

The Bulletin

YOUR MAGAZINE FROM THE BRITISH ECOLOGICAL SOCIETY



British Ecological Society

inFOCUS

An Oryx (*Oryx gazella*) amongst the sand dunes of the Namib-Naukluft National Park, Namibia. Photograph by Ute Bradter, overall runner up of this year's BES photocompetition.



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March 2016

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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 Bulletin Editor.

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WELCOME

Another Landmark Annual Meeting



The 2015 Annual Meeting looms large in this issue. Much of the content either relates to, reports on, or was discussed at, the annual gathering in Edinburgh, another gloriously successful landmark in the BES calendar. But I do hope that the articles that follow are of interest to an audience way beyond the 1200 and more who made it in person to Edinburgh.

We have a new President, and in her first piece Sue Hartley (p5) sets out some of her priorities for the Society over the next two years. Then we move into reports on the Annual Meeting, but we hope that rather than just dwelling on past events these contributions will encourage you to come along to BES meetings if you do not already do so. There is superb science and a varied programme, but the whole thing only works if it attracts members to come along to present their work and widen the range of contacts for networking. We give particular space to our award winners (p9-12).

We have a new Associate Editor, Lauren Ratcliffe, for whom Edinburgh was a first experience of the BES (p13). Lauren also attended the hugely successful Science Slam (p14) and other events that went on way past my bedtime. The BES membership is a broad church and I am delighted to have Lauren's help in making sure my ageing fellow's perspective does not dominate the *Bulletin* too much.

The External Affairs Team organized a very timely discussion panel on GMOs, a meeting thrown open to the wider populace of Edinburgh: Amy Fensome reports on the event (p18).

The annual BES Photographic competition attracted many fabulous entries, as usual. Please do send in your images even if they are less exotic than some of our winners; our designers find the pool of entries for the photocompetition to be an excellent resource when we are trying to illustrate the *Bulletin* and Society publicity material. While I'm at it, please also consider whether you have any images for the In Focus or Looking Back pages on the cover; those pages are open to all.

Our general coverage of the Edinburgh meeting concludes with the publication of the minutes of the Annual General Meeting (p30).

There's a lot of SIG events and news to tell you about (p32 onwards) before we reach the features for this issue, beginning on p45 with the now-traditional annual scan of forthcoming legislation that might impact ecologists and the environment.

In the opening preamble of his December 2015 review of a book about Derek Ratcliffe, bibliophile Paul Adam commented that there seem to be rather few biographies of ecologists. No sooner had the *Bulletin* crossed the threshold of Sam Berry's household than we were taken to task for what might be described as hypobole about the number of ecologist biographies. Sam arrived up in Edinburgh brandishing a list of published works at least 3 times longer than I had expected, and the finished list was even longer (p55). I still think there are rather few biographies of ecologists, but I now know better than to repeat the remark within earshot of someone who is immensely more widely read.

We lost an important and delightful member of our community last year, and Nigel Webb plays tribute to Amyan Macfadyen on p57. Also likely to be of interest are Ian Rotherham's blunt views on the impact of cuts on countryside services (p59), Rob Brooker's account of a workshop on ecosystem services (p62) and Neil Humphries' contribution to an ongoing discussion of 'ecosystem health' (p68).

The feature articles end with a couple of pieces I was tempted to label as Reason and Rant (p70 onwards). The decision of Meetings Committee to outlaw farmed ruminant meat attracted two contributions. Quite independently I received a calm and reasonable note from Mike Morecroft advocating a careful analysis of the evidence, while longstanding, active and enthusiastic BES member Simon Leather was outraged, and offered his assessment of the evidence via his blog, which is reproduced here. There is no official response to Simon from officers or executive staff of the BES here, because I haven't asked for one. It's a cliffhanger to entice you to read the next issue....

Alan Crowden / Editor

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The British Ecological Society is the oldest ecological society in the world, having been established in 1913. Since 1980 it has been a Registered Charity limited by guarantee. Membership is open to all who are genuinely interested in ecology, whether in the British Isles or abroad, and membership currently stands at about 5000, about half of whom are based outside the UK.

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

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

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

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PRESIDENT'S PIECE

A world inspired, informed and influenced by ecology

Sue Hartley

As I sit down to write my first President's piece I've been reflecting on two things. Firstly, I'm struck by what an honour and a privilege it is to be starting out on my 2-year term as President of the British Ecological Society. It does feel quite a responsibility to be the President of the learned society for my discipline, particularly when the BES is the oldest ecological society in the world and has such a distinguished history.



Hopefully it will have an even more distinguished future. And of course it is very well-placed to do that – nothing to do with the new President I hasten to add, but much more to do with the achievements of my predecessors! I'm benefitting from the excellent job Bill Sutherland has done as our previous President. The Society is in great shape, with 2 lovely buildings in central London, a series of very successful publications, and a dedicated staff - the BES team do a fantastic job. We have just held the biggest Annual Meeting ever, and the Society is financially secure. Unlike after the UK General Election in 2010, I didn't find a letter in the drawer saying there is no money left.

Secondly, I've been thinking about the Society's vision statement, the title of this piece: a world inspired, informed and influenced by ecology. That statement is something I should probably keep in mind over the next two years. But how does the Society turn that vision into reality? The BES Strategic Plan addresses that of course, and sets out a framework for the Society's activities over the period 2015-2019.

The plan is taking the Society in exciting new directions and I'm looking forward to helping to implement some of the new initiatives identified as priorities in the plan. I've already had the opportunity to lead the Diversity Task and Finish group, working with colleagues and BES staff to develop a series of recommendations to BES Council to increase the diversity of those doing ecology. We are probably doing a bit better than the US Academy of Motion Picture Arts and Sciences, better known as the body awarding the Oscars, recently revealed to be 94% white and 77% male with an average age of 63! But we shouldn't be complacent and the Society has some more work to do to promote opportunities for all.

It's important to open up ecology to all who want to participate, because, as I'm sure we all realise, now is a critical time for ecological science. There are some serious global challenges threatening ourselves and our planet, and ecology is central to addressing many of them: harnessing agricultural biodiversity and ecosystem services for more sustainable and efficient food production; protection of biodiversity and the safeguarding of the services it provides; adaptation to climate change, including flood mitigation. But it's equally clear we can't tackle these global challenges as a lone discipline. Most environmental problems have human behaviour at their root, so addressing them will need contributions from social scientists, whilst generating the complex evidence-base we need to guide solutions will require input from many disciplines. Feeding a growing population in a warming world, whilst protecting biodiversity and the services it provides, is going to require innovative thinking, unprecedented cooperation between countries and academic communities, and a willingness to cross the boundaries between disciplines. So as well as inspiration, information and influence, I think innovation and interdisciplinarity are two more i-words I'd like to see at the heart of the next 2 years of the Society's development of its vision.

The environmental issues we face are global, so we can't tackle them as a lone Society – we are stronger together and our voice is more powerful if we join with other like-minded organisations. Internationalisation is another i-word I'm keen on! Of course, the BES has played its part as a key member of Intecol and the European Congress of Ecology, but I think we could do more to foster international links. Holding our annual meeting jointly with other European societies in Lille in 2014 and in Ghent in 2017 is a great, and fun, way to move forward on this issue.

My last i-word is impact, otherwise known as 'the dreaded i-word' for those of us subject to the UK Government's Research Excellence Framework assessment! I hope you'll forgive a plug for my home institution: the Biology Department at the University of York was ranked 1st for impact in the 2014 REF. The reason for mentioning this is that 3 of our 5 case studies were ecological ones. We are often guilty of thinking that only disciplines like biomedicine can have real impact on society, but in fact it is ecology that makes a difference. The science media are full of stargazing and space walks, but we aren't moving to another planet anytime soon – even Stephen Hawking in his recent Reith Lectures reckoned we've got to make this one last a few hundred years longer! As the slogan at COP 21 in Paris said "there is no planet B".

This brings me back to the most important i-word – the one in the title and in the Society's vision – influence. There has never been a more important time for ecological science, nor a better chance for the British Ecological Society to make an impact. That's my vision for the next 2 years and I think the Society, and its members (yes – you!) are very well placed to contribute to that increasing influence.

The 2015 Annual Meeting

One of the challenges facing the British Ecological Society, and more specifically the Meetings Committee, is to ensure that the Society offers a range of meeting types that appeal to the widest possible cross section of members.

There are ample opportunities via the annual symposia and Special Interest Groups to present meetings geared towards specific topics, but the challenge when planning the annual meeting is to provide enough variety to attract as many members as possible to give up three or four days of their precious time, in the run up to Christmas. The location needs to appeal, the facilities need to meet the needs of sessions large and small, with space to accommodate networking events of all shapes and sizes, in an atmosphere that makes delegates feel welcome to just hang out and pass the time of day with friends old and new. The annual meeting needs to be a set piece that makes individual members feel part of a dynamic community with common interests and objectives, that makes students want to devote their careers to working in ecology, that reminds jaded and cynical mid-career folks why they put up with the slings and arrows of everyday university or corporate bureaucracy, and gives late career ecologists the chance to gather together with their mates and grumble that things ain't what they used to be.

Edinburgh in December 2015 was a triumph. The weather was kind, so we got in and out without the wrong kind of snow or other factors disrupting travel. Edinburgh is a joy to visit, and the Edinburgh International Conference Centre a venue that manages to provide a sense of space without being intimidatingly large. Above all, has there ever been an Annual Meeting with such an enormous range of things to do?

A Welcome Mixer, Science Slam, Special Interest Group social events by the bucketful, Gala Dinner starring Bill Sutherland demonstrating sensational haggis-eulogising talent, and our very own Edinburgh Fringe events. Even a very quickly drunk dry whisky tasting, and a slightly longer-lasting gin tasting. And for those with time left over, a splendid programme of plenary lectures, thematic sessions and a bountiful collection of contributed paper sessions where stars of the present and future were able to shine. By my count there were 16 workshops on offer, ranging from a chance to shape BES catering policy to building an Ecological Time Machine.

It is not possible to do justice to the whole three days of the meeting in one article, and the only way to properly experience the Annual Meeting is to come along and join in. Over 1200 participated in the Edinburgh meeting, the largest ever BES event, and Liverpool 11-14 December 2016 are the dates for your diary if you want to experience all the BES has to offer.

Meetings Committee chair Andrew Beckerman and deputy chair Emma Sayer stood down from their roles at this meeting. The amount of effort, ideas and enthusiasm those two have put into developing the BES meetings is phenomenal and those of us who have attended meetings in recent years owe them a very big 'thank you'.





Luigi Britani provided an opening plenary on large carnivores that was by turn interesting, amusing, and thought-provoking. The perfect start to the meeting.



Some you win, some you lose



Tired minds enjoyed the distraction of games in the Exhibition Hall. These four enjoyed a protracted session of careful demolition of this tower of blocks. I've got four grandchildren below the age of seven and any one of them would have had that over in seconds. Not that I'm suggesting for a moment that ecologists sometimes overcomplicate matters.



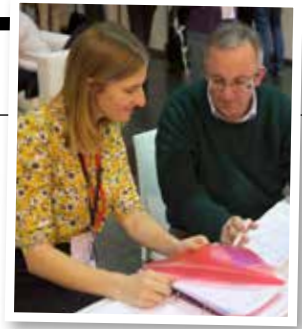
Josephine Pemberton, Professor of Molecular Ecology at the University of Edinburgh, delivered the Tansley Lecture, a tour de force that made use of techniques and data that Tansley would never have dreamed possible



Pat Monaghan offered her personal view on the last 12 months in ecology, a mixture of good and bad news that attracted a great deal of support in the audience

AWARDS

Annual Meeting Student Prize Winners 2015



Amy Everard / Grants and Events Officer, British Ecological Society
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Each year we call on a diverse group of judges to select winners for our Anne Keymer Prize for Best Student Talk and Best Student Poster Prize. With 140 entries for both talks and posters, competition was tight!

To enter, applicants must be a current student presenting work on their research project, or recently have completed their studies and be presenting work that was completed when they were still a student. If presenting a poster, entrants must be the first author and have undertaken the majority of the work of the project.

Both talks and posters are scored on categories including; visual style, scientific content, originality of research, response to questions, and effectiveness of communication.

Winners receive an honorarium of £250 and runners up receive £100. Due to the high standard of presentations we have also selected a number of highly commended individuals.

Our judges were incredibly impressed with the exceptional standard of presentations across the board and we are pleased to announce the following winners. Congratulations to all this year's winners and thank you to our judges whose time and effort makes this possible!

THE ANNE KEYMER PRIZE FOR BEST STUDENT TALK

This prize is named in memory of Anne Keymer, who was one of the first winners of this previously unnamed prize in 1981. She went on to a career of great distinction, before passing away from cancer in 1992 at the age of 36. Anne was a member of the BES Editorial Board of the *Journal of Animal Ecology* and more generally was an exemplary scholar, teacher, and citizen of her discipline. In naming this prize after Anne, we recognise an ecologist early in their career who embodies, to a remarkable degree, the qualities and values we stand for.

WINNER

Janet Maclean
James Hutton Institute/
University of Aberdeen



Does the native plant community of Atlantic oak woods recover after removal of invasive *Rhododendron ponticum*?

With Ruth Mitchell (James Hutton Institute), Robin Pakeman (James Hutton Institute), David Burslem (University of Aberdeen), David Genney (Scottish Natural Heritage), Jeanette Hall (Scottish Natural Heritage)

Increasing efforts to remove invasive plant populations are being undertaken in a variety of habitats across the globe, with the goal of restoring native communities. However, monitoring is rarely undertaken to ascertain what species establish following invasive removal programmes. My research in Scottish Atlantic oak woodlands has revealed that native understorey forbs and grasses failed to return to pre-invasion abundances even thirty years after invasive *Rhododendron ponticum* had been removed. Instead, a bryophyte dominated 'novel community' formed, which, in addition to native seed limitation, provided an effective barrier that prevented the re-establishment of forbs and grasses. In contrast the epiphytic bryophyte community, for which the Atlantic oak woods are renowned, did recover effectively following *Rhododendron* removal.

RUNNERS UP

Katie Murray
University of Stirling



Host life history shifts in response to a sexually transmitted infection in an alien invasive ladybird

With Helen Roy (Centre for Ecology & Hydrology), Matthew Tinsley (University of Stirling)

Callum Macgregor
Centre for Ecology &
Hydrology/University of
Hull/Newcastle University



Artificial light affects abundance and diversity of moths, with implications for nocturnal pollen transport

With Darren Evans (University of Hull/ Newcastle University), Richard Fox (Butterfly Conservation), Michael Pocock (Centre for Ecology & Hydrology)

HIGHLY COMMENDED

Jacob Bishop
University of Reading



Crop yield resilience and climate change: the role of insect pollinators

With Hannah Jones (University of Reading), Simon Potts (University of Reading)

Philippa Holder
University of Exeter



A new hypothesis regarding the cause of mass honeybee deaths in France in the 1990s

With Ainsley Jones (FERA), Charles Tyler (University of Exeter), James Cresswell (University of Exeter)

Kirsty Yule
Victoria University
of Wellington



Winning a co-evolutionary arms-race: a shift in sensory mechanisms compensates for cryptic prey

With Kevin Burns (Victoria University of Wellington)

Svenja Kroeger
University of Aberdeen



Sex and environmental differences in age-dependent and age-independent ageing variation in body mass

With Daniel Blumstein (University of California Los Angeles), Kenneth Armitage (The University of Kansas), Jane Reid (University of Aberdeen), Julien Martin (University of Aberdeen)

BEST STUDENT POSTER PRIZE

Giovanna Villalobos-Jimenez
University of Leeds



Does the urban heat island impact the phenology of dragonflies and damselflies?

With Christopher Hassall (University of Leeds)

Urban areas are usually warmer than their rural surroundings, creating an 'urban heat island' (UHI) effect. We studied the dates on which dragonflies emerged using the records from the extensive database of the British Dragonfly Society (BDS) in four major cities across Britain compared to their rural surroundings from 1990 to 2012. The results suggest that dragonflies emerge earlier in cities, although this pattern is inconsistent across species: species emerging in spring showing a greater response to the UHI than those emerging in summer. The findings from this study demonstrate that warmer temperatures caused by urbanisation have ecological consequences for freshwater organisms.

RUNNERS UP

Charlie Outhwaite
Centre for Ecology &
Hydrology/University
College London



Monitoring the UK's less well-studied species using biological records

With Nick Isaac (Centre for Ecology & Hydrology)

Tamara Ayoub
University of Tübingen



I spy with my little eye... something big and hungry! - Detection of scorpion fish eyes by its prey, the black-faced blenny (*Tripterygion delaisi*)

With Nico Michiels (University of Tübingen)

HIGHLY COMMENDED

Sarah Scriven
University of York



Barriers to dispersal of rainforest butterflies in tropical agricultural landscapes

With Colin Beale (University of York), Suzan Benedick (Universiti Malaysia Sabah), Jane Hill (University of York)

Sarah Trinder
University of Liverpool



Adaptive responses to climate change through evolution of life-history strategy in the long-lived perennial grass *Festuca ovina*

With Mike Fay (Royal Botanic Gardens Kew), James Hartwell (University of Liverpool), Ilik Saccheri (University of Liverpool), Raj Whitlock (University of Liverpool)

AWARDS

Award winners 2015

HONORARY MEMBERSHIP OF THE SOCIETY: DAME GEORGINA MACE



Georgina Mace has served as President of the BES, President of the Society for Conservation Biology and has worked at the Institute of Zoology, Imperial College London and University College London. In an extraordinarily successful career Georgina has been involved in developing criteria for listing species in the IUCN Red List, and works to establish methods for evaluating biodiversity and the ecosystem services it provides. Georgina was appointed Dame Commander of the Order of the British Empire in the 2016 New Year Honours.

Honorary Membership of the BES is the highest honour that the Society gives. The primary criterion for honorary membership is a lifetime's achievement in the science of ecology or its application.

THE PRESIDENT'S MEDAL: ROB FRECKLETON



Rob Freckleton's research focuses on modelling population and community dynamics with a particular interest in large scale population dynamics. He will be particularly recognised by BES members as the Founding Editor of Methods in Ecology and Evolution, a ground-breaking publication that last year celebrated the fifth anniversary since foundation.

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

BES AWARD: PETER THOMAS



Peter Thomas has certainly fulfilled the award criterion of 'exceptional service to the Society', with 20 years' continuous involvement in the BES Bulletin, with 11 years as Editor followed by another 9 years as Book Reviews editor. As Editor Peter was responsible for a radical redesign of the Bulletin in 1998 which was received by one member with a certain amount of disdain: "I dislike very much the style and size of the new Bulletin and I hope the BES will quickly revert to the A5 size...". Peter's cheery and informal style has, I hope, rubbed off on those of us who follow in his footsteps.

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



MARSH ECOLOGICAL ENGAGEMENT AWARD: BOB WATSON

Professor Sir Robert T Watson is a former DEFRA Chief Scientist and former chief Scientist and Director for Environmentally and Socially Sustainable Development at the World Bank. Bob Watson has played a key role in the negotiation of global environment conventions and the evolution of the Global Environment Facility.

An annual award to recognise an exceptional contribution to facilitating the use and understanding of ecology.

**MARSH AWARD FOR ECOLOGY:
JANE MEMMOTT**



Jane's research interests in ecology include pollination ecology, invasion ecology, agro-ecology, biological control, urban ecology and restoration ecology. A theme that runs through many of her projects is the use of ecological networks to answer a variety of environmental questions.

The Marsh Award is made for an outstanding current research record which is having a significant impact on the development of the science of ecology or its application.

**MARSH BOOK OF THE YEAR AWARD:
NIGEL HOLMES AND PAUL RAVEN
FOR THEIR BOOK *RIVERS***



Nigel Holmes sadly died very soon after the publication of his superb collaboration with Paul Raven, but it was delightful that his widow Linda felt able to attend the annual meeting to receive the award for the Marsh Book of the Year. Rivers encapsulates all that is good in book publishing; a superbly crafted text based on years of practical experience, gloriously illustrated with full colour photographs and packaged at a price that by today's standards is modest to say the least.

The Marsh Book of the Year Award acknowledges the important role that books have in ecology and its development. It is awarded to a book published in the last 2 years that has had the greatest influence on the science of ecology or its application.

**MARSH AWARD FOR
CLIMATE CHANGE RESEARCH:
CAMILLE PARMESAN**



Camille's research over the last 20 years has addressed global-scale syntheses and meta-analyses of biological responses to climate change across all taxonomic groups. These syntheses have documented the global nature of climate change impacts, spanning all living organisms from microbes to plants to charismatic animals in terrestrial, freshwater and marine systems

The Marsh award for Climate Change Research is normally awarded annually for an outstanding contribution to climate change research.

**AND A SPECIAL AWARD WENT TO:
HEFIN JONES**



All the usual prizes had been awarded when an unsuspecting Hefin Jones was called out by the President to receive an unannounced, unnamed award for his unstinting contributions to BES life. For the benefit of cave-dwelling, internet-eschewing hermit ecologists Hefin Jones is a former chair of meetings committee, current organiser of the student prize judging and all round Thoroughly Good Bloke. A very popular award.

**AND SPECIAL AWARDS ALSO WENT TO:
ANDREW BECKERMAN AND EMMA SAYER**



Andrew Beckerman took over the role of Meetings Committee Chair from the irreplaceable Hefin Jones, managing to build on the strong programme that Hefin left behind, steadily expanding the role of Special Interest Group meetings in the life of the Society, and introducing yet more innovations and excitement into the established Annual meeting and Annual symposium. In recent years Emma Sayer took on the role of Deputy Chair, in addition to designing SIG logos, suggesting and developing the BES Roadies and their Sex and Bugs and stuff, not to mention being a delightfully pushy associate editor of the Bulletin. The Society owes both these two a huge debt of gratitude for countless hours of devotion to Society business, and the opportunity for both to kiss Bill Sutherland was apparently too good to miss.

First Impressions



Lauren Ratcliffe / Associate Editor
Bulletin@BritishEcologicalSociety.org

First, let me first introduce myself - I'm Lauren Ratcliffe, the newly appointed associate editor of the *Bulletin*. As the BES annual meeting held in Edinburgh last December was the first I have attended, I thought I'd give you some of my impressions of the event and hopefully get you excited to be part of next year's meeting in Liverpool.

Membership of the BES has massively expanded since its beginnings. In line with this, the number of people going to the annual meeting has steadily increased year upon year, with the most recent meeting in Edinburgh topping the record. So one of my first impressions as I stepped through the doors of the EICC and into the first Plenary Lecture was the sheer number of people filling the auditorium. To match these numbers, there was an equally diverse number of thematic topics covered in the lecture series that ran over the three days. No matter what your field, you'd almost certainly find something to satisfy your curiosity. Furthermore, one of the parts

I enjoyed most was simply pootling along to random lectures and learning about something new.

But by far my favourite experience over the course of those three days was the social life. During the day I would often bump into old friends from University and Professors who I worked with on projects in the past, then in the evening there was more of an opportunity to meet loads of new people. The Science Slam on the Monday evening had me in fits of laughter – if you want to know more about this check out my article on p14.

Then on the Wednesday evening there was the Gala Dinner, which was as delicious as it was entertaining – especially during the frantic Ceilidh after the meal. I also managed to get to know some younger BES members and together we explored what Edinburgh had to offer in terms of nightlife, eventually finding ourselves in the alternative rock club, Opium until early Wednesday morning.

It was a fantastic few days, and in my opinion made entirely by the great people who helped organise it as well as all of those who attended.



2015 BES SCIENCE SLAM

Lauren Ratcliffe / Associate Editor
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During the 2015 BES Annual meeting last December, scores of scientists gathered together at Henry's Cellar Bar in Edinburgh to be part of the very first BES Science Slam. The night was organised as a competition, where contestants drawn from among PhD students and long-time doctorates were to battle it out against each other to prove who could describe their research in the most fun and entertaining way.

The comedian Rob Newman introduced the evening by getting audience members and competitors warmed up with science-themed jokes, which featured everything from the evolution of smiling to inviting robot co-workers to the office party.

Following this, and one beer down, it was clear the audience was feeling a bit more relaxed, as people took their professional hats off and sat back eagerly to be both educated and entertained.

Fish-Taekwondo

Sal Keith from the University of Copenhagen was the first contestant to step up onto the stage. Clad in a Taekwondo dobok with a black belt wrapped around her waist, she looked ready for anything.

To introduce her work, Keith asked the audience: "Have you guys ever wondered why there are so many different fish in a coral reef?"

She then got two audience members (including me!) to get up onto stage to interactively demonstrate through fish-Taekwondo her research into this question.

Keith played the part of a *Chaetodon baronessa* fish species, a Taekwondo black belt and the most fearsome reef competitor. I acted the part of *Chaetodon trifascialis*, a red belt who could throw a mean kick but was outdone by the mighty *C. baronessa*. My fellow volunteer played a *Chaetodon guttatissium*, the white-belt of the group who could only give a feeble punch.

We were then given free range to battle it out on stage for the all-important resource (a redstripe beer), using only the Taekwondo moves we were given. What followed after some kicking, punching and a little backwashing was that *C. baronessa* outcompeted both the other fish species and won the resource. In nature, this is called hierarchical competition and it results in very low diversity.

What Keith did then was to switch it up and give *C. guttatissium* another move – the superman punch! This move was highly effective on *C. baronessa*, but ineffective on *C. trifascialis*, creating a looping competitive interaction known as competitive tournament between all three fish species where the resource could be shared and high diversity maintained.

ALIEN STRIPPERS

Christopher Nicholas, from the Royal Veterinary College, gave another highly memorable performance - not least because his first appearance on stage was clad in a tight all-in-one green alien costume. For his PhD he has been investigating why grey squirrels strip the bark off trees, and grey squirrels being an invasive alien species... well, you can see where the idea for the costume came from.

The current hypothesis is that grey squirrels strip bark in order to boost their calcium levels at certain times of the year. Therefore, you would imagine that trees that have been damaged by squirrels have lower levels of calcium than non-damaged trees.

To take us through his experiences out in the field and the results of his investigations into the calcium hypothesis, he decided to give his performance a seasonal twist by rewording the carol 'Good King Wenceslas'.

Here's are a breakdown of his hilarious re-edit of the old classic:

(sung to the tune of Good King Wenceslas)

*"Good thing I brought insect spray,
It's like I'm the feast of Steven,
I will spray it round about,
So it's sprayed all even,
Bloody hell where is that spray!
I think I have lost it,
What's a poor man got to do,
To not be eaten alliiiiiiiiive?"*

*Oh look there's a nice old man
Walking through the woods,
Bloody hell what's that he has,
Resting on his shoulder?
Why's he got a massive gun!
Surely I am done for,
Oh wait he's just shooting squirrels,
And he wants to talk to meeeeeee...*

*Grumble grumble grumble grumble,
Grumble grumble grumble,
Sorry Sir I did not catch,
What it was you were saying,
Grumble grumble grumble grumble,
Grumble grumble grumble,
Yes I'm taking bug samples,
To see why squirrels damage
treeeeeeeees...*

*On his merry way he went,
Keep on killing squirrels,
I carried on taking samples,
And some tree measurements,
When the samples were analysed,
Using hydrochromotography,
I found no calcium difference,
Between damaged and undamaged
treeeeeeeees....*

*But there was a marked difference
when I looked at phosphorus,
As these two minerals are linked,
There is still hope for us!
I must do more statistics
To be sure what's happening
Then again perhaps they are
Just out for the sugar in baaaaaaaark."*

After this, he then presented the audience with another part of his research - can squirrels even absorb calcium at all?

To demonstrate the outcome of this research, he used a pint of beer as an analogy for calcium oxalate. If he could down the pint, it would demonstrate that grey squirrels could absorb calcium... Sadly, he did not manage to down the beer and so things are not looking great for the calcium hypothesis. But he did manage to get a massive round of applause from the audience!



BADGERS AND MOOSE

Rosie Woodroffe from the Zoological Society of London, was the last to step up onto the stage. She has spent a lot of time trying to explain her research on badgers and tuberculosis to policy makers in England. Unfortunately, she says that although they are using her research, they are using it to justify doing the exact opposite of what she has recommended.

For her performance during the Science Slam, she talked to us about controls and why they are so important to her research when translating science into policy. To do this she took us on a journey into the past, to a science experiment carried out in the Rocky Mountains of North America, an area where wolves and bears had been eradicated half a century beforehand, leaving local moose without fear of predation.

Professor Joel Berger observes this environment and wants to know whether the local moose are still vigilant and prepared for a wolf or bear attack, or can they no longer detect a threat? In order to test this, Prof Berger, clad in a moose costume, made snowballs out of wolf urine and lobbed them at the moose he wanted to study. If the moose reacted to the

smell and ran away, it would show that they were prepared for an attack.

Can you think of any problems with this experimental design?

Perhaps when faced with a University Professor dressed in a moose costume, the moose might run away – wolf urine or not. So he needed a control. Doing exactly the same thing, but using some other readily available mammal urine... And that is how it came to be that the National Science Foundation funded a university professor dress up in a moose suit, make snowballs out of his own urine and throw them at unsuspecting moose.

And it worked – the moose didn't run away from the professor's urine, but did bolt when it detected wolf urine, setting the stage for re-wilding twenty years later and the reintroduction of wolves into the area.

So Rosie's point is that controls are vital. They are how we know things work, or don't work and they are also how we know that culling small lumps of badgers does increase cattle TB. Unless we can explain this concept to politicians, we will continue to have problems translating science into policy.

Rosie's performance was the winner of the 2015 Science Slam, decided by raucous audience applause. However, every act that night got the audience in fits of laughter and alongside Rosie, Christopher and Sal's performances we also saw Professor Christian Körner from the University of Basel act out what carbon cyclists can learn from bankers. Tom Oliver from Reading University gave a great performance on his guitar singing about climate change deniers and Bob O'Hara (Senckenberg Biodiversity and Climate Research Institute) gave us his opinion on sausage statistics.

It was a fantastic night and I hope that the Science Slam happens again next year.



A new identity for a strong future

Working with Creative Agency Made Noise, the BES is reviewing all aspects of design and presentation as we pursue the aim of a *World Inspired, Informed and Influenced by Ecology*. The outcome of the design review will become apparent in the coming months.

One of our key strategic goals over the next five years is to share the excitement and relevance of ecology with the world. We also want to inspire and engage the global community of ecologists. The way we communicate is key to the achievement of these goals. If we are to excite, inspire and engage we need our communications to do exactly that. It was this thinking that prompted our decision to review the way we currently look and communicate as an organisation and embark on a journey towards a new identity for the British Ecological Society.

Creating an identity and communications that engage many different groups means getting the input of as many of these people as possible early on in the process. We commissioned design agency *Made Noise* to carry out our identity review and redesign. This included an e-survey to our members and SIGs to get opinions on our existing identity and communications, and understand what people wanted to see from it. We also spoke to key individuals within the BES and the sector.

We looked at all the way we communicate across print, website and social media, and also how organisations within our sector communicate. It was an in-depth process that gave us an objective view of our existing identity and communications and, most importantly, clear direction for the development of a new identity.

What became clear was the need to create an identity that better reflected our role and ambitions for our community. We also needed to find a way of showing the diversity and vibrancy of our community and the ecological systems we work with.

It was this idea of vibrancy and diversity that helped shape the thinking behind our new look. It features a bold letter 'E' – a simple geometric shape that acts as a container for any number of images or colours. The logo can be used to reflect specific themes, subjects or even individual SIG interests through photography or other imagery. It is a dynamic logo that reflects the diversity of our Society, our members and ecology itself.



An interesting feature of our new logo is that everyone within our community can create their own take on it. This could be by members submitting photography to use within the logo or it could be SIGs

creating their own bespoke logo to reflect their specific interest. We are also looking to bring the logo into outdoor spaces and events and encouraging everyone to interact with the 'E' – and in doing so hopefully begin to engage more with ecology itself.

We wanted to create a new identity because we wanted to increase the influence of ecology, to get more people excited about ecology as a field of study



and to make our own voice stronger too – not just in the UK but internationally. We look forward to launching our brand new look and the new ways you can get involved with it.

NEWS FROM THE EXTERNAL AFFAIRS TEAM

Policy Update: Debating GMOs at the Annual Meeting

Amy Fensome / Policy Intern, British Ecological Society
Policy@BritishEcologicalSociety.org

As part of the very diverse programme of offerings during the Annual Meeting, the BES policy team organised a free public debate to consider the science, politics and environmental implications of GM technologies. Amy Fensome reports on a stimulating and successful event:

On 16th December, the BES External Affairs Team held our much-anticipated GM Debate as part of the new Annual Meeting Fringe. The meeting was inspired by the recent decision of Scotland (amongst a number of other EU countries) to ban Genetically Modified Organisms (GMOs) and the recognition that much of the discussion around GMOs is deeply polarised to the point that, as one of the panellists suggested, progress has been stalled.

The aim of the evening was to bring together people (both panellists and audience members) with different perspectives and to have a more open and thoughtful discussion beyond the usual entrenched 'for' or 'against' debate.

The panel included four scientists: Professor Helen Sang of the Roslin Institute and Royal (Dick) School of Veterinary Studies; Professor Joyce Tait, Director of the Innogen Institute; Dr Heather Ferguson, University of Glasgow; and the Chair for the debate, Professor Alan Gray. Pete Ritchie from Nourish Scotland represented consumer interests and the panel was completed by Rob Livesey (Vice-President of the National Farmers Union Scotland) as a representative of food producers.

The evening took place in three acts: first each panellist gave a five minute talk about their role and/or thoughts on GMOs, then the panel took questions from the audience, before finally the audience and panellists mingled to discuss the issues in more depth.

The discussion encompassed GM insects and animals, as well as crops. Professor Helen Sang gave an overview of her work in developing birdflu-resistant chickens whilst Dr Heather Ferguson spoke of her research into the use of GM mosquitoes to control the spread of malaria. The general consensus from the scientists on the panel was that there is little evidence to suggest that GM technology is inherently 'unsafe', but GM products need to be addressed on a case by case basis.

During the course of the evening, a strong theme emerged: much of the mistrust and criticism of GM technologies and products stem from its development by private enterprise. This underpins many other aspects of the debate around GM such as regulation, how risk is managed and communicated, and transparency around how GM business is conducted.

As Professor Joyce Tait commented, many people are less concerned with the technology than they are with the practices (or abuses some might say) of 'big business', the massive global corporations that seem to dominate the development and supply of GM products by "translating genius into a commercial product", as Pete Ritchie put it.

There is concern that the benefits of this technology are being over-sold and that the stated goals (such as increasing production capacity in order to feed the world's growing population, or to produce disease resistant crops and animals, or crops with more nutrients than their non-GM counterparts) though admirable are unrealistic, hi-tech solutions to problems which could to a great extent be solved by addressing socioeconomic inequalities or reducing food wastage through the food supply chain.

Pete Ritchie pointed to the numerous examples where industries have misled consumers or dragged their feet when it came to addressing serious health, environmental or ethical concerns related to their product (for example the toxicity of leaded diesel, cigarettes and cancer, the production of cocoa with indentured labour and most recently, the Volkswagen scandal) fearing that the demand and profitability of their product would decline if this knowledge were made public, or that any regulations

(apart from self-regulation) could limit profitability. In short, financial profit, amongst short-sighted industries at least, is often prioritised over all other concerns. Consequently, members of the public worry that because GM technology is in part developed in the private sector (funded by stakeholder investment in expectation of a financial return) that the potential threats GM technologies and products might pose are swept under the rug along with the concerns of consumers.

The safety of GM products and the suspicion that this might not be the highest priority within the private sector is possibly one of the oldest aspects of the GM debate. So how do we move on from this stalemate?

As an audience member commented, perhaps the general public might have more confidence in GM products if we heard more from scientists about the potential threats and problems posed by GM and how these are addressed. At the same time, greater awareness of the extensive existing legislation could assuage some fears, as could more information about the technologies themselves. Pete Ritchie suggested that perhaps the raw data on which claims are based should be open source.

To the same end, more, well publicised and independent research into the wider environmental impacts of releasing GM products into the wild should be conducted, moving the debate away from well-rehearsed arguments about food safety, towards greater consideration of the ecological risks. For example, what are the downstream impacts of such feats as releasing infertile mosquitoes into the wild to reduce the population of malaria carrying *Anopheles*?

As part of weighing up the pros and cons of a particular GM product, Dr Heather Ferguson suggested that we consider the cost of not using that product. For example, pest-resistant crops could reduce the use of expensive and ecologically damaging insecticides.

Professor Joyce Tait suggested reducing “onerous, expensive and time consuming” legislation to help small businesses to compete with the “big dogs”, allowing companies to do “much more interesting things” and presumably tempering some of the problems brought about by a monopoly. More specifically she spoke of shifting the emphasis of regulation away from the earlier, experimental stages of GM technology and product development and focusing on the safety of the end-product.

Rob Livesey from the NFU Scotland had a pragmatic take on the issue: farmers are open to the idea of GM crops but they are not going to adopt GM crops if they are unsafe, damage the land and most importantly, if there is no market for the produce.

And this last point brings us full circle; Scotland banned GMOs not “based on scientific consideration but, rather one which took into account the wider economic ramifications that growing GM crops might have for Scotland” and to protect its “clean and green brand”.

This brings home the fact that there are numerous factors that influence policy decisions, and although we hope that science and evidence is included in that decision making process, it is rarely, if ever the sole consideration. Rather policy making is a combination of all the factors discussed at the debate; values, risk, economics, perception, experience and more.

For more on our work on GMOs, including our response to the recent House of Lords Science and Technology Committee Inquiry on GM Insects, see <http://www.britishecologicalsociety.org/public-policy/policy-priorities/genetically-modified-organisms/>

Public Engagement



Jessica Bays / Public Engagement Officer, British Ecological Society
jessica@britishecologicalsociety.org

The BES Public Engagement programme had a fantastic year in 2015 with our activities going from strength to strength, reaching more than 3,000 individuals.

BES Science Slam

We ended the year with a bang, holding the Society's inaugural Science Slam as a fringe event to the 2015 Annual Meeting. The night was a fantastic evening of science and comedy, co-organised by three of our members Helen Hicks, Tom August and Nick Goulding. The event starred a snowball-throwing moose and an alien stripper, with PhD students and Professors battling it out in an evening of music, martial arts and sausages. Compèred by the famous comedian Rob Newman (think 'Newman and Baddiel in Pieces' a BBC series in the 1990's), the evening was great fun and a special congratulations goes to Professor Rosie Woodroffe for winning on the night. (See also the report from the Associate Editor of the *Bulletin*, Lauren Ratcliffe, on pp14).

Visit our website (link - www.britishecologicalsociety.org/slam) to view videos of all our superb competitors. If you think you have what it takes to participate in the next science slam email jessica@britishecologicalsociety.org for more information.

Public Engagement Training

In February we launched our 2016 Training Programme with a workshop led by David Price of Science Made Simple (Link - <http://www.sciencemadesimple.co.uk/>). Covering key concepts in science communication this was a great way to kick-start creativity and the development of new busks for our festival programme. Throughout the year, these Roadies will meet a number of times to skill up, develop activities and participate in events. On completion of the course they will then be eligible to apply for regional funding to undertake public engagement activities closer to home.

Events

We are excited to be heading back to Wychwood Music Festival (3-5 June, Cheltenham Racecourse), providing our new Roadies with the perfect location for testing out their public engagement skills. BES members are eligible for a 30% discount on tickets, so book your tickets at <https://event.bookitbee.com/3268/12th-annual-wychwood-festival-2016> entering the code "BES" when prompted to take advantage of this offer, valid until 15 April.

We are also thrilled to announce we will be attending RHS Chelsea Flower Show (25-28 May, Royal Hospital, London). This year we will be working closely with distinguished horticulturalist Emily Darby and set designer Tuula Whitlow. Our stand will showcase the fantastic ecology of pollination and will be a sight to behold. Do you work on pollination ecology? Would you be interested in staffing the stand and engaging the public with your science? If so contact jessica@britishecologicalsociety.org for more information.

A report on the Early Careers Programme at the 2015 Annual Meeting developed by BES, INNGE and SfE

Julia Clause / Ecole Normale Supérieure, Paris, France
@JmClause

On Sunday 13th December, INNGE, SFE and the BES careers team delivered a series of workshops, supported by additional events throughout the conference.

Raising your profile

On the international ecological scene, a Twitter account is a MUST-HAVE! Plenary questions at some meetings like the BES are only asked via the @BritishEcolSoc account, and loads of information such as job opportunities or workshop proposals only circulate on Twitter. It is also a great way to quickly schedule a meeting with someone.

Among all other tools available to us scientists, ResearchGate is one of the most useful. On ResearchGate, you can find almost any ecologist in your field, his/her publications, and his/her network. Useful when you need a last-minute speaker!

Unlocking your potential

This session was organized as a panel. Speakers were Chris Sandom (University of Sussex, Brighton), Juliette Young (Centre for Ecology and Hydrology, Edinburgh), Camille Parmesan (Plymouth University), and Bob O'Hara (Biodiversity and Climate Research Centre (BiK-F), Germany)

MEET THE PLENARIES

This session aimed at helping students prepare and ask questions to three plenary speakers.

It started off by having Camille Parmesan giving tips on "What would a good plenary question look like?"

Starting the next day, coffee breaks became a special moment, almost intimate, between the plenary speaker of the day and the students attending.

Luigi Boitani's (University of Roma, Italy) talk on *Large carnivores in Europe: science, ethics and politics, and the challenge of maintaining viable populations in human-dominated landscapes* was inspiring for all students, and brought many questions linked with policies and the responses of society in the areas that he studied. Some questions were obviously on rewilding in the UK, and in Scotland in particular, where there is an on-going debate about it. His opinion was that it will never be possible nor viable to rewild without having the necessary natural habitat first.

Josephine Pemberton is Professor of Molecular Ecology at the University of Edinburgh. She is known for her involvement in two long-term, individual-based studies of wild vertebrates: red deer on the Isle of

Rum and Soay sheep on St Kilda, and for pioneering methods for estimating genetic relationships in natural populations, including genetic parentage analysis to recover pedigrees and more recently, genomic approaches. Students mostly asked questions on the difficulties and opportunities for long-term funding

Pat Monaghan (University of Glasgow). She did her PhD at Durham University on the problems associated with urban gulls, which included studies at nesting colonies and of the transmission of disease. Questions to her included the position of women in science and at the science-politics interface.



Chris Sandom



Bob O'Hara



Juliette Young



Camille Parmesan

PUBLIC ENGAGEMENT

Targeting a wide audience is what can really help ecology have a more central role in society. This session was chaired by Jessica Bays (BES Engagement Officer).

Vicky Brightman, the Head of Engagement and Interpretation at Kew Gardens, started by giving some insights on what *is* public engagement and what *is* a successful public engagement. She recommended a website that explains it very well: the National Co-ordinating Centre for public engagement (NCCPE) (<http://www.publicengagement.ac.uk/>).

The pyramid of the typology of Public Engagement was nicely made. (Fig. 1).

For a successful public engagement, several points must be addressed (see Fig. 1B).

It is important that everyone has fun and that everyone learns from each other.

Vicky gave the example of the “Healing giant” (<http://www.kirstidavies.com/incredible-edible-table-at-kew-gardens-1/>) at the Kew Garden. It was made for people who work in and visit the park. People who visit the park do it to feel better, to take a breadth of fresh air. The Healing Giant therefore addressed health and wellbeing issues. All ages were concerned. The message of the Healing Giant was to learn what plants provide us, but also to learn gardening and other skills.

BESRoadies then went on stage and talked about their own experience with people at festivals. Follow them @BESRoadies.

We ended the session with suggestions to improve the existing activities, and with some time to think about one’s own activities.

It would be quite interesting to know how our table’s 2-in-1 activity on plant and seed ecology goes:

- i) a “tray activity” on which people would match pictures of leaves, flowers, seeds, pollen and eventually habitats (or a choice of the above) of one plant species. That would trigger some discussion on, for example, why they are shaped like that or that (hint: pollination).
- ii) a tent activity would go deeper into the pollination methods and shape of seeds. A fan would blow different species and types of seeds, thereby showing that seed traits and characteristics play a role in pollination and other functions.

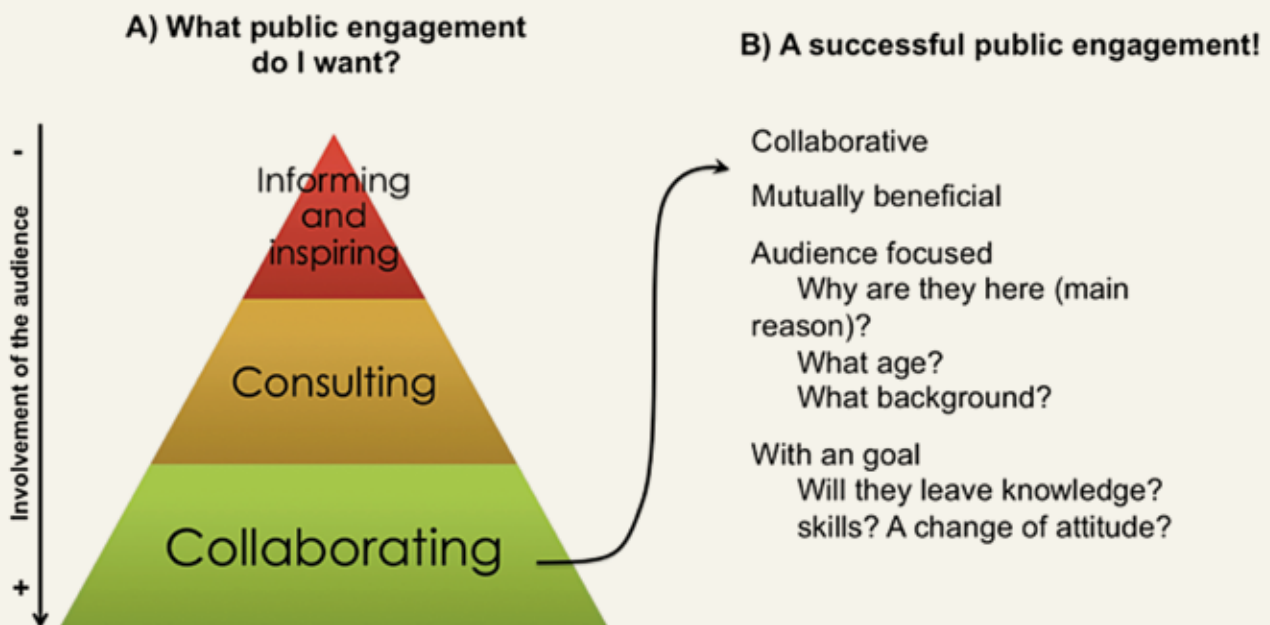


Fig. 1. How is a successful Public Engagement made? (A) Pyramid of Public Engagement. At the tip: a public engagement that requires the least from the audience. It is, for example, museums. At the bottom: the public engagement requires people to be completely involved in the process. It is, for example, citizen science. It is much harder and requires more energy from everyone. (B) Main ingredients of a successful public engagement.



Activity 1: the Poop game. Link the poop to its owner



Activity 2: Smell the Fungus... and link it to the corresponding smell (garlic? soap?)



Activity 3: How long can you go without drinking?



Activity 4: Find the animal on the picture. What is its strategy?

DATA SHARING ARCHIVING AND MORE

The data management session comprised a panel discussion from four expert speakers, Nat Cooper, Bob O'Hara, Sandy Buchanan and Derek France. They each spoke about the benefits of using different types of technology to manage, share and use data more effectively. Some top tips included using an app or even creating your own to help with data collection - check out Project Splatter for inspiration (<http://projectsplatter.co.uk/>). The panel also spoke about the benefits of sharing data to help increase their citation count. Lastly, there are many different platforms and software available now, which can be overwhelming so, the important thing to remember is to find and use one that is relevant to you.

MANAGING AN INTERNATIONAL CAREER

The focus of this workshop was to answer any questions about managing a careers on the international stage. It was chaired by Iain Stott (Post doc; Chair of the BES's Early Careers Committee). Speakers included Kyle Dexter (lecturer), Alexa Sutton (PhD student; representative of INNGE), Will Gosling (Associate Professor; chair of the BES's Education, Training and Careers Committee), Sandra Varga (Post doc, Marie Curie Fellowship), and Peter Baxter (Post doc).

THE BREADTH OF ECOLOGICAL CAREERS

In this workshop, speakers came from a background of ecology that led them to do a PhD and to use the skills they learn throughout the years to develop other careers. Alistair Headley has eight years' experience as an ecological consultancy as well as over 23 years' experience of teaching in British universities; Catharine Bruce, who completed her PhD in 2013 is now the Director of NatureMetrics, a start-up company on the use of metabarcoding as a tool for informing environmental management; Regan Early is a researcher in a highly interdisciplinary environment, and has been involved in research synthesis working group and writing large scale grant proposals. Philippa Gullett is a project manager in conservation (RSPB). Her work revolves around testing management solutions to reverse the decline of breeding curlew populations across the UK, using a combination of habitat management and predator control.

It is hard to summarize the speakers' activities as it is very diverse, but it was definitely inspiring to see where a career in ecology and the associated skills can bring you, sooner or later, and reassuring to know that PhD and early Postdoctoral training all develop the transferable skills for any career pathway.



Iain Stott



Kyle Dexter



Alexa Sutton



Will Gosling



Sandra Varga



Peter Baxter



In the UK, top universities and science sectors are dominated by students from private schools.

With increasing student fees, bright students from low income backgrounds increasingly face barriers when pursuing their interests in science. This is reflected in reports showing that while 18% of pupils on free school meals progressed to higher education, 36% on non-free school meals and 96% at independent schools do the same.

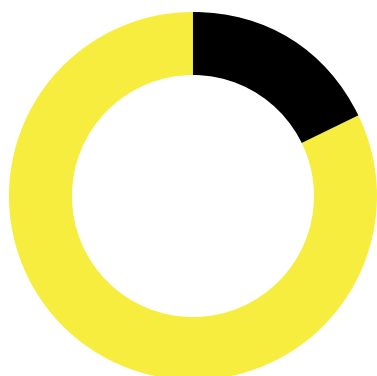
In 2015 the BES sponsored 10 students from the poorest backgrounds to gain science-specific support through the in2scienceUK programme. In2scienceUK places students into 2-week ecology-focused placements, enabling them to experience research first-hand. The students also participate in skills days

that give high quality information and guidance on STEM career pathways and university access. Importantly, workshops focus on the development of transferable skills and the confidence needed for success. With salaries in the STEM sector higher than others the aim is that these students progress to science degrees and careers to be economically stable.

In2scienceUK are looking for ecology researchers to host deserving students from low income backgrounds in summer 2016. Contact Dr Rebecca McKelvey r.mckelvey@in2scienceuk.org for more details.

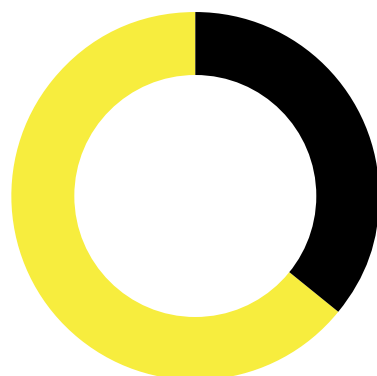
18%

of pupils on free school meals progressed to higher education



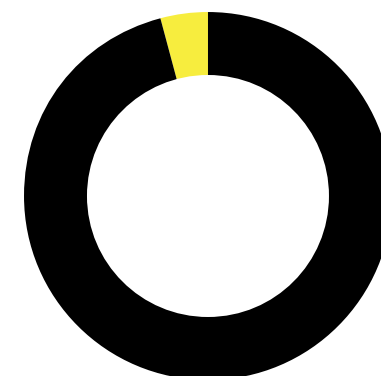
36%

on non-free school meals



96%

at independent schools do the same



THE BES PHOTO COMPETITION 2015

Each year we welcome members to enter our ever popular Photographic Competition. This year we had over 250 images submitted, covering all aspects of ecology. Our judges had a difficult task, but we were pleased to exhibit the following winners at our Annual Meeting in Edinburgh. Congratulations to all our winners and many thanks to our judges!



OVERALL WINNER

Birth

Algerian *Psammodromus* lizard (*Psammodromus algirus*) hatching from a clutch of six eggs. Photo taken at dawn in spring 2015, Madrid (Spain).

Roberto García Roa, National Museum of Natural Science - Spanish Research Council (MNCN-CSIC)

We asked Roberto to tell us a little bit more about his interest in photography, how he came to take the winning image, and about his research.

About photography...

I took my first series of photographs when I was in Nicaragua. Here I carried out research focused on the study of amphibians and reptiles and thus, I could capture a lot of special moments of Nicaraguan fauna and culture. I like photography because it lets me keep magic and unforgettable memories that last for ever, and also, for me it is the best way to remember PhD fieldwork.

About the image...

This picture was taken last spring. In the framework of an ecological and behavior study, I realized that one *Psammodromus algirus* female had laid a clutch of six eggs. Due to the high temperatures of those weeks and with the goal of avoiding losing these eggs, I incubated them. I could observe how the eggs began to grow over the weeks. In the last period, I reviewed the clutch each dawn. One morning, I could see one of them was out of its egg. Then, I just had to wait for the others to follow, and finally, I could take pictures of the expected birth. After this, they were released into their natural habitat. I used a Canon EOS 70D with ISO 5000, f/5.6, 1/200s.

About your research...

My PhD research is focused on chemical ecology and behavior using lizards as a model. Moreover, I am interested in evolutionary patterns of chemical signals through lizards' phylogeny and macroclimatic factors which might influence chemical profile of lizard species. My final goal is to explore how lizards' chemical communication is influenced by environmental factors and by phylogenetic history.

<http://garcia-roa-ecologyandevolution.weebly.com>



OVERALL RUNNER UP

Winner: Ute Bradter,
University of Leeds



Desert Home

The Oryx (*Oryx gazella*), well adapted to desert environments, amongst the sand dunes of the Namib-Naukluft National Park, Namibia, during a beautifully stark evening.

OVERALL STUDENT WINNER

Winner: Kiyoko Gotanda, McGill
University/University of Cambridge



Brown Pelican

A Brown Pelican stares at the camera on El Garrapatero Beach on the Galápagos Islands.

CATEGORY 1: ECOSYSTEMS AND COMMUNITIES

Winner: David Costantini,
University of Antwerp



I thought I saw a cat

Small hunters but big problems. Domestic cats kill more than one billion birds each year. But this picture taken in Linosa Island (Italy) shows how other animals like geckos (*Tarentola mauritanica*) are also under threat of being heavily predated.

Student Winner: Kiyoko Gotanda,
McGill University/University of
Cambridge



Darwin's Finch on a Marine Iguana

Darwin's Finches are an iconic example of adaptive radiation. Here, one of the Medium Ground Finch, *Geospiza fuliginosa*, picks dead skin of a marine iguana. Both species are endemic to the Galápagos Islands.



CATEGORY 2: WHOLE ORGANISMS AND POPULATIONS

Winner: Ute Bradter, University of Leeds



Great White Pelican

Great White Pelican (*Pelecanus onocrotalus*) fishing on a mirror calm tidal pond in Walvis Bay, Namibia

Student Winner: Abbie Chapman, University of Southampton



Peacefully pondering amidst the chatter

A chimpanzee (*Pan troglodytes schweinfurthii*) rests by his tree-top nest in Kibale National Park, Uganda.

CATEGORY 3: ECOLOGY AND SOCIETY

Winner: Ute Bradter, University of Leeds



Eyes on the prize

This Cape Glossy Starling (*Lamprotornis nitens*) was one of a number of passerines drawn to this malfunctioning, dripping tap, a precious resource of water in the desert conditions of Etosha National Park, Namibia.

Student Winner: Kiyoko Gotanda, McGill University/University of Cambridge

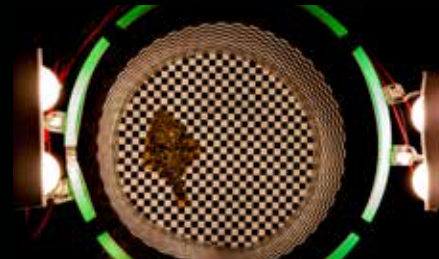


Galápagos Sea Lion at the Fish Market

At the local fish market in Puerto Ayora on the Galápagos Islands, the vendors have to keep a close watch on the fauna who often try to steal fresh fish from the vendors. Here a Galápagos sea lion eyes some fish scraps on the table where the fish are cleaned and filleted.

CATEGORY 4: ECOLOGY IN ACTION

Winner: James Robinson, University of Victoria, BC, Canada



Illuminating vision and camouflage in the Starry flounder

The Starry flounder (*Platichthys stellatus*) uses active camouflage to ambush prey and avoid predators. Their camouflage is controlled visually, using a large repertoire of different light receptors (eight opsin genes). This experiment by researchers at the University of Victoria (Canada) examines how different light environments influence opsin expression and camouflage.

Student Winner: Lara Bates-Prior, Oxford Brookes University



Beetle in UV powder

This carnivorous Ground beetle has been dusted with UV powder. It is a new tracking technique, and it does have some beautiful results.

Entering the Competition

The competition is open for all members to apply and is great way to promote both your photography and the research you are involved in.

The Overall winner wins £750, the overall runner-up wins £250, and the student winner wins £100. We would also like to thank the Oxford University Press and Cambridge University Press for kindly sponsoring £40 worth of book vouchers to category winners

and student category winners, respectively. The next round will open later this year, so watch this space! Further details can be found on the BES website: BritishEcologicalSociety.org/Photocomp

35TH ANNUAL GENERAL MEETING

Minutes

The AGM was held at 10:00 on Tuesday 15th December 2015 in the Pentland Suite, Edinburgh International Convention Centre, The Exchange, Edinburgh, EH3 8EE. A total of 140 members were in attendance.

1. MINUTES OF THE 34TH BES AGM

The minutes of the 34th AGM held on 11th December 2014 in the Charles de Gaulle Room, Lille Grand Palais Convention Centre, 1 Boulevard des Cites-Unies, 59777 Lille, France and published in the March 2015 *Bulletin* 46:1 were presented to the membership.

The motion to approve the minutes was proposed by A. Pullin, seconded by A. Beckerman and carried by a majority with no votes against.

2. THE ACCOUNTS FOR THE YEAR ENDED 31 DECEMBER 2014

The Accounts for the year ended 31 December 2014 were published in the August 2015 *Bulletin* and summarized in the Annual Report.

The motion to approve the accounts was proposed by E. Sayer, seconded by O. Lewis and carried by a majority with no votes against.

3. THE REPORTS OF THE TREASURER AND THE AUDITORS

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

He provided a quick reminder as to how the BES finances worked overall over recent years. The Society carries out several different kinds of activities, all of which are considered very important in their own right. First, we have several activities on which we simply spend money. The main ones are our research grants, as well as our work in education and policy. Then, we have some activities on which we spend some money, but which also provide some income, with the balance between income and expenditure depending on the activity. Our work in meetings covers the Annual

Meeting, our symposia, as well as special interest groups. Here, we receive some income from fees to delegates but overall, we spend much more than we receive. Our membership section produces the *Bulletin*, but also receives subscription fees, and makes a modest profit overall. Finally, we have our work in publications, where we spend a large amount, but gain back a lot more, so much so that profits from publishing, to a large extent, are what enables us to supplement all of our other activities and still make a net surplus each year. We have been putting this surplus into an endowment fund. For many years now our plan has been to slowly build this fund up to a level where the BES would be secure against any future changes in its finances.

Within this stable overall picture, there have been nonetheless quite a few major changes, including the purchase of our headquarters, CDH1, and now a share in CDH2, plus a major increase in publishing income due to a renegotiation with our partner Wiley, which saw the BES gain a larger share of the publishing profits. Also, there has been a consistent trend over many years to increase spending on all activities, greatly above inflation. These increases represent the Society doing ever more for ecology, and are a sign of a highly successful organization. Most importantly, at the end of 2013 we took a longer-term view of our finances, and created a 5-year strategic plan which saw a further considerable increase in spending on all of our major activities, whilst still allowing us to slowly build up our endowment. As a result, since 2014, the actual financial planning has been rather routine, because we have been working to that 5-year plan. But everything

else has been anything but routine, as the BES team has been expanding or transforming almost every aspect of what the Society does, safe in the knowledge that the finances are all taken care of. Our longer-term financial projections indicate that we can expect to keep up an elevated spend on all our activities even after the end of the 5-year plan.

4. THE REPORTS OF THE COUNCIL SECRETARY, THE HON. CHAIRPERSONS OF THE COMMITTEES AND THE EDITORS

The Honorary Secretary presented the reports.

He noted that the Society continued to thrive with a wide range of activities and initiatives across the range of ecological disciplines. Some of the highlights he mentioned included:

- The outstanding BES Journals,
- A growing membership with a target of reaching 6,000 by the end of 2017,
- The diverse meetings portfolio with excellent symposia during 2015,
- The exciting and dynamic Special Interest Group programme of events,
- The launch of the Undergraduate Summer School,
- The pre-election debate 'People, Politics and the Planet: Any Questions?'
- The increase in public engagement activities,
- The expansion of Charles Darwin House and the availability of conference space there.

He thought the BES was a learned society that was healthy, wealthy and wise at the same time. He urged everyone at the Annual Meeting to tell all their colleagues about this great Meeting and encourage them to join the BES so that we could reach our target of 6,000 members and beyond.

5. TO ELECT OFFICERS OF COUNCIL OF THE SOCIETY

Two Council Officers were retiring and the Society thanks Dr Hodgson and Dr Beckerman for their hard work and contribution to the Society over recent years. Professor Hartley was Council's nomination for the post of President, Professor Sutherland for Past President, Dr Vanbergen for Honorary Council Secretary and Dr Davies for Chairperson of the Meetings Committee.

The motion to accept these changes to the Officers of the Society was proposed by M. Crawley, seconded by W. Gosling and carried by a majority with no votes against.

6. TO ELECT ORDINARY MEMBERS OF COUNCIL

Two Ordinary Members of Council were retiring and the Society thanked Dr Hurst and Dr Raven for their hard work and commitment while in post. A third vacancy has been caused by the early stepping down of Dr Blanchard at the end of last year. This meant there were three 4-year positions of Ordinary Members of Council available. In addition, the move of Dr Davies to the role of Meetings Committee Chair had created a fourth vacancy of one 3-year position which would be awarded to the 4th places candidate in the election. A total of 6 candidates were standing for election.

A ballot was held and tellers were appointed. The following people were elected as Ordinary Members of Council: Dr Brotherton, Dr Y Buckley, Dr Hautekèete and Dr Scott (to the 3-year position).

7. THE APPOINTMENT OF THE AUDITORS FOR 2015 AND AUDITOR'S REMUNERATION

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

8. ANY OTHER BUSINESS

There was an opportunity at the end of the meeting for attendees to raise issues and make comments. These included:

- Members were encouraged to put forward suggestions for BES prize winners and plenary lecturers to the Executive Director Dr Norman
- There was some concern that an increase in membership might cause the BES to lose its focus on research although it was noted that initiatives like the BES public engagement programme allowed the BES to reach out to a wider audience without negatively effecting its core values
- Adaptation to climate change was an example of a very important issue that the BES should consider preparing proactive position statements to and that the BES Special Interest Groups could contribute to.
- The increase in activities outside the UK could increase the Society's environmental impact and needed to be carefully considered. The new food policy was a good start in trying to reduce the environmental impact of meetings but careful consideration needed to be given to venue locations.

- The current status of *Ecological Issues* was raised and it was noted that the whole of the BES policy work had been reviewed in 2015. Timely, short synopses of ecological topics had been highlighted as making an important contribution to the Society's policy work and would therefore continue.
- It was important for the BES to engage actively with the practitioner community as well as policy makers.
- Access to biological records, especially those for UK protected species, was important although it was noted this did raise issues around commercial interests and confidentiality.
- The BES had an important role to play in helping develop the evidence base for integrated environmental management and to encourage communication across disciplinary boundaries.

There was no further business and the meeting was closed.

A CALENDAR OF SIG EVENTS IN 2016



Amelia Simpson / BES Events Manager
Amelia@BritishEcologicalSociety.org

There will be another busy year of conferences, workshops and other events for the Special Interest Groups in 2016. We begin with a summary of key dates where these are known.

FEBRUARY

FEBRUARY 8

BES Education: 2016 Undergraduate Ecological Careers Conference

Location: London

FEBRUARY 9

BES Education: Public Engagement Training

Location: Charles Darwin House

FEBRUARY 23

Tropical SIG: GTOe

Location: Gottingen, Germany

MARCH

MARCH 4

Conservation SIG: Early Career Event

Location: Mappin, ZSL, London

MARCH 7

BES Education: Webinar: How to get published

Location: Online

TBC

Aquatic SIG: Ecosystem Services, Resilience and Restoration Workshop

Location: Charles Darwin House, London

Citizen Science SIG: Data Analysis of Citizen Science Data

Location: Charles Darwin House, London, England

Forest Ecology SIG: Resilience in Ecological Networks: data, Hypothesis and Opportunities

Location: Oxford University, Oxford

Forest Ecology SIG: Piedfly.net Annual Meeting

Location: Woodah farm, Devon

Parasite and Pathogen SIG: Cross-Species Transmission and Host Shifts

Location: Cambridge, England

Quantitative SIG: Spatial Data in R

Location: University of York, England

Quantitative SIG: Analysis of Citizen Science Data

Location: Charles Darwin House, London, England

APRIL

APRIL 4

Ecological Genetics SIG: Genomics and Phenomics in Ecological Genetics

Location: Goggerdan, Aberystwyth

APRIL 5 – 7

Ecological Genetics SIG: 60th EGG Annual Conference

Location: Aberystwyth

APRIL 11 – 13

Joint BES and CCI Annual Symposium: Making a Difference in Conservation: Improving the Links Between Ecological Research, Policy and Practice

Location: Cambridge, England

APRIL 11 – 13

Parasite and Pathogen SIG: BSP Spring Meeting

Location: Imperial College, London

A partner of the P&P SIG, The British Parasitological Society, will this year hold its annual spring meeting at Imperial College London. There will be a strong ecology theme running through the entire meeting this year, which will help facilitate and develop stronger links between the two groups.

APRIL 11 – 12

Agricultural SIG: UK PlantSci 2016

Location: John Innes Centre, Norwich

APRIL 12

Parasite and Pathogen SIG: Pathogen Host Shifts Workshop

Location: University of Cambridge

This meeting will focus on all of these steps and will cover the ecology, evolution, mechanisms, immunity and epidemiology underlying pathogen host shifts. The meeting aims to bring together a broad range of researchers from across the UK and Europe, working on this important topic, to discuss their work and develop collaborations. For more details contact Anna Davies on avd26@cam.ac.uk

APRIL 14

BES Education: Public Engagement training: Activity development

Location: Charles Darwin House, London

TBC:

Agricultural SIG: Rewilding in Abandoned Agricultural landscapes: Opportunities and Impacts

Location: Oxford School of Plant Sciences, Oxford

Aquatic SIG: Urban Ecology: making Our Cities Nature Smart

Location: Charles Darwin House, London, England

Climate Change SIG: Methods for Assessing Species Vulnerability to Climate Change

Location: ZSL, London

Forest Ecology SIG: Fieldwork in the Forest: Training Secondary School Teachers to Use British woodlands for Curriculum Teaching and Projects

Location: Mill Wood, Combe, Oxfordshire

Plant, Soils, Ecosystems SIG: Annual Meeting

Location: Charles Darwin House

Quantitative SIG: Data Management in R

Location: Charles Darwin House

MAY

MAY 19

Agricultural SIG: A Conversation About Food, With Food

Location: Calthorpe project, Kings Cross, London

MAY 23-28

BES Education: RHS Chelsea Flower Show

Location: Royal Hospital Chelsea, London

TBC:

Citizen Science SIG: European Citizen Science Association Conference

Location: Berlin

Citizen Science SIG: On Being Enthusiastic About Citizen Science: The Current Picture

Location: Royal Geographical Society, London

JUNE

JUNE 1

Climate Change SIG: Beyond Species Distribution Models Workshop

Location: Bournemouth University, London

JUNE 3-5

BES Education: Wychwood Music Festival

Location: Cheltenham Racecourse

TBC:

Aquatic SIG: Temporary Rivers Workshop

Location: Clifton Campus, Nottingham Trent University, England

Conservation SIG: Satellite Remote Sensing for Conservation Workshop

Location: Charles Darwin House, London, England

Peatlands SIG: What Capability Brown Did for Ecology

Location: Sheffield, England

Tropical SIG: ATBC

Location: Montpellier, France

Parasite and Pathogen SIG: European Grant Writing Workshop

Location: TBC

Planned to run in late June, this workshop will focus on building consortia and forming a number of European Union grant submissions. More news on this, exciting and novel event will follow soon

JULY

JULY 2 – 3

Quantitative SIG: Point process for Ecology: State of the Art and Next Steps

Location: University of Washington, Seattle, USA

JULY 5 – 7

Macroecology SIG: Macro 2016 Oxford

Location: Oxford, England

JULY 21

Aquatic SIG: Multivariate Analysis in R

Location: Charles Darwin House, London, England

JULY 22

Aquatic SIG: Annual Scientific Meeting

Location: Charles Darwin House, London, England

TBC:

Forest Ecology SIG: Defending Forests: Risks, Strategies and Sources of Support

Location: Oxford, England

AUGUST

AUGUST 14 – 18

Plant Environment Physiology SIG: The Ninth International Symposium on Inorganic Carbon Uptake

Location: Clare College, Cambridge

29 AUGUST – 1 SEPTEMBER

Plant, Soils, Ecosystems SIG: Ecosummit Symposium: "Plant-Soil Feedbacks: Bridging Nature and Agricultural Sciences

Location: Montpellier, France

TBC:

Agricultural SIG: Is It Getting Hot In Here? Or Is It Just Me?

Location: TBC

Macroecology SIG: BES Macroecology SIG Early Career Researchers Workshop

Location: Charles Darwin House, London, England

SEPTEMBER

SEPTEMBER 1

Plant Environment Physiology SIG: PEPG International Field Techniques Training Course

Location: Lisbon, Portugal

TBC:

Peatlands SIG: Peatlands and Raptors

Location: Sheffield, England

With Uplands, Peatlands & Raptors, to be held in Sheffield in early September 2016, we will be addressing the hugely controversial issues of why Britain has lost its upland hen harriers, and much more besides. This is a major national conference with relevance to wider international issues as well. The landmark event will bring together key academics and practitioners to examine the ecological and conservation issues of raptors on uplands generally, and peatlands

specifically, from bogs to heather moors. It is the first of two major events, the second being a 3-day national conference in 2017, on issues for the conservation of birds of uplands & peatlands.

Tropical SIG: Annual Meeting

Location: TBC

OCTOBER

TBC:

Agricultural SIG: Early Career Event – Roles for Ecologists Within Agriculture

Location: Charles Darwin House, London

NOVEMBER

Climate Change SIG: Effects of Climate Change on Blanket Bog Workshop

Location: London

DECEMBER

DECEMBER 11 – 14

BES Annual Meeting

Location: ACC, Liverpool, England

2016 TBC:

Macroecology SIG: Complexity in Macroecology

Location: SOGE, Oxford

Peatlands SIG: Landscape, Energy, Climate

Location: Sheffield, England

This workshop will be a one-day, multi-disciplinary workshop & seminar to explore issues for peatlands of energy use. This major issue has arisen as an unrecognised factor in climate change and landscape issues - from our previous conferences. This event will draw together key researchers and thinkers on the subject to identify key emerging paradigms.

Please contact Ian Rotherham if you wish to submit a proposal or to support the event in other ways. All are welcome.

Agricultural SIG: Integrating Ecology Into Sustainable Nutrition

Location: Somerville College, Oxford

BES Policy: People, Politics and the Planet – Any Questions

Location: Royal Geographical Society, London

2017

DECEMBER

BES Annual Meeting

Location: Ghent, Belgium

SPECIAL INTEREST GROUP NEWS

MICROBIAL ECOLOGY – A NEW SPECIAL INTEREST GROUP

Rachael Antwis
rachael.antwis@gmail.com

The British Ecological Society is delighted to announce the launch of our new Special Interest Group in Microbial Ecology. Microorganisms are increasingly being recognized as key mediators of ecological processes at all levels of organization, influencing the health and fitness of individuals as well as driving the stability of ecosystems, and as such is one of the fastest growing fields of ecology. The Microbial Ecology Special Interest Group will act as a central forum to unite researchers studying various aspects of microbial ecology, and guide the synthesis of novel research investigating the role of microbes in organismal and ecosystem function, achieved through regular meetings, workshops and events, as per the BES Strategic Plan. It is hoped that this new SIG will complement a number of existing groups including Pathogens & Parasites; Plants, Soils and Ecosystems; and Agricultural Ecology.



The Microbial Ecology SIG will be co-run by Dr. Rachael Antwis, Lecturer in Ecology and Conservation at the University of Salford, and Dr. Xavier Harrison, Research Fellow at the Institute of Zoology, Zoological Society of London. Rachael is interested in microbial communities of amphibians and their interactions with lethal pathogens, and Xav's research

focuses on factors determining the temporal stability and resilience of host-associated microbial communities, and their subsequent influence on host fitness.

Initial planned activities and outreach will include regular communications through email lists, a Twitter feed and Facebook page with news, job and training opportunities, and group activities. Additionally, we will launch a monthly blog with contributions mainly from PhD students and early career researchers working in the field of microbial ecology. We will also be advertising for individuals to fill roles within the SIG including student rep, early career rep, communications rep, and events rep. In the future we plan to hold a number of events, possibly including an analytical tools workshop, a horizon scanning workshop, and/or an early careers workshop. If you would like to join the SIG, have any suggestions for activities, or are interested in contributing to our blog, please contact us at microbial@britishecologicalsociety.org.



AQUATIC ECOLOGY

Nessa O'Connor (n.oconnor@qub.ac.uk)

Lee Brown (l.brown@leeds.ac.uk)

The Aquatic Ecology Group (BESAG) has been extremely active since its relaunch in 2014. Our goal is to foster a dynamic group of individuals able to address the broad range of challenges faced by the aquatic community, and to further knowledge in this research area. The BESAG hosts its annual science meeting around the third week of July each year at Charles Darwin House in London, bringing together established and emerging leaders in aquatic ecology from around the world. We have also contributed to several other meetings

including the Aquatic Biodiversity and Ecosystems Meeting in Liverpool (<http://www.aquaticbiodiversityandecosystems.org/>) and run the BESAG summer school. If you would like to suggest themes or topics for discussion for future meetings, please contact us. The BESAG is an active network of aquatic ecologists whose interests tend to overlap with several other SIGs and we are keen to develop cross-cutting activities. BESAG is growing and so is our following on social networks - we now have more than 1000 followers on Twitter (@BES_AquaEco)! Also check out our new Facebook page (BES-Aquatic Ecology Group).

This New Year brings new resolutions, new events and a new committee:

Co-secretary marine ecology:
Nessa O'Connor
(n.oconnor@qub.ac.uk)

Co-secretary freshwater ecology:
Lee Brown
(l.brown@leeds.ac.uk)

Early Career Researcher (ECR)
Leader: Miguel Matias

ECR Deputy: Billy Hunter

Treasurer: Rebecca Kordas

ECR Treasurer: Lydia White

Communication Officer: Pavel Kratina

ECR Communication Officer + Twitter:
Marie-Claire Danner

Mail List Manager: Ronni Edmonds-Brown

The BESAG is happy to present a variety of meetings and a workshop in 2016!

Meeting on temporary rivers and streams

Tuesday 7th June 2016

Nottingham Trent University, Clifton Campus, Clifton Lane, Nottingham NG11 8NS

Conveners: **Dr Judy England, Environment Agency and Dr Rachel Stubbington, Nottingham Trent University**

Call for contributions (oral papers and posters)

Intermittent rivers and ephemeral streams are distinctive systems that are

expected to become more widespread and face increasing pressures as a result of human activities, such as water supply and climate change. They support high diversity, provide essential ecosystem services and are functionally part of wider river networks and groundwater systems. However, we need to develop a greater understanding of the current status and impact of pressures upon these temporary watercourses, in combination with appropriate monitoring and approaches to management.

This meeting includes keynote talks from Profesor Paul Wood (Loughborough University), Dr Rachel Stubbington (Nottingham Trent University), Dr John Murray-Bligh (Environment Agency) and Dr Mike Dunbar (Environment Agency). Registration is now open: <https://www.eventbrite.co.uk/e/besag-meeting-on-temporary-rivers-and-streams-tickets-20757709869>

Annual Meeting 2016

The BESAG will be hosting its Annual Meeting on the 21st and 22nd of July, 2016 in Charles Darwin House, London, bringing together established and emerging leaders in aquatic ecology from around the world. It is an excellent forum for meeting people working in similar fields, for socialising as well as for general networking and you can already register for it! #BESAG16

Early-Career Researcher workshop: An Introduction to General Linear Models

Thursday 21st July:

Led by David Orme of Imperial College London, this workshop is designed for people who want to learn more statistical analysis based on general linear models. The course includes a series of lectures and practical exercises that will cover basic regressions, ANOVAS and model fitting. All practicals will be run in R.

Registration: www.eventbrite.co.uk/e/bes-aquatic-ecology-group-early-career-researcher-workshop-tickets-19952179506

Advances in Aquatic Ecology

Friday 22nd July

Leading aquatic ecologists will present their most recent findings and outline their priorities for future research. Keynote Speakers include: Alan Hildrew (Queen Mary University of London),

Rick Battarbee (University College London), Pavel Kratina (Queen Mary University of London), Wyatt Cross (Montana State University), Klement Tockner (Free University and Leibniz-Institute of Freshwater Ecology and Inland Fisheries - IGB), Angela Gurnell (Queen Mary University of London), Ben Halpern (University of California, Santa Barbara), Martin Solan (University of Southampton), Nova Mieszkowska (Marine Biological Association of the UK), Stuart Bearhop (University of Exeter) and Dan Smale (Marine Biological Association of the UK).

Time will be set aside for discussion during the meeting and there will also be ample opportunity for networking and a social in the evening. Students and early-career researchers are encouraged to present posters and give a 'highlight talk' at the meeting. Registration: www.eventbrite.co.uk/e/bes-aquatic-ecology-group-annual-meeting-tickets-19580190878

AQUATIC MACROECOLOGY

Friday 30st September

The main focus of this meeting is to foster the integration of macroecological approaches into the study of aquatic ecosystems. Most predictions about how aquatic systems respond to environmental change require a deep understanding of patterns and processes at different scales. A great deal of what is known about the key processes operating in aquatic systems arises from small-scale empirical and/or experimental studies. The growing interest in integrating macroecological approaches to advance our knowledge about aquatic systems makes this an emerging and exciting topic. We anticipate that the meeting will attract ecologists covering a range of different approaches from mesocosms experiments to large-scale surveys of aquatic biodiversity.

The meeting will be a jointly organized by the Aquatic Ecology (BESAG) and Macroecology (BESMacro) Special Interest groups of the British Ecological Society (BES), with additional support from the Marine Ecosystems Research Programme. #AquaticMacro2016



AQUATIC MACROECOLOGY
Charles Darwin House, London, 30/09/2016
Registration details coming soon!

For the latest news, future meetings and job advertisements you can follow us on Twitter: @BES_AquaEco on Facebook: BES-Aquatic Ecology Group and you can join our mailing list by emailing Ronni (v.r.edmonds-brown@herts.ac.uk). You can also find us on the BES website in 'Getting Involved', 'Special Interest Group'.



British Ecological Society
Conservation Ecology Group

CONSERVATION ECOLOGY

Nathalie Petorelli
nathalie.pettorelli@ioz.ac.uk



Catherine Stokowska and Stuart Patterson organised an excellent workshop at the BES annual meeting

The Conservation SIG was well represented at the BES Annual Meeting in Edinburgh, and the event provided a great occasion for the SIG members to connect and share a drink at the social mixer organised for the occasion. Our two student reps, Cath & Stuart organised

a vibrant workshop trying to encourage students from multiple disciplines to play a part and get involved in conservation, demonstrating to them various ways in which they could contribute their own skills. The SIG also organised a thematic session on rewilding (see attached), which proved to be particularly popular on the day. The session's aims were featured on BBC Scotland, thanks to a great press release organised by the BES Press Officer, Becky Allen. Next on the SIG agenda is the organisation of a BES/ZSL early career workshop on the 4th of March, which will bring a range of facilitators together to run activities focusing on scientific publications, funding applications, interview and networking skills, as well as making good use of the media".



British Ecological Society
Quantitative Ecology Group

QUANTITATIVE ECOLOGY

Nick Golding (@bes_qe_sig)

The SIG put on some great events last year. The SIG committee was also very busy at the BES annual meeting in Edinburgh. Our training reps Susan Jarvis and Duncan Procter ran a well-attended lunchtime workshop introducing programming languages other than R, much of the material for which is available online at bes-qsig.github.io/fge/docs/BES2015WorkshopExamples. Rick Stafford co-organised a very successful joint social event with the Parasites & Pathogens SIG, and Chris Clements ran a thematic session on the topic of prediction and forecasting in ecology. Check out our blog posts on the meeting and the workshop specifically, on the SIG blog (besquantitativeecology.wordpress.com).

The SIG's community-contributed online resources platform *Field Guides for Ecologists* (bes-qsig.github.io/fge) - has gone from strength to strength over the last 6 months, largely thanks to the tremendous hard work of the SIG's online resources rep, Dom Bennett. There are now introductory guides on building

R and Python packages, using git for version control and using command-line unix HPC servers among many others. Contributing a guide is really easy (details on contributing are included as one of the guides) and we'd love to get as many quantitative ecologists involved as possible - so please check out the guides and join in!



Rick Stafford stood down as the SIG's secretary at the annual meeting. The SIG is very grateful for all of Rick's hard work over the last 18 months, which have seen us put on some fantastic events, as well as expanding the SIG committee. Nick Golding has taken over the role of SIG secretary, with Susan Jarvis taking on a new role as Deputy Secretary. Rick is staying on as a core committee member along with Dylan Childs. All our other committee members are continuing in their existing roles: Laura Graham (blog master), Duncan Procter (training rep), Dominic Bennett & Simon Dellicour (Online resources reps), Chris Clements and Miriam Grace (Social media reps) and Angela Watkins (Policy rep, as well as heading up the newly founded Welsh Policy SIG!).

We have five events planned for the coming year. Two of these are training events, organised in response to suggestions during our training survey last year; one on spatial analysis in R to be held in York in March and one on data management in R to be held in London in April. We're holding a joint meeting with the Citizen Science SIG in London in March to discuss analysis of citizen science data. In May, we'll be holding a meeting in Oxford on complexity in macroecology, jointly with the Macroecology SIG. Precise dates and details for these events will be decided shortly. Please visit the SIG blog at besquantitativeecology.wordpress.com where we'll post the details and

information on how to sign up, as soon the events are finalised! Finally, the SIG will also be sponsoring a working group of statistical ecologists to further the use of point process models in ecology, to be held in Seattle in early July. The results of this workshop will be made available via the blog too, and will hopefully lead on to more and bigger events on this topic in the future.

As ever, you can get information on upcoming events, news on all things quantitative, and get in contact with the SIG committee via Twitter (@bes_qe_sig), Facebook (facebook.com/besquantitativeecology), on our blog (besquantitativeecology.wordpress.com), or via email (quantitative@britishecologicalsociety.org). We'd love to get more feedback from quantitative ecologists on how the SIG is doing, what you'd like more of, and any ideas for future events - so please get in touch. We'd also love to develop our blog further, so please let us know if you'd be interested in doing a guest blog post!



British Ecological Society
Macroecology Group

MACROECOLOGY

Members of the BES Macroecology SIG were out in force at the BES Annual Meeting in Edinburgh, the largest BES meeting to date. Running around from talk to talk and poster to poster, the work presented reflected the wide range of research currently being undertaken in the field of macroecology. As well as in the dedicated sessions on macroecology, (including 'Models and methods', 'Distributions, interactions and evolution' and 'Functional traits & diversity'), macroecology featured throughout the conference, cropping up in sessions on citizen science, conservation biology, community ecology, global change ecology and many more. Research presented in talks and posters showed both the geographic and taxonomic breadth over which

macroecological methods are being applied, ranging across scales, and from micro-organisms to megafauna. New methods were presented, older ones updated, distributions were modelled and validated, traits and interactions were scrutinised and lots of interesting areas of research were highlighted leading to stimulating conversations and debates.

Our macro mixer event at the The Dragonfly Bar also gave SIG members the opportunity to catch up with old friends and new over a cocktail or two, the perfect partner to conversations about broad-scale patterns of biodiversity. Overall, the meeting was enjoyable and thought-provoking, not that we would expect anything less from a BES meeting!

The next event for the Macroecology SIG is our main meeting, Macro2016, which will be 7th-8th July in Oxford - more details on this event are available online.



PEATLANDS RESEARCH

Meres and Mosses Forum

The Meres and Mosses Forum is an annual conference for both researchers and practitioners interested in lowland peat-based ecosystems and their place in the landscape (see <http://www.themeresandmosses.co.uk/page/69/meres-and-mosses-forum-2016.htm>).

The 2016 conference hosted by Cheshire Wildlife Trust took place at Bickley Hall Farm, Cheshire, on March 10-11th. The meeting focussed on the impacts of climate change on these fragile habitats with Professor Sir John Lawton and Professor Brian Moss as keynote speakers.

The Meres & Mosses academic coordination project is based at SWT and works with partnership organisations across the Meres and Mosses landscape of north Shropshire, south Cheshire and west Staffordshire to link them with academic institutions interested in this special region.

What Capability Brown did for Ecology: the legacy for biodiversity, landscapes, and nature conservation'

Sheffield Hallam University 15th to 17th June 2016

This major national conference is being organised with English Heritage, Natural England, the Ancient Tree Forum and others to contribute towards the celebrations of the tercentenary of Lancelot 'Capability' Brown. The event will bring together ecologists, landscape historians and archaeologists, land managers and conservationists to look critically at the impact of Brown and his successors on the UK's landscape. The conference will address the paradigms of these designed landscapes. It will consider issues around the legacy of Brown's creations and ideas and the repercussions that are still apparent today. It will make for a thought-provoking and rich discussion over the three days, covering habitat conservation and creation, to drainage and the release of alien species. Issues will include veteran trees – both retention and removal, and rare species including bats, invertebrates, lichens, and waxcap fungi. This is the untold story of the ecology of Capability Brown and the landscape school, which followed. The conference will include a field visit, poster presentations and displays.

For more information, please email info@hallamec.plus.com or telephone 0114 2724227 and follow our website for updates and programmes: www.ukeconet.org.

Peatlands SIG event: *Landscape, energy, climate seminar and workshop*

Organised by the Biodiversity and Landscape History Research Institute, South Yorkshire Biodiversity Research Group, at Sheffield Hallam University, University of York, with Natural England, BES Climate Change SIG, and others. This event is planned to run back-to-back with a joint BES Climate Change SIG / Peatlands SIG workshop / seminar – 'Effects of Climate Change on Blanket Bog Workshop'.

The activity will be a one-day, multi-disciplinary workshop & seminar to explore issues for peatlands of energy use. This major issue has arisen as an unrecognised factor in climate change and landscape issues - from our previous conferences. This event will draw

together key researchers and thinkers on the subject to identify key emerging paradigms.

Please contact Ian Rotherham if you wish to submit a proposal or to support the event in other ways. All are welcome.

For more information, please email info@hallamec.plus.com or telephone 0114 2724227 and follow our website for updates and programmes: www.ukeconet.org.

Raptors, Uplands & Peatlands – Conservation, Land Management & Issues

Sheffield. September 9-10th 2016

Organised by South Yorkshire Biodiversity Research Group, with Natural England, Landscape Conservation Forum, ESEH, IPS, UKECONET, BaLHRI, Peak National Park, Thorne & Hatfield Moors Conservation Forum, & Sheffield Hallam University.

Uplands, Peatlands & Raptors will be addressing the hugely controversial issues of why Britain has lost its upland hen harriers, and much more besides. This is a major national conference with relevance to wider international issues as well. The landmark event will bring together key academics and practitioners to examine the ecological and conservation issues of raptors on uplands generally, and peatlands specifically, from bogs to heather moors. It is the first of two major events, the second being a 3-day national conference in 2017, on issues for the conservation of birds of uplands and peatlands.

This 2-day event will seek to offer scenarios and solutions for the recovery of species and habitats. There will be the opportunity to not only present case studies from current projects but also raise fundamental questions about wider management, economics, monitoring and policy-making. The aim by the end of the two days will be to draw together the common themes and differences reflecting the speakers' and delegates' concerns about the future for raptors in uplands and peatlands, and the hen harrier specifically. This will further set the scene for the longer, 2017 event, which will re-visit some of the issues another year on. The output from the conference will be a short volume of contributions including a scene-setting paper and a review of discussion from the two days.

The second event is *Conservation of birds of uplands and peatlands* – Wed. 6th to Sat. 9th September 2017, also in Sheffield.

For more information, please email info@hallamec.plus.com or telephone 0114 2724227 and follow our website for updates and programmes: www.ukeconet.org.

Widening the scope of Waxcap research - Waxcap fungi as indicators in wood pastures, lowland grasslands and shadow woods

There will be 3 x 1-day workshops and field visits during late summer and autumn 2016 to Clumber Park, National Trust Country Park in Nottinghamshire; Woodhouse Washlands, Yorkshire Wildlife Trust Nature Reserve near Sheffield; and Crowle, North Lincolnshire. These national, cross-disciplinary workshops & field visits will take forward issues and ideas raised at the BES-supported 2014 symposium and the upland workshops in previous years. The events will address issues in lowland wood pasture and heath, in shadow woods, and in lowland wet grasslands. We will shortly be launching our on-line guide to waxcaps and associated fungi as indicators of grasslands and wood pastures – check the website for details.

Contact us for more details: email: info@hallamec.plus.com or telephone 0114 2724227, and follow our website for updates and programmes: www.ukeconet.org.

SHADOW WOODS - a search for lost landscapes

For 2016, we have an exciting Forest Ecology SIG project on 'Shadow Woods - a search for lost landscapes'. See the Forest Ecology Group entry below for more details.



British Ecological Society
Climate Change Ecology

CLIMATE CHANGE ECOLOGY

Mike Morecroft
Mike.Morecroft@naturalengland.org.uk

2015 was the first full year in which the Climate Change Ecology Group has been running. We had two major meetings. An excellent joint workshop with the Met Office on *Using Climate Data in Ecological Research* took place in September and was subject of a full report in the last *Bulletin* (December 2015: 46 (4) p17) The second meeting was a conference on *Ecosystems and Climate Change Mitigation*, organised jointly with the Plants, Soils, Ecosystems Special Interest Group and held at Charles Darwin House in November. This brought together approximately 50 people from across research, policy and practice communities to discuss cutting edge science and how it can be applied to reducing greenhouse gas emissions and maximise carbon sequestration. We took a broad approach to the topic, with papers covering a range of biomes, from tundra to tropical forest and included both managed and natural ecosystems. One issue that was immediately obvious was that this was a group of people who had never come together before. The gulf that can open up between science and practice is often recognised, but there can also be a lack of integration between those who work on different types of land uses and habitats. For example, agricultural, peatland and forest ecosystems are usually viewed as discrete topics, but to maximise carbon sequestration and storage it is necessary to be able to weigh up the pros and cons of different land uses in different places. The conference has spurred some of us to write a paper on this topic, so we can explore these ideas more fully with a wider audience.

At the BES annual meeting the group had a very stimulating and enjoyable 'social' event with a discussion of the outcome of recent UN climate change conference in Paris, with some refreshments to keep us

going before going out for a meal. As well as some well-informed ecologists we were delighted that Professor Sir Bob Watson, former chair of the Intergovernmental Panel on Climate Change, joined us for an evening of stimulating debate. We also jointly sponsored a lunch time workshop on food which was ably led by Steve Peel (Natural England) and stimulated much lively discussion on how the BES should approach catering at meetings to reduce greenhouse gas emissions and other adverse environmental impacts.

We have three meetings lined up for this year: a one day conference on *Methods for assessing species vulnerability to Climate Change*, will be organised jointly with ZSL at London Zoo. A hands-on modelling workshop, *Beyond species distribution models*, is planned at Bournemouth University and we are working up plans for a workshop on *Effects of climate change on blanket bog: adaptation and mitigation implications* with the Peatlands Research SIG.

Over the course of the year has been developing our communications, with the help of Ash Pike, employed as a part-time intern. We now have a blog (<https://besclimatechange.wordpress.com>), twitter account (@BESclimate) and email circulation list (to be added please email ClimateChange@britishecologicalsociety.org). Do get in touch with us through any of these channels.



British Ecological Society
Forest Ecology Group

FOREST ECOLOGY

Secretary: Alan Jones
ajones@earthwatch.org.uk

Future meetings:

DEFENDING FORESTS: RISKS, STRATEGIES AND SOURCES OF SUPPORT

To be held in Oxford, exact date and location to be confirmed

As global and national companies pursue the short-term and unsustainable exploitation of natural resources; competition over land, forests, water and raw materials is fierce. The imbalance of power between rural, working people, indigenous peoples, and activists on the one hand, and companies often backed by government and in some cases military forces, has led to a sharp increase in the killing of environmental defenders over the last decade. While international decision makers discuss measures to protect the planet and prevent extreme climate change, it is unconscionable that activists striving to defend the environment are murdered for their efforts.

In 2014 at least 116 environmental defenders were killed¹. This is almost double the number of journalists killed over the same period. While there are several international campaigns to prevent the killing of journalists², there is little public awareness of, and pressure to end, the killing of environmental defenders.

FOOTNOTES

¹ Global Witness, 2014, 'How Many More: 2014's deadly environment: the killing and intimidation of environmental and land activists, with a spotlight on Honduras' p.8.

² Such as: Global Campaign Against Impunity; the work of the Committee to Protect Journalists; #FreeAJStaff campaign led by Al Jazeera; World Press Freedom Day

Potential audience and participants:

The conference will bring together those individuals who are actively facing these risks on the ground, to share their experiences and challenges of this work, with an audience comprising of environmental NGO's, Human Rights advocacy organisations, legal professionals, with researchers and academics from a broad range of discipline, along with the media.

Conference aim:

The aim will be to discuss and define strategies to support the work of frontline environmental defenders and to think about solutions to improve their personal security conditions. There will be a focus on sharing practical experiences from other fields and allowing those in attendance to contribute to the discussion.

Conference Organiser and Host: Not One More

Not One More is an organisation formed in 2015 in direct response to the violence experienced by environmental defenders and recognizing that for many individuals and small organizations they are extremely isolated from networks that could support their personal security.

As an organization we aim to co-ordinate support that does exist with those who need it and where gaps exist, highlight them and look for solutions.

Date and Location:

The conference will be held in Oxford, the location is yet to be confirmed.

The date is yet to be confirmed but it will be held somewhere between 6th June and 7th July, (we intend to follow on from the Chatham House Illegal Logging meeting in London & they have as yet to finalise their date).

If you want to be informed of the date and location, please send an email to: notonemore.global@gmail.com and we will add you to the mailing list for this conference.

PiedFly.Net

CITIZEN SCIENCE MONITORING OF WOODLAND BIRDS - PROJECT MEETING

19 March 2016, 11.00am to 3pm

PiedFly.Net is a citizen science project monitoring breeding woodland birds and woodland phenology. The network provides data collected to many science projects including the BTO Nest Record Scheme, Track a Tree and university and NGO research groups right across Europe, and also undertakes its own research. Each year the network holds a one day meeting shortly before the bird breeding season, the only occasion when all the monitors involved come together. The meeting is designed to provide feedback to monitors on the previous season's results, putting them in a long-term context, highlighting new ways in which data can be collected, submitted or used, and to show how their data are being used in scientific work. The meeting aims to increase members' awareness of woodland ecology more generally. The 2016 meeting includes talks from visiting guest speakers Will Kirby (RSPB, Hawfinch declines), Bob Harris (formation of national study group and integrating data

from north west England), Sophie Bell (PiedFly.Net, geolocators and provisioning rates) and Malcolm Burgess.

Location: Wooda Farm, Devon Wildlife Trust Centre, Doddiscombeleigh, Devon

Organizer: Malcolm Burgess, University of Exeter/PiedFly.Net

Please see www.piedfly.net for more about the network, current projects and publications

WIDENING THE SCOPE OF WAXCAP RESEARCH

Waxcap fungi as indicators in wood pastures, lowland grasslands and shadow woods

A joint meeting with the Peatlands Research SIG. See the Peatlands SIG entry for more details.

SHADOW WOODS - a search for lost landscapes

We have an exciting Forest Ecology SIG project on 'Shadow Woods - a search for lost landscapes'. Based on 3 years' citizen science work so far with the Peak National Park, this has implications for understanding past and future woodland and forest landscapes. The ideas are far-reaching and the scope of the work is Europe-wide. Participants involved come from a wide area of Great Britain and Europe and the results are to be disseminated to an extended audience through a final, celebratory event and the launch of a long-term project. The ideas relate to the BES-supported 'Wild Thing' conferences, which had representatives from around 20 countries. There will be a launch event and workshops to recruit & train community science volunteers (spring 2016); then work with citizen science volunteers to help close the information gaps (volunteer surveys during spring & summer 2016), and the outputs of the project will be a report and other publications plus an on-line guide. For stakeholders there will be interpretation and recommendations on management, an education pack, flier, key cards and an app; and finally, the celebratory event and launch / conference.

Contact us for more details: email: info@hallamec.plus.com or telephone 0114 2724227, and follow our website for updates and programmes: www.ukeconet.org

FIELDWORK IN THE FOREST:

Training secondary school teachers to use British woodlands for curriculum teaching and projects

ABSTRACT

In 2015 BES Forest Ecology Group supported a consultation workshop with secondary school teachers to explore the potential of British woodlands for teaching the Geography and Science curriculum for Key Stages 3 to 5 (11 -18 years old). The results of this workshop and further recent research into the Geography secondary curriculum by the Sylva Foundation have informed the follow on training project 'Fieldwork in the Forest'. This one day training course will:

- Introduce Geography and Science teachers to British forest ecology and woodland management.
- Provide fieldwork training in a range of techniques that are required by GCSE and A Level specifications.
- Identify fieldwork investigation questions and collect and analyse fieldwork data using techniques required of students by GCSE and A Level specifications.
- Provide participants with resources and case studies on British forest ecology and woodland management, guidance on fieldwork techniques and sampling in woodlands, guidance on accessing local woodlands.

DATE: July 2016 - date to be confirmed

TIME: 1pm – 5pm

LOCATION: Mill Wood, Combe near Woodstock, West Oxfordshire

CONTACT: Jen Hurst, Education Manager, Sylva Foundation, 01865 408018, jen@sylva.org.uk

The Sylva Foundation
<http://sylva.org.uk>



British Ecological Society
Plant Environmental Physiology Group

PLANT ENVIRONMENTAL PHYSIOLOGY

Matt Davey (mpd39@cam.ac.uk)

THINGS TO LOOK OUT FOR IN 2016...

INTERNATIONAL WORKSHOP ON PLANT ENVIRONMENTAL PHYSIOLOGY TECHNIQUES

12th – 16th September 2016

Last year saw our second 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 2016 (see the advert in this issue of the *Bulletin*) – this is THE International workshop to attend if you study plant environmental physiology at any level. If you are interested in being involved in organising or sponsoring the workshop, or have any suggestions then please email either Dr. Steven Driever (steven.driever@wur.nl), Dr. Richard Webster (rcw@aber.ac.uk), Dr Tracy Lawson (tlawson@essex.ac.uk) or Dr Matt Davey (mpd39@cam.ac.uk).

ANNUAL PEPG YOUNG CAREER SCIENTIST MINI SYMPOSIUM

The Plant Environmental Physiology special interest group is holding its next early career scientist mini symposium in the Peak District at the lovely Hartington Hall YHA (<http://www.yha.org.uk/hostel/hartington-hall>). The symposium will start on Monday evening with dinner, followed by a talk from Professor Bill Davies of Lancaster University, and a poster and networking session. Then we will enjoy a guided walk around the spectacular Peak District National Park and a science-themed pub quiz in the YHA pub on Tuesday. Wednesday will be full of selected talks from PhD and postdoctorate attendees, to finish mid- afternoon.

The PEPG are inviting abstracts for talks and posters in all areas of plant eco-physiology from PhD students and postdocs. All attendees are encouraged to present a poster or talk. Please submit a short abstract (~50 words) to Dr. Marjorie Lundgren (marjorie.lundgren@sheffield.ac.uk) or Dr. Richard Webster (rcw@aber.ac.uk) once you have registered. Prizes will be awarded for the best posters and talks!

Registration fees for SEB and BES members £40, or for non-members £60. This includes all meals and shared accommodation from the evening meal on Monday to lunch on Wednesday. Numbers are limited so please register early!

When: Monday, 25 April 2016 at 16:00 - Wednesday, 27 April 2016 at 15:00

Where: YHA Hartington Hall - Hall Bank, Hartington, Buxton, Derbyshire SK17 0AT GB

To sign up please contact Marjorie above or sign up at:

<https://www.eventbrite.co.uk/e/pepg-early-career-scientist-mini-symposium-tickets-20780815980>

The Ninth International Symposium on Inorganic Carbon Uptake by Aquatic Photosynthetic Organisms

14th- 18th August 2016 Clare College Cambridge.

The Impact of ocean acidification on calcification and marine productivity; marine biogeochemical cycles; evolution and diversity of CCM in algal lineages. Contact Prof. Howard Griffiths for more details hg230@cam.ac.uk

We are also going to a larger presence at the BES Liverpool main meeting – details to follow in the next issue!

Contacts:

Matt Davey - mpd39@cam.ac.uk

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

Howard Griffiths – hg230@cam.ac.uk

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

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

Richard Webster - rcw@aber.ac.uk

Jen Cuniff - communications officer – please contact Jen with news and events you would like advertising on our website, email list, Facebook page and twitter @pepg_sig j.cunniff@cabi.org



PLANTS-SOILS-ECOSYSTEMS

Mike Whitfield (@mgwhitfield)
mgwhitfield@gmail.com

Plants-Soils-Ecosystems is a special interest group for people interested in plant-soil interactions, soil ecology, and biogeochemistry. In this issue of the

Bulletin, Ellen Fry and Wayne Dawson report on a soily social and thematic session at December's Annual Meeting in Edinburgh, and we introduce our very own annual meeting, to be held in April.

Digging deeper in Edinburgh

This year the Plants-Soils-Ecosystems special interest group was proud to support 'Digging deeper – Advancing our understanding of how soil biota drive and respond to plant invasions', a Thematic Topic organised by Wayne Dawson and Maarten Schrama. The session was preceded by an invasive species-themed mixer the night before. After an exciting first day of talks, we headed across town for a plant, soil, and invasive species-themed quiz and tasting of some of Scotland's finest single malts. The quiz was challenging and led to lively conversation, which became livelier as the whisky tasting progressed! Despite fierce competition, the winner was eventually crowned; Philip Stack won with an *impressive* four points out of a potential 21, taking home a bottle of the local

offie's premium Scotch. We had a good turnout too – about 25 people made it – not bad considering the competition from other SIGs and Thematic Topic hosts, so thanks to all of you who came along and made the evening so enjoyable.

The next morning, despite some aching heads, we assembled in the Fintry Auditorium for the Thematic Topic chaired by Wayne Dawson and Maarten Schrama, which began with the keynote speech given by Wim van der Putten. The well-attended session provided an excellent overview of state-of-the-art research on the roles of soil biota in plant invasions, with talks covering molecular, biogeographic, experimental and multi-trophic approaches. There were two take-home messages from the session that will help to advance our understanding of how soil biota can drive and respond to invasions: 1) We need to move out of the greenhouse and into the field; 2) We need to consider how interactions between invasive plants and soil biota can change over time, space, and from one genotype to the next.

After Wim contextualised the field and offered some interesting insights from the perspective of plant-soil feedbacks, we moved on to consider some detailed examples of how soil biota can facilitate or impede plant invasions, beginning with Michael Gundale's work on root fungal communities of *Pinus contorta*. This was followed by Madalin Parepa, who described his work on the influence of soil biota on plant community resistance to regeneration of the invasive Japanese knotweed. Subsequently Susanne Wurst presented evidence that invasive species can indirectly facilitate native species through suppression of soil pathogens. Petr Dostal used a chronosequence to demonstrate how increasing loads of native soil pathogens can lead to a decline in giant hogweed over a 30 year period. Elly Morriën followed this with a greenhouse study that offered insights into potential impacts of climate change on herbivory, which would impact range expansion of exotic plant species and invasion probabilities. Alison Bennett closed the session with an overarching discussion on whether AM fungi can influence multiple trophic levels above ground, and ultimately lead to a reduction in invasive aboveground herbivores, giving us all a lot to think about on the topic of cascading effects in ecosystems.

Plant Environmental Physiology Group

Early Career Scientist Mini Symposium

25th – 27th April 2016
Hartington Hall (YHA), Derbyshire

Monday 25th - dinner, keynote talk from Professor Bill Davies of Lancaster University, followed by poster and networking session.

Tuesday 26th - guided walk around the spectacular Peak District National Park with Dr. Peter Carey of the University of Cambridge and a science themed pub quiz in the YHA.

Wednesday 27th - selected talks from PhD and Post-doctorate attendees.

The PEPG are inviting abstracts for talks and posters in all areas of plant eco-physiology from PhD students and postdocs.
All attendees are encouraged to present a poster or talk.
Prizes will be awarded for the best posters and talks!

Registration fees for SEB and BES members **£40**, or for non-members **£60**.
This includes all meals and shared accommodation from the evening meal on Monday to lunch on Wednesday. Numbers are limited so please register early!

<https://www.eventbrite.co.uk/e/pepg-early-career-scientist-mini-symposium-tickets-20780815980>

For further information contact:
Dr. Marjorie Lundgren marjorie.lundgren@sheffield.ac.uk
Dr. Richard Webster rcw@aber.ac.uk

[@PEPG_SIG](https://www.facebook.com/PlantEnvironmentalPhysiologyGroup)





Thank you to all who presented at the session and offered such fantastic and thought-provoking talks, and to everyone that came along to both the session and the mixer.

Ellen Fry (@Ellen_BESS) and
Wayne Dawson



Enthusiastic group members getting stuck into the 'tricky' quiz at the SIG social in Edinburgh

Plants-Soils-Ecosystems Annual Meeting

Plants-Soils-Ecosystems is excited to announce its very first annual meeting, which will be held at Charles Darwin House, London, on 6th and 7th April 2016. The overall objective of the meeting will be to consolidate the SIG's aims and direction. At the time of writing, we're still working out the schedule – it will all be figured out by the time you read this! We hope to host a workshop on analysis techniques, a policy workshop, and Q and A sessions with leading plant-soil scientists. There will be lots of time for SIG members to suggest how they would like the group to evolve. This means you! Come to the meeting to network with your fellow SIG members, and influence the direction of the group. We think it will be great fun.



New Secretary Ellen making off with a key element of Mike's New Phytologist stand decoration at the BES Annual Meeting in Edinburgh

Plants-Soils-Ecosystems gets a new secretary!

After three years at the helm of Plants-Soils-Ecosystems, Franciska de Vries will be handing over to Ellen Fry, who will take over as SIG Secretary in 2016. Franciska will continue to support the group in an advisory role. Thank you very much Franciska!

The SIG committee now includes:

- Ellen Fry (Secretary) (ellen.fry@manchester.ac.uk)
- Mike Whitfield (Deputy Secretary) (mgwhitfield@gmail.com)
- Tom Crowther
- Relena Ribbons
- Michael van Nuland

We're on the look-out for new committee members, particularly a UK-based student representative. If you're interested, get in touch!

Plants-Soils-Ecosystems Bulletin

Plants-Soils-Ecosystems communicates interesting opportunities in the worlds of plant-soil interactions, ecology and biogeochemistry to its members via social media and the mailing list. We also compile a bi-monthly *Bulletin*, featuring news, jobs and studentships hand-picked by committee members Relena Ribbons and Michael van Nuland. To receive the *Bulletin*, sign up to our mailing list – details below.

Join us!

Sign up to our mailing list by sending an email to listerv@jiscmail.ac.uk; subject: BLANK; message: SUBSCRIBE PLANT-SOIL-ECO Firstname Lastname.

Follow us on Twitter @BESPlantSoilEco, like us on Facebook ([fb.com/BESPlantsSoilsEcosystems](https://www.facebook.com/BESPlantsSoilsEcosystems)) and check out our website, including the blog and journal club: besplantsoileco.wordpress.com.



British Ecological Society
Citizen Science Group

CITIZEN SCIENCE

Secretaries: Helen Roy and Michael Pocock (citizenscience@ceh.ac.uk)

2015 was an eventful year for the Citizen Science Special Interest Group and it was great to see such a high level of engagement across all the activities. Thank you to everyone who participated and particularly the organisers who ensured the relevance and richness of the programmes.

So on to 2016. The Citizen Science Special Interest Group invited people to provide suggestions for activities and we have been able to include all the proposed ideas in one way or another. The BES encouraged all the special interest groups to collaborate with one another, with other organisations and other regions of the world. The 2016 programme for the Citizen Science Special Interest Group reflects this request.



Citizen science in Africa

From a global perspective we will be supporting the European Citizen Science Association Conference <http://ecsa.biodiv.naturkundemuseum-berlin.de/> which will be in Berlin from 19 to 21 May 2016. We will also be running a workshop collaboratively with the Tropical Biological Association, the Centre for Ecology & Hydrology and scientists from East Africa in Nairobi, Kenya. This will be an exciting opportunity to share approaches and explore priorities for environmental citizen science in East Africa. Later in the year we will host a meeting in the UK to highlight the findings and widen collaborations.

Back in the UK we will be organising a one day conference *Achieving volunteer engagement, data collection and practical impact in wildlife conservation through Citizen Science* (21 March 2016) hosted by Bournemouth University and the National Trust (NT) in consultation with Natural England. We are also delighted to be collaborating with the International Biometric Society and Royal Statistical Society in organising a meeting with the Quantitative Ecology Special Interest Group on *Data challenges and solutions in Citizen Science*. We will also consider the theme 'On being enthusiastic about citizen science: the current picture and next steps' working with the Royal Geographical Society (with the Institute of British Geographers). Finally, together with the Aquatic Ecology Special Interest Group we will work with the 'Making London Nature Smar' venture, which "links to existing London-based initiatives to research how best to develop London's green infrastructure, enhance biodiversity, increase the ecosystem services and wellbeing benefits offered by the city and to make it more sustainable", to host a meeting. We will also be planning an activity at the Annual Meeting (Liverpool, 11-14 December 2016) and would be extremely pleased to receive ideas or even volunteers to lead this event.

We very much hope that the activities planned for 2016 will excite and inspire you to get involved with the Citizen Science Special Interest Group. If you have ideas for 2017 then please do get in contact, meanwhile we look forward to meeting you at the events throughout 2016. Exact dates, venues and booking instructions will be provided both through citizenscience@ceh.ac.uk (please get in contact if you would like to be added to the list) and the Citizen Science Special Interest Group webpages: www.britishecologicalsociety.org/getting-involved/special-interest-groups/citizen-science/



This PEPG (special interest group of SEB & BES) workshop will provide a unique opportunity for MSc, PhD students and early career researchers to gain training in plant ecophysiology techniques, including:

- leaf-level processes including photosynthetic gas exchange, chlorophyll fluorescence, water status and hydraulic conductance
- canopy processes including stable isotopes, monitoring canopy development/Leaf Area Index, IR thermography and soil water/nutrient status
- theory and practice of long-term monitoring under field conditions, incl. micrometeorology, eddy covariance, and remote sensing methodologies

This comprehensive five day workshop provides an unrivalled opportunity for manufacturers to introduce their latest equipment and provide hands-on training. The successful format includes daily lectures introducing theory of techniques, demonstration of the equipment, followed by hands on sessions for participants to collect data. Evening sessions allow group discussions of techniques and data analysis, -modelling, as well as a formal research poster session.

Internationally renowned scientists will explain and demonstrate key techniques: Prof. Susanne von Caemmerer (ANU); Prof. Steve Long FRS (Illinois, USA); Dr. Bernard Genty (CNRS, France); Dr Xinguang Zhu (PICB, China); Prof. Howard Griffiths (Cambridge, UK); Dr. Andrew Leakey (Illinois, USA); Dr. Wanne Kromdijk (Illinois, USA); Prof. Lauren Sack (UCLA, USA); Prof. Kathy Steppe (Gent University, Belgium); Dr. Colin Campbell (Decagon Devices, USA); Dr. Katie Field (Leeds, UK); Prof. Carl Bernacchi (Illinois, USA); Dr. Gary Lanigan (Teagasc, Ireland); Dr. Saoirse Tracy (UCD, Ireland); Dr. Craig Yendrek (Illinois, USA); Dr. Olga Grant (UCD, Dublin); Dr. Steven Garrity (Decagon Devices, USA); Dr. Jochem Evers (Wageningen University); Dr. Erik Murchie (Nottingham, UK); Dr. Tracy Lawson (Essex, UK); Dr. Steven Driever (Wageningen University); Dr. Richard Webster (Aberystwyth, UK); Prof. Colin Osborne (Sheffield, UK); Dr. Matthew Davey (Cambridge, UK).

The workshop (limited places) will run for five days at the Quinta da São Pedro, Lisbon in September 2016 <http://www.quintasaopedro.pt/> For information on registration, costs, travel, accommodation, programme visit http://www.essex.ac.uk/bs/conferences/pepg_workshop.aspx as soon as possible!

For further information contact:

Dr. Steven Driever (steven.driever@wur.nl) or Dr. Richard Webster (rcw@aber.ac.uk)

Follow PEPG at:
www.facebook.com/PlantEnvironmentalPhysiologyGroup
www.plantenvironmentalphysiology.group.shef.ac.uk
twitter.com/PEPG_SIG



OF INTEREST TO MEMBERS

GORDON RESEARCH CONFERENCE: UNIFYING ECOLOGY ACROSS SCALES

This conference provides a discussion forum for those wanting to make links between physiological, behavioural, population, community and ecosystems ecology. If you want to reach out from specialized research and are passionately interested in linking the levels and putting the pieces together, or if you want to apply ecology in, *e.g.*, conservation, fisheries, forestry or climate change, then this is the conference for you. We look forward to welcoming you at this five-day meeting at the beautiful seaside campus of the University of New England overlooking the Saco River Estuary. To attend: just apply; to speak: contact the chair. Bursaries are available to speakers to part cover registration which includes accommodation and meals, and it is hoped bursaries for postgrads may be available from BES.

Special focus will be on linking the levels using insights from the factors that constrain individual physiologies such as availability of energy and nutrients. Major themes are Metabolic Ecology and Individual-based Modelling using computer simulation. Approaches will include energy-based methods but also ecological stoichiometry accounting for chemical flows within and across levels. Examples will include animals, plants and microbes. Speakers include Brian Enquist, Mary O'Connor, Gabriel Yvon-Durocher, Roger Nisbet Steve Railsback and Volker Grimm.

More details and online application are available at: <http://www.grc.org/programs.aspx?id=13261>

Associated Gordon Research Seminar for postgrads: <https://www.grc.org/programs.aspx?id=15150>

Organizers: Chair: Richard Sibly; Vice Chair: Mary O'Connor

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FROM REGENERATION TO ROMAN SNAILS

A collection of published works by the Atkins ecology team

John Box, Technical Director in Environment & Urban Design Practice at the design, engineering and project management consultancy Atkins would like to draw BES members' attention to a collection of papers of interest to any ecologists involved in building and infrastructure projects. John writes: "Atkins has produced a collection of technical ecology papers published over the past few years by their ecologists in the UK and North America. This collection demonstrates how Atkins help clients meet their ecological obligations and deal with the move towards no net loss of biodiversity. New challenges for biodiversity require robust ecological methodologies and innovative mitigation measures to ensure built development and infrastructure projects are delivered taking full account of environmental issues. This collection of papers represents Atkins' commitment to providing high quality, forward-thinking advice on biodiversity and ecosystem services".

"Atkins has a commitment to sharing knowledge across the ecology and environmental management sector as well as ensuring that such advice is available to those working on projects involving built development, infrastructure and mineral extraction. While we have encouraged staff to publish papers in a variety of publications, we recognise that not all of these are freely available to all readers. With kind permission of the original publications, we have brought all these papers together in one document. Edited by John Box and Jules Price, the ecology collected works can be downloaded free of charge from:

http://www.atkinsglobal.com/~media/Files/A/Atkins-Corporate/uk-and-europe/services-documents/Ecology/NEW_Ecology_Collected_Papers.pdf. "

John Box can be contacted at The Axis, 10 Holliday Street, Birmingham B1 1TF / Mobile +44 (0)7803 259863 / Twitter: EcoFutures @EcologyTweets

MAN AND THE EARTH, AND THE OXFORD PATRICK DUNCAN SCHOLARSHIP IN SUSTAINABLE DEVELOPMENT

Patrick Baker Duncan (1918–1967) was a political thinker and activist, whose books promoted human rights in South Africa and expressed concern regarding the relationship of humans with the Earth. Duncan's *Man and the Earth* was first published fifty years ago, but has been republished by his family to share these ideas as an e-book and as a paperback. The publishers YouCaxton have made a website where some reactions to the book can be found.

In addition, a Scholarship has been started by the family, to share these ideas: the Oxford Patrick Duncan Scholarship in Sustainable Development. Unfortunately the deadline for applications for the first year passed before this *Bulletin* went to press, but a scholarship will be offered annually for at least the next 4 years. It is for students from a SADC country (<http://www.sadc.int/>), wishing to do an MSc at Oxford's African Studies Centre. <http://www.ox.ac.uk/admissions/graduate/fees-and-funding/fees-funding-and-scholarship-search/scholarships-3#duncan>

This initiative aims to contribute to more sustainable development in southern Africa, through helping young people to understand the political and environmental issues for which Patrick Duncan worked, and to influence public policy and practice in the region. It is designed for people who can lead a profound change in the relationship of people with the planet.



ENVIRONMENTAL LEGISLATION

What are the forthcoming legislative issues of interest to ecologists and conservationists in 2016?

William J. Sutherland, Eleanor Burke, Ben Connor, John Martin, Paul McNamee, Clive Mitchell, Kathryn A. Monk, Katharina Rogalla von Bieberstein, Des B.A. Thompson

This paper covers our sixth assessment of the forthcoming legislation that we consider to have likely environmental consequences or consequences for ecologists. We again review issues of a global scale, those in the European Union, and those both in the United Kingdom and constituent countries.

We have often been told that this paper is useful for policy makers desiring a review of the issues on the horizon as well as for researchers wishing to learn either how their results may be used or how their work may be affected by changes in legislation.

2015 resulted in a Conservative majority in Westminster, the dominance of the Scottish National Party in Scotland, and a collapse of many other parties in England and Wales. A referendum on whether the UK will stay in the European Union is forthcoming.

The legislative scans of previous years (Sutherland 2011-15) are freely available on the British Ecological Society website. Issues that have been discussed before are not repeated here.

GLOBAL

OFFICIAL NEGOTIATIONS ON NEW INSTRUMENT ON AREAS BEYOND NATIONAL JURISDICTION START

Following the recommendation of the Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, the UN General Assembly in June 2015 opened the negotiations for a legally-binding instrument on the conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction under the UN Convention on the Law of the Sea. The General Assembly has decided to establish a preparatory committee to make substantive recommendations on the elements of the draft text. This work will commence in March 2016 and carry on into 2017. Before the end of its seventy-second session in 2018, the General Assembly will render a decision on whether and, if so when, to convene an intergovernmental conference to consider the preparatory committee's recommendations and elaborate the text of an international legally binding instrument. Critical issues to be tackled in the negotiations ahead in particular relate to benefit-sharing in marine resources and some countries also still doubt whether there is a need for a new international agreement – at least for all the issues included in the so-called “package deal” identified by the Working Group.

THE DEVELOPMENT OF A REGULATORY FRAMEWORK FOR MARINE MINERAL EXPLOITATION

In 2014 the International Seabed Authority started a stakeholder consultation process on the development of a regulatory framework for mineral exploitation (the so-called ‘exploitation code’) in the deep seabed in areas beyond national jurisdiction. The resulting documents of that process were discussed during the twenty-first annual session of the International Seabed Authority held in Kingston, Jamaica, in July 2015. The key outcome of that meeting was an agreement on a list of seven priority deliverables for the development of an exploitation code over the following 12-18 months. The priority deliverables include the development of an environmental impact assessment process and a strategy for the development of regional environmental management plans. Furthermore, it was agreed that a ‘zero draft’ of the regulations for exploitation, including standard contract terms, should be produced by an expert working group by February 2016. To ensure a continued commitment to transparency and engagement, a stakeholder consultation strategy will be drafted.

THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

The 17 Sustainable Development Goals and 169 targets included in the 2030 Agenda for Sustainable Development came into effect on 1 January 2016. The 2030 Agenda encourages Member States to develop ambitious national responses to the overall implementation of the 2030 Agenda. These can support the transition towards the achievement of the Sustainable Development Goals and build on existing planning instruments, such as national development and sustainable development strategies. Furthermore, Member States are also encouraged to conduct regular and inclusive reviews of progress at the national and sub-national levels. The UN High-level Political Forum on Sustainable Development will have a central role in overseeing a network of follow-up and review processes at the global level. It will hold its first session since the adoption of the 2030 Agenda in July 2016. To keep up the political momentum for the implementation of the 2030 Agenda, three high-level events will be convened by the President of the UN General Assembly during the 70th Regular Session of the UN General Assembly. The first one will be on sustainable development, climate change and financing, ensuring linkages with the December 2015 Paris Agreement.

HARMONIZING IMPLEMENTATION OF GLOBAL WATER CONVENTIONS

In the 2030 Agenda for Sustainable Development the range of water issues receiving international attention has considerably expanded. The agenda also includes an explicit call for transboundary water cooperation, the first in a negotiated UN text since Agenda 21.

In addition to the strengthened ambition on water cooperation, the legal basis for transboundary water cooperation also has been strengthened in the last couple of years. The UN Watercourses Convention, signed in 1997, finally entered into force in 2014, and the UN Economic Commission for Europe Water Convention opened up to all UN Member States, turning it into a legal framework for transboundary water collaboration worldwide.

The International Watercourses Convention represents the codification and progressive development of customary international water law.

It requires countries to take measures to, *inter alia*: ensure equitable and reasonable utilization of shared international watercourses, and participate in cooperation on its protection and development; refrain from causing significant harm; and protect the related ecosystems. The Water Convention makes more detailed provisions for shared water management than the International Watercourses Convention, mandating the establishment of joint bodies to manage transboundary resources, and prescribing different measures.

There have been a number of calls for the two conventions to be implemented in a coherent manner, considering that both instruments are based on the same principles. Other relevant agreements that may consider joining forces on water governance include the Ramsar Convention on Wetlands and the UN Convention to Combat Desertification.

A STRATEGIC PLAN FOR THE INTERNATIONAL ARRANGEMENT ON FORESTS

At the 11th session of the UN Forum on Forests in New York in May 2015, Member States renewed the mandate of the International Arrangement on Forests and agreed on a roadmap to promote the implementation of sustainable forest management.

The UN Forum on Forests Ministerial Declaration and the Resolution on the International Arrangement on Forests beyond 2015 are the two key negotiated outcome documents of the meeting. In both documents Member States stress the importance of strengthening Sustainable Forests Management and define the Forum's roadmap until 2030. Member States also agreed to develop a Strategic Plan for the International Arrangement on Forests for the period of 2017 to 2030. The Strategic Plan aims at guiding the work of the Forum, its Secretariat, and the Collaborative Partnership on Forests, and other components of the International Arrangement on Forests.

In order to achieve the goals, as laid out the Declaration and Resolution, members of the Forum committed to a new series of meetings. The new calendar includes Ad-Hoc Expert Groups, Working Groups, a special session of the UN Forum on Forests and the 12th session in mid-2017.

THE POST-2015 FRAMEWORK FOR DISASTER RISK REDUCTION

The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted at the 2015 Third UN World Conference on Disaster Risk Reduction in March 2015 in Sendai City, Japan, and subsequently endorsed by the UN General Assembly. The Sendai Framework is the successor instrument to the Hyogo Framework for Action 2005-2015. It is a 15-year, voluntary, non-binding agreement, which recognizes that the State has the primary role to reduce disaster risk, but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders. It also brings to the front the importance of working on transforming cities to become more resilient. The main difference to its predecessor is its focus on disaster risks, while the Hyogo Framework focused on disaster losses. A focus on disaster losses means minimizing the impacts of disasters, while a focus on disaster risk puts more efforts to reduce the size of disasters, which would then have an overall effect of reducing its impacts. The Sendai Framework also calls on Parliamentarians to consider revising relevant legislation in line with the Framework, in order to enable national strategies and plans on disaster risk reduction. To ensure that strategies and plans are translated to action, relevant legislation is also to be reviewed and, if relevant, updated.

ENVIRONMENTAL GOVERNANCE IN THE UN SYSTEM

After an upgrade and strengthening of the UN Environment Programme at the Rio+20 conference in 2012, the UN Environment Assembly will convene for the second time in May 2016 in Nairobi, Kenya. It will be held under the theme of "Delivering on the Environmental Dimension of the 2030 Agenda for Sustainable Development". In preparation for the meeting, the second Open-ended Meeting of the Committee of Permanent Representatives will take place from February 15 - 19 in Nairobi. A key task will be the preparation of draft resolutions/decisions. Some of the key areas for discussion potentially focus on environmental justice in light of the 2030 Agenda for Sustainable Development, the relationship of migration and environmental change and the role of national policies to deal with synergies among the multilateral environmental agreements.

BALLAST WATER MANAGEMENT CONVENTION NEARS ENTRY INTO FORCE

With three additional countries having ratified the Ballast Water Management Convention in November 2015, the Ballast Water Management Convention nears entry into force. The Convention aims to prevent the spread of invasive aquatic species through ships' ballast water by requiring ships to have procedures and standards in place to manage and control ballast water. States adopted the Convention in February 2004 and it will enter into force 12 months after ratification of 30 States, representing at least 35% of world tonnage. According to the International Maritime Organization, Morocco's ratification at the end of 2015 brought the total percentage to 32.9%.

A ROADMAP FOR A HYDROFLUOROCARBON AMENDMENT UNDER THE MONTREAL PROTOCOL

At the 27th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer in November 2015 in Dubai, United Arab Emirates, Parties agreed to a road map for negotiating an amendment on the feasibility and ways of managing hydrofluorocarbons in 2016.

EUROPE

The European Commission under President Jean-Claude Juncker and First Vice-President Frans Timmermans continues to focus on delivering the 10 priorities of Juncker's 'Political Guidelines'. It calls on the European Parliament and Council to help deliver quick results in the most important policy areas. The Commission work programme for 2016 focuses on 23 key initiatives and 40 actions as part of its better regulation agenda to ensure that the stock of EU legislation is fit for purpose. It also signalled the withdrawal or modification of 20 pending legislative proposals that are not in line with the political priorities. In 2015 the European Commission declared that it would go "bigger and more ambitious on big things, and smaller and more modest on small things". It seems that they still perceive the environment to be a small thing. As a result more non-legislative initiatives are detailed in this section than in previous scans.

'FITNESS CHECK' OF NATURA 2000.

The Fitness Check of the Birds and Habitats Directives will conclude in 2016, with two reports anticipated from the Commission. The first is expected in April and will take the form of an analysis of the findings of the Fitness Check. The Fitness Check is intended to assess whether the Directives are 'fit for purpose' in terms of their effectiveness, efficiency, relevance, coherence and EU added value, and this first report will summarise the evidence submitted to the Fitness Check under these headings. The first report is not expected to include specific recommendations for next steps, but will instead take the form of a 'Staff Working Document', not endorsed by the College of Commissioners. The second report is expected between September and December and is likely to take the form of a Commission Communication, i.e. endorsed by the Commission as a collective. This Communication is anticipated to set out next steps in response to the findings of the Fitness Check. The European Parliament and Member State Governments in the Council of Ministers will almost certainly adopt their own responses to this document.

'FITNESS CHECK' OF ENVIRONMENTAL MONITORING AND REPORTING OBLIGATIONS

As part of its on-going Regulatory Fitness and Performance programme ('better regulation' agenda), the European Commission is undertaking a 'fitness check' of the monitoring and reporting obligations associated with EU environmental legislation to assess whether they remain 'fit for purpose'. The principal focus of this cross-cutting review is on the financial costs to businesses and other stakeholders of complying with these information obligations. A stakeholder consultation was launched in late 2015 and the results of the fitness check are expected in early 2017.

IMPROVING ENVIRONMENTAL INSPECTIONS

The European Commission has been exploring options for improving environmental inspections regimes, and improving implementation of the 2001 Recommendation on Minimum Criteria for Environmental Inspections in the Member States. A legislative proposal was developed towards the end of the last Commission, but was not tabled and did

not progress further. A new proposal is expected in 2016, but it remains unclear what form the proposal will take, and whether it will be legislative.

NO NET LOSS

In June 2014, the European Commission launched an internet consultation on an EU No Net Loss initiative. The Commission has stated that it is preparing an impact assessment to support the No Net Loss initiative taking into account the results of this consultation. It is likely that the Commission will consider its next steps on this subject in light of the findings of the Fitness Check of the Birds and Habitats Directives. No indication has been given of when the Commission would publish any proposal, or what form any No Net Loss initiative might take.

COMMON FISHERIES POLICY

Several initiatives and developments in the ongoing implementation of the revised Common Fisheries Policy (December 2013) are foreseen in 2016. Following on the introduction of the Landing Obligation for pelagic fisheries in 2015, from 1 January 2016 'unwanted catches' of demersal target species for all EU waters excluding the Mediterranean must be landed and counted against quota, although the obligation is phased such that it applies only to certain demersal species in 2016. The revised Technical Conservation Measures Framework regulation is expected in early 2016; it is anticipated to include specific objectives, targets and measures for reducing seabird bycatch. Having proposed a new Data Collection Framework Regulation in 2015, the Commission intends to propose a Multiannual Programme in spring 2016 as a delegated act. Regarding Multiannual Plans for fishing in the respective regional sea basins, we expect a regulation on the North Sea plan early in 2016 (soon after the adoption of the Baltic plan assuming it gets beyond the current impasse in the trilogue), followed later in the year by proposals for, respectively, western waters and the Northern Adriatic, and a consultation on plans for Mediterranean sea areas. In the second quarter, the Commission is expected to consult on Total Allowable Catches in EU waters for 2017, followed by a Council decision in December 2016, although Baltic Catches are agreed earlier (October).

ENDING TROPICAL DEFORESTATION

Following on a 2013 study of the deforestation impacts of European consumption and several high level policy commitments to stop deforestation made in 2015 (e.g. Sustainable Development Goal 12, Paris Agreement on climate change, and Amsterdam Declaration Towards Eliminating Deforestation from Agricultural Commodity Chains with European countries), the EU Commission will be undertaking a feasibility study in 2016 of policy options for an EU Action plan on deforestation. A coalition of environmental non-governmental organisations will be closely following the development of this study, which is expected to be completed by September 2016. Other forest policy moments in 2016 include the publication of reviews and impact assessment of recommendation of the EU Timber Regulation (which prohibits import of illegally logged timber products) and the Forest Law Enforcement Governance and Trade initiative (which seeks to strengthen forest governance in countries importing forest products into the EU). A Commission communication on the Sustainable Development Goals is also expected mid-year.

CIRCULAR ECONOMY PACKAGE

The European Commission withdrew the previous circular economy package in December 2014 in order to present a "more ambitious" strategy in late 2015. In December 2015, the Commission adopted a new Circular Economy Package to stimulate Europe's transition towards a circular economy. It consists of an EU Action Plan for the Circular Economy, a timetable setting out when the actions will be completed and the adoption of a number of legislative proposals, including proposed Directives on waste, packaging waste, landfill and electrical and electronic waste. It has been criticized by environmental non-governmental organisations for being less ambitious than the previous package. The Commission is now calling on the European Parliament and Council to prioritise adoption and implementation of its legislative proposals. The Package was presented to the European Parliament on 2 December and to the European Council on 16 December. The Netherlands have prioritised the Circular Economy Package for their Presidency of the EU and aim to get Member States' agreement of the related Council Conclusions on the Package in the first half of 2016.

INVASIVE ALIEN SPECIES

2014 saw the adoption of an EU regulation on Invasive Alien Species, this was a significant achievement and the first piece of nature legislation in 20 years, the focus in 2015 was on implementation as the new law would only apply if an accompanying list of species was adopted. At the end of 2015 the Commission proposed a list of 37 species, which was adopted by Member States in December. By addressing such a small number of species, the Commission is falling short of the political commitment and its legal responsibility to address a global environmental problem of this magnitude; the Commission has promised to review the list at the end of 2016 with the intention of broadening the list to include more species.

CLIMATE AND ENERGY

In its Energy Union Strategy, the European Commission has set out the key actions it thinks are required to secure Europe's energy supply and, amongst other things, to increase energy efficiency and de-carbonise the economy. The implementation of the 2030 energy and climate package will be a key priority for the coming year in order to ensure that the targets are met. In the second quarter of 2016 a Commission proposal is expected on how emissions from land use (cropland, grazing land and forestry) should be included within the Effort Sharing Decision for reducing emissions across the European Union, as is the Commission's Transport decarbonisation roadmap. Following the consultation in early 2016, in the second half of the year a revision of the Renewable Energy Directive is expected from the Commission, including on bioenergy policy, and a proposal on monitoring and reporting of the Energy Union 2030 targets. The 2030 target for renewable energy has already been set at 27%. It will be binding upon the EU as a whole but not on individual member states. This will be followed by the Energy Efficiency legislative package in September, which will include reviews of the Energy Efficiency Directive and Energy Performance in Buildings Directive. At the end of 2016, legislative proposals are anticipated on electricity market design, electricity security of supply, and a new Renewable Energy Directive and bioenergy sustainability policy; a strategy for meeting the 2030 15% interconnection target; and a proposal

tabled for a measure on 'streamlining reporting'.

COMMON AGRICULTURAL POLICY

The European Commission is running a consultation on the first year experience of the greening obligations attached to direct payments as part of the last reform. The Commission is primarily interested in views relating to implementation, the level playing field and production potential and ways to simplify the greening framework and reduce the administrative burden. Understanding and improving the environmental effectiveness of greening seems to be of little or no interest to the Commission. This consultation can be seen as part of Commissioner Hogan's broader 'simplification' initiative. Prospects for enhancing the environmental performance of the Common Agricultural Policy are slim, with further dilution of ambition the most likely end point of this process as Europe implementation tends toward the lowest common denominator. It's not clear how this consultation will feed into the review of Ecological Focus Areas penned in for 2017 that could see their area increase from 5% to 7%.

TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP

The Transatlantic Trade and Investment Partnership Agreement with the United States remains a top priority for the Commission in 2016. They are committed to negotiating a fair and balanced deal with the US, with a new approach to investment protection. During the Netherlands Presidency the European trade agenda will be dominated by the negotiations on the EU's bilateral free trade agreements, including with the US.

REVIEW OF THE MULTIANNUAL FINANCIAL FRAMEWORK 2014-2020

The mid-term review of the Multiannual Financial Framework will address how to better target funding towards EU priorities. It will also orientate the budget towards results and simplifying rules, for policies such as the Common Agricultural Policy. A Commission proposal is due out at the end of 2016. It is not clear whether sectoral policies will be covered here or in the "framework of the mid-term sectoral evaluations", which will be developed in 2017.

INTER-INSTITUTIONAL AGREEMENT

ON BETTER REGULATION

The European Commission wants to conclude the Inter-institutional agreement on Better Regulation by the end of the year. In 2016 the commission will bring forward an Inter-institutional Agreement on a mandatory transparency register for interest representatives seeking to influence policy making in the European Parliament, the Council and the Commission to enhance openness and accountability.

UNITED KINGDOM

EU REFERENDUM

In late 2015, as promised in the Conservatives' Election Manifesto, the European Referendum Act was passed by Parliament. The Act provides that a referendum must take place before the end of 2017, asking the question: "Should the United Kingdom remain a member of the European Union or leave the European Union?".

The precise date of the referendum will be determined once negotiations between the UK Government and the European Council are concluded. The negotiations seek to secure a number of reforms to the UK's settlement with the EU, focused primarily on economic governance, competitiveness, sovereignty and immigration.

A vote to leave the EU would have profound implications for environmental policy and legislation in the UK. Environmental legislation in the UK and the EU is closely entwined, with many EU Directives transposed into UK law, whilst the Common Agricultural Policy represents 40% of the EU budget. The EU also has a significant impact on the funding and organisation of scientific research in the UK, across all fields including ecology and conservation science.

In the event of a 'leave' vote, the UK could remain a member of the European Economic Area alongside Norway, Iceland and Liechtenstein, in order to maintain access to the European single market. European Economic Area members must adhere to a number of EU regulations, including most environmental directives, despite being unable to influence their development. However the Common Agricultural Policy, Common Fisheries Policy, and some

environmental legislation, including the Birds and Habitats Directives, would no longer apply (Institute of European Environmental Policy, 2013).

The potential consequences of an EU exit are manifold (see Miller, 2015). Here we focus on the possible impacts for environmental legislation and science.

ENVIRONMENTAL PROTECTION

In the event of exit from the EU, the UK could choose to lower, raise or maintain current levels of environmental protection. As EU Directives are transposed into UK law, in many cases legislative change in Parliament would be required to repeal or alter these Directives. However, the UK Government would have much more freedom to alter environmental objectives, and would be subject to less far-reaching judicial processes to enforce the implementation of environmental policy.

EU environmental protection legislation that currently applies in the UK, and could be subject to change in the event of a vote to leave includes (see Chartered Institute of Ecology and Environmental Management, 2015 for a comprehensive list):

- The Nature Directives (Birds Directive and Habitats Directive), which underpin the Natura 2000 network of protected areas and create a comprehensive system of protection for priority species and habitats. Nature conservation projects also benefit substantially from funding through the EU's LIFE programme.
- Newly introduced Invasive Species Regulations, which seek to minimise the impact of invasive non-native species on biodiversity and human wellbeing.
- The Environmental Impact Assessment Directive and Strategic Environmental Assessment Directive, which apply to major infrastructure and development projects.
- The Water Framework Directive, establishing regulations protecting inland and coastal waters and groundwater.
- The Floods Directive, requiring assessment of flood risk and coordinated measures to reduce this risk.
- The Marine Strategy Framework

Directive, which aims to achieve Good Environmental Status for all EU marine waters by 2020.

AGRICULTURE AND FISHERIES

The Common Agricultural Policy forms the largest element of the UK's EU costs, and provides a comprehensive regulatory and subsidy regime for agriculture in the UK. Departure from the Common Agricultural Policy would have a dramatic impact, creating considerable uncertainty for farmers as an alternative subsidy system is developed. Common Agricultural Policy implementation is currently a devolved issue, and it is uncertain whether any new system would be UK-wide.

Given the UK's stance in the most recent Common Agricultural Policy renegotiations, which sought to reduce the overall budget, it is likely that direct farm payments would decrease. Agri-environment schemes would also be subject to reform, potentially offering an opportunity to improve on the current Common Agricultural Policy, which has been deemed an environmental failure (Pe'er et al, 2014). Leaving the EU would also give the UK greater freedom over pesticide licensing and the regulation of Genetically Modified crops, as EU-wide legislation would no longer apply.

Historically, the Common Fisheries Policy is widely held to have failed in delivering ecologically and economically sustainable fisheries. However, it is acknowledged by conservationists that the new reform (2013) is a significant step in the right direction, with recent trends indicating that the most economically valuable stocks, at least in northern EU waters, are showing signs of improving. The new policy also offers an unprecedented legal basis for ecosystem-based fisheries management. If the UK left the EU, it could assume full responsibility for fisheries within the UK exclusive economic zone (up to 200 nautical miles off the coast), where fishing rights are currently administered at the EU level. While this could secure sole access to the UK fishing fleet and potentially give the Government greater freedom to create ecologically sound policies, it could result in the exclusion of the UK fleet from the waters of neighbouring Member States (some of which currently have historic rights to fish in parts of UK waters) and negatively impact our trade. It is unlikely that the UK would be bound by the Common Fisheries Policy if it left the EU. Most likely

the UK would need to negotiate bilateral fishing agreements with individual EU Member States, and with Norway. Moreover, it would be a high risk strategy to suppose that the UK could reach a new agreement with the EU to work within a modified Common Fisheries Policy.

SCIENTIFIC RESEARCH

EU membership has a significant impact on scientific research in the UK. The EU is a major funder of research, and the UK has received income of around 1 billion per year in the most recent Framework Programme funding round, second only to Germany, with roughly 40% of this awarded to the biosciences. Researchers and institutions also benefit greatly from freedom of movement, facilitating recruitment and supporting collaboration between member states (Royal Society of Biology, 2015).

While non EU-member states are able to access some EU research funding, these opportunities have recently been restricted. For example, Switzerland has been partially excluded from Horizon 2020 funding as a result of restrictions to freedom of movement applied by the Swiss government.

TRIENNIAL REVIEW OF JOINT NATURE CONSERVATION COMMITTEE

During 2015 Defra and the devolved administrations are conducting a review of the Joint Nature Conservation Committee to establish the "most effective and efficient delivery model" across the UK for the functions it performs. This is part of the Cabinet Office triennial review process of all arm's length Government bodies that will take place throughout this Parliament. The review will examine the continuing need for its functions, the appropriateness of the existing delivery model, and related functions carried out by other organisations. The review is expected to report to Ministers by June 2016.

GOVERNMENT RESPONSE TO LAW COMMISSION REVIEW OF WILDLIFE LAW

On 10 November 2015 the Law Commission published its final report of a four-year project to review the law related to the conservation, control, protection and exploitation of wildlife in England and Wales. The review recommended that existing legislation be brought together under a single statute to make

it more consistent, easier to understand and simple to use, and proposed a draft Wildlife Bill. The report recommends a reduction in the current dependency on criminal law in favour of a mix of regulatory measures, but an extension of the penalty for the most serious wildlife crimes to two years' imprisonment. The Government response and decision on implementation of the report is expected in 2016.

RESEARCH FUNDING REFORMS

In late 2015, the UK Government introduced three new policy proposals that are likely to lead to significant legislative and organisational change within the UK higher education and research sector during 2016.

First, the Nurse Review of the Research Councils (see Legislation Scan 2015) recommended the creation of a new body, Research UK, to provide strategic oversight and co-ordination across the seven research councils. This proposal was endorsed in the Autumn Spending Review, and the Government intends to introduce legislation to create this new organisation.

Second, the plans outlined in the Higher Education Green Paper: *Fulfilling our Potential: Teaching Excellence, Social Mobility and Student Choice*, currently in its consultation phase, will likely be crystallised in a White Paper and will require legislative change. While devolution means that the Green Paper's core proposal, to create a Teaching Excellence Framework, will only apply in England, it also proposes changes to the architecture of higher education funding that will apply across the UK. It is likely that the Higher Education Funding Council for England will be abolished, with its responsibilities for funding education passed to a new Office for Students, and its research funding capacity being delivered through Research UK.

Finally, the Government has announced a review of the Research Excellence Framework, led by Lord Nicholas Stern, with the aim of ensuring that "university research funding is allocated more efficiently, offers greater rewards for excellent research and reduces the administrative burden on institutions". The review will be delivered to Government in summer 2016.

ENTERPRISE BILL

The Enterprise Bill, which passed through the Lords in December and will soon receive its Second Reading in the Commons, contains two clauses that require regulators to report on how regulatory changes impact upon business but not on the original purpose of the regulations. The stated aims of these requirements is to allow Government, business and other stakeholders to hold regulators to account; and to ensure regulators are taking action to comply with 'the Duties'. As the Bill currently stands, these Duties require regulators to:

- consider how best they can encourage and promote compliance;
- engage with those they regulate and call on citizens and others to contribute to the development of their policies and service standards;
- review the effectiveness of their chosen regulatory activity in delivering desired outcomes and make any necessary adjustments accordingly.

HOUSING AND PLANNING BILL

The Housing and Planning Bill is designed to make provisions for housing, estate agents, rent charges and compulsory purchases. It has passed through the Commons and will be entering the Lords soon. As it stands, the measures within the Bill to speed up the planning system may have some effects on biodiversity:

- The Bill will create a register of brownfield land and the Government proposes to grant planning permission in principle for sites on the brownfield register;
- The proposed streamlining of the Local Plan process may limit the opportunity for conservation-sector bodies to engage in the planning process at an early stage. In the past, early intervention has been vital for organisations identifying key issues and ensuring they are addressed in a satisfactory manner;
- Clause 107 allows the Secretary of State to grant consent for housing through the Nationally Significant Infrastructure Project process.

JUDICIAL REVIEW

In September 2015, the Ministry of Justice launched a consultation on amendments to the current cost regime covering environmental Judicial Reviews. These proposals would make it challenging for individuals, community groups and some environmental organisations to pursue them in the interests of environmental protection. The Government has yet to confirm whether these proposals will go ahead.

MARINE PROTECTED AREAS

2016 marks the deadline of Oslo and Paris Convention's Recommendation 2003/3, to deliver an ecologically coherent network of Marine Protected Areas in the North-East Atlantic that is well-managed by 2016. The UK is further committed to the Marine and Coastal Access Act 2009, the Marine Strategy Framework Directive (and its national equivalents in each of the home nations), and by the Conservative Manifesto 2015, which promised the establishment of a Blue Belt of marine biodiversity protection by 2020.

ENGLAND

CITIES AND LOCAL GOVERNMENT DEVOLUTION BILL

The Cities and Local Government Devolution Bill has almost completed its progress through Parliament and will soon receive Royal Assent. Although it doesn't devolve any specific powers, the Bill gives power to the Secretary of State for Communities and Local Government to agree unique devolution deals with established city regions and combined authorities. Existing bids include the devolution of powers such as: housing, landscape-scale conservation, delivery of low-carbon energy sources and infrastructure, adaptation to the impacts of climate change, transport, and waste and water management.

MARINE

The second tranche of English marine conservation zones was announced at the beginning of 2016. This added a further 23 sites to the 27 designated to date and therefore another step towards fulfilling the commitment to a UK wide ecologically coherent network of marine protected areas. Evidence collection for the third tranche will start in February, with a public consultation likely to follow during 2017, with final designation in

2018. DEFRA have stated that there will be a total of three tranches, therefore this final tranche offers a critical opportunity to fill the remaining gaps in the network. These gaps include sites to protect mobile species such as seabirds, seals and cetaceans.

SCOTLAND

THE MAY 2016 ELECTION

With 2016 being an election year in Scotland, it is difficult to look much further ahead than May for 'new' legislative issues of interest to ecologists and conservationists. Non-governmental organisations are already hard at work seeking to influence Party manifestos. Whatever the outcome, any incoming Government is likely to face a continuing climate of austerity in public finances, and the public service reform agenda will continue. This continues to be framed by the 2011 report of the Christie Commission won wide cross-party support. It is expressed in terms of four key factors - people, prevention, partnership and performance – and involves communities in the design and delivery of services.

COMMUNITIES AND LAND REFORM

During 2016 the remaining sections of the Community Empowerment (Scotland) Act will come into force. This includes a requirement for a new Administration to consult on any changes proposed to the National Performance Framework, which, following a review by the Deputy First Minister, John Swinney, will include a strengthened set of environmental indicators.

Sutherland *et al.*, 2015 outlined the scope and intent of the Land Reform Bill, which continues its progress through the Parliament. The Scottish Government continues to view this alongside the Community Empowerment (Scotland) Act, together looking to empower communities and to generate sustainable economic growth by freeing-up land and other assets as resources for communities. The Act includes provisions to extend the right to buy land and other assets, and to provide powers for communities to lead or share the delivery of local services, to request the transfer of assets, and to participate in decision-making.

CLIMATE CHANGE

During 2016, the Scottish Government will prepare its third Report on Policies and Proposals under the Climate Change (Scotland) Act 2008, setting out how it intends to meet the 5th Carbon Budget (2028-2032) set by the UK Climate Change Committee. The Committee is currently reviewing the budget that it published in November 2015 to take account of the Paris Agreement of the COP21 to avoid, categorically, 2°C warming.

LAND USE STRATEGY AND BIODIVERSITY

In March, the Scottish Government will publish the revised Land Use Strategy, under the provisions of the Climate Change (Scotland) Act. Work will also continue on the *2020 Challenge for Scotland's Biodiversity* and the associated Route Map, as part of Scotland's contribution to meeting the Aichi Targets.

Red deer management, control of non-native invasive species, wildlife diseases and the role of protected areas are growing in prominence. The winter floods will undoubtedly have repercussions for the work of government, agencies and Local Authorities, and this could have a much wider reach into catchment scale planning and associated ecosystems' work.

ISLANDS WITHIN ISLES

Depending on the outcome of the elections, work will continue on an Islands Bill, seeking to "provide more power, equality and protection for the Islands to allow them to build a more prosperous and fairer future for their communities". A consultation closed in December 2014 in which the proposed Bill covered Island Proofing, Empowering Island Communities, National Islands Plan, Statutory Protection for the Na h-Eileanan Iar, Local Government Electoral Wards and general matters.

MARINE PROTECTED AREAS IN SCOTLAND

Scottish Government is aiming to establish all site designations and management by the end of 2016. Following the designation of 30 Marine Protected Areas in 2014, work has focused on management. Fisheries orders are expected to be established in the highest priority inshore Marine

Protected Areas and Special Areas of Conservation sites in the next few months. The rest of the year will then focus on the lower priority and offshore areas. Simultaneously four more Marine Protected Areas – for whales, dolphins, basking sharks and sand eels - will be consulted on to complete the network. It is also expected that 14 Special Protected Areas at sea for seabirds are consulted on in summer June 2016. These sites, established under European legislation, are critical in protecting Scotland's internationally important seabird populations. A stakeholder workshop will be held by Marine Scotland prior to the consultation. At this workshop reasons for designation and assessment requirements will be discussed with a broad range of stakeholders.

WALES

Wales continues to develop a legislative framework for sustainable and integrated planning and management of the country and to strengthen efforts to tackle key intergenerational challenges like climate change. Two of the three bills reported in last year's update are now landmark Acts, and various related Policy Statements, Plans, and Funds are progressing. An explanation of the various stages of Assembly Bills is available on the National Assembly for Wales (Senedd) website. The fifth election for the National Assembly will take place in May 2016, on the same day as those for Scotland and Northern Ireland.

THE WELL-BEING OF FUTURE GENERATIONS (WALES) ACT

The Act became law in April 2015 and many of the duties will come into force from April 2016. The Act strengthens existing governance arrangements for improving the well-being of Wales to ensure that present needs are met without compromising the ability of future generations to meet their own needs. It sets ambitious and long-term goals for a prosperous, resilient, healthier, more equal Wales, of vibrant culture with cohesive communities, and which is globally responsible in its actions. It sets the shared outcomes for Wales through seven Well-being Goals, to which the public service bodies listed within the Act have to maximise their contribution when delivering their functions and activities. It utilises the principles of sustainable development to define five

ways of working or principles. These ways of working set out how decisions must be taken and actions delivered, such as considering the long term, being preventative, involving people, taking integrated decisions and delivering collaboratively. This is to break down silos and ensure an outcome focus to public service delivery that improves the well-being of Wales, socially, environmentally, economically and culturally. It is linked to, and will support delivery of, the UN Sustainable Development Goals. A Welsh Government consultation on proposals for the national indicators to measure whether Wales is achieving the seven Well-being Goals described in the Act closed in January 2016.

The Act puts a duty on the listed public bodies to think more about the long-term, work better with people and communities and each other, look to prevent problems, and take a more joined-up approach to deliver across the seven Well-being Goals. To support this collaborative working, the Act also establishes statutory Public Service Boards.

ENVIRONMENT (WALES) BILL - NATIONAL NATURAL RESOURCES POLICY – AREA STATEMENTS

The Environment Bill was laid before the National Assembly in May 2015, and is currently moving into Stage 3. One of the main purposes of this Bill is to create the statutory framework for sustainable management of natural resources, including introducing an enhanced biodiversity and resilience of ecosystems duty that will apply to public authorities who exercise functions in relation to Wales. It also gives Natural Resources Wales additional duties and powers. This modern approach is designed to fundamentally rethink the way we manage our natural resources, so that it is done in a more proactive and joined-up way. It focuses on both the benefits of natural resources and ecosystems, and maintaining and enhancing the resilience of ecosystems, for current and future generations. It does not replace any existing environment legislation but provides a lens through which it should be applied. It is compatible with the framework and sustainable development principle established in the Well-being of Future Generations Act and enshrines the 12 principles of the UN Convention on Biological Diversity. It also puts in place

the legislative framework necessary to tackle climate change.

The Bill sets out a specific requirement on Natural Resources Wales to produce a State of Natural Resources Report, including its assessment on the extent to which sustainable management of natural resources is being achieved. Evidence is being collated now for the first report, which is expected to be published in autumn 2016. Both its development and its quality assurance are expected to include input from external researchers. Welsh Ministers will prepare a National Natural Resources Policy in response to the evidence set out in the report (expected Spring 2017). This will set out general and specific policies for the sustainable management of natural resources in Wales.

PLANNING (WALES) ACT

The Planning (Wales) Act came into force in Wales in July 2015. The act modernises Wales' planning process with sustainable development in its centre, ensuring that planning decisions consider social, economic and environmental aspects. It aims to deliver a planning system that is fair, resilient, and enables development, helping to create sustainable places where citizens have improved access to quality homes, jobs and infrastructure, whilst protecting the most important built and natural environments and supporting the use of the Welsh language.

The Act puts in place delivery structures, processes and procedures to make Wales' planning system fit for the 21st century. It strengthens the plan-led approach to decisions on planning applications by providing a legal framework for the preparation of a National Development Framework and Strategic Development Plans, which will sit above Local Development Plans.

NATURE RECOVERY PLAN

The Nature Recovery Plan is a striking example of collaborative strategy development that will underpin new legislative drivers in Wales under the Well Being of Future Generations (Wales) Act and the Environment (Wales) Bill when it is enacted. It is being produced by the Welsh Government in collaboration with the Wales Biodiversity Strategy Board, members of which represent both land and sea managers, Natural Resources Wales, the environmental third

sector, local authorities, and the Wales Biodiversity Partnership. “It is for everyone in Wales”.

The Nature Recovery Plan aims to address underlying causes of biodiversity loss by putting nature at the heart of Welsh decision-making, by increasing the resilience of natural systems (ecosystems), and by taking specific action for habitats and species. It sets out how Wales will deliver the commitments of the EU Biodiversity Strategy and the UN Convention on Biological Diversity to halt the decline in Welsh biodiversity by 2020 and then reverse that decline. Following Ministerial approval, the NRP is expected to be formally launched by March 2016.

WELSH GOVERNMENT NATURE FUND

The Nature Fund was not originally intended to finance projects in the long term but to be a catalyst during 2014-15 for changing the way in which the system operates. Some £5 million has been awarded and a follow-on scheme is expected to be launched in February 2016

WELSH NATIONAL MARINE PLAN – THE MARINE PLANNING SYSTEM – EVIDENCE PORTAL

The goals and principles of the Well-being of Future Generations (Wales) Act 2015 have been a key focus in the approach taken towards this Plan. These include the duty to use resources efficiently and proportionately, to maintain and enhance a biodiverse natural environment, to maximise the well-being of our communities, and encourage full participation in society. More specifically, the Plan is being guided by the current legislative framework for marine planning and Welsh Government policy. The overall Marine Planning System will support and inform marine licensing; directing decision makers and users towards consistent, evidence based conclusions. A comprehensive and shared evidence base that will support consistent, evidence-based decisions is accessible on the Welsh Government website. The Marine Planning Portal for Wales enables anyone to view maps online showing the distribution of human activities and natural resources in Welsh seas. The portal is an interactive planning tool that is intended to support the marine planning process by:

- Raising awareness and understanding of the marine data that are readily available for Welsh seas;
- Providing an understanding of the marine planning evidence base currently available;
- Providing interested parties with the opportunity to comment on the evidence base and the need or availability of further spatial evidence.

MARINE PROTECTED AREAS IN WALES

The Welsh Marine Conservation Zone process is expected to restart in 2016. Beginning with an informal consultation with stakeholders to discuss options for sites, a formal consultation is expected in Autumn 2016. Site selection will be based upon the outputs of the Welsh Government and Natural Resource Wales gap assessment that identifies gaps within the existing Welsh Marine Protected Area network. A consultation on four new Special Protected Areas for seabirds and three Special Areas of Conservation for harbour porpoise is also likely to begin in early 2016. It is hoped these sites, established under European legislation, will be designated in Autumn 2016 following the assembly elections.

POLICY ON THE STORAGE AND DISPOSAL OF HIGHER ACTIVITY RADIOACTIVE WASTE

Following the public consultation that ended in January 2015, the Welsh Government issued a revised policy in May 2015 that supports deep underground geological disposal for the storage of higher activity radioactive waste. This type of disposal is now supported in both England and Wales, but not in Scotland, where the Scottish Government’s policy instead favours the long-term management in near-surface facilities of radioactive wastes. Scotland’s approach is not prescriptive, however, recognising that it applies to waste that may not be produced for decades and for which long-term management options may not be feasible at present or have yet to be developed. In December 2015, following a further public consultation to seek views on the processes by which a Geological Disposal Facility might be sited in Wales, Welsh Government adopted a new policy on Community Engagement and Implementation Processes on Geological Disposal of

Higher Activity Radioactive Wastes. A UK Government initiated project is now developing the processes and potential options for a national facility to be sited in England or Wales. Similar projects are being undertaken across the world in countries that need to dispose of high activity radioactive waste. This nationally significant project is highly complex and sensitive. If a suitable location and a host community is identified and agreed, construction will take decades to see completion. Both Natural Resources Wales and the Environment Agency are engaged in the regulatory scrutiny of this project.

HISTORIC ENVIRONMENT (WALES) BILL

This Bill was introduced by the Deputy Minister for Culture, Sport and Tourism, in May 2015 and is currently at Stage 3. The Business Committee has remitted the Bill to the Communities, Equality and Local Government Committee. It forms part of a suite of legislation, policy, advice and guidance that makes important improvements to the existing systems for the protection and sustainable management of the Welsh historic environment. In broad terms, the Bill gives more effective protection to listed buildings and scheduled monuments, enhances existing mechanisms for the sustainable management of the historic environment, and introduces greater transparency and accountability into decisions taken on the historic environment. The Bill creates new measures that includes: creating a statutory register of Wales’ historic parks and gardens; securing a more stable future for Wales’ historic environment records and establishing an independent panel.

NORTHERN IRELAND

ENVIRONMENTAL GOVERNANCE

Environment Minister Mark H Durkan has undertaken a review of Environmental Governance, with a central focus on the creation of an Independent Environmental Protection Agency. At this time, Northern Ireland is the only region of the UK and Ireland not to have an independent agency. The consultation timing is interesting, given the fact that after the May 2016 elections, the Department of Agriculture and the Department of the Environment will be merged to form the

Department of Agriculture Environment and Rural Affairs. This poses both an opportunity in that agriculture and environment issues will be dealt with by same department and a challenge where the voice of the environment could be lost against a bigger focus on agricultural issues.

CLIMATE CHANGE

The Department of the Environment has recently released a discussion document on the merits of introducing primary legislation on Climate Change in Northern Ireland. The purpose of this discussion document is to seek views on the possible form and content of Northern Ireland climate change legislation. This would have implications for both mitigation and adaptation with emission reduction targets and obligations for renewable energy. Responses for this paper are expected at the end of January 2016 and the debate will continue after the elections in May 2016 when the priorities are decided. Alongside this the Environment Minister hosted an evening session of the Northern Ireland Assembly (Monday 30th November 2015) where members passed a motion in support of the COP21 UN Climate Change Conference by 46 to 43. This motion calling for a climate bill passed by 46 to 42 giving political weight to the potential introduction of climate legislation in the next assembly term.

MARINE CONSERVATION ZONES CONSULTATION AND IMPLEMENTATION

Marine Division is consulting on proposals for new Marine Conservation Zones in Northern Ireland. Designation powers became available in Northern Ireland under the Marine Act (2013). Since that time, Marine Division and stakeholders have been working through the scientific evidence for sites leading to four proposals as set out in the consultation. These include deep sea-bed and black guillemot at Rathlin Island, sub tidal sea grass beds in Waterfoot, Ocean Quahog in Belfast Lough and sea pens and white sea slug communities in Carlingford Lough. The consultation will close in March 2016 with implementation/designation from December 2016.

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Ecologists' lives

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Paul Adam prefaced his review of the recent book about Derek Ratcliffe (*Bulletin* 46.4, December 2015) by noting “there are relatively few biographies and histories of ecologists”. This depends on what one means by “relatively few” and perhaps more surprisingly, on who qualifies as an ecologist.

There are certainly some excellent histories of ecology, but by their nature they are more concerned with events and results than the people who made the observations and produced the results. The Society’s own chronicler, John Sheail has contributed notably to this genre with *Nature in Trust* (Blackie, 1976); *Pesticides and Nature Conservation* (OUP, 1985); *Nature Conservation in Britain* (TSO, 1998); *An Environmental History of Twentieth-Century Britain* (Palgrave; 2002); and of course his BES history, *Seventy-five Years in Ecology* (Blackwell Scientific, 1997). Other histories have been written by David Allen (*The Naturalist in Britain*. Allen Lane, 1976; *The Botanists*. St Pauls Bibliographies, 1986); David Evans (*A History of Nature Conservation in Britain*. Routledge, 1992); Bob McIntosh (*The Background of Ecology*. CUP, 1985); Peter Marren (*The New Naturalists*. Collins, 1995); Tim Sands (*Wildlife in Trust*. Elliott & Thompson, 2102); Frank Egerton (*Roots of Ecology*. U. California Press, 2012). We seem well supplied with general histories.

What about the lives of individuals? Peter Medawar averred long ago that “the lives of scientists, considered as Lives, almost always make dull reading. Academics can only seldom live lives that are spacious or exciting in a worldly sense. They need laboratories or libraries and the company of other academics. Their work is in no way made deeper or more cogent by privation, distress or worldly buffetings. Their private lives may be unhappy, strangely mixed up or comic, but not in ways that tell us anything about the nature or direction of their work.” Fieldwork is not, of course, as spatially constraining as most laboratory work, and often takes place in rather pleasant places. Ecologists may have better stories to tell than our brethren routinely confined within four walls. Are ecologists

really under-biographised? The following list is the story of some ecologists, written either by themselves or by a third person.

Who qualifies? For example, David Attenborough is not an ecologist in the sense of carrying out original research and publishing his results in a formal and often turgid format. But he has done far more to communicate the excitement and results of ecological investigation than almost anyone else. He should be “in”. The difficulty comes with those who are naturalists, but not scientists. Ronald Lockley was a pioneer field worker and wrote extensively about himself and his results. He established the first Bird Observatory in Britain, albeit because he found that paying guests were a better way of making a living than farming a small island. But as his daughter wrote of him (*Island Child*. Carreg Gwalch, 2013) “he romanticised (‘just a bit’, he would argue) in his autobiographies.” Some of his books are certainly worth reading, but they are not really ecology. Richard Mabey has written movingly about his life (*Nature Cure*. Vintage, 2008), but Mabey is also primarily a naturalist. John Muir and Mark Cocker are other naturalists who write beautifully with the eyes of an acute observer. The distinction is delicate. It means that some of those included in the following list should perhaps not be there, and some of those not there should be included.

The following lists subjects by birth date, recording an autobiography (if any), then biography(s).

Aristotle, b.384 BC: Leroi, A. *The Lagoon. How Aristotle Invented Science*. Bloomsbury, 2014. Apart from his contributions to embryology and taxonomy, Aristotle took on board zoogeography and biodiversity.

John Ray, b.1627: Raven, C.E. *John Ray*. CUP, 1942. Marks the beginning of the divorce of the mythology of herbals and bestiaries from disciplined observations, and of the ending of the extreme anthropocentrism of earlier scholars.

Gilbert White, b.1720: Mabey, R. *Gilbert White. A Biography*. Century, 1986. A naturalist, but one marked by disciplined observations and long-term series. Darwin read *Selborne* when at school, and wrote “I took pleasure in watching the habits of birds, and even made notes on the subject. In my simplicity I remember wondering why every gentleman did not become an ornithologist.”

Alexander von Humboldt, b.1769: Wulf, A. *The Invention of Nature*. John Murray, 2015. Perhaps the first ecologist in the modern sense, undertaking surveys, identifying zonation, environmental correlations, and more.

Charles Darwin, b.1809: Barlow, N. (ed.)(1958). *The Autobiography of Charles Darwin 1809-1882*. Collins [and many biographies, perhaps best the two volumes by Janet Moore; see also Jones, J.S. *Darwin’s Island*. Little Brown, 2009].

Joseph Hooker, b.1817: Huxley, L. *Life and Letters of Sir Joseph Dalton Hooker*. John Murray, 1918. Biogeographer *par excellence*, although primarily a taxonomist.

Fritz Müller, b.1822: Möller, A. *Fritz Müller – a Naturalist in Brazil*. Pocahontas Press, 2003. Discoverer of Müllerian mimicry, and pioneer tropical ecologist.

Alfred Russel Wallace, b.1823: *My Life*. Chapman & Hall (1905). Naturalist – and much more.

Henry Bates, b.1825: *The Naturalist on the River Amazons, with a memoir of the author by Edward Clodd.* John Murray, 1892. Friend and collaborator of Alfred Wallace.

Robert Lloyd Praeger, b.1865: *The Way I Went.* Methuen, 1947; Lysaght, S. *Robert Lloyd Praeger. The Life of a Naturalist.* Four Courts, 1998. Librarian and member of the original BES Council. When BES President, bewailed "the glorious days of primary survey [are] superseded... Six-inch map, binoculars and pencil [have been] replaced by instruments for measuring the amount and variation of light, heat, moisture, and by the whole battery of the chemical laboratory."

Arthur Tansley, b.1871: Ayres, P.G. *Shaping Ecology. The Life of Arthur Tansley.* Wiley-Blackwell, 2012. *Eminence grise* of ecology in Britain throughout the 20th century.

John Russell, b.1872: *The Land Called Me.* Allen & Unwin, 1956). Chemist who turned to agriculture and food production.

Victor Shelford, b.1877: Croker, R.A. Pioneer Ecologist. *The Life and Work of Victor Ernest Shelford.* Smithsonian Institution, 1991. A pioneer of animal ecology in the USA.

Aldo Leopold, b.1887: Tanner, T. *Aldo Leopold: the Man and his Legacy.* Iowa Soil Conservation, 1987; Flader, S.L *Thinking Like a Mountain.* University of Wisconsin, 1994. Conservationist turned ecologist through influence of Charles Elton.

Julian Huxley, b.1887: *Memories,* 2 volumes. Allen & Unwin, 1973. Mainly an administrator, but began his career as a founding ethologist.

Ronald Fisher, b.1890: Box, J.F. R.A. *Fisher. The Life of a Scientist.* Wiley, 1978. Too short-sighted to be a true field worker, but laid down the rules of designing and analysing experiments and enjoyed collaborating with Henry (E.B.) Ford

Charles Elton, b.1900: Crowcroft, P. *Elton's Ecologists.* Chicago UP, 1991. Effective founder of animal ecology. Sadly confused with a pop singer by current students.

Alister Hardy, b.1896: *Great Waters.* Collins, 1967; Hay, D. *God's Biologist. A Life of Alister Hardy.* DLT, 2011. Pioneer marine ecologist.

Lancelot Richdale, b.1900: Peat, N. *Seabird Genius.* Otago UP, 2011. Pioneered long-term studies of Antarctic birds

René Dubos, b.1901: Moberg, C.L. *Friend of the Good Earth.* American Society of Microbiology, 2005. Another soil chemist who turned into an ecologist and then conservationist.

Frank Fraser Darling, b.1903: Boyd, J.M. *Fraser Darling's Islands.* Edinburgh UP, 1986; *Fraser Darling in Africa.* Edinburgh UP, 1992. Probably more of a conservationist than ecologist.

Ernst Mayr, b.1904: Haffer, J. *Ornithology, Evolution, and Philosophy. The Life and Science of Ernst Mayr 1904-2005.* Springer, 2008. Expert ornithologist, although main contributions were to evolutionary ideas.

Barton Worthington, b.1905: *The Ecological Century. A Personal Appraisal.* OUP, 1983. Freshwater biologist, became international conservationist administrator.

Rachel Carson, b.1907: Lear, L. *Rachel Carson: Witness for Nature.* Houghton Mifflin, 1998; Quaratiello, A.R. *Rachel Carson. A Biography.* Greenwood, 20004; Souder, W. *On a Farther Shore: the life and legacy of Rachel Carson.* Broadway, 2103. Marine biologist turned effective (and important) populariser.

Niko Tinbergen, b.1907: Kruuk, H. *Niko's Nature. The Life of Niko Tinbergen and His Science of Animal Behaviour.* OUP, 2003. Nobel winning ethologist.

Miriam Rothschild, b. 1908: *Butterfly Cooing Like a Dove.* Doubleday, 1991. A biography as magnificently zany as its author.

Jack Kitching, b.1908: Trevor, N. *Reflections on a Summer Sea.* Century, 2001. Gloriously way out account of classical studies at Lough Ine and their begetter.

David Lack, b.1910: Anderson, T.R. *The Life of David Lack.* OUP, 2013. Schoolmaster turned professional who revolutionised ornithological ecology.

Ernest Neal, b.1911: *The Badger Man.* Providence, 1994. Another schoolmaster, who introduced mammal ecology to many.

Ted (A.E.) Smith, b.1921: *Trustees for Nature.* Wildlife Trusts, 2007. Amateur and effective founder of the wildlife trust movement.

Rosemary Lowe-McConnell, b.1921: *The Tilapia Trail.* MPM Publishing, 2006. Pioneer tropical fish biologist.

Norman Moore, b.1923: *The Bird of Time.* CUP, 1987. Gentleman ecologist who worked indefatigably for nature conservation.

John Morton Boyd, b.1925: *The Song of a Sandpiper.* Baxter, 1999. Effervescent Scotsman and conservationist.

David Attenborough, b.1926: *Life on Air.* BBC, 2002. Nothing to add.

Ed Wilson, b.1929: *Naturalist.* Shearwater, 1994. Started with ants, but has influenced many ecological fields – not least his espousal and subsequent rejection of sociobiology.

Martin Holdgate, b.1931: *Penguins and Mandarins.* Memoir Club, 2003. The title says it all.

Bryan Nelson, b.1932: *Living with Seabirds.* Edinburgh UP, 1986; *On the Rocks.* Langford, 2013. Redoubtable field worker, who studied seabirds in many places, usually accompanied by his wife.

Derek Niemann, *Birds in a Cage.* RSPB, 2012. [Not really biography, but a vivid account of boredom and bird-watching in a German prison-of-war camp involving four internees who went on to make significant contributions to ecology: John Buxton b.1912, John Barrett, b.1913, Peter Conder, b. 1919, George Waterston, b.1911]

Iain Prance, b.1937: Langmead, C. *A Passion for Plants.* Kew Publishing, 1995. Former Director of the Royal Botanic Gardens and expert on the flora of Amazonia.

I am sure this list is highly incomplete. It is really just the books known to me, with a few additions from Des Thompson, Gina Douglas and Chris Saunders (My thanks to them). But it does show that ecological biographies are not particularly rare. And some of them are a joy to read.

Amyan Macfadyen

1920-2015

Amyan Macfadyen, the distinguished and influential ecologist, honorary life member of the BES and its President 1972-74, died at his home in Sheffield on October 2015 just short of his 95th birthday.

He was born in Kent the eldest of six children born to Sir Eric Macfadyen and his wife Violet. Sir Eric was a colonial administrator in the Malayan Civil Service, rubber planter, a developer of tropical agriculture and briefly Liberal MP for Devizes. From an early age, Amyan was fascinated by science. However, his parents did not consider him to be academically inclined and he was sent to Dauntsey's School in Wiltshire noted for its inspirational biology teaching. Here he flourished and together with his contemporary and life-long friend, David Le Cren (BES Secretary 1953-64 and Director of the Freshwater Biological Association), he studied the fauna of dew ponds on the Wiltshire Downs which resulted in a paper on corixids (water beetles) published in the *Journal of Animal Ecology*. He went up to Balliol College, Oxford to read zoology with P.B. Medawar and J.Z. Young among his tutors. Graduating in 1939 at the outbreak of war, he served as a Captain in the Royal Electrical and Mechanical Engineers where among other things he repaired tanks and worked on the development of radar. From this he acquired a considerable technical knowledge especially of electronics.

The war over, he returned to Charles Elton's Bureau of Animal Population at Oxford. In 1947 he took part in the Oxford University expedition to Jan Mayen Island where he collected and studied soil invertebrates. From his collections two new species of springtails (Collembola) were described, one of which was named after him.

In 1948 he published a ground-breaking paper – *The meaning of productivity in biological systems*. This paper paved the way for the development of the branch of ecology known as Production Ecology. Attempts to compare ecosystems by comparing their productivity or energy turnover grew in interest. It led in 1967 to the International Biological Programme. Amyan served on its British National Committee. The Programme had international scope and brought together researchers on different ecosystems in different countries all of whom were comparing productivity in their ecosystems.

His book, *Animal Ecology Aims and Methods*, was also written while at the Bureau and published in 1957. Elton had declined to write this book and had passed the task on to his protégé. The book set out to show with suitable examples how ecology was practiced, the principles involved, the methods used, and the results obtained. It aimed to show that ecology was a science in its own right and that the ecologist was justified in believing that the interrelations of organisms conform to clear principles which can be discovered. It emphasised the Eltonian principle that the appropriate unit of study was the population. This book soon became a land-mark in animal ecology and a second edition appeared in 1963.

His research at the Bureau was largely concerned with soil micro-arthropods and the determination of their role in ecosystems by examining metabolism and energy turnover in their populations.

This required the development of improved techniques for the heat extraction of the animals from soil samples as well as pioneering work on improving methods for measuring metabolic rates of very small animals. Here, Amyan's interest in gadgetry and electronics came to the fore. So much so that Elton was concerned that the tangle of wires in his laboratory could have set fire to the entire Bureau.

In 1956 he left the Bureau to join Wyn Knight-Jones and Ernest Naylor in establishing a new zoology department at Swansea University College. Here he developed a Soil Ecology Research Group among the members of which were Ian Healy, Malcolm Luxton, David Coleman and myself. I well remember my first weeks spent on micro-glass blowing and soldering wires. In those days making one's own apparatus was normal practice. One afternoon while we soldering wires to make a continuously recording micro-respirometer, Amyan remarked that Elton had said that an ecologist needed to be a 'jack of all trades' and then added 'I don't think he meant this'.

In 1965 he accepted the position for two years as Guest Professor at the Jordbundsbiologisk Institut of the University of Århus in Denmark. This was based at the Mols Laboratory, Femmøller, which was at that time a leading centre for soil zoology as a result of the work of T. Weis-Fog and C. Overgaard Nielsen.

He could have succeeded to Elton's Readership at Oxford but he wisely accepted a Chair at The New University of Ulster in Coleraine, where in 1967 together with Palmer Newbould, who had also been appointed to a Chair, he began the task, for a second time, of developing a new department. Together, they developed a new integrated approach based on modules to teaching ecological science, which proved both popular and successful and gave students a unified view of plant and animal ecology. Amyan was elected Dean and subsequently Pro-Vice Chancellor of the University, duties which did not come easily to him but which he discharged with distinction. In 1980 he was elected to the Royal Irish Academy. From 1974-78 he served as President of the International Association of Ecology (INTECOL). He was Editor of *Advances in Ecological Research* from 1964 to 1992 succeeding the founding editor J.B. Cragg.

He retired in 1986 but sadly at this time his wife, Ursula Hampton, whom he had married in 1950 died. Amyan remained in Coleraine and was much involved in horticultural circles in Northern Ireland. His own extensive garden ran down a steep hillside to the River Bann. It was a plantsman's garden that not only contained a wide selection of plants but was highly productive of organic vegetables. He was closely involved in setting up the Open Gardens Scheme for Northern Ireland.

By 2005 the maintenance of such a large property had become too much, and Amyan moved to Sheffield as a near neighbour to his daughter. He and Ursula had three sons and a daughter. He continued to garden, established a wide circle of friends and was closely involved in local activities to promote sustainable living and green politics. He was a person of great humanity and kindness, and of clear principles.

Amyan had joined the BES in 1941 and is one of its longest serving members. He served on the Council and in 1963 he and Palmer Newbould organised a symposium to mark the fiftieth anniversary of the founding of the Society. He served as President 1972-73. His own Presidential Address was unusual. Most Presidents review their life's work or their subject area. Not Amyan, he took as a title '*Some thoughts on the behaviour of ecologists*'. He reflected on how ecologists went about their science and explored some of the inherent difficulties and weaknesses in ecological methodology. He concluded that specialisation was to be avoided and that one should be aware of work in fields beyond one's own. In this he very much developed themes which he had explored in his book and which owe their origin to his undergraduate teachers. His breath of interest, not just in ecology, was a lasting characteristic and one which he passed on to those whom he taught.

Nigel Webb



Affecting grassroots ecology –

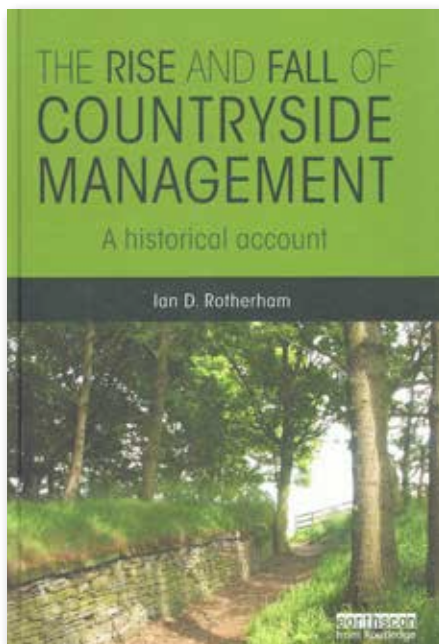
The unrecognised impacts of cuts to local authority countryside & environmental services.



Ian D. Rotherham / Sheffield Hallam University
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“This is the most definitive account of our sector’s development we have ever seen. It should be an essential read for students and all countryside managers and rangers.”

Dan Barnett, Chairman Countryside Management Association, 2015



The catastrophic effects of long-term cuts to local authority countryside services are revealed in my recent book *‘The Rise and Fall of Countryside Management – a historical account’* published by Routledge. The major achievements of these services, and the impacts of their loss, have yet to either recognised or understood; this research provides insight into a stark situation. The work is based on national reviews of countryside services carried out in 2005 and 2013, giving overviews and examples of how these remarkable services evolved during the 1960s and 1970s, and of the merger of parent agencies followed by politically-imposed austerity cuts.

They were developed to deliver environmental improvements across the UK, especially in major towns and cities, and in areas with derelict, despoiled lands, and disadvantaged, disengaged communities. These are challenges, which many areas today still face, with increasing urbanisation support is needed now more than ever before. One of the well-known initiatives to emerge from this national programme was the Groundwork Trusts, established to target public-private partnerships towards the poorest landscapes and communities. The services extended across a wide range of local government delivery from countryside and woodlands, to ecologists and archaeologists, to planning and access officers, and specialist staff in biological records centres a, museums natural history departments, and in education and extension services. Most of these have quietly slipped away and the losses and consequences have been unnoticed.

Dramatic impacts

The results of local authority countryside projects and services were truly remarkable – they transformed communities, engaged and educated local people, rejuvenated local economies, especially through leisure, tourism and outdoor sports, and provided growth-poles for inward investment. The services often worked in partnership with government agencies, the Countryside Commission and later the Countryside Agency (and their equivalents in Wales and

Scotland), with local businesses, and with conservation voluntary bodies like the Wildlife Trusts and the RSPB. These services, initiatives and projects brought about an environmental revolution to deliver restored lands, vibrant local communities, engaged, informed and empowered local people (active citizenship), and sustainable neighbourhoods. This was the heart of the ‘Big Society’ before current politicians, somewhat cynically, took up that mantra.

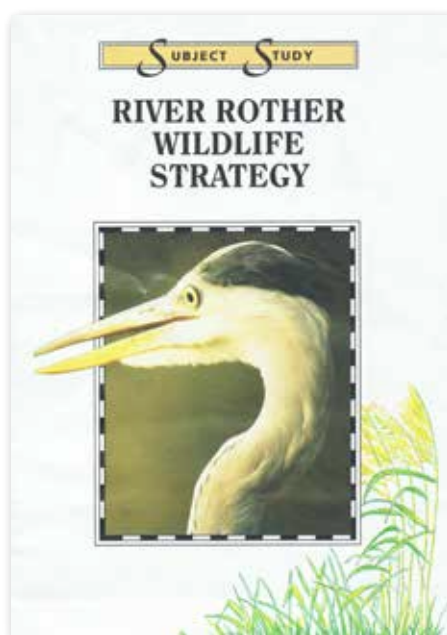
Countryside Projects drew down millions of pounds to disadvantaged areas and created self-sustaining community groups and networks. These initiatives delivered major benefits for wildlife, heritage and biodiversity, but also for health (in many cases for some of the most unhealthy communities), quality of life, education, property values and the ‘desire to reside in a locale’, and more.

Local democracy & advocacy

The initiatives delivered environmental democracy through links directly into local ward councillors in ways that other organisations simply cannot do. Furthermore, senior countryside planning officers, senior ecologists, and woodland managers provided internal advocates and advisors to elected members and senior officers in local government – loss of such services have resulted in local crises like the Sheffield street trees fiasco (see my blog for information on this: <https://ianswalkonthewildside.wordpress.com/>).

National standards & value-for-money

The countryside projects and associated services provided professionally trained staff to national standards and with continuity to deliver work on the ground and to support local communities and partnership projects. They delivered and led innovation and strategic thinking and planning with hugely important enabling roles for other organisations. Furthermore, although politicians generally assume that local government is inherently and rashly inefficient, countryside projects were excellent at maximising value of delivery for every pound invested. Leverage of around £10 for every £1 invested was reported by our research, plus huge community and volunteer added values beyond this.



River Rother Wildlife Strategy consultation supported by the Countryside Commission in the early 1990s

The consequences of the austerity-driven cuts

Services have now been cut to the bone and many axed in their entirety. Some survive and have adapted with good practice and innovation, or particularly in affluent rural, tourism areas, where need clearly links to regional economic performance. However, behind the scenes, even National Parks are barely surviving, and some may continue in name only. Government may have

stepped back from the precipice on this as some degree of ring-fenced budget was announced in recent budget statements; but cuts are still severe and worsening. At the same time, core services and skills have haemorrhaged from these services and from the supporting agencies; and nationally recognised, professional training and standards have gone.



The Downs Ranger, Eastbourne

Alternative delivery

Voluntary sector NGOs have stepped in to deliver selected aspects of countryside services but often with volunteer or part-time, temporary staff, and mostly unqualified and inexperienced workers. At the same time, many local communities are on the outside of most major voluntary organisations and local environmental democracy has been lost or at best, watered-down. Furthermore, NGO-led projects tend to target easy areas with affluent communities (the basis of their memberships) and not areas of need or impoverished communities. Furthermore, seeking sources of easy funding is not always compatible with either conservation or local people. NGOs and Lottery funding can help deliver countryside services, and whilst much formerly professional work is now done with inexperienced or even volunteer staff and little long-term continuity, they still need to be paid. Furthermore, Lottery-funded projects generally last only 2-3 years and are then replaced by new initiatives - so we move from strategic delivery to fads and fashions. Additionally, my research demonstrates much Lottery-funded work is done without proper surveys or approved management plans, and can actually and accidentally damage the resources that it seeks to conserve! Don't get me wrong, there are many excellent

projects and wonderfully dedicated and committed staff, but even these project champions are mostly lower paid and with less professional support than when they worked for local authorities.

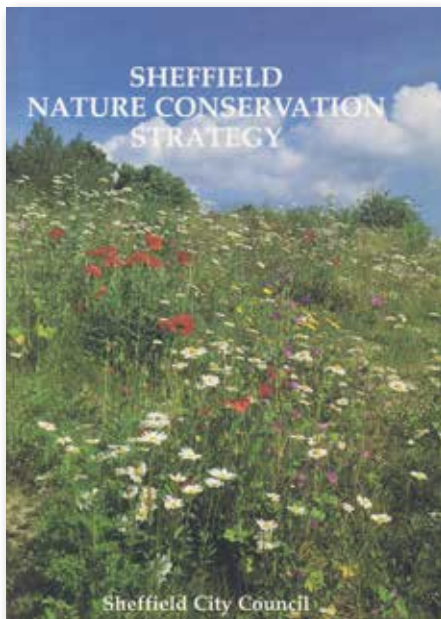
Finally, by going down the ephemeral route of NGOs and Lottery or other funding, much of the money is actually gobbled up in long-winded grant applications, advertisement and recruitment on a 3-yearly treadmill; each 3-year proposal different and distinctive from what went before. I have discussed this with senior colleagues at the Heritage Lottery and they accept the problem but seem powerless to change, and for each time-limited initiative, probably a half to two-thirds of the time is taken up by grant applications, by settling in, or by staff looking to move on to their next assignment.

Areas, communities & economies transformed

The studies demonstrate how these local government countryside services provided robust and economically successful models of transformation in both rural and urban areas. Moreover, they triggered major economic renewal and business opportunities. However, business follows opportunity and does not create it – that initial step, particularly in challenging socio-economic environments, must be through public investment.

Benefits then flow to business and local people through employment and opportunities, and to government through VAT and employment tax revenues etc. Now here is a problem at the core of the misguided austerity cuts, in that the cost of environmental investment is borne by agencies and local government, but they don't derive economic payment unless central government grants it. There's the rub for a society that does not like paying taxes, as cost and benefit are located in different organisations and sectors. The tax revenues from increased economic activity and diminished social costs achieved through countryside management need reinvesting to maintain or even increase the benefits. However, current politicians, the media, and consequently, perhaps most of the

public, want to cut agencies and local authorities to save 'wasting taxpayers' money'. However, what they don't see, and are not told about, are the hidden costs for such a society. I live near the Peak National Park and witness the huge numbers of affluent tourists and leisure visitors swarming to the area every weekend, week in, week out. Their annual expenditure in the area is massive and supports untold jobs in hospitality and retail across and around the Park. In this case, how absurd is it that the Peak Park's budget is cut year in year out to a point of near collapse? Many core services such as the regional and national education and training centre at Losehill Hall have long since gone, and rangers, ecologists, archaeologists, farm advisers, and others are not far behind. Yet the media report almost nothing of this scandalous situation.



The Sheffield Nature Conservation strategy

Today's threats

As a society facing massive environmental challenges of urbanisation, of population growth, and climate-related problems, we have to recognise that if we want the benefits

of a sustainable countryside (urban and rural), then we have to pay for it. Recent catastrophic flooding demonstrates the extreme fragility of today's environment – and yet we continue to over-use and over-exploit our limited environmental capital. This is clearly not sustainable and yet, despite all the rhetoric after major floods in 1998, in 2000, in 2007 and 2008, in 2013, and now 2015 and 2016, politicians, planners, developers and decision-makers just do not seem to understand the nature of the problems and scale of the challenges. Trapped inside their myopic short-term time-frames they are unable to plan for a genuinely sustainable, long-term future. It is worth remembering that we are merely custodians of the environment as we 'borrow' today's resources from future generations and the rest of the biosphere. Countryside managers and rangers have been at the very core of these issues and society's responses for several decades, and in many cases, they have been so effective, that the need for them today is not as apparent as it was in the 1960s post-industrial decline. Across the country, they would now be planning ways in which to combat the excesses of flood impacts and other problems at local landscape levels, but they have mostly gone.

What does this mean for ecology, and why should we care?

For ecologists and the BES perhaps, much of the above seems irrelevant in our world of Research Council-driven funding and the heady sweatshop of academic excellence. However, for me this is a little like when I heard a colleague dismissing schoolteachers and college lecturers as not 'relevant' to BES, because 'they are not academics'. My answer to this is that we were all young once. Maybe 'non-academic' teachers or lecturers inspired us to our choice of present-day career, and without them, we would all be the poorer. Additionally, of course, many of us cut our teeth as teachers and lecturers in our early careers...

Countryside managers and rangers alongside local government ecologists have delivered the practical outputs from our academic research, changing the world for the better over several decades. These people have been at that tricky interface between research and practical implementation, helping close a gulf between BES and the wider community; and for this, we should be grateful. Perhaps one of them inspired you to become an ecologist and to join the BES. These hugely dedicated and highly trained professionals have been the uncelebrated foot-soldiers of conservation since the 1960s, but most have now gone, and believe me, there will be consequences.

Two relevant publications

*Ian D. Rotherham (2015) *The Rise and Fall of Countryside Management – a historical account*. Routledge, London.

Ian D. Rotherham (2014) *Eco-history: An Introduction to Biodiversity and Conservation*. The White Horse Press, Cambridge.

Ian Rotherham is Professor of Environmental Geography, and Reader in Tourism and Environmental Change, Sheffield Hallam University. He is the author of over 500 papers, 30 or more books, and around 500 newspaper and magazine articles

*To buy this at a big discount just email i.d.rotherham@shu.ac.uk for a flier

David Walton reviews Ian Rotherham's book on p78

Ecosystem Services and Nature Conservation: Chalk and Cheese or a Match Made in Heaven?



Rob Brooker / Chair – SBS Science and Technical Group, Secretary – BES Scottish Policy Group
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December 2015 is half way to delivery of the Scottish Biodiversity Strategy 2020 Challenge. The 2020 Challenge adopted ecosystem approach thinking, with emphasis on the services and benefits that we derive from nature. However - at this mid-point to 2020 - this focus is ringing alarm bells.

As expressed in the State of Nature Scotland conference (February 2015), there are concerns that a strong focus on ecosystem services and natural capital distract from effective biodiversity conservation. But are these concerns based on evidence, an inherent dislike of services and biodiversity 'valuation', or uncertainty about biodiversity's position within ecosystem service frameworks? And is there an alternative?

To explore this in greater depth the Scottish Policy Group and the Scottish Biodiversity Strategy Science and Technical Group organised a joint workshop at the BES Annual Meeting in Edinburgh. Thoughts and concerns similar to those outlined above were being expressed throughout the Annual Meeting, and so the workshop seems timely. These concerns, and perhaps the fortuitous location of the meeting room near to the lunch point, were reflected in good workshop attendance, and we're very grateful to all of the delegates that took the time to come along and contribute.

Short and thought-provoking presentations by Paul Walton (RSPB) and Philip Boulcott (Marine Scotland) set out clearly some of the main benefits and potential drawbacks of focussing on ecosystem service delivery (see Box 1). These were followed by break-out group discussion, each group considering three questions: 1. What is the basis for current concern (e.g. data, gut instinct, or uncertainty)? 2. What is the evidence base? 3. What should we do now? Reports back from break out groups were followed by a final open discussion.

Here I try to summarise responses to these questions. Many responses could fit in multiple categories, and so (as ever) this reporting process is imperfect. However, it does help us to move towards some broader over-arching messages which might form the basis for future action.

BOX 1 – SUMMARY OF INTRODUCTORY PRESENTATIONS

The following are the main points both for and against the use of ES concepts, particularly with respect to issues of nature conservation, put forward during the introductory presentations.

Pros – the use of ES concepts...

- Allows environmental issues to be introduced when (as may currently be the case) economics dominate the decision making process,
- Frames the environmental case in policy terms, possibly increasing the likelihood of action,
- Enables a closer tie in with governmental planning, leading to policies with better environmental outcomes,
- Encourages a more holistic approach during decision making by explicitly including the multiple services arising from the environment,
- Promotes a governmental focus on the environment, for example in national plans and high level strategies.

Cons – the use of ES concepts...

- Biases decisions towards cost /benefit criteria,
- Is difficult (impossible?) with respect to evaluation of intrinsic value,
- Often implies a trade-off between different services,
- Can result in loss of species on the (economic/environmental) margins,
- Drives a loss of focus on Good Environmental Status (GES) and the three pillars of sustainable development,
- Can involve prices (determined by market forces) that do not equate to social importance,
- Has re-orientated targets and goal setting towards service delivery rather than nature conservation.

1. WHAT IS THE BASIS FOR CURRENT CONCERN?

Responses were varied, but can be corralled into three broad categories.

Implementing and testing ecosystem service orientated approaches

First there are some basic practical concerns about implementing approaches based on ecosystem services, and if you can't make the approach work then its delivery for nature conservation becomes academic. The problems include the issue of valuation, including how to weight different services (and components of biodiversity) which may be valued very differently by different stakeholders.

Cultural services seemed to be a particularly troublesome: the feeling was that much of biodiversity is somehow 'dumped' into cultural services because it needs a home – no-one's sure what service it might deliver but they certainly don't want to risk stating that it delivers none. Does this then debase the cultural service concept? This may be linked to concerns about the under-valuing of cultural services; they are hard to value and often provide physical or mental

health benefits that aren't included in assessments. Perhaps there is a need for more social scientists (maybe within NGOs) to help develop approaches to (and argue the case for) cultural services?

A final general point with implementation is that the complexity generated by attempting to balance multiple ES can lead to difficulty in making decisions, for example in choosing between alternative land management and use options.

Issues of communication

All groups raised issues of communication. Whilst it was acknowledged that ES concepts might help with communicating nature conservation issues – for example, the benefits from the 'other bits' of biodiversity not captured on rarities lists or in protected areas - there were also concerns related to communication which differed depending on the stakeholder groups or bodies involved. These focussed

on the difficulty of communicating ecosystem service concepts and the risk of miscommunication and misinterpretation. One problem of (mis) communication is the long-running issue of confusing the ecosystem approach and ecosystem services; although these are not the same there is still confusion over terminology.

Policy makers were a key stakeholder group often mentioned in discussions concerning communication. For example, it was suggested that what scientists see as the ecosystem service agenda is different to what politicians see; this may lead to a change in objectives away from the key issues for scientists or conservationists. So, although it may be a useful tool with which to engage politicians or government, it may result in a different focus as governments (obviously) have their own agenda - certain topics may 'fall off of the list' because governments 'want to see a direct benefit to people'. In addition, not all policy makers may be

equally receptive to the concept; some of the break-out groups considered it be a good tool which is easy to communicate (evidenced by its uptake by policy makers), but others suggested that some policy makers may be almost 'allergic' to ecosystem service thinking, and in these cases we would be better arguing a case for biodiversity conservation (and even 'nature'). Also, do we over-estimate politician's understanding when we are discussing biodiversity – function – service linkages? Do policy makers make the same leap as ecologists that service delivery is necessarily underpinned by biodiversity (irrespective of how well-founded the ecologist's leap actually is)? Perhaps we have a poor understanding of when and where best to use the ecosystem service terminology for communication.

In terms of broader communication, there is also the risk that the ecosystem approach is seen by policy makers or the public as agreed upon by all scientists, whilst in reality there is still a lot of discussion about it within the ecological community (related to the lack of data for testing the ecosystem service-conservation link). However, publicising this 'disagreement/discussion' could do harm, perhaps with the media/politicians focussing on the disagreement rather than understanding the concepts of ecosystem services (as with climate change). So how can we at least highlight the concerns or uncertainties without throwing the baby out with the bathwater?

Away from government, some communication issues relate to the conservation NGO sector. It was noted that the "big NGOs are not talking cultural services"; this may be because of the (actual or perceived) risk that the terminology or concept alienates members. It may be easier to generate emotional connection to the conservation of species, particularly at a local level, than to ecosystem services. At the same time, however, this might be detrimental for communicating conservation messages to policy makers (noting the above comment that not all policy makers might be equally receptive to this language). In a similar vein, NGOs might over-emphasise the rare at the expense of the average, and service delivery might redress the imbalance in focus.

Repackaging alters the contents of the package – simply by repackaging the evidence base within ES concepts we alter it. There is a risk that 'organisations' use ecosystem services for their own ends; perhaps this relates to the need for comprehensive service assessments to avoid biased selection and over-emphasising of particular services.

The ethics of focussing on ecosystem services

A lot of discussion was focused at a fundamental level – is it ethically 'right' to focus on ecosystem services, or does accepting this framing lead inevitably down a slippery slope to monetisation, and reinforcement of market-centric, neoliberal values that are generally perceived as problematic for conservation? As you would expect there were a range of views.

There was a general feeling that we are having to justify the 'value' of biodiversity more and more. Consequently we are not putting the case for inherent value, which may then be forgotten. A separate issue associated with valuation was concern that calculating service value leads to marketization which then leads to offsetting; ES assessment is therefore worrying because it is seen as a first step to off-setting. In addition, valuation may mean that biodiversity conservation gets moved further down the priority list.

Nor do we acknowledge that ecosystem services is only one concept; others exist, such as 'nature based solutions' which points us toward a win-win approach (avoiding an either-or mentality). Over-emphasis on ecosystem services might be dangerous if it turns out to be a passing fashion; we will have spent time and money rebranding to include ecosystem services without it giving us the impact for either our research or for nature conservation that we wanted/hoped for.

In general, there was concern that we're abrogating the moral responsibility – passing on the decision-making to someone else by simply providing the data for others to make a decision, when instead we should be fighting the corner of biodiversity and reinforcing an ethical approach to nature conservation.

2. WHAT IS THE EVIDENCE BASE?

In some cases, responses to this question identified gaps in the evidence with respect to understanding and implementing ecosystem services concepts, including:

- The need to better understand cultural services;
- The position of biodiversity within the services framework;
- The regulation by biodiversity of functions and then services.

These are classic questions – and big ones too - so it's not surprising that they were raised again during this discussion. There was also general agreement of a continued need for more linkages with economists and social scientists within any new research. However, (and admitting that we should probably have worded the question more tightly) what we were particularly interested in was evidence that enables us to test whether ecosystem service approaches support biodiversity conservation. To this end is there much of an evidence base, and if we need more information where might we get it?

Lack of an evidence base

There seemed to be general agreement that there is a real need for additional data on whether a focus on ecosystem services and natural capital will deliver effective biodiversity conservation. We don't have the data to test this in more than a few cases. Problems then arise in terms of prioritisation - if it's not possible to demonstrate a direct benefit from biodiversity for people, why should conservation be prioritised? However, discussions did flag up some relevant recent evidence which tried to link nature conservation and service delivery; the evidence discussed included demonstrations that very few species within certain groups (e.g. pollinators) were often involved in delivering key functions and services (see for example Kleijn et al. (2015), which focusses on the pollinator services delivered by bees), leading to the risk that the remaining species would be overlooked by a focus purely on service delivery. The flipside is service delivery by non-native species: if non-native invasive species provide services, does this outweigh their non-native status? It was also suggested, however, that perhaps it is too early for us to have developed an evidence base, and so the overall knowledge gap is not surprising.

Within the broad knowledge gap there are specific topics that might be addressed, including better understanding the linkages between biodiversity and ES delivery, and trade-offs between services. It was suggested that there is a risk that our thinking has become calcified and that we no-longer challenge the validity of this assumed link. Likewise, we don't challenge the common assumption that maintaining high biodiversity provides an insurance policy for service delivery.

A final part of our missing evidence base is related to communication. Above we point out the possible lack of understanding concerning the appropriate use of ES terminology as a communication tool. The Common Cause for Nature1 report (and related work) draws on the 'values and frames' approach within social psychology. It argues (with a decent amount of evidence) that using ES/monetary arguments for nature conservation appeals to extrinsic motivations and reinforces these values, ultimately undermining 'the cause', and providing a good example of where a better understanding of the impacts of the communication mode indicates we might want to tailor that communication.

How can we build an evidence base for assessing the biodiversity-ES link?

Several options were proposed for addressing the identified knowledge gap(s). These include data from REDD and REDD+ mechanisms/studies, and applications of the TESSA (Toolkit for Ecosystem Service Site-Based Assessment2) as these might indicate whether or when adopting these approaches will lead to benefits for biodiversity. The TESSA website states "The compilers of TESSA are collating data derived from its application for meta-analysis, to evaluate at a broad scale the contribution that information on ecosystem services can make to biodiversity conservation." Meta-analytic assessments were also raised as an option for addressing knowledge gaps. One break-out group discussed



a meta-analysis from 2009, most likely that by Rey Benayas *et al.*, which showed that “ecological restoration increased provision of biodiversity and ecosystem services by 44 and 25%, respectively. However, values of both remained lower in restored versus intact reference ecosystems. Increases in biodiversity and ecosystem service measures after restoration were positively correlated”. This study takes a global approach, something also suggested in the break-out discussions (i.e. comparing conservation benefit – ES linkages at a global scale). Are sufficient data already available to allow similar meta-analyses?

An intriguing question was raised concerning future value projection: if we make choices now based on service levels/values, will these be maintained through time (i.e. will we value things in the same way in 2050)? Perhaps this issue might be addressed by back-casting, e.g. assessing historical service provision and the conservation management decisions that might have been made previously if we’d had ecosystem service assessments – would the outcomes of these decisions now be seen as “good”?

Differences in application of the approach in terrestrial and marine environments were also discussed, including, for example, the existence of different end users. However, in terms of addressing knowledge gaps it was noted that for the marine environment there is already a framework to work with (perhaps referring to the Marine Ecosystem Service Partnership³, which focusses in particular on valuation studies), although it was also noted that it is difficult to link the marine environment with health and wellbeing concepts.



3. WHAT CAN BE DONE ABOUT IT?

Having assessed the causes for current concern, and the quality of the evidence base against which these might be tested, we then considered what might be done to deal with these problems. Suggestions again fall into the two general categories of research and communication although, as mentioned above, these are not necessarily mutually exclusive.

More research

Suggestions for further research, in addition to those outlined above, included:

- Needing to maintain a broad understanding of the ecosystem approach framework;
- Working holistically across larger spatial scales and range of services to better understand balances and trade-offs between services across space and time;
- Comparative studies of biodiversity trends (nature conservation success) in areas +/- the application of an ecosystem approach or ecosystem service thinking;
- Exit studies – i.e. following up the impacts on nature conservation of policy decisions based on ES assessments;
- Scientific monitoring (e.g. for REDD+ projects) that allows assessment of the impacts of an ecosystem approach on biodiversity in the long-term, whether or not this approach involves payment for ecosystem services.

Communication

Discussions focussing on communication indicated a general acceptance that in some cases ecosystem service concepts might be useful tools for communication, and that cultural service concepts in particular had “emotional traction”. However, there were also some key points proposed with respect to redressing what was seen as a current imbalance in the way biodiversity conservation and ecosystem service concepts are communicated, including:

- Acknowledging up front that we want to conserve biodiversity, i.e. we should not be scared of saying it, and should get some passion back into the debate;
- Having as a starting point the statutory obligations as a baseline, with ecosystem service delivery and concepts included ‘on top’ of that baseline;
- The need not to subsume biodiversity within ecosystem service concepts, but to mention biodiversity and nature conservation explicitly (avoiding the assumption that conservation leads to service delivery);
- The possibility of not being bound by ecosystem service frameworks, or feeling that there is no alternative: the ecosystem approach, and within that ecosystem services, should be the tool and not the master;
- Make use of nature and biodiversity as an opportunity to tap into what really interests the people to whom we’re communicating.

The extent to which these proposals could be pursued may vary between researchers. For example, would stating that we “want to conserve biodiversity” de-value the weight given to what should be un-biased scientific opinion? However, it seems to be clear that overall more communication is required, and we certainly need to better understand when and where to use different terminology. Such understanding would help us to address the commonly-raised challenge of mainstreaming biodiversity conservation and the desire to get the biodiversity conservation message across multiple policy sectors.

Conclusions

A favourite pastime for researchers is arguing about definitions. With respect to the study of plant competition, John Harper (1961) noted that defining competition “might indeed be seen as a direct continuation of the mediaeval tradition of rhetoric”. Noting the risk, here we have not been overly prescriptive about definitions. Whether the points outlined above relate to the wider ecosystem approach or specifically to ecosystem services is something that the reader can pick apart. However, we would suggest that *within the workshop* we were (more-or-less) all talking about the same things.

What the workshop demonstrated was the complexity of the issue. It indicated that we have considerable knowledge gaps relating to the specific issue of whether a focus on ecosystem services will deliver for nature conservation. It’s clear that we need to continue to pull together relevant datasets to address this question in a wider range of ecosystems and to assess the issue systematically (through a systematic review, perhaps?). But beyond a lack of scientific knowledge, we also have some major challenges with respect to communication. Notably we seem to have moved on from the issue of simply trying to communicate what ecosystem services are, to a more complex problem of understanding when and where different communication approaches are most effective or relevant.

Within this article I haven’t tried to answer the questions posed during the workshop. Perhaps many answers have already been provided - for example in the recent papers by Mace *et al.* (2012) and Silvertown (2015) – or activities are underway to provide them. However, even if this is the case then this clearly has not been communicated, as indicated by the consistent messages of concern raised across all four workshop break-out groups.

Finally, we detected general enthusiasm within the workshop for going back to discussing nature conservation. A desire to please, or funding pragmatism, has

perhaps encouraged us to adopt ES terminology whilst not at the same time mentioning nature; we need to rebalance things. If not a groundswell, perhaps we are detecting a gentle susurrant to this effect within the workshop, the Annual Meeting, and the wider ecological community.

Overall, it has certainly given us food for thought, and flagged some interesting topics – such as the issue of horses for courses – that can now be taken up and explored further, for example through the BES’ Policy work.

Finally, thanks again to all workshop participants, in particular Paul and Philip for such stimulating introductory talks, to Alison Hester for chairing us so efficiently, and to those of you that came along to contribute your thoughts and opinions.

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Ecosystem Health – needing another approach?



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In the June 2015 Bulletin John Wiens offered his thoughts on the use and misuse of the term 'Ecosystem Health'. A response from Tim Burt and colleagues followed in the December issue, and here consultant ecologist Neil Humphries joins the discussion.

Language and Communication

John Wiens¹ essay on the use of language to communicate the health of ecosystems (not necessarily confined to the EU's Natura 2000 types²) has seemingly reawakened³ a long and supposedly settled debate on the setting of methods and criteria for determining the health of those in the UK. He candidly and pragmatically tells us in his last paragraph that the usage of the term *health* is reasonably a matter of *condition and the need for conservation or management* where ecosystems can be *measured and managed* and that *condition* is a *desired* state or states that are *valued*.

A Call to Define the Indefinable

In response to John Wiens' article, Tim Burt and colleagues³ suggest an approach based on three criteria of *Condition, Process and Durability* as a possible means of defining the health of upland landscapes in order to meet national and EU targets. The suggested framework is said to be exclusive of social values and intrinsic appeal, and restricted to ways in measuring the functional health of upland ecosystems. In doing so, it is not clear whether the established frameworks^{4, 5, 6} currently used to report ecosystem health, including uplands, at national and/or EU levels are possibly no longer valid and/or that upland ecosystems are more indefinable than others. Of the three existing frameworks, the Common Standards Monitoring⁶ methodology might have been considered more fully with that proposed³. There are also other forms of surveillance and indices of health,

such as the remote sensing of land use and condition as the integrity of resources, thereby widening the definition of the indefinable.



The CSM methodology has a wide application and was used to assess the health of restored peatland, heathland and grassland ecosystems on a surface mine in Wales¹⁵

Existing Methodology

Taking a narrower vegetation stand point, for the past twenty years we have had the well understood Common Standards Monitoring⁶ (CSM) methodology. This has successfully been used for monitoring, assessing and reporting of the biological and biophysical condition of our important terrestrial, aquatic and marine ecosystems, as well as some faunal groups, which enables effective conservation and management actions to be planned and implemented^{6, 7, 8}. The CSM methodology is accepted by UK's conservation practitioners and governmental agencies. It might reasonably be assumed to be fit-for-purpose as it has just been reviewed and updated⁹. Importantly, it has allowed the UK to report consistently on its national and international obligations¹⁰ in respect

of the health (condition) our natural heritage and capital, and in a form that is compatible at a European scale¹¹.

As I understand, the three criteria selected from Ratcliffe¹² were not intended at the time to be indicators of ecosystem health in the context of John Wiens' narrative. I recollect that Terry Rowell⁷ in his rationale and synthesis of CSM referring at some point to the Ratcliffe value criteria, but Terry's condition-based methodology (also focused on composition, function and process) enabled ecosystem health to be unambiguously defined (Favourable and Unfavourable), measurable and pragmatic measures to be implemented.

How different the suggested new approach in Table 12 is to the established CSM methodology⁶ is questionable. Even for upland habitats, the established CSM¹³ already caters for their proposed complementary and diversity constituents of Condition by reference to and metrics for vegetation community types (Phase I Habitats and NVC or other phyto-sociological systems), genetic pools and indicators of local distribution. For *Process*, as function and process, the CSM uses criteria and metrics such as canopy cover and age-class (including dead plant material). In terms of *Durability* (resistance and resilience), it is covered by the CSM criteria and metrics of regeneration potential, genetic pools and exotic/weed species. In essence, there appears to be little difference between their³ defined indefinable health criteria and those of the established and defined CSM system^{6, 7}.

Clarification is needed on how any suggested new approach is to be aligned with CSM as the means of the UK Government reporting to the European Commission. Is it to be a parallel or replacement evaluation? Perhaps the focus of new effort should be one of refinement of the CSM methodology rather than replacement where criteria, metrics and definitions of health (condition) could be supplemented or extended to soil carbon, climate change, exceedance levels etc.. If there are inadequacies in the CSM methodology or recent findings have extended our understanding or that scientific values have changed, then is it not appropriate and more effective in resource allocation that the current methodology is developed? A good example is the recent suggestion of ways for developing the long established Ecosystem Function Analysis methodology used in Australia and elsewhere to assess ecosystem condition on rehabilitated mine sites¹⁴, rather than attempting to re-invent the wheel¹⁵.



Bog-pools (M19) and mire (M25) assessed to be in a Favourable Condition using CSM15

Something to Develop?

On the other hand, Tim Burt and colleagues³ tell us that the focus on biodiversity and the biophysical health is about to be widened by recent planned policy initiatives to introduce poverty, well-being and other societal and economic dimensions, and human needs in to the mix as ecosystem services and sustainability. In this respect, I am mindful of the considerable contributions of Ian Rotherham and colleagues on socio-economic histories and human value of our peatland and woodland ecosystems.

These are not values currently embedded in either the Ratcliffe¹² criteria for assessing conservation value or the CSM methodology for determining ecosystem condition and management inputs, nor are they addressed in the suggested new framework³.

So is it the socio-economic dimension that needs a framework and methodology developing for the UK? But, isn't this what the UK National Ecosystem Assessment¹⁶ (NEA) provides and where ecosystem services might contribute towards a definition of ecosystem health^{17, 18}. Was this the direction Tim and colleagues³ were subconsciously taking us? Perhaps an outcome from the two thought provoking essays could be the formation a BES Ecosystem Socio-Economics Special Interest Group. That I will happily leave to others.



Heathland (H12) assessed to be in a Favourable Condition using CSM15

Dr Neil Humphries is a long standing member of BES, a Chartered Biologist and Chartered Soil Scientist involved in the rehabilitation of ecosystems following disturbance by mining. In 2013 he received the American Society of Mining Reclamation's prestigious William T Plass Award for his contribution. He carried out reviews of the CSM methodology and ability to report on ecosystem condition for the Joint Nature Conservation Committee and English Nature, and currently its application in the post mining context.

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Science, policy and practice: lessons from Paris and Edinburgh

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December was a momentous month for those of us who work on climate change. In Paris, 196 nations agreed to international action to limit emissions to less than 2 °C and recognised 1.5 °C as an aspirational limit to aim for to avoid the most dangerous impacts.

However, turning good intentions into practice is hard, even if those intentions are set out in binding international agreements. The Paris agreement is not the end point; it is the start. That's not to diminish the achievement: it was a masterclass in international diplomacy which has delivered a breakthrough and it is an essential step that is long overdue. But it hasn't yet resulted in any actual emissions reductions and that will require even more work by a huge range of different people.

Meanwhile in Edinburgh in December, 30 or so ecologists debated the BES catering policy, including whether it made sense to deny conference-goers the opportunity to eat beef and lamb in the interests of limiting methane emissions by ruminants. Quite a contrast to the high level statesmanship of the Paris negotiations! But it is an example of the sort of issue that we have to grapple with to really tackle climate change and the level of detail this will require. It also provides a microcosm of the challenges of turning scientific knowledge into real benefit for society and the planet. We know with a high degree of confidence that methane is a potent greenhouse gas and that ruminant animals produce it. That's the easy bit. Once one starts to work through how a policy can be put into practice a whole raft of other issues start to appear. For a start milk and cheese are produced by the same

ruminant species that provides beef, so to be properly evidence-based we need to consider those in the mix alongside meat. Even more profoundly much of the western part of Britain is well suited to growing grass, which people cannot eat directly: isn't grazing animals a sensible land use strategy in these areas? We also deliberately graze some habitats as part of conservation management – sheep and cattle are essential to the survival of some species in Britain – isn't that something we want to encourage? And on top of all this, we need a policy that is practical for caterers to implement and commands the respect of members. One long-standing and well-respected member of the Society went so far as to boycott the annual meeting in response to the new catering policy (<https://simonleather.wordpress.com/2015/12/17/meeating-issues-with-the-british-ecological-society-why-i-boycotted-the-2015-annual-meeting/>).

Policy sets a direction, but practical action is needed to make a difference and this in turn requires expertise, knowledge and resources. In most cases, there will also be some trial and error, and feedback mechanisms to revise and improve policy are essential: that's perhaps the stage the BES catering policy is at. Policy, practice and science are all necessary parts of delivering solutions to problems, whether at the global scale or within the BES. I'll resist the temptation

to prescribe a new BES catering policy. But one thing that is worth noting is that the whole UN Framework Convention on Climate Change process for reducing emissions is predicated on monitoring emissions. The Paris talks would never even have happened without knowledge of rising greenhouse gas emissions and setting goals for their reduction would be nonsense without it. I'd suggest a good place for the BES to start its journey towards reducing emissions is by measuring, or at least estimating, our current emissions. We could then set targets for reducing them and monitor our progress. That's an evidence based approach. Beyond setting targets however we'll need creativity and persistence to achieve our goals – just as the UNFCCC will.

Editor's note: Mike Morecroft submitted this piece unaware that Simon Leather has asked if we would reproduce the core of his objection to the new BES catering policy, which follows in the next article.

Mee(a)ting Issues with the British Ecological Society – Why I boycotted the 2015 Annual Meeting

Simon Leather / Harper Adams University

@Entoprof

Normally at this time of year I would be recovering from the enjoyable after-effects of the British Ecological Society (BES) annual meeting; too much talking, too much eating, too much coffee, too much beer and wine and not enough sleep.

This year however, I denied myself the traditional end to the academic year as I decided to boycott the meeting. As someone who has, since 1977, missed only a handful of meetings, this was big personal sacrifice, but I felt very strongly that I needed to make a protest: hence the one person boycott! So what prompted this action?

I was fully intending on attending the meeting in Edinburgh. Having spent ten years living in Peebles and working at the Forest Research Station at Roslin, Edinburgh is full of pleasant memories for me. I logged on to the site to register for the meeting and was stunned and annoyed to come across this statement:

Food Policy *In an effort to help reduce greenhouse gas emissions, the BES has decided to remove all farmed ruminant meat from its catering. Ruminants and their farming are key producers of methane. We run several large events a year, serving thousands of meals to participants and are keenly aware of the impact of human activity on natural systems. We will continue to cater for non-vegetarians, but will remove farmed ruminant meat from menus and will also only serve MSC certified fish. We take seriously our commitment to greening our events and hope you understand and support our decision. For more information on the background to this decision, read the paper by Ripple, W.J. et al: Ruminants, climate change and climate policy. - See more at: http://www.britishecologicalsociety.org/events/current_future_meetings/2016-annual-symposium/registration/#sthash.WioDx4IA.dpuf*

Two things about this statement really got my goat (ruminant pun intended) – first, the non-democratic nature of this decision, the membership were never polled about this and second, the patronising and insulting statement, “We will continue to cater for non-vegetarians” This is tantamount to the comments by the vegan Shadow Minister for Agriculture, Kerry McCarthy who suggested that meat eaters should be treated like smokers. As ecologists, and presumably all scientists with some biological background, the people running the BES know that we are omnivores by nature, look at our dentition and gut structure folks!

I would also point out that the UK dairy herd is bigger (1.9 million) than the beef herd (1.5 million) and that you can't have one without the other. The UK is the world's tenth largest producer of milk (2.2%). So why not ban all dairy products and make delegates drink their tea and coffee black or with a vegetable based milk substitute? What about ruminant derived products? Whilst we are about it, how about penalizing delegates wearing woolly jumpers, leather shoes, leather belts and carrying their cash in leather wallets, purses and handbags?

I raised my concerns via Twitter and Facebook and did have a minor discussion with Andrew Beckerman, the outgoing Meetings Secretary, but to no real satisfaction. I pointed out that why should people who enjoy beef and lamb be singled out, when

those BES members who fly and drive everywhere not be targeted? I made the decision many years ago that I would not fly if at all possible, basically unless work dictated it, and as a result have flown (including return flights) only six times in the last twenty years. I recycle obsessively and my foreign travel is by train, ferry or Skype! So yes, tropical field work and international conferences on the other side of the world are a thing of the past, but I see no need for flying visits by western ecologists to indulge in brief exotic field work. Either go for the duration of the study or stay at home and discover the wonders of your own back yard, or rather than be an ecological imperialist, trust the local scientists to collect the data for you to number crunch. Or if you feel that your presence is indispensable then go by ship and take the opportunity to write and read papers on the way ☺

Although Ripple et al (2014) make a convincing case for slowing down greenhouse gas emissions by reducing ruminant production they do so from the highly biased minority viewpoint of those with “ecological privilege” (Nevens, 2014). They thus singularly fail to address the equally effective and more attainable actions that can be made by targeting travel, especially by air and private motoring (Girod *et al.*, 2012). There are over 100,000 flights a day and air travel is set to double by the year 2050 despite the fact that fossil fuels (oil at any rate) will run out in about 40-50 years (the former estimate according to the Institute of

Mechanical Engineers, the latter by BP). One might ask then why do we have politicians wanting to build more airports and runways? As an ecologist this does not compute, but then looking at how many of my colleagues boast about their cheap flights compared with my more expensive rail trips, perhaps it does. As Nevins (2014) points out, a privileged few enjoy the ability to travel quickly and comfortably (although I would dispute the comfortably) around the world to conferences and field sites and this has a very significant effect on carbon emissions. Nevins calculated the carbon emissions generated by the Association of American Geographers to attend their 2011 meeting in Seattle as 5,352 metric tons, pointing out that the annual total per capita carbon emissions from energy consumption in Haiti is 210 kg and for Bangladesh 290 kg, i.e. the air travel alone to and from the Seattle conference per delegate was more about three times the total annual emissions of an average Haitian or Bangladeshi which by any standard is unbalanced and profligate. Whilst other travel forms are amenable to very large future reductions in carbon emissions by improvements in technology, the evidence is that air travel will prove intractable and that the only feasible way forward is to drastically reduce flights made (Girod *et al.*, 2012, 2013). Given that only 2-3% of the world's population flies internationally

(Peeters *et al.*, 2006), this would seem a realistic aim and cause less harm to livelihoods and ways of life of people in less developed nations (note that 31 % of the global cattle herd are found in India, compared with 0.35% in the UK – Table 1). Unfortunately, although many of this wealthy airborne 2-3% are keen to embrace 'light green habits' such as home recycling and composting, they are the most likely to indulge in long distance flights and not want to be denied the 'privilege' of flying (Barr *et al.*, 2010).

I don't think that it is in the BES's remit to impose life style choices on its membership by banning particular food groups. If the BES directorate want to make an environmental point using food as an example, then perhaps they should concentrate on food miles instead and serve locally sourced meat and seasonal vegetables. Delegates at the Edinburgh meeting could then have enjoyed the excellent Scottish beef that is available served with 'tatties and neeps' and perhaps also have experienced that particularly Scottish delicacy, the Scotch pie ☺



I do hope that the BES will reconsider their food policy as I would hate to have to miss any of the many excellent meetings scheduled for 2016.

SOME MEATY FACTS FOR THE BRITISH ECOLOGICAL SOCIETY TO RUMINATE UPON.



The global cattle herd peaked in 1990 and has been declining, albeit gradually, ever since.

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TABLE 1. NUMBER OF CATTLE IN THE WORLD.

World: 964,640,000

Rank

	Country	Head	% of Total
1	India	301,100,000	31.21%
2	Brazil	213,035,000	22.08%
3	China	100,550,000	10.42%
4	United States	89,800,000	9.31%
5	European Union	88,150,000	9.14%
6	Argentina	51,895,000	5.38%
7	Australia	27,600,000	2.86%
8	Russia	19,132,000	1.98%
9	Mexico	17,120,000	1.77%
10	Uruguay	12,108,000	1.26%
11	Canada	11,915,000	1.24%
12	New Zealand	9,938,000	1.03%
13	Egypt	6,485,000	0.67%
14	Ukraine	4,408,000	0.46%
15	Belarus	4,364,000	0.45%
16	Japan	3,850,000	0.40%
17	United Kingdom	3,400,000	0.35%

There are approximately 1 billion sheep in the world, of which 187,000,000 (18%) are in China; in the UK there are 22,900,000. There are 674,000,000 goats in the world, most of which are in the tropics.

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A lot of the work that CIEEM does is about raising standards of professional practice, providing training and knowledge-sharing events, publishing guidance and contributing evidence to policy-makers.



SHARING EVIDENCE ON EFFECTIVE MITIGATION

During 2015 we consulted our members on how we might improve the sharing of evidence on the effectiveness of protected habitats and species mitigation work undertaken as a result of development. Anecdotal evidence suggests that information on what works, and what doesn't, is not being widely shared, leading to wasted time, effort and money on mitigation activities with little chance of success.

The results of the survey certainly seemed to support this view. CIEEM's Professional Standards Committee subsequently decided to investigate whether there are existing information-sharing tools available that would do the job if they were better utilised by the profession. The Collaboration on Environmental Evidence, the Environmental Evaluators network and ResearchGate were all felt to have potential but the Conservation Evidence initiative, led by Professor Bill Sutherland and his team in Cambridge, was felt to offer the most promise in terms of users both accessing the existing information and being able to contribute short summaries of comparative research studies undertaken as part of their mitigation work. An article by the Conservation Evidence team published in the March issue of *In Practice* has kick-started discussions amongst the membership as to how we can best contribute.

Also published in the same issue of *In Practice* is an article from the ACCE (Adapting to the Challenges of a Changing Environment) doctoral training partnership. This paper highlights the importance of the profession engaging with the research community in identifying appropriate research questions and supporting the academic community

to undertake relevant research and make the results widely available amongst the practitioner community. There are so many potentially fruitful areas of research that would have significant benefits to all of us trying to manage vulnerable habitats and species effectively.

We must get better at working together to plan high priority applied ecological research and share the results. Surely there is a role for CIEEM and BES to work collaboratively here. A joint workshop to identify research topics and secure practitioner engagement? Collaborative funding approaches? A joint publication?

A REVISED COMPETENCY FRAMEWORK

In January this year we published a revised version of our Competency Framework which identifies the range of competencies appropriate to CIEEM members (and potential members) and sets out the expectations of competence at different levels of experience (and membership grade).

The main changes are in the competencies themselves which have been revised to more explicitly reflect the skills and experience of our members working in academia, land management, statutory agencies and local authorities. For example, in addition to competencies on scientific method and teaching, our academic members can now identify competencies in developing programmes of learning and sharing of research findings.

CIEEM members use the Competency Framework to plan and record their continuing professional development (CPD) activities, upgrade their membership and to apply for Chartered Ecologist registration.

NEW GUIDANCE

We have been very busy over the past few months publishing new guidance for professionals and for homeowners. The second edition of CIEEM's Guidelines on Ecological Impact Assessment: Terrestrial, Freshwater and Coastal was published at the beginning of the year and formed the basis of our very popular Spring Conference in London in March. Since then we have published guidance for homeowners on how to engage an ecological consultant as part of a development project. We have also produced new professional guidance for employers, Guidelines on Providing High Quality Work Experience Opportunities, as part of our efforts to help students and others seeking to enter the profession get that all-important quality practical experience to improve employability.

Changes to Defra's approach to allowing Natural England to produce ecological and environmental practitioner guidance has created a need and an opportunity for other stakeholder organisations to produce guidance going forward. Principles of Good Guidance has been published as a guide to how CIEEM will approach this task and we hope that it is also useful to others.

Finally, we have produced Guidelines for Accessing and Using Biodiversity Data to support decision-making in the planning process. As well as a useful reminder to ecological consultants we hope this document, produced in partnership with the Association of Local Environmental Record Centres (ALERC) and a range of other environmental organisations, will be of use to local authority planners and developers.

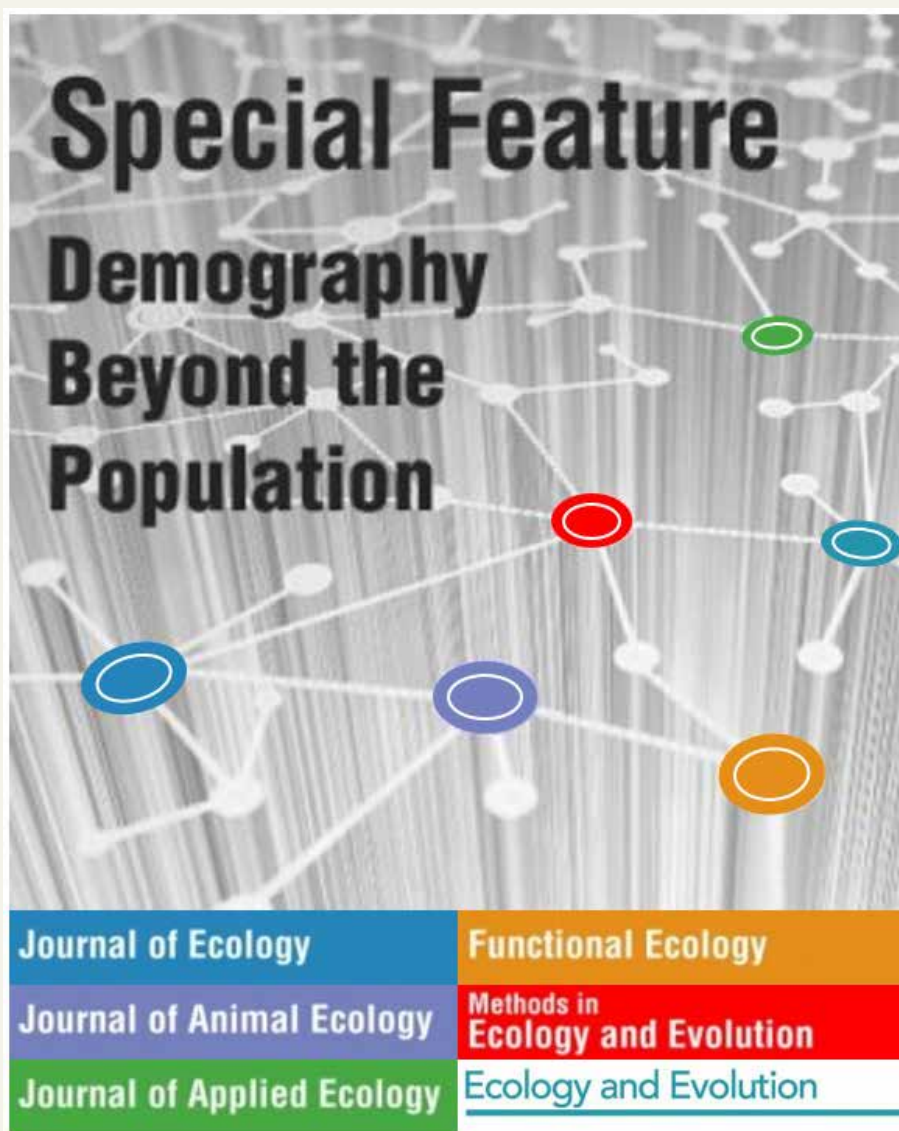
PUBLISHING NEWS



In February the British Ecological Society published an innovative special feature entitled *Demography Beyond the Population*. This Special Feature was a collaborative effort including articles in all five BES journals and our partner journal, *Ecology and Evolution*. This is the first time such a large collaboration has been attempted by the BES. This cross-journal approach has allowed us to highlight the strongly interdisciplinary nature of the field of demography to its fullest potential.

This cross-journal Special Feature is based on a British Ecological Society Symposium of the same name that was held in March 2015. We hope that this exciting collection of articles will show both demographers and non-demographers alike that there is much to be gained by linking demography to other disciplines and across different scales in ecology and evolution. All the articles in the Special Feature can be found here: http://wileyonlinelibrary.com/BES_demography. If you are interesting in learning more about these articles you can also find a link to a recent webinar on the subject chaired by two of the Special Feature's Guest Editors.

All articles published in BES journals are free to access for members.



Special Feature
Demography Beyond the Population

Journal of Ecology	Functional Ecology
Journal of Animal Ecology	Methods in Ecology and Evolution
Journal of Applied Ecology	Ecology and Evolution

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Data Archiving

In January 2014 the British Ecological Society's journals began mandating data archiving to all accepted authors. For more information about this visit the British Ecological Society's website. *The Journal of Ecology's* Executive Editor, David Gibson, reviews the implementation of this mandate in our annual 'news' editorial in issue 104:1 (<http://onlinelibrary.wiley.com/doi/10.1111/jec.2016.104.issue-1/issuetoc>).

Commentaries

Twelve months ago the *Journal* launched a new paper type: commentaries. Our third commentary paper is published in issue 104:1 by Mark D. Dixon and John C. Stella. The commentary focuses on 'Temporal variability in hydrology modifies the influence of geomorphology on wetland distribution along a desert stream' by Dong *et al.*

The whole of issue 104:1 will be freely available for the duration of 2016.

Biological Flora of the British Isles

This year the Biological Flora of the British Isles series is celebrating its 75th birthday. The Editor of this series, Anthony Davy, will be writing a piece for the *Bulletin* to celebrate the publication of 75 years of British species accounts in *Journal of Ecology*. We will also be publishing a Virtual Issue, which will be available on the *Journal of Ecology* homepage (<http://www.journalofecology.org/view/0/index.html>) in the summer.

Journal of Ecology Blog Editor

Towards the end of 2015 Pierre Mariotte (currently The University of Sydney) joined the *Journal of Ecology* editorial team to supervise the *Journal of Ecology* blog (<https://jecologyblog.wordpress.com/>). Our blog is now in its fourth year after being launched in 2012 to coincide with *Journal of Ecology's* centenary volume. For all the latest news relating to

Journal of Ecology visit our blog or follow us on Twitter (@Jecology) and Facebook.

Journal of Ecology at #BES2015

As always the *Journal of Ecology* editorial team had a brilliant time at the BES Annual Meeting back in December. A number of conference summaries are available on the *Journal of Ecology* blog (<https://jecologyblog.wordpress.com/>).

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Journal of Animal Ecology



www.journalofanimalecology.org
@AnimalEcology

Animal Ecology highlights

Bugs collected on a rooftop for 18 years reveal climate change effects

Local insect community turnover due to climate change has been revealed through an 18-year volunteer project occurring on the roof of the Natural History Museum of Denmark in Copenhagen. The research suggests that specialised species are more sensitive to climate change. 1,543 different species of moths and beetles and more than 250,000 individuals have been registered on the single urban rooftop in Copenhagen during 18 years of monitoring – that corresponds to 42 % of all moths and 12 % of all beetle species in Denmark. Interestingly, the insect community has changed significantly during that period. The results were published in issue 85:1 of the *Journal* by Thomsen *et al* and researchers from the Center for Geogenetics and the Center for Macroecology, Evolution and Climate at the Natural History Museum of Denmark at the University of Copenhagen.

Philip Francis Thomsen, lead author on the paper, said; "As temperature increases we see a corresponding change in the insect community, specifically for the resource specialists – the insects that feed on only one species of plant. Earlier studies have confirmed that specialist species also respond rapidly to destruction of their habitats, so we are dealing with a very sensitive group of animals".

The nut weevil *Curculio nucum* is an example of a resource specialist, feeding only on hazel. It lives further north in Europe than its close relative the acorn weevil *Curculio glandium*, which feeds only on acorns. While the nut weevil was only registered in the first half of the study, the acorn weevil only appeared in the last years of the study, suggesting that specialist species are moving northwards in Europe. Using the entire dataset, the study was able to confirm this trend and highlights the increased pressure on the most northern species, which may be 'squeezed out' of their range in the long term.



Horse-chestnut leaf miner (*Cameraria ohridella*) and acorn weevil (*Curculio glandium*) Photo credit: Jens Kirkeby (top) and Klaus Bek Nielsen (bottom).

COMADRE: Uniform data for Biodemography

COMADRE: a global database of animal demography was recently published in the *Journal*. The paper introduces the COMADRE Open Access database which is run by the Max Planck Institute for Demographic Research (MPIDR). The database contains demographic information on an unprecedented variety and number of animal species including information on animal migration, the distribution of species, the distribution of genes, and the distribution of species of conservation concern. "A database that collects such detailed demographic

information on animal species has been missing so far” says lead author Roberto Salguero-Gómez. The database is financed and supported by the MPIDR and is an addition to the existing database COMPADRE, that contains demographic information on hundreds of plant species.

Associate Editors

We are pleased to welcome Laura Prugh (University of Washington, USA), Sonya Clegg (University of Oxford, UK) and Kate Parr (University of Liverpool, UK) to the Editorial Board. Laura studies the dynamics of wildlife populations and communities, with a particular interest in facilitation, trophic interactions, and indirect effects. Research in the Prugh lab uses a combination of intensive fieldwork, modelling techniques, non-invasive genotyping, meta-analyses, and interdisciplinary approaches to study the response of wildlife communities to global change. Her current field-based research focuses on carnivore communities in Alaska and arid grasslands in California. Sonya seeks to understand the evolutionary processes that promote divergence in wild vertebrate systems by studying divergence in morphological, ecological, behavioural and genetic attributes. Sonya focuses on island bird populations, particularly those in the southwest Pacific region to examine topics including rates of phenotypic evolution, the dynamics of natural selection, the importance of disease pressures e.g. avian malaria, shifts in dispersal capacity and island biogeography patterns. Kate is a community ecologist with a particular interest in ants and termites. She studies how biotic systems are structured, maintained and how they respond to disturbances. Her current research in the tropics is exploring how diversity changes along gradients, and investigating the role of dominant social insects in ecosystem structure and functioning.

Simon Hoggart
Assistant Editor
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Our latest issue includes a new Review: *Macrophysiology – progress and prospects* by Steven Chown and Kevin Gaston. This Review gives an overview of macrophysiology’s conceptual foundations, methodological approaches and insights and the challenges the field is facing currently, and is a useful introduction to anyone new to the topic.



We published our first Special Feature of 2016 in issue 1: Mechanisms and Consequences of Facilitation in Plant Communities. This Special Feature, edited by Richard Michalet and Francesco Pugnaire, goes back to the basics of facilitation, reviewing our knowledge on the main functional mechanisms of facilitation, their implications for community structure and ecosystem functions and services. This Special Feature also complements the Special Feature: Mechanisms of Competition (edited by David Robinson, Claire Trinder and Rob Brooker) published in the journal in 2013. We also contributed to the cross-journal Special Feature: Demography beyond the population with two papers looking at leaf traits: *Functional leaf traits of vascular epiphytes: vertical trends within the forest, intra- and interspecific trait variability and taxonomic signals* and *The underlying basis for the tradeoff between leaf size and leafing intensity*.

Issue 1 also included two papers on peer review in *Functional Ecology*. These papers *Gender differences in patterns of authorship do not affect peer review outcomes at an ecology journal* and *Editor and reviewer gender influence the peer review process but not peer review outcomes at an ecology journal* are part of an ongoing project by Functional Ecology’s Executive Editor, Chuck Fox, looking at bias in peer review. This project is going to be rolled out across the other BES journals in 2016.

Ken Thompson interviewed Emma Sayer at the Annual Meeting on her Virtual issue, *Making the Most of Microbes*. To read the Virtual Issue and listen to the accompanying podcast head to our website where you can also find more information about the journal plus all the content mentioned above (functionalecology.org).

Editorial Board

We are joined on the board by Rafael Oliveira (University of Campinas, Brazil) whose research is focused on plant functional ecology, ecohydrology and biosphere-atmosphere interactions, Anna Sala (University of Montana, USA), who studies plant resource dynamics and its implications on plant life history strategies and responses to the environment and Sarah Diamond (Case Western Reserve University, USA), an evolutionary ecologist with specific interests in biological responses to climate and land-use change. We were also joined by Susana Clusella-Trullas (Stellenbosch University, South Africa), whose research focuses on the responses of ectotherms to changing environmental conditions and potential interactive effects of climate change and biological invasions and David Costantini (University of Antwerp, Belgium). David’s research interests include the role of oxidative stress and antioxidants as mediators of life-history variation, the impacts of environmental changes on animal populations and meta-analysis as a tool to develop a quantitative synthesis of research results. Our board continues to grow in response to our increasing submissions, which have increased by over 40% in the past five years.

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www.methodsinecologyandevolution.org
@MethodsEcolEvol

Cross Journal Special Feature

In February, *Methods in Ecology and Evolution* published four articles as part of the cross journal Special Feature 'Demography Beyond the Population'. All four articles are well worth a read and we've provided a little taster of each one below.

Patterns of survival and reproduction determine fitness and there is a rich body of theory linking demography with evolution. Mark Rees and Steve Ellner provide an overview of how these methods can be used to understand evolutionary dynamics and selection in a structured population modelled by an Integral Projection Model.

Edgar Javier González *et al* explore how inverse modelling performs with simulated data and a relatively simple demographic model. The authors look at scenarios of data availability both in terms of time series length, per-year sample size and availability of independent vital-rate estimates. They show that an inverse model can provide accurate reconstructions of the vital rates in a scenario where no individual-level information is available.

Spline methods that estimate smooth functions over continuous domains have the potential to resolve high dimensional problems in ecological systems. Brittany Teller *et al* consider two examples of these that are important for many plant populations: competition with neighbours and climate variables.

Finally, Falster *et al* introduce plant – an R package which provides a transparent platform for investigating how physiological rules and functional trade-offs interact with competition and disturbance regimes to influence vegetation demography, structure and diversity.

You can read the full Special Feature here: http://wileyonlinelibrary.com/BES_demography

New Associate Editor

In December, we welcomed Anne Chao to our Associate Editor Board. Anne is based at the National Tsing Hua

University in Taiwan and describes herself as 60% statistician, 30% mathematician and 10% ecologist. Her current research interests include statistical inferences of biodiversity measures and statistical analysis of ecological and environmental survey data. Prior to joining the Board, Anne was an active reviewer and author for the journal. She had two articles published in *Methods in Ecology and Evolution* in 2015 and provided the cover image for our April Issue. We are all looking forward to working with Anne in the coming years.

Author Interview

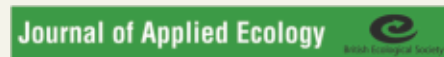
Professor Otso Ovaskainen (University of Helsinki, Finland) recently had two *Methods in Ecology and Evolution* articles published online in Early View. Following the publication of these, Associate Editor David Warton (University of New South Wales) interviewed him about both. In the interview, David and Otso talk about studying communities of species and their interactions via joint species distribution models, the advances made by Otso's papers and future developments in this field.

You can watch the full interview on our YouTube channel here: <http://bit.ly/1QE8NEj>

Publishing Tips and Tricks

Over the past few months, we have introduced a new category to the *Methods* blog (<https://methodsblog.wordpress.com/>): Publishing Tips and Tricks. Posts in this category give advice and guidance on getting your research published. The first tips and tricks post that we published provided guidance on choosing where to submit your manuscript. We also have advice on how to choose preferred reviewers, creating your first R package and how to maximise the exposure of your research.

Chris Grieves
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From Executive Editor, Marc Cadotte

The past few months have been quite dynamic at the *Journal of Applied Ecology*. We have had three long-serving Associate Editors (Christopher Dickman, David Angeler and Brian Wilsey) step down

from our board. We wish to thank them for their dedication to the journal and wish them well in their new endeavours. One of our Senior Editors, Mark Whittingham, has ended his term with the *Journal*. Mark first joined our team in 2006 and served as Senior Editor for six years. He has been an invaluable member of our team and he has contributed to every aspect of the *Journal*, from his capable decision-making to overseeing new initiatives. We wish him well with all of his future endeavours.

Replacing Mark as Senior Editor is Martin Nuñez, a new face at the *Journal of Applied Ecology*. Martin is a Professor at the Universidad Nacional del Comahue in Argentina and is a global expert on pine invasions and the role of tree mutualisms with soil microorganisms in facilitating invasions. He brings new energy and broadens the global reach of the *Journal*.

Associate Editor Mentoring

2015 was the first year of the *Journal of Applied Ecology* Associate Editor Mentoring opportunity, which provides researchers who completed their PhD not more than 10 years ago an opportunity to learn more about the Associate Editor role, the editorial process and how it works, during a one-year placement with the *Journal*. Six early-career researchers took part in the opportunity in 2015, working with the Senior Editors to handle manuscripts and oversee the peer review process. They also contributed posts about the papers they handled to the Applied Ecologist's blog and you can read these posts here: <http://bit.ly/1PcXgW0>. We would like to send a special thank you to the first round of mentees who have enthusiastically contributed to the *Journal* and helped to shape the opportunity for future mentees. The 2015 mentees were José Alves, University of Aveiro, Portugal and University of Iceland, Iceland; Lander Baeten, Ghent University, Belgium; Nathalie Butt, University of Queensland, Australia; David Moreno Mateos, Basque Centre for Climate Change, Spain; Romina Rader, University of New England, Australia; Ayesha Tulloch, Australian National University, Australia.

This year we welcome as mentees Susan Cheyne, *Oxford Brookes University, UK*; Caroline Howe, *University of Sheffield, UK*; Pia Lentini, *University of Melbourne, Australia*; J. Scott MacIvor, *University of Toronto, Canada*; Jeremy Piggott, *University of Otago, New Zealand*; Cheryl

Schultz, Washington State University, USA.

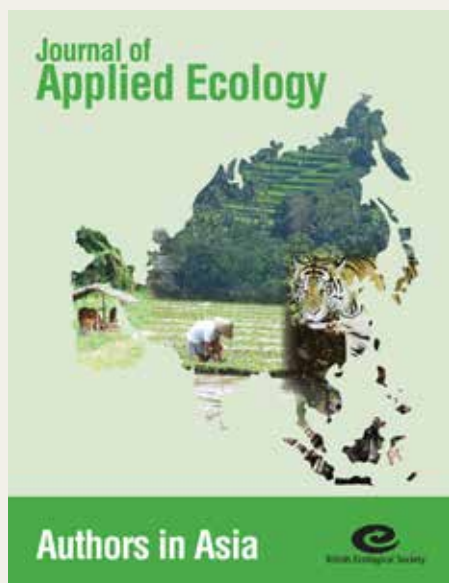
For more information about the Journal of Applied Ecology Associate Editor Mentoring opportunity and how to apply for 2017 see: <http://bit.ly/1OjVgxS>.

New Editorial for 2016

The aim of *Journal of Applied Ecology* is to drive forward the field of applied ecology by providing a high-quality evidence base for scientists, practitioners, managers and policymakers. In the 2016 Editorial the Senior Editors use their editorial and academic experiences to provide guidance for potential authors, with a focus on three key stages of the research process: planning and execution, writing and dissemination, and communication of findings. You can read the Editorial 'Achieving and communicating globally relevant applied ecological research' here: <http://bit.ly/1TXiZFG>.

Virtual Issue: Authors in Asia

In recognition of the increasing number of submissions to and publications in the *Journal of Applied Ecology* from authors based in Asia, we have compiled a Virtual Issue of papers from authors in Asia published in the *Journal* over the last few years (<http://bit.ly/1RGp9gg>). The Virtual Issue highlights a number of key areas including applied ecology in an era of rapid change, managing the impacts of land use change, the science of healthy ecosystems, reducing human-wildlife conflicts and managing species.



On the Blog

To complement the Virtual Issue 'Authors in Asia' we have published a series of blog posts on the Applied Ecologist's blog from authors featured in the Virtual Issue, Senior Editor Marc Cadotte, who is currently based in China, and other researchers from a variety of fields of applied ecology based in the region (<http://bit.ly/1URhjhb>).

We also continue to publish a range of posts from *Journal of Applied Ecology* authors and Associate Editors on the blog, with recent posts on the conservation of wet grassland birds, managing invasive species in a warming Arctic and the role of wildlife in antimicrobial resistance dynamics. If you are interested in contributing to the blog please e-mail Nathalie.Pettorelli@ioz.ac.uk or admin@journalofappliedecology.org to discuss your ideas.

In the News

Over the past few months a diverse range of *Journal of Applied Ecology* articles have appeared in the news. A timely paper from Jennifer Burt and Jeffrey Clary about recovery rates and successional divergence on abandoned ski slopes was highlighted in local news, whilst a paper from Chloe Hardman and colleagues featured in the Guardian looked at three wildlife-friendly schemes to support local diversity of species and habitats on farmland. A paper from Jennifer Koop and colleagues on Darwin's finches and the threat of extinction they face from an introduced parasitic fly was featured on BBC online and The Daily Telegraph, amongst others.

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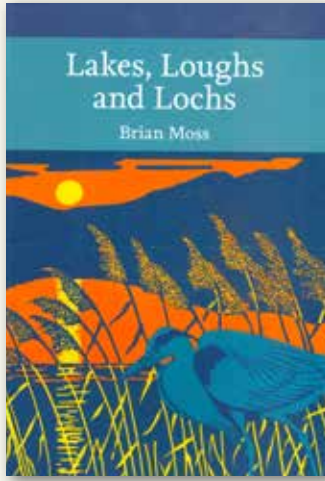
Alice Plane – Assistant
Editor, *Journal of
Applied Ecology*



Kate Harrison,
Assistant Editor

BOOK REVIEWS

The book reviews editor is Sarah Taylor, who is currently on leave of absence. Reviews in this issue have been collected and edited by **Alan Crowden**.



Lakes Loughs and Lochs

Brian Moss (2015)

William Collins £60.00 (hbk)
£35.00 (pbk)

ISBN 978-0007511388 (hbk)

ISBN 978-0007511396 (pbk)

Brian Moss has commented previously that to understand fresh waters fully one needs to be something approaching a polymath. This makes him the ideal author for a book such as this, for not only does he understand the details of the range of subject areas needed, but he also has the ability to explain complex elements of biology, geology, chemistry and many other fields in a straightforward and yet effective way. Add to this a liberal sprinkling of illustrations and graphics, and you have an excellent addition to the New Naturalist series. It is certainly worth reading to learn about lakes in particular, but covers a lot more besides, and is good enough in parts to stand as a specialist textbook in its own right.

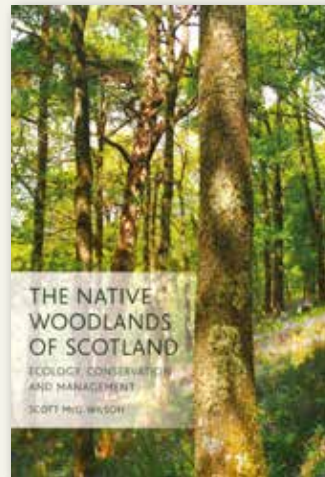
The focus is the lakes of Britain and Ireland, and it strays to other parts of the world only for specific examples to illustrate its key concepts. There is a short but useful introduction to the history of limnology, culminating in a lament about the dominance of bureaucracy in modern

science, no surprise to anybody familiar with the author. There then follows a series of chapters going through the physical and chemical background, the organisms found in lakes and the ecological processes that link them. This does not concentrate solely on the large and obvious; it treats the micro-organisms with the detail that they are due. It even extends beyond what is required for understanding lakes, providing an excellent summary of the current understanding of higher taxonomy that anyone who struggles with anything more complex than the five kingdoms view of life will find very useful, whether or not their interest is in lakes. Then we are introduced to habitats and interactions, before a consideration of human impacts. A very personal tour of various lakes around Britain and Ireland – some well known, others less so – is used to illustrate key ideas of biology, management and mismanagement with real examples. The final chapter, short but punchy, looks at the future, with particular reference to climate change and to the potential and the reality of the Water Framework Directive; it strays beyond the confines of lakes, being a plea for a holistic approach to managing our environment in which fresh waters are but one, albeit pretty important, part.

At the end of the book are notes for each of the chapters. In some cases these are simply citations of references as sources of specific pieces of information, but more often they are footnotes providing small stories and pieces of detailed information in their own right. Much of this notes section is as informative and interesting as the chapters themselves, and the whole is supported by an admirable list of references, some to classic pieces of work but much to very recent literature.

Are there any downsides? The problem with a multidisciplinary approach is that there will always be the occasional lapse of detail that a specialist will pick up; I found a couple of obsolete scientific names, for example, but such flaws are trivial and can be forgiven in such a broad-ranging piece of work. If you want to understand lakes, or if you simply want a good read by a master storyteller of non-fiction, get hold of this book.

Michael Dobson



The Native Woodlands of Scotland: ecology, conservation and management

Scott McG Wilson (2015)

Edinburgh University Press

ISBN 978-0-7486-9285-9

Woodland books have tended to focus on different types of woodland – such as pine woods or oak woods – or on topics – such as history, silviculture or diseases. Perhaps the most famous is that pioneering work by H. M. Steven and A. Carlisle, *The Native Pinewoods of Scotland* (Oliver & Boyd, Edinburgh 1959). Scott Wilson has written a book which brings many of these disparate topics together within one cover. As the author says “this book aims to provide a comprehensive

but approachable overview of the history, ecology and management of Scotland’s native woodlands”. To what extent has the author succeeded in this aim?

The first chapter in the book which attracted me was the final chapter, a gazetteer of native woods which can be visited. Starting with the pine forests and moving through deciduous woodlands, and finishing with some new plantings of native species and an assortment of impressive plantations, there are notes on over 70 potential visits. I know many of them, but there are others which now feature on my ‘must visit’ list. The sad fact is that ash woods have had to be omitted because of the threat of spreading the *Chalara* disease.

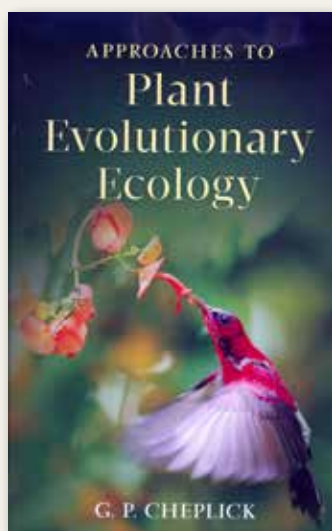
Scotland has had an extensive forest cover, but over the centuries it dwindled largely because of clearance for agriculture, sporting estates and urban development, as well as the use of timber for fuel. A century ago only about 5% of Scotland was covered with trees, but this has now expanded to over 18%. However, the majority (over 70%) is of plantations with non-native conifers. Optimistically, Scott Wilson says that the “remnant native woodlands ... are probably in the best ecological condition that they have been in for at least the past century”. Surely this is something to celebrate.

The book takes a relatively classical approach, starting with chapters on woodland environments (geology, soils and climate) and historical reflections of the long-term decline and more recent rise of woodlands in Scotland. A set of four chapters deal with pine woods and montane scrub; oak, birch and aspen woodlands; ash, elm and hazel woodlands; and wet woodlands with alder and willow. These are followed by chapters exploring

the conservation of native woodlands, their expansion and management, and their relationships with plantation forests. Each chapter is well written, well researched, well-illustrated, and authoritative.

The main attraction of this book is the way that it inter-weaves so many strands relating to Scotland's native woodlands. They are not reviewed just in a historical context, nor in an ecological context, nor in the context of their ongoing restoration. Everything is brought together so that the whole picture, both scientific and social, is seen at the same time. This makes for a readable and interesting analysis of these woodlands today. But what of their future? Scott Wilson foresees a blurring of the traditional distinctions between native woodland and plantation forests. A changing climate and a changing political environment are also likely to have long-lasting impacts on these interesting woodlands.

Michael Usher



Approaches to Plant Evolutionary Ecology

Gregory P. Cheplick (2015)
Oxford University Press, Oxford
£43.33 (hbk)
ISBN 978-0199988327

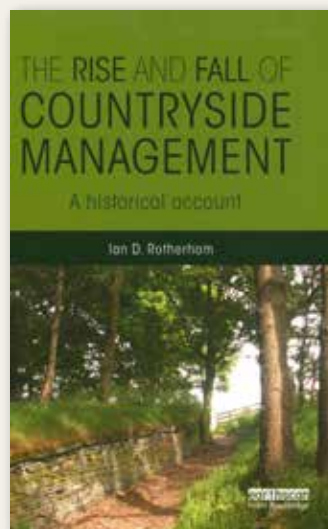
I have long thought there is nothing in ecology more delightful than a well thought through and executed experiment. In large part this book is a celebration of the use of experimentation to unravel the way in which abiotic and biotic factors act at the population level upon plant evolution, and therefore meets with my approval.

Having dealt in the first two chapters with the scope of plant evolutionary ecology and the way in which natural selection acts upon plant populations, the author then has chapters which deal separately with the common garden approach, reciprocal transplants and molecular techniques, as basic methods in evolutionary ecology. These chapters will most interest those engaged upon experimentation or who are planning experiments; although as the author admits the field of molecular ecology is now so large that the chapter can only give an overview. Later chapters give more general overviews of the current state of knowledge about plant-abiotic environment interactions, plant-plant interactions, plant-microbe interactions and plant-animal interactions, with an emphasis upon relating evidence to the various research methods available. I find the later chapters of most books tend to be less interesting than the early ones, but found the later chapters of this book the most interesting, especially the chapters on plant-microbe and plant-animal interactions. Throughout the book key points are illustrated with well chosen published studies, which are often described and discussed at some length. In addition at relevant places important concepts are explained.

When reading the first chapters of this book I thought it would have most relevance to those who are actively involved in plant evolutionary ecology research. However the later

chapters have a much wider interest and provide useful introductions to the topics they cover and the book can be recommended to undergraduate and graduate students.

John Hopkins



The rise and fall of countryside management: a historical account

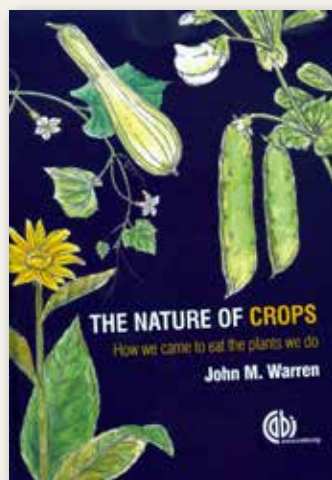
Ian D Rotherham (2015)
Earthscan £90.00 (hbk)
ISBN 978-0-415-84425-3

Over the past 20 years Ian Rotherham has proved to be one of the most prolific writers of both papers and books on the management of our countryside, from the fens to ancient woodland, and from history and cultural change to economics. This latest book brings together his accumulated knowledge of the history of how countryside management evolved in the UK and why. The historical story is complex involving government departments, local authorities and NGOs in an ever changing matrix, and illustrates not only the lack of political strategic thinking on the environment over long periods but also, as Rotherham describes them, "the remote, massive and faceless Defra" and the "impenetrable nature of the Environment Agency" as key players.

Starting in 1949 with the creation of the National Parks his 16 chapters cover Country and Forest parks, Countryside Management and its projects and services, as well as the development of what he describes as a new profession, including site wardens and rangers as well as ecologists and foresters with a very broad range of employers. This development of Countryside Managers and Countryside Rangers had a marked effect on public appreciation of the countryside and especially of National Parks during the last two decades of the 20th century but savage austerity cuts have recently seen a rapid decline in all countryside services and the loss of many skilled people.

This is a really valuable reference volume bringing together an interesting literature from peer reviewed journals and New Naturalist volumes to conference proceedings and legal instruments. Rotherham's close association with the practical implications shows in the case studies he presents and he examines the economics of what was achieved and what has been lost with a clear eye. His final analysis of issues and opportunities has considerable significance for any ecologist working in the British countryside. His conclusions are that the relentless application of the economic drivers rather than recognition of the public good achieved, together with the increasing disenfranchisement of the young from the countryside, are wrecking decades of progress. The latest Government proposals to tear up the planning rules can only have further damaging effects certainly across England and Wales. You will need much strong drink to counter the justified pessimism of his final chapters.

David Walton



**The Nature of Crops:
How We Came to Eat the
Plants We Do**

John M. Warren (2015)
CABI, Wallingford £45.00 (hbk),
£19.95 (pbk)
ISBN 978-1780645087 (hbk)
ISBN 978-1780645094 (pbk)

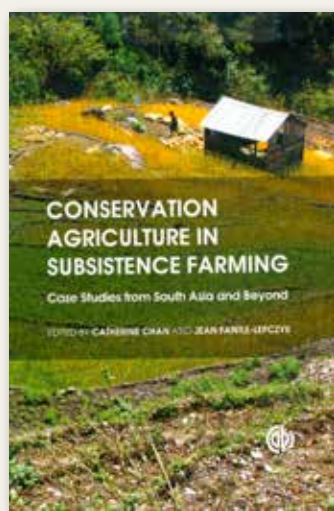
Given the recent emphasis upon human interdependence with nature I am surprised there has not been more interest in the plants we rely upon for food. All were originally wild and the genetic resources of crop wild relatives represent one of our most important and threatened natural assets.

The way in which crops have interacted in history and prehistory is complex. In this highly entertaining book John Warren lays out many of the stories behind the domestic plants we use for food, flavourings and to some degree medicines. Ecologists have been late to take an interest in farming and much of it on the organisms that occur in cropping systems; rarely the crops themselves. This book shows how biologically diverse our crops are. Not always is there a clear distinction behind wild and domesticated. For example, cocoa remains little changed from its wild condition after 400 years as a farmed crop. Other crops have slipped in an out of domestication; the origin of the “wild” cabbage populations in Britain being often discussed.

If you have a nervous disposition global food security may be keeping you up at night. We rely on 12 plant species out of 400,000 for about 80% of our calories. Gerard Diamond has suggested that this dependence upon a narrow range of species is because few wild plants have features which suit them to domestication. This claim has had a great influence upon conservation policy, not least what goes into gene banks. In the final chapter this thesis is examined and found wanting. It may be that a much greater range of wild plants than we realise have the potential to be used as crops.

If you don't know much about our food plants and their origins, perhaps you should, and you will find this an entertaining introduction to the topic.

John Hopkins



**Conservation Agriculture
in Subsistence Farming.
Case Studies from South
Asia and Beyond.**

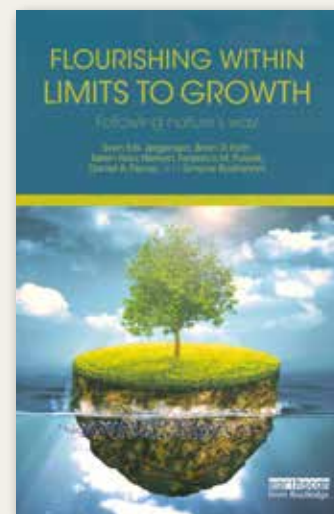
C. Chan and J. Fantle-Lepczyk (2015)
CABI, Wallingford £85 (hbk)
ISBN 978-1-78064-423-3(Hbk)

With world population set to increase in the next 35 years by circa 22 per cent, i.e. from 7.3 billion in 2015 to 9.5 billion by 2050, agricultural systems are under constant pressure

to increase productivity. This is itself a major challenge, and is made even more difficult when twinned with sustainability. Although this is a world-wide problem, Chan and Fantle-Lepczyk argue that it is particularly acute for those involved with small-scale subsistent farming in notably vulnerable regions; the challenges not only encompass on-the-ground practicalities but also the sharing of information in a technological world. These and other issues are reflected in a project entitled Sustainable Management of Agroecological Resources for Tribal Societies (SMARTS) which began in 2008. This gave rise to a conference entitled ‘Frontiers in Agriculture in South Asia and Beyond’ in 2013 on which this book is based. There are 29 contributors including 12 from the University of Hawai'i-Manoa, Honolulu. The opening chapter defines conservation agriculture (CA) i.e. the combination of profitable agricultural production and inbuilt strategies to take account of environmental concerns and sustainability, and then goes on to provide an informative synopsis of the history and distribution of CA today; 150 Mha are distributed in 27 countries. The second chapter examines biophysical (mainly soil attributes) and socio-economic aspects of CA with examples from southern Africa and Southeast Asia. Topics include the attainment of sustainable intensification and the development of resilience. Each of the subsequent ten chapters deals with a specific case study. Regionally, six relate to Nepal, two to India and two to Malawi. Most concentrate on agricultural techniques such as tillage methods, intercropping, soil conservation and the adoption of specific crops. In relation to the latter, there is an emphasis on maize production. Other chapters focus on socio-economic issues including risk and gender. All provide valuable insights but contrasting case studies from

developed nations such as Canada, USA or Australia’ where most conservation agriculture is located, and other parts of Asia, would have been useful and would have provided a degree of balance. Each chapter has useful tables, diagrams and bibliography and the book provides valuable reading for advance students of agriculture, development and environmental science. However, at £85 this book is expensive and is only likely to reach libraries in the developed world. How will it reach those nations, regions and locales, like those referenced which are indeed the frontiers of agriculture and development, where it is needed most?

Antoinette Mannion



**Flourishing within limits
to growth: following
Nature's way**

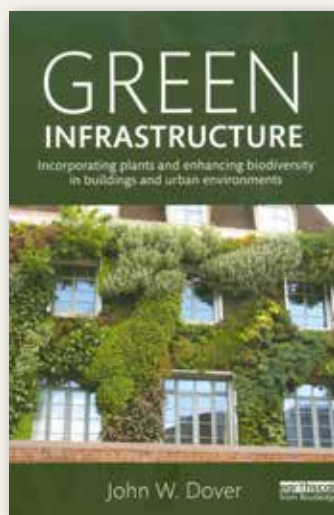
Sven Erik Jorgensen, Brian D Fautith, Soren Nors Nielsen, Federico M Pulselli, Daniel A Fiscus & Simone Bastianoni (2015)
Earthscan £95.00 (Hbk) £26.99 (pbk)
ISBN 978-1-138-84252-6 (hbk)
ISBN 978-1-138-84253-3 (pbk)

As Albert Bartlett memorably said “The greatest shortcoming of the human race is our inability to understand the exponential function.” This book, co-authored by leading researchers from Austria, USA,

Italy and Denmark, addresses that problem, which can also be summarised as “sustainable growth is an oxymoron in a world of limited resources”. The approach adopted grew out of a critical analysis of why the *Limits to Growth* books from the Club of Rome in 1972 had made so little impact on political and economic policies. Recognising a change of mind set is still needed the authors have tried to develop a new model based on three natural principles – reduce, reuse and recycle. This is not the first book to challenge the neoliberal, market driven approach to our future that the economists and politicians have wished upon us, but here they concentrate on long-term development rather than short-term growth. They examine the books that have built on the original Club of Rome ideas and note some important probable reasons for their political failure – the Brundtland definition of sustainable development was entirely human-centric, the education system does not encourage a focus on system thinking which is what is needed for complex models, the politicians failed to change their approach after the 2008 financial crash, there are determined attempts to limit contraception and although environmental economics is better recognised today than 40 years ago it is a long way from being a major policy driver. Comparing the properties of ecosystems and human societies they come up with a list of eight actions that would address the problems of sustainability and then they suggest how we might persuade politicians and economists to face ecological reality. Their approach to population control is to increase prosperity in Third World countries along with easier contraception and better education. Pollution would be controlled, in part by moving to solar energy but also by forcing companies to spend more on abatement, and resource usage would decline because of

reuse and recycling. Using the ecological global footprint they conclude we are heading for a major ecological deficit. In the final chapter they bring together their 12 recommendations and try to assess the obstacles to their implementation. To ecologists there is nothing new in what they suggest but I fear that greed for money and power, together with religion and inertia will all conspire together to defeat them. In the end I do wonder who the book is really meant for. It is too complex for the public, too academic for politicians, and too hopeful for ecologists.

David Walton



Green infrastructure

Incorporating Plants and Enhancing Biodiversity in Buildings and Urban Environments

John W Dover (2015)

Earthscan £102 (hbk) £44.99 (pbk),

ISBN 978-0-415-52123-9 (hbk)

ISBN 978-0-415-52124-6 (pbk)

The term Green Infrastructure is confusing, even though it has been around for some time. For those that expect this to be about parks, rivers, nature reserves, golf courses and even flood plains this is the wrong book. The author specifically restricts this book to a subset of urban ecology – the interactions

between vegetation and buildings. In an increasingly urbanised world it is often the city vegetation that provides people with their day to day contact with the natural world, which thus performs a social and psychological function especially when presented as green spaces. However, this book documents, in considerable detail, the other benefits to be gained from plants on, in and around our buildings – control of climate, pollution and drainage, increased energy efficiency, improved biodiversity, and even food production and educational opportunities. His principal chapters describe how green walls, green roofs, permeable pavements and street trees can offer not only a more civilised living environment but one with actual economic value. From a purely ecological view (as distinct from those of planners and estate agents) he does discuss the contribution to biodiversity that can be made not just by gardens but also by green roofs. With examples from around the world this certainly is a book that should be used by all planners and policy makers. Many of the innovations introduced by regulation so successfully elsewhere should become compulsory in the UK and might progress more rapidly if they were taken up as policy regulation objectives with Government by groups like the Architectural Association, Royal Town Planning Institute and Town and Country Planning Association. His final chapter on future policy, regulation and incentives seems rather lacking in detail and ideas for a book otherwise clearly inspired by enthusiasm. This book is a useful addition to recognising key elements of urban ecology and what they can contribute.

David Walton

ALSO RECEIVED

Notes by Alan Crowden



Wildlife Habitat Conservation

Concepts, Challenges and Solutions

Edited by Michael L. Morrison and Heather A. Mathewson

Johns Hopkins University Press, Baltimore. £48.50 (hbk)

ISBN 978-1421416106

The Wildlife Society (TWS) is the professional membership association for Wildlife professionals, but while it welcomes international members the great majority of members live and work in North America. Many are employed by State or Federal bodies to deliver the legislative goals set out for wildlife protection, and TWS meetings are well attended by enthusiastic students and professionals and, the meeting programme, on paper, resembles what we expect to see at conservation biology and ecology conferences. Attendees are passionate about the protection of populations and habitat, but with the underlying agenda that strong healthy populations are needed in order to ensure there are plenty of beasts to supply the needs of hunters and other harvesters. They are, in short, wildlife practitioners, and most TWS members need to know how best to manage wildlife populations

and are relatively uninterested in generating new theory or carrying out long term research. They need to know what to do, when to do it, and how to keep within budgets and legal frameworks.

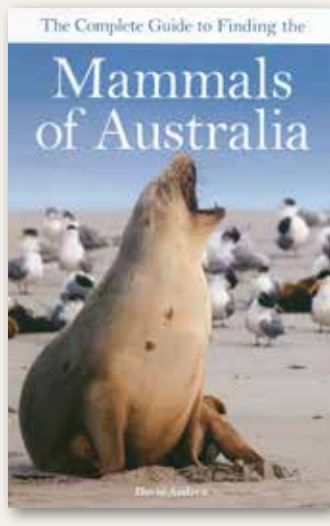
The Wildlife Society has launched a new book series that aims to provide a text and reference works for the practitioner community. *Wildlife Habitat Conservation* is a review of the habitat concept, encourages a focus on those critical factors contained within what we call habitat, and arrives at a habitat concept that promises long-term persistence of animal populations. The volume editors have assembled a very capable set of contributors and have clearly conducted a thorough review and revision process during the writing of the book. But the fact that the editors, contributors and reviewers are, to a man and woman, based in the United States, rather suggests that the readership of the book will very closely match the membership of TWS. Entirely understandable, but it makes one proud that the editors of the BES/CUP Ecological Reviews book series would not countenance accepting a project with such a geographic bias.

European Wood-Pastures in Transition

A social-ecological approach
 Edited by Tibor Hartel and Tobias Plieninger (2014)
 Earthscan from Routledge, Abingdon £85.00 (hbk)
 ISBN 978-0415869898

A wide-ranging review of a cultural landscape that arises where trees and livestock grazing occur together. Wood-pastures are intermediate between open pastures and closed canopy forests, and grazing is necessary for their maintenance; thus they are vulnerable if grazing is reduced or abandoned. The book begins with three broad brush introductory chapters, followed by eleven chapters that draw on

regional examples from across Europe. Two synthesis chapters at the end try to draw out some guidelines for a future research agenda.

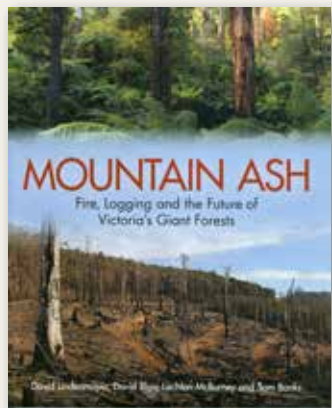


The Complete Guide to Finding the Mammals of Australia

David Andrew (2015)
 CSIRO Publishing AU \$49.95 (pbk)
 ISBN 9781486304979

As someone who travels to Australia rather more often than is proper for my carbon footprint, it was a delight to find this new book coming in for review. Most of my trips in the past have been spent visiting Australian academics who, being friendly and accommodating souls, will often take visitors out for a show and tell in the local bush, but as the balance of my time in Australia shifts towards ecotourism rather than editing, this volume is manna from heaven. David Andrew is an accomplished author and experienced travel guide, and the scope and coverage of this book shows his expertise to good effect. It includes a state-by-state guide to sites to visit, and an indication of what you might see there and when. It could be said to be a little superficial, but Australia is a huge place and a comprehensive volume would take up most of the feeble baggage allowance we are permitted by airlines

these days. There is a decent-sized colour plate section, and the second half of the book provides a mammal-finding guide. Want to see a Fat-tailed False Antechinus? This book will suggest where to look. I'm going to use it to plan my next visit, though whether I'll carry a printed copy with me on my next trip is moot. At 800g it is a bite out of the previously-mentioned baggage allowance. There is an ebook version and I'll be tempted to download it before I go (where it will sit alongside my guide to Australian wine). But my pre-trip browsing will be lavished on the excellent printed edition.



Mountain Ash

Fire, Logging and the Future of Victoria's Giant forests
 David Lindenmayer, David Blair, Lachlan McBurney and Sam Banks (2015)
 CSIRO Publishing AU\$59.95
 ISBN 9781486304974

I'm not sure how well the name of David Lindenmayer is known to British ecologists, but I advise any readers prone to an inferiority complex not to look up David's output of books and articles. *Spoiler alert* The back cover of this book says that this Professorial phenomenon has, in 32 years of work on forests and fire projects, published more than 970 articles and 38 books. Hard enough to imagine how this is possible even in someone who never leaves their office, but David is a dedicated experimental and field biologist,

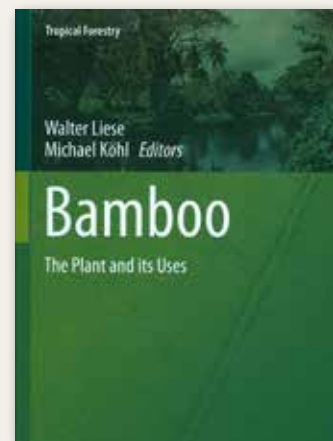
and family man; we just have to assume he is one of a kind.

The Mountain Ash forests of the state of Victoria are the world's tallest flowering plants, where David Lindenmayer and others had worked for 25 years before the tragic and catastrophic fires of 2009. As all ecologists in fire prone areas have to learn, a disaster can be turned into an opportunity, and this lavishly illustrated book surveys the experience of 6 years of post-fire monitoring. A case study for those interested in forests and fire, and perhaps the monitoring of major disturbance in general.

Satellites in the High Country

Searching for the Wild in the Age of Man
 Jason Mark (2015)
 Island Press, Washington D.C.
 £17.95 (hbk)
 ISBN 9781610915809

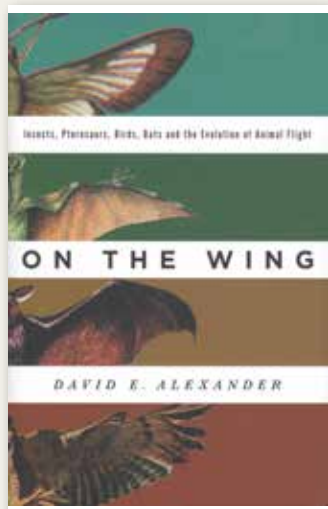
An American journalist explores wilderness in the High country of the American West.



Bamboo. The Plant and its uses

Edited by Walter Liese and Michael Kohl (2015)
 Springer International Publishing AG, Switzerland
 £126.00 (hbk)
 ISBN 978-3-319-14132-9

An overview of the relevant biological basis, production and utilisation of bamboo



On the Wing

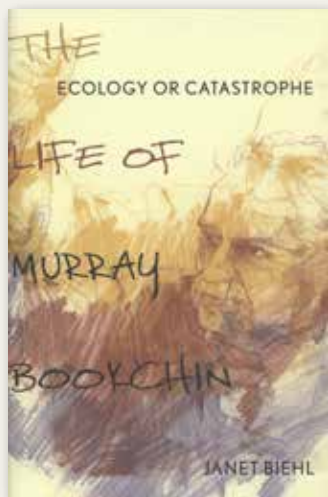
Insects, Pterosaurs, Birds, Bats and the Evolution of Animal Flight

David Alexander (2015)

Oxford University Press, New York £19.99 (hbk)

ISBN 978-0-19-999677-3

An accessible investigation of animal flight.



Ecology or Catastrophe

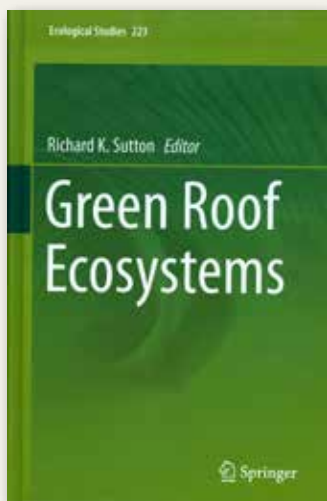
The Life of Murray Bookchin

Janet Biehl (2015)

Oxford University Press New York £22.99 (hbk)

ISBN 978-0-19-934248-8

A biography of a philosopher described as a groundbreaking environmental and political thinker.



Green Roof Ecosystems

Edited by Richard K. Sutton (2015)

Springer International Publishing AG, Switzerland £126.00 (hbk)

ISBN 978-3-319-14982-0

Reviews green roof research, design and management from an ecosystem perspective. A book for policymakers, designers and ecologists interested in the interactions within and between green roofs and other living systems.



The Brazilian Amazon

Politics, Science and International Relations in the History of the Forest

Joana Bezerra (2015)

Springer International Publishing AG, Switzerland £89.50 (hbk)

ISBN 978-3-319-23030-6

Based on a PhD thesis, the book analyses the role of Amazonian Dark Earths – a fertile soil horizon with high concentrations of carbon of anthropic origins – in the current scenario of development in the Amazon

DIARY

THE SOCIETY'S MEETINGS

2016

APR 11-13

Joint BES and CCI Annual Symposium: Making a Difference in Conservation – Improving the links between, Ecological Research, Policy and Practice. Cambridge, UK. Further details: http://www.britishecologicalsociety.org/events/current_future_meetings/2016-annual-symposium/

DEC 11-14

2016 Annual Meeting. Liverpool, UK. Full details from: http://www.britishecologicalsociety.org/events/current_future_meetings/2016-annual-meeting/

THE SOCIETY'S COMMITTEE MEETINGS 2016

FEB 9

Policy Committee

FEB 10

Meetings Committee

MAY 4

Grants Committee

MAY 10

Policy Committee

MAY 11

Meetings Committee

JUN 20

Council

OCT 11

Policy Committee

OCT 12

Meetings Committee

DEC 11 COUNCIL

OTHER MEETINGS 2016

MAR 20-24

63rd Annual Meeting of the Ecological Society of Japan. Sendai, Miyagi. Website: <http://www.esj.ne.jp/meeting/63/english.html>

MAR 23-24

A Symposium on Emerging Plant Disease and Global Food Security. Raleigh, North Carolina, USA. Website: <https://www.ncsu.edu/mckimmon/cpe/opd/EPD/agenda.html>

MAR 23-25

Introduction to the Vector Behavior in Transmission Ecology RCN. Clearwater, Florida, USA. Website: <http://vectorbite.org/vectorbite2016/>

APR 5

2nd Annual Meeting of the Forest Insect Group, Royal Entomological Society. Peterborough, UK. Website: <http://www.royensoc.co.uk/meetings>

APR 10-14

19th International Conference on Aquatic Invasive Species. Winnipeg, Manitoba, Canada. Details from: <http://www.icaais.org/>

APR 17-22

Mapping, Monitoring and Modelling of Vegetation Characteristics using Earth Observation. Vienna, Austria. Details from: <http://meetingorganizer.copernicus.org/EGU2016/session/21860>

APR 26-29

European Networks Conference on Algal and Plant Photosynthesis. Malta. Website: <http://encapp2016.eu/home/>

APR 26-MAY 1

7th International Conference on Fossil Insects, Arthropods and Amber. Edinburgh, UK. Details from: <http://steppe.org/event/7th-intl-conference-on-fossil-insects-arthropods-amber/>

MAY 8-12

The International Society for Ecological Modelling Global Conference 2016. ISEM. Towson, University, MD, USA. Further details: <http://www.isemconference.com/>

MAY 16-20

MBA Postgraduate Conference 2016. Portsmouth University, UK. Website: <http://www.mba.ac.uk/membership-2/mba-postgraduate-workshops/>

JUN 2

Planning for Climate Change Conference. Westminster, UK. Details: <http://www.planforclimatechange.co.uk/>

JUN 6-7

18th International Conference on Biodiversity. New York, USA. Website: <http://www.waset.org/conference/2016/06/new-york/ICB>

JUN 12-16

Mathematical and Computational Evolutionary Biology. Montpellier, South of France. Details from: <https://www.ncsu.edu/mckimmon/cpe/opd/EPD/agenda.html>

JUN 27-01

9th International Symposium on Phlebotomine Sandflies – ISOPS. Reims, France. Further details from: <http://www.univ-reims.eu/site/event/isops-ix/home>

JUN 13-16

14th International Symposium on Scale Insect Studies, Catania, Italy. Details: <http://www.issis2016.org.spazioweb.it/>

JUN 19-23

Annual Meeting of the Association for Tropical Biology and Conservation. Le Corum, Montpellier, France. Website: <http://www.atbc2016.org/>

JUN 26-30

Plant Biology Europe, EPSO/FESPB 2016. Prague, Czech Republic. Details from: <http://www.europlantbiology2016.org/>

JUN 20-24

Palaeoenvironments in permafrost (ICOP) 2016. Potsdam, Germany. Details from: <http://icop2016.org/index.php/program>

JUL 4-7

The Society of Experimental Biology Annual Meeting. Brighton, UK. Website: <http://www.sebiology.org/meetings/index.php>

JUL 6-8

Society for Conservation Biology - 4th Oceania Conference (OCCB). Brisbane, Australia. Details from: <http://brisbane2016.scboceania.org/>

JUL 24-29

Unifying Ecology Across Scales. Gordon Research Conference, University of New England, Biddeford, Maine, USA. Website: www.grc.org/programs.aspx?id=13261

JUL 29-2 AUG

The 16th International Behavioural Ecology Conference. The University of Exeter, UK. Website: <http://www.behavecol.com/pages/society/meetings.html>

AUG 7-12

101st Ecological Society of America Annual Meeting. Fort Lauderdale, Florida. Website: <http://esa.org/ftlauderdale/>

AUG 8-11

6th European IUSSI Congress. Helsinki, Finland. Website: <http://www.iussi2016.com/>.

AUG 15-19

15th International Peat Congress. Kuching, Sarawak, Malaysia. Website: <http://ipc2016.com>

SEP 1-10

IUCN World Conservation Congress. Hawaii, USA. Details from: <http://www.iucnworldconservationcongress.org/>

SEP 4-7

ECSA 56 Coastal systems in transition: From a 'natural' to an 'anthropogenically-modified' state. Bremen, Germany. Website: <http://www.estuarinecoastalconference.com/>.

SEP 5-8

Ento'16 Annual National Science Meeting. Shropshire, UK. Further details: <http://www.royensoc.co.uk/content/scottish-regional-meeting-12th-november-2015>

SEP 6-8

Ento' 16 Annual National Science Meeting. Harper Adams University College, Shropshire. Further details from: <http://www.royensoc.co.uk/content/ento-16-annual-national-science-meeting>

SEP 20-23

20th Evolutionary Biology Meeting. Marseilles, France. Further details: <http://sites.univ-provence.fr/evol-cgr/>

SEP 25-30

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

SEP 25-30

ICE 2016. International Congress of Entomology. Orlando, Florida, USA. Website: <http://ice2016orlando.org/>.

NOV 7-9

New trends in evolutionary biology: biological, philosophical and social science perspectives. The Royal Society, UK. Website: <https://royalsociety.org/events/2016/11/evolutionary-biology/>

NOV 7-11

World Lake Conference 2016: Lake Ecosystem Health and its Resilience: Diversity and the Risks of Extinction. Bali, Indonesia. Details from: <http://www.ilec.or.jp/en/wlc/new/?p=2864>

TRAINING WORKSHOPS

APR 12

Pathogen Host Shifts. Cambridge, UK. Website: <http://www.infectiousdisease.cam.ac.uk/events-and-training/pathogen-host-shifts-workshop>

MAY 2-13

2016 International Spring University on Ecosystem Services Modelling. Bilboa, Spain. Website: <http://springuniversity.bc3research.org/>

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

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

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In the years since we started using the back cover to look at photographs from times gone by, the majority of images have come from the Tansley Archive of photographs residing in Charles Darwin House, which mostly date back to the 1920's and 1930's. We would love to be able to include more images from the second half of the twentieth century, especially those showing still-active ecologists in their younger days.

The image above comes courtesy of Professor H J B Birks, recently retired from the University of Bergen. John, like most recently retired ecologists, shows absolutely no intention of stepping back from pursuing his long term interests in community plant ecology, vegetation history, bryology and floristics, and more power to his elbow.

Our image dates back to 1965 during John's Cambridge Part II Botany Long Vacation term. Taken at Winterton Sand Dunes on Norfolk's East coast, it shows from left to right a clean shaven Professor Peter Grubb, J. Michael Lock, then a PhD student looking at small plants (probably bryophytes) in the dune slacks at Winterton, and John Birks.

The photographer was another splendid young botanist and paleoecologist by the name of Hilary Lees, who became Hilary Birks in September 1966.

Dear readers, if you have photographs of ecologists in action in the past, be it far distant or more recent, please send your jpeg or tiff files to Bulletin@BritishEcologicalSociety.org.

