxed and enjoying ourselves – and the sun was coming up! There were also messages that Radio 5live might want to bring us in, and likewise BBC 24 hour News, even the World at One, perhaps. In fact, the whole business seemed to be getting right out of hand.

Eventually, we regrouped for the second BBC1 transmission at 8.40ish. Initially, we were told we would have 4 minutes, so we rehearsed a different routine involving me, Liam and Rob in that order. Just before transmission, the studio cut the time to 3 minutes, so Rob got the push and we rehearsed a revised routine. Then it was go, smiles and walk to camera time again, but I was cut short and so was Liam. Blinking afterwards, Sian told us that she had had a message as she started that we would have only 2 minutes, because an earlier item had over-run. Nevertheless, it was deemed OK, and we immediately had to do it again for BBC News.

At that point we had no idea whether it was all over, or not. Rob and Liam said they had to get away soonish, but I said I could be available for World at One, provided I could go home for breakfast in the meantime. However, we soon heard that neither R5live or World-at-One would take it up, so we packed up, drove out of the wood and went our separate ways.

IMPRESSIONS?

I was impressed that Sian Lloyd stayed calm and helpful to us amateurs throughout. All this down-to-the-wire stuff would have flattened me. Live news programmes change constantly and staff must live by their wits.

I was surprised that the BBC's equipment looked so down-at heel. When I commented and joked that they must spend all their cash on senior staff layoffs, there was just a world-weary response from all the BBC people. The mobile studio had been used elsewhere until 11 the previous evening, which was why they could not drive down the evening before and reccy the ground. Given the rust and the W-registration, it looks like the on-the-ground staff is paddling hard so that the management can sail serenely on.

I did wonder what would have happened if the branches had damaged the transmission equipment. Presumably we would have packed, gone home and the studio editors would have scrambled for their back-up items.

Publicity is extremely capricious. Good though Liam's research is, it was picked up partly because we had just enjoyed two weeks of hot, sunny weather. An item on the long-lasting impacts of drought would have had little credibility if the country had been under floods like last summer.

Whilst it was good to attract some attention to Lady Park Wood, I doubt that many listeners would remember when 'Today' becomes 'Yesterday'. On the other hand, publicity for woodland research, climate impacts and research reserves must leave some kind of mark on the public mind, even if the individual item is forgotten. A stream of such items advertises our presence and activities. Meanwhile, those involved had their 15 minutes of fame.

"It had already been decided that we would go to the Biblins bridge to broadcast, so we drove off in convoy. The BBC's mobile transmission van (roughly Ford Transit size) could hardly take the gradient up to Symonds Yat Rock"

SOCIETY NEWS

Welcome to our newest staff members!

We're here to help, so do get in touch and say hello.

Kate Harrison

I'm Kate, a new Assistant Editor on the publications team. Unlike all the other newbies here, I am completely new to the BES! I graduated a few years back with an history of art degree and have since worked for two publishers on engineering and medical journals. My role here will be working across all five BES journals, coordinating marketing initiatives and reporting on journal performance, as well as supporting Liz and Andrea with various projects whilst Catherine is on maternity leave. I am also managing the books series, *Ecological Reviews,* so if you have any ideas for future volumes, let me know! It's an exciting time to be working in academic publishing and I can't wait to get stuck in at the BES!

Kate@BritishEcologicalSociety.org

Amelia Simpson, Events Manager

I'm Amelia and the new Events manager at the BES. I previously worked in the conference centre at Charles Darwin House so have been lucky enough to already have been involved with many BES events! I haven't always worked in events – for 8 years I was an entertainment manager for Thomas Cook all over Spain, Canaries, Balearics and Cyprus. I'm very excited about the role and working very closely with Amy and the Special Interest Groups regarding events, outreach and, of course, the Annual Meeting! Please don't hesitate to get in touch if you have a question about events or our SIGs!

Amelia@BritishEcologicalSociety.org

Amy Everard, Grants & Events Officer

Many of you may already be familiar with my name popping up in your inboxes over the past eight months, as I worked with Andrew Beckerman (Meetings Committee Chair) to put together the INTECOL 2013 programme which, with over 1,600 presentations, was no mean feat! I started at the BES in January this year as the Festival of Ecology Assistant, working on a variety of events organised for our centenary celebrations. I am now pleased to be taking on the role of Grants & Events Officer at the Society, where I will be overlooking the grants portfolio and working alongside Amelia on upcoming events including the BES Annual Meeting. So, if you have any queries regarding grants and events, do get in touch!

Amy@BritishEcologicalSociety.org

Katherine Maltby, Policy and Education Assistant

Hello, I'm Katherine! I recently graduated from the University of Sheffield where I studied Biology with Conservation and Biodiversity and now I'm the new Policy and Education Assistant. I'm really interested in marine ecology and fisheries science, and I like trying to relate this to current policy issues. This summer I was the policy intern at the BES where I was lucky enough to go to places such as Westminster and INTECOL! I'm really happy to be staying on with the BES and hope to get more ecological science recognised in policy and decision making. During my time here I hope to encourage more members to take a more active role in policy, whether that be through our events or engaging them in more of our responses to government consultations.

Katherine@BritishEcologicalSociety.org

Cheryl Pilbeam, Acting Policy Manager

As many of you will realise, I'm not new to the BES, but am now working in a new capacity as Acting Policy Manager until the beginning of April, when Ceri Margerison returns from maternity leave. I've been at the BES since January, starting as a Policy Intern. I enjoyed it so much, that I applied for the role of Policy and Education Assistant, and was delighted to become a permanent member of the External Affairs Team. By background, I am an ecologist – I have a Master's in Conservation and Forest Protection from Imperial College London, and I studied biology at Oxford as an undergraduate. I hope to build on the successes of the centenary year in my new role, and continue to draw together science to inform policy and decision making.

Cheryl@BritishEcologicalSociety.org
@BESpolicy

Update on the 2013 Membership Drive

Bill Bewes / BES Membership Officer
Membership@BritishEcologicalSociety.org

This year has been an exciting year for the membership team with the centenary celebrations, the INTECOL meeting and the membership drive.

I'm delighted to announce that we have achieved our target with 4510 members at time of writing. We have given a further 903 complimentary memberships to delegates who paid the non-member rate at the INTECOL meeting. The Society will start 2014 with over 5000 members for the first time in our history.

I'd like to say a big thank you to all members who have helped us reach our target. We are very grateful to all members who have recommended membership to friends and colleagues. Some of you have reached double figures with the number of new members you have brought to the Society; a fantastic effort.

We have over 350 members in the prize draw to win lifetime membership. The draw will take place early in January 2014. If you are still waiting for your vouchers for the fantastic NHBS website, they will be winging their way to you shortly. Thanks again to everyone involved.

We are not resting on our laurels however; next year should prove just as exciting. We have our first Annual Meeting outside of the UK, with our joint Annual Meeting in Lille, France with the SFE. Keep checking the website and *eBulletin* to find out about all other events and activities from across the BES team.

The new membership database has been installed and we hope to have the web portals online by the end of the year. BES members will be able to check their membership status online and amend their contact details as well as renewing subscriptions and booking BES events. We also hope to allow access to BES journal content and back issues of the *Bulletin* via the members' area.

See you in 2014!

THE BES PHOTO COMPETITION 2013

Each year the British Ecological Society welcomes members to enter our popular photographic competition. We have five standard categories; Ecosystems and Communities, Whole Organisms and Populations, Ecology and Society, Ecology in Action and the Student Category. In addition this year we included the category 'Celebrating Ecology' to recognise the Society's 100th Birthday.

The overall winner receives £750, the overall runner-up receives £250 and the student award winner receives £100. We would also like to thank the Oxford University Press for kindly sponsoring £40 worth of book vouchers to the winner of each category that does not receive the overall, overall runner-up or student prize this year.

Our judges had a tough task with a diverse selection of stunning shots covering all aspects of ecology, but we were pleased to announce the below award winners and runners up at INTECOL 2013. Congratulations to all our winners and many thanks to our judges.

The deadline for the 2014 Photographic Competition will be Monday 11 August. Details can be found on the BES website under Grants & Awards.

OVERALL WINNER AND WINNER OF THE 'WHOLE ORGANISMS AND POPULATIONS' CATEGORY: 1

Zoe Davies

The photo is of a pair of black-browed albatross *(Thalassarche melanophrys)* greeting one another on the cliff tops of Saunders Island, Falkland Islands. These charismatic birds are an 'endangered' species on the IUCN Red List, with their decline attributed primarily to incidental mortality in trawl and longline fisheries. The good news is that recent surveys have shown that the number of individuals is increasing – hopefully their status will be downgraded soon. The Falklands are the stronghold of the black-browed albatross, supporting about 70% of the global breeding population.

Zoe Davies is a Senior Lecturer in Biodiversity Conservation at the Durrell Institute of Conservation and Ecology (DICE), University of Kent. Her research interests all centre on addressing questions of importance to conservation/environmental management and policy. Recently, with the support of UK government Darwin Initiative funding, Zoe has been working with various organisations in the Falklands to help develop aspects of their protected area strategy. Zoe says of the photograph "The Falklands are a fantastic place to visit. They are characterised by a rugged (and very windswept!) beauty and unrivalled opportunities to observe wildlife in solitude. It is really easy for a whole day to slip past, while you sit at the edge of a gentoo penguin colony, or on a sandy beach full of elephant seals. The black-browed albatross is one of my favourite species found on the archipelago – the adults are huge but beautifully elegant birds, and a real pleasure watch as they soar past on the wing or preen each other whilst sitting on their nests."

OVERALL RUNNER UP AND WINNER OF THE 'ECOLOGY IN ACTION' CATEGORY: 2

Christopher Beirne

Whilst a local herdsman drives his flock to fresh pasture, Professor Stuart Bearhop gets animated explaining the wonders of migration to his flock of 2nd students. Northern Cyprus is an ideal location for students to observe human-wildlife conflict in action within a hotspot of biodiversity and endemism.

Chris Beirne works at the Centre for Ecology and Conservation, Penryn Campus, University of Exeter where he uses molecular techniques to study how and why individuals in wild populations age. Looking at natural populations (in this case European badgers) can give us clues as to why variation in ageing rates occur.

WINNER OF THE 'CELEBRATING ECOLOGY' CATEGORY: 3

Benjamin Magana-Rodriguez

The Mexican government and local communities are working together to conserve and educate about the importance of cenotes (sinkholes) in the Mayan region. Through conservation projects on rural areas, the funds granted are invested in infrastructure (stairs, information signs, gravel roads, rubbish containers) and hiring keepers from the local community.

RUNNER-UP IN THE 'CELEBRATING ECOLOGY' CATEGORY: 4

Dannielle Green

Diving in headfirst! Ecologist uses his head to search for cryptic infauna on intertidal mud-flats.

Dannielle is a postdoctoral researcher at Trinity College Dublin and her research focuses on assessing human impacts on marine ecosystems. She took this photo whilst on fieldwork during her PhD in the most beautiful part of Ireland, County Donegal, where she studied the impacts of non-native oysters on biodiversity and ecosystem functioning (www.ucd.ie/marbee/dannielle_green). The work focused on what was happening in the mud and when one of her friends, Mark Browne, decided to take a closer look she couldn't resist taking this picture!

WINNER OF THE 'ECOSYSTEMS AND COMMUNITIES' CATEGORY: 5

Gavin Ballantyne

Rhododendron ponticum is normally pollinated by bees, but visits to flowers can be perilous for bees at this site near Wareham in Dorset. Here you can see a female *Misumena vatia* crab spider holding her front legs wide in a threat posture when faced with a macro lens.

RUNNER-UP IN THE 'ECOSYSTEMS AND COMMUNITIES' CATEGORY: 6

Daniel Metcalfe

A fallen pink bloodwood *(Corymbia intermedia)* and blady grass *(Imperata cylindrica)* re-sprout, reinvigorated, two weeks after a dry season forest fire cleared the system of the wet season's accumulation of vines, litter and cyclone debris.

WINNER OF THE 'ECOLOGY AND SOCIETY' CATEGORY: 7

Carsten Meyer

Carcasses of de-finned sharks washed up on the Pacific shore of Mexico (near Guerrero Negro, Baja California Sur), some twelve thousand kilometers away from shark fin consumers.

RUNNER-UP IN THE 'WHOLE ORGANISMS AND POPULATIONS' CATEGORY: 8

Hans De Kroon

Tassel Hyacinth *(Muscari comosum)* in the wild *(Lefkas, Greece)*

Tassel Hyacinth is not uncommon in the Southern part of Europe and is a very photogenic species. Hans found it early May on the island of Lefkas, Greece. It was growing amidst a field of wildflowers in a deserted olive orchard. These fields are a paradise for wild plant lovers in the Mediterranean spring, and are also full of pollinating insects.

Hans De Kroon is a professor of plant ecology at the University of Nijmegen, in the east part of the Netherlands. His research focusses on mechanisms by which plant biodiversity is sustained. He is fascinated in his work in how this beauty is regulated, and in his photography in the beauty itself. It is also important to Hans to share that fascination with a bigger public: he is involved in an initiative to stimulate the interest of a wider audience for the wild flora. What is new is that he makes short videos of plant species to drag people into the wild plant world and which makes it easier to identify species. See: www.floravannederland.nl.

RUNNER-UP IN THE' ECOLOGY AND SOCIETY' CATEGORY: 9

Silviu Petrovan

Long tailed macaques *(Macaca fascicularis)* are relaxing at the Sacred Monkey Forest in Ubud, Bali.

RUNNER-UP IN THE 'ECOLOGY IN ACTION' CATEGORY: 10

Anna Carter

Female tuatara being tracked to and from her nesting rookery with a spool of cotton attached to her tail.

WINNER OF THE 'STUDENT' CATEGORY: 11

Elli Tzirkalli

A flagship species of Cyprus the Levantine Leopard *(Apharitis acamas)* butterfly resting (location: Vretsia, Pafos district)

RUNNER-UP IN THE 'STUDENT' CATEGORY: 12

Jacob Bishop

A jumping spider *(Salticidae)* wrestles with an impressive catch *(Apis mellifera)*

SPECIAL INTEREST GROUP NEWS

BES AQUATIC ECOLOGY SPECIAL INTEREST GROUP REBOOTED

The need for both scientific and political focus on aquatic resources is stronger than ever, and issues such as climate change and extreme events (such as flooding and drought), the contribution of aquatic ecosystem services and invasive species are impinging on both science and politics. In addition, in financially challenging times, when all sectors are feeling the pinch, the government is moving environmental responsibility away from the statutory agencies towards the third sector. This is a good time to engage with a specialist group that has the potential to bring together aquatic-minded individuals from all sectors to exchange skills, knowledge and ideas.

We will be rebooting the Aquatic Ecology SIG this year, with a new set of meetings and workshops, which started with an initial gathering at the joint BES – Intecol 2013 meeting (18-23 August in London). The event was very well attended (and not just because of the free wine!) by a mixed and enthusiastic crowd interested in all aspects of aquatic ecology, and there was lively debate about ideas for future meetings, workshops and symposia (please see below for further details of the first proposed meeting).

The new team includes Guy Woodward, co-secretary of the group along with Melanie Fletcher; Nessa O'Connor who will represent marine interests; Dominic Andradi-Brown, Jennifer Cooper and Gavin Williams as student representatives; and Mark Ledger, Honorary Treasurer. Ronni Edmonds-Brown, a stalwart of the group, has generously offered to continue running the Aquatic Ecology mailing list to which many of you undoubtedly subscribe. We would like to take this opportunity to thank Anne Robertson, the previous Secretary, for her endeavours and for initiating us into the ways of Group organisation.

Guy is a Reader in Ecology at Imperial College London and the Series Editor of Advances in Ecological Research. His main research interests are focused on quantifying the impacts of stressors (climate change, acidification, eutrophication, species invasions and habitat alteration) on the structure and functioning of aquatic ecosystems. He is currently collaborating with a range of experts from different disciplines in order to understand the links between patterns and processes in natural systems, and to develop conceptual frameworks within which to advance ecological theory – and to apply it to real-world problems. He is particularly interested in how stressors affect multiple levels of biological organisation, from molecules, to individuals, to entire ecosystems. As co-Secretary of the BES Aquatic Group, he is keen to integrate pure and applied marine and freshwater ecology, and to initiate a range of new workshops, symposia and other activities that will help foster interactions within the group – as well as strengthening ties to other BES Special Interest Groups.

Melanie is involved in science, publications and training at the Freshwater Biological Association (FBA), an independent scientific charity of long-standing. The Aquatic Ecology SIG complements the existing work of the FBA, and opportunities to work together for mutual benefit will be explored. As it is, many FBA members will also be BES members. Melanie is particularly interested in the ecology of freshwater invertebrates as well as interdisciplinary working in the application of science to practical, contemporary issues in freshwater ecology. As with the FBA as a whole, Melanie works on various projects with a diverse range of partners including statutory agencies, government science bodies, academic institutions, consultants, water companies, NGOs, biological recorders and enthusiasts.

She is particularly keen to address the loss of fundamental skills, such as those in taxonomy, through publications and training, and sees the Aquatic Ecology SIG, in collaboration with other BES SIGs, as the ideal forum to address skill deficits (through workshops and other activities), as well as promoting links between individuals with different interests in aquatic ecology.

Nessa is a lecturer in Marine Biology at Queen's University Belfast, and a community ecologist with an emphasis on coastal ecosystems. She is primarily interested in understanding relationships between biodiversity and ecosystem functioning and stability. Her research has focused on the consequences of species loss and tests for generalities so that we can predict the effects of loss of biodiversity under changing environmental conditions. Her current research aims to disentangle the combined effects of multiple stressors (e.g., climate change, invasive species, pollution etc.) on how ecosystems function and for provisioning of the services they provide. Nessa particularly likes working on rocky shores to learn about their community dynamics but also because they are highly tractable model systems for testing basic ecological theory, understanding the consequences of species loss and for examining predicted climate change scenarios. She is also interested in applied ecology and conservation and developing tools to assist with marine resource management.

Dominic's main interest is in coral reef ecology and conservation, and he has led the Operation Wallacea Coral Reef Monitoring programme in Indonesia for the past few summers. In October he will begin a PhD on mesophotic coral reef fish ecology at Oxford University. During his undergraduate degree he was a BES Undergraduate Fellow, and continues to be actively involved in many of the

BES student led activities such as the upcoming careers day and student symposium at Charles Darwin House in November. In the Aquatic Ecology SIG he is keen to provide a link with the growing student support provided by the BES to make sure it meets the needs of student marine and freshwater ecologists. In particular he thinks it would be good to get some skills-focused workshops on survey and data analysis techniques for students working with the BES student group and other SIGs.

Jen is interested in the impacts of climate change and other human activities on the marine environment. She recently started a PhD at the University of Sheffield looking at the effects of climate change on marine ecosystems. One of her main areas of focus will be to improve how climate effects are incorporated into current marine ecosystem models and how model type and structure effect projections. She is interested in how the results might influence fisheries and ecosystem management. Her work draws on interdisciplinary links and involves working with fisheries scientists at Cefas and physical climate scientists at Exeter University. In addition to her academic work, Jen is interested in public awareness, perception and relationship with the marine environment. She has organised several outreach events and aims to continue this work whilst at Sheffield. As a former BES undergraduate fellow Jen is keen to continue her involvement with the BES. She hopes that the Aquatic Ecology SIG will increase the representation of marine and fresh water ecologists within the BES, and is excited to be a part of the team.

Gavin is a freshwater ecologist and is currently a doctoral researcher at the University of Birmingham investigating the functional impacts of drought on chalk streams. Gavin is keen to help as many early career ecologists as possible with an aquatic interest discover and get involved in the Aquatic Ecology SIG.

Mark is a Senior Lecturer in Ecology within the School of Geography, Earth and Environmental Sciences at the University of Birmingham. His research interests in freshwaters focus on ecological responses to global change, and encompass disturbance ecology, food webs, and environmental stressor effects on biodiversity and ecosystem functioning. Current projects use mesocosm experiments to explore the impacts of extreme climatic events, especially severe droughts, on ecological networks in streams. Mark was one of the local organisers for the BES meeting in Birmingham last year, and is keen to widen the activities of the Aquatic Ecology Special Interest Group.

Ronni is a Senior Lecturer at the University of Hertfordshire and is also the Chair of the Hertfordshire Natural History Society. Her interests include taxonomy and conservation and she is currently running a captive rearing programme for native White-clawed Crayfish – whose populations have been devastated in recent decades by invasions of American Signal Crayfish and the spread of crayfish plague across UK freshwaters.

An introductory meeting is planned for next year (date to be confirmed), and the current idea is to have a two-day event, one day being dedicated to training for Early Career Researchers, and the other comprising a mini-conference with plenary speakers from both the marine and freshwater worlds, discussions about the role of the Aquatic Ecology SIG, including ways to get involved, and breakout groups on various topics including the future direction of aquatic ecology.

We are keen to involve you and hear your views about what would be useful to you as an aquatic researcher, practitioner or enthusiast. Get in touch via e-mail (for now please use our institutional email addresses [guy.woodward@imperial.ac.uk; mfletcher@fba.org.uk] until we set up a dedicated address with which all the team will interact), or Twitter (@BES_AquaEco). We look forward to hearing from you!

Citizen Science: The new BES special interest group

Helen Roy and Michael Pocock / Joint Secretaries
CitizenScience@ceh.ac.uk

Citizen science is creating excitement throughout the ecological world (and beyond). The opportunities presented by citizen science, a methodological approach involving volunteers in scientific studies, are being recognised by many people representing a range of perspectives. From research ecologists and conservation practitioners to policy-makers and most importantly the volunteers themselves – there is incredible enthusiasm for getting involved in advancing ecology.

Citizen science is not new. It has a long history but the past decade has seen a rapid increase in the number of citizen-science initiatives across the world. Citizen science provides an indispensable means of combining primary ecological research with environmental education and public engagement. The wealth of technology available to support and inspire citizen science is rapidly expanding. Citizen science has become global in scale, long-term in ambition and engages hundreds of thousands of volunteers in an amazing range of scientific pursuits.

The new Citizen Science special interest group will provide a forum for sharing experience and expertise. Additionally the group will foster and support creativity and innovation in research through citizen science. We invite you to join us in shaping this new BES Special Interest Group.

Objectives

- To promote the value of citizen science
- To provide a forum for sharing details of current citizen science in ecology, and as a community to foster and support creativity and innovation in research via citizen science
- To develop links with relevant initiatives across disciplines
- To foster collaborations on citizen science globally
- To provide a network for students and volunteers who want to support citizen science projects and develop their own

To encourage networking and sharing of expertise amongst people interested in citizen science including volunteers, researchers and policy-makers

PEATLAND RESEARCH

Ian Rotherham
I.D.Rotherham@shu.ac.uk

This has been an exciting period for what used to be the Mires Research Group, with a very international feel to the *War & Peat Conference* in September, from St Helena to the Falklands, and from Holland to Finland. With the International Peat Society, we battled for access to the moors, considered heathland airfields, and discussed flying fortresses in Kinder Scout's boglands. Did you know for example, that the Scottish troops plucked a catastrophic defeat from near victory at the battle of Flodden because their uniform marching with pikes in German order caused them to sink into a mire? The proceedings will be published shortly.

The field visit, now an annual part of our programme, was to Thorne and Hatfield Moors near Doncaster, to look at major restoration works. This was a fascinating day and a chance to examine in detail the issues of a major wetland and peatland 'restoration'. Hosted by JBA Consulting Ltd and the Thorne & Hatfield Moors Conservation Forum, we were even treated to the spectacle of a flock of nine cranes, which have arrived and breed in the area even without any introduction programme.

The annual *Sphagnum* and Waxcap identification days have booked up completely and that is encouraging for us as organisers.

Next year promises to be even more eventful with our *'In The Bog'* conference in September which will look at all aspects of the ecology, heritage, history and archaeology of peat bogs and peatlands. There will be more workshops on *Sphagnum*, including a visit to Thorne Moors, and there will be a 2-day symposium on issues to do with Waxcap Fungi as indicators of conservation value of grasslands and wood pastures. In May we have a 2-day event in Sheffield with the first part of *'Wilder By Design'* to consider issues of wilding, re-wilding, eco-cultural landscapes, and cultural severance. This promises to be cutting –edge, informative, and probably controversial. Part 2 will be a 3-day conference in September 2015. More information will be in the Peatland SIG Newsletter and is also downloadable with booking details etc, from www.ukeconet.org . For enquiries or offers of support or of presentations and posters, please email info@hallamec.plus.com.

We are also excited to announce that Rachael Maskill of the Moors for the Future Project and the Peak National Park, has joined the team as our publicity officer.

British Ecological Society
Tropical Ecology Group

TROPICAL ECOLOGY GROUP

Lindsay Banin
tropical@BritishEcologicalSociety.org

THE TROPICAL BIOLOGY ASSOCIATION AFRICAN ALUMNI GROUP (TAAG)

Inaugural meeting

2nd-4th July 2013, Nairobi, Kenya

Report contributed by Titus Adhola, Research Scientist, Zoology Department, National Museums of Kenya

Last July, TAAG held their first conference in Nairobi. The theme of the conference was *Biodiversity in Africa – present state, challenges and prospects for its conservation.* The initial aims were to: **1.** share knowledge from research and work experience and build capacity in conservation challenges for the next generation, **2.** generate a synergy of ideas, networks, opportunities and proactive action to solve real world conservation challenges in Africa and **3.** serve as a voice for conservation biologists in Africa, shaping policy and trailblazing the frontiers of research for the benefit of biodiversity and humanity.

The meeting covered topics including:

- Biodiversity loss and challenges of conservation in African context
- Climate change and other threats to biodiversity conservation
- Biodiversity and ecosystem functioning and services
- Capacity building for biodiversity conservation in Africa
- Social aspects for biodiversity conservation
- Challenges and opportunities for effective linkage of biodiversity conservation research with policy and practice in Africa.

TAAG requested funding from the BES Tropical Ecology Group to help support this meeting. The BES-TEG committee was particularly keen to provide support for students to attend the meeting to facilitate networking and transfer ideas. BES-TEG hopes this sets a precedent for future collaborations.

TAAG conference in summary

TAAG is an umbrella association of the Tropical Biology Association (TBA) alumni from all over Africa that is promoting the conservation of Africa's threatened biodiversity through sharing knowledge and developing careers. TAAG's membership includes TBA's national alumni groups in 13 African countries. Through the student conference, TAAG is serving as a unique voice for young African conservation biologists who want to make a real impact in conservation in their own countries and in Africa at large.

The Conference became a melting pot of 178 participants drawn from 13 countries and over 50 institutions. Students, conservation biologists and practitioners, policy makers, and government agencies had the rare opportunity of participating in plenary sessions; presenting and listening to case studies from many countries and engaging in working group discussions. Five renowned global conservation leaders gave keynote addresses; they highlighted their conservation and research experiences and offered possible solutions to some of the challenges faced in conserving biodiversity in Africa.

The conference was attended by the Director General of the National Museums of Kenya (NMK) on behalf of the Cabinet Secretary, Ministry of Sports, Culture and Arts. Sponsors that made the conference a success include the TBA as the principal sponsor; other sponsors include the British Ecological Society Tropical Ecology Group (BES-TEG), British Ecological Society Outreach Grants, The World Academy of Sciences (TWAS) and The NMK.

There was diversity in scale and skill in the 24 oral and 6 poster presentations and it was a wonderful learning experience for everyone! Prizes were awarded to the best oral, speed talk and poster presenters. Participants found the opportunity to network with peers and mentors useful and awe-inspiring. The conference received extremely positive feedback from the participants and 95% said they would like to see another TAAG conference in the near future. 93% of the delegates reported that the conference had met their expectations. Amidst the Keynotes and student presentations four parallel workshops were convened on the 1st day and a panel discussion on the future of TAAG convened on the final afternoon of conference.

This resulted in very exciting ideas that will form a blueprint for growing and expanding TAAG with the aim of building the capacity of the next generation of conservationists in Africa and beyond.

EARLY CAREER RESEARCHER MEETING SPRING 2014

Back by popular demand, BES-TEG is planning an early career researcher meeting for next Spring. Keep your eyes on our webpage, Facebook group and Twitter (@BES_Tropical) for updates. The aims of the meeting are to provide a friendly forum for communication amongst tropical ecologists, give the opportunity for researchers to develop skills in communicating their science, networking and other invaluable skills.

As ever, please do keep in touch with your ideas for future BES-TEG supported events, as well as news items for our newsletter. If you wish to subscribe to our newsletter, contact us via e-mail at tropical@britishecologicalsociety.org.uk

British Ecological Society
Macroecology Group

MACROECOLOGY

Macroecology was well represented at Intecol in London (although we suspect that some of those responsible for downing all the free wine at our evening mixer in record time were not, in fact, card-carrying macroecologists…) Our scientific presence was very visible, most obviously in the session *Reinventing macroecology with process-based approaches* organised by Sal Keith and featuring an excellent, thought-provoking keynote from Brian McGill; and in John Harte's well-received workshop on MaxEnt. But macroecology crept into the #INT13 twitter feed from all over the conference centre, confirming our view that macroecology is an ecological force to be reckoned with.

Largely this is due to our members, and we have worked hard this year to give ownership of SIG activities to the membership, mainly through discussions at meetings and over the internet. As a result, our 2014 activities are being organized by five separate non-committee members, with the committee acting primarily as facilitators. These activities will hopefully include a small workshop to polish the 'manifesto for macroecology' that emerged from our Sheffield meeting into a tangible output, a meeting at the Natural History Museum on *Scaling the Time Barrier,* to break down the barriers between neontological and palaeontological research agendas, a Software Carpentry Bootcamp (in partnership with the Computational Ecology SIG), and a workshop to address the 'data deficit' by uniting macroecologists, citizen scientists, and third sector organisations. Finally, building on the great success of our meeting in Sheffield this July, our 2014 annual meeting will be at the University of Nottingham.

As usual, you can stay up to date with all of our activities by signing up to our mailing list (BESMACROECOLOGY on JISCMail's Listserve), following us on Twitter (@besmacro), or checking our Facebook group (BES Macroecology SIG).

PLANT ENVIRONMENTAL PHYSIOLOGY GROUP

2nd Annual BES – PEPG mini symposium

Manchester 9-10th September 2013

PEPG's mini-Symposium took place in a sunny (for at least two hours of the symposium) Manchester on the 9th September. There was an excellent array of talks and a BBQ social to top it off! Monday began with Professor Hendrik Poorter, from the Research Centre Jülich talking about the need to look at the bigger picture in research and not just focusing on one aspect. Using the analogy of looking at the whole elephant not just focusing on the trunk or the ears, but pulling the tail as well. I think this is what he meant, but the elephant did remain somewhat an enigma for the remainder of the symposium! Following this we heard some fabulous talks from around the world including, improving green roof boxes, looking at drought tolerance, and amazing root images from Dr Saoirse Tracy, University of Nottingham. Another outstanding talk came from Lorna McAusland of the University of Essex, who showed the first ever photograph of water use efficiency and won the price for best early career scientist presentation.

Things 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. If you are interested in being involved in organising or sponsoring the workshop, or have any suggestions then please email either Dr Tracy Lawson (tlawson@essex.ac.uk) or Dr Matt Davey (mpd39@cam.ac.uk).

3rd Annual PEPG symposium – Spring 2014 – Sheffield and the Peak District

Next year's symposium will be slightly different…the first day will be spent networking and walking in the Peak district (Edale, Castleton area) with local guides who will talk about the history, flora and ecology of the area. We plan to stay the night in a local hostel and the following day will be spent having the more formal symposium research-led talks.

Joint SIG mini-symposium with the Plant, Soil and Ecosystem SIG

"C cycling – from plants to ecosystems" Autumn 2014, location TBA.

May we also take this opportunity to remind you to promote the PEP group with academic colleagues, postdocs and PhD/MSc students etc whether starting this year, or by now well established. Encourage them to visit the website and sign up to the jiscmail email forum or Facebook page above.

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Richard Webster – rcw@aber.ac.uk

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

British Ecological Society
Plants, Soils, Ecosystems

PLANTS, SOILS, ECOSYSTEMS AT INTECOL

Franciska de Vries
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@BESPlantSoilEco

Because our Special Interest Group only saw the (official) light in December last year, we were far too late to put in a symposium proposal for INTECOL. So, we decided to link up with Richard Bardgett and Wim van der Putten, the organisers of the INTECOL symposium 'Soil biodiversity and ecosystem function: recent advancements and new challenges' on Tuesday the 20th of August – obviously a topic very close to our combined hearts. We sponsored their symposium and organised a drinks reception straight after, for people interested in our group, and for speakers and attendees of the symposium. This provided an ideal opportunity to promote the group, and advertise our first meeting 'Digging deeper: research challenges in plant-soil interactions, which, as I am writing this, has just been held (a meeting report by Sarah Pierce follows).

The symposium ran for the entire day, and included a range of speakers and talks, covering all aspects of soil biodiversity and ecosystem functioning. The morning session started with an overview of the field by keynote speaker Wim van der Putten, followed by talks focusing on links between soil biodiversity and ecosystem functioning, ranging from carbon cycling, plant community composition, and ecosystem services. In the afternoon, Louise Jackson gave a keynote lecture on how research by soil ecologists can meet the needs of society and human well-being, and illustrated this with an example of a successful project in California. Her talk was followed by presentations focusing on the effects of land-use change and climate change on soil biodiversity, highlighting the challenges of understanding the mechanisms through which change affects soil communities and their functioning.

The great attendance numbers of the symposium – over 300 for the entire day – confirm that interest in this area is increasing, not just within the field of soil ecology and plant-soil interactions, but also from other research areas, policy-makers, and stakeholders. There couldn't be a better time for our special interest group, and this was illustrated by the great turn up at the drinks reception afterwards – over a hundred people! The reception facilitated interaction between people interested in plant-soil interactions, soil ecology, and ecosystem ecology, and increased the visibility of the Plants, Soils, Ecosystems SIG. The success of the symposium and the reception was further confirmed in the month after INTECOL, when our membership rose from 90 to 150 members! A great result, and a fantastic reward for all our efforts to start up the special interest group!

Meeting report:

Digging Deeper: Research Challenges in Plant-Soil Interactions

Charles Darwin House, 2-3 October 2013

On 2-3 October, 40 delegates from 11 countries descended on Charles Darwin House for the first meeting of the BES Plants-Soils-Ecosystems special interest group. Organised by Franciska de Vries, Emma Sayer and myself, the meeting consisted of three sessions plus posters addressing current research and future challenges to understanding plant-soil interactions and their influence on ecosystem functioning. The meeting was kicked-off with a welcome by Plants-Soils-Ecosystems Secretary, Franciska de Vries, who reminded us that the group was only conceived one year ago at the BES/SEB/BS joint symposium, also at Charles Darwin House. How far we've come in a year, with 155 members already!

The first session focused on carbon cycling and was headed by a keynote from BES Vice President, Richard Bardgett (University of Manchester). He highlighted the importance of plant traits in explaining variation in soil microbial communities and carbon stocks, and as drivers of ecosystem function and responses to climate change. He suggested one big challenge now is to determine the relative role of the different routes by which plant composition can influence soil properties under climate change, and particularly the need for better understanding of root traits and root exudates.

Posters remain an important focal point of ecology meetings

The rest of the session included interesting talks showing that nitrogen addition increases soil carbon stocks, tillage systems can alter soil microbial communities, home-field advantage for litter decomposition may not be as straightforward as we thought, 'priming' effects could be included in global carbon models, and litter inputs affect soil and microbial carbon stocks in consistent ways across ecosystems. The discussion session that followed emphasized the need for large-scale observational studies as well small-scale mechanistic studies, and the necessity to find ways to integrate these. By creating a strong community and discussing research plans frequently we're more likely to find ways forward with this, and meetings like this one can only help!

Talks for the day were rounded-off with the Speed Poster Presentations, where poster presenters had 1 minute to entice other delegates to visit their poster and find out more. The subsequent poster session and wine reception provided ample opportunity for exploring the posters, discussing the talks and networking. This was followed by a conference dinner and visit to a local pub where discussions continued into the evening.

Discussions in the pub. Also an important focal point of ecology meetings

Day 2 started with the nutrient cycling session. The keynote address by David Johnson (University of Aberdeen) highlighted the importance of diversity to nutrient cycling. He discussed not just species richness, but intraspecific diversity, and how this can regulate nutrient cycling. He also drew attention to the diversity of chemical compounds in the soil and that neglecting this diversity hampers our understanding of nutrient cycling. He concluded that we still need multiple reductionist approaches to identify the most important drivers of nutrient cycles.

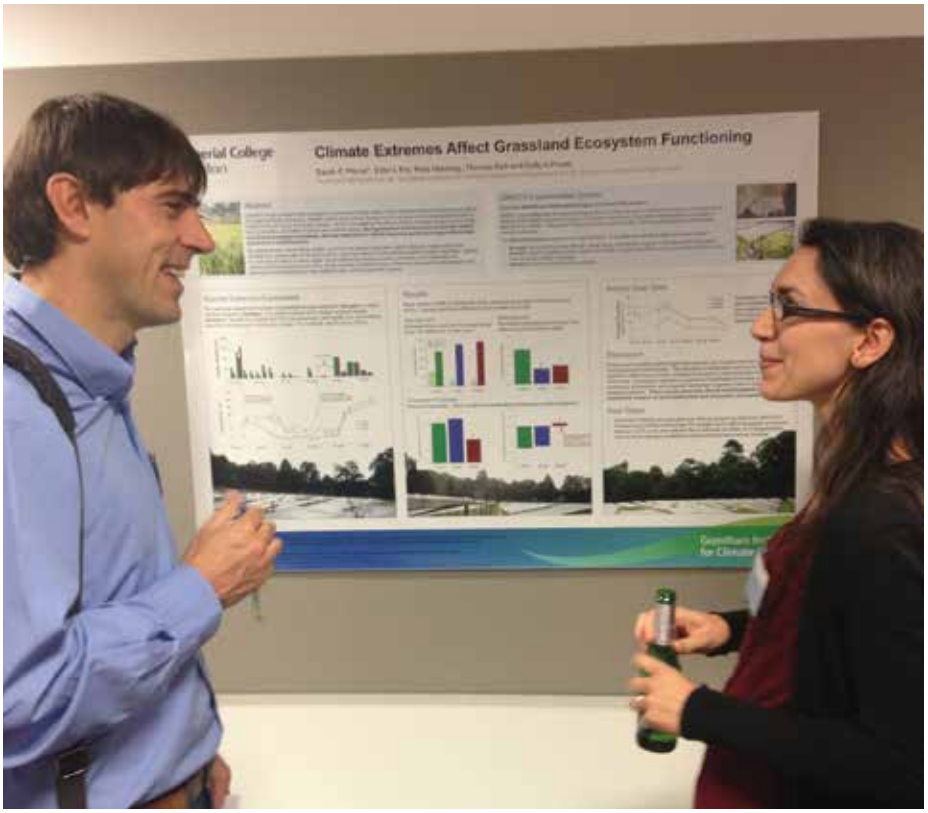
The nutrient session continued with talks addressing how C and N labelling in food web studies can give us insight into the relationships and functions of different components, how plant functional traits can help us to understand ecosystem process rates, especially if we tailor plant trait groups for our specific questions, and how root exudates can inhibit nitrification and this correlates with changes in microbial community structure. In the resulting discussion, chair Dario Fornara noted how frequently the word 'complicated' kept coming up and that highlighted how much more work there is to do. There is a need to scale up from mesocosms, and it was suggested that working in simplified field systems, such as some agricultural systems, might provide a way forward. Ideas for new studies, collaborations and much more continued to flow during the networking lunch that followed.

Session 3 focussed on communities and biodiversity. Jennifer Rowntree (University of Manchester) provided a stimulating keynote address that highlighted the importance of plant genotypic diversity for host-parasite interactions and for feedbacks between plants and soils. She proposed that the challenge is now to relate biodiversity both within and among species to large-scale ecosystem processes. Further talks in the session revealed that increased plant diversity can enhance beneficial bacteria, and that soil CO2 concentration at natural CO2 springs alters fungi, bacteria and archaea community structure. There were also a number of talks focusing on arbuscular mycorrhizal fungi (AMF). We learned that plant sex-specific interactions with AMF are due to differences in resource use patterns between sexes, that tillage affects AMF communities but effects depend on soil depth, and that AMF range may be limited by soil and climatic properties rather than host plants.

The session was concluded with an enlightening talk by Dote Stone about methods for obtaining large-scale datasets when budgets are tight. Her top three tips were (1) talk to people and collaborate, (2) create detailed methods and stick to them – if you can send out sampling packs to ensure the same samples are collected in the same way while making it easy for collaborators to do so, that's even better, and (3) think about your dataset and how you will handle it before you start collecting data.

The meeting was wrapped-up as it began, by Franciska de Vries. The student talk prize was awarded to Ellen Latz (Georg-August University Gottingen) and I was honoured to receive the student poster prize. Franciska encouraged members of the group to get involved, let us know what they would like from the group and any ideas for future meetings. Thanks were given to meeting sponsors: Wiley, Oxford University Press, the Global Soil Biodiversity Initiative, the Society for Experimental Biology, the British Society of Soil Science and, of course, the British Ecological Society. It was a great meeting and we look forward to many more in the future!

Sarah Pierce
Imperial College London
PSE Student Representative



Sarah Pierce with her poster

The science behind the schemes

Beth Brockett / PhD student at Lancaster Environment Centre
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During preparations for my PhD fieldwork it became apparent that farmers and scientists don't often get together to discuss the science behind ecologically-sensitive land management.

Participants discussed the problems associated with soil compaction

I was having a cup of tea with upland sheep farmer Will Rawling in his farmhouse kitchen and explaining to him how I would estimate soil carbon storage and nitrogen retention across his farmland when he commented that, although he had attended many events about the importance of carbon storage, no one had ever explained the science behind the process. I did my best to explain and in return Will talked me through silage fermentation. We agreed that it was a shame farmers and scientists didn't share ideas and information more often and some months later, with sponsorship from the Agricultural Ecology Group of the British Ecological Society and the Ecosystems Knowledge Network, twelve farmers, ten farm environment advisors and nine academics met at Will's farm to discuss a range of scientific topics pertinent to livestock farming in Northwest England.

The event started outside with three different activities. In one part of a field, Professor John Quinton (Lancaster University) gathered participants around a soil pit to discuss his work on soil compaction in the Eden Valley, and how, when combined with intense rainfall, compaction can lead to flooding – a familiar problem for many farmers in the area. The group discussed how reducing stocking levels and farm traffic could help prevent this and John described recent research into how species-rich swards can improve soil structure.

Dr Franciska de Vries (University of Manchester) then talked about her work as a soil ecologist. She demonstrated how hammering a length of drainpipe into the ground lets researchers "take

the field into the lab" to measure the nitrogen which leaches from the soil during rainfall and how these measurements relate to the soil biota and grassland productivity. Asked about climate change Franciska explained her interest in investigating soil system resilience in the face of drought conditions and how the characteristics of the soil microbial community are key to understanding this.

Fran de Vries explains the use of soil cores in helping to understand the soil microbial community

Nearby, Professor Richard Bardgett (University of Manchester), Dr Sue Ward and Catherine Baxendale (both Lancaster University) gathered farmers and advisors around what looked like an astronaut's helmet (and was in fact an Infra-Red Gas Analyser) to explain the basics of soil photosynthesis and respiration, and how carbon and nitrogen emissions are measured in the field. After a brief explanation Sue set the Analyser going to measure the amount of photosynthesis occurring under the grey conditions. The academics then described new research into how plant traits, such as root length and leaf size, affect carbon and nitrogen retention underground and how this links to the activities of soil microbes. Both farmers and advisors were astonished to learn there are more bacterial cells in a handful of soil than there are people on Earth. When Richard was asked which plants were best at encouraging carbon storage in a grassland system he explained that often lower-yielding species were better, but that research was on-going to discover which vegetation mixtures optimise food production alongside other priority ecosystem services, such as carbon storage.

Demonstrating the Infra-Red Gas Analyser

Over the course of the event the flow of knowledge travelled both ways; with one farmer describing an experiment he is running on his dairy farm which compares how quickly silage fields and sheep pasture absorb water. Over in the farm yard, local farmers Duncan Ellwood and Sam Rawling introduced the monitoring scheme on nearby Kinnerside Common. A collaboration between the commoners and Natural England, it aims to increase vegetation diversity on the common. The farmers are trained in plant identification and surveying "with the aid of a GPS, good eyes and a handbook" and paid for submitting information regularly.

Back in the farm workshop after coffee Dr Alan Blackburn and I explained our research which looks at the potential for using satellite images to analyse vegetation and estimate below-ground processes. Lively discussions continued over lunch, and after the event 94 per cent of attendees thought the event had been worthwhile, with a number of farmers and advisors subsequently contacting me for further information about the research discussed.

With reform of the EU Common Agricultural Policy and changes to the UK's agri-environment schemes likely to consider managing farmland to deliver ecosystem services like absorbing greenhouse gases, these conversations benefit all parties.

Feedback from farmers indicates it takes too long for scientific understanding to filter through to them, and many rely on advisors, who also feel they have limited access to appropriate science. So this kind of event is very valuable to them; many are even interested in getting involved with scientific research, and believe stronger bonds between farmers, advisors, scientists and policy makers could only be a good thing.

"This kind of event enables scientists to understand how scientific outputs are interpreted on-the-ground and stimulates ideas and collaborations" said Catherine Baxendale from Lancaster University.

"It is really important that farmers have a better understanding of how soils and everything that is stored in them work", according to host Will Rawling, who is currently Chair of the Cumbrian Farmer Network. "Much of what was discussed at the meeting was actually about good farming practice and if it helps to reduce damage to the planet then we all win. I think more events focusing on how sustainable food production can work alongside genuine environmental management systems, would be well received and valued by everyone, it gets us working together and sharing knowledge."

"Thoroughly enjoyed today", commented farmer Glenis Postlethwaite.

"Personally, I would like a whole day on each topic."

MORE INFORMATION:

Beth Brockett is a PhD candidate at Lancaster Environment Centre. Her PhD project is interdisciplinary – looking into the social and environmental implications of using satellite imagery to manage land for ecosystem services including carbon storage, nitrogen retention and food production http://tinyurl.com/lfwvv4q Email: b.brockett@lancaster.ac.uk

The event was sponsored by the Agricultural Ecology Group of the British Ecological Society and the Ecosystems Knowledge Network and was supported by the Cumbrian Farmer Network, NERC, Lancaster University and University of Manchester.

LETTERS TO THE EDITOR

FROM DAVE ROBERTS

Department of Life Sciences,
The Natural History Museum, London

The draft calls for Horizon 2020 (The European grant and subsidy framework for innovation and R&D) are expected soon, with the first actual calls expected in December. In the first week of September 17 current EU projects held a joint meeting (Biodiversity Informatics Horizons 2013; http://conference.lifewatch.unisalento.it/index.php/EBIC/BIH2013) in Rome that agreed a common goal, *sine qua non,* of predictive modelling of the biosphere. This is a massive challenge, more complicated than climate modelling, that will be decades in the realisation. In the short term, though, we need to work out what steps can be taken in the H2020 funding period. The European Commission have let it be known that they would prefer to see consortia formed in the open leading to broad, but focussed, collaborative proposals rather than the competitive bids that were usual in previous Framework rounds. It is also clear that we need to build better links between the various disciplines that can contribute, including ecology, molecular biology, microbiology, agriculture, socioeconomics, taxonomy, remote sensing and, of course, computing. We have set up a web site (http://h2020.myspecies.info) where those interested in joining consortia can register their interest and suggest projects that can lead to consortium bids. We hope that some BES members will sign up and help with this challenge.

Alex Hardisty & Dave Roberts (on behalf of the BIH 2013 programme committee: Eva Alonso LifeWatch Italy; Christos Arvanitidis LifeWatch Greece; Rosa M Badia EUBrazilOpenBio; Alberto Basset LifeWatch Italy; Palma Blonda BIO_SOS; Donatella Castelli iMarine; Alastair Culham i4Life; Frank Oliver Glöckner MicroB3; Gregor Hagedorn pro-iBiosphere; Alex Hardisty BioVeL; Jörg Holetschek OpenUp!; Yde de Jong PESI; Jacco Konijn CReATIVE-B; Wouter Los ENVRI; Nikos Manouselis agINFRA; Matthias Obst BioVeL; Dave Roberts ViBRANT; Soraya Sierra pro-iBiosphere; Aaike De Wever BioFresh; Anna-Maria Wremp LifeWatch Sweden)

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FROM R. F. PARSONS

Department of Botany,
La Trobe University

The important controversy around the death of botany raised in the June 2013 *Bulletin* (pp 54 – 57) becomes too bogged down by the trivial terminological issue – i.e. botany versus plant science. What we really need to know is the answer to this question – are there enough universities in the United Kingdom currently offering high quality advanced undergraduate courses in mainstream botany subjects like plant systematics and plant anatomy / morphology which lead on to properly supervised post-graduate research work? Information on this would let us judge to what extent botany has declined in the UK.

In my own (Australian) university botany department , the time spent by undergraduates on plant systematics, plant anatomy / morphology and any studies of plant groups other than angiosperms has declined markedly at the expense of plant molecular biology. An obvious problem has been that we did not replace our (now retired) plant anatomist at exactly the time when our large research group working on the developmental molecular biology of *Arabidopsis* badly needed training in advanced anatomical techniques. Decline in botany core subjects has similar serious implications for the training of plant ecologists too of course.

FROM TOM LA DELL

Landscape Architect
The Natural History Museum, London

Marcus Eichhorn is right about communicating so that a publication is comprehensible to as wide a readership as possible (*Bulletin* August 2013 p46). It reminds me of my time at the London Borough of Lambeth in 1970 when public consultation in Planning Policy was just starting. A first draft was circulated to the whole department for contributions and comments. One paragraph read "I think that the public will have difficulty in understanding some of these concepts". In the margin was written "That may well be true but they will not have half as much trouble understanding them as you have expressing them".

I have tried to write clearly ever since.

FROM CLIVE SPINAGE

"Knowledgeable naturalist"

Keith Kirby discusses the definition of ecology and the meanings which have been put upon it in the popular mind (Bulletin June 2013). I have always considered a suitable meaning of ecology to be scientific natural history. It surely stems from that. In a review of my recent book A*frican Ecology – Benchmarks and Historical Perspectives,* in what is otherwise a very complimentary review, your reviewer refers to me as a "knowledgeable naturalist". This could be high praise indeed, but I am unable to decide whether or not he meant this in a pejorative sense in that my work lacked scientific rigour. So I don't know whether to be flattered or not. I know I began in my schoolboy days as a naturalist, and perhaps I have now ended as one having passed through the doors of academia on the way. Along with other persons from all walks of life I expect to be contributing to the great annual butterfly count, the results of which will no doubt be analysed by an ecologist. Was Charles Elton first and foremost a naturalist and secondly an ecologist?

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OF INTEREST TO MEMBERS

GORDON CONFERENCE ON PREDATOR-PREY INTERACTIONS

The following announcement arrived just as the August *Bulletin* had gone to print and I was unable to include it in that issue. Most members will see this announcement after the December 8th application deadline, for which I apologise: but it looks a brilliant meeting. Gordon Research Conferences are an excellent forum and let's hope the trend towards including ecological topics more often will continue.

Alan Crowden

The first ever Gordon Research Conference on Predator-Prey Interactions will be held 5-10 January 2014 at Ventura, California. Gordon Research Conferences are recognized as the "world's premier scientific meetings", where 150-200 leading investigators from around the globe meet biennially for a full week of intense discussion of the frontier research in their field. The GRC Organization is a non-profit trust that presently organizes about 250 conferences a year (www.grc.org). These meetings are considered highly prestigious and as an ecologist I find it very encouraging that the number of GRCs on subjects based in ecology, such as Predator-Prey Interactions, is increasing, as the traditional focus has been on biomedical research.

Predator- interactions have shaped all life on earth and this underlying commonality helps explain the recent development of parallel independent research paths in many diverse fields. The theme of our conference is "From genes to ecosystems to human mental health" and our goal is to bring together a diverse range of researchers who would not normally interact, and have them discuss how each addresses the same phenomenon, which will undoubtedly lead to new synergies and new avenues of research.

We have put together an exceptional roster of international speakers, and each talk will be followed by intense discussion led by top researchers. Our conference will provide junior scientists and graduate students the opportunity to meet and discuss their work with the leaders in their field, and all will participate in discussing critical issues concerning predator-prey interactions. We are encouraging all attendees at this conference to contribute a poster to ensure that absolutely everybody has the opportunity to tell us about their newest research on predator-prey interactions.

The conference webpage is: http://www.grc.org/programs.aspx?year=2014&program=predator

Liana Zanette
Conference Chair

Associate Professor,Western University, London, Ontario, N6A 5B7, Canada

BUTTERFLY CONSERVATION: SEVENTH INTERNATIONAL SYMPOSIUM: SOUTHAMPTON UNIVERSITY, 4-6TH APRIL 2014

I am pleased to announce that our Seventh International Symposium will be held at Southampton on the theme: The ecology and conservation of butterflies and moths

We are inviting offers of papers or posters on relevant topics. On-line registration and abstract submission, (deadline 6th December 2013) and further information, can be found on www.butterfly-conservation.org/symposium

The Symposium will include the latest science of butterflies and moths and how science can help to reverse the decline of butterflies and moths, and their habitats. The programme also provides opportunities for Butterfly Conservation members and others to present papers or posters on practical conservation work and contributions will be welcomed. The Symposium will end with a forward look of future challenges, including the impact of climate change.

Keynote speakers include:

Professor Chris Thomas
(York University, UK)

Professor Christer Wiklund
(Stockholm University, Sweden)

Dr Tom Brereton
(Butterfly Conservation, UK)

Dr Bob Pyle
(Naturalist and writer, USA),

Dr Thomas Merckx
(Lisbon University, Portugal).

The proceedings will be published as a special issue of the *Journal of Insect Conservation*, deadline for paper submission will be Friday 2nd May 2014).

Nigel Bourn
Director of Conservation

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www.bigbutterflycount.org

ANOTHER CORRECTION TO THE JUNE BACK COVER CAPTION

The June 2013 back cover featured a photograph of BES Presidents past and present, which I foolishly claimed to represent, with three named exceptions, all Presidents still living at the time of the BES 75th Jubilee meeting. In the Editorial to the August issue I had to own up that we had omitted to mention Roy Clapham. Now my friend Peter Grubb has noticed that we also omitted Professor N. A. Burges CBE, an Australian botanist who became the first Vice-Chancellor of the New University of Ulster in Coleraine, Northern Ireland and who served as BES President from 1958-9. The omission is particularly heinous as I knew Alan as a co-editor of the Flora Europaea volumes published by Cambridge University Press, a role that he conducted with considerable expertise and huge charm. Alan died in 2002 and is greatly missed.

Can we value landscapes by combining natural and cultural heritage?

Budalen valley in Norway – a landscape featuring both natural and cultural heritage. Photo Kari Dahl

Of course we can! That's the simple answer to the question. Take anyone into a Scots pine wood, onto a raised bog, or through a hay meadow, and hopefully pretty soon you will see, hear, and maybe even feel its value. But what is 'it' that you value?

James Speed, Gunnar Austrheim, John Birks and Des Thompson

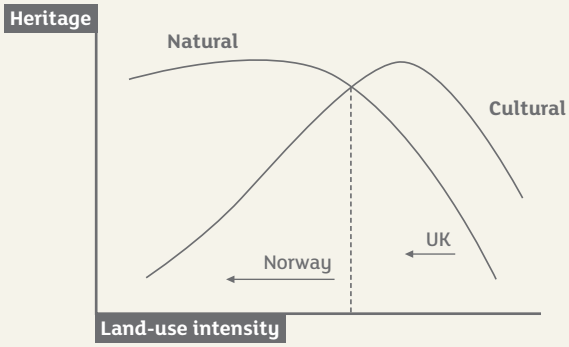
Depending on your particular interests and background, it might be the diversity of flowers, insects, or birds (the ecologists' view), the history and management of the land which has produced what you see (perhaps the geographers' view), or quite simply the beauty or your own special experience of the place (any of us!). At one level, we simply chime with some spots better than others – we favour some over others, and sometimes we can describe why this is so. But often, we cannot say why – which of course is one of the beguiling things about nature.

The trouble is though that, as ecologists, we have not been very good at trying to tease out why we value some areas more highly than others, except in terms of a whole range of metrics used to quantify species richness, diversity and abundance, and all manner of descriptors of habitats and ecosystems. So, many of our protected areas are founded on these principles – thus we have European and national conservation sites for birds, other animals, plants, habitats and geology, and in Britain, at least, 'Sites of Special Scientific Interest' – which are just that. But we also have National Parks, Biosphere Reserves, and other designations which are more about amenity, beauty, and landscape values – the so-called cultural heritage. Surely as people who predominantly enjoy nature, we actually need to find ways of bridging the gap between cultural and natural heritage values? There must be a way of drawing the two facets together into one which describes the wider and more wholesome importance and value of a place, particularly as cultural activities have played a major role in influencing nearly all landscapes in, for example, Europe (Birks *et al.* 1986).

Well, we thought so, and through a collaborative project (DYLAN: Dynamic Landscapes: long-term ecology of upland cultural landscapes) led by Norway and involving colleagues there and in the UK, we went about trying to draw together the threads of the different interests in managed mountain landscapes.

So, what did we do? Taking four protected mountain areas in Norway (Landscape Conservation Areas) and three in Britain (National Parks), we first described their natural and cultural heritage elements. Natural heritage elements include, for example, pristine habitats with relatively long continuity, the diversity of habitats and species, and successional dynamics under conditions of different levels of land-use intensity. Cultural heritage elements include hunting traps, modified trees and coppice woods, fences and corrals, and shielings (huts).

Then, we set about dissecting the various pressures on these seven landscapes – land-use and other factors – at different periods over several millennia, and attributing these to influencing cultural and/or natural heritage features. In this compilation and evaluation (Speed *et al.* 2013) we were greatly helped by 'expert opinion' from colleagues in Norway and Britain. Finally, we arrived at our conceptual model of how cultural and natural heritage values vary with land-use intensity in protected areas in our mountain areas.



The conceptual model of natural and cultural heritage shown along a gradient of land-use intensity

Our model tries to contrast the natural and cultural heritage 'values' of our three areas in the UK and our four areas in Norway along a major axis of land-use intensity. Three things emerged from this. First, whilst the natural heritage 'value' increases a little and then declines with land-use intensity, the cultural value increases markedly and then drops off at a higher level of land-use. Second, the level of land-use intensity is far greater in the UK, but the trend in Norway is greater over recent years (with wide-scale abandonment of traditional mountain pastures grazed by livestock). Third, at the point where the sum of the natural and cultural heritage values is greatest (x*), we have the land-use intensity that maximises natural and cultural heritage.

The seven protected mountain areas in the UK and Norway

So, where does this take us? Well, you probably think that it is self-evident that the natural heritage and cultural heritage vary in the ways we have described. Well, yes, but nowhere in the literature have we found such simple comparisons. And more importantly, nowhere do we find a systematic means of evaluation of such landscapes. Ironically, the closest and best articulation of these criteria is given by Derek Ratcliffe (1977) in the foundation stone of the selection of sites for nature conservation in Britain, with 'fragility', 'naturalness', 'recorded history', and 'intrinsic appeal' considered alongside 'rarity', 'diversity', and 'size' in judging the merits of sites. So why is it that we have not even attempted to integrate values across the spectrum of cultural and natural elements of nature? And how can we judge what is good or bad for a particular place if we have no systematic means of doing this?

Well, we are back, where we started, not in a wood, bog, or field, but on a Norwegian mountain flank, just above the forest with near-derelict summer dwellings and trees encroaching once-lush, summer-grazed pastures. We ask ourselves if the changes we see around us are 'good' or 'bad', and then we talk about sampling regimes for measuring floristic diversity and richness, and we may consider putting out some moth traps. We could have stopped at that, and done our bit for 'ecology'. But we did not – we cored the nearest mire and used a multidisciplinary approach with palaeoecology, archaeology and history to unravel the local land-use history and landscape dynamics. This long-term approach allows us to see the impact of human activities on landscapes and ecological dynamics over time. As an example, in our northernmost site in Dividalen, we see strong human influence from Sami reindeer herders from the 17th to 19th centuries in the forms of dung fungal spores, human modifications to trees, and shifts in local vegetation composition between pine forest and open grassland areas. Today's landscape is used differently, and with fewer semi-domestic reindeer, so without this long-term perspective we would have missed how the rich cultural history has influenced, and become a part of this important landscape.

The long-term ecological and cultural history of Dividalen in northern Norway (one of the seven protected mountain areas). Modified from Sjøgren & Kirchhefer 2012. This diagram shows that Sami reindeer pastoralism has affected the vegetation composition from early 17th to the 19th century.

Finally, we talked with the local group of farmers and other land-users including reindeer herders and hunters to try and understand what was important to them in this – their – changing landscape, and we challenged the different management institutions and ourselves to think keenly about the nature of past and present change, and what might be best for the landscape now and in the future.

We are still hard at it – thinking, talking, and trying to assimilate what we are learning so that we can answer our headline question. We sense we are getting a bit closer to the answer, but like children trying to tickle trout, we often fail to grasp our quarry!

ACKNOWLEDGEMENTS

We thank co-workers who have worked with us on this topic: Sally Johnson, Anders Kirchhefer, Mons Kvamme, Laszlo Nagy, Per Sjögren, Birgitte Skar, Duncan Stone, and Eva Svensson.

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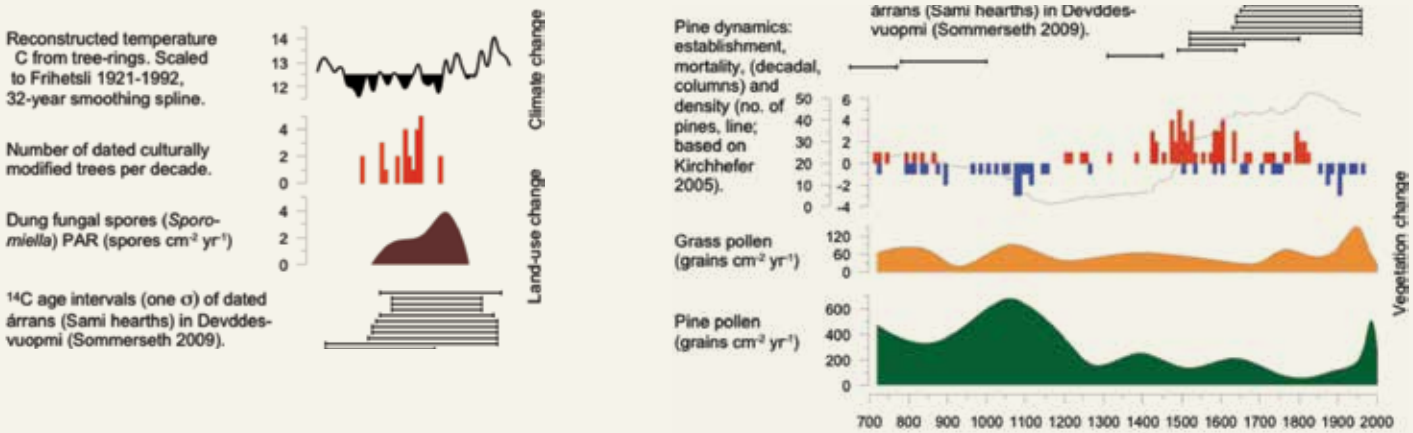
The DYLAN project http://www.vm.ntnu.no/dylan/index.php/english/

The ManEco project (Managing Ecosystem services in low-alpine cultural landscapes through sheep grazing) follows up on this work, inviting the input from an even wider range of stakeholders, and examining land-use change in an ecosystem services context. http://www.ntnu.no/vitenskapsmuseet/maneco



The long-term ecological and cultural history of Dividalen in northern Norway (one of the seven protected mountain areas). Modified from Sjøgren & Kirchhefer 2012. This diagram shows that Sami reindeer pastoralism has affected the vegetation composition from early 17th to the 19th century.

Stuart Pimm and Natalia Ocampo-Peñuela. Photograph by Gilberto Collazos.

Why *SavingSpecies?*

Stuart Pimm / Chair of SavingSpecies and Doris Duke Professor of Conservation Ecology at Duke University
savingspecies.org

As soon as I saw it, I knew it had to go. Turning off the busy coastal road east of Rio de Janeiro in Brazil onto dirt took me a few kilometres northwards. I drove past thin cattle: dozens of black vultures stood on the ground waiting for them to die. Only sparse grass covered the poor laterite soil. On either side, farther from the road was lush tropical forest that soon closed the cattle pasture to a narrow gap.

This is the Mata Atlântica — the coastal humid forests of Brazil. They once covered a million square kilometres — four times the size of Great Britain. An exceptional number of endemic plants and animals live here. Sadly, extinction threatens more of them than anywhere else in the Americas. That's because only about 7% of the forest remains, most of it in tiny fragments. To my right was one of the largest: the Reserva Biológica Unãio. The narrow strip of cattle pasture through which I travelled made Unãio an 'island', imprisoning the species within it, the isolation dooming many of them to extinction. That narrow strip was what had to go.

Half a lifetime earlier, I became passionate about real islands: wet, windy places, such as Inner Farne, Hilbre in the Dee estuary, and St. Agnes in the Scilly Isles. There, given rotten weather, some hapless bird would end up, blown far off course. I would add it to my life list. This didn't happen often enough, so with other twitchers I'd count the common species, and especially those that bred there. We had to be counting something. In time, annual bird observatory reports would print the data and the reports would gather in the archives of the British Trust for Ornithology. My colleagues and I published results from this massively crowd-sourced activity that spanned dozens of islands and many decades (Russell *et al.* 1995, 2006). Breeding populations on islands go extinct. Those with the largest populations, last longest.

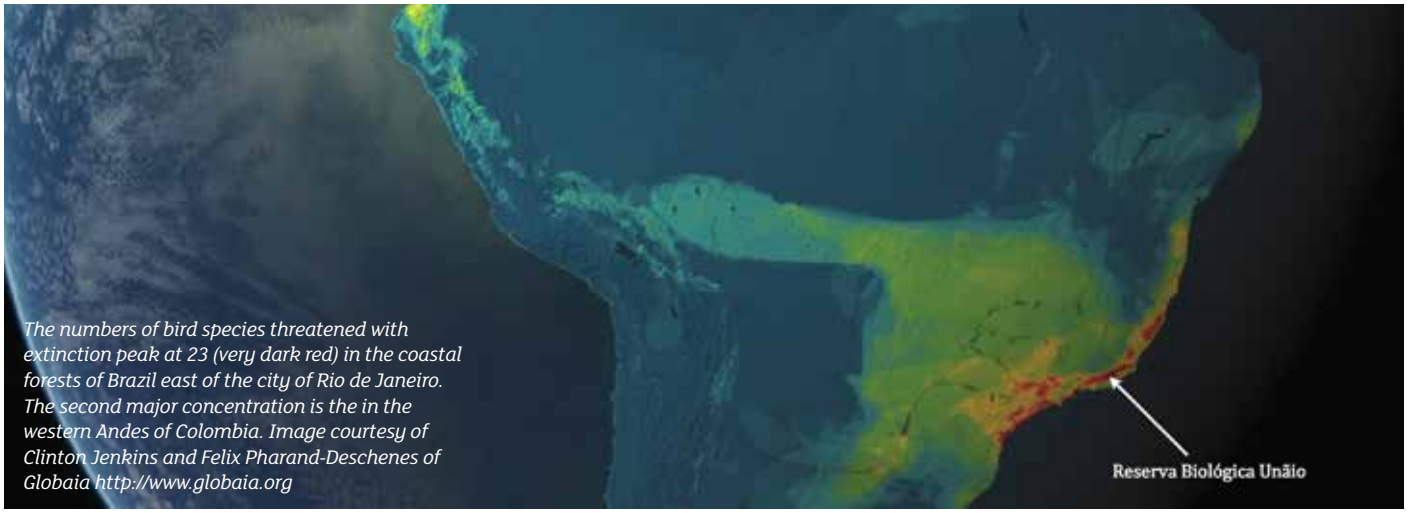
The same applies to forest 'islands' — remnant patches surrounded by a 'sea' of former forest cleared for cattle grazing. We'd analysed data from the project established by Tom Lovejoy in the Amazon (Ferraz *et al.* 2003) and from forest patches in Kenya (Brooks *et al.* 1999a). Following forest clearing, substantial fractions of the bird species initially present in the forest went extinct within a decade or two in fragments smaller than 10 km2.

Reserva Biológica Unãio was as an isolated patch of forest, separated from forests to the east by a cattle pasture along a north-to-south road. This is an old image. The Associação Mico-Leão Dourado, has planted forest and encouraged natural regeneration to restore habitat connections. Image courtesy of Google Earth.

We understood the larger issues too. The familiar species-area relationship makes strikingly good predictions of how many species will go extinct eventually from the known extent of deforestation (Brooks *et al.* 1999b). Globally, tropical deforestation is the major threat to species. We'd mapped out the greatest concentrations of species at risk (Manne *et al.* 1999).

All this told me that this damnable cattle pasture might eventually be responsible for more extinctions than any other scar in the Americas. http://www.youtube.com/watch?v=R3zjeJW2NVk&feature=player_embedded Our colleagues worked on golden lion tamarins. They told us these charismatic monkeys needed to escape their forest island prison to go forth and multiply. We knew the isolation of Unãio wasn't just about birds.

So, I founded a non-profit and called it SavingSpecies (http://www.savingspecies.org). I rounded up a science board — Tom Lovejoy of the Heinz Center, Peter Raven of the Missouri Botanic Garden, E.O. Wilson of Harvard, and Patricia Wright, of SUNY Stony Brook — all colleagues familiar with endangered species on damaged landscapes. The mission was to raise the $300,000 to help our Brazilian friends, the Associação Mico-Leão Dourado (http://www.micoleao.org.br) buy the cattle pasture and restore it.



The numbers of bird species threatened with extinction peak at 23 (very dark red) in the coastal forests of Brazil east of the city of Rio de Janeiro. The second major concentration is the in the western Andes of Colombia. Image courtesy of Clinton Jenkins and Felix Pharand-Deschenes of Globaia http://www.globaia.org

The first year, I raised $300 and felt exceedingly stupid. I got over it the next year, when we raised two-thirds of the money and partnered with the Small Grants for the Purchase of Nature programme of the IUCN Netherlands for the remainder http://www.iucn.nl/en/themes/restoring_and_conserving_nature/spn/. Our Brazilian colleagues bought the land, transferring its title to the Instituto Chico Mendes de Conservação da Biodiversidade, a Brazilian governmental organisation.

After that, things just got better. Local school children helped plant native trees, which grew quickly in this warm, humid climate. Last year, the forest was tall enough that tamarins were escaping from Unãio into the forests to which it now connects. The authorities are now trying to combine Unãio, the former cattle pasture, and those other forests to which they now connect, into a conservation unit that will protect 8,000 hectares. It will be one of the largest patches of lowland Mata Atlântica. The forest restoration is obvious from space — one can see the forest coming back on Google Earth, by comparing the historical images.

A baby golden lion tamarin drapes over its mother's back and eyes fruit hungrily.

Other species are moving *back* into Unãio, too. On a very good day, I learned students had found puma scat in the restored forest. "How can you get so excited about puma poop?" my wife asked. Pumas rule. Without them, a smaller predator, the tayra, had become more common and it killed tamarins, causing their decline in Unãio. With the connection restored, the pumas were back. I imagine the tayras feeling nervous. http://www.youtube.com/watch?v=yybIhS23XlQ&feature=player_embedded

So what next? The majority of globally threatened species are struggling to survive on fragmented landscapes. Much science tells us that reconnecting fragments is likely to be a very cost-effective way of preventing extinctions. Moreover, we have a very good idea where to look for projects from increasingly good species maps available online from the IUCN Red List, Birdlife International (Jenkins *et al.* 2013), and for plants, the World Checklist of Selected Plant Families, compiled at the Royal Botanic Gardens at Kew (Joppa *et al.* 2013).

Our next project was in Colombia, where a large patch of cloud forest was about to be snipped off from the main chain of the western Andes by deforestation. We funded the Colombian non-profit, Fundación Colibrí, to acquire, protect, and restore land to prevent this. Along the way, our Colombian colleagues have discovered a dozen or so species of amphibians and reptiles, previously unknown to science.

Yes, we're looking for projects globally. http://savingspecies.org/projects/submit-project/

Our business model is simple. You and your university (or other employers) are living in sin — and SavingSpecies can absolve you of some of it. We sell carbon indulgences. We restore land that then soaks up 5 to 10 tons of carbon per hectare from the atmosphere each year. It's very beautiful carbon, of course, and the science behind it came from the journals we all read and, indeed, of this society. We invite you to share our indignation about the scars that fragment our Earth and to join with us to make them go away.

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Digitizing the Elton archive

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Seventy years after they were begun, Charles Elton's Field Notes from Wytham Wood and surrounding areas are being transcribed into digital form suitable for dissemination on the internet.

Charles Elton (r) with Thomas Park in the 1950's. Photograph by E.W ('Bill') Fager, courtesy of Robert Elton

14 SEPTEMBER 1944. FIFIELD, OXON.... 2. p.36, C.E.

Near the main Burford-Stow-on-the Wold road a little stream runs in a secret grassy valley by the edge of an oak-ash-hazel wood [Tangley Woods], on the margin of which I shook one green lacewing from hazel leaf, and saw (very few) more in the big hazels inside the wood. Saw the same leaf-miner as C.E. 323 (n.k.) (324)

The stream is 4 - 7 ft. across, less than 18 in. deep, with stones at a few places, and muddy clay bottom - presumably calcareous. It runs a bit turbid, but limpets were very ab. on stones, and Hydrobia jenkinsi swarmed under stones (325) and on the mud bottom. One crayfish seen, and some caught here by the Prewetts the other day. Gammarus pulex fairly ab., some with red ? gregarine parasites. One queen ant on a stone in the stream not kept or recorded (326)

One small snail collected under log in the wood, and I saw Goniodiscus rotundatus. (327) Under loose bark of a willow stump by the stream at about 5 feet were Limax maximus and Clausilia rugosa.

On the stream pools Velia currens were common; one Gyrinus was seen, but no Gerris.

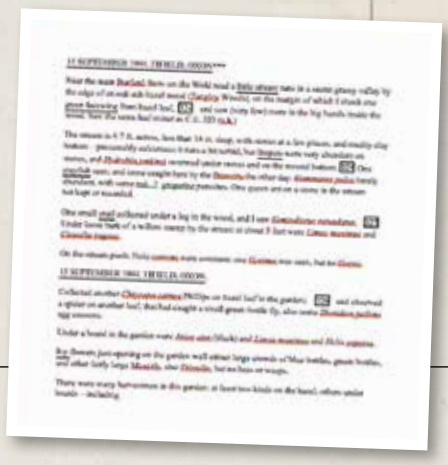
15 SEPTEMBER 1944. FIFIELD, OXON.

Collected another Chrysopa carnea Phillips on hazel leaf in the garden; and (328) observed a spider on another leaf, that had caught a small green-bottle fly, also some Theridion pallens egg coccoons.

Under a board in the garden were Arion ater (black) and Limax maximus and Helix aspersa.

Ivy flowers just opening on the garden wall attract large growds of blue-bottles, green-bottles, and other fairly large Muscids, also Eristalis, but no bees or wasps.

There are many harvestmen in this garden: at least two kinds on the hazel, others under boards - including



An Elton original page with its electronic transcript

Charles S. Elton, FRS (1900-1991) is revered as a founding father of field ecology and population dynamics. In the 1930s, he established and directed the Bureau of Animal Populations (Department of Zoological Field Studies) in Oxford and became founding editor of *Journal of Animal Ecology*. Starting in 1942, he studied Wytham Woods near Oxford and the surrounding farmland. Literally hundreds of D.Phil. theses and papers have developed seminal hypotheses and reported observations and experiments in the wake of Elton's work, making Wytham the most intensively studied semi-natural area in southern Britain.

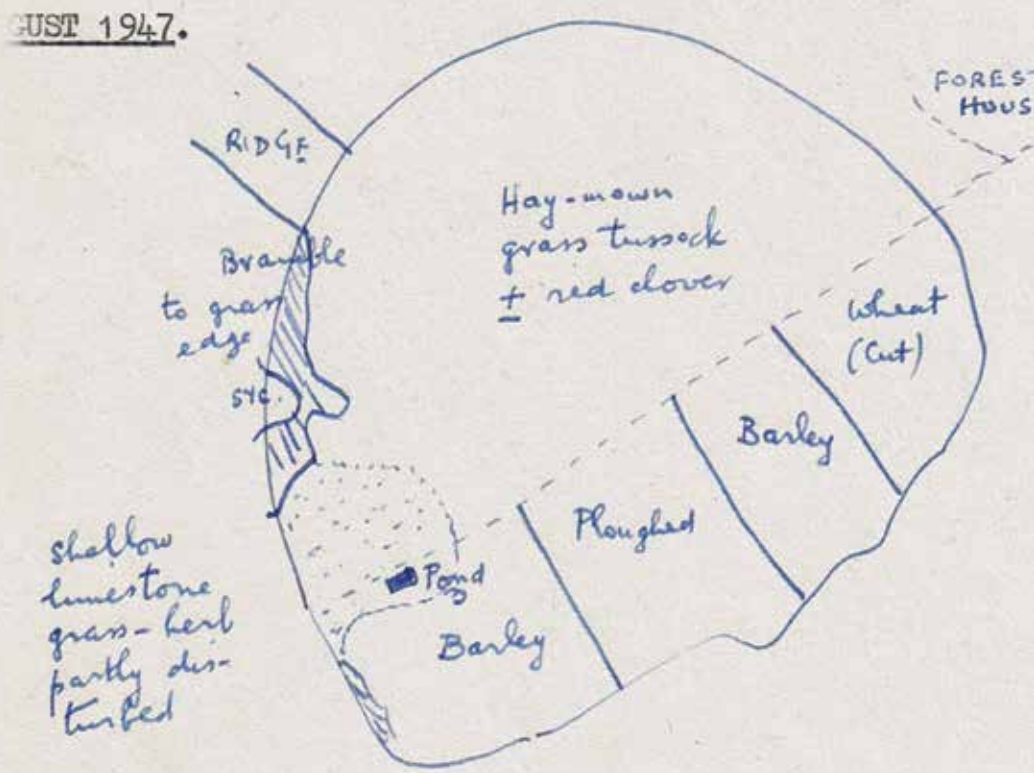
Elton is best remembered for his books; by modern standards, he published very little in journals. ISI finds only twelve papers between 1922-1975, of which only two have attracted more than 100 citations and only one substantial work is about Wytham (though he wrote several reports and 'notes' for specialist publications like *Entomologist's Monthly Magazine*). The primary observations upon which his books, and his reputation, rest consist of over 60 unpublished manuscripts (at least half a million words) entitled *'General Field Notes'* that for many years have languished unstudied in locked cupboards in the upper gallery of the Oxford University Museum of Natural History. Even Elton's scientific obituary in *Biographical Memoirs of Fellows of the Royal Society,* written by Richard (T.R.E.) Southwood and John R. Clarke in 1999, fails to mention their existence. As well as owning the copyright, the Museum manages the thousands of specimens whose collection is described in the Notes and Elton's own meticulous labels, displaying a few as the 'Wytham Collection'.

These notebooks started in 1942. Every page is headed with a date and location, often the weather conditions and time of day as well, carefully noting when GMT, single or double summer time were in force. The texts include extensive, sometimes poetic (his wife Joy was a poet), descriptions of landscape and vegetation, detailed lists of organisms seen, heard or collected (many with the original taxonomist and the source of full details), thousands of specimen numbers, and thoughts about hypotheses, experiments, museum displays and teaching exercises. Tightly reasoned, often lengthy, arguments identify unfamiliar species.

Although later appointed Reader in Animal Ecology, and best known for contributions to entomology and mammalogy, Elton had a deep interest in, and extensive knowledge of, geology, botany, mycology, ornithology, limnology, forestry and agriculture. He studied economic uses of the land as well as its natural fauna and flora, often reporting observations and ideas arising from conversations with farmers, gamekeepers, landowners and ordinary locals. Dozens of springs, streams and marshes are carefully mapped and their condition and inhabitants recorded many times over the years.

From September 1939, Elton and many other Bureau of Animal Populations (BAP) staff were deployed in rodent control for the war effort. These duties often took him to London and elsewhere, but Elton also found time for long walks, bicycle rides, journeys on trains and buses to farms and villages in and around Oxford and Wytham, the Cotswolds, Wittenham and the Rivers Thames, Cherwell, Glyme, Dorn, Evenlode and Kennet. Some notebooks record the more urban wildlife he encountered in the University Parks, around the Science Area, the Botanic Gardens, the attic flat at 98c Banbury Road that he shared with his wife and young family, St Hugh's College, the home of the BAP between 1947-1952, Corpus Christi College, where he was a research fellow and the houses and gardens of his many friends and collaborators, including the geologist, Donald Baden-Powell.

Agriculture and gardening changed greatly to support the war effort: large areas of former parkland were dug, ploughed or grazed for food production. But for much in the 1940s, there was insufficient machinery, fuel and manpower to mow verges or trim hedges, and many private gardens were neglected. Elton's account of the wildlife of these areas recorded many species of plants, butterflies and birds that are now rare or absent from southern Britain. His understanding of their relevance to the productivity of contiguous agriculture is remarkably prescient of modern 'set aside' and wildlife corridors, as advocated by the EU's CAP.Mosquitoes were a



Elton illustrated his notes with many drawings and maps.

special interest: he documented and tried to collect every mosquito that entered his flat. Fire-watching duty at the University Museum created opportunities for nocturnal observing of mosquitoes and the bats preying on them. A striking feature of these Notes is Elton's delightful, now sadly outmoded, 'work-life balance'. Household pests including flies, mice and clothes moths are described as thoroughly as the wild fauna. Some collecting forays were solitary but his wife, later his children and a variety of friends often accompanied him.

The 416 hectares of Wytham Woods and its adjoining lands passed to the University from the donor, Colonel Raymond ffennell, in stages during the 1940s. Much was rented to farmers who grazed sheep and ploughed even quite small areas for sparse crops. The Ministry of Supply took large quantities of timber and firewood, their lorries and equipment damaging tracks and paths. The locals fished in the Thames and its tributaries, shot or trapped rabbits, and collected wild birds' eggs, where they could.

Research students began work in Wytham from 1943; those in the first decade included Aubrey Manning, Monica Shorten, Peter Larkin, Dennis Chitty, Peter Hartley, Francis Ratcliffe, Amyan Macfadyen, C. Overgaard Nielsen, Richard Miller, Valerie Todd & Kitty Paviour-Smith from New Zealand. Elton valued the collaboration with other Oxford researchers, including biologists H.N. (Mick) Southern, Mary Laurie, David Lack, George Varley, B.M. Hobby, P.H. (George) Leslie, E.B. Ford, E.F. Warburg, A.R. Clapham, N.V. Polunin and Ashmolean archaeologists. O.W. Richards was a frequent correspondent on taxonomic entomology. Early in 1945, W.H. Thorpe came from Cambridge to search for an obscure river bug and the broadcaster and author, James Fisher, drove Elton in his car (a rare luxury!) to count rooks' nests in Blenheim Park.

Overseas researchers and administrators visited from shortly after the end of World War II. Elton took Professor and Mrs. G.P. Baerends from Gröningen for a walk in Wytham Wood on 24 June 1948, and Thomas Park a few days later, followed by Monte Lloyd, Eugene Odum, Frank Pitelka, Robert MacArthur and other eminent Americans. Conversations with Ian Clunies Ross of CSIRO Australia, whose visit coincided with the heatwave of August 1947, inspired these patriotic thoughts:

'The farm country panorama seen from Rough Common was lit up with the tawny wheat fields, and floated in the grilling sun and faint haze like tulips at dusk: a vast patch of small patterns... Counterpoint to its dense peacefulness and ancient settlement was the Australian tale of wild, hot, arid wastes, and swamps tenanted by feral water buffaloes, and racing herds of kangaroos on the plains, vast droughts and famines for the sheep, and strange reproductive dislocations in millions of sheep caused by a new clover.'

Elton's commitment to undergraduate teaching is evident from the start. His notebooks discuss sites in Wytham and elsewhere that could serve for student field trips and schemes for ecological projects. Examining the 'railway' ponds at Wolvercote in 1944, he notes their suitability for class study, not least because: 'This little depth would lower any drowning danger for students.' The Wytham Ecology Course started in September 1948 with 17 undergraduates from University College, London and became an annual event. The students were evidently working hard in the field and back in the laboratory. Their findings were catalogued in separate documents to which Elton's notebooks refer.

Not before time, Oxford University has decided to make its vast archive available on the Internet to scholars elsewhere in the world by digitising as much as possible. The Elton Archive will obviously be valuable to biologists, climatologists, agriculturalists, local historians and many others, so Wytham's current custodian, Nigel Fisher, called for a suitable volunteer.

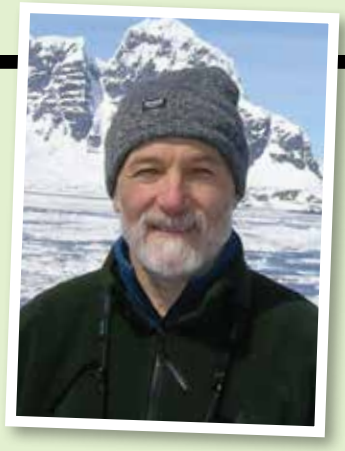
Elton typed his Notes with a cloth-ribboned manual typewriter on both sides of greyish quarto paper, with many hand-written additions, underlining, alterations, symbols, abbreviations and numerous geographical, geological, taxonomic, anatomical and personal names that baffle electronic optical character recognition. I use voice-activated software to dictate as much as possible and edit in type-face styles, specimen numbers and corrections by hand. Like many people educated before photography became easy, Elton could draw well and did so frequently. The text incorporates numerous sketch maps and drawings of insects, shells and plants, which I scanned and insert as .jpg images.

History may explain the notebooks' neglect: John Pringle accepted the Linacre Professorship of Zoology in 1963 on the condition that the semi-independent biological fiefdoms, Animal Behaviour, Edward Grey Institute of Ornithology and the BAP amalgamated into a united Department in a new, purpose-built, building. Elton and his colleagues, who had long enjoyed autonomy and classical elegance in the former Botany School building overlooking the Botanic Gardens, did not welcome such modern management policies – or architecture. Elton felt undervalued and excluded from decisions concerning the BAP and ecological research in general. Pringle even suggested that Elton's specimens and these notebooks were of so little value to modern biology that they should be destroyed! Fortunately Elton retired before the new Zoology building was completed in 1970 so he never actually worked there.

Elton's nemesis was also my D.Phil. supervisor: I was JWSP's only female research student – at least the only one to survive the ordeal. Elton would probably turn in his grave if he knew that someone indelibly associated with his tormentor is enjoying such intimacy with his precious notebooks. However, it may be of some comfort that throughout the late 1960s, Pringle was fully occupied with the many titanic battles over the creation of the physical fabric and forcibly-assembled personnel of the new Zoology and Psychology Departments, and the Honour School of Human Sciences, so he and I, like he and Elton, very seldom met.

Caroline Pond is emerita Professor of Comparative Anatomy, The Open University and Honorary Senior Research Associate in Zoology, Oxford University. She attended Elton's undergraduate lectures in the mid-1960s and hopes to complete this 'job' by the end of 2014.

So what's wrong with the older literature?



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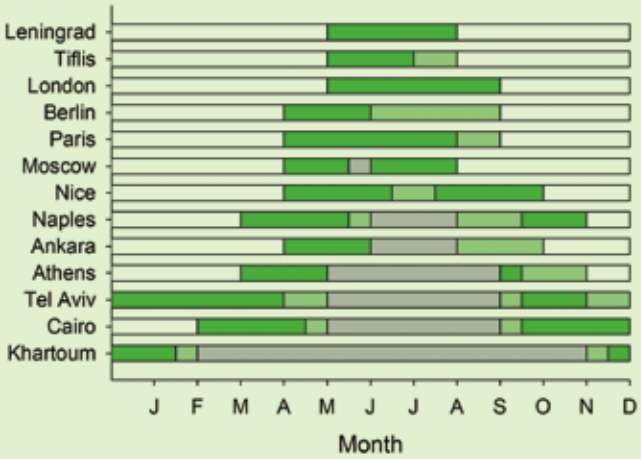
accl@bas.ac.uk

Call me old-fashioned, but I am a sucker for second-hand bookshops.

Many years ago I was casting my eye along a row of dusty tomes in Ely and my attention was caught by the name Clarke on an ecology text[1]. My interest piqued, I picked it up and came across a wonderful little diagram showing the latitudinal variation in the annual pattern of activity in the widely distributed ladybird, *Coccinella septempunctata.* What attracted me was the way the author had summarised a large amount of ecological information simply and directly. Science is a powerful way of understanding the world around us, but even the deepest understanding is of no value if it cannot be communicated to others. And so I find myself drawn to authors who can express complex ideas in clear and simple language[2], and those who can present their data with a lucid and uncomplicated visual style.

Several years later I was asked to write a chapter for an edited book, and assigned the topic of the influence of climate change on animal distribution. Here was an ideal opportunity to use the diagram I had found, to illustrate a point I wished to make about climate and seasonal activity. So I redrew the diagram and included it in the submitted paper. The paper duly went out for review and alongside the usual mix of valuable critique and helpful error correction came a stridently negative review. The centrepiece of this diatribe (we've all had them) was reference to this diagram, with the referee suggesting that I was lost in the Dark Ages and needed to read some up-to-date literature if the best I could come up with was a diagram from the 1930s.

SEASONAL ACTIVITY IN COCCINELLA



The offending diagram, showing latitudinal variation in the seasonal patterns of activity in the 7-spot ladybird, Coccinella septempunctata. The different colours in each bar show the periods when adult ladybirds are overwintering (white), fully active in summer (green shades) or undergoing summer aestivation (grey). The switch from red to pink marks the approximate timing of generations. Note how the period of summer activity increases from north to south, and that in regions where summer temperatures can get very high, summer activity is interrupted by a period of aestivation. This diagram was redrawn from figure 5.7 in Clarke (1954)1, though the original, cited by Clarke, comes from Bodenheimer (1938)[5].

The editor accepted my suggestion that it was unlikely that this particular species had evolved an entirely new physiology in the space of a few decades, and hence the diagram was still ecologically relevant. Not only that, it was such a neat diagram that it was worth using again. In the end the diagram did not make it into the final version of the paper, but the comment from the referee did make me think. Why was he or she so antagonistic to the older literature? Granted, some literature does go out of date as a field moves on, and some ideas prove to be wrong. But much of the work of earlier scientists remains accurate, relevant and worth reading. Reading the older literature is not only important to establish the historical and intellectual context for modern work, but it also a salutary reminder that the early pioneers of ecology were smart; they had often identified the key problems even though they were not always able to solve them.

The Danish marine biologist Gunnar Thorson (1906 – 1971) who undertook fundamental work on the reproductive biology of marine invertebrates, both in Greenland and in European waters. He overwintered in Greenland in the early 1930s as part of the Danish Three-year Expedition to Greenland, during which he undertook the first ever year-round sampling of any polar marine system, and established the basic conceptual framework for reproduction in marine invertebrates that we still use today. Photo courtesy Danish Marine Biological Station, Helsingør.

I have personal experience of the importance of reading the older literature. As a graduate student working in polar regions, I became interested in why so many of the local marine organisms tended to produce such large eggs. I pondered on this frequently whilst wintering over at South Georgia, and formulated a few ideas. On my return to UK I started to read around the topic, and eventually came across the work of the great Danish marine biologist Gunnar Thorson. I found his key papers in obscure volumes that had clearly not been off the library shelf in years, and read through these with increasing dismay. All of those clever ideas and insights I had developed during my own fieldwork, destined for the triumphant last chapter of my PhD thesis, were not so original after all. Gradually I realised that this deep-thinking ecologist had formulated the important questions in the field long ago (and I like to think this was during the long nights whilst wintering over in Greenland in the early 1930s). I just hadn't realised it because so few of the currently fashionable papers in the major journals cited his work. This was an important lesson in the need to explore the older literature in order to see how a field has developed intellectually, and thus provide a context for more recent work.

It is, of course, possible to go too far. Ecology is a relatively young science and it is rarely necessary to go further back than Darwin or Wallace in a modern biology paper. Galileo did lay the foundations of scaling theory, and I recently found an excuse to quote from the *Natural History* of Pliny the Elder[3], but a recent citation to Aristophanes' satirical play *The Frogs* in an article on bird plumage colouration is maybe pushing things a bit far. An honourable exception here is a quotation from Aristotle that is both relevant and appropriate, used by Paul Harvey and Mark Pagel to introduce a chapter in their book on the comparative method[4].

So how can we encourage the practice of consulting the older literature to students? When devising a final year course on marine macroecology a while back, a colleague and I decided to build each lecture around a key paper for the topic of the lecture, and to ensure that a good proportion of these were selected deliberately from the older literature. This was not just because they were then unavailable on-line, and hence necessitated the use of the library as more than just a convenient place to sit or write, but also because they might just go some way to prevent the question asked of another biological colleague recently: so who was this guy Elton?

FOOTNOTES

[1] Clarke, G.L. (1954). *Elements of Ecology*. London, Chapman & Hall.

[2] We all have our own favourites; mine is John Maynard Smith, whose popular introduction to the theory of evolution remains a classic.

[3] Pliny noted the existence of 'green plants' growing in hot springs near Padua. These were probably the cyanobacterial mats that grow there today, and Pliny was thus probably the first person to document the existence of hyperthermophiles.

[4] Harvey, P & Pagel, M. (1981). *The Comparative Method in Evolutionary Biology*. Oxford, Oxford University Press. For those at home in the blogosphere, see also Simon Leather's piece on appropriate citation at: http://simonleather.wordpress.com/2013/03/

[5] Bodenheimer, F.S. (1938). *Problems of Animal Ecology*. Oxford, Oxford University Press.

What use is small data

IN A BIG DATA WORLD?

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Shortly after writing my previous essay, on how ecologists detect and interpret patterns in data, I happened upon an article in *Foreign Affairs* by Cukier and Mayer-Schoenberger (2013) dealing with the rise of 'Big Data'. Their arguments led me to wonder how Big Data might change the way we do ecology, and in particular about the role of 'Small Data' that have traditionally been the bread and butter of ecology. Let me explain.

'Big Data' is all the rage. In areas as diverse as medicine, marketing, particle physics, bird watching, astronomy, crime prevention, genome sequencing, English Premier League football, transportation, social networking, weather and climate forecasting, or national security, massive amounts of data are being turned every which way to reveal unexpected patterns – the tiny needles in gigantic haystacks. The explosive rise of Big Data has been fueled by advances in computational technology, informatics, and cloud computing that have made it possible to assemble, explore, and visualize data at magnitudes previously only imagined in science fiction (recall Hari Seldon's "psychohistory" in Isaac Asimov's *Foundation* series). Search engines like Google can be used to track the preferences of individual consumers and target advertising, and smart phones can feed information about personal locations and movements into data banks that absorb tens of millions of records on a daily basis. Big Data, or 'data-intensive science', has been called the "Fourth Paradigm," following the earlier experimental, theoretical, and computational paradigms of how science is done (Hey *et al.* 2009).

Big Data may not yet be as widely embraced in ecology as in some other fields, but it is growing rapidly. Data from multiple sources are being gathered in digital libraries such as the Entangled Bank[1], the Australian Ecological Knowledge Observation System (AEKOS)[2], the National Phenological Network in the United States[3] or the Avian Knowledge Network (AKN)[4]; eBird[5] (a component of AKN), for example, contains several hundred million observations of bird occurrences, most submitted by bird-watchers. My colleague Grant Ballard tells me that a time-depth recorder on one of the penguins he studies generates a record of depth, temperature, light intensity, conductivity, and changes in speed every second, producing ~200,000 observations during a single foraging trip. Arrays of wireless sensors are being deployed in both terrestrial[6] and oceanic[7] environments to gather terabytes of environmental data.

So 'think big' may be the new mantra of ecology. Given the rising tide of Big Data everywhere, one might ask what value remains for 'Small Data'. Small Data come from specific studies, usually conducted over a short time or in a few locations. For nearly a century, these studies have been conducted to support (or, less often, to refute) concepts or theories in vogue at the time. Such Small-Data studies are the building blocks of modern ecology: observations and data have enriched theory, generating in turn new questions to be addressed by more Small-Data studies. In fact, many ecologists have distrusted analyses of large data sets; decades ago, some worried about being swept out to sea in a deluge of data. At that time, the concerns were with how to manage, access, and analyze all those data. This is no longer an issue—Bayesian statistics, GIS, spatial modeling, radio-tracking, information-theoretic analyses, satellite imagery, and other tools and methods have eased the data-management challenge and sharpened the resolution and rigor of Small-Data studies. But some reluctance to embrace Big Data in ecology remains, for two reasons.

First, data gathered for particular studies carry with them the idiosyncrasies of assumptions, methods, study design, time and place, scale of investigation, and other factors, all of which are manifestations of the questions asked and who asks them. Combining many such studies to make Big Data encapsulates and magnifies this heterogeneity, blurring the sources of variation and obscuring the underlying assumptions. It may be, as some Big Data proponents argue, that the inaccuracies of heterogeneous and messy data are overwhelmed by the vast quantity. One can't help but feel, however, that something important has been lost.

Second, many Big Data arrays in ecology rely on the contributions of individuals or Small-Data projects to a shared data pool. Yet many investigators have felt

a hesitancy to share their hard-won data, even beyond the point where all options for publication have been exhausted. Nonetheless, making data available through repositories or 'data commons', with standardized metadata to guide users, is clearly on the rise, and is now mandated for projects funded by the National Science Foundation in the United States. Hampton *et al.* (2013) have suggested that those who do not participate in data-sharing may "run the risk of becoming scientifically irrelevant." In this view, data that are not shared might just as well not exist.

Big Data, however, is about more than assembling massive data banks or data sharing. Big Data portends a fundamental change in the way science is done, perhaps especially in ecology. For the past half-century or more, ecology has been in a deductive phase, testing hypotheses or addressing questions prompted by concepts and theories. Big Data instead advocates a largely inductive approach, in which the data collection is not directed by particular questions or theories. Using an expanding array of analytic and visualization tools, massive data sets can be mined for unexpected patterns or anomalies. One does not need to know beforehand how the data are to be used, and sampling—the underpinning of a good deal of modern ecology—becomes unnecessary. It's not quite aimless mining (after all, early gold prospectors didn't dig just anywhere, but had a pretty good idea of where to look), but neither is it constrained by particular questions or theories or by the persuasive power of preconceptions, which can lead one to see what one wants to see in the data.

The real paradigm shift, however, may have to do with causation. The search for patterns in massive data sets emphasizes correlations. Some proponents of Big Data argue that the huge amount of data should inspire sufficient confidence in the correlations to allow conclusions to be drawn and actions to be undertaken without understanding the underlying causes. As Cukier and Mayer-Schoenberger put it in their *Foreign Affairs* article, "we will need to give up on our quest to discover the cause of things, in return for accepting correlations." If this is so, the adage that 'correlation does not imply causation' that has been drilled into every student in introductory statistics will become irrelevant. The implications of this shift are profound. In science, the detection of a pattern, whether through a few observations or mining of large amounts of data, has long been just the first step. The underlying processes or mechanisms that cause the pattern must also be determined if we are to have robust knowledge and understanding and a reliable foundation for applications of the science, such as predicting the effects of natural-resource management.

Don't get me wrong. Big Data will enable us to uncover patterns we have scarcely imagined. The development of digital libraries and data commons will foster a welcome openness among scientists. Advances in informatics and computational capacity will transform ecology. It's an exciting time. But Small Data still has an important role to play. Mining massive data may yield bountiful correlations, some of which are spurious, some nonsensical, and some revealing of Nature's well-kept secrets. The ability to distinguish among these—to separate the wheat from the chaff—is honed through immersion in detailed studies and observations of particular systems. So long as we continue to seek causal explanations of what we uncover, asking 'why' as well as 'what', the patterns that emerge from Big Data will prompt new, fine questions that have not been asked before. Interpreting those patterns will depend on the insight, intuition, and understanding gained from Small Data.

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"So 'think big' may be the new mantra of ecology. Given the rising tide of Big Data everywhere, one might ask what value remains for 'Small Data"

FOOTNOTES

[1] http://www.entangled-bank.org.uk/doc/about.php

[2] http://www.aekos.org.au/

[3] http://www.usanpn.org

[4] http://www.avianknowledge.net/content/about/; see Kelling *et al.* (2009)

[5] http://ebird.org/content/ebird/about/

[6] http://www.cens.ucla.edu/; see Borgman *et al.* (2007)

[7] http://www.oceanobservatories.org/

LOSE *– the –* BEARDS!

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"So, what is Ecology?" I ask the handful of friends that sit with me in a central London pub, clutching the one drink that we undergraduates can afford. "And, why is it important?" This'll stump them, I think. History, English, Classics, PPE students don't know about this sort of thing, I think.

As we sit as far from nature as you can get in England, they lend their metropolitan thoughts, and I prepare some passionate hand gestures.

I was warmly surprised. Despite the toe-curling 'something to do with being Green' and 'it's about birds and flowers' there is generally an okay level of comprehension. Words like 'webs' and 'networks' are bandied about. The classicist says something pretentious about ancient Greek houses. "Beauty… fragility…endangered". All nice stuff and I swig my pint happily, waiting for more.

But only one friend goes beyond the romantically idealised vernacular that we learn as apostles of Wordsworth and Constable. "Understanding ecology means understanding our environment and how to live sustainably within it". He has the inkling that it's about more than preserving nature for moral and spiritual reasons; that, because of the notions of systems and relationships, the economy, society, health and wellbeing are all underpinned by this abstract thing ecology.

It is baffling why this group of bright things can talk comprehensively on party politics, Kafka and football, but only one friend seems concerned about how humanity lives on this planet as well.

THE PROBLEM

This is a small sample of intelligent students but it's pretty representative of those studying at universities, and is enough to make the point that ecology is not high on the list of concerns of the future leaders of the land, and not a national priority.

And as we continually see in the news – and crusaders such as Ben Goldacre and Mark Henderson are starting to swing the spotlight on this – this dismissal of engagement is mirrored in broader environmental issues, and indeed throughout the whole of science.

This is surprising considering that science is the foundation rock for everything else that teeters on top of it, yet public understanding doesn't balance this out. Science remains in the domain of scientists, and this is a dangerous game.

THE SOLUTION, IN PART

So what is to be done about it? This is a difficult question that hasn't really had a good answer yet. There are, however, small ways in which to tilt the balance towards a safer level, chipping away at this wall of misunderstanding. One such method is to demonstrate to people the importance of science through television, radio and magazines.

While it's impossible to engage the uninterested, it is possible to interest the unengaged. Look at the wonders that Brian Cox's television shows have done to the Physics undergraduate uptake. And while that's due to the 'cool' factor (these sixth formers aren't signing up because the feel physics is important to the world), it shows how powerful mass media can be.

Such media can be used cleverly. Directed points are more effective; a farmer is more likely to become interested and concerned by the notion of ecosystem services when she understands that there's money involved,

"While it's impossible to engage the uninterested, it is possible to interest the unengaged"

and so wouldn't featuring biodiversity science on Radio 4's Farming Today be good? An investment banker is more likely to want to protect the coffee plantations he invested in if he knew it would get him more money; why not have agronomy in the Financial Times?

STUDENT GROUNDING

This directed approach is what was in mind when a friend and I set up a popular science magazine at our university. The University of York's *Spark Magazine* is written by students, read by students, and aims to engage the whole student body with what students are interested in. Nestled alongside the standard pop-science articles in the magazine, we try to include pieces on science-in-politics for the politicos, science-economics for the economists, science-history, science-art and healthy doses of science-booze, sex, and clubbing.

For instance, we recently included a feature on campus birds (no, not those kind). The University of York has the largest plastic bottomed lake in Europe and has a suitably large population of waterfowl that go with it. In with the interesting facts about the creatures that peck at our ankles we could slip in important information on the low soil and water quality that result from the tonnage of excrement each year. Student newspapers are often little more than a voice-piece for nutters, with student journos enjoying notoriety as opinionated and ill-informed spouters of fatuous babble. Most sensible students cringe when reading some 18 year olds' take on the crisis in Syria, especially when professionals are paid to do a proper job at such things. This is slightly unfair to those who report on real issues, such as nightclub closures and kebab van scandals; proper student journalism.

However, science is different. It's difficult to have an opinion over sub-atomic particles, and when it's a case of giving science publicity, then more is better. Even with contentious issues such as GM crops and the nuclear debate, this presentation to the student populace outweighs potential biases, and allows the reader to go further with it in The Economist, New Scientist and other 'serious' publications.

We try to report on local and university science stories as much as possible, in an effort to engage further with those around us, and as one of the UK's six designated science cities there is certainly a lot to cover. One example is our featuring of the opening of the York Environment Sustainability Institute this spring, which was jointly hosted with the BES. Bringing such an event to the student attention adds to the Institute's gravitas, and builds the potential for links with undergraduate studies and activities.

Despite our best intentions, most students try to be cool. While being seen reading a science magazine wouldn't faze them, having a magazine that's overtly uncool and enthusiastically anoraky won't help boost readership either. This is a serious consideration; I hate to say it, but someone who doesn't wear walking boots indoors, a woolly hat in summer and an unkempt beard is going to have more success engaging with the non-scientific community than one who falls into such an eyebrow-raising stereotype.

We're back in the pub. This time we're in rural Oxfordshire, with the whir of combines outside bringing in the last of the harvest; one step closer to that abstract notion of nature that my friends tackled with so valiantly. Here, I feel, is safe territory in which to reveal to you that I'm not an ecologist but a chemist. Yet the same issues and same importance runs throughout all of science.

I think of asking my friends again why ecology is important, but this is a waste of breath. Instead, they need to be informed of its relevance to their field; they need to relate to it. They'll relate to things they're interested in, they'll relate to fun, and they'll relate to sharp dressed ecologists. And while my fashion sense is questionable at best, I might take the liberty of ending on a sartorial note: Ecologists, lose the beards.

Rant & Reason

Leave it alone!

A rant by Markus Eichhorn

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The ancient beech forests cast a deep shade as we wandered through piles of litter and the husks of last year's mast. With evident pride, the manager of this German reserve gave his guests a backstage tour, glad to share his observations with fellow spirits, all of us endlessly fascinated by the business of trees.

At one point he paused to point out, on the opposite ridge, a patch of planted conifers, which had succumbed to disease and were now in the process of gentle degradation (decay class three, for the connoisseurs). What, someone asked, was he planning to do with that area? He looked faintly bemused by the question. What was there to do? The trees would eventually fall down, then rot, then they would see what came next. It would be interesting.

Imagine, if you will, having the same conversation in the UK. Those dead trees would have to be felled, removed, tidied up. They were, after all, an introduced species, and it would be abhorrent to allow them to remain. New seedlings would have to be planted, locally-sourced native stock of course, none of that frightful sycamore or sweet chestnut. And were that not reason enough to rev up the Stihl, there's always health and safety – what if the trees were to fall on someone? The l*aissez-faire,* wait-and-see attitude towards management would be anathema. The forest must be returned to nature, by force if necessary.

This contrast struck home in a similar situation a few years later, when a British warden informed me that he saw his job as being a light manager, supporting advance regeneration by preventing the canopy trees from closing in. My suggestion that it might be easier to leave the trees to it – after all, they had coped perfectly well before humans turned up – was summarily dismissed. Natural processes couldn't be relied upon to produce the type of natural woodland he was interested in. He would have been appalled by our Teutonic beech forests. So little understorey! Scarcely a seedling in sight!

As an undergraduate I had the privilege of being taught by Oliver Rackham, in rambling lectures that soon diverged from the class notes into speculative digressions, drifting far beyond the allotted time. Hugely enlightening but a nightmare for revision. Rackham's 'The History of the Countryside' contains one of the most influential arguments in popular ecology, leading to now widespread recognition that our British landscapes are a palimpsest of ever-changing management over thousands of years, making everything we see the product of human intervention. Nothing remains that is truly wild, and many of the habitats we cherish exist only because our actions have kept them that way.

There has, however, been a flip side to this realigned view of British nature, which is the belief that managed systems should be maintained for their own sake, often over and above other considerations. Frequently interventions are justified with the excuse that it's for the benefit of 'biodiversity', a word which once invoked so often discredits the argument it supports. The old joke holds true that the best way to improve the biodiversity of your forest is to chop half of it down. The intermediate disturbance hypothesis tells us as much; we are simply welcoming in ruderal species that were artificially abundant in recent history.

Personally I gain no pleasure from walking in the Lake District. I feel nauseated by the eroded terrain of barren, denuded hills, maintained by perpetual grazing. Other people seem to enjoy it though. I have no objection to maintaining cultural landscapes, so long as this is recognised for what it is – gardening. When we encourage the species and structures we prefer, and discourage those we don't, it is no different in principle to keeping the bindweed off our rambling roses. When we create new habitats to draw in our favourite species, it is not conservation, nor even restoration. A value judgement is being placed on which are the 'right' species, and nature is not allowed a place at the negotiating table.

Returning to those prolonged classes in the stuffy room behind the botany library, one of Rackham's maxims stuck with me. Whatever the starting conditions, 'natural' is what takes place in between human interventions. Conservation is inherently conservative, whereas nature releases an unbounded liberal spirit. Sometimes I wish we could learn to walk away, and watch from a distance.

Where to draw the line on intervention?

A response from Keith Kirby

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Most conservation in Britain is about active land management. We live in a cultural landscape that has been highly managed for centuries if not several millennia: much of what the conservation sector values is the result of that intervention.

One particular consequence of the intensification of farming and forestry practices over the last seventy years is that many species and assemblages are now confined to small isolated patches of countryside.

Sites will change whatever we do. How they change depends on our land-use choices, including the option, in places, of leaving sites alone. We may try to slow that change; try to maintain the species that we have inherited, whether in meadows, coppices or heaths, because people do value such things. We may try to do this by mimicking past management practices; or we may do new things like deliberately create reed-beds to boost bittern numbers. We decide what we want and try to keep it.

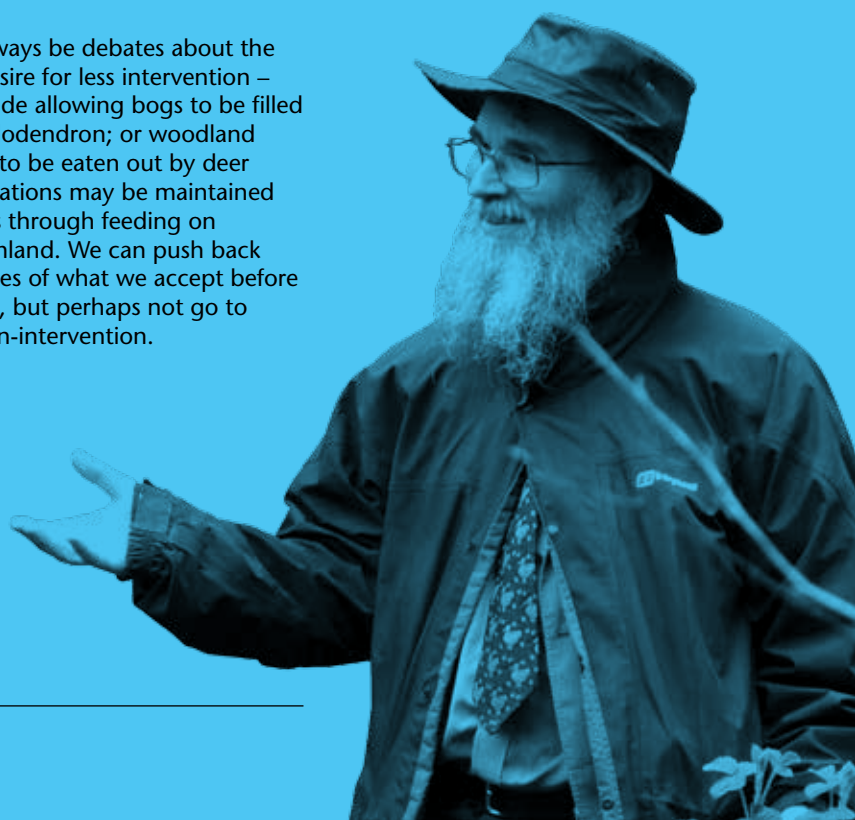
We should also explore the consequences of not intervening so much. Almost certainly there will be species losses as conditions change. These might be temporary – in a former coppice woodland left alone gaps may eventually re-appear creating conditions for the open phase butterflies or plants to come back. However given the small size and isolation of many woods now the species might not make it. Similarly some of the species that might be expected to benefit from unmanaged high forest (dead wood beasties for example) are pretty poor colonists as well. We could end up with more natural but much poorer systems than at present: which is fine as long we are happy with that outcome, for that site.

Management is usually just a substitute disturbance measure. The small size of most conservation areas in lowland Britain makes it more risky to rely on natural processes to send a storm, disease outbreak, windstorm, herd of bison through the site sufficiently frequently to create a disturbance somewhere, compared to the situation on the Continent or in North America. However, the conservation sector has been considering whether some large sites, existing or newly-created, might be managed using a less interventionist approach. This has attracted the name 'rewilding' and it will be interesting to see how areas where it is being explored, such as in Ennerdale in the Lake District, develop.

There will always be debates about the limits to a desire for less intervention – do they include allowing bogs to be filled up with rhododendron; or woodland understories to be eaten out by deer whose populations may be maintained at high levels through feeding on adjacent farmland. We can push back the boundaries of what we accept before we intervene, but perhaps not go to complete non-intervention.

We cannot assume species will survive because 'they coped perfectly well before humans turned up': we have changed the area they have available to them and the environment in which they live. Maybe Markus's forests only really got going when our ancestors helped to eliminate the mega-herbivores – a pretty big intervention if that were the case!

Meanwhile, despite the efforts of the Forestry Commission, Wildlife Trusts and Conservation Agencies, there may be more broadleaved high forest in Britain which is not subject to active intervention across the country than at any time over the last six hundred years.



Rant & Reason

The slow pace of change in ecology

A rant by Steve Cousins

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Ecologists, and policemen, seem to be getting younger. The vitality of the INNGE group (International Network of Next Generation Ecologists pronounced *in-jee*) at the INTECOL 2013 London Congress confirmed this.

The excitement that their sessions generated was stimulating for all ages. For me it recalled the vitality of the first INTECOL Congress in 1974 held in The Hague. That Congress sought to build a very big picture of how the world's ecosystems work (van Dobben *et al.* 1975). This was to be achieved by integrating the findings of the 10-year long International Biological Programme (IBP) where compatible measurements and analysis had been applied to all the world's major ecosystem types. Just about all the big names of the subject presented at the Congress (the brothers Odum, Margalef, Patten, etc.) and the accumulated effect was overwhelming to a then young ecologist such as myself. Yet all was not well at the end of IBP. The big picture proved elusive and the reaction of research ecologists (and funding) was to move away from full ecosystem scale and concentrate again on smaller scale studies with few species; topological food-web properties rather than energetics.

So how does Ecology look seen through the eyes of the London INTECOL Congress some 40 years later?

"we seem to have moved from ....ecology as a cabinet of curiosities to a new .... cabinet of dynamic curiosities"

Well, very busy, we seem to have moved from Bob May's reflection on early ecology as a cabinet of curiosities to a new or contemporary cabinet of *dynamic* curiosities in which different modules of few species are more elegantly understood, while the bigger picture sought at the first INTECOL Congress still evades us. We have progressed but are we progressing fast enough given the challenges of demands on ecosystem services, of climate change and the dark forces of pathogens and parasites?

So that's my Beef, my Rant – ecology is not moving forward fast enough to meet its big challenges.

How do we speed up? Ironically the fascinating plenary session on political engagement provided one model from the Office of the Chief Scientist (Bob again) where it was said that their Model for problem assessment was to be careful to establish a wide range of scientists' views including maverick views of the problem and their potential solutions and then move on to analyse the proposals. It would be good to see us put this into practice in our own discipline.

Why don't our textbooks take this approach and include a section towards the end of each chapter, which seeks and lays bare disagreements over concepts, terms and approaches? In this way the next generation of ecologists will at least open their minds to new starting points for solutions more quickly.

But can Ecology as a discipline take criticism? When in *New Scientist* I published (Cousins 1985) a critique of IBP's trophic level approach and proposed a return to body size analysis of whole food chains I received a stern rebuke from Frank Golley, President of the Ecological Society of America saying: "don't rock the boat". Closer to home when *A Critique for Ecology* (Peters 1991) was published, John Lawton's review of the book in *Nature* reprimanded those who had sanctioned its publication; I am proud to say I reviewed the manuscript for CUP's editor Alan Crowden, now of the BES *Bulletin*, and strongly recommended publication. We need to try to learn from informed and constructive critics such as Rob Peters, which is why I have nominated him for the 'Rant' picture here. Sadly he died in 1996 aged just 49.

Professor Robert Henry Peters (1946-1996)

Now here is some real criticism. I am reminded of Michael Ghiselin (1987) who said 'ecologists are unclear about the nature of their fundamental units and about what such units do'. That's pretty serious and the statement remains deeply challenging.

For starters I will throw in the terms 'ecosystem' and 'trophic level' both of which have important definitions in young Lindeman's 1942 paper that was the basis for IBP and both, in my view, are worthy candidates as dysfunctional terms if we take Ghiselin's statement to heart. 'System' is a weasel-word full of subjectivity, such that we can set system boundaries with abandon and still sound scientific. But this is at the cost of actual science and assessing repeatable properties wherever we view *eco'systems'*. I know what a human object is, e.g. the human being, but a *human 'system'* can be pretty much anything, so it is with ecology, but we lack the ecological object. In that spirit what we think of as ecosystems are perhaps 'Photonsheds' (Cousins 1990) catchments of solar energy that pass assimilated energy through the food web to the local top predator; they then have Size (measured area/volume), biodiversity of the area and can integrate the dynamic curiosities found there.

In one of the Congress coffee breaks I discussed the pace of change in Ecology with BES President's Medal winner 2013 (!) Dave Raffaelli who made the insightful remark that it is the lens through which you view ecology that determines how you make progress in the subject. My ego was stroked to find that Dave had recently cited my own attempt (Cousins *et al.* 2005) to change the lens on how trophic interactions are measured and modelled in order to resolve the failure of trophic-level based ecosystem dynamics. From The Hague in 1974 it has taken me 30 years to get to that point for terrestrial ecosystems. While at sea, Julia Blanchard's paper to the Congress integrating body size structures of fish species in the North Sea showed just what the IBP folk were trying to achieve even if it took 40 years to deliver it. Blanchard's was a spectacular piece of work. Rob Peters would certainly have applauded it. So we are making progress, we just need to speed up and see well-informed criticism as a useful motor for faster change.

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FIRST ACCREDITED DEGREES ANNOUNCED

CIEEM was delighted to announce its first accredited degree and degree pathways in July of this year. The accreditation process was developed by the Training, Education and Careers Development Committee as a tool to recognise those undergraduate and taught Masters degree programmes that provide students with the knowledge and skills that employers in our profession are generally looking for in graduate applicants. It was influenced significantly by feedback from employers and from early career practitioners working in applied roles.

Students following an accredited degree will cover all of the required content and quantity of practical work required by the scheme. For a degree pathway it is only the required combination or combinations of core and optional modules that are accredited.

The following degrees have been approved by the Governing Board for accreditation:

University of Greenwich
MSc Environmental Conservation

Harper Adams University
BSc(Hons) Countryside and Environmental Management

Manchester Metropolitan University
BSc(Hons) Ecology and Conservation

Nottingham Trent University
BSc(Hons) Biological Sciences (Ecology and Environmental Management)

The following degree pathways have been approved by the Governing Board for accreditation:

Manchester Metropolitan University
BSc(Hons) Environmental Science

BSc(Hons) Environmental Management and Sustainability

The next group of accredited degree/degree pathway applicants are currently under assessment and those that are successful will be announced in January.

Further details of the accreditation scheme and the closing date for the next round can be found on the CIEEM website at www.cieem.net/accreditation

BEST STUDENT PROJECT AWARD

CIEEM has expanded its annual awards and introduced, for the first time, two Best Student Project Awards. Generously sponsored by The Environment Partnership (TEP), two prizes of £250 each will be awarded to the best undergraduate and best postgraduate (Masters level) dissertation that is judged to have the most impact on professional practice in our sector.

Entries must be submitted by a CIEEM Student Member or Graduate Member supported by the department/course programme leader. Dissertations must have been submitted during the 2012/13 academic year and should be free of any marks or tutor/assessor comments.

The closing date is Friday 14th February. Shortlisted authors will be invited to attend the Awards event at the Birmingham Botanic Gardens in June 2014.

Further details and entry forms can be downloaded from the CIEEM website at www.cieem.net/awards

REGISTER OF CHARTERED ECOLOGISTS

The new Register of Chartered Ecologists has been launched and the first 18 Chartered Ecologists were announced on the 24th October. This group can now put the designatory letters 'CEcol' after their names.

Those that have been through the assessment process describe it as 'robust, 'tough', 'daunting' and 'fair'. However the registrants have agreed that it needs to be if it is going to be effective in promoting high standards of professional practice.

The assessment is a two-stage process centred around CIEEM's Competency Framework. The first stage is a desk-based assessment of a comprehensive application form in order to determine whether an applicant is likely to have reached the standard and merits a Professional Review Interview (PRI). The PRI is the second stage of the assessment and is a face-to-face interview with questioning by two senior professionals.

So far all of the applicants have been CIEEM members but the Register is open to anyone who meets the eligibility criteria and is a member of a professional body 'licensed' by CIEEM to put forward potential registrants.

Further details of the Register are available on the CIEEM website www.cieem.net/chartered-ecologist

BIODIVERSITY OFFSETTING

Like BES and many other organisations CIEEM has been spending quite a bit of time responding to the UK Government's consultation on Biodiversity Offsetting in England. Having attended numerous meetings at Defra it is clear that a scheme in one form or another is likely to be announced shortly.

The practical application of biodiversity offsetting as planning tool is not, of course, new in that off-site compensation is already used in some development projects. However it is the introduction of the active promotion of such an approach, the creation of an offset 'market' and the use of recognised metrics that creates opportunities for a step change in addressing some of these development tensions but also provides challenges for the profession to resolve.

A fundamental principle is that offsetting must be underpinned by good science and there is still much we do not know. A commitment to gathering robust evidence of what works and what doesn't work should surely be a pre-requisite for any scheme. There is a vital role for the scientific community in planning research strategies to answer the many questions that will arise.

Biodiversity offsetting is often presented in quite simplistic terms that are relatively easy to understand by a range of stakeholders. However that must not be allowed to cloud the fact that ecological functionality is complex and uncertain. Successful habitat creation over the long term is not as easy as some politicians seem to think!

CHANGES TO CIEEM MEMBERSHIP CRITERIA

Next month will see a significant change in CIEEM's membership criteria. Membership grades will no longer be based on a relevant degree qualification and the number of years of relevant experience but on what an individual is able to demonstrate that they know/understand and are able to do competently. The criteria combine a relevant degree qualification together with evidence of competence in a minimum number of technical and transferable skills areas identified in CIEEM's Competency Framework. Membership grades will be based on the levels of competence (basic, capable, accomplished and authoritative) with, for example, Full member applicants being required to demonstrate competence at the Accomplished level in the required number of skills areas which are themselves divided into sub-themes.

The technical and transferable skills areas are:

Technical	Transferable
Surveying	Professional conduct
Environmental management	Business management
Environmental assessment	Project management
Environmental governance, legislation and policy	Information management
Scientific method	People management
Facilitation, consultation, stakeholder engagement	Self management
Public awareness and education	Health and safety

There is a also a new route for those individuals who do not have a relevant degree but are working in a relevant role and can demonstrate, as a result of a minimum number of years of experience, the required level of competence.

SUPPORTING MEMBER NETWORKING

CIEEM's Geographic Sections are very important in providing members with networking opportunities, CPD events and discussion meetings. In order to strengthen and support our Sections we have recently appointed a full-time Co-ordinator, Vicky Bowskill and a part-time Support Officer for the Irish Section, Mairead Stack.

If any BES members would like to organise joint meetings/events with the CIEEM Geographic Sections you are very welcome to contact Vicky or Mairead through enquiries@cieem.net

FORTHCOMING CONFERENCE

Biodiversity Offsetting In Practice
March 2013, Birmingham

PUBLISHING NEWS

BES Publications Data Archiving Policy

Liz Baker / Deputy Head of Publications
Liz@BritishEcologicalSociety.org

Over the past couple of years the Society has been mindful of the scientific community's drive for increased openness of research. Two aspects that have particularly attracted attention are the need for easier access to data that support the conclusions in published papers and the long-term preservation of those research data.

One of the main functions of peer-reviewed journals is to provide readers with published articles that have been through a rigorous evaluation process by experts and that have, as a result, been given a scientific 'stamp of approval'. The only way to truly verify the results of a research paper is to analyse the original data or replicate the study. However, without access to the original data, results cannot be verified through reanalysis. In addition to allowing verification of study results, sharing data has other benefits to the scientific community. In particular, it allows data to be used for new purposes, including reanalysis using new statistical techniques or to address new questions, inclusion of data in meta-analyses, and use in teaching. Thus, calls have been made for authors to provide access to their data in publicly accessible repositories that ensure long-term preservation of the data.

In 2010 a number of high profile evolution journals approved a 'Joint Data Archiving Policy' (JDAP) (Whitlock *et al*, 2010) and moved to mandate the archiving of data associated with work published in their journals. In 2012, the BES Publications Committee agreed that the BES should join these journals and adopt a similar policy. A JDAP statement encouraging the archiving of data was published on all of the BES journal websites during 2013 and, beginning in January 2014, the journals will mandate the archiving of data for all papers published in the Society's five journals.

The BES journals' revised JDAP statement will be as follows:

Data are important products of the scientific enterprise, and they should be preserved and usable for decades in the future. The British Ecological Society thus requires that all data (or, for theoretical papers, mathematical and computer models) supporting the results in papers published in its journals will be archived in an appropriate public archive, such as Dryad, TreeBASE, NERC data centre, GenBank, figshare or another archive of the author's choice that provides comparable access and guarantee of preservation. Authors may elect to have the data made publicly available at time of first online publication or, if the technology of the archive allows, may opt to embargo access to the data for a period of up to a year after publication. Exceptions, including longer embargoes or an exemption from the requirement, may be granted at the discretion of the editor, especially for sensitive information such as confidential social data or the location of endangered species.

Thus, starting with manuscripts submitted in January 2014, all articles accepted for publication will be published with the expectation that the data described in the results will be made publicly accessible by deposition in a data repository that guarantees public access and permanent storage. Upon acceptance authors will be required to deposit sufficient data to allow each result in the published paper to be re-created and the analyses reported in the paper to be replicated to support the conclusions made. When data are deposited it will also be important that authors ensure that adequate meta-data accompanies their paper so that a third party can reasonably interpret those data correctly.

To facilitate the deposition of ecological data, all of the BES journals have integrated with the Dryad data repository. The Society is sponsoring deposits made in this archive. However, there is no requirement that authors use this specific repository for their data. Authors should pick the repository that is best suited to their type of data and is most useful to the ecological community likely to access their data. A list of the most commonly used repositories for ecological data will be available to authors from the journals' author guidelines and on their ScholarOne Manuscripts websites.

Authors will be able to request that their data be embargoed for up to 12 months following publication of their

article. Longer embargo periods can be granted at the editors' discretion. These embargoes will provide protection of data which, if placed in the public domain, may jeopardise further publications. For sensitive data relating to endangered species or protected locations, authors can transform locality details. In rare situations where authors have limited rights to use of data (e.g., proprietary data), or when data access is politically or cultural-sensitive, editors can waive the archiving requirement.

In each paper published a 'Data accessibility' section will be included so that data associated with the articles are easily found. The location of the data will also be included in the reference list, with DOI (Digital Object Identifier) if available, making access to the data easy, and future citation of the data trackable via the Data Citation Index.

In announcing this mandate the Society remains aware of a range of issues that continue to concern the community. There are currently limitations in making the many forms of ecological data searchable and retrievable. It is hoped that community standards will emerge to facilitate the sharing of ecological data, including the development of standards for data re-use and citation. The quality of data deposited and, in particular, the metadata accompanying it, need to improve for the true value of data to be appreciated. Finally, it will be important for researchers to trust that the people accessing their data will treat it with respect and adhere to ethical guidelines and community expectations.

The Society's aim is to 'Advance ecology and make it count'. This new data archiving policy will promote greater openness within ecological research and will strive to encourage more research on data that has already been collected, and in doing so advance the field for future generations.

Whitlock, M. C., McPeek M. A., Rausher M. D., Rieseberg L. & Moore A. J. (2010) Data archiving. *American Naturalist* 175, 145–146.

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

PUBLISHING NEWS

Journals Update

Functional Ecology

www.functionalecology.org
@FunEcology

A successful INTECOL included our journal-sponsored symposium on *Mechanisms of Plant Competition.* For anyone that missed the symposium, Liesje Mommer's keynote talk on plant facilitation is available from the BES Soundcloud page (https://soundcloud.com/besjournals/sets/intecol), along with talks from the other journal symposia and workshops.

Steve Ellner's review 'Rapid evolution: from genes to communities, and back again?', based on his Tansley Lecture given at the BES 2012 Annual Meeting, was published in *Functional Ecology* in October.

Our December issue features a new Perspective from Wilco C.E.P. Verberk and David Atkinson on "Why polar gigantism and Palaeozoic gigantism are not equivalent: effects of oxygen and temperature on the body size of ectotherms". In this paper, Verberk and Atkinson offer a novel explanation for gigantism in icy, polar waters, giving a possible explanation for why patterns in body size across gradients in temperature are stronger in organisms that breathe under water than in airbreathers. This issue also includes Cavin *et al*'s paper "Extreme drought alters competitive dominance within and between tree species in a mixed forest stand," which was featured on the Today programme, BBC News online, Good Morning Scotland and BBC Radio Wales.

We welcome two new members to the Associate Editorial Board: Shuli Niu is based at the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, China, where her research focuses on terrestrial ecosystem responses to climate change and human disturbance. Shuli uses global change manipulative experiments to reveal ecosystem carbon, water, and nitrogen cycles as well as their couplings in response and feedback to global change. She also uses data mining approaches to synthesize regional and global patterns of ecosystem properties and their responses to environmental changes. We are also joined by Julia Koricheva, from Royal Holloway, University of London, England. Julia's research focuses on the ecology and evolution of plant-herbivore interactions, particularly the mechanisms of plant resistance to herbivores, relationship between plant diversity and ecosystem functioning, and methods and applications of meta-analysis and research synthesis in ecology. She works primarily in boreal and temperate forest ecosystems.

Early in 2014 we will also welcome a third new Associate Editor, Joe Bailey. Joe has been a guest editor for Functional Ecology, working on our next Special Feature: Climate change and species range shifts (to be published in Issue 1, 2014). Predicting the community and ecosystem consequences of global climate change is among the most challenging and pressing of problems confronting modern evolutionary ecologists. This special feature addresses key issues linking global climate change to shifting species distributions with an emphasis on understanding the impacts on functional plant traits and the ecological interactions they mediate. It spans a broad range of theoretical and empirical issues, dealing with genetic divergence in plants along elevation and latitudinal gradients and its impact on plant functional traits, interactions with other species, and potential ecosystem consequences.

Jennifer Meyer
Assistant Editor
(Jennifer@BritishEcologicalSociety.org)

Journal of Ecology

www.journalofecology.org
@JEcology

Issue 101:5 of Journal of Ecology was published in September. A particularly exciting Editor's Choice paper from this issue is "Scale-dependent relationships between tree species richness and ecosystem function in forests" by Chisholm *et al.* There's also a spirited Forum discussion on an Australian dune chronosequence between Uren and Parsons and Laliberté *et al.* in this issue.

Additionally, Jairo Patiño the first author on "Baker's law and the island syndromes in bryophytes" was interviewed by the *Los Angeles Times* about his paper, which also features in this issue.

VIRTUAL ISSUES

Journal of Ecology has published two Virtual Issues over the past month. The first honours our former Executive Editor Michael Hutchings who retired from the role at the end of 2012. Mike has worked on the *Journal* in an Editorial capacity for nearly 30 years. In addition, Journal of Ecology has always been Mike's first choice for his own first-authored work. A commentary on the Virtual Issue by Associate Editor Richard Shefferson is available on the Journal of Ecology homepage.

In early September we also published a Virtual Issue on facilitation and scaling, to coincide with the Ecological Society of Germany, Austria and Switzerland's Annual Meeting. Earlier this year Santiago Soliveres wrote a piece on the Journal of Ecology blog regarding the current facilitation debate. Santiago and his colleagues organised a session at the Annual Meeting in Germany and our publication of this Virtual Issue coincides with their session.

All of the papers in both Virtual Issues are free to access and if you would like to write an opinion piece for the Journal of Ecology blog please contact the Editorial Office with your proposal via admin@journalofecology.org.

NEW ASSOCIATE EDITORS

We would like to offer a warm welcome to five new Associate Editors joining our Editorial Board: Ellen Damschen, Jennifer Lau, Frida Piper, Nicole Rafferty and Melinda Smith.

ONLINE FEATURES

Finally Journal of Ecology now has an app which is available to download for free from the iTunes store. The *Journal* continues to post audio interviews on our blog and there are lots of posts about the summer conference season (including ESA and INTECOL) from members of our Editorial Board. As always, you can get in contact with us via Facebook and Twitter (@JEcology).

Lauren Sandhu
Assistant Editor
(Lauren@BritishEcologicalSociety.org)

Methods in Ecology and Evolution

www.methodsinecolodyandevolution.org
@MethodsEcolEvol

Issues 4.8, 4.9, 4.10 and 4.11 have all been published online since the last *Bulletin* was circulated. Issue 4.8 contains a Special Feature on 'Unifying Fossils and Phylogenies for Comparative Analyses of Diversification and Trait Evolution', with guest editors Luke Harmon and Graham Slater, which attempts to initiate an integration of paleontological and neontological data. It includes 5 papers by paleobiologists whose research uses phylogenies of fossil taxa to answer diverse macroevolutionary questions, from time scaling phylogenies, to inferring modes of phenotypic and lineage diversification. All issues also contain a number of freely available application papers: citable descriptions of new methods and techniques.

INTECOL this year was a great success. Over the course of the conference, one of our Associate Editors, Barb Anderson, interviewed a number of delegates about the oldest methods that they still use today, the newest methods that they currently use, and if they could invent a method what would it be? Look out for everyone's answers on the *Methods* blog podcasts (methodsblog.wordpress.com). Also on the blog, our Editor, Bob O'Hara, wrote an interesting piece about the use of Twitter at INTECOL, and recorded a couple of short podcasts giving an overview of the journal and the blog,

We've added a new video to our YouTube channel, in which David Warton interviews Trevor Hastie, Professor of Statistics at Stanford University; Trevor talks about his recent paper 'Inference from presence-only data; the ongoing controversy' published in *Ecography*, which is a response to Royle *et al*'s 'Likelihood analysis of species occurrence probability from presence-only data for modelling species distributions' in *Methods* (youtube.com/MethodsEcolEvol).

We're always keen to try out new online features, and have recently added a tag-cloud to our Wiley Online Library site, which contains popular keywords that readers can click on to view more *Methods* papers in that area. We've also added a geosearch map, where readers can click on a country to view any papers that mention that country. In addition, a new journal App has been launched for readers to access *Methods* papers via their iPads.

Last but not least, we're pleased to welcome on board 5 new Associate Editors: Tom Gilbert from the Natural History Museum of Denmark, Sean McMahon from the Smithsonian Tropical Research Institute USA, Doug Yu from the University of East Anglia UK and the Kunming Institute of Zoology in China, Ryan Chisholm from the National University of Singapore, and Patricia Backwell from the Australian National University (methodsinecologyandevolution.org/EditorialBoard).

Remember, as a member of the BES, you have free access to *Methods*!

Samantha Ponton
Assistant Editor
(coordinator@methodsinecologyandevolution.org)

Journal of Animal Ecology

As we approach the end of the year we are pleased to reflect on another good year for JAE. The journal is now successfully integrated with Dryad and is effectively participating in the Manuscript Transfer Program with the open access journal *Ecology and Evolution*.

In terms of content, we published seven review papers, including Charles Godfray's presidential address on 'Mosquito ecology and control of malaria' (Issue 1) and an instructional paper on 'Quantifying individual variation in behaviour: using mixed-effect modelling approaches' by Dingemanse and Dochtermann (also Issue 1). Excitingly, we also published our first Synthesis paper entitled 'Insights into population ecology from long-term studies of red grouse *Lagopus lagopus scoticus'* by Martínez-Padilla *et al.*, which reviews the trajectory and impact of red grouse studies in population ecology. The authors attempt to synthesise the various explanations for population regulation and cyclic patterns, and conclude by highlighting the need to consider multiple, interacting mechanisms. This is the first of a new type of JAE paper that we will be publishing. The Editors felt there was a gap in the literature for balanced, comprehensive and concise overviews of well-established field or laboratory study systems, targeted at a broad ecological audience, and hence the idea of synthesis papers was born. We welcome suggestions for new synthesis papers – please just email your proposal to the Editor.

Published papers have been well received outside the field as well. The study 'Migration phenology and seasonal fidelity of an Arctic marine predator in relation to sea ice dynamics' by Cherry *et al*. (Issue 4) was featured in The Guardian and The Independent. The research demonstrated, using 10 years' data on polar bears in western Hudson Bay, how sea ice conditions drive the bears' annual migration on and off the ice. More recently, BBC News, The Independent, Reuters, Los Angeles Times picked up a paper by Ripple *et al*. entitled 'Trophic cascades from wolves to grizzly bears in Yellowstone' found that a knock-on effect of Yellowstone wolf introduction is that grizzly bears consumed more berries, available from the increased shrubbery resulting from the reduction in herbivory of elk lessened by wolves.

Our latest issue – the December issue (82:6) – rounds off the year nicely. It opens with an *In Focus* paper in which Salvador Herrando-Perez (The University of Adelaide, Australia) discusses the implications of a modelling paper by Amarasekare and Coutinho entitled 'The intrinsic growth rate as a predictor of population viability under climate warming'. The authors challenge recent studies on the effects of climate warming on the population viability of ectotherms and provide some important caveats and considerations for such studies. Following this is our first ever Special Feature entitled 'Location-only and use-availability data: analysis methods converge' edited by our Associate Editor Bryan Manly (WEST Inc, USA) with his colleagues Lyman McDonald (WEST Inc, USA), Wayne Thogmartin (United States Geological Survey, USA) and Falk Huettmann (University of Alaska, Fairbanks, USA). The initial idea for this Special Feature arose from a session on this topic that took place at a meeting of the Wildlife Society in Kona, Hawaii in 2011. The idea of the Special Feature is to compare methods that have been developed for modelling the geographical distribution of species (with location only data) and methods that have been developed for modelling habitat selection by animals (with use-availability data). The Special Feature contains seven thought provoking papers that in synthesis show that the modelling of the geographical distribution of species and the modelling of habitat selection by animals are essentially the same problem in terms of analysing the data. We hope that the Special Feature will be of great interest to those involved in analysing animal distributions and resource use.

Peter Livermore
Assistant Editor
Peter@BritishEcologicalSociety.org

BES 33rd Annual General Meeting
Minutes

British Ecological Society

The AGM was held on Thursday 22th August 2013 in the Capital Suite Room 10, The International Conference Centre, Excel London, One Western Gateway, Royal Victoria Dock,London,E16 1XL, United Kingdom. 84 members were in attendance.

1. MINUTES OF THE 32ST AGM

The minutes of the 32nd AGM held on 19th December 2012 in the Great Hall, University of Birmingham, Edgbaston, Birmingham, B15 2TT, United Kingdom and published in the August 2013 *Bulletin* 44:3 were presented to the membership.

P. Grubb questioned why the awarding of Honorary Membership to Professor Hassell in 2012 had not been recorded in the minutes of the AGM. G. Mace noted that the Awards Ceremony, which normally happened directly after the BES AGM, was documented in the *Bulletin* and that awards had not been recorded in the AGM minutes for a number of years. She agreed that BES Council would consider adding details of BES awards to the AGM minutes.

The motion to approve the minutes was proposed by R. Berry, seconded by R. Mitchell and carried by a majority with one abstention and no votes against.

2. CENTENARY CELEBRATIONS

The Executive Director presented an update on the delivery of BES centenary activities. One of the first activities to be completed was the publication of a paper on the 100 most important questions for ecological research in the Journal of Ecology, a project led by Professor Sutherland. A series of innovative posters on key ecological topics was produced for schools and accompanied by competitions and online resources. Over 30,000 copies of the posters had been distributed directly to schools. Second, Professor Grubb and Professor Whittaker had compiled a booklet discussing the 100 most influential papers published in the BES Journals. This represents an outstanding resource which highlighted the contribution of past ecological research to current thinking. Third, three interdisciplinary meetings were organised for early 2013 which highlighted the interface between ecology and related disciplines and all these meetings had been well attended. Fourth, in a new departure for the BES, we joined the Royal Horticultural Society in celebrating 100 years of the Chelsea Flower Show by putting on a display which demonstrated the impact of changing gardening habits on the ecology of gardens. The stand was visited by several thousand people during the Show week. Subsequently, in July and August 140 public events had taken place during the BES Festival of Ecology, running across the UK in partnership with local museums, galleries and community groups. Included in this outreach work was the 'Sex, Bugs and Rock'n Roll' Roadshow, put together by a team lead by Dr Sayer, promoting ecology at a wide range of public events including music festivals. The final event in the programme was the INTECOL Congress itself which had been very successful in bringing the international community of ecologists to the UK to celebrate the Society's birthday. She thanked the BES Festival of Ecology Manager, Julie Hodgkinson, other BES staff and the countless volunteers who had worked tirelessly over many months and even years in helping to ensure the BES celebrated its centenary in a most fitting style. She also noted that there would be a formal evaluation of all the centenary activities so that BES Council could learn from new activities for the BES, and consider which kinds of projects might be futher developed or continued in future.

3. THE ACCOUNTS FOR THE YEAR ENDED 31 DECEMBER 2012

The Accounts for the year ended 31 December 2012 were published in the August 2013 *Bulletin* and summarized in the Annual Report.

The motion to approve the accounts and the reports of the Treasurer and Auditors was proposed by D. Hodgson, seconded by A. Beckerman and carried by a majority with no votes against.

4. THE REPORTS OF THE TREASURER AND THE AUDITORS,

The Honorary Secretary presented the accounts on behalf of the Treasurer.

He noted that in the Society's 100th year, the finances were in better shape than ever. The current year was rather different because of spending on the various and wonderful centenary activities. However, the centenary expenditure was saved up for in advance over the last five years, and so has had a surprisingly small effect on this year's finances – so the Society would still make a small surplus. Second, working with our partner societies at Charles Darwin House, we had just bought a new building, currently known as 'Charles Darwin House II'. This exciting new building was very near our current HQ. The Society bought it for three reasons: it will enable us to expand the hub of scientific societies; we will have extra space for holding larger meetings split between CDH and CDHII; and in the longer terms we considered it a prudent way to invest some of our reserve. Third, because our publication income has increased (as explained at last year's meeting), our longer term financial modelling shows that we can expect

to build the buffer we need, even if we increase our expenditure somewhat, not least because we are no longer setting money aside for the centenary. For this reason, the BES Council have already increased budgets for grant giving. A current exercise aims to identify new projects for future development, learning from the centenary activities as well as looking at areas in which the BES might try to grow influence or activity, using available financial resource in accordance with our charitable objectives. Finally, he thanked Hazel Norman, Olivia Hunter, and the other BES staff members for their hard work to keep the finances in shape; and he thanked the Finance Board and Management Board members for their time.

5. THE REPORTS OF THE COUNCIL SECRETARY AND THE HON. CHAIRPERSONS OF THE COMMITTEES AND 6. THE REPORTS OF THE EDITORS

The Honorary Secretary presented the reports.

He noted that the BES was a modern, dynamic society with an active governance structure which was achieving its mission of advancing ecology and making it count. He highlighted a number of activities;

Education – the BES was actively working with other organisations to promote the teaching and learning of ecology through the development of the National Curriculum , as well as building on the legacy of the Festival of Ecology programme

Grants – a Peer Review College had been established to help with grant reviewing and match funding of the James Parkyn legacy had provided £64k to support students from 37 countries to attend the INTECOL Congress.

Meetings – INTECOL had been the focus of much work but it had also been agreed to hold the 2014 Annual Meeting jointly with the French Ecological Society in Lille, France.

Policy – the Ecological Issues series had been re-launched at a reception in the House of Commons and work with the National Capital Initiative had continued to develop.

Publications – the Society's stable of journals continued to be very successful with 3 million full text downloads of BES journal articles demonstrating the influence and impact of the research it published.

Membership – currently the BES had 4,213 paying memberships and 995 complimentary ones with the aim to increase paying memberships to 4,500 by the end of the year. He urged all members to encourage their colleagues to join the BES.

7. TO ELECT OFFICERS OF COUNCIL OF THE SOCIETY

Professor Sutherland was Council's nomination for the post of President and Professor Mace for the post of Past President. Dr Hodgson was standing for re-election to the post of Council Secretary, Dr Purves for the post of Honorary Treasurer, Dr Beckerman for chair of the Meetings Committee, Professor Gray for chair of the Publications Committee and Dr Vickery for chair of the Public and Policy Committee.

The motion to accept these changes to the Officers of the Society was proposed by T.H. Jones, seconded by C. Thomas and carried by a majority with one vote against.

8. TO ELECT ORDINARY MEMBERS OF COUNCIL

Three members of Council were retiring and the Society thanked Dr Coomes, Professor Hails and Dr Ezard (Council's Early Career Representative) for their hard work and commitment while in post. There were two nominees for election to the two Ordinary Member of Council places and the proposal to elect Dr D. Gilbert and Dr J. Hill to these two posts was made by D. Hodgson, seconded by J. Vickery and carried by a majority with no votes against. There were four nominees for the post of Early Career Representative so a ballot was held. Tellers were appointed. The candidate who gained the most votes was Ms J Randall who was duly elected as Early Career Representative on Council.

9. THE APPOINTMENT OF THE AUDITORS FOR 2013 AND 10. AUDITOR'S REMUNERATION

The AGM agreed to delegate authority to BES Council for the appointment of the auditors and their remuneration. The motion to accept this was proposed by J. Lee, seconded by A. Beckerman and carried by a majority with no votes against and one abstention.

11. ANY OTHER BUSINESS.

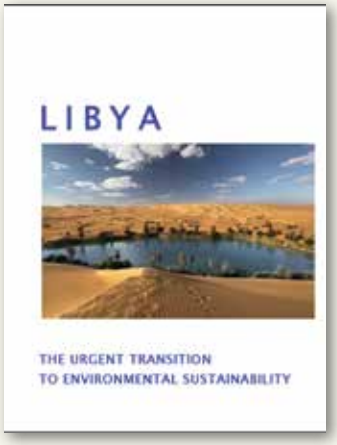
No formal AOB had been submitted but the President asked if there were any questions from the floor.

J. Cowie asked if the views of the membership would be sought on the INTECOL Congress and on the future direction of the BES. The Executive Director informed the AGM that all INTECOL delegates would be asked for feedback and there was a feedback section on the Congress app. The President said that the membership would be consulted on the Society's direction in due course.

The President thanked everyone for attending the AGM and the meeting was closed.

BOOK REVIEWS

The book reviews are organised and edited by **Peter Thomas**



Libya: The Urgent Transition to Environmental Sustainability

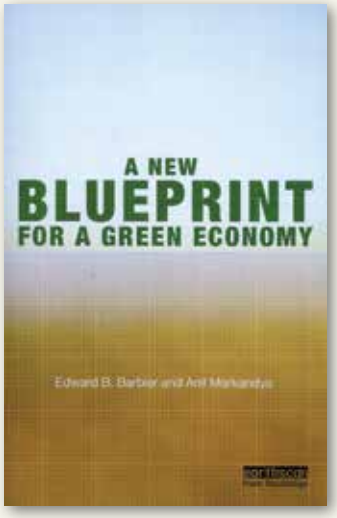
Robert Goodland (2013) Environmental General Authority, Tripoli, Libya.

ISBN 978-0-9792179-0-6

E-book pdf is available from RbtGoodland@gmail.com or from the website www.Goodlandrobert.com.

As if Libya does not have enough problems following the overthrow of the Gaddafi regime, this book points out that Libya is running out of water and oil. There are no year-round flowing rivers in Libya and 96% of freshwater used is from the huge fossil water reserves stored under the Sahara. Of this, 75% of the water is moved to the northern coastline where most people live along the Great Man-Made River (a huge pipeline and associated reservoirs) which is designed to deliver 5M m3 of water per day! Realistic figures suggest the huge reserves will be economically exhausted in 40-50 years. On the oil front, and leaving aside the current problems over ownership, the oil and gas reserves currently provide 72% of the GDP, and are also likely to run out in 40-50 years. So the remit of this book is to provide detailed recommendations, backed up with evidence, to allow the country to have a sustainable future. And it is very upbeat. Solar powered desalination plants and water pumps would solve the water problem and solar power itself would solve many of the country's power problems and leave enough over for sustainable export. There is also a long chapter on ecotourism, extolling Libya's virtues including one of the best collections of archaeological sites in the world (if they escape bulldozing). From a visit there just before the 2011 uprising, I can attest to the incredible friendliness of the people and the beauty of the landscape but it will be a while before ecotourism starts earning foreign currency. The book paints a potentially rosy future if the recommendations are followed and if one ignores the political problems. The upbeat message is perhaps inevitable given the involvement of the government in the book's production, but the scientific and social arguments are still sound. As a vision for the future for a country it is heartening. As a detailed case study of how a whole economy could be turned around, this is exemplary and would be a wonderful example to use in many environmental courses.

Peter Thomas



A New Blueprint for a Green Economy

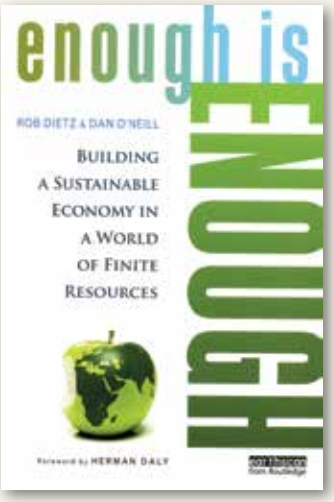
Edward B. Barbier & Anil Markandya (2013) Earthscan from Routledge, Abingdon. £19.99 (pbk)

ISBN 978-1-84971-353-5

Originally published in 1989 with David Pearce as the lead author, the first version of this book had a major impact worldwide. Its origin lay in a report commissioned by the Department of the Environment in the UK to help them respond to the 1987 Brundtland Report on sustainable development. The terms of reference were to consider the links between sustainable development, national accounting and resource accounting, and the authors' response made very clear just how great a change was needed in policies to address this. Sadly Pearce died suddenly in 2005 but his co-authors have taken the opportunity to examine progress over the last 20 years. Its principal theme was and is that by valuing the environment and including it in national resource accounting there would exist a financial framework to manage exploitation more scientifically and encourage improved environmental management. The authors conclude that progress has been mixed with positive features being greater environmental awareness by the public, the use of some valuation tools for ecosystem services and price incentives to manage activities, the acceptance of the importance of sustainable energy, and the establishment of global financing facilities for funding ecosystem conservation. But the negative features they document deal with water quality and supply not keeping pace with population increase, CO_2 continuing to increase, biodiversity and habitat loss increasing, energy companies fighting emission controls, perverse subsidies skewing national accounting, and political and institutional inertia supported by self-interested lobbying. So progress globally must be seen as poor. In that respect this is overwhelmingly a depressing read despite the attempts by the authors to see the upside.

They do provide some very useful tabulated data such as indicators of environmental performance, and taxes and user charges by country, which highlight very clearly both progressive countries and those for whom the environment is apparently still of little consequence. And they provide interesting examples from around the world of small scale successes. This 'green economics' approach is even more urgent today, but having squandered the opportunities for change in the good times the politicians are now saying it is too expensive in the current recession that they have created. If we continue to progress at this rate future generations will have little green left to account for.

David Walton



Enough is Enough: Building a Sustainable Economy in a World of Finite Resources

Rob Dietz & Dan O'Neill (2013) Earthscan from Routledge, Abingdon. (2013) £12.99 (pbk)

ISBN 978-0-415-82095-0

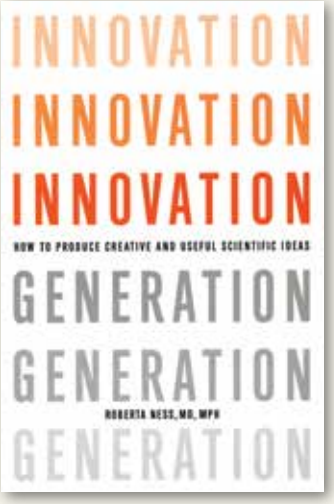
Our media are currently filled with economists and pundits proclaiming that they know how to fix our current global recession and make a bright and prosperous future. The present disaster, resulting from uncontrolled greed and astonishing political naivety, is based on a paradigm of continual growth totally at odds with the objective of sustainability and a world of finite resource. Sadly, the political establishment worldwide, driven by the finance community, has still not seen fit to examine alternatives. This book comes out of a conference organised in Leeds in 2010 that assumed that sustainability rather than growth should be the ultimate test for long-term survival and that different economic models, measures and objectives can provide both employment and, most importantly, improved well-being without destroying our life support systems as is currently happening.

This is an easy book to read with very pertinent cartoons introducing each chapter and some very useful figures and tables. The strong critique of the monetary system and its uncontrolled debts, the focus on GDP as an indicator of wealth but not of social well-being, the lack of any consideration of steady state options in economics teaching show just some of the serious obstacles to developing a public action for a sustainable approach. They do not avoid the contentious question of population control but, whilst eschewing the coercive methods tried in China and India and proposing education and empowerment of women, they fail to address the serious impediments to contraception caused by religion. They have some useful polling data on what people say they would like – consume less food and energy, save water, protect biodiversity – and, although these are supported by some small scale examples in various countries, where is the evidence that the Word Bank, the World Trade Organisation, the OECD countries allow any of this to affect policy?

Their proposals for creating full employment by using reduced work time and guaranteed jobs both resemble previous experiments in centralised economies (like East Germany) that failed, but on the positive side they give some interesting examples of other business models. Dismissing GDP as misleading they examine other measures of progress like the Happy Planet Index (in which Costa Rica comes top and the USA 114th), and the new ISO standards for companies that determine environmental performance and corporate social responsibility.

I take to heart their quote from Buckminster Fuller "You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete". These authors are trying to do just that with some sensible ideas based on strong arguments and data. In many ways the book is an inspiring read for those who have already concluded enough is enough and want some suggestions on what they should do. You should read it.

David Walton



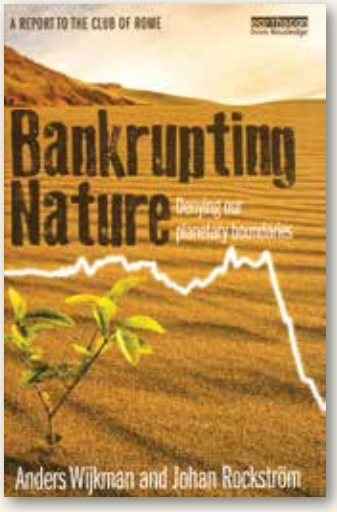
Innovation Generation: How to Produce Creative and Useful Scientific Ideas

Roberta B. Ness (2012) Oxford University Press, Oxford. £19.99 (hbk)

ISBN 978-0-19-989259-4

To those who have had the 'pleasure' of attending management training courses this book will engender serious flashbacks. It does, however, fit in very well with the current government emphasis at universities and research councils that science is principally an activity undertaken to develop the economy rather than pursue better understanding of the world around us. The Department of Business, Innovation and Science could scarcely object to the central proposal here that innovation can and should be taught to everyone. I cannot dispute that it is a good idea to be creative, to innovate and to discover new facts and new understandings. It is just that the approach here – "breaking the frames that restrain us, upsetting the paradigms that anchor us, looking outside the box" – are all redolent of management speak and seem to fit very poorly with the real current recession and the complex bureaucratic systems that limit both money, opportunity and management in science. Getting a really new idea through peer review in a reactionary system is still a daunting task. She stresses the importance of looking for the unexpected, asking the right questions (with its own acronym PIG IN MUD), using analogies, the value of teams, and the other expected approaches. She questions the current emphasis on success metrics and asks if thought content (ideas) would not be more useful than products (e.g. published papers) but without telling us how we could make this assessment. She even suggests that science administrators should be trained in innovative thinking – perhaps the greatest heresy in the book! The text is easy to read, full of a wide range of examples and might even help those, whose initiative has been destroyed by the system, remember again what creative thinking was like. As Susan Sonntag apparently said "The only interesting answers are those which destroy the questions". If this quote rings a bell with you then so will this book!

David Walton



Bankrupting Nature: denying our planetary boundaries

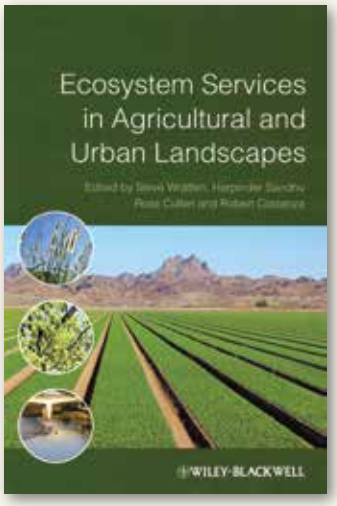
Anders Wijkman & Johan Rockström (2013) Earthscan from Routledge, Abingdon. £24.99

ISBN 978-0-415-53969-2

As the authors say on the first line "This book is not about climate change" but about the failures of our economic, political, religious and social systems to recognise that, without radical changes, we are running out of options for our future. Yet again the authors attack the growth agenda which underlies all the meetings of the G8 and the G20, rail against the continued use of GDP as the key indicator of progress and remind the reader that continual growth is neither intellectually possible nor practically sensible. They are brave enough to raise the problems of population but, given the outspoken suggestions for other changes in social habits, one might have expected them to make more of the education of women, the provision of adequate contraception in solving our demographic problems. They recognise that the most difficult change will be the redistribution of power and resources, something normally only achieved by war and conquest. Their solution is to propose different business models where the primary concept is lease rather than sale, service and support for long-lasting equipment rather than throw-away products, and a recycle and re-use philosophy at the end. This they call the "circular economy" with what they believe will be significant reductions in energy and raw material consumption, as well as increased employment.

The chapter devoted to Planetary Boundaries tries to show how the application of limits in seven key areas will provide enough "working space" to work for a sustainable solution. Their key areas are freshwater, chemical pollution, agricultural land use, biodiversity loss, ocean acidification, atmospheric aerosol load, ozone depletion, climate change and phosphorus and nitrogen flows. Whilst not all of these are equally important – nor indeed do we know enough about all of them to set safe boundaries – they are all inter-related and subject to a bewildering range of unsystematic controls and monitoring, suggesting progress at best will be slow. Perhaps the most interesting chapter is by Wijkman on his attempts to change things through the Swedish and European parliamentary systems and the problems he encountered with "political parties stuck in the logic of the industrial society". For him present political systems are not relevant to present problems and show no inclination to adapt. Plus ça change!

David Walton



Ecosystem Services in Agricultural and Urban Landscapes

Edited by Steve Wratten, Harpinder Sandhu, Ross Cullen & Robert Costanza (2013) Wiley-Blackwell Chichester. £55.00 (hbk)

ISBN 978-1-4051-7008-6

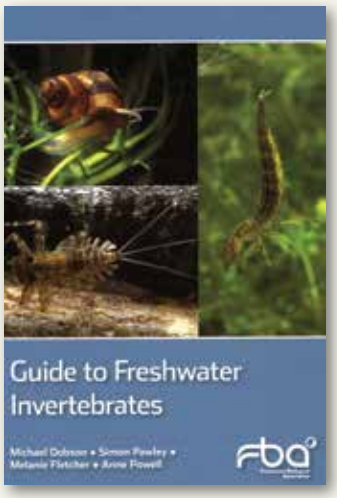
This volume is partly a follow-up to the Millennium Assessment and brings together 27 researchers from around the world, but mainly from Australasia. In an interesting Foreword an Indian MP points out that women in the state of Tamil Nadu used ecological principles in cultivating the land of five ecological zones more than 10 000 years ago! Each chapter is self-contained and starts with an abstract and (usually) ends with a conclusion. Thus, cross-referencing between chapters is minimal. Data are given mainly in the form of tables, with few diagrams and photos.

The first section (three chapters) on scene setting includes a large table giving commonly used methods for calculating the monetary value of ecosystem services and another looking at the functions and value of wetlands. This is followed by specific examples, the first of which is from viticulture and shows how pest and disease control can be incorporated into the system. Interesting, but not revolutionary in view of (for example) the large volume of work on controlling maize pests and pathogens in Africa. The final chapter of this group discusses urban landscapes, using specific examples from different parts of Europe. This chapter has a high level of scientific rigour and its content is widely applicable.

The final group of chapters looks at scale-dependent aspects of ecosystem services using a variety of case studies. One of the most interesting is that of the Qinghai-Tibet plateau, which can be considered at a wide variety of scales from local to global. The opening up of the region to both tourists (quantified) and mining companies (not mentioned) is leading to a loss of biodiversity and to soil erosion, but this is not spelled out. At the other end of the scale is an interesting account of the efforts of a wool yarn manufacturing company (abbreviated to WYM, one of the numerous rather irritating bits of jargon that pervade the book) to incorporate ecosystem services into his production system.

This book tackles a very important topic. It is not possible in 200 pages (including references and an index) for it to be comprehensive. However, it includes some interesting material, but which needs to be treated with caution when considering the topic as a whole.

Janet Sprent



Guide to Freshwater Invertebrates

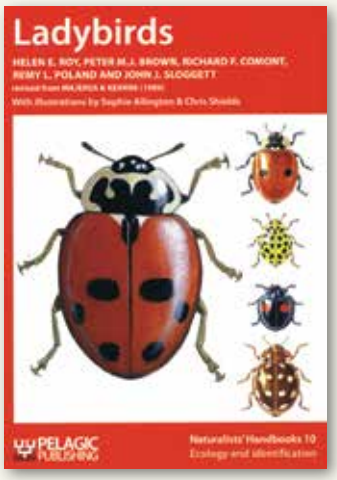
Michael Dobson, Simon Pawley, Melanie Fletcher & Anne Powell (2012) Scientific Publication No. 68, Freshwater Biological Association, Ambleside. £33.00 (hbk)

ISBN 978 0 900386 80 0

Generations of freshwater ecologists have cut their teeth using T. T. Macan's classic *Guide to Freshwater Invertebrates*, for many years the very best identification guide for freshwater animals. The excellent and simple illustrations, plus the generally easy-to-use keys, helped students to sort their catches, in most cases to family or genus and occasionally even to species. This was originally produced in 1959 and was then revised and re-issued a number of times, but always remaining familiar and essentially unchanged. It acted as a lead-in to the more detailed species keys for the major groups of invertebrates, also produced by the Freshwater Biological Association, and together they allowed more-or-less every freshwater organism to be identified reliably. In consequence British freshwater ecologists have been able to study their favourite ecosystems, without worrying unduly about identification problems. Although other general keys have been produced more recently, these have not really improved on Macan's guide but have just tried to fill the void left whilst it has been out of print. I still use my old heavily repaired copy of the original for preference, when dealing with my freshwater samples!

Now it is back. The authors have used many of the original illustrations and have kept the general organisation of the guide, but have added new line drawings where these are needed and have revised the keys and added extra identification tips where appropriate. They also reflect some taxonomic changes, although these are mercifully few. The result is a very familiar little book, still very easy to use and even more comprehensive than its predecessor and with a tough and water-repellent cover, to allow use in the field. The authors are apparently very anxious about whether this will still prove to be a useful and popular guide but I have no such doubts. Even though I may be biased by my life-long use of the original, I think that it is an excellent guide and that the new material and revised structure make it even better. In almost every respect I thoroughly recommend it. My only reservation is the cost, which may well deter purchasers and this is a great shame. It deserves to be in the anorak pocket of every freshwater ecologist, whether they are beginners or experts!

Mark Young



Ladybirds (2nd ed.)

Helen E. Roy, Peter M.J. Brown, Richard F. Comont & Remy L. Poland & John J. Sloggett (2013) Naturalists' Handbook No. 10, Pelagic Publishing, Exeter. £19.99. (pbk)

ISBN 978-1-907807-07-7

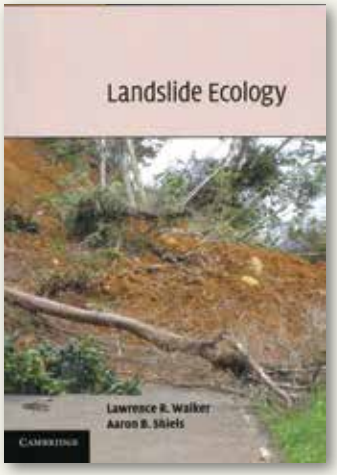
The name Mike Majerus will be forever linked with ladybirds and his first edition of this book published with Peter Kearns in 1989 was the catalyst for a surge of interest in this well-known family of beetles. He sadly died in 2009 but his enthusiasm spurred his co-workers to produce this second edition.

Much additional information has been learned about ladybirds in the past 24 years – 39 pages worth in the case of this book. In keeping with other *Naturalist's Handbooks* this one gives a comprehensive and readable account of ladybird biology aimed at the both the professional and knowledgeable amateur as well as at students in both schools and universities. The authors give ideas for further research, show how readers can get involved in recording and studying ladybirds, as well as pointing out the gaps in our knowledge.

The book covers the 47 species of the Coccinelidae resident in Britain but focuses in detail on the 26 species most regularly encountered. Chapters cover the life history of ladybirds, their natural enemies, variation, population and evolutionary biology, distribution, identification and study techniques. The coloured plates and identification keys have been modified to accommodate new species including the Harlequin and the Bryony Ladybirds. The rise of the Harlequin, and the consequences for other species, is covered thoroughly and there is a map documenting its spread across the country.

I recently came across a Kidney-spot Ladybird and turned to this book for information. Everything I wanted to know was there but was spread across numerous pages. I think a brief paragraph on each of the 26 commoner species summarising distribution, food plant etc would be useful. Nevertheless, this is a wonderful book and deserves a place on any naturalist's bookshelf.

David Emley



Landslide Ecology

Lawrence R. Walker & Aaron B. Shiels (2012) Cambridge University Press, Cambridge. £75.00 (hbk)

ISBN 978-0-521-19052-7

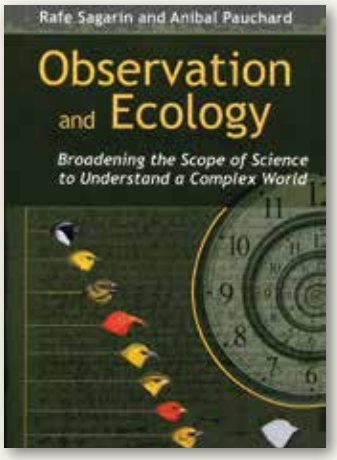
£35.00 (pbk)

ISBN 978-0-521-17840-2

What's so special about landslides that they deserve their own book? The authors work hard to convince the reader that they are ecologically

important in their own right; for example as large-scale movers of plant nutrients, for their unusual spatial heterogeneity, and because of the number of trees around the world that depend on landslides for establishment. But it also comes down to the devastating impacts that landslides have on us humans and how we can manage the risk. There is a lot to be gleaned from this book on the physics of landslides and their triggers, what we know about their colonization, how poor management contributes to landslide risk and how that risk can be managed (by vegetation manipulation and physical intervention) based on an understanding of how landslides work. A useful book that has a place in all ecological libraries.

Peter Thomas



Observation and Ecology. Broadening the Scope of Science to Understand a Complex World

Rafe Sagarin & Anibal Pauchard (2012) Island Press, Washington, DC. £18.99 (pbk)

ISBN 978-1-59726-826-4

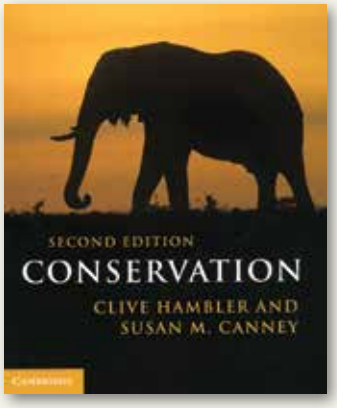
This is a rather unusual book – one that you spend five minutes looking at before deciding what it is about! The back page blurb had me stumbling a bit – three quotes, mentioning that the book "...demonstrates how and why direct sensory awareness of our natural world is a bridge to deeper ecological understanding... is inspiring, thought provoking, critically needed treatment of how to use our power of observation to expand ecological knowledge and provide practical environmental solutions... a highly innovative manifesto on the importance of clever observations for solving fundamental problems in ecology and environmental management..." Well, I persevered.

What is it about? The Foreword, by Paul Dayton, provides an answer. The book is really about understanding nature's processes – making observations, defining hypotheses, testing them through a variety of means, and possibly even taking steps to help nature. It is as much about understanding major environmental issues, such as climate change and overfishing, as developing new techniques for coping with these. Divided into four parts, and with 'text boxes' contributed by eighteen ecologists, conservationists or writers, it is certainly fresh on ideas.

There are groups of chapters on The role of observation in ecology; Using observation in ecology; The challenges posed by an observation approach; and Beyond academia: the power of observational approaches. Then we have the concluding chapter, which has a real pop at the more formal academic approach to ecology. It begins thus "Science is often portrayed as an incremental process of building an edifice of knowledge, brick by brick...", and goes on to take us through the shortcuts we can take to develop and test concepts. It's a bit thin on detail, but strong on narrative. I liked the examples of E.O. Wilson's and Rachel Carson's work, and President Teddy Rooseveldt's quoted derision of scientists was amusing: "I know these scientists pretty well and their limitations are extraordinary, especially when they get talking of science with a capital S. They do good work, but after all, it is only the best of them who are more than bricklayers, who laboriously get together bricks out of which other men must build houses; when they think they are architects they are simply a nuisance". No wonder he switched from biology to politics.

Like so many books from Island Press, this is an acquired taste. There are some interesting ideas here and there, and the challenging nature of the book is good.

Des Thompson



Conservation (2nd ed.)

Clive Hambler & Susan M. Canney (2013) Cambridge University Press, Cambridge. £27.99 (pbk)

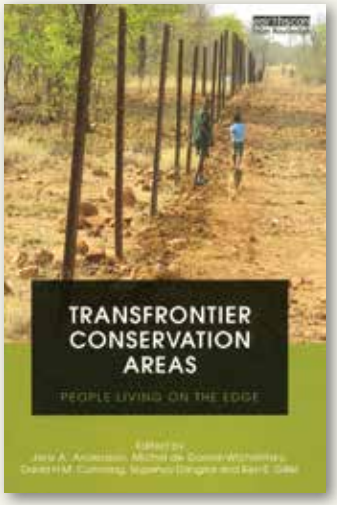
ISBN 978-0-521-18168-6

I've been reviewing various conservation related texts in my quest to develop a new module on Conservation Biology. I selected this book as my core text as it is newly updated and revised, competitively priced, nicely structured, includes colour diagrams and makes good use of case studies. Need I say more? This text is an expanded version of Hambler (2004) and follows much the same section and chapter headings with a few tweaks here and there, and covers a wide range of topics, including threats to biodiversity, environmental impact assessment and restoration and offsetting. At 416 pages long, it is 48 pages longer than its predecessor, reflecting advances in knowledge on wildlife and conservation biology.

My only gripe is that the comprehensive table detailing 'some pivotal dates in the development of conservation' (Table 1.1 in Hambler 2004) has been omitted from the second edition. Given the many recent developments in conservation biology it would have been nice to see this time line extended (hint to authors for third edition). Chapter 9 on Environmental policy (Environmental economics, law and education in Hambler 2004) has undergone substantial revisions and expansions, and does an excellent job highlighting the human-nature relationship. The chapter includes an assessment of the new fascinating discipline of conservation psychology, which aims to understand how people value and act towards their environment. It is critical that conservation includes humans as, like it or not, we are part of the system, and conservation programmes that fail to engage with society are less likely to succeed. The book concludes with a case study of the Mali elephants, which asks the million dollar question: how do you conserve elephants in a remote area suffering from poverty and resource degradation? This case study demonstrates that collaborative engagement with local stakeholders is key, rather than imposing a 'fortress conservation model' on to the local populace, as discussed by Andersson *et al.* (2013) for South Africa (see review below). So to conclude, this comprehensive text will be an important companion for undergraduates and postgraduates studying conservation biology, and anyone working in conservation or land resource management.

Hambler, C. (2004) *Conservation.* Cambridge University Press, Cambridge.

Sarah Taylor



Transfrontier Conservation Areas: People Living on the Edge

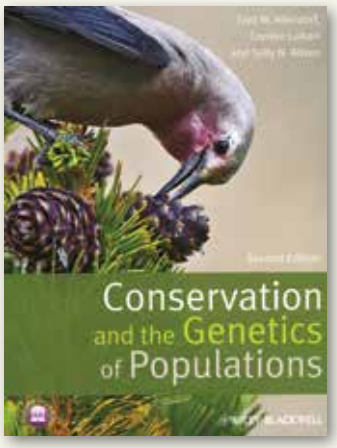
Jens A. Andersson, Michel de Garine-Wichatitsky, David H.M. Cumming, Vupenyu Dzingirai & Ken E. Giller (2013) Earthscan from Routledge, Abingdon. £60.00 (hbk)

ISBN 978-1-84971-208-8

Firstly, so we all know what we are talking about, I'd better define what a Transfrontier Conservation Area (TFCA) is! According to the South African Development Community a TFCA refers to "areas or components of a large ecoregion that straddles the boundaries of two or more countries, encompassing one or more protected areas as well as multiple resource use areas". Rather tediously, this definition is buried in an end note at the end of the introductory chapter rather than being declared in the main text. The book centres on the 'forgotten people' affected by protected wildlife areas. Many of these peoples were displaced in the 1960s and 1970s by the creation of national parks, and were legally denied access to land and resources ('fortress conservation' model). Living on the edge of protected areas, in marginal lands where erratic rainfall, crop raiding and illegal activities threaten survival, these peoples now find themselves residing in the newly designated TFCAs that are meant to bring peace, unity and opportunities for eco-tourism. The TFCAs are seen as a way of joining up core reserves to permit the free movement of wild animals along ancient migratory trails.

This book examines the various land management initiatives that have taken place in South Africa (Fortress Conservation, Community-Based Natural Reserve Management, Transfrontier Conservation Areas), the socio-economic and ecological factors that impact upon them, and the opportunities and conditions needed for implementation of TFCAs. This review of the perspectives of 'people living on the edge' is very timely as TFCAs are largely a politically driven process and ecological considerations often ignore development value for those living within the boundaries. Consulting and involving local communities in land management plans is key to the successful marriage of development and conservation. There are 24 contributing authors from a wide range of disciplines (e.g., agronomists, anthropologists, ecologists, sociologists, veterinarians, etc.), giving this text a truly multidisciplinary flavour and making it accessible to social scientists and ecologists alike. A fascinating book that will be of interest to anyone involved in conservation and land resource use, especially where conflicts of interest arise.

Sarah Taylor



Conservation and the Genetics of Populations (2nd ed.)

Fred W. Allendorf, Gordon Luikart & Sally N. Aitken (2013) Wiley-Blackwell, Chichester. £95.00 (hbk)

ISBN 978-0-470-67146-7

£39.95 (pbk)

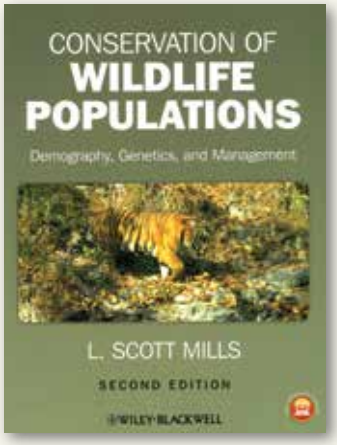
ISBN 978-0-470-67145-0

In my experience, conservation decision makers do not often consider genetic factors systematically. As a result some, perhaps many, decisions will not give the desired long term result. Many are aware that genetic data is ever more readily and cheaply available and understand concepts such as inbreeding depression. To translate genetic data into information which supports decisions also requires an understanding of concepts such as effective population size and outbreeding depression which are not so familiar. The second edition of this text book has been extensively updated and will be valuable to ensure the next generation of conservationists are thoroughly educated in conservation genetics.

The title *Genetics of Populations and Conservation* might have been more apposite. The first half of the book is largely given over to an introduction to genetics and chapters on evolutionary processes. The conservation relevance of genetics is mainly explored in a third section which covers topics such as identifying units of conservation, hybridization, conservation breeding, climate change and genetic monitoring. Case studies in guest authored text boxes are excellently chosen to illustrate key concepts in each chapter. From a conservation perspective there is a lot of scene-setting before getting to the meat of the topic. This is perhaps what one might expect from a text book and fine from didactic point of view. The book is less useful as training about practical decision making. I have a quibble that in most chapters only common animal and plant names are used. Scientific names are given for most taxa in the index, but I don't think this is good practice.

Anyone teaching a course to undergraduate and post-graduate students should consider using this book as their standard text and I am sure I will be using it to look things up.

John Hopkins



Conservation of Wildlife Populations: Demography, Genetics and Management (2nd ed.)

L. Scott Mills (2013) Wiley-Blackwell, Malden MA. £95.00 (hbk)

ISBN 978-0-470-67150-4

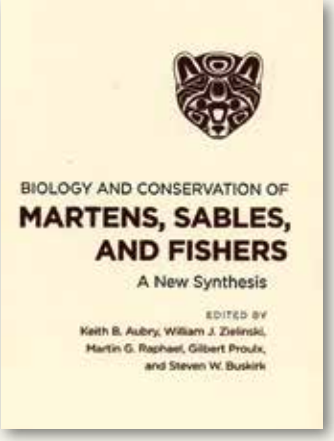
£39.95 (pbk)

ISBN 978-0-470-67149-8

I reviewed the first edition of this book back in 2007. At the time, I noted that it focused, in particular, on the application of basic population ecology to conservation problems. In that sense, it was enjoyably written, highly readable, and likely to appeal to anyone interested in how theoretical population ecology could make a difference in real management scenarios. The second edition retains the readable style of the first, which stood out for Mills' ability to render complex theoretical concepts into simple prose. The references have been augmented and updated and some effort has been made to reduce the North American bias in the examples used. Several sections have been expanded or rearranged to provide better coverage of concepts that were formerly a little brief.

There is much involved in conserving populations that is not covered here: this is not a book about conservation biology in its wider, interdisciplinary sense. Likewise, this is not an exhaustive introduction to theoretical population ecology. Instead, Mills' book is explicitly aimed at exploring the basics of the interface between population ecology and conservation. In that context, it remains an excellent overview and should appeal particularly to those who want a patient and gentle introduction to get started on some of the weightier theoretical concepts. A North American bias remains, providing an opportunity for readers from elsewhere to familiarise themselves with that continent's wealth of conservation and management experience. It should appeal to aspiring conservation biologists from undergraduate level upwards.

Phil Stephens



Biology and Conservation of Martens, Sables and Fishers: a New Synthesis

Edited by Keith B. Aubry, William J. Zielinski, Martin G. Raphael, Gilbert Proulx & Steven W. Buskirk (2012) Cornell University Press, Ithaca. $75.00 (hbk)

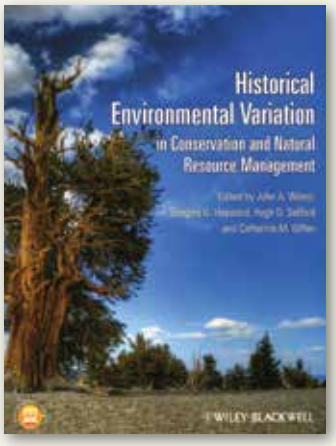
ISBN 978-0-8014-5088-4

In 1994, Steve Buskirk and colleagues published *Martens, Sables and Fishers: Biology and Conservation*, a synthesis of knowledge on the genus *Martes* emerging from the first international *Martes* symposium, held 3 years earlier. Almost 20 years later this new volume has been produced based on invited syntheses presented at the fifth international Martes symposium in 2009. The *New Synthesis* is not simply an updated version of the earlier book. Instead, it reflects huge advances in science – from more routine genetic analyses to finer-scale remote monitoring, as well as significant changes in the focus of management concerns – from global warming to habitat restoration.

The *New Synthesis* brings together the efforts of 62 scientists from 12 countries, in a volume stretching to almost 500 pages of review material focused on the genus *Martes.* It is arranged in five sections, covering evolution and biogeography; biology and management; ecology and habitat management; research techniques; and conservation. It will, unquestionably, represent a fantastic resource for biologists focused on the genus and managers whose remit includes any of the focal species. Moreover, this detailed review of existing information will be of use to macroecologists, theoreticians and data miners, allowing them easy access to data that would often take months to collect (see, for example, the 5 page table of demographic rates in Chapter 5, the 5 page table of information on intentional releases in Chapter 6, or the 23 page table on documented parasites and pathogens of the genus in Chapter 7).

The *New Synthesis* also highlights areas that should be the focus of research in coming years. Among the areas of ignorance that it identifies, remain 3 species of *Martes* from south and southeast Asia for which reliable scientific information remain scarce. With an increasing focus among funding bodies on supporting only economically productive research, it remains to be seen whether these knowledge gaps can be filled in time for the even-newer synthesis.

Phil Stephens



Historical Environmental Variation in Conservation and Natural Resource Management

John A. Wiens, Gregory D. Hayward, Hugh D. Safford & Catherine M. Giffen (2012) Wiley-Blackwell, Chichester. £95.00 (hbk)

ISBN 978-1-4443-3792-1

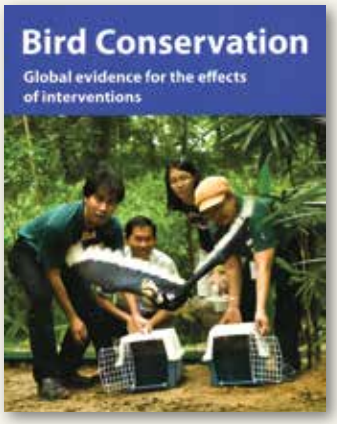
£40.00 (pbk)

ISBN 978-1-4443-3793-8

Historical range of variation (HRV) is the "variation of ecological characteristics and processes over scales of time and space that are appropriate for a given management application" (Chapter 1, p5). This requires a specification of an appropriate time period, which in the USA (the principal focus) usually equates to the period immediately prior to European colonisation. At the heart of this book is whether taking such a historical approach is appropriate given the level of anthropogenic transformation of habitats and the impact of future climate change, which predicts the emergence of novel ecosystems with no modern-day analogs. The authors lay out a very persuasive argument that there is a continued role for HRV to help to identify ecological conditions that will restore ecological resilience in the face of climate change, and that this needs to go hand in hand with consideration of social range of variation that is acceptable by society.

The edited collection is divided into six sections which together assess whether HRV is still appropriate for the management of forests. The section on global perspectives expands the remit beyond North America's forests, with case studies from the African savannah, Australian wet eucalypt forest, English lowland woodland and Fennoscandian taiga. So there truly is something for everyone. While it may no longer be the case that those who ignore history are doomed to repeat it, I quite agree with Stafford *et al.* (Chapter 24) that by studying historical variation in response to past climate change we can better understand changes that are likely to occur in our forests in the future. With contributions from 54 scientists and practitioners, including a look at Wytham Woods by our very own Keith Kirby, this fascinating and well-written book will be of interest to anyone involved with conservation and land management.

Sarah Taylor



Bird Conservation: Global Evidence for the Effects of Interventions

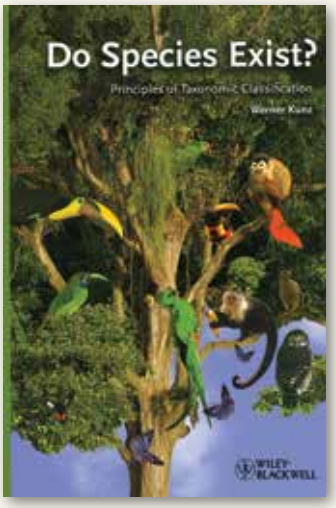
David R. Williams, Robert G. Pople, David A. Showler, Lynn V. Dicks, Matthew F. Child, Erasmus K.H.J. zu Ermgassen & William J. SutherlandEd (2013) Synopses of Conservation Evidence, Vol. 2. Pelagic Publishing, Exeter. £34.99 (pbk)

ISBN 978-1-907807-19-0

The aim of this series is to synthesise conservation actions used worldwide to provide an evidence base to help scientists, policy makers and especially practitioners to design and implement maximally effective conservation. This volume focuses on bird conservation and lists 322 conservation interventions ranging from habitat management and minimising pollution threats to providing supplementary food. The book is logically structured, grouped either according to intervention type (e.g. habitat restoration creation; education and raising awareness; captive breeding) or threat (e.g. non-native species; urbanisation; agriculture). It is easy to find a specific interaction thanks to a comprehensive and well laid out table of contents, while the index allows all information for a specific species to be located.

For each intervention, the authors outline the main results from key scientific studies on a one-study-per-paragraph basis. This means the book feels rather like a series of notes, rather than being a true synthesis. At the start of each section, the 'headline' findings are given using bullet points. This is helpful for the longer sections but rather pointless for very short sections where there is a lot of similarity between the bullet point(s) and the detailed account. My main gripe with the book is that, other than in the bullet points, there is very little synthesis of key themes and key findings. This means that it is rather hard to get an overall picture of the effect of a conservation intervention – the evidence is laid out for the reader, and very clearly at that, but it is (largely) up to the reader to analyse and evaluate that evidence. No recommendations are given; again, the reader needs to formulate their own recommendations based on the descriptive accounts of relevant studies. Overall, this is a useful descriptive summary of conservation actions for birds but requires the reader to draw the threads together.

Anne Goodenough



Do Species Exist? Principles of Taxonomic Classification

Werner Kunz (2012). Wiley-Blackwell , Chichester. £65.00 (hbk)

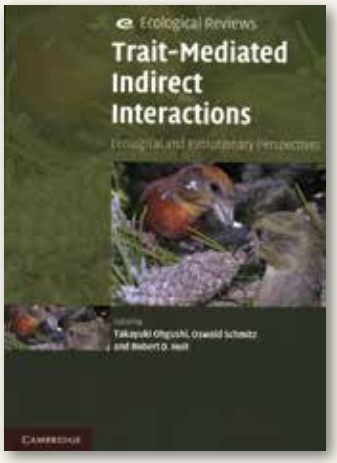
ISBN 978-3-527-33207-6

This volume was first published in German in 2012 with the English translation a year later. The author admits to incubating much of the material for about 20 years as he gradually moved from being a straight geneticist to a scientist embracing philosophy. Following this fascinating progression through this book is, for me at least, a major exercise and one that I regret that I have not fully completed by the time this review was due. Like most practicing biologists I use species as a tool almost every day, even though I understand the concept's limitations. However, I had not realised quite how human-centric it is, nor, I regret to say did I realise that Darwin did not believe in species.

This book is divided into eight chapters. Each covers a particular theme such as 'what are traits in taxonomy?' 'biological species as a gene-flow community' and cladistics, with current hot topics such as bar coding being considered *en route*. Most examples used are from animals, with a bias towards birds, and each is well explained by simple diagrams. Non-plant and animal eukaryotes do not feature, which is unfortunate, particularly in the case of fungi. We are currently surrounded by species (???) of *Phytophthora* that have caused major problems such as the potato famine in Ireland and the devastation of Jarrah dieback in Australia, with new problems in Britain and elsewhere killing many woody species. There is also limited coverage of bacteria, an area where arguments about the species concept have been raging for decades. Lateral transfer is briefly mentioned, but the important dual nature of the DNA complement of many parasitic and symbiotic bacteria is not clearly spelled out.

I will certainly return to this book, because I am sure it can help me understand the philosophical aspects of one of our most commonly used terms. I think, as suggested in this book and elsewhere, there will be a move away from using species as the main taxonomic tool in future decades, but coming up with a robust alternative system will take time.

Janet Sprent



Trait-Mediated Indirect Interactions

Edited by Takayuki Ohgushi, Oswald Schmitz and Robert D. Holt (2012) Cambridge University Press, Cambridge. £70.00 (hbk)

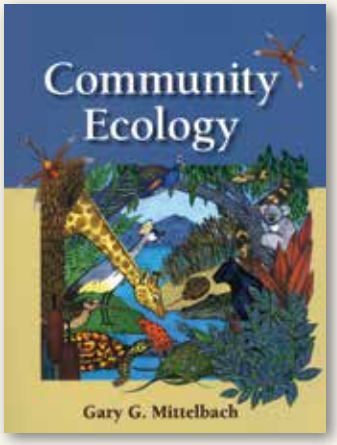
ISBN 978-1-107-00183-1

£40.00 (pbk)

ISBN 978-0-521-17313-1

The complexity of interactions between species in ecosystems is a fundamental concept in community ecology. The term 'trait-mediated indirect interaction' refers to the way in which the relationship between two species in a system can be influenced by the presence of a third (or more) species. All communities of three or more species are likely to exhibit such interactions, and their study can be of considerable value in management, both for conservation purposes and in fields such as agriculture, forestry and pest management. This volume contains an extensive variety of examples of these interactions in both marine and terrestrial environments. They cover such topics as host-parasitoid interactions among insects, plant-herbivore systems, and predator-prey relationships. Some contributors investigate the involvement of such interactions in the process of coevolution and the development of mutualism, while others document their involvement in food web composition. The concept can even be applied to the evolution of microbial mutualisms. A final section examines the application of these ideas in such areas as biological pest control and agriculture, plus the possible impact of environmental change, such as climatic shifts, upon these interactions. There is material here that will prove of interest to population ecologists and to those involved in community and ecosystem studies. The book provides an approach to understanding community relationships that involve more than simple two-species interactions.

Peter Moore



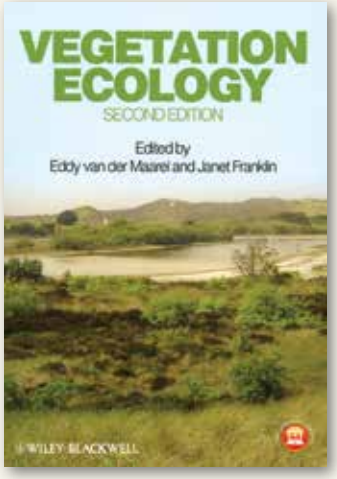
Community Ecology

Gary G. Mittelbach (2012) Sinauer Associates, Sunderland, MA. £48.99 (pbk)

ISBN 978-0-87893-509-3

As the author points out, the problem with writing an introductory text on community ecology is what topics to include, and what emphasis to place upon each of them. Mittelbach chooses to start with the big picture and to examine global patterns of biodiversity, including latitudinal gradients, from which he works down into local landscape patterns. The movement from there into ecosystem functioning is not entirely seamless, but does share issues of biodiversity significance. The bulk of the book then consists of population ecology, including density dependence, predator-prey, competition models, and mutualism. The component parts are then assembled as he looks at food webs, metapopulations and species coexistence models. The inclusion of neutral theory here is a creditable feature. Finally, the author looks at evolutionary effects, especially the possibility of rapid evolutionary development within communities. The text is attractively set out, including clear graphics, and a sensitive approach to the use of mathematical models which should introduce the student to this important aspect of the subject without scaring them away. The book will undoubtedly be adopted for many undergraduate courses in community ecology.

Peter Moore



Vegetation Ecology (Second Edition)

Edited by Eddy van der Maarel & Janet Franklin (2013) Wiley-Blackwell, Chichester. £90.00 (hbk)

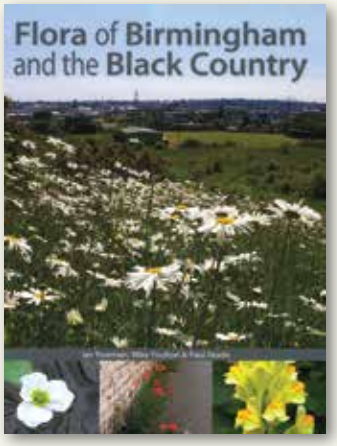
ISBN 978-1-4443-3888-1

£45.00 (pbk)

ISBN 978-1-4443-3889-8

Many ecologists will be delighted to learn that the study of vegetation did not end with the death of Tansley! In this edited volume, many aspects of vegetation science are covered, from the historical debates about the nature of vegetation and phytosociology, through to current questions concerning the impact of climate change on vegetation. Vegetation classification may seem somewhat static and descriptive to the experimental ecologist, but it is often basic to the understanding and communication of site features and is therefore valuable for field studies. Three chapters cover such work, including topics such as discontinuity in vegetation, and the issue of dynamic change. More specific subjects then take over, including clonality and modularity, assembly rules in vegetation, species interaction (including allelopathy), and the role of herbivores in the establishment of vegetation structure and composition. Soils receive surprisingly little attention apart from a mention in a chapter on vegetation and ecosystems, when considering biogeochemical cycling, and a more detailed coverage of soil-dwelling organisms, with especial reference to rhizosphere and mycorrhizal studies. A chapter is devoted to diversity and its relationship to stability in vegetation, and the subject of plant strategies and functional types is also given its own chapter. The final section of the book is given over to more applied aspects of vegetation science, such as invasion (and invasibility), conservation and restoration, and the approach to vegetation mapping at different scales. This last subject is an essential basis for the monitoring required if the impact of climate change is to be understood. This is a great book that has something of interest for all ecologists with a botanical bent. Only one thing is absent throughout, that is any reference to the work of Tansley! Perhaps his influence is so profound that it no longer requires mention, rather like Newton in physics.

Peter Moore



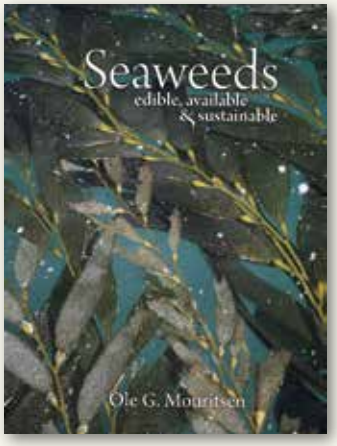
Flora of Birmingham and the Black Country

Ian Trueman, Mike Poulton & Paul Reade. Pisces Publications, Newbury. £38.00 (hbk)

ISBN 978-1-874357-55-1

Another in the series of excellent 'county' floras. This one stands out for two main reasons. Firstly, an earlier chapter gives 12 botanical walks, each with instructions on the route and what should be seen at each stop. Secondly, it includes checklists of not just vascular plants but also fungi, lichens and bryophytes. This stretches the definition of 'flora' a little but is so useful. The lists for lichens and bryophytes give notes on habitat while for vascular plants there are fuller ecological descriptions and many have distribution maps. There are also good sections of the physical make-up of the area and social history pertaining to plants. This is beautifully printed with many high quality photos of plants and people. A benchmark local ecological flora.

Peter Thomas



Seaweeds: Edible, Available, and Sustainable

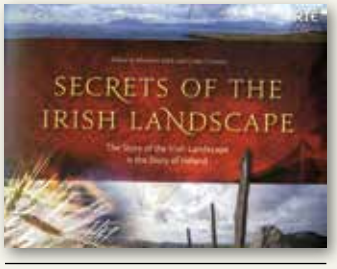
Ole G. Mouritsen (2013) University of Chicago Press, Chicago. £24.50 (hbk)

ISBN 978-0-226-04436-1

Is this the first ecological cookbook? There are plenty of recipes from the familiar sushi to the use of seaweed in soups, salads, main courses and deserts, including bullwhip kelp coated with chocolate (surely worth trying just for the name!), and putting a piece of dried *Chondrus crispus* into champagne to watch it unfold like a flower "while it dances on the bubbles". Wooing with seaweed? But these culinary delights take up under a third of the book, the rest being concerned with past and future uses of this often ignored group. The first and longest part of the book is on the role that seaweeds have played in our history, providing foods and elements in our diet such as salt. This even goes so far as to suggest that the evolution of the human brain was down to seaweed supplying various micronutrients such as iodine that would have been difficult to get elsewhere. Inevitably, the discussion of food includes a lot of description of the taste of different seaweeds, their calorie content and health benefits, including their potential as anti-cancer agents. The last section of the book is on industrial uses of seaweed: extracting alginates, their use in medicines and as animal fodder and fertilizer.

With the many popular TV cooking shows currently on offer, you might, at first dip, see this book as a bit of showmanship, cashing in on fashion. But it includes a sound appreciation of the applied ecology of seaweeds and sits at the junction between science and social science. We accept this in conservation science so why not with seaweed aquaculture? Look at it yourselves and enjoy the science as well as the recipes.

Peter Thomas



Secrets of the Irish landscape: The story of the Irish Landscape is the Story of Ireland

Edited by Matthew Jebb & Colm Crowley (2013) Cork University Press, Cork. €29.00 (hbk)

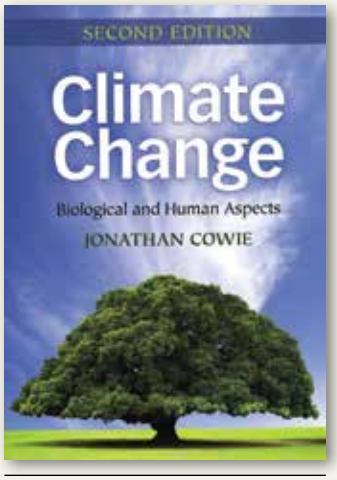
ISBN 978-1782050100

This is a lovely coffee table book that accompanies an RTE television series aired in May 2013 that was inspired by the work of Robert Lloyd Praeger (1865-1953). Praeger has been described as an *Irish Naturalist Optimus Omnium*, since his extensive botanical surveys, which includes a 5-year "one-man census of the entire Irish flora", gave him an intimate knowledge of the Irish flora and its context in the landscape, people and places. The book is edited by Matthew Jebb, Director of the National Botanic Garden, and Colm Crowley, producer/director of the RTE programme. The book is divided into 24 chapters and broadly follows a chronological sequence, starting with the glacial processes that define the form of the landscape, and then moving on to the various life forms that colonised the newly exposed land and then how man modified these over the ages. By the end of the book you will be equipped with the various tools to unlock the hidden messages that have been written in the palimpsest that is the Irish landscape. I was particularly captivated by Connor Meade's search for life in Ireland during the Ice Age, which utilises new innovative genetic techniques to demonstrate that Ireland was not just a mass of ice and rock, but actually supported living organisms, such as the Arctic sandwort . Interspersed throughout the book are historical photographs and short blurbs about the life and works of Praeger. For example, Colin Kelleher recounts Praeger's 1913 seed buoyancy experiment that aimed to test whether plants could float in from neighbouring lands and provided evidence for the land bridge theory of post-glacial colonisation. This book is a fascinating and well written account of scientific endeavour that is accessible to the general public and academic alike and embellished with beautiful colour illustrations and photographs. If you are interested in finding out more on Praeger check out his 1937 book.

REFERENCE

Robert Lloyd Praeger (1937) *The way that I went.* The Collins Press Facsimile edition was published in 1998

Sarah Taylor



Climate Change: Biological and Human Aspects (2nd ed.)

Jonathan Cowie (2012) Cambridge University Press, New York. £34.99 (pbk)

ISBN 978-1-107-60356-1

The role of climate/weather in relation to society, agriculture (food provision), energy production and use, human health, etc. cannot be underestimated, which is why climate change has become a mainstream political issue. Its significance is also reflected in the numerous books which have recently been produced which deal with climate, its real and potential changes, and possible impacts. This book comprises eight chapters which divide equally between the record of past climatic change, and changes and impacts post 1600AD (the Little Ice Age), including human responses.

The introductory chapters considers various components of global climate (e.g. the greenhouse effect, carbon cycle and hydrological cycle), and how they are interact. Then the all-important techniques of climate reconstruction are described. Biotic indicators including pollen analysis and dendroecology are used, though there is no mention of beetles or snails, alkenes and 18O isotopes. Examples of abiotic indicators are isotopes of water and carbon content of ice cores. A notable absence is a discussion of amino acid racemisation, an innovation developed in the last 30 years, to date fossil biological materials such as bone or shell.

Cowie chooses 1600AD as the beginning of modern times. There is a case for this: it was the beginning of significant scientific research endeavour and, not least, the start of meteorological records. It was also, as I have pointed out (Mannion 2006), one of several carbon thresholds; in this case it was the expansion of Europe that led to a major shift in carbon capture by humans. Chapter five documents climatic change and its biological impact since 1600AD. Of especial importance are records of atmospheric carbon dioxide and other gases in polar ice cores which show huge increases in greenhouse gas concentrations; why do sceptics believe that this is insignificant!

What is happening today is the focus of chapter six. Few areas of the world are devoid of evidence for climatic change, or indeed other types of change. Ocean biota and chemistry are altering, declining and acidifying respectively. Terrestrial floras and faunas and their productivity at low and high altitudes are altering in composition (Tansley would be enthralled!), flowering/fruiting/hibernating dates are altering; sea levels are rising, ice caps and glaciers are melting, temperatures are rising and the incidence of extreme weather events is increasing. Case studies from diverse regions illustrate these changes.

Population growth and technological development are, as is examined in chapter seven, the basic causes of climatic change though the relationship is complex.

What, if any, should the responses of governments be to these issues? These questions of sustainability are addressed in the final chapter. This book provides a reasonable synopsis of the material available on climatic change and is thus a useful addition to the literature. The graphs, diagrams, etc. are informative as are the reference lists at the end of each chapter. It would have been more convincing if Cowie had avoided the awful and indefinable 'we' which always fails to impress, especially in a book with a serious scientific message. At £34.99 this is a reasonable price for a good-sized text.

REFERENCE

Mannion, A.M. (2006) *Carbon and Its Domestication*. Springer, Dordrecht.

Antoinette Mannion

As the *Bulletin* goes to press Cambridge University Press is offering a 20% discount on Jonathan Cowie's book. Go to www.cambridge.org/climatechange2

DIARY

THE SOCIETY'S MEETINGS

2014

JAN 22-24
The Impact of Pesticides on Bee Health – Joint British Ecological Society, Society of Experimental Biology and Biochemical Society. Charles Darwin House, London, UK. Further details: http://www.jointbessebbs.org/2014/Home.aspx

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/

OTHER MEETINGS 2014

2013

JAN 8-10
International Advances in Pesticide Application 2014. Oxford, UK. Details from: http://www.aab.org.uk

JAN 13-17
The 9th International Conference on Dendrochronology, Melbourne, Australia. Details from: http://dendro2014.com/

JAN 19-24
International Symposium on Foraminifera. Concepcion, Chile. Website: http://www2.udec.cl/forams2014/.

MAR 6-9
SSSA Ecosystem Services Conference. Soil's Role in Restoring Ecosystem Services. Sacramento, CA, USA. Website: https://www.soils.org/files/meetings/specialized/ecosystem-services/ecosystem-flyer.pdf

APR 4-6
Butterfly Conservation's 7th International Symposium – The ecology and conservation of butterflies and moths. Southampton, UK. Website: http://butterfly-conservation.org/4218/symposium-2014.html

MAY 7-8
Sustainable Agriculture – Annals of Applied Biology Centenary Conference. Rothamsted Research, Harpenden, Herts. Website: http://www.aab.org.uk/contentok.php?id=168&basket=wwsshowconfdets

MAY 14-16
Networks of Power and Influence: ecology and evolution of symbioses between plants and mycorrhizal fungi – 33rd New Phytologist Symposium. Zurich, Switzerland. Website: http://www.newphytologist.org/symposiums/view/4

JUN 14-17
Evolutionary Biology of Caenorhabditis and other Nematodes. Cambridge, UK. Details: https://registration.hinxton.wellcome.ac.uk/display_info.asp?id=390

JUN 18-20
Climatic Uncertainty – It's Impact on Agronomic Decision Making. Leeds, UK. Website: http://www.aab.org.uk/

JUL 1-4
Society of Experimental Biology Annual Meeting. Manchester UK. Details from: http://www.sebiology.org/meetings/Manchester/Manchester.html

JUL 13-17
BIOGEOMON 2014. 8th International Symposium on Ecosystem Behaviour. Bayreuth, Germany. Website: http://www.bayceer.uni-bayreuth.de/biogeomon2014/.

JUL 13-18
The 27th Congress for the International Union for the Study of Social Insects. Cairns, Australia. Website: http://www.iussi2014.com/.

JUL 14-17
2nd Annual International Conference on Ecology, Ecosystems and Climate Change, Athens, Greece. Further details: http://www.atiner.gr/ecology.htm

JUL 15-18
Systems biology and ecology of CAM plants. Lake Tahoe, CA, USA. Details: http://www.newphytologist.org/symposiums/view/5

AUG 3-8
10th European Congress of Entomology. York, UK. Details from: http://www.royensoc.co.uk/meetings/20140803_ece2014.htm.

AUG 3-8
9th IsoEcol Conference. The University of Western Australia, Perth. Details http://www.isoecol2014.org/.

AUG 3-8
9th European Conference on Ecological Restoration, Oulu, Finland. Further details: http://chapter.ser.org/europe/upcoming-events/conferences-workshops/.

AUG 10-15
From Oceans to Mountains: It's all Ecology – 2014 Annual Meeting. Sacramento, USA. Website: http://esa.org/am/.

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/

SEP 25-26
Are There Limits to Evolution? Cambridge, UK. Website: http://www.nature.com/natureevents/science/events/20748-Are_There_Limits_To_Evolution

TRAINING WORKSHOPS

FEB 4-7
Modelling Dynamics In Biology: From History To Practical Examples. Barcelona, Spain. Further details: http://www.transmittingscience.org/courses/syst-bio/intro-system-bio/

MAY 26-30
Introduction to Individual based models in Ecology using NetLogo. Barcelona, Spain. Further details: http://www.transmittingscience.org/courses/eco/system-bio-ecology/

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.

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*in*FOCUS

Photo: Hans De Kroon

Tassel Hyacinth (Muscari comosum) in the wild (Lefkas, Greece)

Tassel Hyacinth is not uncommon in the Southern part of Europe and is a very photogenic species. Hans found it early May on the island of Lefkas, Greece.

Looking **BACK TO THE FUTURE**

So, we've come to the end of the last Bulletin of the BES centenary year. We've tried hard to capture some of the fun and excitement of the last 12 months as well as reflecting the serious scientific events of the year. We've included reports on cutting edge symposia, noted the multifarious activities of our Special Interest Groups, recorded the success of the Sex & Bugs & Rock 'n Roll roadshow in taking ecology to the music-loving public, pictured some of the 80,000 people that turned up to enjoy Festival of Ecology activities, and tried to give a flavour of a hugely successful International Congress of Ecology. We have used previous back covers to illustrate scenes from the archives, and the natural temptation was to honour another of the founder members or other key figures of ecology. But we hope you'll have noticed that the *Bulletin* likes to raise a smile every now and then, and we could not resist this image sent in by Michal Knapp and Jana Knappova of their younger daughter Sarka, who is clearly an avid fan. An eater if not yet a reader.

With the surge in life expectancy Sarka might just be around to see the 200th anniversary of the British Ecological Society. If so, may she be living in a happy and prosperous world that lives in harmony with the natural environment; and may there still be a community keen to advance ecology and make it count.

British Ecological Society