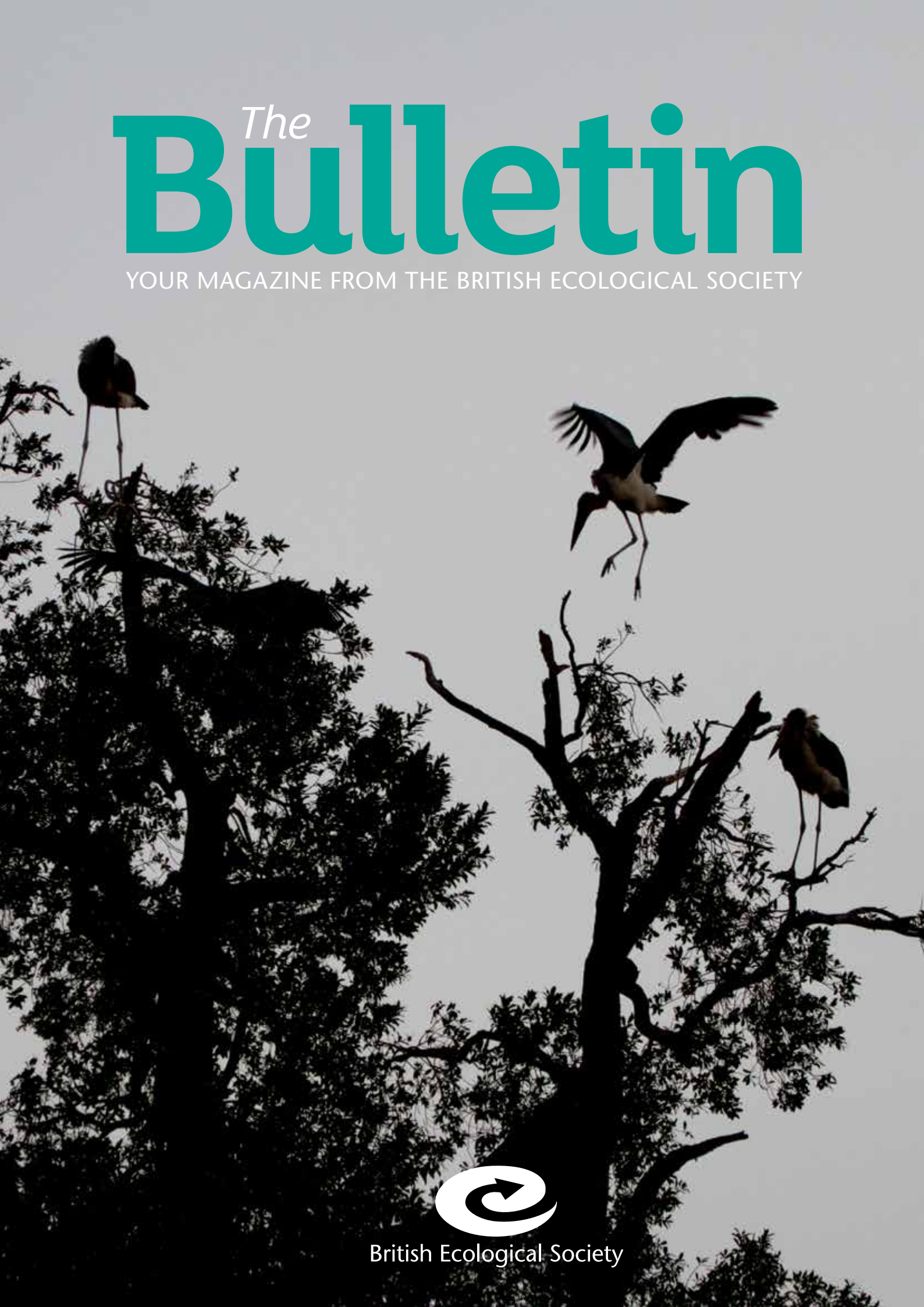
The Bulletin

YOUR MAGAZINE FROM THE BRITISH ECOLOGICAL SOCIETY



British Ecological Society

*in*FOCUS

Photo: Frazer Bird

The BES Roadies hit the Wychwood Festival n June. Will Gosling helps budding ecologists match the poo to the animal.

Contents *August 2013*

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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: Marabou storks *(Leptoptilos crumeniferus)* roosting in the Masai Mara, Kenya

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REGULARS

FEATURES

WELCOME

Making Ecology Count

August in London, and another global event where excellence, respect and friendship will be to the fore.

Rather against expectations, in August last year the great British public engaged enthusiastically with the 2012 Olympics. While the 11th International Congress of Ecology will generate slightly less excitement among the populace at large, for ecologists it will be every bit as stimulating as the table tennis, fencing and weightlifting that were played out 12 months ago at the ExCeL centre, our conference venue. This year it will be ideas batted to and fro, the sparring will be verbal and hopefully the weights lifted will be ideas, collaborations and new initiatives. London will again host the brightest and best from across the world; established stars will have a chance to shine and new talent will suddenly blossom on the big stage.

You'll have to forgive my hyperbole. The BES Centenary events are now in full swing and activities that have been in the planning for months or even years are coming to fruition. We've tried to give you a taste of most of them in this issue and the last, but with the Festival of Ecology underway and the INTECOL Congress imminent, life is so hectic that some of the reporting of events will have to wait for the next issue. But for now we have coverage of the launch of the Ecological Issues booklet at the Palace of Westminster (p8) and a report from the Wychwood Festival, where a group of intrepid volunteers spent their weekend swabbing festival-goers, cajoling them to play a poo game and providing assistance with identifying creepy-crawlies from around the Festival site. Brilliant outreach work! Emma Sayer says that BES stickers were applied to nearly 1000 visitors' lapels, though it is not recorded whether this was part of a human mark-recapture experiment (p12). Karen Devine reports on the Centenary Wallchart competition that attracted over 300 entries (p18). As you will see on the back cover, the Chelsea Flower Show also celebrates a centenary this year, and the shared anniversary was celebrated with a BES stand at the event. Ken Thompson designed the stand with planting styles characteristic of 1913 and 2013, with an overarching theme alerting visitors to the threats posed by invasive species.

Is all this effort worth it? Well, when MPs and Peers take the trouble to come along to hear what ecologists have to say about extreme events, when families spend festival-going time in a tent watching a bumblebee colony, when schoolchildren draw pictures and compose odes to wildlife, the answer must be yes. Advancing Ecology is not just a matter of doing our research. It is convincing other people that it counts.

Much of the rest of this issue reinforces the role that ecologists play in the wider world. European fisheries policy has more to do with politics than commonsense, but the importance of science in providing a sound basis for the political debate was never more obvious (p20). Rose Hanley-Nickolls gives us a delightful account of the efforts to restore to New Zealand the "melodious wild musick" heard by Joseph Banks in 1770 (p28). Mike Morecroft (p31) explains the process of producing a climate change impacts report card that will summarise the key science for non-specialists. The Field Studies Council does an invaluable job linking ecology and natural history for both amateur and professional biologists: the FSC is 70 this year (p34). While old traditions are to be celebrated we must not lose sight of the plethora of new equipment being added to the ecologists' toolbox, so Yoseph Araya brings us up to date on Apps for ecologists (though no doubt more have been added since he wrote his piece on p36). Our two regular essayists both glance back to the past for messages which will apply equally well in the future (John Wiens on p39, Richard Hobbs on p41). Markus Eichhorn has a rant about lack of clarity in scientific papers (p46). The proximity of Markus' rant and the reports on BES journals (p48) and our book reviews section (p52) is purely coincidental.

The annual report and accounts are presented from p62-80. I urge you to read the report, which details the achievements of the Society and the challenges that have to be addressed in maintaining the health and vitality of our publications, meetings and other events. Council and BES employees work hard on

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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behalf of us all; if you want to make your own contribution, consider standing for Council. And don't wait until you are old and grey; we need elected representatives that reflect the membership, and besides, I read somewhere that being a postdoc was the most productive time of a research career (Bulletin 42:2 p37, to be exact) so how about donating some of your time and energy to making the BES a Society that meets the needs of ecologists past, present and future?

Former BES Hon Secretary Malcolm Cherrett has drawn my attention to an omission on the back cover of the last issue, where we offered a photograph of BES Presidents extant in 1988, the 75th anniversary of the Society. Due to an oversight the Society failed to invite Professor A R Clapham, President from 1954-56, to the 1988 symposium, and I failed to mention him in the caption as a past-president. Roy Clapham CBE, FRS was an extremely eminent ecologist who spent most of his career at the University of Sheffield. Professor Clapham was a co-author of the *Flora of the British Isles* known to most botanists simply as CTW, after the initials of the three authors, Clapham, Tutin and Warburg.

Finally, it is very sad to note the death of Nick Dusic, the first Science Policy Manager for the BES. Nick was a warm and charming young man and we offer our condolences to his family on their great loss. Hazel Norman pays tribute on p00.

Alan Crowden / Editor

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LETTER TO THE EDITOR

FROM ALAN GRAY
On Desert Island Discs

(Published in the Bulletin of June 2013)

I thoroughly enjoyed R. J. (Sam) Berry's piece in the last Bulletin on Desert Island Discs pointing out how few ecologists have been on the programme. I was mildly puzzled however by Sam's inclusion in a list of castaways who had asked for insect repellent, but according to him were not biologists, of the late great stage and screen actress Miss Dulcie Gray. Not only was my namesake (no relation) passionate about butterflies - she was a Vice-President of the British Butterfly Conservation Society for many years and wrote a charming, knowledgeable and beautifully illustrated book entitled "Butterflies On My Mind" - she was also a Fellow of the Linnean Society of London.

In fact, by one of those strange little coincidences that crop up in life Dulcie Gray and I were admitted to the Linnean on the same day (in 1984), one after the other in the small Presidential hand-shaking ceremony that marks such occasions. The President of the Linnean Society whose hand we shook that day was none other than Professor R J Berry!

Alan Gray

p.s. Sam, as I recall Dulcie and I had to shake your left hand as for a reason you will no doubt recall your right arm was in a sling.

PRESIDENT'S PIECE

Ecology goes global

Georgina Mace / President of the British Ecological Society

INTECOL 2013 promises to be an exceptional event. Lots of people, a great variety of approaches to and applications of ecological science, and a huge international gathering are ingredients for a really exciting meeting.

I think this comes at a key point in time for the science of ecology. Maybe it is a 'turning point', although I hesitate to say such a thing only partly because I try to avoid clichés! The various projects that BES has coordinated as part of our centenary events provide great food for thought about where ecology has come from, where it is heading, and what are unexplored avenues for the Society to pursue next.

People usually start with thinking about the past, but I will start this reflection with the future. Bill Sutherland's paper[1] on 100 fundamental ecological questions leaves no doubt that there are important and interesting areas of ecological science yet to be answered that will keep our discipline happily involved in research over the next 100 years. The emergence of several new 'NCEAS-like' initiatives, both in Europe and the rest of the world, suggests that ecologists in several countries are very clear that there is more to be gained by bringing ecological science synthesis and analysis in cooperative working groups up to new levels. So we can see great confidence in the basic science, as well as in the added value of coordination and collaboration. Ecology will grow but with new ways of working, perhaps including more data synthesis and ecoinformatics (whatever that might mean!).

ECOLOGY IN DEMAND

In my mind there is a further reason for us to be optimistic and excited about the future of our discipline, and this is because the demands for good, fundamental ecological science is also growing outside the discipline, and in the areas of science that are attracting most attention from policy-makers and science-funders. Consider the major topics related to food and water security, alternative energy systems, natural hazard and disease resilience, and even poverty alleviation. All of these topics have in the past been undertaken rather independently of ecologists, but we have a strong set of basic knowledge, tools,

The launch of the Ecological Issues document at Westminster brought ecology and the BES to the attention of MPs and members of the House of Lords.

system and process understanding that will contribute in important ways to all of these. In the past few months this point has been brought home quite clearly at several events, most recently at the UK Town meeting on the international Future Earth research programme (http://royalsociety.org/events/2013/future-earth-meeting/) co-hosted by the British Academy and the Royal Society. Despite the breadth of this programme (http://www.icsu.org/future-earth), it is clear that ecology plays a core role in delivering its ambitious goals, and those of you who heard one of the designers and instigators of Future Earth, Professor Johann Rockstrom, speak at last year's annual meeting, can have no doubt that this is the case.

Linked to this is the success of one of our centenary projects, the cross-disciplinary meetings. Thankfully, not a cross word was spoken and these three meetings, which were designed to bring BES' ecological strengths together with closely related disciplines and see how more integration might benefit both, proved very successful and stimulating. In fact all were successful and inspiring meetings which brought together a range of different research communities. I hope they lead to further activities to establish stronger working across these areas, which focussed on marine ecology, global change and biosphere interactions, and the evolutionary ecology of infectious disease. These three areas are just a subset of topics where ecological science can bring new insights and understanding.

As I write, the Festival of Ecology (festivalofecology.org) is just starting and promises to be another new venture for us, an important step in exploring how we as the BES can engage more with the public and other institutions to improve ecological knowledge and understanding. We have partnered with over sixty organisations across the UK to organise ecological events that will reach out beyond our normal networks, involving natural history societies, museums, national heritage sites and horticulturalists. The experience so has been fantastic, everyone seems to be enjoying it, and there is much more to come!

To return to our history, we really can be proud of 100 years of ecological science led by the BES. If anyone needs reminding about what this includes, for just a taster you have to refer to the compilation of 100 of the most influential papers published in the BES journals, a publication coordinated by John Whittaker and Peter Grubb, which accompanied the June edition of the Bulletin, as well as being available online. If you start reading this booklet you will realise how much has been achieved over the past 100 years by so many great ecologists that the BES has supported in one way or another. It is an inspiration to all of us for what we can hope for over the next 100 years!

The BES-York Sustainability Institute meeting in April brought together a multi-disciplinary group to discuss global change and biosphere interactions

I will finish by acknowledging the huge amount of excellent work that has gone into all these projects. None of them would have been possible without the dedication and excellence of you all – our BES members. None of it would have happened without the outstanding support and organisation of the staff at Charles Darwin House. With regard to the centenary, we especially have to thank Hazel Norman and Julie Hodgkinson, but of course it is also a wider team effort as will be clear when you read this *Bulletin*.

My thanks to everyone; we have a great deal to be proud of, but also a lot of work yet to do, in the next few months but also over our next 100 years!

FOOTNOTES

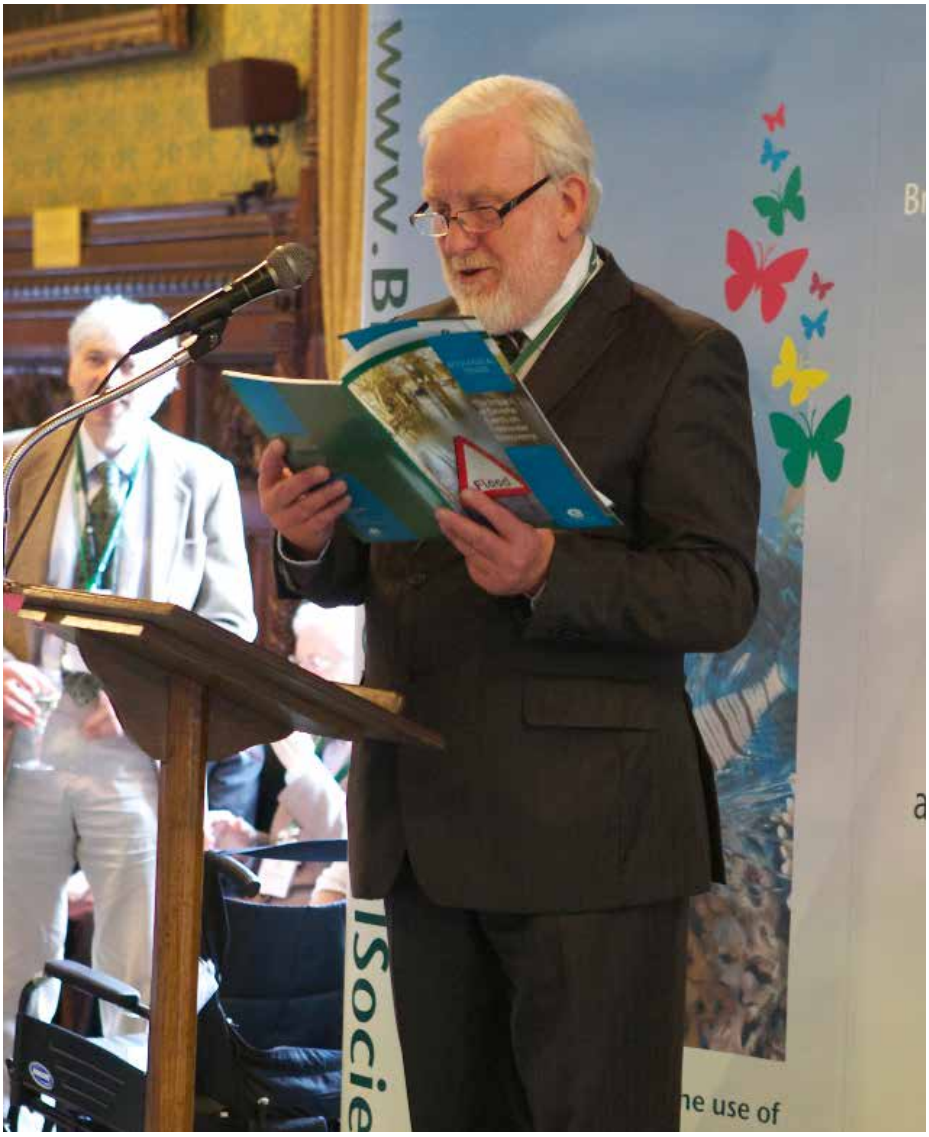
[1] Sutherland, W.J., *et al.*, Identification of 100 fundamental ecological questions. *Journal of Ecology*, 2013. 101(1): p 58-67

SCIENCE POLICY SPECIAL EVENT

The BES goes to Parliament

Martin Smith / Martin Smith
Martin@BritishEcologicalSociety.org / @BESPolicy

As part of the BES's centenary events, the newest addition to our Ecological Issues series – 'The Impact of Extreme Events on Freshwater Ecosystems' was launched in splendid style at a gathering in the Members' Dining Room in the Palace of Westminster on June 25th. BES Policy Intern Katherine Maltby reports:



Andrew Miller MP greeted guests and introduced the report

The event, which was sponsored by Andrew Miller MP, Dr Julian Huppert MP and Stephen Metcalfe MP, saw over 100 people attend, all of whom welcomed the report and the much needed information it provides about the problems freshwater environments face from extreme weather events.

Andrew Miller MP introduced the document and remarked on the excellent attendance. BES president Professor Georgina Mace then highlighted the success of the BES over the past 100 years and mentioned the range of events that are being held this year as part of the centenary celebrations. The speeches were concluded by Huw Irranca-Davies MP who gave an engaged and enthusiastic welcome to the publication, encouraging 'all to read the report, and to act upon it' and noting the importance of understanding the ecological issues that extreme events present for both freshwater systems and wider society. Huw also highlighted the importance of societies such as the BES in holding such events in Westminster in order to further bring environmental problems to the attention of MPs.

The document itself grew out of an increasing concern over the lack of information made available to policy makers over the issues that extreme events present for freshwater ecosystems. Whilst much media and political attention centres upon the impact of extreme events upon people and their properties, far less is given to freshwater

A full house!

systems. The document, written by a number of freshwater specialists, therefore gives an insight into the problems such systems face and provides recommendations on how to attempt to limit the impacts from such events. As the document presents, extreme weather events such as floods, drought and heatwaves have wide-reaching impacts on freshwater systems, affecting water quantity and quality, river structure and hydrology, in addition to causing species loss and in some cases encouraging non-native invasive species to flourish. Additionally, different weather events have different impacts which will thus require different management techniques. Whilst flooding and drying out are natural features of freshwater systems, the intensity and frequency of such events is set to increase with climate change. Therefore developing more rigorous management and policies will help to limit some of these impacts. By managing and limiting the impacts of extreme events on freshwater systems, not only do we enhance the resilience of ecosystems to these events, we also provide benefits to society through sustaining ecosystem health. The document highlights many ways that managers and policy makers can maximise resilience of these freshwater systems.

From left: Huw Irranca-Davies MP, Andrew Miller MP, Professor Georgina Mace (BES President), Dr Stephen Benn (Parliamentary Affairs manager) and Hazel Norman (BES Executive Director)

Natural Flood Management (NFM), such as reforesting hill slopes, restoring river channel meanders and controlling excessive erosion, should be more widely used in order to harness natural ecological and hydrological processes to reduce flooding. Another route for management is to implement Sustainable Drainage Systems (SuDS), which apply a similar approach to NFM but instead in urban areas. Such an approach includes promoting wiser use of industrial, agricultural and domestic water and increasing the use of permeable surfaces. However, implementing such approaches, whether it be NFM or SuDS, has to occur at a landscape level if the positive effects of such techniques are to be felt more widely.

This latest addition to the Ecological Issues series is an invaluable document which highlights the importance of understanding and managing the impact of extreme events on freshwater ecosystems. Through innovative management techniques, resilience of freshwater systems to extreme events can be maximised and benefits to society will also result.

The success of the event and the encouraging comments received from MPs and practitioners alike further highlights the importance of this document. As Huw Irranca-Davies MP recommended, "read it, and act upon it". An executive summary of the report follows, and the full document is available at www.britishecologicalsociety.org/public-policy/our-position/ecological-issues/

A NOVICE GOES TO PARLIAMENT

For Martin Smith and other policy-focused members of the BES, a trip to the Westminster corridors of power is pretty much a matter of routine, but for more than a few of us this was a first visit to the mother of Parliaments. I don't think I was the only one who joined the queue to go through a security check at the Cromwell Green entrance with a frisson of excitement. A bustling mixture of staff, official visitors, tourists, and painters and decorators weaved to and fro in the cavernous Westminster Hall, then through St Stephen's Hall into the Central Lobby; Peers' corridor to the right, Commons to the left. The Division bell rang out, giving MPs warning that they had 8 minutes to get to the voting lobbies. On into the Members' Dining Room, with tables laid out with sandwiches with the crusts cut off, cakes (of course, this is the BES) and copies of the new *Ecological Issues* booklet and the *100 Influential Papers* volume. The room filled nicely, and any fear that we might end up with a room full of ecologists and no parliamentarians was not realized; members of both the Lords and Commons put in an appearance, and showed genuine interest. As Katherine observed above, the speakers were properly engaged with the topic, and it felt like a real networking opportunity had been created, and the opportunity properly exploited. Congratulations to Martin Smith and BES colleagues on an excellent event; to Iwan Jones, editor of the *Ecological Issues* volume (and to the team of authors); and to Peter Grubb and John Whittaker, editors of the *100 Influential Papers* which also attracted the attention of attendees.

Alan Crowden

The Impact Of Extreme Events On Freshwater Ecosystems: executive summary and policy brief

Extreme weather events – such as major floods, prolonged droughts and intense heatwaves – affect people and properties directly. The disruption caused to society makes immediate media headlines but, in the longer term, policy-makers need to understand the full implications of more frequent and more extreme events as our climate changes.

The impact of extreme events on the ecological health of our freshwater systems is less obvious but, nevertheless, very important. Freshwater ecosystems provide a wide range of benefits to society. These include water purification, water supply, food, and flood control. Crucially, we need these 'services' more than ever during extreme events, but degraded or disrupted freshwater ecosystems are less able to provide them. This will mean that the effects on society are magnified.

The Impact of Extreme Events on Freshwater Ecosystems summarises current knowledge about the physical and biological effects of extreme weather patterns, and outlines a range of land management strategies that can be used to mitigate these effects. Many of our rivers and lakes have been greatly modified in the past and, in places, this has made the effects of floods and droughts worse. However, there are practical steps that can, and are, being taken to manage land and water more wisely to the benefit of both society and ecosystems. Improving habitat structure and encouraging natural processes in the landscape can result in a 'win-win' situation by creating more refuges for wildlife while reducing the consequences of extreme floods and drought.

KEY MESSAGES

- Extreme weather is likely to become more common as a result of climate change – especially periods of intensive rainfall and prolonged dry spells.
- Freshwater systems are particularly susceptible to these changes. Ecosystem services are seriously disrupted when conditions go beyond normal bounds.
- Human activities influence the severity of these impacts by reducing the ability of freshwater ecosystems to withstand and recover from extreme events.
- Flooding and drying out are natural features of freshwater ecosystems, but when these become more frequent and more intense, aquatic plants and animals are less able to recover.

EFFECTS OF EXTREME EVENTS ON FRESHWATER ECOSYSTEMS

- The amount and quality of water can be greatly affected and habitats for wildlife may become seriously degraded.
- Some species may be lost locally, especially where extreme events disrupt breeding; non-native invasive species are often able to take advantage of this, so extreme events can cause the type of animals and plants to change.
- Major floods will increase inputs of domestic, agricultural and industrial pollution to rivers and lakes and reduce water quality. Erosion will re-shape river channels and affect the movement of sediment.
- Droughts will increase levels of pollution, hinder fish movement, and expose water plants to damage, ultraviolet light, heat stress or frost; many species will become stranded; the physical structure and chemical composition of river and lake beds will change as they dry out.

POLICY IMPLICATIONS

- To maximise benefits to Society, we need to ensure that freshwater ecosystems are resilient to extreme events.
- The European Union Water Framework Directive (2000/60/EC) is helping to increase the ecological quality of lakes and rivers; the EU Floods Directive (2007/60/EC) provides a mechanism for balancing ecological impacts alongside direct human effects by taking advantage of nature's own capacity to absorb excess water.
- Wise use of land and effective water management can provide multiple benefits; these include providing refuges for wildlife and reducing soil erosion and pollution.

- Natural Flood Management and Sustainable Drainage Systems (see below) at the landscape scale can provide a more sustainable, longer term solution to pollution events and flooding than traditional 'end-of-pipe' solutions and 'hard engineering' fixes.
- The three principles of Natural Flood Management and Sustainable Drainage Systems are: slow water down, encourage infiltration and encourage natural processes.

Wiser use of water for industrial, agricultural and domestic purposes will reduce the effects of drought.

Water-friendly farming can be used to improve the natural water retention capacity of land, reducing the need for abstraction.

Best practice in the construction industry can be used to reduce water demand and storm water run-off, reducing flooding and pollution.

Policy tools (e.g. best practice guidance, agri-environment schemes, urban planning) should be used to incorporate resilience to extreme events into the natural and built environments.

NATURAL FLOOD MANAGEMENT

Natural Flood Management (NFM) harnesses natural ecological and hydrological processes to reduce flooding. Most of the techniques employed are already components of existing best practice in farming, forestry, river restoration and natural habitat management.

Techniques include:

- Reforesting hill slopes
- Planting dense woodlands in gullies
- Modifying agricultural practices
- Restoring river channel meanders
- Allowing target low-lying areas to flood
- Controlling excessive erosion
- Managing large woody debris in watercourses

This approach enables most current land uses to continue, while introducing controls in key areas. Incorporating NFM into the Floods Directive has ensured that its aims are closely aligned with those of the EU Water Framework Directive.

SUSTAINABLE DRAINAGE SYSTEMS (SUDS)

Sustainable Drainage Systems apply a similar approach to NFM, but in urban areas. Water flow is managed above ground rather than being drained from urban areas through a combined sewerage or storm water system. Relatively low-cost techniques can be used to slow down runoff, including:

- Increased use of permeable surfaces, including permeable asphalt and paving
- More ponds and wetlands
- Greater recycling of roof runoff and grey water
- Increased use of swales and infiltration trenches in low-lying tracts of land next to impermeable surfaces
- Setting any necessary hard flood defenses back from the channel.

The overall effect is reduced runoff rates and increased groundwater recharge. However, SuDS provide additional benefits by increasing pollutant retention and reducing storm-water discharge. Similar approaches can be used in rural areas to reduce diffuse pollution from agriculture and provide on-farm water resources.

SUN FUN & ECOLOGY

Four of the BES Roadies share their experiences of the first music festival on the 'Sex & Bugs & Rock 'n Roll' tour.

@BESroadies / besroadshow.blogspot.co.uk

HANNAH – THE ARTISTE

Hannah Griffiths failing the audition for shrinking violet of the crew

The sun is shining, sunburnt people drift past in silly hats sipping warm pints in plastic glasses, the smell of churros wafting in the breeze, a uni-cyclist whizzes past… "Hello there, would you like to play with my poo?" comes the cheery voice of Will the Poo-Master. This was the scene for three marvellously sunny days outside the BES tent at Wychwood Festival on Cheltenham Racecourse from 31st May to 2nd June. A team of seven enthusiastic BES members spent the weekend chatting about the differences between herbivore and carnivore poo; keying out revellers to determine what UK species they resemble the most; swabbing festival goers' clothes to culture their microbes; helping excited bug hunters to identify their invertebrate captives; and with the team and visitors alike marvelling at a live colony of bumblebees busying away in their observation hive.

The Wychwood team was privileged to be the first to man the 'Sex & Bugs & Rock 'n Roll' stall for a full weekend festival this year (or *ever* for that matter) as part of the BES Centenary celebrations. As you can imagine, we were all anxious that we do our very best to enthuse as many people as we could about the wonders and importance of ecology, as well as demonstrating the brilliance of our society. And I think we succeeded. Of the roughly 1000 people we spoke to, some popped in for a quick look at the bees, others stayed for 30 minutes eagerly participating in every activity we could throw at them and asking questions – only to return the next day for more. The knowledge and enthusiasm of some of our young visitors was amazing, for example, 'Bee the biologist' (approx. 9 years old) told me that she was going to keep her special BES torch for ever so that she would always be able to look at animals even if it was dark, while 'Oscar the Sea Explorer '(no more than 7) spent a good 10 minutes educating me about the adaptive qualities of the mimic octopus and why they are successful in escaping predation. Perhaps even more rewarding, however, were the conversations with those who previously hadn't paid much attention to the natural world – the people who remarked wide-eyed: "well, I didn't know that!".

I feel very lucky that to have had the chance to be a part of such a brilliant project in science communication and public engagement. Here's to a long and successful summer of 'Sex & Bugs & Rock 'n Roll'

WILL – THE POOMASTER

Will Gosling surrenders to the authorities after being charged with peddling class A poo

My festival experience seemed to centre around poo, but not in the way in which most festival goers fear! Before people get the wrong idea, I have to say that the Wychwood Festival toilets were excellently maintained throughout the festival – well done, Wychwood! The poo I'm referring to was contained in petri dishes, which I carried around on a tray for much of the festival along with images of six UK animals. This combination of poo and pictures formed the basis for a simple game of "Whose Poo?" in which passers-by attempted to match the poo to the animal picture. By working through this exercise people were encouraged to think about animal diet, digestive systems and the use of poo for ecologists. Taking just a few minutes in its most basic form, the "poo game" proved to be an excellent 'taster' to attract people into the "Sex & Bugs & Rock 'n Roll" tent.

And to answer the question everyone is surely asking: No, the poo wasn't real (hot sunny festival weather and trays of poo are not a fun mix) – but very realistic replicas. If you want to start your own fake poo collection visit the *Nature Watch* web site.

FRAZER – THE FILMMAKER

What the cool guys are wearing this year

People at festivals tend to be enthusiastic about everything, they're there to have a good time and forget about the real world, at least for a couple of days. I was pretty sure we wouldn't struggle to get people to visit our stall. But what I didn't really anticipate was just how interested and intrigued our audience would be. Not just about our novel big blue tent, our silly wellies, or fake poo, but the science we were there to show off. Instead of being another tent to browse for 2 minutes and move on, we were a hub of activity and conversation for all ages. People returned day after day with new questions and the constant stream of creepy-crawlies kept our identification table pretty busy. Perhaps what I noticed the most was our presence around the rest of the festival: it was hard to walk past a crowd of people without seeing a BES sticker or an "I've been swabbed" badge (which created plenty of great photo opportunities). We even became campsite celebrities with kids stopping by of an evening with yet more questions.

The BES should be very proud of what it has achieved with this and, most importantly, of how much the audience appreciated the effort. There is no doubt in my mind that several budding scientists of the future will have been encouraged by the BES 'Sex & Bugs & Rock 'n Roll' stall last weekend. Science can be fun and cool but I think what really came through is that science is interesting and most people are keen to find out more!!

ALEXE – THE BUSKER

Alexe Rose shows a festival goer a tray of poo. While I am not an expert, the recipient's body language seems to be saying 'Eeeeww'

On Monday I didn't know whether to pack a bog snorkelling kit or suncream. I watched miserableweatherdotcom all week and by Thursday morning I had repacked my bag several times. If in doubt, pack everything! Fortunately, everyone else had done the same, so we left the OU in convoy with fully loaded van and campervan – both looking great with the BES logo on the side.

The tent looked amazing and pulled in crowds. The 'busks' and activities worked well at this family-friendly festival and we definitely have some budding ecologists as a result!

The audience was great – people loved how we are celebrating 100 years of the Society and liked the fact that they could be part of it. I got to talk about mushrooms and poo all weekend and I have promised to source alpaca poo and elephant poo paper! We also discovered that the fibrecap fungus not only smells like Camembert, it also smells like Dad's feet.

My highlight of the festival has to be the great team that I got to meet and work with. Other highlights include stickers (people of all ages liked the stickers); seeing a giant bear and a dragon get swabbed; meeting Tony De Saulles (Horrible Science illustrator) and watching him beautify our chalk board; getting my face painted (with bugs of course!); and enjoying the live acts with the other roadies. All I can say is Aaahhoooyyy!

EMMA – THE WORRIER

Emma Sayer. Classy.

I've spent the last 5 months in a state of anxiety about whether 'Sex & Bugs & Rock 'n Roll' will work. The last week before Wychwood was a blur as I ran around in full headless-chicken mode trying to get the finishing touches in place – much to the amusement of some of the team. It's one thing to cook up a daft idea after a few pints down the pub and something completely different to see it become reality – so after setting up the stall on Cheltenham Racecourse, I spent a couple of hours in a daze because *it was really happening!* Once the site opened to festival-goers, there was no more time or reason to worry – we had over 300 visitors on the first afternoon and loads of positive feedback throughout the festival. We found out that everyone loves seeing live bumblebees and even indifferent teenagers want to know how 'gross' their festival kit is.

I spent most of my shifts on the stall taking swabs of hats, shoes, trousers, rucksacks, wristbands, etc. and applying the samples to agar plates, so people could see the microbial growth on their festival kit. We had quite a few colourful characters take a seat in the swab throne, including a bobby from the Gloucestershire Constabulary, 'Snot the Dragon', and a giant teddy bear.

The highlight of this activity was going backstage to swab the festival organisers (while Bill Bailey had dinner in the background) and then taking a sample from Greg Dread of Dreadzone, just before he went on stage to give the final (awesome) gig of the festival.

Like the rest of the team, I was absolutely thrilled to see so much interest and engagement in our visitors. And I'm sure this was partly fuelled by the energy and enthusiasm of the team working the stall – everyone did an amazing job and was so excited that it was hard to get anyone to take a break. Thanks also to Graeme Merifield, Stefan Edwards and Jem Maynard-Watts of Wychwood Festival for the support and for organising such a great weekend!

We'll be doing this all summer, so please keep an eye on our blog and, from us all: Happy Birthday BES!

The Wychwood Team was:
Emma Sayer, Will Gosling, Frazer Bird (Open University), Helen Featherstone, Sarah Dalesman (University of Exeter), Alexe Rose (Greensands Trust) and Hannah Griffiths (University of Lancaster).

LINKS

Naturewatch website – http://www.nature-watch.com/repliscat™-animal-scat-set-11-scats-p-1532.html?cPath=142_158&osCsid=fdjg610mc9psb7fsu3om3ac4p7

Blog 'Sex & Bugs & Rock 'n Roll' – http://www.besfest.org

On twitter: @BESRoadies #BESfest

Publications workshops at INTECOL

INTECOL 2013
Into the Next 100 Years

During INTECOL the Publications Team will be running two workshops on topics relevant to publishing.

The first will be held on Monday, 19 August, 13:00-14:30, and will be aimed at researchers who are interested in becoming more proactive in promoting their papers.

MAXIMISING THE IMPACT OF YOUR RESEARCH PAPER

The number of scientific papers published has increased exponentially, as has the number of journals that these are being published in. How can authors maximise the impact of their paper, *so that it stands out from the crowd,* in a world where readers are overwhelmed with different demands on their time? In this workshop we will talk about how authors are using many different ways to promote their papers including blogs, social media, videos, podcasts and the press. We are welcoming the following speakers to the workshop: **Corey Bradshaw**, University of Adelaide, **Mark Kinver**, BBC Environment Reporter, **Mike Thelwall**, Professor of Information Science, University of Wolverhamptonand **Chuck Fox**, University of Kentucky. During the workshop the presenters will help authors to understand how to make the most of social media opportunities, be given ideas on how best to work with the press, will hear discussion on the importance of focussing on those activities that will be most beneficial and will learn about how online activities can be measured.

The second workshop will be held on **Thursday, 22 August, 12:30-14:00**. It is primarily aimed at researchers for whom English is not the first language, but will also be of interest to early career scientists who want additional tips on writing and to Editors who want to understand the problems non-native English speakers face when communicating their science.

WRITING AND PUBLISHING SCIENTIFIC PAPERS IF ENGLISH IS NOT YOUR FIRST LANGUAGE

The most-renowned scientific journals publish in English only and competition for space in them is intense. A lack of adequate English skills often puts non-native English speakers at a distinct disadvantage in comparison to their native-English-speaking peers: their papers can be perceived as being cumbersome to read, lacking clarity and flow and, generally, failing to effectively communicate the research findings. It is in the interest of both parties – journals and authors – to make sure that the language barrier does not hinder the best science from being published. This workshop aims to heighten awareness in both authors and editors of what constitutes the language barrier and offer advice for those who struggle with article preparation. An expert trainer will discuss how to avoid the most common mistakes and the audience will be able to address the trainer, editors and experienced authors in a Q&A session.

Which or That?
Among or Between?
Less people or Fewer?
~~Data was~~ or Data were?
Anova or ~~Anova analysis~~?

INTECOL 2013

The 11th International Congress of Ecology is upon us. From August 18th to 23rd up to 3000 ecologists will be gathering in the revitalised East End of London to spend 6 days talking about ecology, meeting old friends and making new ones, presenting their science and hearing about work from all over the world.

11 PLENARY SPEAKERS

Tim Clutton Brock, University of Cambridge, UK

Joel Cohen, Rockefeller University, USA

Sandra Diaz, Cordoba National University, Argentina

Boije Fu, Research Centre for Eco-environmental Sciences, Chinese Academy of Sciences

Nancy Grimm, Arizona State University, USA

Illka Hanski, Helsinki University, Finland

Ove Hoegh-Guldberg, University of Queensland, Australia

Jane Lubchenco, Oregon State University, USA

Georgina Mace, University College London, UK

Martin Nowak, Harvard University, USA

Susan Trumbore, Max Planck Institute for Biogeochemistry, Germany

45 brilliant symposium topics
28 workshops

WHAT'S COMING UP AT INTECOL 2013

Agriculture, Ecology and Sustainability

So critical worldwide. Complementing 4 standard sessions, we have symposia on "Agricultural Yield", "Soil Biodiversity", and "Evolutionary Management"

Interested in Conservation, Biodiversity and and Climate Change?

Not limited to 6 oral sessions on conservation, 5 on conservation management and policy, 3 on climate, and 5 on biodiversity and ecosystem function, you'll find mention of these topics and biodiversity throughout all sessions. And don't miss the symposia on *"Phenology and Climate Change" ,"New Synthesis and Climate", "Light Pollution", "Altitudinal Patterns of Biodiversity", "Threats to Ecosystem Services", "Global Change and Multispecies Systems", "Global Change and Ecosystem Ecology"* and *"Plant Invasions"*

Urban Ecology, People and Citizen Science

Some of the most important science is happening in cities and with the help of citizens, changing and influencing policy. Don't miss symposia on *"Putting Applied Science into Practice", "Long Term Urban Research", "Island Biocultural Diversity", "The Importance of Basic Science", "Ecology and Citizen Science" "Ecosystem Poverty"* and *"Tools to Manage Human Impact"*

Parasites, Pathogens and Disease

Always a hot topic, we've got symposia crossing many boundaries, including *"Multi-level Disease Transmission", "Community Ecology of Infectious Disease", "Mediterranean Forests Fighting Back"* and the *"Forest Microbiome"*. And don't miss the 2 additional standard oral sessions.

Forests

One of the most popular standard sessions with 48 talks. And don't miss related issues in other oral sessions such as "Above Ground - Below Ground", "Ecosystem Ecology". And our cracking symposia on *"Mediterranean Forests", "Natural Forest Succession", "LTER Research", "Large Scale Manipulations in the Tropics"* and *"Forest Resilience Tipping Points"*

Not Without Evolution

Evolutionary Ecology has a strong showing at INTECOL. 3 outstanding oral sessions along with powerful insights from symposia on *"Eco-Evolutionary Dynamics", "Evolution in Ecological Communities"* and the *"Tree of Life in Ecosystems"*

Methods Galore

2 dedicated oral sessions on Methods and Maths, 2 symposia on Predictive Science, a symposia from METHODS IN ECOLOGY AND EVOLUTION, as well as a bevy of workshops during lunchtimes await you. You'll be hardpressed not to learn some new methods at INTECOL. Core Ecology, Something for Everyone. Debates, resurrections and all the topics you know and love - don't miss the big oral session on "Aquatic Ecology", "Community Ecology, "Population Ecology" and "Species Interactions" and "Food Webs". And the symposia *"Critiquing Biodiversity Studies" and "Reinvigorating Macroecology"*.

And taking us further than ever don't miss *"Island Biogeography", "Top Predators", "Mechanistic Plant Competition", "Altitudinal Patterns of Biodiversity" and "Plant Functional Ecology"*

SOCIAL EVENTS

Ecologists rarely miss the opportunity to party. Here's two of the hottest tickets in town

Informal Congress Mixer

Fox @ ExCeL, London;
Tuesday 20 August 2013; 19.00

£13.95 per person

Come along and join your fellow delegates for an evening of chat and entertainment. The ticket includes a hot fork supper, entertainment and a good company. There will also be space to relax and chat about the day.

British Ecological Society Centenary Party

Old Billingsgate, London;
Thursday 22 August 2013; 19.30

£18 per BES Member / £42 per non Member (limit of 2 tickets per delegate)

All delegates are invited to celebrate the British Ecological Society's centenary at Old Billingsgate in central London. This venue has fantastic views over Tower Bridge, HMS Belfast and London's newest attraction the Shard, so you truly feel in the heart of the city. It is quick and easy to get to from ExCeL and you can even take a leisurely river voyage to the party.

Entry includes food, three drinks and entertainment. We hope to see you there!

For a complete listing of Symposia and Workshops visit www.intecol2013.org

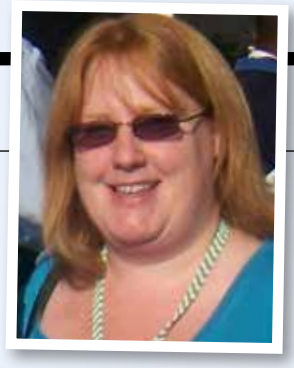
PRE-CONFERENCE FIELD TRIPS

Delegates will have a chance to see some wonderful scientific sites on the Sunday before the meeting starts. The full listing is on the INTECOL website, but will include Kingley Vale, one of the first five National Nature Reserves to be created in the UK and a favourite of Sir Arthur Tansley, and Wytham Woods, an icon for generations of Oxford staff, postgraduates and visitors.

The veteran Yews of Kingley Vale are among the oldest living things in the UK .

ECOLOGY EDUCATION AND CAREERS

BES Centenary Competition



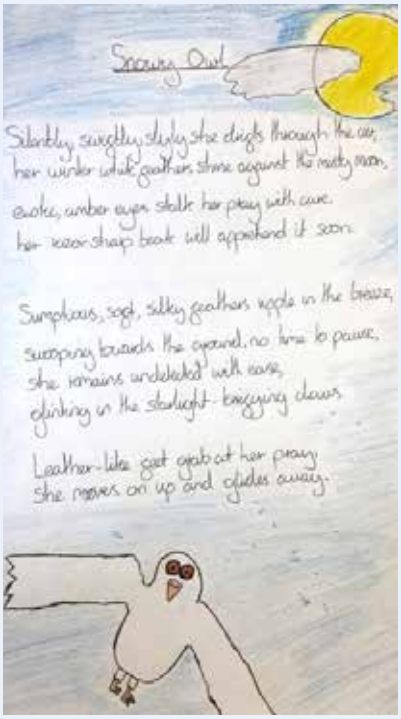
Karen Devine / BES Education Manager
@YoungEcoBES

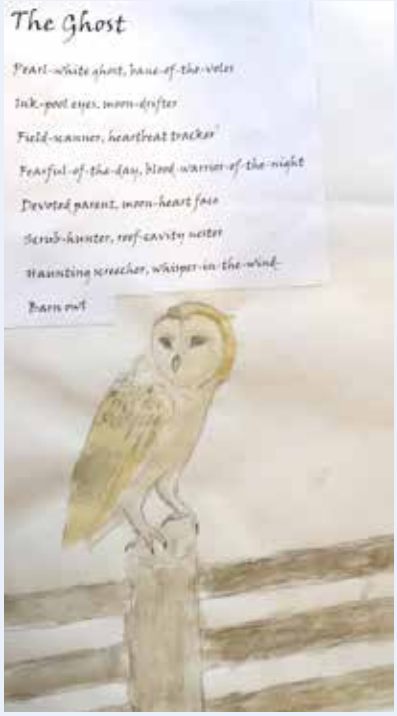
We are pleased to announce that the BES Centenary Wallchart Competition received over 300 entries, many of which were for the category "My Favourite Wildlife". The competition was open to all young people from the age of 5 through 18. We received entries from individuals, schools and youth groups.

The winner in the 5-11 category is Elia Hawley with her poem, The Ghost. Chosen by the judges for both the beautiful artwork and the detail expressed in the poetry. Elia is a student of Wolvercote Primary School which consistently submitted stunning watercolour paintings for all their entries and so the runner up was also awarded to Jack Liu in the same school for his poem, Rabbit.

Deciding on a winner for the 12-18 category was much more difficult and the judges finally awarded First prize to Adelle Kirby of St Michaels RC School for her poem Snowy Owl and second prize to Katie Elmore of Bradford Grammar School for her poem Roe Deer.

A significant number of other poems were selected for commendation: they include spiders, lion mane jellyfish, snowdrops , worms, oak trees and more. These will all be collated into booklet of centenary poems that will be available at INTECOL.

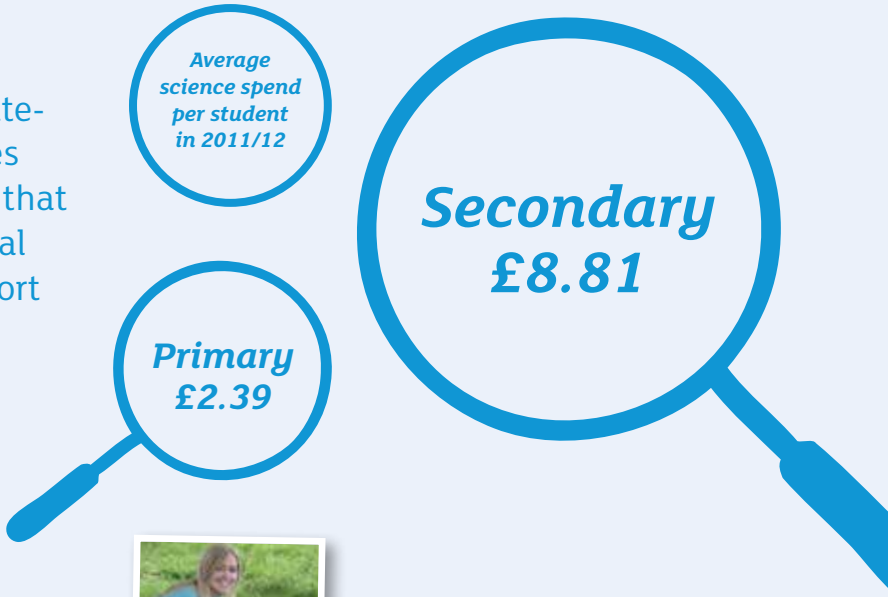




SCORE Report: provision for practical science in schools seriously lacking

Olivia Richardson & Karen Devine / Former BES Undergraduate Fellow
@orichardson12

Research commissioned by SCORE (Science Community Representing Education) shows that on average, state-funded schools and sixth form colleges have just 70 per cent of the resources that SCORE has identified as being essential to teach science subjects. The full report is available at http://score-education.org/policy/curriculum/practical-work-in-science and the key numbers are summarised below.



RESOURCING PRACTICAL SCIENCE: AT A GLANCE

Average science spend per student in 2011/12:

- Primary – £2.39
- Secondary – £8.81

Range of science spend per student:

- Primary – £0.04-£19.08
- Secondary – £0.75-£31.25

- No formal allocation of science budget to practical work in 75% of primary and 80% of secondary schools
- The average primary school has 46% of the equipment in sufficient quantities needed to teach science
- 50% of secondary schools do not have sufficient ecological sampling equipment or access to outside space for teaching practical science

UNDERGRADUATE PERSPECTIVES OF FIELDWORK UPDATE

In the last edition of the Bulletin, the initial results of a BES undergraduate survey questioning how the recent fee reforms are affecting student perspectives of fieldwork were presented. Here, I report an update on the results, comparing the perspectives of first year students (who have been affected by the fee change) and second year students (who are unaffected by the fee change).

Updated results

- 63.7% of first year students and 61.4% of second year students considered fieldwork (UK and overseas) opportunities when selecting their undergraduate course.
- 46.4% of first year students and 45% of second year students were aware of additional costs related to fieldwork opportunities when applying.
- 77.4% of second year students and 85.2% of first year students said that they thought fieldwork would be a part of their future career.

From the available data so far, it appears that undergraduate students are interested in fieldwork opportunities and regard it as important in relation to their future career. It is yet unclear as to whether the fee reforms have altered this view in relation to cost and if so, how.

This survey is on-going and will be repeated annually in order to create a larger data set with which we will be able to gain a greater understanding of the impact of the fee change on undergraduate perspectives with regard to fieldwork.

If you are currently an undergraduate then please fill in the survey. If you have contact with undergraduate students, then please distribute it to as many people as possible – the survey can be found at: http://www.surveymonkey.com/s/BJYBCB6.

SCIENCE POLICY

Fisheries reform in Europe: a sustainable future?

Cheryl Pilbeam / Policy and Education Assistant
@BESPolicy

Fishing in Europe has been a delicate issue for many decades. Concerns over the management of EU fisheries began to develop after 2006, when independent studies were highly critical of the policies then in place. Areas highlighted as most in need of change were depletion of fish stocks, damage to the marine environment, and instability within the industry. By the European Commission's mid-term review of the EU fisheries policy in 2008, these failures were widely acknowledged. After this start, a long and winding process to change EU fisheries policy finally came to a conclusion at the end of May this year.

An overarching fishing policy for European Union member states was first proposed in the Treaty of Rome in 1957, but this was not formalised until 1983, when the Common Fisheries Policy (CFP) came into place. The policy seeks to ensure that fisheries resources in Europe are economically, socially and environmentally viable for all countries in the EU. Basic objectives of the policy are outlined in the Framework Regulation, which details conservation and sustainable exploitation of fisheries resources. Hundreds of other pieces of legislation feed in to this, and the policy needs to strike an overall balance of sustainable fisheries management with profit for fleets and communities.

The latest round of CFP reforms from 2010 has been a lengthy process, reflecting both the political and structural difficulties of the policy. Initial stages were fairly uncomplicated. After analysing responses to their Green Paper on the reform of the CFP, a starting proposal for the new policy was developed by the European Commission in 2011. This was headed by Maria Damanaki, Commissioner for Maritime Affairs and Fisheries, and the proposal focused on three main areas: maximum sustainable yield (MSY), discards, and regionalisation (see Box 1).

These proposals were passed to European Parliament. The European Parliament line was developed by German MEP Ulrike Rodust and members of the Fisheries Committee in June 2012. An ambitious position was developed in relation to sustainability, with long term management plans for every fishery, a complete ban on discards, Marine Protected Area development by all member states, and the introduction of sustainable quotas based on MSY in place by 2020. In February 2013, this position was passed through European Parliament by 502 votes to 137.

The European Parliament is only one of three European institutions. The majority of decision-making usually falls to the Fisheries Ministers from member states, forming the Council of Ministers. Accepting ambitious reform of the policy was more difficult here, due to the differing interests of a number of countries. Under initial agreements in June 2012 Ministers were able to accept the broad proposals from the Commission, but much of the detail was left out or open to further negotiation. Proposals in February 2013 outlined what the Council was happy with – including a minimum discard level of 7%, not 0% as proposed by the European Parliament. These types of compromises reflect the sometimes opposing ideals of each member state.

Sweden was eager to push for a total ban on discards, but France, Spain and Portugal were set for a minimum level of 10%. As votes in Council are weighted by the size of the member state, these three states had the power to block progress in reform of the policy, so careful negotiation was required.

Discussions between the three institutions (trilogues) to develop a common position on the specific policy points started in March and ended in May. The European Parliament and Council have equal decision making powers over the reform of the CFP, and concerns about the development of suitable negotiating positions from both sides were raised before the final meeting. Parliament was not prepared to negotiate unless EU Ministers were able to agree upon a mandate that formed at least a halfway compromise.

The final negotiating position from Council formed the broad basis of the agreed policy. There will be a number of changes relating to quotas, discards and fish stock management. A maximum discard level of 5% will be introduced for some species in 2015, and rolled out for all others in 2016. New fish quotas will be based on MSY, with overfishing brought to an end by 2020. The day-to-day management of fisheries will be carried out by member states with relevant stakeholders, not from a central body in Brussels.

The interplay between these broad policy changes and their finer detail will not be certain until closer to the implementation of the first parts of the policy in 2015. Overall, these changes give the CFP a strong grounding in ecological science and methods throughout. It is hoped that these reforms will mark a new era for fisheries in Europe, and these processes can be simultaneously sustainable and economically viable, as well as based on rigorous scientific monitoring and assessment.

BOX 1
Maximum sustainable yield (MSY)

The maximum sustainable yield is the largest catch that can be taken from a fish population over an indefinite period without harming it (European Commission 2011). MSY does not damage population levels as it removes the same number of fish that are added to the population each breeding season. To harvest MSY, fish populations must be of sufficient size. This is calculated as BMSY for each species, and corresponds to the population size that gives the highest rates of reproduction. Fish stocks in the EU are not at BMSY, and so recovery to this level is needed before MSY catches can be used. To allow population growth to this level, catches smaller than MSY will be harvested initially. These are calculated as FMSY.

Discards

These are fish that are thrown back to sea, either because they are not allowed to be landed, or they are worth little money. Under the current CFP regulations, fish quota represent the maximum number of fish that can be caught. There are no bans on discards however, so once cod quotas are met, for example, fishing can continue for other species, and any surplus cod is simply thrown away.

SOURCES

European Union. 2011. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the Common Fisheries Policy. Additional Information: CFP reform – Maximum Sustainable Yield.

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011PC0425:EN:NOT

http://ec.europa.eu/fisheries/reform/docs/msy_en.pdf

http://ec.europa.eu/fisheries/reform/proposals/index_en.htm

Nick Dusic

1978 – 2013

Nick Dusic, the first Science Policy Manager for the BES, has sadly died after a short illness.

Nick joined the BES in 2004 at an exciting time in its development when the Society decided to commit significant resources to policy development. Up until that time the Society had relied on the volunteer efforts of the members of the Public and Policy Committee but our ambitions to influence policy and policy makers had grown. Nick was a perfect choice to take the new role and define it.

He completed a BA in Economics and Environmental Studies at Pitzer College, US and an MSc in Public Understanding of Environmental Change from University College London after which he moved into public policy, working at the Parliamentary Office of Science and Technology (POST), Charter 88 and the Associate Parliamentary Sustainable Waste Group.

At the BES Nick relished the task of building the Society's policy work. He developed strong links with government departments, established the intern programme, developed the ministerial shadowing scheme, and initiated the BES POST Fellowship scheme amongst many other achievements. He was also great fun to work with, helping the BES staff to appreciate rituals from his native USA and always willing to join in our own.

In 2007 BES Nick became Director of the Campaign for Science and Engineering before moving into science policy and public affairs at Pfizer.

He will be very sadly missed by all who knew him.

Hazel Norman

SPECIAL INTEREST GROUP NEWS

PEATLANDS RESEARCH

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

War & Peat: The Military Heritage of Moors, Heaths, Bogs and Fens

BES Peatland SIG Conference 4th to 6th September 2013 in Sheffield, UK

From the battles for the moors in the 1930s to the harvesting of peat litter and sphagnum moss for the war effort in 1914-1918, to the impacts of military use on moors, bogs, heaths and fens this is a remarkable story...

With the anniversary of the start of the First World War next year, SYBRG are organising a major conference and event in Sheffield – called fittingly, *'War & Peat'*, from 4th – 6thSeptember 2013 (see www.ukeconet.org for full details and booking or telephone 0114 272 4227). Involving not only researchers and academics, archaeologists and ecologists, but ordinary local people too, the conference addresses the impacts of conflicts on moors, heaths, fens and bogs, their usage and products. The subjects range from the strategic impacts of these areas in conflicts; the legacy and challenge of managing these cultural landscapes today; to harvesting sphagnum, to peat as horse litter, and as fuel; to use of the landscapes for military training; and then to battles for access to the moors, for conservation and more.

Along with oral presentations, there will be displays and posters, which will form the basis of an exhibition, and a field visit to a local site. The event is being organised with Sheffield Hallam University by the South Yorkshire Biodiversity Research Group, the Biodiversity & Landscape History Research Institute, The Landscape Conservation Forum, the British Ecological Society, and the International Peat Society. It will be held at the Sheffield Showroom and Workstation in the centre of Sheffield. There will be pre-published proceedings and a post-conference book.

For more information, visit our website www.ukeconet.org to download a booking form, email us at info@hallamec.plus.com or contact Christine on 0114 272 4227.

Investing in Peatlands: Partnership for a New Era

IUCN UK Peatland Programme conference in York, 10th – 12th September 2013

The latest 'Investing in Peatlands' conference organised by the IUCN UK National Committee Peatland Programme is set for 10th – 12th September 2013 in the historic city of York. The fourth in the series of conferences, this year's theme is 'Partnership for a New Era' and will explore how the conservation, government and business sectors come together to meet the challenge of restoring a million hectares of peatlands through partnership approaches. The Conference will highlight examples of good practice, identify barriers that still need to be broken down and highlight opportunities for taking forward partnership action both in the UK and internationally.

For more information: http://www.iucn-uk-peatlandprogramme.org/news/224

For international visitors then why not attend Sheffield 4th -6th September and York 10th-12th September. The two venues are only 1 hour apart.

Humberhead Levels National Nature Reserve: Workshop and field visit to look at restoration & management

JBA Consulting, Thorne & Hatfield Moors Conservation Forum, International Peat Society, South Yorkshire ECONET & Sheffield Hallam University

Wednesday 2nd October, 2013

Following the success of the field-based workshop to Fenns & Whixal Moss in summer 2012, we are having a similar event to the Humberhead Levels of Yorkshire & Lincolnshire. Kieran Sheehan of JBA Consulting is organising a 1-day workshop and field visit to the Humberhead Peatlands National Nature Reserve to look at peat restoration, water management, policy and associated politics. This is one of the biggest, most interesting and historically controversial peatland restoration sites in the UK, so this is a unique chance to get involved and find out more. The aim will be to look at the NNR site in general – restoration work, cultural background, site ecology, water management, to climate change issues and associated politics etc.

Topics will include:

- Presentation on palaeo-ecological background and issues by Professor Paul Buckland
- Politics, restoration, hydrology & ecology by Kieran Sheehan

We will visit sites with 'toolbox talks' on sites across the moors:

- The Flora of Thorne Moors – Ian McDonald (THMCF);
- Inkle Moor and its invertebrates – Helen Kirk (THMCF), Julian Small (Natural England);
- Bog restoration in action – Darren Whitaker (JBA Consulting);
- Northern Goole Moors – Kieran Sheehan, Paul Buckland.

There will be a formal launch of the study into the inverts of Inkle Moor by the Thorne & Hatfield Moors Conservation Forum.

This is a single day activity, but accommodation can be arranged f or those coming from afar.

To book your place and receive the detailed itinerary please contact Christine or John on 0114 2724227 or email info@hallamec.plus.com

Visit www.ukeconet.org for updates.

This workshop also follows on nicely from the major symposium W*ar & Peat: The military heritage of moors, heaths, bogs and fens* in Sheffield, 4th – 6th September 2013.

PLACES FREE BUT LIMITED SO BOOK EARLY

Waxcaps and Wood-pasture Fungi – Identification Workshops

Wednesday 9th October Longshaw, Peak District

Ian Rotherham and colleagues are organising another 1-day workshop with a field visit during autumn 2013

following on from their successful event in 2012. The workshop will be an introduction to the ecological importance of wood-pasture fungi especially waxcaps at one of the UK's best sites for the species. The day will include field identification of species as well as looking at their characteristics in the classroom. The workshop will be suitable for beginners, those who want to brush up on their field skills, and for those who want to gain a greater understanding of the importance of wood-pasture fungi as indicators of an older landscape.

Sphagnum Mosses Identification Workshops

Wednesday 16th October & Wednesday 20th November

To be held in the Sheffield area – Rivelin Valley

In 2012, the Peatlands Special Interest Group organised two very successful and informative 1-day workshops based at Longshaw on the moorland fringe of the Peak District. The level of interest was such that Professor Ian D. Rotherham and colleagues are organizing a further two, linked, 1-day workshops with field visits to sphagnum-rich different sites within the Sheffield area during autumn 2013. The first workshop will be an introduction to the ecological importance of sphagna, their habitats and field identification of four to six of the commoner species. The second workshop will focus on looking at the detailed characteristics of sphagnum mosses, their morphology and microscopic features as well as the identification of 10 or more species in the field. The workshops will include field sessions and there will be opportunity to examine species back in the classroom. The first workshop will be suitable for beginners and for those who want to brush up on their skills. The second workshop will assume some basic knowledge of sphagnum mosses.

For more information and to be sent a booking form for the Waxcaps or Sphagnum workshops, please contact:

Christine Handley, BaLHRI / SYBRG Events Co-ordinator, c/o HEC Associates Ltd.,Venture House, 103 Arundel Street, Sheffield, UK, S1 2NT
Tel: 0114 272 4227;
00 44 (0)114 272 4227;
E-mail: christine@hallamec.plus.com;
Visit our Website: www.ukeconet.org

British Ecological Society
Tropical Ecology Group

TROPICAL ECOLOGY

Co-secretaries Lindsay Banin & Daisy Dent
lindsay.banin@gmail.com
@BES_Tropical

The beginning of 2013 heralded a shake-up of the BES-TEG committee. Emma Sayer left to help launch a new SIG "Plants, Soils, Ecosystems" and Simon Queenborough stepped down after a long service as Secretary, but remains the editor of the newsletter. They served the group extremely well and left some very big boots to fill! As well as Lindsay and Daisy taking on joint custody of the Secretary title, TEG recently recruited its newest committee member, Aisyah Faruk, as Social Media Representative. She has been keeping the community up-to-date with news, views and events via our Facebook page and Twitter (please do join the "British Ecological Society Tropical Group" on Facebook to keep in touch, or follow @BES_Tropical). As ever, we are keen for volunteers to join the committee – we particularly welcome PhD students to get in touch as the role of Postgraduate Rep is up for grabs!

This year, TEG provided financial support to the inaugural Tropical Biology Association Africa Alumni Group (TAAG) conference for students in Nairobi, Kenya. The theme of the meeting was *"Biodiversity in Africa – present state, challenges and prospects for its conservation"*, with the aim of building capacity in the next generation of biologists and conservationists within Africa. BES and TEG were thrilled to support this venture, and look forward to hearing about the meeting's successes.

TEG is making its presence felt at the INTECOL 2013 meeting, with a symposium on "Natural Forest Succession in the Tropics" organised by Daisy, and a workshop on "Priorities in Global Forest Conservation" co-organised by Lindsay and Markus Eichhorn (Forest Ecology Group). We look forward to welcoming you to these events.

TEG endeavours to support its members to get what they want out of the group. We encourage you to make contact if you have an idea for an event and would like our support to make it happen. You can find out more about the group, contact details and our past activities on the BES Special Interest Group webpages.

British Ecological Society
Parasites and Pathogens Group

PARASITE AND PATHOGEN ECOLOGY AND EVOLUTION

Joanne Lello
LelloJ@cardiff.ac.uk

The Parasites and Pathogen Ecology and Evolution SIG, held a successful symposium and social event (about 80 attendees) at the British Society for Parasitology meeting in Bristol this April. Prof Andrew Read, (Penn State University, USA) gave a fantastic plenary presentation "Within-host population ecology and the evolution of drug and vaccine resistance". Next up for the SIG is a double symposium at August's INTECOL meeting in London. The symposium is entitled: "The Community Ecology of Infectious Diseases", with a host of excellent presentations including talks from invited speakers: Prof Robert Poulin (Plenary), Prof Armand Kuris, Dr Serge Morand, Prof Andy Dobson and Prof Mike Begon. This symposium will focus on four crucial areas of leading edge research in parasite ecology with the goal of answering key questions and proposing future directions for the field. On the agenda will be the importance of finding and understanding pattern in complex host-parasite systems (Simplifying complexity); examining the role of parasites in ecosystem processes (Drivers of Change); considering the interplay between host genetics and host-commensal relationships in driving parasite dynamics (The Within Host

Ecosystem) and; discussing how to predict and control virulence evolution and disease persistence (Emerging Disease).

We hope many of you will join us and details of the social event will be revealed closer to the date. In addition later this year (date to be confirmed) we will be running a early career event for the SIG particularly focusing on grant production. The event will include advice on small grant and fellowships in particular, with a range of activities including guest speakers advising on the different potential funding bodies. Watch this space...

British Ecological Society
Invasive Species Group

INVASIVE SPECIES

Helen Bayliss
besinvasivespecies@hotmail.co.uk

Continuing the celebrations for both the BES Centenary and our SIG's 10th birthday, in June we launched the #iaschat initiative on Twitter to coincide with the BES Festival of Ecology. We've been very busy tweeting facts, figures and images of invasive species!

Next, our focus shifts towards INTECOL in August, where there are several sessions and workshops organised that relate to biological invasions. We are expecting to see lots of invasion ecologists from around the world converging in London for the Congress, and hope to see many of you there. We will be hosting a celebratory networking event at the meeting with cake – do consider coming along if you're attending INTECOL!

These are just a couple of examples of our activities for 2013. For more information on these and other activities you can sign up to our email list to receive our e-Bulletin (http://www.jiscmail.ac.uk/lists/BES-INVASIVE.html) or follow us on Twitter (@BES_Invasive). We look forward to seeing you at INTECOL!

British Ecological Society
Plants, Soils, Ecosystems

PLANTS, SOILS, ECOSYSTEMS

Franciska de Vries
franciska.devries@manchester.ac.uk
@BESPlantSoilEco

A new BES special interest group on plant-soil interactions, with a focus on biogeochemical cycling, community dynamics, and ecosystem functioning.

Aims

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

Committee

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

Plants, Soils, Ecosystems Bulletin

Plants, Soils, Ecosystems has only existed for five months, and we already have 88 people signed up for the email list, 64 people that like us on Facebook, and 92 followers on Twitter! Recently, Sarah Pierce, our student rep, compiled the first PSE *Bulletin*, which included news, meetings and events, job opportunities, grants, and links to some recently published papers. If you also want to stay up to date with everything that is happening in Plant-Soil-Ecosystem world, sign up for the newsletter! But more importantly, the success of PSE depends on you, so keep sending us your jobs, studentships, and interesting facts.

PSE and other relevant meetings to come

20 August 2013: Grants workshop at INTECOL. See the official program for more information, but it will include some plant and soil ecologists speaking about how to apply for grants!

20 August 2013: INTECOL Symposium *'Soil biodiversity and ecosystem function: recent advancement and new challenges'*, organised by Richard Bardgett and Wim van der Putten. Keynote speakers are Professor John Crawford, University of Sydeny, and Professor Louise Jackson, University of California Davis. Afterwards there will be a reception for attendees and speakers, and people interested in the special interest group.

2-3 October 2013: Workshop *'Digging deeper: Research challenges in plant-soil interactions'.* Charles Darwin House, London.

The first official Plants, Soils, Ecosystems meeting, in which we will identify fundamental challenges in the field of plant-soil interactions, and their application to climate mitigation, biodiversity conservation, and sustainable food production. A particular focus will be on the issue of scales (both spatial and temporal), on the stability of processes and ecosystems, and on the application and integration of fundamental science into policy and management.

The meeting will focus on three key areas, which will all have their own session and keynote speaker, and which will be open for contributed talks and posters:

1. Carbon cycling – keynote speaker: Prof Richard Bardgett, The University of Manchester

2. Nutrient cycling – keynote speaker: Dr Dave Johnson, The University of Aberdeen

3. Community dynamics and biodiversity – keynote speaker: Dr Jenny Rowntree, The University of Manchester

Registration and abstract submission will open in July-August. More information will follow, so keep an eye out for us on the (new!) BES website, on Twitter and Facebook, or sign up for the email list (see below).

16-17 December: Molecular Microbial Ecology Group Meeting (MMEG-2013) at University of Essex. Further details will be available in future *bulletins*.

20-22 November: New Phytologist Symposium in Buenos Aires. Plant interactions with other organisms: Molecules, ecology and evolution. See the website for further details: http://www.newphytologist.org/symposiums/view/2

Join us!

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

British Ecological Society
Macroecology Group

MACROECOLOGY

Adriana De Palma, Tom Webb, Sally Keith and Nick Isaac
@BESMacroecol

We are very excited about INTECOL and have plenty of activities planned. There's a SIG social on Monday 19th after the day's talks, which we hope will be an opportunity to meet macroecologists from across the globe. On Tuesday 20th there's a half day symposium on Process-based approaches to macroecologywith a keynote talk from Brian McGill. We're delighted that, following the symposium, John Harte will present a two-hour workshop on Maximum Entropy and Ecology. On the afternoon of Wednesday 21st there is also an Island Biogeography symposium. There are also four sessions of contributed talks on the Wednesday, Thursday and Friday. Keep up with live macroecology news during the conference by following our twitter account (@BESMacroEcol), or the #BESMacro hashtag. We hope to see you there!

British Ecological Society
Plant Environmental Physiology Group

PLANT ENVIRONMENTAL PHYSIOLOGY GROUP

Matt Davey
Mpd39@cam.ac.uk

2nd Annual BES – PEPG mini symposium 9th – 10th September 2013 – Manchester

After the success of our first mini-symposium the 2013 annual PEPG symposium will take place at the University of Manchester from noon on the 9th to noon on the 10th September 2013. Talks are invited on all aspects of environmental plant physiology (landscape to molecular), especially from post graduates and post doctorate researchers.

We are delighted to have the following academics as keynote speakers: **Prof. Hendrik Poorter** (Juelich, Germany) (plant biomass and metaphenomics), **Prof. John Doonan** (Director of the National Plant Phenomics Centre, Aberystwyth), **Dr. David Coomes**, (Aerial Hyperspectral Analysis and biochemical profiling of forest canopies) (University of Cambirdge), **Dr Saoirse Tracy** (Exploring the rhizosphere: Imaging root-soil interactions using X-ray Computed Tomography) (University of Nottingham) and **Prof. Maurizio Mencuccini**, (Forest Ecosystem Physiology) (University of Edinburgh. Accommodation (ensuite B&B, £50 pp) is available on campus and a conference dinner will be held in a local restaurant on the evening of the 9th. We hope to be able to cover the on site costs of all speakers. Members of BES and SEB can apply for travel support from the respective societies.

To ensure a place at the meeting, please send an email to **giles.johnson@manchester.ac.uk**, stating your name, whether you require accommodation and a tentative talk title, if you wish to speak. (Please note: on campus accommodation is limited and will be allocated on a first come first served basis) or please register at http://plantenvironmentalphysiology.group.shef.ac.uk/

INTECOL 2013 – London

The PEPG will be present at the 11th INTECOL Congress, Ecology: Into the next 100 years from 18-23 August 2013. We will have a two hour discussion meeting on "Plant Environmental Physiology – what we have learnt from the past 100 years and what we might learn in the next 100". This event will be held in London as part of the centenary celebrations of the British Ecological Society either on the Monday or the Tuesday – details to follow.

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).

Things to look out for in 2013…

- mini away days to interesting field sites across the UK
- prizes for best PEPG talks
- mini-techniques workshops
- PEPG logo competition

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.

Matt Davey – mpd39@cam.ac.uk

Colin Osborne – c.p.osborne@sheffield.ac.uk

Howard Griffiths – hg230@cam.ac.uk

Carla Turner – communications officer – please contact Carla with news and events you would like advertising on our website, email list and the PEPG Facebook page **carla.turner@sheffield.ac.uk**

Lucy Rowland – Postdoc rep lucy.rowland@ed.ac.uk.

Zoe Harris – Postgraduate rep Z.M.Harris@soton.ac.uk

Marjorie Lundgren – marjorie.lundgren@sheffield.ac.uk

Richard Webster – rcw@aber.ac.uk

British Ecological Society
Forest Ecology Group

FOREST ECOLOGY

Markus Eichhorn
@BESForests

Fungi for forest ecologists: 8th October 2013

A one day workshop in Wytham Woods (Oxford) for forest ecology research professionals, postgraduate students or other interested parties to increase their understanding of the roles of fungi in forest ecosystems.

Fungi are vital to forest ecosystem functioning through their roles as plant symbionts and decomposers. Perhaps due to the difficulty in studying fungi, combined with lack of interaction between forest ecologists and mycologists, the impact of fungi within forests is often not fully acknowledged or understood within mainstream forest ecology. This workshop will bring together research professionals in both fields, to enable forest ecologists to learn directly from mycologists about the basic functions of fungi within forests, and how this knowledge might be applied to, or influence, their research.

The day will consist of a combination of classroom and field based activities within Wytham Woods, focussing on saprotrophic and mycorrhizal fungi and their roles in forest ecology. Sessions will be led by Prof Lynne Boddy (Cardiff University), Dr Andy Taylor (James Hutton Institute) and Dr Martha Crockatt (event organiser; Earthwatch). The event is sponsored by the British Ecological Society.

Costs are £50 (£30 students), plus a booking fee.

Please contactmcrockatt@earthwatch.org.uk to sign up for the event, or if you have any questions.

ECOLOGICAL GENETICS

Paul Ashton
Paul.Ashton@edgehill.ac.uk

Fungi for forest ecologists: 8th October 2013

Details are now confirmed for the 58th Annual EGG conference. It will be held at Longhirst Hall, near Newcastle from Monday 14 April- Wednesday 16th April 2014 and will feature the usual mix of speakers, visits, dancing etc. There is (limited) public transport, but there will be pick-ups from airport/station etc. Further details will be available plus link to booking will be found on the EGG website (http://www.ecologicalgeneticsgroup.org.uk). Start preparing your talks and posters! We look forward to seeing you there.

Cost would be similar to this year, somewhere between £260 and £290, with option of sharing for lower cost (www.longhirst.co.uk).

British Ecological Society
Agricultural Ecology Group

AGRICULTURAL ECOLOGY

Barbara Smith
@BES_aeg

Rethinking Agricultural Systems

18-19 December 2013, St. Catherine's College, Oxford

The meeting will explore agricultural systems in the context of providing ecosystem services: it will ask what we would do in an ideal world and how we can envisage positive changes to the current system given socio-economic constraints. An important feature of the meeting will be to encourage discussion of techniques across disciplines and discourage the use of labels so that we are unhindered by possibly negative preconceptions. The meeting will explore theory and practice from a wide range of farming systems.

Invited speakers include **Professor Jonathan Foley**, University of Minnesota; Professor **Tim Benton**, University of Leeds; **Professor William Sutherland**, University of Cambridge; Professor Philip Grime, University of Sheffield; **Professor Steven Newman**, BioDiversity International Ltd; Dr Joern Fischer Leuphana University, **Dr Christine Watson**, Scottish Agricultural College.

Workshops: There will be three targeted, structured workshops with pre-determined outputs. A facilitated workshop on *'Computational and Technological Solutions to Rethinking Agriculture'* will be organised by the British Ecological Society's Computational Ecology group.

The hoiho is the world's rarest penguin

The quiet places

Rose Hanley-Nickolls
@rosehn

As you get off the plane at Christchurch airport the horrors of the long haul flight are washed away by a tunnel of native bird song welcoming you to New Zealand. But for most visitors, this bridge wrapped in photographs of the lush greenery of the west coast rain forests is the closest to the original New Zealand soundscape they will ever get.

Over the last 800 years, since the arrival of humans and their grim band of followers – dogs, cats, rats, stoats and possums – over 50 species of native bird have gone extinct with many others restricted to protected islands and reserves, rendering the forests silent, green cathedrals where the odd chirrup of a rifleman or introduced blackbird is startling.

Today's weary souls are not the first travellers to be welcomed by a glorious avian reception. When Joseph Banks, the botanist on Cook's first voyage to New Zealand, was anchored in Queen Charlotte Sound in January 1770 he remarked:

"This morn I was awakd by the singing of the birds ashore from whence we are distant not a quarter of a mile, the numbers of them were certainly very great who seemd to strain their throats with emulation perhaps; their voices were certainly the most melodious wild musick I have ever heard, almost imitating small bells but with the most tuneable silver sound imaginable to which maybe the distance was no small addition."

Unlike most visitors to New Zealand, I have been fortunate enough to have heard this wild music. Every day for the last six months I was awoken by the raucous call of a bell bird *(Anthornis melanura)* imitating my alarm clock outside the bedroom window. Out in the field I was kept company by curious flocks of chattering mohua *(Mohoua ochrocephala)*, whose trilling song and yellow heads made it easy for early European settlers to christen them bush canaries, although sometimes they seem more like friendly mice with their quiet chittering. All day long I was surrounded by the oddly digital calls of bellbirds, the cackle and whistle of kaka *(Nestor meridionalis)*, the piercingly paranoid alarm calls of South Island saddlebacks *(Philesturnus carunculatus carunculatus)* and the trill and peep of the bolshy fantails *(Rhipidura fulinginosa)*, so at odds with their role in Maori mythology as bringers of death. Back at the hut, a South Island robin *(Petroica australis australis)* frequently made me jump as he sat on the compost bin behind me and proudly proclaimed the kitchen his territory. The yellow eyed penguin *(Megadyptes antipodes)* under my bedroom lived up to his Maori name of hoiho – noise shouter. Petrels and owls squawked and hooted their way through the night.

For many birds, island sanctuaries which have been cleared of invasive predators, such as Anchor Island in Fiordland where I was working, are the only places they can get on with making their musical racket in peace. Many of the birds that I spent my days with have experienced extreme declines and range contractions due to the introduction of mammalian predators: Mohua have disappeared from 85% of their range whilst the South Island sub species of the kokako, famed for the beauty of its call, has gone extinct. The 700 South Island saddlebacks in existence are all descended from 36 individuals rescued from Big South Cape Island (also known as Taukihepa) after a rat invasion in the 1960s.

Only 30 populations of mohua remain in the wild, mostly in predator controlled areas.

"Mohua have disappeared from 85% of their range whilst the South Island sub species of the kokako, famed for the beauty of its call, has gone extinct."

The friendly South Island robin is thriving since being brought to pest-free Anchor Island in 2002

Part of the Muttonbird Islands off the coast of Stewart Island, Taukihepa plays an interesting role in the story of the conservation of soundscapes in New Zealand. Frequented for only a few months of the year by people making a traditional harvest of mutton birds, Taukihepa was the last bastion of a great mythical bird called the hakawai. Only ever known by the terrifying noise it made, the hakawai was believed to be a bad omen with its cry – thought by some Maori to be caused by the bird choking on the hair of the warriors who were doomed to fall in battle – seen as presaging war. Although never seen, the hakawai was described by one Maori chief as being as large as a moa, black feathered with a plume of red feathers on top of its head. Along with the saddlebacks, the hakawai disappeared from Taukihepa with the arrival of black rats in 1961, never again to frighten the mutton birders on clear nights.

The arrival of rats on Taukihepa also spelled the end of the Stewart Island snipe *(Coenocorypha aucklandica iredalei)*. Further study of the last known observations of both the hakawai and tutukiwi, as snipe are called in Maori, showed that the disappearance of tutukiwi almost always coincided with that of the hakawai. By playing recordings of closely related snipe species to old muttonbirders who had heard the hakawai on Taukihepa, the now extinct Stewart Island snipe was identified as the earthly embodiment of the hakawai, with the noises that had so terrified the muttonbirders coming from the nocturnal display calls and flight of the snipe. Armed with this knowledge, the resurrection of the hakawai seemed possible.

In the 2005, as part of a wider snipe recovery project, the Department of Conservation carried out a translocation of Snares Island snipe *(C. aucklandica huegeli)* to Putauhinu Island off the coast of Taukihepa. Although there were concerns among the Putauhinu muttonbirders that this translocation would not restore the hakawai as Snares Island snipe had never been observed in display flight, several of the males released showed distinctive wear and tear on their tail feathers which indicated that they had previously channelled the hakawai: After 40 years, along with this small, unassuming bird, an ancient cultural soundscape was being restored to the Muttonbird Islands.

Bird song is big news in New Zealand. Every morning before the 7am news the national radio station plays a selection of native bird calls. For many people this will be the only time they ever get to hear the species featured, although this is slowly changing. Much of the focus of today's conservation effort in New Zealand is on bringing back bird song to the silent forests so more people can walk in green cathedrals which have had their choirs restored to them.

Forest and Bird, the largest conservation organisation in New Zealand outside of the government's Department of Conservation, has a flagship programme called "Restore our dawn chorus" which advocates for the use of pest control to return precious soundscapes. Many other smaller, community groups are using bird song as both an incentive for conservation action and as an indicator of its success: like the island on which I have been living and working, areas where there has been intensive trapping and poisoning for stoats, rats and possums are bustling with birds and most definitely noisier.

With the hakawai reintroduction and other bird song focussed projects, New Zealanders are beginning to reconstruct a soundscape which has been missing for over a century. Perhaps one day soon the forests will be again filled with the wild music that so captivated Joseph Banks.

To hear song of the birdsong mentioned here, visit www.radionz.co.nz/collections/birds

SOURCES

Miskelly (1987) *Notornis* 34(2), 95-117
Miskelly et al (2012) *Notornis* 59, 32-38

The fearsome hakawai – Snares Island snipe on Putauhinu Island. Photo copyright Colin Miskelly, Te Papa

LWEC Climate Change Impacts Report Card on Terrestrial Biodiversity

Mike Morecroft (Natural England) / Mike.Morecroft@naturalengland.org.uk

Understanding the impacts of climate change on biodiversity and ecosystems has been a major topic for ecological research over the last 20 years and the rate of publication of papers and reports continues to increase. At the same time has also been a steadily growing demand for scientific evidence to inform the development of climate change adaptation in conservation and land management. This summer sees the publication of the National Adaptation Programme by the UK government, in which the natural environment will be an important element.

This presents two major challenges: 1) how to synthesise the results of a large volume of research to identify common trends and patterns and 2) how to communicate this to non-specialists, including conservation managers and policy makers. These two challenges – synthesis and communication – were the aims of the UK Terrestrial Biodiversity Climate Change Impact Report Card, published by the Living With Environmental Change (LWEC) partnerships in May this year. It can be downloaded here http://www.lwec.org.uk/node/1535. I had the privilege of chairing the working group leading this project; many other BES members were also involved in steering the project, writing review papers and acting as peer reviewer.

The new report card was inspired by similar documents produced by the Marine Climate Change Impacts Partnership (MCCIP) and a series of further Report Cards on other topics is planned by LWEC. The term 'Report Card' conveys the impression of something short and snappy. And compared to most scientific reviews it is – the core of it is a series of pithy summary statements – but it isn't lightweight. It is actually a 24 page glossy booklet, which is designed to work well both on a screen and in hard copy. Crucially it is underpinned by 15 detailed review papers which form a bridge to the original scientific literature.

This way it is possible both to see the big picture across the range of subjects and to be able to go into detail in an area of specific interest. For many users of the report card, for example ecological consultants or conservation advisors, they will mostly be interested in the high-level overview, but they may on occasions need to address particular topics.

Climatic conditions suitable for the snow bunting may diappear by the end of the century. Photograph Julian Dowse/Natural England

A fundamental aspect of the report card concept is that it is a product of the wider scientific community, rather than a single organisation or consortium. The project was developed under the LWEC partnership, with funding and practical input from Defra, NERC, the Environment Agency and Natural England; a large number of individuals from a range of other organisations also freely gave their time. A project working group, comprised of senior scientists with expertise in the field from universities, research and conservation organisations steered the project, reviewed papers and worked on the text of the report card. A separate group of experts were commissioned to write the review papers. Each of the review papers was reviewed by at least 2 reviewers (normally drawn from the working group) as well as by me, as working group chair. The card itself was reviewed by a further panel of experts who had not previously been involved in the project, chaired by Professor Andrew Watkinson, Director of LWEC. In addition to the working group and review paper authors (a group of over 40) there was opportunity for others to make an input through attending a workshop at the start of the project and we held a lunchtime session at the BES Annual Meeting, with an open invitation, to review the headline messages.

Getting scientists to come up with consensus messages about anything is notoriously like herding cats but we fairly quickly came up with a series of key messages from the Report Card. The basic message that 'There is strong evidence that climate change is already affecting UK biodiversity' was not controversial. Getting the exact wording of all the points right was a different story and we took a lot of trouble to make sure that there was a high degree of consensus about them in the working group, going through many iterations. You can read them in Table 1.

Given the controversies that sometimes range around climate change, we took pains to assess the extent of our confidence in the findings. In the underlying review papers, authors were asked to assess both the amount of evidence and the degree of consistency in the evidence for their statements. The highest confidence is where we have multiple sources of evidence, all pointing in the same direction. In the final report card this was distilled into 'high', 'medium' and 'low' confidence. There is an element of expert judgement in this, of course, but having an explicit framework for making judgements focuses discussions and encourages consistency.

Since publication we have had a lot of very positive feedback from both the scientific community and the policy and practitioner communities. The card has generated a few items of debate and various people have asked to get involved in the next one – all of which is a good sign. And yes, the talk is of 'when' not 'if' there is a new one: there are some areas we want to look at in more detail and naturally the science continues to evolve and develop. The publication of the report card was picked up by Channel 4 News, who were already looking to do a piece on changes in wildlife and recent weather. We had not set out to directly appeal to the general public – it was pitched more at the level of the 'interested non-specialist'. What became clear however was that the report card was a valuable resource for those wanting to develop more outputs for a wider audience. We still need to explore the opportunities for this further – for example in education.

TABLE 1 HEADLINE MESSAGE ON THE IMPACTS OF CLIMATE CHANGE IMPACTS ON TERRESTRIAL BIODIVERSITY IN THE UK

- *There is strong evidence that climate change is already affecting UK biodiversity. Impacts are expected to increase as the magnitude of climate change increases.*
- *Many species are occurring further north and at higher altitudes than in previous decades, including some species which have colonised large parts of the UK from continental Europe.*
- *Recent rates of change in distributions differ between species. Some species, including many plants, are intrinsically slow to disperse and fragmentation of habitat may contribute to some species spreading more slowly than would be expected from climate change alone.*
- *Warmer springs in recent decades have caused a trend towards many biological events (e.g. flowering, budbreak, laying and hatching of eggs) occurring earlier in the year. The rates of change vary among species, which may alter the interactions between species.*
- *There is evidence of changes in the composition of plant and animal communities, consistent with different responses of different species to rising temperature.*
- *Species differ in their responses to variation in precipitation. The effects of climate change are less certain for precipitation than for temperature, but potential changes could lead to substantial changes in biodiversity and ecosystems.*
- *Some habitats are particularly vulnerable to climate change; the risks are clearest for montane habitats (to increased temperature), wetlands (to changes in water availability) and coastal habitats (to sea-level rise).*
- *Climate change exacerbates the risk that non-native species (including pests and pathogens) may establish and spread.*
- *We expect there to be regional differences in the impact of climate change on biodiversity, reflecting different species, climate, soils and patterns of land use and management.*
- *The protected area network, which includes Sites of Special Scientific Interest and National Nature Reserves, will continue to have a valuable role in conservation although there will be changes in populations, communities and ecosystems at individual sites.*
- *Climate change will interact with, and may exacerbate, the impact of other continuing pressures on biodiversity, such as landuse change and pollution.*
- *Extreme weather events, such as droughts and floods, have clear impacts on ecosystems and the ecosystem services they provide; climate change may alter the frequency and severity of such events.*

Declining populations of the common frog are consistent with drier summers between 2003 and 2006 and habitat loss. Photograph Natural England/ Steve Hiner

WHAT LESSONS HAVE WE LEARNT? THREE THINGS STAND OUT FOR ME.

Firstly, the scientific community needs to pull together to come up with consensus views. Academic careers are often pursued in very individualistic ways, but there is a need to work together on big topics where the whole body of knowledge is greater than the sum of the parts. Working to produce a synthesis, with all the debating and grappling with uncertainty which this entails, should be part of the process of science.

Secondly, if outputs are to be accessible to non-specialists and useful for potential users, they need to be involved in developing them from the outset. We convened a user group to help us with this but it needs to go deeper than that. I like to think I have a 'foot in both camps' as a scientist working in a government conservation agency (my more practical colleagues might dispute this). Perhaps more importantly I worked closely with my colleague, Lydia Speakman, who acted as project manager and comes from a consultancy, rather than science, background. It was Lydia who produced the first draft of the card before we specialists got to work on it and kept our feet on the ground where necessary. The card also benefited from professional graphic design to turn the end product into something attractive and easy to read; there is a real skill in doing this well.

Finally I set out by describing 'synthesis' and 'communication' as two separate tasks. But actually they are intimately linked. We can't develop a shared understanding of a big topic without talking and communicating with others forces us to bring together and organise our ideas.

The Field Studies Council at 70

Cathy Preston / Charitable Development Officer, FSC
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In December 10th 1943 the inaugural meeting of the Council for the Promotion of Field Studies (now Field Studies Council) was held at the Natural History Museum in London. In April 2013, almost 70 years later, a group of young naturalists visited the Museum for a 'behind the scenes' tour as part of the FSC's Young Darwin Scholarship programme. As the Young Darwin Scholars were taking an enthusiastic interest in the collections that they were being shown and as they listened intently to talks from staff one could almost feel the gentle nod of approval from the 35 individuals who met on that December day in 1943.

While many field centres and even some charities have struggled, FSC has stayed true to the core values set out in 1943. Like any successful species it has adapted in order to survive and expand in changing economic, educational and environmental conditions. The 70th Anniversary gives us a chance to reflect on our history but also to look forward – a time to celebrate.

In 1943 Francis Butler (one of FSC's founders) setting out his vision for the Council for the Protection of Field Studies, wrote "Children are keen on studying living plants and animals in their natural environment and it is coming to be realised among educationalists that this aspect of the subject needs to be encouraged." FSC's network of 17 field centres throughout the UK is testament to our ability to adapt and follow Francis Butler's vision. Each year over 140,000 people of all ages from primary school children through to retired adults experience FSC on courses for schools, universities and individuals at our Centres. We also seek new partnerships and develop creative ways of working to widen our opportunities to inspire environmental understanding through first hand experience. Recent developments include our Olympic fieldwork and delivering education in three of the Royal Parks, and in early summer we will be starting a new education provision in Belfast's Titanic Quarter to help students understand 'real life' urban regeneration.

Young Darwin Scholars at Preston Montford Field Centre

FSC Centres have always been a 'second home' to natural historians, with both amateurs and professionals developing their skills and knowledge with the help of FSC tutors and associate tutors. Building on this tradition and to support 16 and 17 year olds with a real interest in the natural world in 2012 FSC launched the Young Darwin Scholarship. This new initiative seeks to provide encouragement, support and opportunities for 16 and 17 year olds who have a real passion for the natural world. FSC is developing a fund to provide long term opportunities for training and support on an ongoing basis for Young Darwin Scholars during the period when they make life and career choices.

Young Darwin Scholars at NHM –under the dinosaur tail and working as a group)

FSC intends to award a further 15 Young Darwin Scholarships in 2013 and to develop the scheme to provide ongoing support and opportunities for young keen natural historians to expand their knowledge of the environment and the sector. *Existing* scholars are keen to support and help the new intake and we welcome support from other individuals or organisations who can help. We hope that the forthcoming 'generations' of Young Darwin Scholars will go some way towards providing knowledgeable and skilled individuals who can play an important part in the future of the environmental sector both in the UK and worldwide.

The new FSC Biodiversity Fellowship (FSC Bio.Fells) project supported by the Defra (Department for Environment, Farming and Rural Affairs) fund for Biodiversity in the Voluntary Sector and Natural England is another example of FSC's ability to build partnerships and adapt to meet the changing needs of the biodiversity and taxonomic training sector. FSC is working in partnership with a large number of National Recording Schemes and Societies to offer training courses to increase the skills, numbers, geographical coverage and taxonomic scope of biological recorders especially volunteers.

Tomorrow's Biodiversity is another new project for our 70th year. Funded by the Esmée Fairbairn Foundation this five year project will help FSC to identify important gaps in identification and monitoring skills (for plants, animals, fungi etc) and address some of them with new training and resources. The first two years will focus on finding the gaps and the next three on filling them. It will enable the FSC to develop new resources and training for groups of organisms that are currently under-resourced but which have the potential to make a valuable contribution to our understanding of how biodiversity fares over the coming decades in the face of rapid environmental change.

The BES and FSC have collaborated over many years, on this occasion on a report of fieldwork

Over the last seven decades FSC has touched the hearts and minds of literally thousands of people of all ages. A programme of special 70th Anniversary events is planned to celebrate our success and to look forward to the future. Many centres are offering events in conjunction with BES illustrating how the two organisations work together to increase knowledge and understanding and interest in the natural world. (The full programme of events is available at www.field-studies-council.org/70). We shall also be looking forward with the help of visionary thinkers at a special event at the RSA in November when we will be plotting the imaginary path for FSC over the next 70 years.

As well as looking forward we are also using the 70th Anniversary celebrations to collect FSC memories and share them on our website. These memories give a real insight into the different ways FSC can change a life, from a career choice to a partner. Whatever the memory – all have one thing in common the underlying affection for FSC .

The anniversary also gives us an opportunity to renew and strengthen partnerships. There have been consistently strong links with the BES through the FSC's development, some fostered by pioneers such as Arthur Tansley who highlighted the strong synergies between the emerging science of ecology and its natural history roots. Both bodies still share common causes, not least the need to protect the status of fieldwork and field-based research at all levels of education, the creation of high quality and innovative resources, and filling the ever-growing gaps in formal training and for those aspiring to do more field studies. We look forward to working with the BES for another 70 years at least.

CATHY PRESTON, CHARITABLE DEVELOPMENT OFFICER

Cathy has worked for FSC for over 10 years in a variety of different roles. She has managed several funded projects including the Eco Challenge Project which worked with students from 245 schools from 22 of the most disadvantaged areas of England. Cathy is now involved in helping the FSC to build partnerships and seek funding to help young people access FSC including those who are disadvantaged and those with a specialist interest such as the Young Darwin Scholars.

‘There is an app for that’

The next level of ecological mobile technology

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Advances in information technology and computing are greatly assisting field ecology, by supplementing the traditional clipboard and pencil of investigators. The digital revolution is transforming our ability to collect, analyse, store and share data at faster speeds and volumes than ever before (Snaddon *et al*. 2013). This is a result of miniaturisation, improved power and connectivity of computers.

When the desktop computer made its début in the eighties, it was a tool for transcribing and analysing ecological data away from the field. By the 90's it had given way to the field laptop and pocket PCs that could be used on site to record and work with data. These are now increasingly making way to mobile devices like tablets (e.g. iPad's and Tab's) and mobile phones (e.g. smartphones like the iPhone), especially under less challenging environmental conditions.

MOBILE DEVICES

Mobile devices are essentially handheld computers. They are often multi-functional, equipped with camera, telephone, audio/video recording capabilities, Global Positioning System (GPS) and web-enabled (either Wi-Fi or Bluetooth). They run specific software applications that enable them undertake complex activities. Sometimes additional equipment can be attached to carry out a wider range of assessments (e.g. Geiger Counters were connected to monitor radio activity after the Fukushima disaster). In a nutshell, they are the digital analogue to the Swiss Army Knife (and very likely more).

As their capabilities improve, their prices are also getting lower and uptake among the general population is increasing. For example, at the end of 2012 according to the International Telecommunications Union, there were 6.8 billion mobile device subscriptions globally. This is set to rise to 18 billion by 2018 according to Ericsson.

Mobile devices currently boast increased performance thanks to custom-designed software applications (apps) that make them capable of gathering, analysing and sharing large amounts of data almost instantly. This progress in mobile devices has been greatly assisted by increased internet connectivity, enabling rapid communication between devices/locations (Williams *et al,* 2011).

Online communication platforms have improved collaboration among scientists, overcoming distance and time barriers. Moreover, the increasing accessibility of web-enabled mobile devices to the general public has further hastened the re-birth of citizen-scientist partnership in the form of citizen *(cyber)* science (Silvertown, 2009). The role of this collaboration is increasingly being recognised and harnessed (Roy *et al.* 2012).

As the use/adoption of mobile devices is increasing in tandem with development of enhanced mobile apps, it is high time to utilise them for ecological research/education. This account aims to provide a brief review of mobile technology and highlight some of the mobile apps available to ecologists. At the same time it aims to provide a platform (via the included Survey Form: http://goo.gl/xpOvT) to share/rate useful applications by ecologists for ecologists, which at the moment is sorely lacking. Overall, it will encourage more ecologists to engage with the technology and even enhance their research/teaching/outreach.

THE APPS

Mobile apps are provided by distribution platforms, which are often operated by the owner of the mobile operating system e.g. the App Store for Apple's iOS, Google Play for Android and the Windows Phone Store for Windows apps. The apps are directly downloaded from platform to device via an internet link. Apps have versatile uses ranging from basic productivity (email, calendar, contacts, weather) to reference (education, directory) and from entertainment and games to commercial transactions. There are currently over 700,000 apps each for iOS and Android platforms, with fewer, but still several hundred thousand, for other platforms.

The simple interface of many apps makes it easier to execute actions. Apps are often appealing for ecological activities, as they are much cheaper than buying independent equipment e.g. GPS (although they come with their own limitations in the field). They are also accessible, easy to acquire, and are highly empowering to citizens (De Souza *et al.* 2012). Although apps are often built for consumption of produced content, they can be adapted for creation as well.

As the iconic advert goes 'there is an app for that', indeed there are many apps, with varying levels of usefulness, to undertake tasks in ecology. An attempt at broad categories classifies apps as: (1) reference/education: including those that act as field ID kits; (2) recording/sharing data, where apps may be used for making measurements, tagging geographic references, sending back recordings to a central database; (3) educational games, with apps for testing learning; (4) calculation/data analysis and visualisation, with mapping and statistical summaries; (5) news/marketing purposes where information is provided on events or products. Some examples of ecology apps are given in Table 1.

"Online communication platforms have improved collaboration among scientists, overcoming distance and time barriers."

TABLE 1. SOME EXAMPLES OF APPS OF RELEVANCE FOR ECOLOGY

Category	*Number of apps†*	*iOS*	*Android*
Reference, education Surveys, iBird Pro	>25	SoilWeb, TreeID, Wild flowers	Ecological
Data recording, GIS Notes, MAEDN	10-25	FieldtripGB, eNature, PlantTracker	Secchi, Nature Sea Turtle app,
Data analysis, visualisation	10-25	Eco:Map, Ecofootprint Ecological Footprint, ecoLAMP	
News, marketing	10-25	EnvironRSS, ecoNews Ecology News, ecoScan	
Social, Professional Networking	<5	GreenIT.fr EcoCritique	
Games, Entertainment	10-25	Life Cycles for Kids	
Super Forest'Oh!		Bat Sound Effects, Ecotrail	

† Numbers are given as broad classes within platforms.

‡Apps were searched using 'ecology' as a keyword at iTunes® and Google Play®, the two major app platforms. In this instance, there were 181 iPhone (109 iPad apps) and 352 Android apps.

CHALLENGES AND CONCLUSION

At the moment, neither app platform provides easy navigation, especially for scientific apps. There have been commendable, though not yet sufficient, initiatives on listing useful apps for ecology (e.g. Bruna Lab: http://brunalab.org/apps/). Moreover, there appears to be little if any vetting of app suitability and functionality. This would be crucial to assure users of the quality of data produced/analysed (Kharrazi *et al* 2012 provides an analogous example). The best integration initiative, so far appears to be for Chemistry, which includes a wiki by professionals (e.g. http://www.SciMobileApps.com)

On another note, there are several opportunities for ecologists to develop their own apps using open-source codes. Although most are linked to citizen science projects, they provide a platform conducive for experimentation. Good examples of such platforms are the Open Data Kit (http://opendatakit.org/) and EpiCollect (http://www.epicollect.net/).

Finally, it is to be expected that better mobile devices with more advanced software as well as improved internet connectivity will drive more efficient technology, resulting in applications capable of powerful analyses and visualisation of larger datasets. The time is ripe for exploring how this technological progress could be harnessed to help address ecological issues.

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FURTHER RESOURCES

App Survey Form: http://goo.gl/xpOvT
Apps for Ecology News: http://goo.gl/9ISG3

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Patterns, paradigms, and preconceptions

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"To do science is to search for repeated patterns, not simply to accumulate facts"

(Robert MacArthur, in Geographical Ecology, 1972, p. 1)

"All we want are the facts, ma'am"

(Sgt. Joe Friday in the television series Dragnet, in the early 1950s)

Science, as MacArthur observed, is about detecting patterns and relationships and deriving causal explanations. Like many ecologists, MacArthur interpreted patterns through their alignment with theory – a deductive approach. Sgt. Friday's approach (like Sherlock Holmes' before him) was more inductive – accumulate facts and then, through inspired guesswork, connect the dots to see the pattern and solve the crime. MacArthur's approach was analytical, Friday's more intuitive.

While we may think of MacArthur's approach as more scientific than Friday's (who was, after all, not a scientist but a fictional detective), both approaches may be important as we are confronted by a growing deluge of data ("facts") about all sorts of things. Separating the signal (an interesting pattern) from the noise of seemingly irrelevant data has become a major challenge, spawning increasingly complex and sophisticated statistics, data mining and knowledge discovery procedures, and the pattern-recognition software used in DNA screening or the detection of e-mail spam. We ask computers to do the work of detecting patterns and telling us whether they are real (by which we mean statistically significant) or not. Against this backdrop, is there still a role for the practiced eye of a keen observer to see a pattern in a mass of data?

COMPETITIVE EVIDENCE

Back when I was a brash young ecologist in the 1970s (I'm no longer young, and arguably not so brash), ecology was roiled by intense debates about whether interspecific competition determined community structure. Part of the debate revolved about how one marshaled evidence. In one camp, proponents such as Jared Diamond, Martin Cody, or Tom Schoener looked for examples of niche-displacement patterns between co-occurring species that agreed with the predictions of competition theory. In the other camp, opponents such as Dan Simberloff and Don Strong (and I was among them) challenged the ubiquity of theory-based explanations by assessing niche overlap among many co-occurring species, noting the many patterns that did not match predictions and asking whether the occurrence of confirmatory patterns was any different from what one would expect by chance.

The distinction between the approaches was brought home to me one spring when Diamond visited my lab group. Jared is a gentle and gracious man, and the acrimony that had fueled some of the past debates was left behind. At one point, I spread out on the lab bench a large table showing multiple bird species and niche variables. I said something like, "See, there's no consistency. This is why I have difficulty accepting competition as the driving force." Jared looked over the matrix of numbers. Without hesitation he pointed to several cells. "You're looking at it the wrong way. Here's a perfect example of niche differentiation, and here's another. You're letting all those other numbers confuse you." I had missed the patterns that he saw, and he was unbothered by the nonconforming observations that so interested me.

I don't think that either of us convinced the other that day. There's a more important message here, however, than who was right or wrong. Both of us looked at the data – the facts – through different lenses, colored by our preconceptions of how natural communities are put together. Jared's perspective was shaped

by his experiences in New Guinea and by competition and niche theory, which dominated community ecology at that time. Mine reflected my experiences in highly variable grasslands and shrub deserts and a growing view that environmental variation can erode the patterns expected from equilibrium-based theory. The data set contained something for both of us.

"Both of us looked at the data – the facts – through different lenses, colored by our preconceptions of how natural communities are put together"

All of this resembles what Thomas Kuhn described in his ideas about paradigms and scientific revolutions (Kuhn, 1970). Paradigms—a widely accepted body of theories, methods, and examples that embodies a view of how the world works—influence the questions researchers ask and what they look for (and are prepared to accept) in their results. Nonconforming patterns are considered anomalies that can be ignored or explained away without jeopardizing the power of the paradigm. Under the sway of a paradigm, the search for patterns is not an aimless wandering or mindless data dredging, but a focused effort in which the expected patterns seem to stand out in bold relief against a background of irrelevant detail. Jared was able to see patterns in my data because the prevailing competition paradigm told him what to look for.

But surely statistics provides a check against the urge to see only confirmatory patterns? Well, not necessarily. Of course, scientific hypotheses are supposed to be appropriately null and statistical tests designed to place the burden on rejection of the null hypothesis so that one has confidence in the (statistical) veracity of an alternative hypothesis (e.g., that niche differences among similar species are greater than one would expect by chance alone). But it is not at all difficult to structure hypotheses and tests to favor the expected patterns (and their interpretations). After all, Mark Twain popularized the phrase that "There are lies, damned lies, and statistics"[1] and Darrell Huff's 1954 book, *How to Lie with Statistics,* has sold well over a million copies. Automated pattern-detection algorithms may seem less vulnerable to conscious or unconscious bias, but someone needs to write the code to tell the computer what to look for, leaving ample room for paradigm-derived preconceptions to influence the search.

More to the point, a rigid adherence to statistical analyses or computerized searches for patterns may blind us to the outlier patterns that occur at the fringes of data sets—the patterns that Jared saw in my data. These may indeed be examples that confirm the paradigm, or they may be chance occurrences that are inevitable in a large sample or collection of data. They may also be those unexpected but real patterns that lead us to doubt the ubiquity of a paradigm, the anomalous observations that are the stuff of Kuhn's scientific revolutions. The trick is in knowing when such patterns deserve attention and when they don't; preconceptions can make them too easily ignored. All of this becomes more relevant in the context of climate change. Paradigms hold true when nature's rules—cause-effect relationships—remain relatively steady. Science thrives by filling in the details. The anomalous observations arise when nature bends or changes the rules. Climate change will certainly alter, if not actually change, the rules and how they are expressed in ecological systems. No-analog species assemblages and novel ecosystems will change interaction webs and ecological processes in unexpected ways. Extreme events will push systems beyond thresholds into unknown territory. Things will no longer be as they ought to be, at least according to the paradigms that have guided our thinking in the past.

We shouldn't abandon the statistics and modeling that have contributed so much to the rigor of ecology. But we must also be more attentive to the new, novel patterns that emerge, for these hold the keys to adapting our concepts, theories, and methodologies – our paradigms – to the new realities of a nature out of balance.

FOOTNOTES

[1] Chapters from My Autobiography". http://www.gutenberg.org/files/19987/19987.txt.

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"...we must also be more attentive to the new, novel patterns that emerge, for these hold the keys to adapting our concepts, theories, and methodologies – our paradigms – to the new realities of a nature out of balance."

From our Southern Correspondent

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Congratulations to the BES in its centenary year! 100 years is a great achievement. Centenaries and other milestones are a great time to pause and consider both the past and the future.

There seem to be a lot of important milestones happening around this time – my university, the University of Western Australia, was also founded 100 years ago. I recently attended the centenary symposium put on by the California Botanical Society that also turned 100 this year. My PhD supervisor, Charles Gimingham, just recently had his 90th birthday. My postdoctoral advisor, Hal Mooney, was 80 last year. Both seem to have changed little since I worked with them and still have more energy than I do. My wife and I celebrated our 25th wedding anniversary in May, and I thank Gillian and my children Katie and Hamish for putting up with me all that time. And I just calculated that I joined the BES shortly after starting my PhD, 36 years ago, and hence have been a member of the BES for over a third of its lifespan. I think this means that I officially qualify as either a dinosaur or an old fart. I attended my first BES winter meeting at Lancaster in 1977, and had my first ever journal paper published in the *Journal of Ecology* in 1979.

At that time, papers (and indeed theses) were written in long-hand and then typed up as a paper manuscript on a typewriter, electric if you were lucky. Statistics were mostly done on calculators, working out x2, y2, xy and all that, and then putting them all together. Some more complex analyses may have been conducted (usually with some trepidation and over a few days) on a mainframe computer using a highly arcane and unforgiving command language. And diagrams were done using tracing paper and the dreaded Rotring pens (wonderful things when they worked but with tips prone to drying up and becoming unusable unless soaked for several days in washing-up liquid solution) – and, if you could afford it, Letraset lettering. Younger readers are probably wondering what on earth I am talking about, but I just checked on Wikipedia and all these things still exist, albeit no longer on the radar of most graduate students. Three paper copies of the manuscript were then stuck in a brown paper envelope and sent by mail off to the journal, where they were then sent to the editor and on to reviewers, who provided their review in red pen on the manuscript and via a typed report. After all that, you received the verdict and all the red ink, and hoped that there was room for revision and the chance of acceptance thereafter.

At that time, ecology was in a rapid state of development too. The emergence of computers was slowly expanding the scope to deal with large and complex sets of data, and development of electronic sensors and equipment was revolutionizing the field. Things that took weeks to measure and analyse suddenly started to be possible in a few minutes. Things I spent 2 weeks in the lab measuring can now be done almost with the flick of an instrument. Pieces of equipment that took up whole labs now can be carried in one hand. When I was at Stanford in the early 1980s, the pride of the Mooney lab was the IRGA set up that measured gas exchange in plant material. The machine was like something out of the movie "Brazil" – it took up a whole lab and had tubes and dials everywhere, emitted alarming wheezes and whooshes constantly, and regularly broke down. And in the middle of it all trapped in a sealed glass chamber was a poor unsuspecting twig of some plant or other. Now you can just clamp two pads onto a leaf in the field and get the same sort of data virtually instantaneously.

Photo above: A beardless undergraduate Hobbs (plus Ruff the dog) doing fieldwork at Moor House National Nature Reserve ca 1975, with the house and lab in the background. Note the weather and field gear – things were always much better in the good old days!

Richard with Hal Mooney in 2002. After 20 years' collaboration Hal knows to keep the drinks bowl firmly in his grasp

"Advancing our ecological understanding remains more dependent on ideas, perceptive questions, thoughtful investigation and careful interpretation and synthesis than on snazzy visuals and complex stats and modelling."

So, now that students can sample and analyse things more rapidly and easily – and can complete their entire thesis on a laptop using standard word processing, graphics, imaging, statistical and modelling software – does this mean that advances are more frequent and more rapid in ecology? If we're free from the drudgery associated with data collection, analysis and reporting that characterized the work 30-40 years ago, surely the whole endeavour must be easier and result in more immediately tangible outcomes? Well, it is a characteristic of the older generation that they constantly tell the younger generation that they never had it so good. I certainly think this is true in the case of moving on from mainframe computers, Letraset and Rotring pens.

But is it true of the underlying science? I suspect not. Advancing our ecological understanding remains more dependent on ideas, perceptive questions, thoughtful investigation and careful interpretation and synthesis than on snazzy visuals and complex stats and modelling. Collecting data on meaningful ecological patterns and relationships remains a time-consuming business, fraught with risks relating to study design, statistical power, and just the sheer difficulty of collecting the data in often hostile environments or with organisms that are apparently not willing to cooperate. In addition, just because complex sampling and analysis is now possible, it's sort of expected that one should do these complex sampling and analyses because one can – regardless of whether the question being asked is best answered that way or by more straightforward means. I frequently encounter this conundrum when examining PhD theses – students tend to jump to complex and obscure methods of analysis, often using derived variables, when sometimes a simple x-y plot of observations might have told the story much better. Or worse, there are those who bypass the tedious step of collecting primary field data and hence rely on modelling approaches exclusively. Certainly cheaper and likely to result in quick results and publications, and sometimes very useful – but also likely to produce a growing cadre of ecologists who don't see the value of – or have the necessary skills to conduct – field observations and experiments.

When I look at my mentors including Charles Gimingham and Hal Mooney, their inspiration and motivation came mostly from careful field observations in the first instance. Indeed, most of the foundational ideas in ecology arose from such observations. At the California Botanical Society Centennial Symposium in Berkeley in April, the society's President, Tom Parker, outlined the history of the society and mentioned that its founding in 1913 coincided with the Second International Phytogeographic Excursion, during which participants including Frederic Clements, Henry Cowles and Arthur Tansley experienced Californian ecosystems such as the redwood forests for the first time. It would have been fascinating to have been there to share the experiences and conversations amongst that bunch of ecologists and perhaps see some of the big ideas in ecology taking early shape in response to their field experiences.

RAWES' MOORS

My own personal research trajectory was also undoubtedly moulded by early field experiences. My first paper in the *Journal of Ecology* in 1979 (Rawes & Hobbs, 1979) arose because of undergraduate summer employment I undertook at Moor House National Nature Reserve in the northern Pennines, under the supervision of the Officer in Charge there, Mike Rawes. Moor House was a wonderful institution back then – a fully functioning field station and lab up in the middle of nowhere in the blanket peat, based around the former Prince of Wales' shooting lodge that was also the highest inhabited house in England. Run by what was then the Nature Conservancy Council, there was a number of full-time staff including a resident reserve warden, botanist and housekeeper, and there was a pointer dog also on staff (yes, it was actually a government employee) to assist with grouse research. In addition to the staff there was a steady stream of students either working on PhD projects or employed to conduct seasonal research. The combination of isolation, groups of people working on different but allied projects, and a central base with good logistical support – the stuff with which all good field stations are made – provided a wonderful environment for field observational and experimental work coupled with intellectual discussion and debate (the latter also being assisted by the odd trip down to the George & Dragon now and again). Mike Rawes was an avid proponent of field experiments and a fierce defender of Moor House and what it represented. Unfortunately, those higher in the hierarchy with control of the purse-strings were less convinced and, sadly, Moor House ceased to be considered a good investment after the late 1970s and was eventually closed down completely as a field station. It's too bad that today's students cannot have the same experience I did, but fortunately the field experiments, and Mike Rawes' legacy, have lived on – indeed, a paper revisiting the subject of our 1979 paper just recently came out in *Journal of Applied Ecology* (Lee *et al.*, 2013).

So much for the past – what of the future? Given the advances seen in both techniques and ideas in ecology since my PhD years, I'd be wary of making any predictions about how things might develop in the future. Certainly, technology will continue to increase the scope of measurement and analysis in amazing ways. Miniaturized tracking devices are already revolutionizing faunal studies, molecular genetics are rendering movement, breeding and rapid evolution easier to follow, and use of social media and smartphones is opening up an amazing potential for citizen science. At the same time, tried and true technologies such as $2 plant quadrats will still have a place, I'm sure! As will the need for thoughtful observation and experimentation – technological advance should help inform the science, not drive it. In addition, the urgency for sound ecological work will only continue to grow as the human impact on the environment grows and we struggle to find ways in which a growing human population can cohabit the planet with all other species, many of which we know little about. The BES is in great shape to continue to be a leading and effective force in ensuring that ecology continues to develop and thrive – and, I hope, help find answers to the pressing problems facing humanity in the next hundred years.

Our hero, beard now fully formed, graduating with a PhD from the University of Aberdeen in 1982: with Charles Gimingham

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"It's too bad that today's students cannot have the same experience I did, but fortunately the field experiments, and Mike Rawes' legacy, have lived on – indeed, a paper revisiting the subject of our 1979 paper just recently came out in Journal of Applied Ecology (Lee et al., 2013)."

The Chartered Institute of Ecology and Environmental Management

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REGISTER OF CHARTERED ECOLOGISTS LAUNCHED

Just 9 months after being notified that our petition for a Royal Charter had been successful we have been able to launch the new Register of Chartered Ecologists. During the intervening period there has been much work to do in identifying the eligibility criteria for the award, setting the competency standard, agreeing the assessment process and putting into place all the practical arrangements for this new professional practice standard.

We have been very fortunate to be able to call on not only some of our past-presidents and senior members who have wide experience of such matters but also the Chief Scientists of the four statutory nature conservation bodies in the UK. They have worked really hard to identify and then test the criteria and process to ensure that it is rigorous, robust and fair. We are very grateful to them.

The Chartered Ecologist (CEcol) eligibility criteria are, not surprisingly, based on CIEEM's Competency Framework which will also form the basis of our membership eligibility criteria from January 2014. Applicants, who must be a member of an approved professional body, have to complete a detailed application form which then undergoes a desk-based assessment followed by a professional review interview. It is anticipated that the first Chartered Ecologists will be announced in October.

CHARTERED ENVIRONMENTALIST OF THE YEAR

Earlier this year we were delighted when CIEEM member David Stubbs became the first ever Chartered Environmentalist of the Year. His award was presented at the Sustain Magazine Awards for Sustainability, Business & the Built Environment held at The Guoman Tower Bridge Hotel, London.

David Stubbs won the Chartered Environmentalist of the Year Award for his work with the London Organising Committee for the Olympic Games (LOCOG) where his role was Head of Sustainability. The inaugural Chartered Environmentalist of the Year award, sponsored by the Society for the Environment, recognised the work of individuals who have achieved high recognition in their specific field

COLLABORATIVE WORKING ON GREEN INFRASTRUCTURE

One of CIEEM's priority areas of work is to increase interdisciplinary understanding and collaborative working between the professions. To that end we were delighted to organise our summer conference on green infrastructure in partnership with the Landscape Institute. The event, which was held at the Burlington Hotel, Birmingham in July, featured keynote presentations on the opportunities and challenges for delivering biodiversity benefits through green infrastructure from CIEEM Patron Tony Juniper and former Natural England Board member Pam Warhurst.

Delegates from both professional backgrounds were then able to work in small groups to apply their different skill sets to examining design approaches to green infrastructure projects using recent case studies. Delegates later commented on how instructive it had been to gain a better understanding of the drivers and technical challenges that frame another profession's response to the same set of circumstances and design opportunities. The consensus was that more such interdisciplinary events could lead to better outcomes for biodiversity.

JOINT REPORT ON GOOD SPATIAL PLANNING

CIEEM has been working with RSPB and RTPI on a new report on good practice in spatial planning with nature in mind. *Planning Naturally*, which identifies 12 principles of good spatial planning and uses case studies to exemplify them, was launched at the RTPI Planning Convention in July.

PERCEPTIONS ON ECOSYSTEM SERVICES

At our Spring 2013 Conference *'Ecosystem Services 1: Practical Methods for Demonstrating the Value of Nature to Decision Makers'*, delegates were asked to undertake three interactive activities relating to their perceptions of ecosystem services, including the opportunities and concerns they have with such an approach. Peter Glaves MCIEEM, from the University of Northumbria, and keynote speaker at the conference, asked delegates to list the ecosystem services provided by trees/woodlands as an indicator of the wider values and services found in nature.

Not surprisingly given their backgrounds and roles as ecologists and environmental managers, the delegates typically identified a wider range of values/services than those outside the profession (see wordle diagram) with the top 5 being:

- Habitat
- Biodiversity
- Carbon sequestration
- Wildlife
- Fibre/fuel

Three out of the top five are not listed in the Millennium Ecosystem Assessment typology and delegates also listed a number of other values/services that are not explicitly covered in the MEA including landscape, inspiration, awe and green space. There was some debate amongst delegates as to the extent to which, unless there is common agreement within society as to which values/services are to be recognised, the monetary approach to valuing ecosystem services can be usefully employed.

Delegates went on to identify a wide variety of issues and concerns with the ecosystems services approach and, in particular, with the concept of monetary valuation of some of the more abstract but no less important cultural and aesthetic services. Ecologists and environmental managers appear to have much more difficulty than planners and economists in this regard, perhaps influenced by the drivers that caused them to enter into the profession in the first place – values about biodiversity and then environment that, at best, are challenging to reduce to financial measures.

Despite this many delegates could see potential applications for an ecosystem services approach but remain frustrated by the lack of available tools and techniques for current approaches such as Environmental Impact Assessment.

The full report of Peter's session is available on the CIEEM website.

FORTHCOMING EVENTS:

Ecosystem Services 3: Rivers – A Framework for Action

6-7 November 2013, Southampton

Bookings opening shortly

Rant & Reason

I don't understand...

Dr Markus Eichhorn / School of Biology, University of Nottingham
markus.eichhorn@nottingham.ac.uk / @BESForests

The mantra of Gilles Deleuze, the French philosopher, is *"Bring something incomprehensible into the world!"* I know what many of you are thinking – there hasn't been enough Nietzscheo-structuralist philosophy in the *Bulletin* lately. Given the quality of many of the papers I end up reading (or reviewing), Deleuze has a substantial following among ecologists.

Incompehensibility in itself isn't necessarily a problem. At the risk of sounding like Donald Rumsfeld, there are four types of academic paper. There are the ones you read and grasp immediately. There are the ones you know you'll never understand, and therefore don't even bother worrying about. Worse are those you think you understand but don't (which doesn't preclude judgment by reviewers), or that you never find out about because they're in a journal you wouldn't ever look at.

There are good and bad excuses for a paper being incomprehensible. Poor writing skills can be an issue, especially those for whom English is not their mother tongue, but a more pernicious problem is created by cramming studies into editorial straitjackets. The pressure to publish in high-profile journals has led to the most important and novel findings being presented in a format that automatically makes them difficult to understand. The standard of science required to publish in *Ecology Letters*, combined with the strict 5000 word limit, means that some papers can no longer be appreciated on their own merits (and I'm personally against using the appendices as a necessary extension). Naturally *Science* and *Nature* are even worse, though *Nature* has recently promised to improve (Editorial, 2013). The presence of open-access journals with no page limits is likely to ease this strain, but part of the contradictory nature of the open access movement is that we are supposed to make our findings accessible – and therefore intelligible – to a wider public audience, yet the increase in length is seldom accompanied by greater clarity of expression.

Sometimes incomprehensibility isn't the fault of the author, but a failing on the part of their readers. As an example, take Chesson's famous 2000 paper, *'Mechanisms of maintenance of species diversity'*, cited over 1,000 times and a classic of the ecological literature. Hands up if you've read it – good, yes, everyone. Clearly many of you have cited it too. Now hands up if you understood it. I mean really followed the line of thought all the way through. I suspect that not so many hands will be in the air. If you're anything like an honest friend of mine (and population ecologist!), you probably skipped over the tricky equations and focussed on the take-home messages. The number of times it's been mis-cited suggests that this is a common phenomenon.

We all know that maths can be a barrier to understanding; notably the density of equations in a biological publication is negatively correlated with its future citation rate (Fawcett & Higginson 2012). Often it's just unnecessary and amounts to nothing more than statistical showing-off (see the excellent blog post by Brian McGill, 2012). If your methods are deliberately obfuscatory, then they fail one of the prime criteria of science: that any reasonable reader ought to be able to repeat the study. Using incomprehensibility as a smokescreen is one of the dark arts of science, as reviewers often assume that things outside their expertise are fine, or else won't own up to their ignorance. This means that complex mathematics can get a free pass – we are all in a hurry, and there isn't always time to check the fine detail. As a rule, if an equation is vital to understanding your study, then keep it but explain it in full. If it's purely there to make you look clever and boost your credibility then cull it.

Finally, I'll end with some advice to younger ecologists. You will frequently encounter papers, or even conference talks, that are utterly incomprehensible. The trick is to work out when the problem is yours or that of the authors. If it's the former, and you can recognise your own weaknesses, then set aside the time to work on them and make sure you're not missing out on something important. Take a day and work through Chesson (2000), for example; it's worth it. If you find that something is still just gobbledegook underneath then discard it and resolve to do better yourself. Writing and publishing something complex and impenetrable is relatively

> ***If your methods are deliberately obfuscatory, then they fail one of the prime criteria of science...***

easy, but getting people to read it (never mind cite or apply it) will be near impossible. Someone who writes in a way that others struggle to understand is not a great mind on a different intellectual plane. They're a bad scientist.

Further reading:

Chesson, P., 2000. Mechanisms of maintenance of species diversity. *Annual Review of Ecology, Evolution and Systematics* 31:343–366.

Editorial (2013). Announcement: reducing our irreproducibility. Nature 496, 398.

Fawcett TW & Higginson AD (2012). Heavy use of equations impedes communication among biologists. *Proceedings of the National Academy of Sciences of the USA,* 109, 11735-11739.

McGill BJ (2012). Statistical machismo? Dynamic Ecology, http://dynamicecology.wordpress.com/2012/09/11/statistical-machismo/

HAVE YOUR SAY

Does anyone want to respond to Markus's Rant? Rant & Reason is open to anyone who wants to have a Rant, or to those who wish to give a Reasoned response to something that has enraged Markus. Contact Emma Sayer (emma.sayer@open.ac.uk)

PUBLISHING NEWS

Journals Update

Functional Ecology

www.functionalecology.org
@FunEcology

Issue four is a bumper issue for *Functional Ecology* and includes our latest Special Feature on *Mechanisms of Plant Competition* as well as a new Extended Spotlight on *Responses to global climate change: Insights from organismal physiology.*

The most important and timely of recent developments in the study of the mechanisms by which plants compete is described and critically evaluated in the Special Feature, *Mechanisms of Plant Competition*, guest edited by David Robinson, Clare Trinder and Rob Brooker. Plant competition is resistant to direct study, its occurrence often has to be inferred after the event and estimated indirectly from crude proxies, and is shrouded in semantic and statistical complexity. The literature is replete with 'plant competition experiments', but many of these give only partial, indirect or weak information about competitive mechanisms and their ecological relevance. Yet, such experiments provide much of the empirical bedrock on which the prevailing theories of plant community dynamics rest, and in which competition plays central roles. The current position is one in which 'competition' is as much a part of the plant ecology furniture as it is of ecology generally, not because it is fully understood, but because it is a theoretically useful concept. Ecology is still waiting for its big breakthrough on competition, as on so much else. But even so, the new evidence and insights now being obtained about the mechanisms by which plants compete will move us closer to achieving it.

David Robinson will also be chairing a symposium on Mechanisms of Plant Competition at INTECOL, with a keynote from Liesje Mommer. The speakers will present the latest experimental and theoretical approaches to the study of the mechanisms of plant competition and discuss directions for future studies on competitive mechanisms and the means to achieve significant progress in understanding the ecological role of those mechanisms.

The Extended Spotlight from Steven Chown and Ary Hoffman features a small selection of new papers on "Responses to global climate change: Insights from organismal physiology". The papers selected by Chown and Hoffman highlight ecophysiological forecasting as a means to substantially improve our current ability to make population and area-specific forecasts, especially given brisk developments in understanding of the ways in which ecological interactions can be incorporated into similar approaches. These papers also emphasize importance of being able to integrate large environmental, trait-based and genomic datasets and show how future forecasting in biology will benefit from the synthesis of traditional bioinformatics and what is now largely considered ecoinformatics. Chown and Hoffman have also assembled a Virtual Issue to accompany the Extended Spotlight.

Two new editors have also joined the Editorial Board in June. William Hopkins joins us from Virginia Tech, where he studies how wildlife responds physiologically and behaviourally to disturbances. Bill is particularly intrigued by tradeoffs among physiological processes (e.g., reproduction, thermoregulation, immune function) and how ecological changes may force animals to reprioritize their investments of time and energy. We are also joined by Maud Ferrari from the University of Saskatchewan. Maud's research looks at better understanding the ecology of predator-prey interactions and the role of biotic and abiotic factors in shaping those interactions, looking at cognitive, behavioural and evolutionary ecology and encompassing both fundamental and applied research.

Jennifer Meyer
Assistant Editor
(Jennifer@BritishEcologicalSociety.org)

Maud Ferrari

William Hopkins

Journal of Ecology

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INTECOL 2013

INTECOL 2013 is almost upon us and many members of the *Journal of Ecology* Editorial Board will be attending the conference. This includes Executive Editor David Gibson, Editors Amy Austin, Richard Bardgett and Mark Rees as well as a number of our Associate Editors. Visit the BES stand during the conference to meet members of the Editorial Office, especially if you have any questions about the *Journal*.

Journal of Ecology is pleased to be sponsoring a symposium at INTECOL 2013 entitled 'The Tree of Life in ecosystems: evolution of plant effects on carbon and nutrient cycling' organised by Associate Editors Hans J.H.C. Cornelissen and Will K. Cornwell. The symposium will also be published as a Special Feature in the Journal at the beginning of next year.

In the News

Two papers published in J*ournal of Ecology* have featured in the news over the past few months. Queen's University in Ontario, Canada published a press release about the paper 'Caribou exclusion during a population low increases deciduous and evergreen shrub species biomass and nitrogen pools in low Arctic tundra' by Zamin & Grogan. 'Sex allocation, pollen limitation and masting in whitebark pine' by Rapp, McIntire & Crone has also been press released more recently by Harvard University and the NSF. All Journal of Ecology press releases are available to access via the new BES website.

Altmetric

Journal of Ecology, along with the rest of the BES Journals, has begun a trial with article level metrics (ALMs). Readers can access an article's Altmetric score by downloading the enhanced PDF via ReadCube on Wiley Online Library. Executive Editor David Gibson has written a post on the *Journal* blog, which provides more information about article level metrics and Journal of Ecology's relationship with them.

Earlier this year and as part of the BES' Centenary Celebration, *Journal of Ecology* published the 'Identification of 100 fundamental ecological questions' by Sutherland *et al.* (101:1). This paper has proved to be very visible via social media channels – it is in the 99th percentile of articles tracked by Altmetric. This paper has also been recommended by F1000Prime.

Editorial Board changes

We would like to warmly welcome to the Editorial Board a number of new Associate Editors: Yvonne Buckley, Walter Carson, Dan Flynn, Matthew Heard, Andrew MacDougall and David Wardle. We would also like to thank Associate Editors Marcelo Aizen, Rob Brooker and Thomas Kitzberger, who have stepped down from the Board this year, for all of the work that they have done for the *Journal.*

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Journal of Applied Ecology

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We are all looking forward to the upcoming joint BES annual meeting and INTECOL congress, and *Journal of Applied Ecology* has plenty of activities planned:

Editors E.J. Milner-Gulland and Jos Barlow will be running a workshop on "How best can international journals support ecologists in emerging economies?", which will involve a panel discussion with Navinder Singh from Swedish University of Agricultural Sciences, Joice Ferreira from Brazilian Agriculture Research Corporation and the author of the first article in our Reviews in Emerging Economies series (49: 535-541), Martin Fisher from the journal *Oryx*, Phil McGowan from Newcastle University, and Liz Ferguson from Wiley-Blackwell. An interactive audience question and answer session will follow the panel discussion.

Phil Hulme is organising a Journal-sponsored symposium "Putting Applied Ecology into practice: Knowledge and needs for the 21st Century" with Peter Kareiva from The Nature Conservancy as the keynote speaker.

The INTECOL congress also provides an excellent opportunity to celebrate fifty years of *Journal of Applied Ecology* with many of our readers, authors and editorial board, who are so integral to the success of the Journal. We have devised several awards including 'Best title of a paper' and 'Most cited author', as well as honouring our most hard-working and long-serving Reviewers and Associate Editors, among others. We will be announcing the recipients of the awards at the BES Journals reception which will be held during INTECOL, and the full list of winners will be provided in a subsequent *Bulletin* article.

Practitioner's Perspectives

We are very pleased to announce another milestone during our Golden Jubilee year with the publication of our 10th Practitioner's Perspective article *"A partnership approach to addressing applied ecological research needs of an oil and gas business"* by Pedroni *et al.* (50: 539–543). The Practitioner's Perspective series was created at the beginning of 2011 in order to provide a platform for individuals involved in management of ecological systems to explain what is needed to ensure more effective interactions between research and its applications. Phil Hulme is responsible for overseeing the series, which has become very successful and we now receive a steady flow of article submissions on a wide range of topics. Practitioner's Perspectives are all free to access, and can be found on the Journal website (http://www.journalofappliedecology.org/view/0/PractitionersPerspective.html).

Altmetrics

We are particularly focussed on ensuring that the papers we publish are more widely read than just by other academic researchers. In order to track the broader impact of our work, we are starting to provide a wider range of Journal and article-level metrics which measure different aspects of the impact of the Journal and individual articles. With just under 675000 full text downloads for papers published in 2012, *Journal of Applied Ecology* articles are accessed far more than the average Biological Science article published by Wiley-Blackwell. An enhanced PDF is now available for all new papers via ReadCube on Wiley Online Library with additional features including

an Altmetric score, which measures the amount of online attention a paper receives (such as tweets, Mendeley bookmarks or blog, news and Facebook mentions, etc.). Our articles receive more online attention than average, with a mean Altmetric score of 4.8 compared to the global average of 3.4. Two recent articles that received a large amount of online attention are "Rotational vegetation burning effects on peatland stream ecosystems" by Ramchunder *et al.* (50: 636–648) and "Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis" by Pearce-Higgins *et al.* (49: 386–394).

Changes to the Editorial Board

Recently, Yvonne Buckley and Doug Landis have stepped down as Associate Editors. We would like to thank Yvonne and Doug for all their hard work for the Journal. We also wish Yvonne all the best for her new role on the *Journal of Ecology's* Editorial Board, and we are sure they will make her very welcome. We would like to offer a very warm welcome to Joseph Bennett who joined the editorial board in June.

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Journal of Animal Ecology

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The journal leads into INTECOL with an exciting July issue (Vol 82, Iss 5), provided a number of stimulating contributions. Opening the issue is Elizabeth Nichols' *In Focus* article, which delves into the 'brown' world of detritus food webs by examining the paper 'Predatory beetles facilitate plant growth by driving earthworms to lower soil layers' by Chuan Zhao *et al.* The authors of this paper investigate ecosystem functioning beyond trophic interactions, showing that predatory beetles can indirectly affect plant biomass by prompting behavioural changes in soil-improving earthworms.

On the cover is a Chacma baboon in Tsaobis Nature Park, Namibia, taken Harry Marshall, lead author of the paper 'How do foragers decide when to leave a patch? A test of alternative models under natural and experimental conditions'. This paper provides rare empirical tests of competing models of patch-departure decisions by animals in natural and field-experimental foraging conditions. Interestingly, the authors show that foragers' patch-departure decisions may depend on the characteristics of the environment, and that in some environments simpler models can actually provide a good description of this behaviour.

The issue also includes a thoughtful theoretical review paper, 'Species diversity and community similarity in fluctuating environments: parametric approaches using species abundance distributions' – the first comprehensive overview of how to analyse community dynamics in space and time using specific species abundance models. Bernt-Erik Saether and colleagues argue for a parametric approach in studies of community structure and organization, and assume an underlying lognormal form of the species abundance distribution.

We are extremely appreciative of all the hard work our Associate Editors do on behalf of the journal. We are fortunate to also receive a number of excellent submissions from them – a good example in the August issue is 'A direct physiological trade-off between personal and social immunity' by Sheena Cotter and colleagues. In the paper, the authors challenge the personal immune system of female burying beetles and measure subsequent investment in social immunity to show that by balancing investment in personal and social immunity in this way during one breeding attempt, females are able to defend their subsequent lifetime reproductive success

On the digital side of things, our vimeo channel is thriving. One particular highlight is the video produced by Mike Heithaus and Derek Burkholder entitled 'A behaviour-mediated trophic cascade', in which they outline – with some stunning footage of sharks, turtles and sea cows – their study 'Patterns of top-down control in a seagrass ecosystem: could a roving apex predator (Galeocerdo cuvier) induce a behaviour-mediated trophic cascade?' published in Wiley Online Library Early View in June.

Finally, turning to the impending excitement of INTECOL, we are pleased to promote the *Journal of Animal Ecology*-sponsored symposium, organised by our Editors Mike Boots and Ken Wilson, on 'Multilevel transmission processes in disease transmission: blending

models and data'. The symposium will include presentations by animal disease experts from around the world, including keynote speaker Peter Hudson (Pennsylvania State University, USA), Meggan Craft (University of Minnesota, USA), Sandra Telfer (University of Aberdeen) and Katie Hampson (University of Glasgow). Accompanying the symposium will be a Virtual Issue of the journal, showcasing important recent animal disease papers we've published.

We look forward to seeing you all in London.

Peter Livermore
Assistant Editor
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Methods in Ecology and Evolution

www.methodsinecologyandevolution.org
@MethodsEcolEvol

Issues 4.6 and 4.7 are now available online, containing a variety of interesting papers and freely available applications. Remember, as a member of the BES, you have free access to all *Methods* content!

To help with our increasing number of submissions, we're happy to announce the addition of 3 new Associate Editors (AEs) to the team: Barb Anderson from the University of Otago, Liam Revell from the University of Massachusetts Boston and Carolyn Kurle from UC San Diego. You can read more about their research interests on the *Methods* website.

In April Associate Editor Matt Spencer wrote an interesting piece for the *Methods* blog (methodsblog.wordpress.com) entitled "Strangeness and simplicity in ecology", in which he discusses why not all ecological work is unbearably dull to read about, and what this means for ecological methods. In April, another of our AEs, Satu Ramula, also contributed with a nice summary of demographic models: "Out of the jungle of demographic analyses".

Now in our fourth year, *Methods* has published over 300 papers. One of the main objectives when launching the journal was to bring together research in ecology and evolution, as well as to try to create a unique platform for authors developing new methods. Timed for Evolution 2013, we've put together a Virtual Issue which highlights some of the papers with an evolutionary theme, published over the preceding 12 months. This Virtual Issue is freely available and can be found on the *Methods* website **(methodsinecologyandevolution.org/virtualIssues).**

Methods is currently partaking in a 6 month trial with Altmetric. Altmetric is a powerful tool that tracks when an article has been mentioned online on websites such as Twitter, Facebook, Google+, blog sites, news sites, and many more. An Altmetric score is displayed next to the abstract of each *Methods* article on Wiley Online Library, which is calculated by taking into account factors such as the number of times an article has been mentioned online, and by whom. With the increasing use of social media for the dissemination of research, the Altmetric score aims to quantify the online impact of individual articles.

Samantha Ponton
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BES PUBLICATIONS TEAM

The current BES Publications team are pictured below. Graziella Iossa is currently on maternity leave.

Catherine Hill, Head of Publications

Andrea Baier, Managing Editor, Journal of Ecology and Journal of Applied Ecology

Liz Baker, Managing Editor, Journal of Animal Ecology and Functional Ecology

Peter Livermore, Assistant Editor, Journal of Animal Ecology

Erika Newton, Assistant Editor, Journal of Applied Ecology

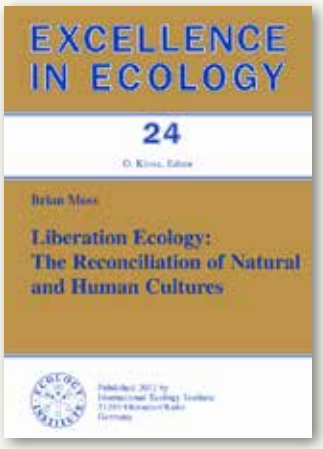
Jennifer Meyer, Assistant Editor, Functional Ecology

Samantha Ponton, Assistant Editor, Methods in Ecology and Evolution

Lauren Sandhu, Assistant Editor, Journal of Ecology

BOOK REVIEWS

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



Liberation ecology: The Reconciliation of Natural and Human Cultures

Brian Moss (2012): Excellence in Ecology 24, International Ecology Institute,

Oldendorf/Luhe, Germany.
€44.00 (hbk)
ISSN 0932-2205

The Excellence in Ecology prize is awarded by the German-based International Ecology Institute to those "distinguished by outstanding and sustained scientific achievements". Brian Moss was the happy recipient in 2009 and joined the illustrious ranks of laureates alongside people like John Lawton, E.O. Wilson, Ramon Margalef, Hal Mooney and Georgina Mace. Depending upon your point of view, part of the joy or penance of the prize is the requirement to write a book to "present their personal experiences, insights and visions". And this is exactly what Brian has done, here reviewed by two experienced ecologists.

Peter Moore

Brian Moss is very familiar to British ecologists as a limnologist, most famously associated with studies of the eutrophication of the Norfolk Broads. In this book, we meet with Brian Moss the ecologist, but also gain a glimpse of the wider aspects of his talents, as philosopher, theologian, historian, art and music critic, and poet.

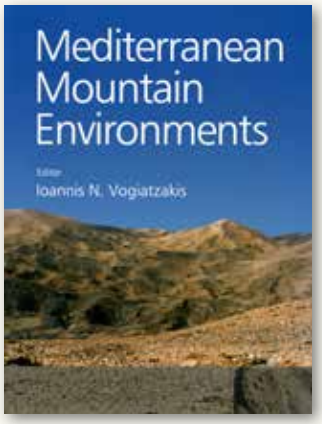
The book could well have been entitled, *'A Short History of Nearly Everything'*, plagiarising that of Bill Bryson, as it covers the geological and biological history of the Earth, culminating in the development of human cultures. Instead, he calls it Liberation Ecology, echoing the term *Liberation Theology* of Gustavo Gutierrez, which emphasised the need for people to be freed from colonialism, imperialism, and the pressures imposed by multinational companies. A similar emancipation is needed, according to Brian, to free humanity from the exploitative pressures applied to Earth's limited resources. The message many not be new, but the presentation of the argument is certainly innovative. The orderly arrangement of bases in DNA is likened to the structure of a washing line in West Wales. Ecological succession is compared to the development of music, from Thomas Tallis to Ralph Vaughan Williams. The concept of multiple possible outcome of environmental change is illustrated by reference to John Fowles' *The French Lieutenant's Woman* with its various alternative endings. The interconnectedness of natural systems is compared with the paintings of L.S. Lowry and Henri Rousseau. But the romantic ideals of the Noble Savage as espoused in the poetry of Dryden and Longfellow are soundly rejected. He concludes, reasonably, with the predictable calls for habitat conservation, tapping renewable energy resources, recycling materials, and more efficient food production and distribution, all of which are entirely commendable. Perhaps he could have placed greater emphasis, however, on the need for global population control, an unpopular but essential problem that must be faced if humanity and the Earth's ecosystems are to survive. The great diversity of illustrations in this book make it extremely attractive and readable, as well as intellectually stimulating. Its novel approach to so many ecological principles is refreshing, and places Brian Moss among the ranks of Jared Diamond, E.O. Wilson, and Paul Ehrlich as a presenter of profound thoughts in a highly accessible manner. The author claims that this book was not written for ecologists, but for 'everyone else'. I would delete the 'else' and suggest that this is a book for everyone, including ecologists.

David Walton

Ecologists are a heterogeneous group, as any BES meeting conclusively proves, and their interests and knowledge cover a frighteningly wide spectrum far beyond the disciplines of science. Yet normally their writings are constrained within the formal confines of the scientific paper or monograph. Whilst it should be no surprise to those who know Brian Moss, this book breaks all those conventions and provides what is, in my experience, a uniquely personal yet academically challenging view of ecology and its context in a world dominated by humans. As he says in the Preface, he could have written a book for his fellow ecologists, but instead chose to try and explain the key elements of ecology to a wider public through parallels from arts and humanities. His view that ecology is all part of a seamless culture is one that I share and so it has been for me a liberating experience to review Brian's insights into music, literature and painting and how they help to explain ecology. There can be few ecology books that contain pictures of stain glass windows, descriptions of jet engines, the Song of Hiawatha, the King James Bible as well as lucid descriptions of evolutionary theory, ecosystem functioning, cellular physiology and habitat characterization – to name but a few. His general thesis is that there are too few scientifically literate people and too many intellectually corrupt leaders whose concern for economic and social reward over environmental management and sustainability gains them an uncritical following that will, in the end, prove disastrous for the human race. His long-term fondness for the Gaia approach to world history and concern about limiting the size of the global population shows, as always, that he is perfectly willing to argue for the less popular objectives if he sees convincing evidence. Brian's genius in this volume lies in using unexpected linkages to facilitate his explanations – thus the plot of John Fowles' The French Lieutenant's Woman helps explain planetary history. The disdain with which he despatches those who proclaim that "economic growth is good, essential, undeniable" is clear in every chapter. His design for liberation is simple and pragmatic in that he accepts the difficulties in changing human behaviour and the problems of the selfish gene but sees light in the darkness from the younger generations. The Moss approach has been to question every statement but accept the connectedness of everything even if it cannot yet be explained. To Brian the world has always been a fascinating set of mysteries from which human endeavour has extracted some understandings in science, art and music. His students were always challenged to think for themselves and in this book he does the same to the reader. The book ends, typically, with one of Brian's own poems poking fun at the Establishment!

This sort of publication would probably offend many panels in the RAE and be dismissed

as a mere reiteration of what was already known. If I am right it demonstrates just how far from the holistic view we have strayed and how little we value the unorthodox. Whilst he eschews references in the text his end notes to each chapter are fascinating in drawing attention to his catholic range of sources. Unfortunately the public at large will never see or hear of it but I strongly recommend the book to any ecologist with a broad outlook. A shorter version published as an e-book by a major publisher could however reach its intended recipients with who knows what effects?



Mediterranean Mountain Environments

Edited by Ioannis N. Vogiatzakis (2012) Wiley-Blackwell, Chichester.

£75.00 (hbk)
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£37.50 (pbk)
ISBN 978-0-470-68625-6

At the outset I must declare an interest in this book as I contributed one of the chapters on *'Quaternary environmental history'*. However, I played no other role in its planning, reviewing or production. There are 16 contributors in total who tackle a broad spectrum of material. The opening scene-setting chapter pays tribute to McNeil's (1992) classic text *The Mountains of the Mediterranean World* in identifying their unique characteristics of glacial history and endemism, and highlights the problems and challenges associated with land-use change, the impact of intensifying tourism and climatic change. The next two chapters present a temporal perspective, specifically environmental and glacial history. The latter details the research of the late 1800s and early 1900s which established the role of ice and ice ages in shaping Mediterranean mountain landscapes, reviews the current state of knowledge about glacial history in each of the major mountain chains/countries, and comments on the status of the numerous recent and current glaciers (there are 40 glaciers in Turkey alone); unsurprisingly their future is uncertain given global warming. Landforms and soils, the result of past and present climatic regimes in combination with sea-level changes and geology, which includes limestone and similar calcareous rocks as well as varied metamorphic rocks and granite, are also documented in Chapter 4. Equally, climate is a primary control on hydrology as discussed in chapter 5: from the sub-Saharan of the south, to the dry continental climate of the east and the more pronounced continental climate of the north. Inevitably, water is a prized and diminishing resource; its scarcity will intensify with climatic change so adaptation and planning are vital. Mediterranean mountains, in common with mountains worldwide, are biodiversity hotspots with many endemics as is reviewed in chapter 6. Zoogeographical features include diversity, rare and endangered species and refuges while conservation via national parks and protected landscapes is briefly examined. Chapter 7 introduces a human element and the cultural significance of Mediterranean mountains in prehistory and history; religion, mythology, *genres de vie* of the past and present including the rise of various forms of mountain tourism including ecotourism. This leads on to a discourse in chapter 8 on land-use change and its drivers such as population increase in the past and current depopulation with a loss of rural traditions, economic factors including links, such as roads, with lowland centres, and technological innovations such as mechanization, and the unavoidable question of climate change. All of these factors interact with varying degrees of intensity to create dynamic mountain landscapes throughout Mediterranean countries. This dynamism is entering a new phase which is driven by recent climatic change, the subject of Chapter 9 in which predictive models are discussed; warming and drying are the likely outcomes; glaciers will shrink and winter rainfall will decline, droughts will increase and surface water flow will be reduced. Ecological and socio-economic adaptations and change will ensue throughout the Mediterranean mountains; and what happens in the mountains will affect the lowlands though prediction is complex and uncertain. As the concluding chapter indicates, Mediterranean mountains face many challenges and uncertainties.

Antoinette Mannion

Vegetation Databases for the 21st Century: Biodiversity and Ecology 4

Edited by Jürgen Dengler, Jens Oldeland, Florian Jansen, Milan Chytrý, Jörg Ewald, Manfred Finckh, Falko Glöckler, Gabriela Lopez-Gonzalez, Robert K. Peet & Joop H.J. Schaminée (2012) University of Hamburg, Hamburg.

€20.00 (pbk)
ISSN 1613-9801
Free download: www.biodiversity-plants.de/biodivers_ecol/

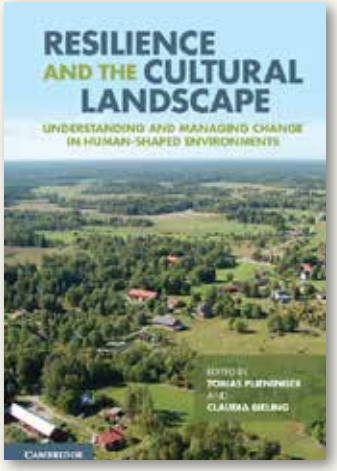
Don't get me started about databases of georeferenced vegetation plot data in Britain! Several hundred thousand such plots must have been recorded over the past century but the records are mainly scattered or lost. If you know where they are, access is often difficult and metadata lacking. The few examples of good practice seem little supported. For the time being the plot-based Countryside Survey programme, which I would argue is the most policy-relevant biological survey in the UK, is on ice.

It is therefore both welcomed and galling to see in this special edition of *Biodiversity and Ecology* that they do things better elsewhere. A meeting on vegetation databases in Hamburg was the stimulus for this publication and it is a celebration of the recently established Global Index of Vegetation-Plot Databases (GIVD). One hundred and eighty two databases were on the rapidly expanding GIVD by May 2012.

The first six papers in this volume cover strategic issues relating to vegetation databases and examples of their use. One of the most serious problems is, of course, developing species reference lists which cope with synonymy and taxonomic revision. Most of the volume consists of information about the individual GIVD databases, their, purpose, content and structure. Some accounts are for small data holdings but others are about impressive achievements. For example, in The Netherlands their national database has more than 600,000 plots recorded and the French have more than 200,000 records.

The material presented here is mainly technical and of interest to those who commission, design and manage data bases. Sadly none of the papers relate to UK data. The way in which vegetation is changing is planet saving knowledge. It would be nice to think that someone might persuade funders and researchers in the UK to take the vegetation plot data and international data sharing more seriously.

John Hopkins



Resilience and the Cultural Landscape: Understanding and Managing Change in Human-Shaped Environments

Edited by Tobias Plieninger and Claudia Bieling (2012) Cambridge University Press, Cambridge.

£45.00 (hbk)
ISBN 978-1-107-02078-8

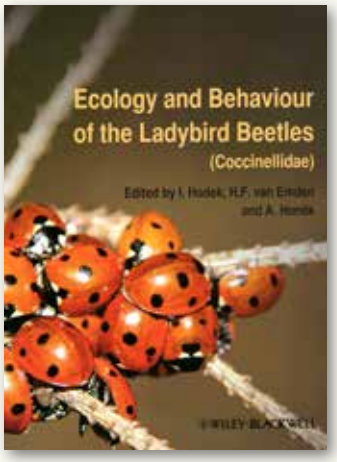
I have always felt more confident about giving advice where analysts arrive at a similar view from different starting points. This book sets out to examine such points of similarity and difference between two analytical schools, the students of cultural landscapes, who see a world shaped by the interaction of humans and nature, and supporters of the Resilience Alliance, with their emphasis upon linked socio-economic systems, panarchy and the adaptive cycle.

Exploration of concepts rather than analysis of data is at the core of this book. It is therefore predominantly discursive, although a large amount of case study material is included. There is, however, only a cursory treatment of ecological principles and the major emphasis is upon the social and institutional factors which shape landscapes. Of course, in the past hundred years we have seen the breakdown of many long established land management systems, often with significant simplification of ecological systems. An important message of the book is that we should not look on such systems sentimentally as they are often associated with human injustice and hardship.

An area of confusion explored by several authors is the lack of clarity in what is meant by "social system". In the UK we would be wise to reflect more on this issue as our political class have become besotted by local communities as decision makers when in fact landscapes are shaped as much by regional, national and international processes, not least globalisation of trade, and this in my view enfeebles much current environmental policy. There is a very interesting and wise reflection on this topic by Ann Kinzig in the penultimate chapter.

If I was asked to give a shelf mark for this book it would be as social geography but ecologists with an interest in the interaction between society and nature and those involved in policy advice will find it of interest.

John Hopkins



Ecology and Behaviour of the Ladybird Beetles (Coccinellidae)

Edited by Ivo Hodek, Helmut F. van Emden & A. Honek (2012) Wiley-Blackwell, Chichester.

£120.00 (hbk)
ISBN 978-1-4051-8422-9

There has been such an upsurge in interest in Ladybird beetles recently that a book dedicated to their fundamental and applied biology is very welcome. Of course, there has always been a realisation that ladybirds are a vital part of biological control and that studies of their genetics has lead to real insights, but recently they have become iconic and much-loved creatures and the invasion of northern European countries by the large and colourful but voracious Harlequin ladybird *(Harmonia axyridis)* has produced a huge surge in popular and scientific interest in them. This book is dedicated to the memory of Professor Michael Majerus, who sadly died recently but who contributed so much to stimulating work on ladybirds and who should have been an author.

This is a very well illustrated and authoritative account, with an excellent set of authors and a very full range of topics. Basic material on phylogeny and taxonomy (backed up by full appendices of scientific names) and on life histories and development, feeding, diapause and genetics are all included. There are then chapters on their natural enemies, their use in biological control, their communication and the role they play generally in insect communities, before final thoughts on recent progress in our understanding of their biology and likely future advances. Overall this is a rich mine of information and full of important and fascinating detail and it has much to be admired. It can be highly recommended except that the price is so high that it cannot be realistically expected that many individuals will buy it and even libraries will be challenged to afford it. What a shame.

Mark Young

Insect Outbreaks Revisited

Edited by Pedro Barbosa, Deborah Letourneau & Anurag Agrawal (2012) Wiley-Blackwell, Chichester.

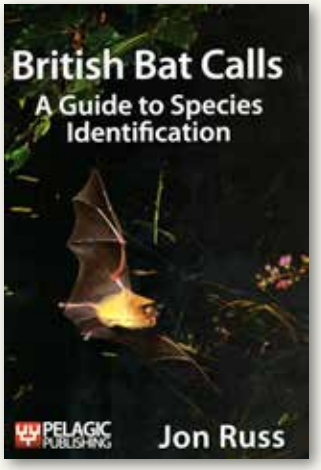
£65.00
ISBN 978-1-4443-3759-4

The whole subject of insect outbreaks, (with its related subject of insect population cycles), has been a very important driver for our general understanding of population dynamics, so there have been previous important books on the topic, notably the 1987 volume authored by Barbosa and Schultz. This volume is specifically designed to update the earlier volume. Many of the chapters are indeed direct

updates but there are also some new things to include, such as the impact of climate change on insect populations. In particular, it is important to understand whether pest outbreaks will become more frequent and serious.

Many authors contribute to the twenty chapters here, and these are grouped into sections termed Physiological and life history perspectives, Population dynamics and multispecies interactions, Population, community and ecosystem ecology, Genetics and evolution, and Applied perspectives. The last section, with six chapters, is the largest part of the book. Every chapter is very well referenced and there are some useful and attractive illustrations. They are also generally wide-ranging, but with the use of specific examples to make the arguments come to life. Overall this is an important and informative book, on a vital subject which is not only of specific interest but which has a relevance to all ecologists who work with population ecology. It should be as influential as the 1987 book.

Mark Young



British Bat Calls: A Guide to Species Identification

John Russ (2012) Pelagic Publishing, Exeter.

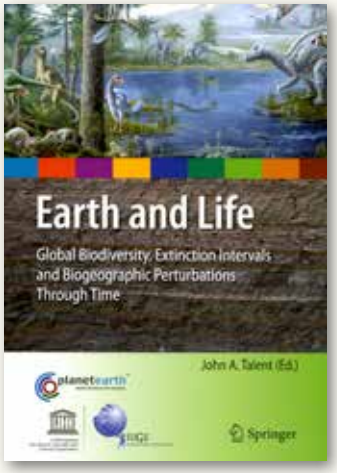
£29.99 (pbk)
ISBN 978-1-907807-25-1

This is not just a simple handbook giving an indication of what each of our bat species sounds like with a bat detector. It does do that, but also so much more. This is a detailed book that will tell you everything worth knowing about analysing bat calls. It starts with an in-depth account of the physics of sound and its detection, and how bats use sound for feeding and communication. This is followed by technical sections on equipment and software, from hand-held heterodyne detectors to equipment that works by frequency division (reducing all frequencies across the spectrum by a factor of 10 so the whole range of calls are audible in real time) time expansion (which gives a more accurate recording of sound but is played in slow-time to make it audible) and full spectrum sampling (recording everything at very high sample rates to give accuracy and real time). How each of these methods works, and their pros and cons, is explored in detail. There is less help with software than one would hope, perhaps due to commercial sensitivities. Sonograms used later in the book are displayed in BatSound and AnalookW but BatSound gets hardly a mention elsewhere and Analook does but briefly. Perhaps to the serious bat worker this is not a problem but as an amateur this left me floundering. This is not helped by the index; for example 'heterodyne' is included only as a sub-heading under 'identification' and takes you to the species accounts but not to an explanation of what it means (which is very nicely explained on page 31).

The bulk of the book is made up of species accounts giving you broad background information on distribution, emergence time, flight and foraging behaviour and habitat. There is also detailed information on echolocation and social calls and their characteristics as recorded by the different methods listed above with numerous sonograms.

If you are a casual user of a bat detector this book will be helpful in that it gives detailed descriptions of the frequencies and what you should hear for each species but the detail will probably be overkill. If you are seriously interested in bat calls this is certainly the book to use since, despite the little niggles, it is inclusive, detailed and very clearly written and organised.

Peter Thomas



Earth and Life: Global Biodiversity, Extinction Intervals and Biogeographic Perturbations Through Time

Edited by John A. Talent (2012) Springer, Dordrecht.

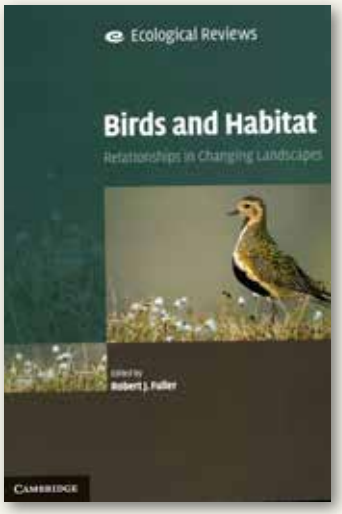
£ 90.00 (hbk)
ISBN 978-90-481-3427-4

Earth and Life has hit the bookshelves! Over the 1100 printed pages, 74 international authors from all continents describe, analyse and interpret the signatures and patterns of bioradiations and extinction events through geological time. This very well illustrated book is organised in five major chapters, starting with general overviews on major topics such as the Phanerozoic biodiversity and complex interacting Global Cycles, followed by the description and analysis of evolutionary patterns and innovations, then focussing on global extinction events and biocrises, moving on to an excellent overview on palaeobiogeographic patterns and problems, and finally concentrating on Cenozoic Environments and the effects of asteroid impacts.

All the included chapters are excellently written and provide a state-of-the-art insight into the various evolutionary phenomena observable, and the dynamics and interaction of fossil ecosystems. The thematic range (from Late Neoproterozoic Ediacaran evolution of animals to the perturbation of Miocene ecosystems) will make sure that everyone interested in dynamic palaeobiological systems will find his or her favourite chapter! Sometimes rather extensive, but nonetheless carefully selected references provide an additional valuable source for further information and guide the reader towards the overall complex nature of the evolutionary topics described.

The book does not intend to be a textbook for students nor does it pretend to be the proceedings of a highly-focused scientific conference. However, the editor managed to organise the entire volume in such an excellent way, that it could and will easily serve both purposes. The extraordinarily good (largely colour) illustrations attract and invite the reader to dive into the various chapters – even by just flipping through the book, you'll find yourself sitting down and starting to read the different chapters. This is clearly a 'must have' for Palaeontologists, Palaeobiologists and everyone interested in the evolutionary aspects of the development of life on our planet. It should also not be missed by university libraries – this book will certainly not end up as a dust collector on the bookshelves of our students – it's simply too fascinating and inspiring!

Michael Montenari



Birds and Habitat

Edited by Robert J. Fuller (2012) Cambridge University Press, Cambridge.

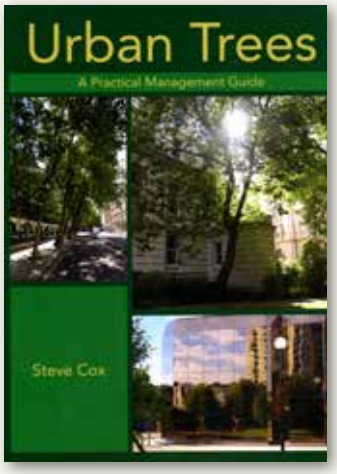
£75.00 (hbk)
ISBN 978-0-521-89756-3

£40.00 (pbk)
ISBN 978-0-521-72233-9

The RSPB, although mainly concerned with bird protection, has become the largest general conservation movement in Europe as a result of the close relationship between birds and their habitats. Conserving birds inevitably involves the conservation of habitats, and thereby many other elements of flora and fauna. It is important, therefore, to ascertain precisely what a bird requires of its habitat, which may involve climatic limitations, structural factors (largely determined by vegetation), habitat diversity (especially if feeding and nesting requirements are different), food supply (often dependent on the other species of plant and animal in the habitat), and space, which is needed in different degrees depending on specific territorial requirements. The book opens with a consideration of these and many other factors that influence the population dynamics of birds and which define habitat quality for any species. As this introductory section points out, however, there are complications. On a continental scale, a bird species may use different habitats in the various parts of its range, perhaps being lowland in the eastern Europe and montane in Spain, as is the case with the middle-spotted woodpecker. Habitats themselves change over time, depending on successional processes in ecosystem, changing human activities and land-use, and shifts in climatic conditions. It is not straightforward, therefore, to predict the avifauna of a site simply on the basis of habitat conditions. These aspects of the study are taken up as separate discussions of structure, transitional habitats, heterogeneity, and the relationship between bird communities and fragmented cultural landscapes. The second part of the book moves from the general to the specific and considers individual habitats, including moorland, arctic-alpine montane, wetland (reed swamps, fens, mudflats, saltmarshes, etc.), and temperate forest. The selection of habitats for specific study is inevitably limited and has a distinctly northwest European, if not British bias. A kind of appendix chapter does look at the North American scene, however, where habitats are generally more extensive and less fragmented than those of Europe, and also Australia, especially in relation to human-induced habitat change. There is no coverage of steppes, deserts, Mediterranean, or polar tundra habitats, but the selection does permit the authors to explore the nature of at least some bird/habitat relationships in detail. The final section of the book revisits some of the general topics raised in the introductory chapters, such as what constitutes habitat quality, how habitat requirements may vary during individual life histories, and the importance of understanding population dynamics in the study of bird/habitat relations. One of the most important topics raised in the book is that of adaptation to climate change. Observations on phenological changes in habitat features such as leaf emergence in trees, and insect abundance, in relation to migrant arrival dates, and nesting periods are well known. One response for birds arriving out of synchrony with the food supply would be to alter its latitudinal settlement pattern and thus increase its fitness, as is illustrated by the pied flycatchers of northern Europe.

One might have expected a chapter on climate change in relation to migration routes and 'winter' habitats south of the Sahara, which are so critical in the survival of long-distance migrants. As a collection of essays, this work will serve many purposes. It is of interest to theoretical ecologists and modellers, to habitat conservationists in the field, and to the vast army of birders who wish to explore the ecological relationships between birds and their environment.

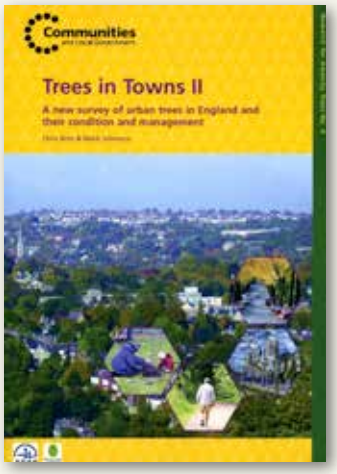
Peter Moore



Urban Trees: A Practical Management Guide

Steve Cox (2011) Crowood Press, Marlborough.

£19.99 (hbk)
ISBN 978-1-84797-298-9

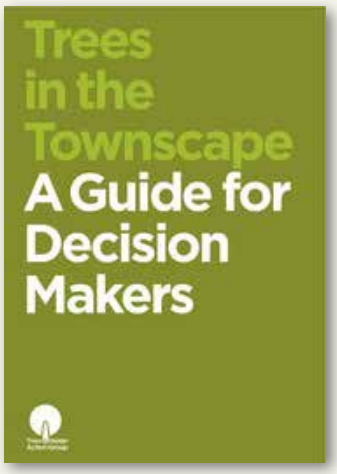


Trees in Towns II: A New Survey of Urban Trees in England and their Condition and Management

Chris Britt & Mark Johnston (2008) Department for Communities and Local Government, London.

£13.63 (pbk) Available from www.lulu.com/content/paperback-book/trees-in-towns-ii/12620931

ISBN 978-185-112-8891



Trees in the Townscape, a Guide for Decision Makers

TDAG (2012) Trees and Design Action Group. Free at www.tdag.org.uk

Here is a group of books on urban trees that many ecologists may not have come across. Interest in the ecology of urban trees goes back to *Trees in Towns* (1993) and Tony Bradshaw's *Trees in the Urban Landscape* (1975).

The former was a survey of the nature and distribution of urban trees and the latter was the first detailed ecological study of the problems and constraints faced by trees in often hostile urban environments. Since then there have been numerous surveys of urban trees (e.g. Thorpe ***et al.*** 2005) but not so much on their ecology. The nearest was Roberts ***et al.*** (2006) *Tree Roots in the Built Environment*, a wonderful book covering all aspects of root growth, protection and management in great detail.

Now we have three more books, but are they useful for ecologists? *Urban Trees* has all the chapters you would expect: how trees grow, problems faced by trees and how to plant and look after them. It also covers the development of towns and how this has affected trees, and what to consider when planning new trees planting. It covers just 174 pages and so is fairly limited in its depth. It's nicely illustrated, written in an easy style by a practicing arboriculturalist who knows his stuff, and so will be a popular science book for those urbanites who have a general interest in the trees around them. As such, while it is an interesting book, it has limited value for ecologists.

Trees in Towns II follows up on the 1993 publication by assessing how the quality and quantity of urban trees in England has changed since the original 1992 survey. The survey was based on sampling a series of towns in different regions and the result is a wealth of information on tree density, species composition, size and health. For example, sycamore is the commonest large broadleaved tree, we now have more urban trees than in the 1992 survey, Leyland cypress is most common in the southeast (9.7 trees ha-1), and, surprisingly, 70% of the trees surveyed were in good condition and only 3% were poor, dying or dead. This is a veritable mine of statistics on urban trees. But this takes up only about a third of the book. The rest is concerned with the maintenance and management of urban trees drawing out examples of good practice from around the country, including a large appendix with 12 case studies on a range of subjects such as using green waste, sourcing external funding, and fostering community involvement. So in terms of use for ecologists, this book gives a descriptive base for knowing what is out there.

Trees in the Townscape is very much at the applied end of things giving a detailed, user-friendly overview of what things need to be considered when planting new trees. This starts from surveying what is there already and creating a plan of what is wanted. There is information on choosing the right species, ensuring they have adequate space water and light whether through an underground 'root cell system' for protecting roots from soil compaction or the London Borough of Hackney's use of volunteer 'tree carers' who water and monitor new plantings. While there is not too much ecology here it does provide a good example of how to go about putting ecological knowledge into the hands of the right people in the right way. We should be paying far more attention to this 'applied' aspect than we do. Ecology is not just about acquiring more knowledge; it needs to be used.

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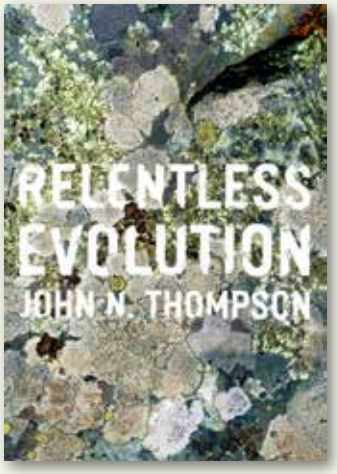
Peter Thomas



Relentless Evolution

John N. Thompson (2013) University of Chicago Press, Chicago.

£22.50 (pbk)
ISBN 978-0-226-01857-1

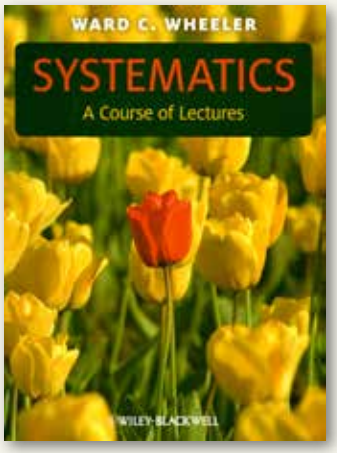
About once a decade I read a book which causes me to restructure the way I think about a topic. This is such a book, which is substantially concerned with evolutionary ecology.

There is a seeming paradox at the heart of evolutionary research. Whilst rapid evolution abounds in nature, the paleontological record suggests much slower change. Thompson persuasively marshals the evidence that this is because much of evolution is driven by trophic, antagonistic and mutualistic interaction between genomes driving rapid non-directional coevolution. He argues that metaphors for evolution such as that of the arms race often wrongly represent situations where there is a carousel of similar measures and counter-measures being deployed. This places much greater emphasis on conserving standing genetic diversity in managing species and ecosystem.

Much thinking about metapopulations implicitly assumes an ecological equivalence between populations. A large part of the book is devoted to the thesis that geographically distributed genomes encounter more than just varied abiotic selection. The pattern of coevolution with other genomes also varies due to local abiotic factors and there is added complexity as from place-to-place a different range of other genomes are encountered, giving rise to novel co-evolutionary interactions. It is not unknown for example that a host-parasite interaction in part of a shared range is mutualistic elsewhere. These genotype-by-genotype-by-environment interactions create geographical adaptive mosaics and from time-to-time ecological speciation.

Most genomes interact with very many others in complex networks of trophic and non-trophic interactions, what Thompson calls 'the web of life'. This is also the title of a thought provoking chapter where he addresses the analytical challenge of applying the concepts of earlier chapters to identify the way evolutionary and co-evolutionary processes shape complex networks of ecological interaction and so ecosystems. This is a wonderful book and I would recommend it to all ecologists and evolutionary biologists.

John Hopkins



Systematics: A Course of Lectures

Ward C. Wheeler (2012) Wiley-Blackwell, Chichester.

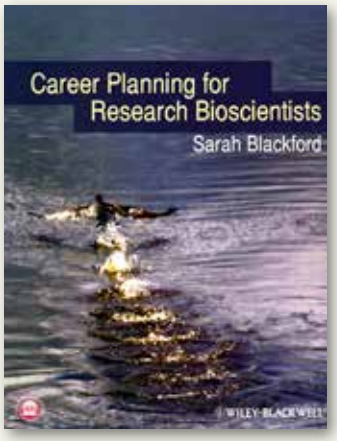
£95.00 (hbk)
ISBN 978-0-470-67170-2

£45.00 (pbk)
ISBN 978-0-470-67169-6

Arranged as a collection of seventeen 90 minute classes (each including discussion questions and exercises), this account of systematics gives a broad perspective on the history and current status of a discipline that is as old as the science of biology itself. History is a major feature of the book, commencing with an account of the thinking of Aristotle and Theophrastus and continuing up to Gaylord Simpson and Mayr in the opening chapter. Each subsequent section of the collection includes a description of the particular subject's development and the personalities involved, and this presentation of the historical development of themes, accompanied by portraits of the major contributors to theory, adds greatly to the appeal and interest of the book. Initial topics include the basic philosophy of science (from William of Ockham to Karl Popper), the concept of the species, and the mathematical and computational basis of modern systematic analysis, including matrix algebra and Markov models. Comparative anatomy and the development of concepts of homology are basic to the evolution of systematics as a discipline, and the subject is given a full and intensive airing.

The book then moves into molecular mode with a discussion of genetic sequencing and the establishment of phylogenetic trees. Inevitably, this involves a move into more advanced mathematics and computation. One problem I found here was the relative isolation of the individual chapters and a lack of clear linking between them, in addition to a dubious arrangement of topic order in some cases. Perhaps this is to be expected in a book on systematics and illustrates the problems of sequencing and tree construction! The chapter on sequence alignment, for example, opens by referring to the analysis of sequence data that is to be described in the subsequent four chapters. If this collection is indeed to be presented as a series of lectures, then I fear that students might well become lost at this stage. Some initial explanation of why this topic is to prove important to subsequent chapters might have helped. The book then proceeds through a discussion of statistical approaches and problems in tree construction, and ends with an account of the molecular clock, and the placing of dates on lineage splits. Viewed as a series of lectures, this is clearly aimed at graduate level courses in systematics, although some elements would prove useful at undergraduate level.

Peter Moore



Career Planning for Research Bioscientists

Sarah Blackford (2012) Wiley-Blackwell, Chichester.

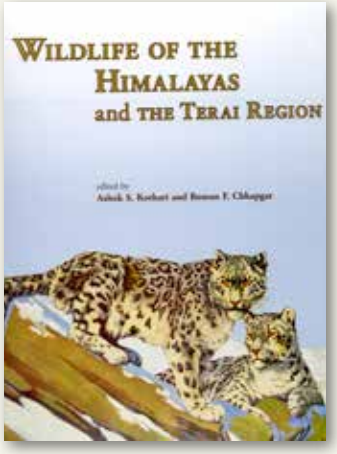
£19.99 (pbk)
ISBN 978-1-4051-9670-3

Job scarcity, especially for the young, is a matter of international concern so any form of 'helping hand' is welcome in the scientific world. The diversity of bioscience, which embraces not only the mainstream fields of biology but the more peripheral overlaps with chemistry, physics and environmental science, make it difficult to generalise although one major key lies in the research context. This is highlighted by the opening comment of Blackford, who is a careers advisor now working for Society of Experimental Biology, that "career planning is as vital to researchers as planning experiments".

The opening chapter establishes the book's objectives, notably the audience is defined and the necessity of planning is emphasised, especially in a rapidly changing research world wherein there are few secure permanent posts for the entire working lives of scientists. Chapter two concentrates on two career planning models, notably the DOTS model (Decision making, Opportunities, Transition, Self -awareness) and the planned happenstance model which is less prescribed and focuses on curiosity, persistence, flexibility, optimism and risk taking. Subsequent chapters deal with self-awareness, with emphasis on various means of quantifying or ranking skills and preferences, the job market for which information relies on advertisements in diverse outlets as well as networking and should include self-employment. The chapter on the enhancement of employability could be considered as the most valuable contribution to securing employment since it encourages positive responses to opportunities; it also examines the role of funding in a research career, networking through conferences, teaching roles, workshops, voluntary work, support groups in home institutions, publications, etc.

This book provides sound advice and brings together the many factors which are essential for job acquisitions and promotions. The appendices add a further dimension through the documentation of case studies in a wide range of employment situations, e.g. academic posts, clinical trials, start-up biotechnology, government research, patents, healthcare. The value and variety of social media, which help spread the word, are highlighted, while the examples of *curriculum vitae* and covering letters are helpful, and the value of support resources such as institutional programmes, postdoctoral associations and those of science organisations is emphasised.

Antoinette Mannion



Wildlife of the Himalayas and the Terai Region

Edited by Ashok S. Kothari & Boman F. Chhapgar (2012) Bombay Natural History Society/Oxford University Press, Oxford.

£45.00 (hbk)
ISBN 978-0-19-808395-5

This is the fourth book in a series designed to make accessible old writings, drawings and paintings of India's flora and fauna. A large-format coffee-table book, it runs through a wide range of animals from this region from deer, tigers and elephants to rats, bats and moles. It's a lovely gentle read. I picked up tips on hunting yak from Colonel Alexander Kinloch (1885), learnt about the then prevalent myth that tigers sucked the blood of their victims from W.T. Blandford (1888-1891) and puzzled over the curious habit of the Tibetan wild ass turning tight circles whenever they spotted a man as told by The Shramana Ekai Kawaguchi (1909). The text is punctuated by high quality B&W and colour drawings of the animals. The most striking full-page paintings, scattered every few pages through the book, are of birds and a few plants, although there is no text on these. This is just the book to give as a gift or to enjoy on a quiet evening with a glass of whisky (perhaps while wearing a pith helmet).

Peter Thomas

ALSO RECEIVED

Tamarix: A Case Study of Ecological Change in the American West

Edited by Anna Sher & Martin F. Quigley (2013) Oxford University Press, New York.

£55.00 (hbk)
ISBN 978-0-19-989820-6

Invasive, profligate with water ("once purported to use as much water as entire cities") and a potent wildfire fuel, particularly in N America. Here is the ultimate reference written by 44 leading authorities covering biology, ecology and management.

Desert Lake: Art, Science and Stories from Paruku

Edited by Steve Morton, Mandy Martin, Kim Mahood & John Carty (2013) CSIRO Publishing, Collingwood.

AU$59.95 (hbk)
ISBN 978-0-643-10628-4

A large format book combining art, science and interviews with indigenous people about life and living on the land in this region of NW Australia that we used to call Lake Gregory.

Population and Community Ecology of Ontogenetic Development

André M. de Roos & Lennart Persson (2013) Princeton University Press, Princeton.

£44.95 (hbk)
ISBN 978-0-691-13757-5

How an organism changes in size or morphology depends upon the efficiency with which they convert food into biomass, and differences in the efficiency of different organisms can create bottlenecks in population regulation by changing maturation and reproduction rates. This book investigates the theoretical consequences of those bottlenecks for populations and communities.

3Principles of Ecological Landscape Design

Travis Beck (2013) Island Press, Washington, DC.

$40.00 (pbk)
978-1-59726-702-1

Planning a building development or a new town? This book gives practical advice on integrating the ecological and sustainable into the design, from looking after soil to building in coping strategies for the inevitable disturbance.

Ancient Woodland: History, Industry and Crafts

Ian D. Rotherham (2013) Shire Publications, Oxford.

£6.99 (pbk)
ISBN 978-0-74781-165-7

The human history side of old woodlands in a very readable small book with many colour photographs of old crafts.

DIARY

THE SOCIETY'S MEETINGS

2013

AUG 18-23
INTECOL 11 - Ecology: Into the next 100 years. ExCeL, London, UK. Incorporating the BES Annual Meeting and centenary

THE SOCIETY'S COMMITTEE MEETINGS

2013

AUG 20	Finance and Management Board (at Excel during INTECOL)
OCT 10	Public and Policy Committee
OCT 22	ETCC
NOV 18	Finance Board
DEC 12	Council

OTHER MEETINGS

2013

AUG 4-9
ESA 2013, 98th Annual Meeting – Sustainable Pathways Learning from the Past and shaping the Future. Minneapolis, USA. Details from: http://www.esa.org/meetings/.

AUG 4-9
32nd Congress of the International Society of Limnology. Budapest, Hungary. Details from: http://www.sil2013.hu/.

AUG 5-9
International Society for River Science: 3rd Biennial Symposium. Beijing, China. Details from: http://www.conferencealerts.com/show-event?id=110371

AUG 25-29
24th International Conference of the World Association for the Advancement of Veterinary Parasitology. Perth, Western Australia. Details from: http://www.waavp2013perth.com/.

AUG 25-30
10th: Combining experimental and theoretical approaches to understand biogeochemical interfaces in soil. Florence, Italy. Details from: http://goldschmidt.info/2013/.

SEP 4-6
Ento 13 - Thirty years of Thornhill and Alcock: The Evolution of Insect Mating Systems. St-Andrews, Scotland. Details from: http://www.royensoc.co.uk/content/ento-13-4-6-september-2013.

SEP 8-10
Plant Genome Evolution 2013. Amsterdam, the Netherlands. Details from http://www.plantgenomeevolution.com/.

SEP 9-12
IALE 2013 European Congress. Manchester. Details: http://www.iale2013.eu/.

SEP 13-15
2013 BCT National Bat Conference. University of Warwick. Details from: http://www.bats.org.uk/pages/national_bat_conference.html.

SEP 17-20
Changes in Alpine and Arctic Flora under Climate Change. Kurhaus Bergün, Grisons, Switzerland. Details from: http://www.wsl.ch/alpine-arctic-flora/itex/index_EN.

SEP 24-29
37th Annual Meeting of the Waterbird Society. Wilhelmshaven, Germany. Details from: www.waterbirds.org.

SEP 27 – 30
Annual Conference of the International Wader Study Group. Wilhelmshaven, Germany. Details from: http://www.waderstudygroup.org/.

OCT 4-6
The 4th International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems. Texas Tech University, Lubbock, TX, USA. Details from: www.math.ttu.edu/icma

OCT 6-11
5th World Conference on Ecological Restoration. Madison, Wisconsin, USA. Details from: http://www.ser2013.org/.

OCT 21-25
Mathematics of Planet Earth 2013 - Pan-Canadian Thematic Program - Sustainability of Aquatic Ecosystem Networks. New Brunswick, Canada. Details from: http://www.crm.umontreal.ca/act/theme/theme_2013_1_en/ecosystem_network13_e.php.

OCT 23-25
Ecological Networks. Delving into the Architecture of Biodiversity. Coimbra, Portugal. Details from: http://www.networks.uc.pt/.

NOV 8-12
2nd Global Conference on Entomology. Kuching, Sarawak, India. Details from: http://www.gce2013.com/

NOV 10-13
61st Annual Meeting of the Entomological Society of America. Austin, Texas, USA. Further details from: http://www.entsoc.org/entomology2013.

NOV 12-15
The sixth International Conference on Coexistence between Genetically Modified (GM) and non-GM based Agricultural Supply Chains. Lisbon, Portugal. Details from: http://gmcc13.org/index.php.

NOV 20-23
2nd New Phytologist Symposium. Buenos Aires, Argentina.Website:http://www.newphytologist.org/symposiums/view/2

NOV 24-29
EcoTas13 – 5th Joint Conference of New Zealand Ecological Society and Ecological Society of Australia. Auckland, New Zealand. Details from: www.ecotas13.org.

DEC 1-5
8th International Conference on Coelenterate Biology (ICCB). Eilat, Israel. Details from: http://www.iccb2013.com/.

2014

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

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/.

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 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/

MINUTES OF THE 32ND ANNUAL GENERAL MEETING OF THE BRITISH ECOLOGICAL SOCIETY

MINUTES

The AGM and Awards Ceremony was held at 16:30 on Wednesday 19th December 2012 in the Great Hall, University of Birmingham, Edgbaston, Birmingham, B15 2TT, United Kingdom. A total of 204 members were in attendance.

1. Minutes of the 31st AGM

The minutes of the 31st AGM held on Tuesday 13th September 2011 in the Octagon Centre, University of Sheffield, Western Bank Sheffield S10 2TN, United Kingdom and published in the December 2012 *Bulletin* 43:4, 94 were presented to the membership. The motion to approve the minutes was proposed by A. Beckerman, seconded by A. Vanbergen and carried by a majority with no votes against.

2. Centenary celebrations

The President presented the AGM with an update on plans for the BES centenary celebrations in 2013. The BES Festival of Ecology Manager, Julie Hodgkinson, had worked closely with BES Council to develop a wide range of events and activities for 2013 aimed at different audiences. The INTECOL Congress, 18 – 23 August 2013, will be the centrepiece of the celebrations but there would also be several interdisciplinary meetings and the 100 most influential papers published in the BES Journals would be identified. A series of innovative posters on key ecological topics will be produced for schools which will be accompanied by competitions and online resources. The Festival of Ecology, taking place in the early summer of 2013, will be a series of public-facing events run across the country in partnership with local museums, galleries and community groups. Members were encouraged to get involved and to attend the INTECOL Congress. The centenary year would also be used to launch a major membership drive and all existing members were asked to contribute by helping to recruit new members.

3. The Accounts for the year ended 31 December 2011 and the reports of the Treasurer and Auditors

The Accounts for the year ended 31 December 2011 were published in the August 2012 *Bulletin* 43:3, 64-87 and summarized in the Annual Report. The Treasurer presented the accounts. He noted that there would be some spending on centenary activities in 2012 but that the majority of funds would be spent in 2013. He also noted that a new publishing contract had been agreed with Wiley Blackwell which provided greater income stability over the next five years. He advised the AGM that the BES was also developing a longer tern financial plan.

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

4. The reports of the Council Secretary, the Hon. Chairpersons of the Committees and the Editors

The AGM noted the excellent turnout for the Annual Meeting and also that the Annual Symposium in Bangor had been a great success. A wide range of Special Interest Group activities had taken place during the last 12 months. There had been some internal changes in publications support but the BES Journals continued to be outstanding. A new set of educational wall charts had been launched for schools and the BES grant schemes had been completed revised. There reports showed the BES was a vibrant and active society on the verge of its next 100 years.

The motion to approve the reports was proposed by M. Hassell, seconded by T. Coulson and carried by a majority with no votes against.

5. To elect Officers of Council of the Society

Two Officers retired from their post: Charles Godfray and Libby John. The President thanked them for all their hard work and contribution to the BES as Past President and Chair of the Education, Training and Careers Committee, respectively. Bill Sutherland stepped down from the post of Vice President and was the Council nomination for the President Elect post. The Council nomination for the vacant Vice President post was Mick Crawley. The motion to accept these changes to the Officers of the Society was proposed by C. Thomas, seconded by W. Gosling and carried by a majority with no votes against.

6. To elect Ordinary Members of Council

Three members of Council were retiring and the Society thanked Jeff Bale, Tim Blackburn and Adam Vanbergen for their hard work and commitment while in post. There were five Council nominations and so a ballot was held. Tellers were appointed. The three candidates who gained the most votes were O. Lewis, M. O'Callaghan and E. Sayer who were duly elected as Ordinary Members of Council.

7. The appointment of the Auditors for 2012 and their 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 A. Vanbergen, seconded by A. Beckerman and carried by a majority with no votes against.

8. Any other business.

No further business had been received and the AGM was closed.

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THE BRITISH ECOLOGICAL SOCIETY

Accounts for the year ended 31 December 2012 together with Council's and auditor's reports

TRUSTEES AND ADVISORS

Members of Council

J Bale: Resigned December 2012
L Batty: Appointed December 2012
T Blackburn: Resigned December 2012
A Beckerman
J Blanchard
R Bardgett
D Coomes
M Crawley: Appointed December 2012
T Ezard
C Godfray: Resigned December 2012
E Goldberg
W Gosling
A Gray
R Hails
D Hodgson
G Hurst
E John: Resigned December 2012
O Lewis: Appointed December 2012
R Mitchell
G Mace
M O'Callaghan:
Appointed December 2012
D Purves
P Raven
E Sayer: Appointed December 2012
W Sutherland
A Vanbergen: Resigned December 2012
J Vickery

Executive Director

H Norman

Principal address

Charles Darwin House
12 Roger Street
London WC1N 2JU

Auditors

Mazars LLP
Sutton Times House
Throwley Way
Sutton
Surrey SM1 4JQ

Bankers

Barclays Bank plc
60 High Street
Putney
London SW11 1XB

Solicitors

Stone King Sewell LLP
16 St John's Lane
London EC1M 4BS

Investment Advisors

Barclays Wealth
Charity Investments Team
15th Floor
1 Churchill Place
London E14 5HP

Office bearers

President: G Mace

President Elect: W Sutherland
Appointed December 2012

Vice President: R Bardgett
M Crawley: Appointed December 2012

Hon. Secretary: D Hodgson

Hon. Treasurer: D Purves

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

Finance Board: D Purves

Management Board: G Mace

Education, Training & Careers Committee: L Batty
Appointed December 2012

Grants Committee: R Bardgett

Meetings Committee: A Beckerman

Membership Committee: M Crawley
Appointed December 2012

Personnel Committee: D Hodgson

Public and Policy Committee: J Vickery

Publications Committee: A Gray

Company number: 1522897
Charity number 281213

Council's report

For the year ended 31 December 2012

1. FINANCIAL STATEMENTS

The Trustees present their report and financial statements for the year ended 31 December 2012.

2. COUNCIL'S RESPONSIBILITIES

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

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

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

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

Statement of disclosure to auditors:

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

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

The BES is a company limited by guarantee (Registration no. 1522897) and has no share capital. As a registered charity (Registration no. 281213), it is governed by its Memorandum and Articles of Association. These were extensively reviewed and approved by the membership at the Annual General Meeting (AGM) in September 2007.

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

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

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

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

Resources expended on governance = £51,350 (2% of total)

4. STATEMENT OF GOALS AND PRINCIPAL ACTIVITIES

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

The vision of the British Ecological Society is to advance ecology and make it count. Ecology is the scientific study of the distribution, abundance and dynamics of organisms, their interactions with other organisms and with their physical environment. At a time when finite natural resources are being used at increasing rates, it has never been more important for human society to understand its impact on ecological systems (which includes systems intensively managed or impacted on by humans such as arable farms, pastures and marine fisheries) and their importance in maintaining human health. The BES's many activities include the publication of a range of scientific literature, including internationally renowned journals, the organisation and sponsorship of a wide variety of meetings, the funding of numerous grant schemes, education work and policy work. The Society has approximately 3,500 members worldwide, and membership is open to all with an interest in ecology. There is a small membership fee, with discounts for students and those from low income countries.

5. REPORT ON PRINCIPAL ACTIVITIES

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

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

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

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

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

5.1 Develop Ecological Science and Scientists

Publishing – Resources Expended = £1,515,024 (56% of total)

Publishing is a hugely important activity for the BES, both in terms of its financial input and through its contribution to the advancement of ecological science. As a result of high renewal rates for our five journals, the Society's income from publications increased in 2012 to £2,811,432; and this is also due in large part to the outstanding contribution from our newest journal *Methods in Ecology and Evolution*. At a time when library budgets continue to be squeezed, it is difficult to successfully launch new subscription journals but this journal has managed to bridge the ecological and evolutionary communities and provides a single forum for tracking methodological developments in these areas. We continue to provide this journal free of charge to all BES members.

Ensuring comprehensive and sustainable access to our journals continues to be a priority and our journals are now available in over 7,000 institutions worldwide, including more than 3,000 institutions in developing countries. All articles are freely available two years after publication and we also ensure that there is always one completely free issue of each journal every year. We continue to receive high levels of press interest in particular articles and any articles featured in the mainstream media are freely available for all members of the public to access. Research published in the journals in 2012 was featured on a number of television channels, such as CNN, CBS and BBC, as well as on numerous radio programmes and in newspapers in a wide range of countries, including UK, US, China, Indonesia, Australia and New Zealand.

All our journals recognise the importance of communicating our research to the wider public and various initiatives have been implemented to do this. One example is *Functional Ecology*, which now publishes a freely available lay summary along with every published article, allowing non-specialists to access and understand the research contained in the journal.

Open access has been a hotly debated topic among UK academics, funders, publishers and the Government during 2012. The BES continues to support the principles of disseminating research as widely as possible and has initiated many activities in 2012 to help with this. We were involved with a number of meetings on open access throughout the year, both with learned societies, European Parliament representatives, publishers and running a workshop for our members at our Annual Meeting in Birmingham. All the BES journals are compliant with recent changes in funder mandates, most notably the RCUK's new policy, and continue to be actively engaged in meetings and debates on this subject. During 2012, we also entered into a new partnership with Wiley on the fully open access journal *Ecology and Evolution*. We fully support the mission of the journal and are delighted to be partnering with Wiley and a number of other learned societies to help ensure the ongoing success of this journal.

As the BES's centenary year, and the 50th anniversary of *Journal of Applied Ecology*, 2013 brings a number of exciting opportunities. We are looking forward to the launch of the 100 Influential Papers project later in 2013, which celebrates 100 of the influential papers BES journals have published over the past 100 years. The journals will continue to expand their strong digital presence, through the various blogs, social media channels, videos and podcasts, and there are plans to launch an app for each of the journals later in 2013. We will continue to stay abreast of new developments in open access and data archiving, informing our members of any changes that affect them. Finally, we will continue to facilitate the peer review, publication and wide dissemination of some of the best ecological research in the world.

Research – Resources Expended = £258,005 (10% of total)

In 2012 the Society received 537 applications for funding across its whole grants portfolio and funded a total of 108 applications.

The majority of our awards went towards funding scientific ecological research projects; we supported small projects with new and innovative ideas as well as larger projects which aim to help early career ecologists to establish an independent research career in ecology. We also supported a number of ecologists in developing countries, helping them conduct research in their own country as well as establish collaborations with ecologists in developed countries.

In addition to research projects, we supported a number of public engagement events, helped members to attend or run meetings and workshops, supported students to attend courses and awarded a number of prizes to outstanding individuals in recognition of their contribution towards the science of ecology.

In 2012, 600 books were dispatched to 90 countries via the Gratis Book scheme and BES funding has allowed 67

students from 37 European universities/ institutions, spanning 18 countries, to attend Tropical Biology Association Field courses in Uganda, Tanzania, Borneo and Madagascar.

During 2012, the Society undertook a major review of its funding activities and we have greatly streamlined and simplified our grants schemes. We offer four funding routes – Research Grants, Ecologists in Africa, Training and Travel Grants, and Outreach Grants – and have increased our budget for these schemes for 2013. The BES received a very generous legacy from the estate of the late Dr James Parkyn which will be used to support students from low income and lower middle income countries to attend the INTECOL Congress. These grants will be known as Parkyn Bursaries and will enable us to support 42 applicants. The BES has matched the legacy thereby enabling us to support a further 106 students from higher income countries.

Meetings – Resources Expended = £288,829 (11% of total)

The exchange of ideas and networking that happens at scientific conferences and field trips are vital ways in which science advances and develops. Although the BES charges a registration fee to attend, the Society subsidises conferences to ensure fees are low for students and unemployed members.

The Annual Meeting at Birmingham University attracted almost 870 delegates, 430 talks and 141 posters. The programme was busy with a diverse range of events and two renowned plenary speakers. Professor Steve Ellner gave the Tansley Lecture and Professor Johan Rockström presented the BES Lecture. There were a wide range of scientific sessions and thematic topics such as insect pollination, biodiversity and health and sustainable agriculture.

2012 saw two symposia; the BES Annual Symposium was a joint event with the International Union for Conservation UK Nature Peatland Programme, on *Investing in Peatlands,* Demonstrating Success, held at Bangor University. The programme contained 62 talks, 55 posters and drew 252 delegates. The second of which was a joint symposium between sister societies, the Biochemical Society and Society for Experimental Biology entitled Aboveground-belowground Interactions: Technologies and New Approaches. The event at Charles Darwin House, the second of its kind, registered almost 100 delegates. As with solely BES events, the meeting was heavily subsidised by all three organisations, and provided travel grants and significant student discount.

There has been much progress with the 2013 INTECOL Congress: Ecology into the Next 100 Years, 18 – 23 August, ExCel, London. We have over 20 national and pan-national ecology societies as academic sponsors, ensuring the meeting will be as internationally diverse as possible. There are 11 plenary speakers from across the globe, 28 interactive workshops and 45 world-class symposia.

The Society's thirteen Special Interest Groups have, again, been incredibly active in furthering ecological research, but also in promoting ecology to the public across the country. The BES subsidises these events and offers grants for travel to the meeting as well as reduced priced registration to students. As an example, our Agricultural Ecology Special Interest Group organised an event entitled 'Restoring diverse grassland: What can be achieved, where and what will it do for us?' and our Forest Ecology Group's 'Animals, Man and Treescapes' event, which explained the concept of the 'shadow woods' and how it related to ancient treescapes of grazing animals.

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

5.2 Improve the Quality of Education and Capacity Building – Resources Expended = £104,746 (4% of total)

The Society undertakes a wide range of education projects each year.

The Society continues to work with teachers and teacher trainers in developing good teaching and learning resources and advising on best practice in using school grounds to teach science, in 2012 this was delivered through centenary projects. In 2013 we will develop resources that support the society's policy activities and reflect feedback from teachers on their requirements.

The Society reviewed and published an updated edition of the guide 'Rooting for a career in ecology and environmental management' and has distributed this free of charge at a variety of careers events for school students and undergraduates.

The Society significantly expanded its support for undergraduates in 2012 with a free careers conference for 100 ecological undergraduates. The event will run again in 2013 with a nominal fee. The success of this conference has led to a further expansion of the careers support provided for students in 2013 to include Masters and Doctoral students: this follows requests from students for this provision to be made available to them and the Society is looking at how it engages and communicates with students who are not able to travel to such an event. The undergraduate fellowship scheme continues to recruit exceptional candidates, 13 of which were guests of the Society at the 2012 Annual Meeting. In 2013 there will be the first meeting of the fellowship alumni, many of whom are now full members of the Society and have developed projects and ideas that support ecological education and career development. The Society additionally funded 5 ecological undergraduate research bursaries of £1,440 each in 2012 and expects to fund a further 5 in 2013.

The Society has continued to fund the work of SCORE, Science Community Representing Education and has collaborated with the Society of Biology and its member organisations in working with the Department for Education on the national curriculum review, advising and commenting on content for the biology and practical science aspects of the national curriculum. The Society expects to continue working on curriculum development for pre 19 students over the next 2 to 3 years

5.3 Promote the Use of Ecological Science (policy) – Resources Expended = £296,715 (11% of total)

The Society promotes the use of ecological science to policy-makers, informing with sound scientific evidence decisions which affect the natural environment and society. We respond to consultations and inquiries on relevant policy issues in England and Scotland, utilising the expertise of our members. We intend to develop work over the coming year to engage with policy-makers in Wales.

In February 2012, we reviewed the Society's strategy for policy and public engagement, involving trustees, members and representatives of external organisations. We focus our work on those areas where members have particular expertise and where the BES can make a unique contribution to challenging issues of importance to society: sustainable food production; natural capital valuation and the links between ecosystem services and biodiversity; planning and ecology; ecology and human health; open access to research publications and data and the UK's Overseas Territories. Our work overall is informed by two over-arching priorities: scientific evidence informing policy-making and fostering interdisciplinarity and knowledge exchange.

Our programme of annual activities aims to build members' skills and expertise in engaging with policy-makers. Our Parliamentary Shadowing Scheme continues to offer a unique opportunity for members to gain an understanding of the needs of decision-makers. Participants disseminate their experiences to colleagues, building policy awareness within the ecological community. Policy-makers, and their constituents, benefit from their engagement with scientists and our members have been called on to provide further advice following their placements. One participant believes their research is 'now more tuned to the needs of policy-makers' and another has taken a position at the Department for the Environment, Food and Rural Affairs, assisted by their experience on the scheme. The scheme will run again in 2013, with placements with ministers in England and Wales and with Members of the European Parliament.

Enabling and supporting our members in policy engagement is important, as evidence-based policy making ultimately benefits society. In December 2012 we ran a policy training workshop for postdoctoral students, postgraduates and more established researchers. Participants asked questions of 'mentors' experienced at the science – policy interface. We will build upon networks created at this and other events by engaging all those who have taken part in our new group on 'LinkedIn'. Researchers will share questions and concerns around engaging with policy-making, strengthening their confidence to do so. In 2013, we will run our successful two-day policy training workshop for members and non-members once again. We have also partnered with the Living with Environmental Change programme to offer our headquarters free of charge as the venue for a knowledge exchange training course for all ecologists, with a discount for members of the Society.

Synthesising ecological knowledge on particular topics, disseminating this to non-specialist audiences, is important to the BES. In 2012, an expert group developed a publication in our 'Ecological Issues' series, on the impact of extreme events on freshwaters. This will be launched at a reception in Parliament in June. The publication will appeal to a broad audience, including interested members of the public. A second publication, on 'Tree Health', is being explored and will make a contribution to the development of our understanding of the causes and consequences of significant tree diseases, such as Ash Dieback *(Chalara fraxinea),* of concern to the public and policy-makers alike.

The BES worked with the British Society of Soil Science and the Scottish Government's Biodiversity Science Group to run a conference in March on challenges for Scotland's biodiversity. A nominal fee allowed students and early-career researchers to participate and we supported the travel expenses of BES members otherwise unable to attend. Here we launched the Scotland Policy Group, aimed at developing a community of ecologists who can inform relevant policy decisions. We will run a follow-up event, partnering with the Scottish Government and with the Institute of Ecology and Environmental Management, in September 2013.

The Natural Capital Initiative (NCI), a partnership project of the BES, continues to work with others to run the Ecosystems Knowledge Network, with nearly 1,000 members. The Network brings together communities developing approaches to valuing their natural resources, with the aim of managing these natural assets more sustainably. In 2013, the NCI will discuss with medical professionals the relationship between biodiversity, ecosystem services and human health, at the INTECOL meeting in London. Participative techniques such as electronic audience voting and discussion via social media will ensure lively communication between ecologists, clinicians and others who do not usually meet to discuss this significant topic.

5.4 Build Collaborative Partnerships

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

In 2012 the BES continued working with a wide range of partners across the whole spectrum of our activities. Of particular importance is our continued collaboration with the Biochemical Society (BS), the Society for Experimental Biology (SEB) and the Society of Biology (SoB) which co-own Charles Darwin House (CDH) along with the BES. We were delighted in 2012 that the Society of General Microbiology decided to relocate to CDH and will become a co-owner. This move further cements CDH as the hub of the biological sciences in the UK and places the BES right at the heart of it. CHD generates revenue for the BES through the rental of spare office space and the hiring out of the conference suite. As well as running joint meetings the four co-owners are continuing to explore ways of working more closely.

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

5.5 Ensure Financial Sustainability

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

of 2012 CDH generated a profit for the BES which was a financial aim when we decided to invest in the building. In 2012 we undertook a review of our grants portfolio (see section 5.1 Research for more details), one result of which was a significant decrease in the money spent on the administration of the portfolio.

In 2012 we continued to develop and support the BES Journals to further enhance their standing so that they remain a sustainable and significant income stream for the Society in the near future, despite uncertainties over the impact of open access and the world recession. The conclusions of the 2011 review of the publications team within the BES were implemented and a new staffing structure put in place. The new team has been a great success and the BES Journals are benefiting from stronger staff support.

A competitive tender process was conducted for the Journal Publishing contact. It was decided to remain with Wiley Blackwell for the next five years but the new contract has increased the amount of revenue coming to the BES and significantly reduced the amount of year-to-year uncertainty over this income. This is very important to the BES given that Journal income is by far our largest revenue stream.

5.5.1 Financial Management and Control

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

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

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

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

In 2012 £316,960 (12% of resources expended) was given away in grants. This substantive sum requires careful management by the Society. Applications are reviewed against specific, published criteria. The BES has established a Peer Review College to review grant applications. This ensures that the Society uses the most appropriately experienced reviewers for each grant application. The only exceptions to this are the Travel & Training Grants. These are reviewed by BES staff and awards are made if the applicant meets the published criteria and there are sufficient funds available.

5.5.2 Investment Policy and Performance

2012 was again a turbulent time for the equity markets around the world. The BES portfolio, managed by Barclays Wealth achieved a positive return of 7.6% (2011: loss 3.5%) and is in-line with appropriate benchmarks. Income from cash investments has increased reflecting the increase in cash holdings and more active cash management. The investment managers produce a quarterly summary of performance for the Honorary Treasurer and Executive Director. The investment managers attend one meeting of the Finance Board a year to discuss performance and general strategy. Day to day investment decisions are delegated to Barclays Wealth in accordance with the agreed mandate. The BES has spread its risk as far as practicable by part owning its headquarters building and holding some of its reserves in long-term deposit accounts as well as in equities, bonds and trust funds.

We have continued to use the services of the Ethical Investment Research Service (EIRIS) to provide us with information, based on a long list of criteria and a scoring system, on the environmental performance of FTSE listed companies. This information is updated twice annually and is used to screen out companies with the worst environmental records and policies from our portfolio. This gives a more objective and consistent basis for excluding companies. Full details are available from the Honorary Treasurer or the BES Office.

A policy of this sort is consistent with the ethos of the BES and is important to maintaining the support of members and the wider ecological research community.

5.5.3 Financial Performance

The accounts show a surplus of £562,627 (surplus of £563,770 in 2011) before unrealised gains on investments of £140,427 (loss of £135,130 in 2011). Council set the 2012 budget to make a modest loss and use some of the funding for the centenary celebrations to start projects in 2012. Several factors, including increased income, contributed to the surplus in 2012. Total funds of the Society were £6,973,584 at the end of 2012 (£6,270,530 at the end of 2011).

5.5.4 Reserves Policy

The Society holds reserves for three purposes. The first is to generate income for its operations needs and to act as a buffer against uncertainties over future journal publishing income (the Expendable Endowment Fund). This is held as a designated fund and stands at £4,000,000 (£3,000,000 in 2011). Continuing concern over the stability of academic publishing pricing models and uncertainty over the impact of the global recession suggests that there is significant insecurity over this major source of income for the Society. The expendable endowment will allow the Society to gradually accumulate funds to provide greater long-term stability without affecting its day-to-day activities. It is the Trustees' intention to build the fund to approximately £10,000,000. The income from this sum will help to mitigate the possible future decline in publishing income, allowing the Society to continue its work, and provide funds to invest in future income-generating projects. In 2013 the BES is undertaking a project to model financial projections over the next 5 years in order to understand better the possible implications of Open Access publishing and review its reserves policy.

The second is that funds can be set aside for specific major projects. The designated tangible fixed asset fund comprises the net book value of fixed assets held by the Society, principally the Society's office in London and as such it is not available to meet the general running costs of the Society. This year the Society has utilised £254,836 of its Centenary fund to help fund projects and activities planned for the Festival of Ecology which will take place in

2012 and 2013 to celebrate the BES's 100th birthday. The BES has a major programme of events and activities planned for 2013 which will target a wide range of audiences across the UK and beyond.

The third is to ensure that the BES can meet its operational needs and working capital requirements (the free reserve). These are currently £439,225 and represent approximately 4 months operating costs, excluding third party operating costs and grants. The Society aims to hold between 6 and 12 months operating costs as free reserves. The level of reserves and the Society's financial strategy is regularly reviewed and monitored by the Trustees. The reserves policy is reviewed annually at the Finance Board meeting in September and any recommended changes are considered by Council in December of that year.

5.6 Improving Efficacy

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

In 2012 we continued to review ways in which co-location with three other learned societies in Charles Darwin House could provide opportunities for more effective use of BES resources.

5.6.1 Risk Management

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

Some of the major risk areas are:

A major loss in income from journals resulting from a change in publication models or a decrease in impact factor: Income from journals is a very significant proportion of the Society's funds. There is continued uncertainty regarding publications models and the timeframe in which this might happen. This risk is being mitigated in a variety of ways. We have a reserves policy which would provide a sufficient buffer to allow a gradual scaling back of the Society's financial commitments. The Society has a Head of Publications to deliver more effective and efficient journal management and to ensure that the Society keeps abreast of the latest developments in journal publishing. The internal publications team structure changed in 2012 to provide better support for our Journals. Essential to the success of BES publishing is the commercial publisher that we partner with. We conducted a competitive journal publishing contract re-tender to ensure we have the best possible partner to work with and it was agreed to remain with Wiley Blackwell for the next 5 years. The new contract includes a provision to reduce the uncertainly on income from year to year. Each journal has a strategic plan identifying ways in which it can increase its reputation and standing.

A sustained decline in attendance at the Society's meetings: The difficult funding situation in Higher Education could have a significant impact on the ability of academics to participate in BES meetings. There is now a timetable for publicity for BES Symposia and Annual Meetings, for both the Bulletin and website, to ensure the ecological community is informed of meetings well in advance. The Annual Meeting moved back to its traditional December slot in 2012 and this proved highly popular with the highest delegate number for many years.

A sustained decline in membership: The Society's Membership Committee receives regular reporting on membership numbers and trends. Council regularly discusses the role of learned societies such as the BES in the 21st century and reviews the activities of the organization to ensure we provide excellent services that are wanted and needed by the ecological community. In 2013 the BES will use the centenary celebrations to focus work on a membership drive to increase membership by 1,000 people.

6. THE SOCIETY'S ENVIRONMENTAL IMPACT

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

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

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

7. FUTURE DEVELOPMENTS

Details of some of the wide range of activities planned for 2013 are given under the headings of the Society's principal aims. Making the most of the varied opportunities afforded to the BES at Charles Darwin House is a priority as well as celebrating the Society's 100th birthday.

The centenary year will begin with three cross disciplinary meetings, the *Marine ecology centenary symposium*, to be held at the National Museum of Scotland on 27 March and the *Global change and biosphere interactions conference* as part

of the launch of the York Environmental Sustainability Institute on 8-9 April. The final meeting in the series will be the *Evolutionary ecology of infectious diseases conference* in London on 17 May.

The Festival of Ecology, which will be held from 15 June – 4 August 2013, includes over 100 events and activities taking place across the whole of the UK. These public engagement activities aim to raise the profile of ecology with the general public. In addition, the BES will be running an exhibit on the impact of alien species on garden ecology at the Royal Horticultural Society's Chelsea Flower Show, which will also be 100 years old in 2013.

The 11th INTECOL Congress, Ecology, Into the next hundred years, is the centrepiece of the centenary celebrations. Over 5 days of exciting science there will be 11 plenary speakers from across the globe, 28 interactive workshops and 45 world-class symposia. The Congress will be held at ExCel in London from 18-23 August 2013.

Professors Peter Grubb and John Whittaker completed the editing of the 100 Influential Papers, published in 100 years of the British Ecological Society project. The publication will be sent out with the June 2013 Bulletin and will be accompanied by an on line resource.

Four education wall charts entitled *How diverse is life on earth?, Food, food and more food, The competition for life on earth* and *Is there life beyond earth?* have been launched and the results of the associated competitions will be announced in the late summer of 2013.

2013 promises to be an exciting and very busy year for the British Ecological Society.

8. AUDITORS

In 2012 the BES conducted a competitive tender process for auditor services and awarded the contract to Mazars LLP.

This report was approved by the Council on 25 June 2013.

Professor Georgina Mace

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

For the year ended 31 December 2012

We have audited the financial statements of The British Ecological Society for the year ended 31 December 2012 which the Statement of Financial Activities, the Balance Sheet and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

Respective responsibilities of trustees and auditors

As explained more fully in the Trustees' Responsibilities Statement set out on page 61, the trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view.

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

Scope of the audit of the financial statements

A description of the scope of an audit of financial statements is provided on the APB's web-site at www.frc.org.uk/apb/scope/private.cfm.

Opinion on the financial statements

In our opinion the financial statements:

- give a true and fair view of the state of the charitable company's affairs as at 31 December 2012 and of its incoming resources and application of resources, including its income and expenditure, for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006.

Opinion on the other matter prescribed by the Companies Act 2006

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

Matters on which we are required to report by exception

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

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

Nicola Wakefield
(Senior Statutory Auditor)
for and on behalf of Mazars LLP, Chartered Accountants and Statutory Auditor

Times House, Throwley Way, Sutton, SM1 4JQ

Date:

Statement of financial activities
Incorporating the income and expenditure account

For the year ended 31 December 2012

	Notes	Unrestricted £	Restricted £	2012 £	2011 £
Incoming resources					
Incoming resources from generated funds					
Voluntary income					
Legacy & Donations		-	10,000	10,000	32,551
Activities for generating funds					
Investment income	2	98,920	-	98,920	65,382
Profit on disposal of fixed assets		-	-	-	69,498
Other income		48,156	-	48,156	15,195
		147,076	**10,000**	**157,076**	**182,626**
Incoming resources from charitable activities					
Publications		2,811,432	-	2,811,432	2,445,778
Income from conferences		154,032	-	154,032	179,549
Subscriptions		150,562	-	150,562	149,319
Total incoming resources		**3,263,102**	**10,000**	**3,273,102**	**2,957,272**
Resources expended					
Cost of generating funds					
Investment management fees		3,175	-	3,175	4,406
Charitable activities					
Publications		1,515,024	-	1,515,024	1,361,194
Meetings		288,829	-	288,829	342,247
Research		258,005	-	258,005	141,874
Education		104,746	-	104,746	106,585
Policy		296,715	-	296,715	209,118
Bulletin and other services		192,631	-	192,631	176,050
Governance costs		51,350	-	51,350	52,028
Total resources expended	**3**	**2,710,475**	**-**	**2,710,475**	**2,393,502**
Net incoming resources		**552,627**	**10,000**	**562,627**	**563,770**
Net gains/(loss) on investments	**9**	**140,427**	**-**	**140,427**	**(135,130)**
Net movement in funds in year		**693,054**	**10,000**	**703,054**	**428,640**
Fund balance brought forward		6,268,545	1,985	6,270,530	5,841,890
Fund balances carried forward	**13**	**6,961,599**	**11,985**	**6,973,584**	**6,270,530**

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

Balance sheet

Company number: 1522897

As at 31 December 2012

	Notes	2012 £	2011 £
Fixed assets			
Tangible assets	8	1,777,210	1,820,158
Investments	9	4,377,411	4,134,484
		6,154,621	5,954,642
Current assets			
Debtors	11	825,189	585,690
Cash on deposit and in hand		390,190	17,188
		1,215,379	602,878
Creditors: amounts falling due within one year	12	(396,416)	(286,990)
Net current (liabilities)/assets		818,963	315,888
Net assets		**6,973,584**	**6,270,530**
Represented by			
Unrestricted funds			
General fund		439,225	448,387
Tangible fixed assets fund		1,777,210	1,820,158
Expendable Endowment fund		4,000,000	3,000,000
Centenary fund		745,164	1,000,000
Restricted fund		**11,985**	**1,985**
	13	**6,973,584**	**6,270,530**

Included in the above reserves are unrealised gains of £266,864 (2011 gains £218,976).
The accompanying notes form an integral part of these financial statements.

These accounts were approved by the Council on 25 June 2013 and signed on its behalf by

Professor G Mace
Member of the Council

Notes to the accounts

For the year ended 31 December 2012

1. ACCOUNTING POLICIES

a) Basis of accounting

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

b) Consolidation

The BES and its subsidiary, BES Trading Company Limited comprise a small group. The BES has not prepared consolidated accounts on the grounds that the subsidiary has not traded during the year and is therefore not material.

c) Cash flow statements

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

d) Income

i) Subscriptions income: All subscriptions income is accounted for in the period to which it relates.

ii) Other income: All other income has been accounted for on a receivable basis.

e) Expenditure (including grants)

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

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

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

f) Depreciation

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

Freehold property- 2% per annum on cost

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

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

g) Investments

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

h) Foreign currencies

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

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

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

i) Operating lease

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

j) Fund accounting

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

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

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

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

2. INVESTMENT INCOME

	2012 £	2011 £
Income from listed investments	44,273	56,207
Interest receivable	54,647	9,175
	98,920	**65,382**

3. ANALYSIS OF TOTAL RESOURCES EXPENDED

	Direct Staff Costs £	Other Direct Costs £	Support Costs £	TOTAL 2012 £	TOTAL 2011 £
Cost of Generating Income	-	3,175	-	3,175	4,406
Bulletin & Other services	77,874	74,085	40,672	192,631	176,050
Publications	416,464	970,548	128,012	1,515,024	1,361,194
Meetings	83,030	164,692	41,107	288,829	342,247
Research	26,515	223,782	7,708	258,005	141,874
Education	60,657	26,674	17,415	104,746	106,585
Policy	74,968	164,550	57,197	296,715	209,118
Governance	34,233	7,678	9,439	51,350	52,028
	773,741	**1,635,184**	**301,550**	**2,710,475**	**2,393,502**

Support Costs	2012 £	2011 £
Non salary staff costs	25,906	21,994
Property	38,070	28,049
IT costs	35,950	24,523
Venue Costs	9,063	3,033
Publicity	20,192	15,240
Fees / Affiliations	39,415	37,621
Office running costs	40,002	50,130
Depreciation	42,948	46,329
Accountancy	-	-
Outsourced finance & payroll	22,851	27,241
Legal & Consultancy	18,226	15,570
Bank charges	8,927	19,607
	301,550	**289,337**

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

4. GRANTS

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

	2012 £	2011 £
Grants committee	221,247	134,079
Public & Policy committee	119,284	57,156
Education, training and careers committee	42,189	5,379
Meetings committee	12,293	7,000
Write back of grant commitments no longer required	(78,053)	(3,507)
	316,960	**200,107**

Grant commitments are as follows:

	2012 £	2011 £
Grant commitments at 1 January	128,487	176,416
Awards made during year	316,960	200,107
Payments made during the year	(282,857)	(248,036)
Grant commitments at 31 December	**162,590**	**128,487**

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

5. NET INCOMING RESOURCES

is stated after charging:

	2012 £	2011 £
Depreciation	42,948	46,329
Auditor's remuneration		
- audit services	5,250	7,450

Other than disclosed in note 15 members of Council did not receive any remuneration during the year. Expenses reimbursed to 18 (2011: 22) Members of Council in the year equalled £7,595 (2011: £11,834).

6. TAXATION

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

7. EMPLOYEES

The average number of employees during the year was 18.9 (2011: 18.4 {full time equivalents}).

	2012 £	2011 £
Membership	1.5	1.6
Publishing	9.8	9.7
Conferences / Meetings	3.1	3.5
Research	0.6	0.6
Education	1.0	1.0
Policy	2.6	1.8
Governance	0.3	0.2
	18.9	**18.4**

	£	£
Staff costs during the year amounted to:		
Wages and salaries	668,632	604,044
Social security costs	67,011	64,388
Employer's pension contributions	38,098	35,658
	773,741	**704,090**

One (2011: one) employee earned £60,000-£69,999 during the year. The figures above includes 1 editor (2011: 1) retained on the payroll.

8. TANGIBLE FIXED ASSETS

	Freehold property £	Furniture, fixtures and equipment £	Total £
Cost			
1 January 2012	1,910,774	56,937	1,967,711
Additions	-	-	-
Disposals	-	-	-
31 December 2012	**1,910,774**	**56,937**	**1,967,711**
Depreciation			
1 January 2012	109,898	37,655	147,553
Charge for the year	38,223	4,725	42,948
Disposals	-	-	-
31 December 2012	**148,121**	**42,380**	**190,501**
Net book value			
31 December 2012	**1,762,653**	**14,557**	**1,777,210**
31 December 2011	1,800,876	19,282	1,820,158

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

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

9. INVESTMENTS

	2012 £	2011 £
Market value 1 January 2012	4,134,484	3,287,367
Additions	862,094	316,154
Disposals proceeds	(912,467)	(245,632)
Net investment gain/(loss)	140,427	(135,130)
Movement in deposits	152,873	911,725
Market value 31 December 2012	4,377,411	4,134,484
Historical cost at 31 December 2012	4,210,546	3,915,508
Accumulated unrealised gains based on historic cost at 31 December 2012	166,864	218,976
Realised gain in year based on historic cost	92,787	8,356
Represented by:		
UK equity shares	724,752	802,760
Overseas equities	694,296	570,127
Overseas fixed interest		
UK fixed interest	386,085	347,928
UK Other	138,022	132,286
Overseas Other		
Market value of listed investments	1,943,155	1,853,101
Investment in subsidiary undertaking	2	2
Investment in associated undertaking	300	300
Amounts held in cash	2,433,954	2,281,081
Total	**4,377,411**	**4,134,484**

10. SUBSIDIARY UNDERTAKINGS

The BES holds 100% of the issued share capital of BES Trading Company Limited, a company registered in England and Wales. The sole activity of BES Trading Company Limited will be to organise the 11th International Congress of Ecology in August 2013. At 31 December 2012 the Share Capital and Accumulated losses of BES Trading Company Limited amounted to (£1,799) – (2011(£1,799)).

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

At 30 June 2012 the net assets according to the audited financial statements of Charles Darwin House Limited were £1,000 (2011: £1,000); the company made a loss before and after taxation of £6,994 (2011 profit of £6,994).

11. DEBTORS

	2012 £	2011 £
Trade debtors	555,925	456,630
Other debtors	70,098	36,365
Prepayments and accrued income	74,066	92,695
Loan to trading subsidiary	125,100	
	825,189	**585,690**

12. CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR

	2012 £	2011 £
Trade creditors	86,115	79,321
Social security & other taxes	49,003	19,142
Other creditors	7,516	42
Accruals and deferred income	91,192	59,998
Grants payable (note 4)	162,590	128,487
	396,416	**286,990**

13. FUNDS

	Fund balances brought forward 1/1/2012 £	Income £	Expenditure £	Net gains on Investment Assets £	Transfers £	Fund Balances Carried Forward 31/12/2012 £
Unrestricted funds						
General	448,387	3,263,102	(2,412,691)	140,427	(1,000,000)	439,225
Designated Expendable Endowment fund	3,000,000	-	-	-	1,000,000	4,000,000
Tangible fixed asset fund	1,820,158	-	(42,948)	-	-	1,777,210
Centenary fund	1,000,000	-	(254,836)	-	-	745,164
Total unrestricted funds	**6,268,545**	**3,263,102**	**(2,710,475)**	**140,427**	**-**	**6,961,599**
Restricted						
BEVC	111	-	-	-	-	111
Alex S Watt Breckland Research Trust	1,874	-	-	-	-	1,874 -
Policy Assistant Fund	-	10,000	-	-	-	10,000
Total restricted funds	**1,985**	**10,000**	**-**	**-**	**-**	**11,985**
Total funds	**6,270,530**	**3,273,102**	**(2,710,475)**	**140,427**	**-**	**6,973,584**

DESIGNATED

Tangible fixed asset fund

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

Expendable Endowment fund

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

Centenary fund

These are funds set aside to provide for projects being developed to mark the Society's centenary year in 2013.

RESTRICTED

Restricted funds of £ 11,985 at 31 December 2012 are represented by cash on deposit (2011 – £1,985).

BEVC

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

Alex S Watt Breckland Research Trust

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

Policy Assistant Fund

Restricted donation to support a staff member to work in the policy area. The staff member was appointed in February 2013.

The Society holds 37,052 on behalf of the European Ecological Foundation. This balance does not form part of these accounts.

14. ANALYSIS OF NET ASSETS BETWEEN FUNDS

	General £	Designated £	Restricted £	2012 Total £	2011 Total £
Tangible assets	-	1,777,210	-	1,777,210	1,820,158
Investments	-	4,377,411	-	4,377,411	4,134,484
Net current assets / liabilities	439,225	367,753	11,985	818,963	315,888
Net assets	**439,225**	**6,522,374**	**11,985**	**6,973,584**	**6,270,530**

15. RELATED PARTY TRANSACTIONS

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

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

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

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

Bill Sutherland – was awarded the Ecological Engagement Award of £1,000. He was not involved in the prize award process.

16. THE GEORGE JACKSON ESTATE

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

17. POST BALANCE SHEET EVENT

On 31 May 2013 May the Society completed on the purchase of a part share (21.1%) in the freehold of 107 Grays Inn Road. As part of this transaction the Society disposed of a part share of its interest in 12 Roger Street, reducing its interest in that property from 30% to 21.1%. It shares the ownership of the buildings with other biological focused charities and the property is held by Charles Darwin House Limited on trust for the Co-owners.

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Looking **BACK**

This is barely looking back very far, but in May for the first time in 100 years the BES had a presence at the Chelsea Flower Show

Both the RHS Chelsea Flower Show and the BES celebrate their centenaries in 2013, and to mark the occasion the BES took a garden to Chelsea for the first time in its history. Split into two micro gardens with radically different planting, the BES exhibit illustrated how changing fashions and ecological knowledge have influenced British gardens over the past 100 years, and the impact of these changes on British biodiversity. In our picture of the stand Lauren Sandhu and Erika Newton are poised ready for the onslaught of visitors once the gates open.

The planting in the 1913 half of the BES garden included species such as Japanese knotweed, ferns and monkey puzzle. The founders of the Society would have been unfamiliar with some of the plants in the 2013 garden, including dawn redwood, Leylandii (*Cupressus × leylandii*) and restios.

The gardens were designed by BES stalwart and garden expert Dr Ken Thompson. Some of the 1913 plants, like ferns, are less widely planted now because they have simply become less fashionable or, like the monkey puzzle, people have finally realised that sticking them in suburban front lawns was never a very good idea. Others, like Japanese knotweed, have fallen from favour for reasons that are all too obvious. The cost of Japanese knotweed to the British economy is estimated at £166 million per year, mostly accounted for by the costs of control and removal. While it is not illegal to grow Japanese knotweed on your own land, it is a criminal offence to cause or allow it to escape into the wild.

Some plants in the 2013 garden were unknown to the gardener of 1913. Dawn redwood (*Metasequoia glyptostroboides*), a beautiful deciduous conifer, was first discovered in China in 1944, and is now widely grown in gardens. Like ginkgo, it is a 'living fossil', known from the fossil record before it was discovered as a living plant.

Another 2013 plant, or group of plants, is the restios, slightly odd southern hemisphere relatives of the grasses. According to Ken Thompson: "The fashion for restios is recent, but so is the ability to grow them from seed. Only in 1995 was it shown that the seeds of most species will not germinate unless exposed to smoke. The active chemical in smoke was revealed by Australian researchers in 2004 and is now known, for short, as karrikinolide, after an Aboriginal word for smoke."

British Ecological Society