

# THE BULLETIN



BRITISH  
ECOLOGICAL  
SOCIETY

# InFOCUS

This image accompanies a recent study published in *Methods in Ecology and Evolution*. Can you guess where it is, what it's of, and how it was taken? Turn to p20 for the answer.

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**BRITISH  
ECOLOGICAL  
SOCIETY**

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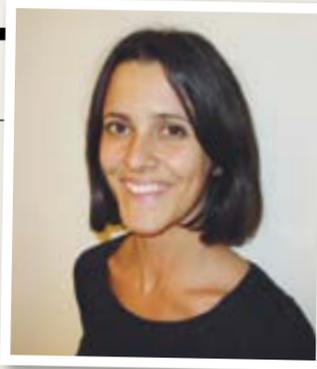
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## WELCOME

# YOUR BES, YOUR BULLETIN



**Kate Harrison** | Editor | [bulletin@britishecologicalsociety.org](mailto:bulletin@britishecologicalsociety.org)

This issue of the *Bulletin* marks the end of an era and the beginning of a new one. The Society has a new President and a new *Bulletin* Editor. Don't worry though, there won't be any radical overhauls. We will carry on with the excellent work that defines the BES and continue to work towards a world inspired, informed and influenced by ecology.

Richard Bardgett's first President's Piece (p5) outlines his priorities for the next two years. These include ensuring that the BES leads the way in shaping the scientific and political agenda, and continues to celebrate the fundamental science that leads to fascinating discoveries. To deliver on these two goals we need to make sure that we are an inclusive Society that represents everyone.

These are threads that will also shape the *Bulletin*. And in this issue, we've made a pretty good start. Our policy team discuss the UK government's 25 Year Environment Plan (p8) and Bill Sutherland *et al.* provide an overview of forthcoming legislative issues (p50). We've tackled the Anthropocene. John Wiens discusses the philosophical disagreements behind our conservation perspectives (p44) while Rebecca Nesbit talks to Chris Thomas about embracing this period and the opportunities it may bring (p40).

The latest international research from our journals can be found on p80. Fascinating science has been captured in our photographic competition which just gets better every year (p28). And of course, we have a roundup of the best science event of 2017, Ecology Across Borders (p12).

We are building an inclusive and representative community. Cecilia Medupin talks about widening participation (p62), we launch the Accessibility Network (p60), and ask whether ecology has a problem (p66). All of these conversations will be covered regularly in the *Bulletin*, along with other subjects that affect the working lives of ecologists.

In Alan's farewell (p88) he talks about the generosity and good-humour of ecologists. He's right, and it's what makes working at the BES so enjoyable. So send me your thoughts, comments, critiques and ideas about what you read here and what you would like to see – this is your *Bulletin* after all.

**Kate Harrison**

Our first edition of 2018 is a bittersweet affair – we say a very fond farewell to Alan Crowden who has steered this fine *Bulletin* ship since June 2007, and proffer a very warm welcome to its new captain, Kate Harrison.

Alan's contribution runs to more than just collating content and haranguing those who miss deadlines – he has helped form its informal, intelligent and friendly personality, commissioned many fascinating articles, been integral to a number of redesigns and has helped create the in-demand magazine you now have in your hands.

His successful background in publishing and relationship building has served the *Bulletin* incredibly well. Alan's passion, commitment and enthusiasm are both exemplary and infectious – although Mrs Crowden has been less than impressed when catching Alan working whilst on holiday...

On a personal level, I will miss his guidance, friendship and great humour; it has been a genuine pleasure and honour working with Alan and he will be missed. Although I shan't miss the jealousy-inducing unsolicited holiday photos he sent...

So, I have great pleasure in welcoming Kate Harrison as our new *Bulletin* Editor.

Kate is already part of the BES team as she manages the commissioning and editorial processes for Ecological Reviews, develops marketing and communications material for the publications team, and project manages our popular Guides to Better Science series. Kate comes to us with strong editorial skills, an understanding of our ecological community and a passion for equality and diversity.

Together, we will embark on a redesign of the *Bulletin* – not just the look, but a wholesale review of content, of how we can better give voice to your experience, and the *Bulletin*'s environmental impact. We shall start a programme of research and development and will be looking to you, our readership, for your input. We have a wonderful, vibrant community and want to do our best to represent that.

Thank you to Dr Crowden for his unswerving and valued input, and we look forward to the *Bulletin*'s next regeneration...

**Richard English** | Communications Manager

## PRESIDENT'S PIECE

# BUILDING A GLOBAL SOCIETY



**Richard Bardgett** | President of the British Ecological Society | [richard.bardgett@manchester.ac.uk](mailto:richard.bardgett@manchester.ac.uk)

**To be elected President of the British Ecological Society is a tremendous honour and a role that I am very excited to take on. If I look back at the history of the Society, dating back to 1913, and the long list of eminent ecologists who have taken on this role, it is daunting, but exciting.**

The Society has long been part of my academic life. It is quite frightening to think that I joined the BES in 1987, over 30 years ago. I was just starting as a PhD student at the time at Lancaster University, carrying out research under the supervision of past President John Whittaker. From then I became a regular at the Annual Meeting, which was always, and still is, a highlight of my academic year. But my involvement in the BES stepped up in 2006 when I became an editor of *Journal of Ecology*, and even more so in 2011 when I was Vice President. These roles not only gave me an insight into the day-to-day running of the Society, but also a greater understanding of its mission to generate, communicate, and promote ecological knowledge and solutions.

I am taking over as President of BES at an exciting time. The BES has gone from strength to strength in recent years, testimony to the excellent work of Hazel Norman and her impressive team, and the leadership of Sue Hartley and other past Presidents. Reading Sue's final President's piece in last issue of the *Bulletin* (w:4, 2017), it is abundantly clear that the Society and its membership is booming, but also we are becoming

much more diverse, both in our membership and the Society's goals. In fact, one of the most striking things about the BES today is that we are diverse and our outlook is global.

Despite the enormous success of the Society, it goes without saying that we cannot be complacent. We live in a world that is fast changing, both scientifically and politically, and perhaps more than ever the BES needs to ensure that we contribute to, and play a leading role in shaping the scientific and political agenda. This includes promoting and communicating world-leading ecological research and supporting new talent, which are core business of the Society. But also we need to reach out to other disciplines to increase our capacity to address global environmental challenges that result from escalating human impacts on Earth. In other words, ecological research is becoming more collaborative and interdisciplinary, and the BES has a key role to play in promoting this.

We also need to step up efforts to ensure that our voice is heard and ecological knowledge supports future policy formulation, a topic that

many in the BES, including myself, feel strongly about. And we need to continue to work hard to raise the profile of ecology among the general public and in education, and to encourage children from a diversity of backgrounds to get involved with ecology, which I was pleased to see is a key objective of the UK Government's 25 year Environmental Plan (p8). So while the BES is vibrant and in great shape, there is still much to do to ensure that we continue to deliver our vision.

My biggest job over the next two years will be preparing for the next Strategic Plan, which will take the Society beyond 2019. This might seem a long time off, especially having only just done a "strategic refresh" last year. But as I highlight above, the internal and external environment of the Society is fast changing and we need to take a hard look at our goals and objectives to ensure that we continue to deliver on our vision in the oncoming decade. A key priority for me over the coming two years will therefore be to work with the Board of Trustees, staff, and our diverse membership to identify our future priorities and develop our next Strategic Plan.

That said, it is of course important that we remain focussed on our current Strategic Plan, which includes a wide range of goals and objectives, on which much progress has been made. One of particular importance that spans all activities of the Society is our long-term commitment to inclusivity and increasing the diversity of those doing ecology. Much progress has already been made. For example, the percent of women involved in organising invited sessions at the Annual Meeting increased from 37% in 2016 to 48% in 2017, and the gender balance of our plenary speakers is routinely 50:50. The percent of members who identify as black and minority ethnic (BME) has increased from 16% in 2016 to 24% in 2017. And, new activities are in place to support ecologists with disabilities.

The Society's commitment to inclusivity is far reaching and long-term, and many other initiatives have been introduced, and are being planned. These span the entire range of activities of the organisation, from membership and grant giving, to publications and policy. With this in mind, I am looking forward to my new role as Chair of the BES Equality and Diversity Working Group (EDWG) and working with the Society to establish it as a leader in promoting an inclusive and diverse ecological community. The EDWG already has plans to reach out to lower socioeconomic groups, especially in inner cities, further develop the BES's mentoring schemes, and develop support for mental health and wellbeing in the ecological community.

Another topic of high importance to the Society is internationalisation. Of course much of the Society's important work has, and will continue to have, a UK focus, for instance in education and policy. But at the last count 46% of our 6460 members are non-UK based, covering 127 different countries, and the geographical reach of the research we publish in our journals is truly international, as are our editorial boards. The tremendous success of the Annual Meeting in Ghent, jointly organised with the GFÖ, NecoV, and EEF, is testimony to our international outlook. It also emphasises the need to bring together the international ecological community to address global environmental challenges, as highlighted in the joint statement<sup>1</sup> that

came from this meeting. I have tried to avoid mentioning Brexit, but it is hard not to because it makes it all the more important that the BES strives to ensure that the discipline of ecology, and the reach of the Society, is not constrained by national borders. International collaboration and serving our overseas members is key to our current strategy, as it will be in our next.

The last thing I want to mention are our primary goals to communicate world-leading ecological science, and to generate, synthesize and exchange ecological knowledge. The Society does an excellent job in addressing these goals through a wide range of activities, including our world-leading journals, meetings, workshops, and the award of grants. But two issues we discussed at the 'strategic refresh' was the need for the BES to take more of a lead role in shaping the ecological agenda, and also to help ecologists at all levels address core ecological questions and major environmental challenges. This couldn't be more important given the uncertain times we live in, but also given the high relevance of ecology to global environmental challenges. I look forward to working with the BES to develop our work in these areas of the Society's work.

I have touched on just a few areas of the BES's work, but not all; I simply don't have space. However, one thing that is abundantly clear as I take over this exciting role is that the BES offers something for all its members, whether that be publishing and communicating world-leading ecological research, funding for new research and attending conferences, training in communication and public engagement, support for educational work and career development, and opportunities to get engaged in education, policy and practice.

As I stood in front of the audience at the start of the Ghent meeting to introduce Sue Hartley's plenary lecture, it struck me what a vibrant and diverse Society the BES is. I am delighted to take on this role and very much look forward to working with the Society.

<sup>1</sup> [www.britishecologicalsociety.org/importance-ecology-across-borders-joint-statement/](http://www.britishecologicalsociety.org/importance-ecology-across-borders-joint-statement/)



Social time in Ghent

## POLICY

# A GREEN FUTURE

## OUR 25 YEAR PLAN TO IMPROVE THE ENVIRONMENT; THE GOOD, THE BAD, AND THE NON-COMMITTAL



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The 25 Year Environment Plan set out by the Government on 11 January 2018 has been met with a mixed response by the environmental community. Its scope and ambition have been praised, both in terms of the breadth of issues the Plan covers and the ability for long term planning provided by the 25 year timeframe. This has set the Plan apart from previous environmental policies however, concerns have been raised that it does not go far enough and lacks legislative clout. Here, we highlight the best, worst, and least certain aspects of the Plan, particularly relating to those issues our members might find interesting. We have tried to concentrate on new initiatives, not those in which it is merely proposing to 'continue support for' or similar.

### GOVERNANCE AND DELIVERY

It was encouraging to see the Plan took on board some of the suggestions laid out in the Natural Capital Committee's (NCC) advice published in September 2017. This included the proposed establishment of a new independent body to hold government account. The Plan commits to consulting on setting up this new independent body, and on a new set of environmental principles to underpin policy-making. It is expected this consultation will be launched early 2018, and the set of metrics to monitor the progress of the Plan's implementation, which are also still to be developed.

However, the NCC suggested that the Plan itself should be given statutory footing, and while the Plan alludes to future bills (such as the forthcoming Agriculture and Fisheries Bills) and

regulations (mostly to be consulted on, for instance, educing the use of single use plastics), it also stops short of proposing many new legal requirements. Many environmental NGOs are calling for an Environment Act to provide the legislative underpinning to the Plan to ensure it is more than a set of ambitions.

There are still many areas the Plan is vague and non-committal on. For example:

- The Plan does not set in place 5 year reviews, instead saying there will be yearly reports and periodic reviews of the contents of the Plan.
- The metrics against which to assess the Plan will be consulted on, but at present are not described in detail for each aspect. The reason given for this is the adoption of a natural capital approach to the environment, which will require the development of new metrics.
- Much of the Plan relies on the voluntary cooperation of industry, if it is to be effective.
- Budgets are, for most initiatives mentioned, not outlined.

### USING AND MANAGING LAND SUSTAINABLY

When discussing sustainable land management and use, the Plan refers to a system that will use 'public money to deliver public goods', particularly in reference to agricultural subsidies. This new environmental land management system will 'incentivise and reward land managers to restore and improve natural capital and rural heritage'.

According to the Plan, the aim is to 'develop a framework that works for the whole of the UK and reflects the needs and individual circumstances' of the four countries, and to work out the 'appropriate extent of the forthcoming Agriculture Bill'. Additional positive aspects within this chapter of the Plan include:

- a proposed consultation on how to embed net gain into building regulations, including on whether it should be mandatory, or remain locally controlled and advisory, as is currently the case.
- A proposed increase in wooded area of 180,000 ha by 2042 (although like for much of the Plan's aspirations the devil will be in the detail of where the woodlands are planted and with what mix of trees).
- Maintaining EU environmental standards and regulations (such as on neonicotinoids) post Brexit.
- Funding to develop a soil health metric.

However, there are concerns over the expansion of the term 'net gain' within building regulations to include other services, such as recreation, which may mean biodiversity gains are not always prioritised. In addition, government continues to drag its heels on deciding if conservation covenants will provide an effective conservation measure. The government sought expert advice on conservation covenants in 2014 (and received a draft bill), yet the Plan still only intends on 'considering' the implementation of conservation covenants.

### RECOVERING NATURE AND ENHANCING THE BEAUTY OF LANDSCAPES

The ambitions of this section of the Plan include the development a new strategy for nature to tackle biodiversity loss. It will build on England's existing Biodiversity 2020 strategy in order to maintain our commitments under the Convention on Biological Diversity. The recognition of landscape-scale management in conservation was evident, particularly in the proposal for a Nature Recovery Network (NRN) of 500,000 ha. The NRN will aim to connect existing wildlife sites, and provide opportunities for species conservation and the reintroduction of native species. However, there does not appear to be a funding commitment from government for the development of the NRNs, nor a timeframe or process for how progress will be assessed. In addition, it is not clear which organisations will be responsible for the implementation and maintenance of the NRN, although it is noted that the government will work with existing National Nature Reserves to allow wildlife to 'brim over' into new areas. Finally, 'making all areas more beautiful' is also an aim of the Plan, but metrics to assess this are not clearly outlined, although they are expected to be developed.

### INCREASING RESOURCE EFFICIENCY AND MINIMISING ENVIRONMENTAL IMPACTS AT END OF LIFE

The Plan aims to eliminate avoidable plastic waste by 2042, using measures such as reforming the producer responsibility systems to incentivise a better market for waste plastic. In addition, there is a proposal to publish a Resources and Waste Strategy in 2018 to reduce waste crime. There have been criticisms of government's slow ambitions to reduce waste. For example, no deposit return scheme for plastic bottles is included in the Plan, despite being recommended by the Environmental Audit Committee, having the support of major supermarkets such as Tesco and Iceland, and having been shown to be

a highly effective measure to increase plastic recycling in other countries. In addition, levies on items such as coffee cups, bans on plastic straws are all felt to be simple actions that could be done immediately without the need for prolonged consultation. However, the Plan indicates instead that a consultation on how single use plastics could be reduced will be launched and is expected in 2018.

### SECURING CLEAN, PRODUCTIVE AND BIOLOGICALLY DIVERSE SEAS AND OCEANS

The Plan proposes that 'science-based plans' will be used in managing fisheries post-Brexit, and that maximum sustainable yield will be sought using an ecosystem approach to management. The Plan also commits the government to reporting annually on the state of the UK's fish stocks. However, the Plan does not specifically set out how stocks of commercially fished species will be monitored, for which there is a currently a lack of data. The Plan does recognise fish stocks cannot be seen in isolation, and the marine environment needs protecting and improving. Hence, the network of marine protected areas will be extended.

Given the aspirations of the Plan for the marine environment, it is appropriate that it commits to continuing to adhere to and deliver our ambitions under the OSPAR convention. While no estimate of when this will be delivered is given, the proposal to develop a marine online assessment tool is welcomed.

This piece has not been a comprehensive list of all the ambitions of the 25 year plan for

improving the environment. More was set out particularly around government's ambitions for improving the global environment and connecting more people with the environment. However, we tried to highlight some of the key issues for the ecological community. Below, we have also highlighted the key actions the Plan aims to deliver in 2018. The BES Policy Team will work on and contribute to as many of these actions as possible. It is clear that for many of the Plan's goals and aspirations that the devil will be the detail of how to meet these goals, hence the engagement of BES membership with the Policy Team is key to enabling our BES input. The policy needs to hear from you, so please contact Camilla, Policy Manager, if you can contribute to any of the consultations or calls for evidence planned for 2018:

- Consultation on a new independent body to hold government to account and a new set of environmental principles to underpin policy-making in early 2018.
- Consultation on the third tranche of Marine Conservation Zones in the first half of 2018, with designations within 12 months of that date.
- Consultation on a new environmental land management scheme.
- Consultation on a new Clean Air Strategy.
- Consultation on a National Policy Statement for water resources.
- Call for evidence on how the tax system or charges could reduce the amount of single use plastics waste.
- Developing and consulting in 2018/19 on a code and best practice guidance for assessing the merits and risks of species reintroduction projects.



Teggs Nose Country Park, Macclesfield, UK.  
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# ECOLOGY ACROSS BORDERS

## ANNUAL MEETING ROUNDUP 2017



## ECOLOGY ACROSS BORDERS

### THE 2017 JOINT ANNUAL MEETING OF THE BRITISH ECOLOGICAL SOCIETY, THE ECOLOGICAL SOCIETY OF GERMANY, AUSTRIA AND SWITZERLAND AND THE NETHERLANDS-FLANDERS ECOLOGICAL SOCIETY, TOGETHER WITH THE EUROPEAN ECOLOGICAL FEDERATION



Alan Crowden | Outgoing Editor of the BES Bulletin | alan.crowden@ntlworld.com

I normally consider myself a gentle and mild-mannered fellow. But let me tell you, if I had written this report 5 minutes after reaching my Ghent hotel roughly 2.5 hours later than expected, after a journey involving trains of the slow, slower and slowest variety, and a 40 minute walk dragging a wheeled suitcase over icy cobbled streets through a Flanders snowstorm, my report would have made a Tarantino film script look like the story board for a children's television programme. Mind you, a couple of hours' delay was a minor inconvenience compared to that suffered by other attendees; the snow that swept across much of north-western Europe on 11 December 2017 meant that any conversation about the journey to Belgium risked turning into a travellers' version of the Four Yorkshiremen sketch: "Snow in't face an' ice clogging t'wheels of t'suitcase – paradise" (find it on You Tube, if you don't already know it by heart).



While it is tempting to hold certain individuals to account for arranging our annual meeting to coincide with a snowstorm, in my experience it is rarely possible to maintain a grudge once one realises one has landed in a major centre of expertise in the manufacture and distribution of beer, fries and chocolate. Any Christmas market stall that can fry churros and load them with so much sugar and melted chocolate that your bloated correspondent cannot finish a single 5 Euro portion rides high in the pantheon of conference-related culinary experiences.

And talking of a big portion...did anyone see the Twitter post from our outgoing President, of herself with a snowman...and what a snowman! Unnoticed by Sue or the photographer, Mr Big the snow sculpture had been 'enhanced' in a manner frankly inconsistent with the temperature.

The weather conditions required a certain fleetness of foot among organisers and participants; Sue Hartley found herself delivering her Presidential address as the first talk of the conference rather than the last (I particularly enjoyed the awestruck tweet from a delegate along the lines of 'She had her talk prepared three days early?!'). Opening the conference was something of a challenge, since some of us were still a bit grumpy and it was still snowing as she spoke, despite the assurance from the Mayor of Ghent that the snow would all be gone by evening. But she nailed it. I confess to being among the many who do not devote a great deal of time to thinking about the role of



Sue Hartley tweeted a photo of herself with a Ghent snowman, apparently unaware of quite how pleased he was to see her.

silicon in plant community ecology, crop protection and climate change mitigation, but I am as vulnerable to infectious enthusiasm, expertise and self-deprecating humour as the next fellow. More than one very good ecologist has described Sue as their role model.

Sue's *tour de force* sent delegates flooding out into the conference corridors energised and ready to share ideas, hypotheses and information, be they speakers in the concurrent sessions that got underway immediately after coffee, organisers of a wide variety of workshops offered through the middle of the day, or whether they had to wait for the poster session for their turn in the spotlight. There were a few



Day 2 began with the awards ceremony (see following pages) and an excellent plenary lecture from Carlos Herrera, who, despite a much-delayed journey to Ghent, delivered a masterly overview of plant traits that vary sub-individually. Carlos was presented with the Ernst Haeckel Prize by Alberto Basset of the European Ecological Federation immediately after his talk.



Carlos Herrera (left) receives the EEF Ernst Haeckel Prize from Alberto Basset, EEF President

gaps in the programme – snowbound speakers – but the meeting really got into full swing as the enthusiasts raced from talk to talk soaking up ideas, while the more measured folk spent time in the hallways talking to old friends or browsing the exhibits (although not so much the latter; come on folks, use it or lose it).



One cannot report on a BES annual meeting without a mention of the Annual General Meeting. Such gatherings are, by tradition, the best way to clear a room in record time. Want to shift 1200 people in a hurry? Announce the AGM and 30 seconds later the audience is down to about 50. Until, that is, Professor S. Hartley took the reins. Her performance in chairing the 2016 meeting was so, er, idiosyncratic that folk were queuing at the door for the 2017 edition. There must have been over 70 people in attendance to see Sue bludgeon and blag her way through the annual business meeting and only one attendee went away disappointed – the one who fell asleep (you know who you are and you know I have the photo). At one point Sue introduced a North Korean voting system – those in favour vote now; those against, best we don't offer you the chance to vote at all. Sue's penultimate act as BES President was to very generously thank the outgoing *Bulletin* editor, kindly describing me as 'irreplaceable', before in the same breath announcing that the replacement will be Kate Harrison. Eee, they know how to offer a compliment do them Yorkshire University professors.



Sue Hartley indicates to members that now would be a good time to vote in favour of her proposals.

The Conference dinner divided opinion. It was a stand-up buffet on an upper floor of the conference venue, which worked brilliantly for those who enjoy browsing food and circulating among their fellow delegates, less so for those that don't like waiting in queues and do like sitting down to eat.



Louise Vet opened the final day with her personal view of the last 12 months in ecology. This slot allows the speaker to discuss the issues that have caught their attention over the last year, and is proving to be a fascinating insight into the variety of interests, opinions and priorities of leading ecologists. Louise rose to the occasion with a fascinating and thought-provoking browse of topics from microbes to global climate change that set everyone up for the day.



Everyone has their own way of tackling conferences. Some eminent ecologists of my acquaintance find themselves spending most of their time in the spaces between meeting rooms, because they want to talk to old friends or because new friends want to talk to them. Others move between sessions while other sit tight for the duration. In my time as *Bulletin* editor I have tended to roam the corridors to get a feel for the tide of enthusiasm in different areas of ecology, and to pounce on unsuspecting folk that I think might enjoy the kudos of being invited to contribute to the *Bulletin* in some way. I have always thought it would be slightly invidious to comment on individual contributed papers, but I would just make a few general observations on the presentations at BES meetings. As someone who can barely make himself understood in his own native language, let alone anyone else's, I am in awe of the folk, young and old, who can inform and even entertain audiences in what might be their second or third language. The passion and enthusiasm of all speakers and poster presenters is plain to see, and the thoughtful and sympathetic hearing that more senior ecologists give the up and coming generation is splendid; especially since it is the youngsters whose fast-developing skills and effort tend to keep the establishment on their mettle. I went to one session on reintroductions, restoration and rewilding (S23) that for me exemplified what the BES annual meeting is all about; 8 brilliant speakers spanning a range of countries, backgrounds, and expertise providing a roomful of people with ideas, information and above all inspiration for ways to take our science forward.

So we came to the last afternoon and I contemplated how best to spend my final session as *Bulletin* editor; and went on a random walk, swapping rooms after one talk and immediately going to the next session along the corridor. I heard speakers from Germany, the Netherlands, Spain, Portugal, Scotland and Brazil. I learned about plant-pollinator interactions, demography, ecosystem functioning, hemiparasites, species abundance, and much more. Brilliant.

Top that, Iain Couzin, I thought as I waited for the closing plenary. He did, with a dazzling exposition of how social interactions shape biological processes, focussing on how and why animals exhibit highly-coordinated collective behaviour. The abstract in the conference booklet attempted a spoiler with the message that Iain would introduce 'a new fully-immersive Virtual Reality environment for freely-moving animals'. The audience reaction as expressed on Twitter was "Wow!". Freed from the limitation on message length and with the rich lexicon of the English language at my disposal, I can wax more lyrical: by golly, it was good stuff. One knows about the potential of technological advances to contribute to the advancement of science, but for most of us future technology jumped off the screen and ran around the conference hall when a real fish started interacting with a virtual fish.



*Iain Couzin presented a barnstorming plenary. If he'd kept still for more than 3 seconds I might have got a good enough picture to reproduce in colour.*

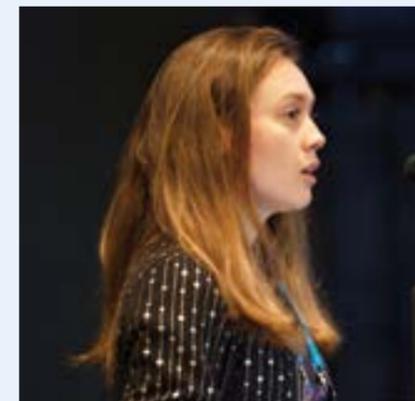
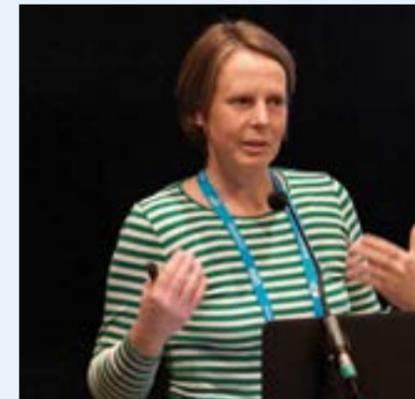
And that was it. The hundreds of us that stayed for the Couzin climax simultaneously rushed to the cloakroom and formed a very British queue for our coats. My

stored outerwear was recovered by BES Events Manager Amy Everard, who spent the end of the meeting helping the conference centre staff rather than deservedly resting on her laurels while accepting the plaudits of BES members grateful for another brilliantly organised meeting. Well done Amy, and thanks to all the BES staff who supported the meeting so well. The volunteer helpers were brilliant, and I have to say that I enjoyed the entire experience of being in Ghent. Once the snow went.

The BES staff are brilliant with the logistics of our meetings but there is a terrible twosome that do an enormous amount of work preparing the ground for the annual meeting by getting the scientific notes in the right order. The terms 'organising the scientific programme' and 'thankless task' are virtually synonymous, and putting together the programme would be hard enough without the late cancellations, changes of mind, special pleading and all the other difficulties that delegates throw up and which I am probably not supposed to mention. Emma Sayer and Zoe Davies have been responsible for organising the scientific programme for 4 and 3 years respectively, for which effort they are entirely justified in dressing up as angels for the conference Christmas Day, when others simply limit themselves to silly seasonal jumpers. It is an enormous task they take on in addition to the day jobs, and they deserve the thanks of us all.



*Emma Sayer and Zoe Davies. Emma is wearing the smile and Zoe is giving the photographer a pleasant but firm non-verbal communication to the effect that he can chose between putting the camera away now, or eating it.*



*Eric Higgs, Vicky Temperton, Andreas Schweiger, Andrea Perino, Keith Kirby, Rudy Diggelen, Sabine Tischew and Jim Harris came together in one 2-hour session that for this audience member at least encapsulated all that is great about ecology meetings*

## ECOLOGY ACROSS BORDERS

# BEHIND THE SCENES OF THE EAB SCIENTIFIC PROGRAMME



Emma Sayer, Zoe Davies, Amy Everard

The following item appeared in the delegates' booklet for the Ecology Across Borders meeting in Ghent, but since at least 4,500 of our members were unable to get to the fully-subscribed meeting, we thought it might be helpful to reproduce it in the Bulletin to give you a few insights into the work that goes into organising our annual meeting. Anyone caught muttering about scheduling risks being invited to help in future...

600 presentations, 500 posters, 13 workshops and 4 plenaries in three days: have you ever wondered what goes into creating the scientific programme for a large international meeting? While you might think that we just use a computer programme or algorithm, it actually comes down to three people and a large number of Excel spreadsheets, emails, and lists.

Although the thematic sessions and workshops are selected through open competition months in advance, the main work on the scientific programme starts with the close of abstract submission. It takes us a good 10 weeks, 3-4 meetings, and around 500 internal emails to compile the colourful programme overview that appears in the meeting programme, a diagrammatic representation of what we hope will be exciting and stimulating oral and poster sessions.

Immediately after the abstract submission deadline, we begin by working out the number of sessions

for each category (e.g. Community Ecology, People & Nature) based on the number of submissions. We first place the thematic sessions in the programme overview, taking into account the spread of subject areas and the topics our plenary speakers will be covering. We then start filling in the rest of the programme with the category sessions, using a colour scheme to spot potential clashes. This usually takes a couple of days, and a lot of tea and chocolate. Once we are satisfied with the programme overview, we start sifting through the abstracts to create sessions with coherent subtopics. This represents the bulk of the work, because we try to achieve a balance of speaker gender and seniority that is representative of the initial submissions. We also aim for an even spread of talks across institutions and countries to create a varied international programme. If your abstract did not get accepted, this is not a reflection of the quality of your science, but because we aspire to ensure diversity and inclusivity

across the meeting. The next step is to include the subtopics in the programme overview, which often requires some additional shuffling to avoid overlaps and clashes. This year, we also had to consider how to arrange the lightning talks in the most suitable sessions, by creating a direct link between the last oral session of the afternoon and the subsequent poster sessions!

We might get a bit of breathing space before early bird registration closes, but then the real madness begins because we have only a short space of time to finalise the programme. For each presenter who has not managed to register, we need to find a suitable swap to complete the oral sessions. For this task, we are really grateful to those delegates who originally requested an oral presentation, accepted our offer of a poster instead, and are then willing to change back to a talk to help us out. Finally, once all the talks are timetabled, we can focus on arranging the poster sessions.

We try to create diverse and vibrant sessions across a wide range of topics each day.

During these 10 weeks of intense work on the programme, we also correspond with delegates, draft and create the guidelines for presenters, and recruit and assign session chairs! Even after the main programme goes to print, we are still busy sorting out last-minute cancellations. Then mid-December arrives and it is time to travel to Ghent, so we cross our fingers, hold our breath and hope you all enjoy the meeting!



**Emma Sayer**  
(the four-meeting old-timer and ultimate pro)

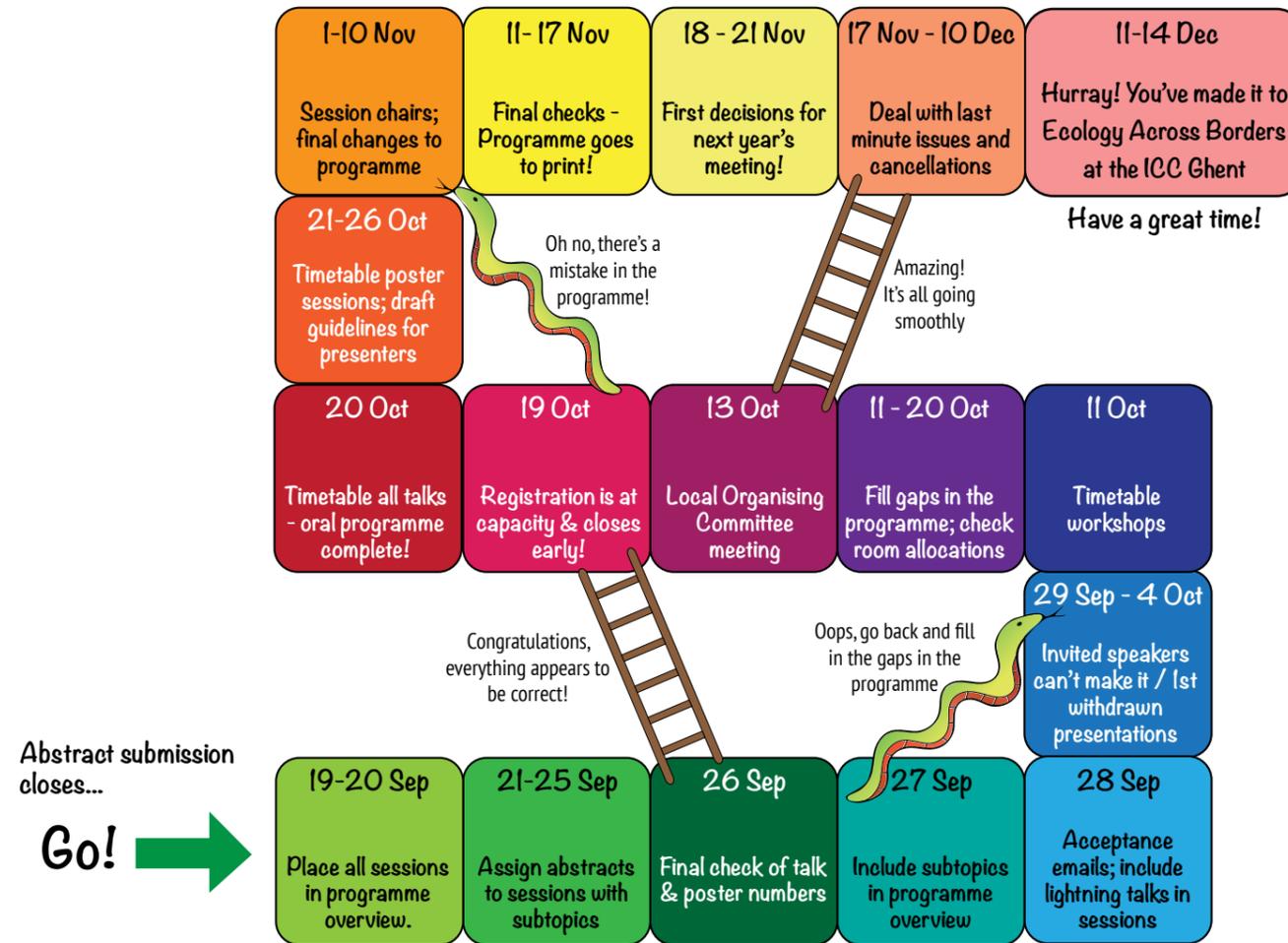


**Zoe Davies**  
(chief partner-in-crime for the past three meetings)



**Amy Everard**  
(BES meetings guru, fixer and all-round superstar)

*(If you want to know more or learn how to create the scientific programme for a large international meeting, you can sign up for a workshop in 2018)*



## ECOLOGY ACROSS BORDERS

# AWARD WINNERS 2017

### HONORARY MEMBERSHIP

Louise Vet



Honorary membership is the highest honour we can give and it recognises an exceptional contribution at an international level to the generation, communication and promotion of ecological knowledge and solutions. Honorary membership of the Society was conferred on Louise E.M. Vet, who is director of the Netherlands Institute of Ecology (NIOO), one of the largest institutes of the Royal Netherlands Academy of Arts and Sciences (KNAW), and professor of Evolutionary Ecology at Wageningen University.

May Berenbaum



Honorary membership was also awarded to May Berenbaum, Professor and Head of the Department of Entomology at the University of Illinois at Urbana-Champaign, who was unable to receive the award in person.

### BES PRESIDENT'S MEDAL

Phil Warren



*Phil Warren takes the biscuit*

This prestigious honour was established in 1987 and is in the personal gift of the President. Professor Phil Warren has been a major inspiration, mentor and friend to the President, for which he was apparently awarded a Presidential biscuit. Sources close to the *Bulletin* suggest that the baked item was brought in when the gold medal normally awarded to recipients was left in the hotel room of a senior BES official identified only by the initials 'H a z e l N o r m a n'.

### MARSH AWARD FOR ECOLOGY

Sandra Lavorel



This Marsh Award recognises a record of research that is having a significant impact on the science of ecology or its application, and was awarded to Sandra Lavorel of the French National Centre for Scientific Research (CNRS) by Oliver Bogue on behalf of the Marsh Christian Trust.

### MARSH AWARD FOR CLIMATE CHANGE RESEARCH

Richard Pearson



Richard Pearson of University College, London received the Marsh Award for an outstanding contribution to climate change research from Oliver Bogue of the Marsh Christian Trust

### MARSH BOOK OF THE YEAR AWARD 2017

Tim Clutton-Brock



Tim Clutton-Brock was not able to be in Ghent to receive his award, but delegates at the INTECOL Congress in 2013 will remember his plenary talk, which outlined many of the ideas developed fully in his book

### BES AWARD 2017

Alan Gray



Our BES Award is made in recognition of exceptional service to the Society. Alan is a former vice president of BES, served two terms as chair of the Publications Committee, and chaired the Ecological Affairs Committee for nine years. He sat on the editorial board of the *Journal of Ecology* for many years and edited (with Peter Edwards and Mick Crawley) a BES book entitled *Colonisation, Succession and Stability*. Alan delivered the BES Lecture in 2003 on the GM debate and his last paper was published in the *Journal of Applied Ecology* in 2004 – 32 years after the first one. But apart from that...?

### BES FOUNDERS' PRIZE

Liza Comita



The BES Founders' Prize commemorates the enthusiasm and vision of the Society's founders. It is awarded to an early-career ecologist who is starting to make a significant contribution to the science of ecology, and this year was awarded to Liza Comita of Yale University.

### EQUALITY AND DIVERSITY CHAMPION

Christine Maggs



This award recognises an individual or group who has made innovative contributions to enhancing the practice of equality and diversity in the ecological community. In 2017 the award is made to Dr Christine Maggs of the Joint Nature Conservation Committee.

### ECOLOGICAL ENGAGEMENT AWARD

Jane Stout



This award recognises an ecologist who has bridged the gap between ecology and the public, and this year goes to Professor Jane Stout of Trinity College Dublin.

### PUBLIC ENGAGEMENT AWARD

Aaron Watson



The Public Engagement Award recognises the outstanding role members have played in the delivery of the Society's public engagement programme, and the 2017 edition was awarded to Aaron Watson of the University of Reading.

### BES EARLY CAREER PRIZE WINNERS

### JOURNAL OF ECOLOGY: ELTON PRIZE 2016

Roberto Salguero-Gomez



### JOURNAL OF ANIMAL ECOLOGY: HALDANE PRIZE 2016

Pedro J. Bergamo



### METHODS IN ECOLOGY AND EVOLUTION: ROBERT MAY PRIZE 2016

Gabriella Leighton



The *Journal of Ecology* Haldane Prize 2016 was awarded to Martina Treurnicht and the winner of the *Journal of Applied Ecology* Southwood Prize 2016 was Michael Becker. Neither was able to attend the presentation but both were given a warm round of applause *in absentia*.

### L'OREAL-UNESCO FOR WOMEN IN SCIENCE AWARD



This is not an award in the gift of the Society, but the meeting recognised the achievement of Amy Austin of the University of Buenos Aires and Senior Editor of *Journal of Ecology* in being recognised for this prestigious prize.

### GFO WIEHE AWARD



Michael Staab of the University of Freiburg

### GFO PHD AWARD



Andreas H. Schweiger of the University of Bayreuth

## InFOCUS

# THE ANSWER!



This is a drone-captured photograph of a Greater Crested Tern *Thalasseus bergii* colony breeding on a temperate Australian island.

This is the species of seabird which Hodgson et al. replicated with fake, decoy ducks in their experiment, the #EpicDuckChallenge. Drone-derived wildlife population data are more accurate than those collected using the traditional ground-based method. Hodgson et al. created colonies of life-sized, replica seabirds containing a known number of fake birds to assess the accuracy and precision of each counting approach. The study also developed a highly accurate semi-automation technique to count the number of individuals in the remotely sensed imagery. Such improvements in the effectiveness of wildlife monitoring enable more informed and proactive environmental management. The #EpicDuckChallenge study is published in *Methods in Ecology and Evolution* (DOI: 10.1111/2041-210X.12974).

## ECOLOGY ACROSS BORDERS

# PEOPLE'S CHOICE AWARD

At Ecology Across Borders, the organising societies agreed to make a special award for scientists that use and promote inter- and trans-disciplinary approaches in science. This award recognises the joint involvement and cooperation of more than just the classical ecological disciplines in science (inter); but also the involvement of the non-academic societal environment in science (trans). This poster award was voted for by delegates, for the scientist that showed the use of inter- and trans-disciplinary in their approach, and that proof the added value of it.

The winner received a NecoV-financed poster prize of €500, and free registration to the upcoming BES Annual Meeting (Birmingham, December 2018) and GfÖ Annual Meeting (Vienna, September 2018).

### WINNER

**Nikolai Knapp**

Helmholtz Centre for Environmental Research - UFZ

Linking lidar and forest modeling to assess biomass estimation across scales and disturbance states

With Rico Fischer (Helmholtz Centre for Environmental Research - UFZ), Andreas Huth (Helmholtz Centre for Environmental Research - UFZ)



## ECOLOGY ACROSS BORDERS

# STUDENT PRIZE WINNERS

Each year we call a diverse group of judges to select winners for our Student Poster and Talk Prizes. Our Joint Annual Meeting: Ecology Across Borders, saw a record 320 entries for both talks and posters, so our judges certainly had their work cut out!

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 for the project.

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

Winners receive an honorarium of £250 and runners up receive £100. Due to the high standard of presentations this year at Ecology Across Borders, a number of Highly Commended individuals have also been selected for both talks and posters.

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

### STUDENT TALK PRIZE

#### WINNER



**Pen-Yuan Hsing**  
Durham University

Science and citizenship: Capacity building for civic engagement through the MammalWeb citizen science project

With Lorraine Coghill (Durham University), Julie Ryder (Belmont Community School), Roland Ascroft (Citizen scientist), Philip Stephens (Durham University)

MammalWeb is a citizen science project in north east England where we work with local communities to monitor wildlife with camera traps. We discovered, however, that in addition to successful

crowdsourcing of useful ecological data, this project has stimulated civic engagement. This included a group of secondary school students who, with support from the BES, developed their own ecology outreach activities that were presented at public events. There are also citizen scientists who started their own camera trapping surveys elsewhere to inform wildlife management, and do their own engagement and outreach. This highlights the value of citizenship in citizen science.

#### RUNNER UP



**Eleanor Tew**  
University of Cambridge

Capturing cultural ecosystem services – a new method of incorporating cultural values into land management decisions

#### RUNNER UP



**Dries Van de Loock**  
University of Antwerp  
Belgium

Cooperative breeding in an Afrotropical songbird: a buffer against habitat disturbance?

With Liesbeth De Neve (Ghent University Belgium), Diederik Strubbe (Ghent University Belgium), Mwangi Githiru (Wildlife Works Kenya), Erik Matthysen (University of Antwerp Belgium), Luc Lens (Ghent University Belgium)

## HIGHLY COMMENDED



**Martina Lori**  
Research Institute of  
Organic Agriculture (FiBL)

Enhanced functional potential of protease encoding microbial communities in soils of organic compared to conventional farming systems under simulated future drought scenarios

With Sarah Symanczik (Research Institute of Organic Agriculture (FiBL)), Paul Mäder (Research Institute of Organic Agriculture (FiBL)), Norah Efosa (Research Institute of Organic Agriculture (FiBL)), Sebastian Jaenicke (Justus-Liebig-University Giessen), Franz Buegger (Helmholtz Zentrum München), Simon Tresch (Research Institute of Organic Agriculture (FiBL)), Alexander Goesmann (Justus-Liebig-University Giessen), Andreas Gattinger (Justus-Liebig-University Giessen)

## HIGHLY COMMENDED



**Ineke Roeling**  
Universiteit Utrecht

Grassland plants differ in phenotypic plasticity and trait strategy depending on their niche width and position along N:P gradients

With Jerry Van Dijk (Universiteit Utrecht), Maarten Eppinga (Universiteit Utrecht), Martin Wassen (Universiteit Utrecht)

## STUDENT POSTER PRIZE

### WINNER



**René Heim**  
Hamburg University,  
Macquarie University

Multiscale Remote Sensing of Plant Pathogens: Detecting Myrtle Rust in Australia

With Ian Wright (Macquarie University), Jens Oldeland (Hamburg University), Angus Carnegie (New South Wales Department of Primary Industries), Hsing Chang (Macquarie University)

A devastating invasive disease, myrtle rust (*Austropuccinia psidii*), is threatening one of Australia's dominant plant families, the Myrtaceae. The disease is responsible for substantial yield losses in affected industries and causing local extinctions of ecologically important plant species. Our research aims at developing a proof-of-concept for automated and targeted detection of this aggressive disease to reduce costly and

environmentally damaging fungicide applications. At the EAB2017, we presented recently published results (doi: 10.1111/ppa.12830), showing that optical sensors are a useful tool to accurately discriminate healthy and infected lemon myrtle trees and thus suggest to further deepen research efforts.

### RUNNER UP



**Olivia Bell**  
University of Exeter

Investigating the trophic ecology of Tasmanian predators

With Robbie McDonald (University of Exeter), Stuart Bearhop (University of Exeter), Menna Jones (University of Tasmania), Rodrigo Hamede (University of Tasmania), Sarah Perkins (Cardiff University)

### RUNNER UP



**Denise Rupprecht**  
University of Münster

Sheep and deer grazing as tool for restoration and maintenance of calcareous grasslands: A six-year experiment

With Annika Brinkert (University of Münster), Kristin Gilhaus (University of Münster), Norbert Hölzel (University of Münster), Birgit Jedrzejek (University of Münster)

## HIGHLY COMMENDED



**Annika Hass**  
Agroecology University  
of Goettingen

Landscape configurational heterogeneity by small-scale agriculture, not crop diversity, maintains pollination services in Western Europe

## HIGHLY COMMENDED



**Demetrius Martins**  
Imperial College London

Whole plant nutrient and carbon associations in tropical trees

With Françoise Ishida (James Cook University), Emma Humphreys-Williams (Natural History Museum), Stanislav Strekopytov (Natural History Museum), Jon Lloyd (Imperial College London)

## SPONSORSHIP

# AN EXHIBITION ACROSS BORDERS



**Paul Bower** | Fundraising and Development Manager | paul@britishecologicalsociety.org

# 'CONFERENCE ORGANISERS IN THE USA COULD REALLY LEARN A LOT FROM YOU GUYS.'

**Possibly the best compliment you could ever receive from an exhibitor, particularly from the director of a tech start-up who had flown from California to be part of the exhibition at Ecology Across Borders. We were of course delighted that our work to improve the quality and increase not only the size but diversity of the exhibition at Annual Meeting had paid off.**

The exhibition at Ecology Across Borders was the largest that BES has staged since INTECOL in London in 2013 and exhibitor feedback was positive. The 34 participants generated much needed income to help us deliver a successful high quality meeting. However, revenue is not the only reason we stage an exhibition at the heart of our Annual Meeting.

Exhibitors such as German instrument manufacturers Ecomatik and EcoTech though to Italian and Danish NGOs, LifeWatch and the Global Biodiversity Information Facility (GBIF) added to the delegate experience and international feel of the event.

Many of the organisations and companies from across Europe and UK who exhibited at Ecology Across Borders will be returning for #BES2018 at the Birmingham ICC 16-19 December 2018. They will also be joined by first time exhibitor Swiss open access platform MDPI AG, OUP, CABI, ADC Bioscientific, GBIF, PR Statistics and our publishing partner Wiley who, as well as exhibiting at Ecology Across Borders, sponsored the closing plenary featuring our outgoing President Professor Sue Hartley.

If you would like to be part of the exhibition at #BES2018 or sponsor part of the Annual Meeting please contact me on [paul@britishecologicalsociety.org](mailto:paul@britishecologicalsociety.org) or call +44 (0) 20 7685 2500

A full sales brochure with options to suit all budgets can be found at <https://www.britishecologicalsociety.org/events/bes-annual-meeting-2018/exhibition-and-sponsorship>

Spaces are limited and are already selling fast so there is no time to waste.

**FLYING FROM CALIFORNIA TO BELGIUM CAN BE TAXING, BUT TAKING PART IN THE BES 2017 ECOLOGY ACROSS BORDERS EXHIBITION WAS THE OPPOSITE. WE FELT WELCOMED, MET MANY COOL PEOPLE, AND OUR BUSINESS INTERACTIONS PROVED REALLY FRUITFUL. WE ALSO GOT A POSITIVE RECEPTION FOR WILDNOTE, OUR DIGITAL ENVIRONMENTAL DATA COLLECTION, MANAGEMENT, AND REPORTING TOOL. WORKING WITH THE BES WAS A GREAT EXPERIENCE. WE WILL BE BACK TO EXHIBIT AT #BES2018.**

**Brandon Jones**  
Wildnote, California USA

## ANNUAL MEETING

# 37TH ANNUAL GENERAL MEETING MINUTES

Minutes of the Annual General Meeting held on Wednesday 13<sup>th</sup> December 2017 in the Jan Van Eyckzaal Room, International Convention Centre, Van Rysselberghedreef 2, 9000 Gent, Belgium.

81 members of the British Ecological Society attended the meeting.

### 1. MINUTES OF THE PAST AGM

The minutes of the 36<sup>th</sup> AGM held on Tuesday 13<sup>th</sup> December 2015 in the Hall 1, Area and Convention Centre Liverpool, Monarchs Quay, Liverpool, Merseyside L3 4FP (as published in the *Bulletin* Vol 48:1 pp24 – 25) were presented to the meeting.

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

### 2. ACCOUNTS

The Accounts for the year ended 31 December 2016 (as published in the *Bulletin* Vol 48:3 pp 65-90) and summarised in the Annual Review were presented to the meeting.

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

### 3. THE REPORTS OF THE TREASURER AND THE AUDITORS

The Treasurer, Dr Ezard, presented his report. He noted that the previous Treasurer had formalised the modelling of financial forecasting for the BES and this had continued to be developed to help understand the long term impacts of income and expenditure trends. The Society had prioritised the diversification of income streams to reduce risk and had moved more money into the investment portfolio. The Society had continued to invest in the ecological community by agreeing

to employ a policy officer based in Scotland, increasing the amount of money allocated to the 'Ecologists in Africa' grant scheme, creating an additional permanent staff member in the Publications Team and increasing the staff resource for the Society's public engagement activities. These were all affordable because of the new 7 year contract that had been signed with Wiley for the publication of the Society's Journals. The Society was about to start the new cycle of strategic planning which would be considering how best the BES could invest in ecology and the Society was keen to hear ideas from members.

The BES Finance Committee has undertaken a review of the way in which the environmental screen of the investment portfolio operated. At the moment the companies with the worst environmental performance were screened out and we were looking to move, at least partially, to positive investing in those companies with the best environmental performance. The review would be completed in 2018.

The treasurer concluded by stating that the BES continued to be in a strong financial position.

### 4. THE REPORT OF THE COUNCIL SECRETARY

The Council Secretary, Dr Vanbergen, presented his report. He started by saying that the BES has had another fantastic year with lots of progress. There had been considerable efforts made to address the governance of our society, something not done for some decades, and we were moving towards a more, modern governance structure changing the form and the operation of the Board of trustees and the committees. He stated that such changes, if approved at the AGM, would empower our society to become more representative, more effective and fit for purpose in delivering its strategic goals and day-to-day function.

Our publications go from strength to strength, continuing to present the very best of global ecological research and our publications team deserve enormous credit for securing a new excellent 7-year deal with our publisher (Wiley) that assures the valuable income from our journals and their continued excellence. Publications don't stand still and the executive and the publications committee are striving to maximise journal impact and develop new innovative publications, such as an interdisciplinary journal, to benefit our membership and the wider community.

Our external affairs team was doing fantastic work also, whether it was delivering excellent public engagement activities (e.g. RHS Chelsea, NERC unearthed) or training opportunities (e.g. summer schools) or actively engaging with policymakers & parliaments around the UK to understand and shape the debate around Brexit and the implications for our science, end-users and nature itself. The BES was also increasingly engaging with the media, exemplified by the appointment of a full time media officer, to ensure that ecology was getting the attention it deserved across society and different stakeholders.

The BES was exploring innovative ways of securing and diversifying funding in order to secure the future of all the societies activities, including the valuable grants that we award during these straightened times. We have increased our membership to an unprecedented level at >6000 members and co-organised with our friends and partners on the continent the largest annual meeting in our history (at least until the weather provided us with a lesson in humility!). The BES would not be what it is without its membership and their voluntary efforts in SIGs, committees, Council and at different events around the world.

Finally thanks go to Hazel and her dedicated and professional team in the executive, without whom things would simply fall apart!

### 5. ARTICLES OF ASSOCIATION

The President, Professor Hartley, presented the revised Articles of Association and the case for change. She noted that the range and complexity of the Society's activities had increased dramatically over the last 20 years but the governance of the organisation had not been reviewed during that time. Staff had increased from 3 to 23, we now have 17 Specialist Interest Groups, 2 properties in central London, a much bigger membership a substantial investment portfolio and a much wider range of activities. The external environment had also changed with increasing scrutiny and expectations of boards of trustees. BES Council had therefore concluded a review of governance of the Society was needed.

A skills audit had been done on the existing board and a working group established, comprising existing and past Council members, to conduct a review of the BES governance structure. We commissioned an external consultant with governance expertise to help us with the review and completed a survey of the governance arrangements in a range of similar organisations to the BES. We consulted widely and talked to other organisations who had also undergone governance reviews.

The result was a set of recommendations agreed by Council to make the governance of the BES more effective. These recommendations included:

- Refocusing the board of trustees onto strategic issues;
- Delegating more authority to the Society's Committees so that decisions can be taken more quickly;
- Increasing the frequency of Board meetings from 2 to 4;
- Reducing the size of the board of trustees from 22 to 13;

- Engaging more effectively with members by introducing electronic voting on some AGM matters;
- Encouraging members to take up the new opportunities on Committees by having open recruitment calls;
- Reviewing the risk management processes in the Society.

As a number of these changes required changing the Articles of Memorandum and Association, it was also decided to ask the Society's solicitors to bring them up to date to follow best practice. The current Articles of Memorandum and Association had been distributed to the membership along with the proposed new Articles of Association.

#### A question and answer session then followed:

Q: How long does a member have to have been a member before they can vote at an AGM?

A: They can vote immediately on becoming a member.

Q: How will decisions be delegated to Committees?

A: The Board will deal with strategy and the long term direction of the organisation whilst Committees will deal with managerial and operation issues. The Chairs of Committees will also be members of the Board in order to keep a strong connection between strategic and operational activities.

Q: How will the proposed new structure fill the gaps identified in the trustee skills audit?

A: The new Board will comprise 10 Officers and 3 Ordinary Members, one of which will always be an Early Career Representative. Bringing non-members on to the Board has been discussed but discounted as the Board has the right to co-opt external people onto the Board if a particular skills set is needed but not present on the Board.

Q: How will the Board assess the effectiveness of the changes?

A: There will be a transition period of 3 years before the new structure is fully implemented which provides opportunities for assessing the impact of the changes. It is now considered best practice for Boards to review their governance arrangements on a regular basis and the BES will be doing that on the same cycle as the strategic planning process (i.e. 5 years).

Comments from members included support for the changes to make decision making faster and more effective, noting that many other organisations had gone through similar governance changes making the trustee board smaller, and support for increasing the influence of members through greater participation at Committee level.

The members were requested to resolve by special resolution that the Memorandum and Articles of Association of the Society be replaced in their entirety by the new Articles of Association that had been circulated with the AGM agenda. The special resolution was proposed by A. Bennett and seconded by D. Gilbert. A total of 81 members voted to adopt the resolution, no members voted against or abstained and therefore the special resolution was passed.

### 6. TRUSTEE TERMS OF OFFICE

The terms of office of our two Vice Presidents, Rosie Hails and Andrew Pullin, were both due to expire at the close of the AGM. In order to restore the usual rotation cycle provided for by the Articles of Association of the Society and to ensure that the Society does not have to replace both Vice Presidents at the same time, the trustees resolved to exercise the power at Article 9.7 of the new Articles of Association to extend the term of office of Rosie Hails for one year until the end of the AGM held in 2018.

## 7. TO ELECT OFFICERS OF COUNCIL OF THE SOCIETY

The Council nominees for four Officer posts were as follows:

Present Officers		Retiring Date	Council Nominees
<b>President:</b>	S.Hartley	2017	R. Bardgett
<b>Past President</b>		2018	S. Hartley
<b>Vice President:</b>	R. Hails	2018	
<b>Vice President:</b>	A. Pullin	2017	D. Hodgson
<b>Council Secretary:</b>	A. Vanbergen	2018	
<b>Honorary Treasurer:</b>	T. Ezard	2019	
Honorary Chairpersons of Committees		Retiring Date	Council Nominees
<b>Meetings:</b>	Z. Davies	2018	
<b>Policy:</b>	J. Vickery	2019	
<b>Publications:</b>	J. Hill	2019	
<b>Education &amp; Careers:</b>	W. Gosling	2017	W. Gosling

The motion to accept these changes to the Officers of the Society was proposed by J. Lello, seconded by D. Burslem and carried by a majority with no votes against.

## 8. TO ELECT ORDINARY MEMBERS OF COUNCIL

Six Council members were retiring, either at the end of their term of office or stepping down early because of the governance changes of the Society. There was an election to choose one from the six nominations for the Early Career Representative. A ballot was held and tellers were appointed. A. Birkett was elected as an Ordinary Member of Council having received the biggest number of votes.

## 9. THE APPOINTMENT OF THE AUDITORS FOR 2017 AND THE 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 Y. Buckley and carried by a majority with no votes against.

## 10. ANY OTHER BUSINESS

Professor Sue Hartley, thanked the members of Council who were retiring; Professor Pullin, Dr Gilbert, Dr Stott, Dr Eichhorn, Dr Scott, Dr Turnbull and Professor Buckley.

There was no further business and the meeting was closed.



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## CAPTURING ECOLOGY 2018

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# BES PHOTOGRAPHIC COMPETITION 2017

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Each year we welcome our members to enter our ever popular Photographic Competition: Capturing Ecology. This year we had a staggering 300+ images submitted, covering all aspects of Ecology. We even added a new category 'The Art of Ecology' to encourage our members to look at an alternative side to the natural world.

Our professional judges had a difficult task, but we were pleased to exhibit the following winners at our Joint Annual Meeting: Ecology Across Borders 2017. Congratulations to all our winners and many thanks to our judges!

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### OVERALL WINNER

**Christopher Beirne**  
Crees Foundation and University  
of Exeter

#### *On the trail*

A male ocelot, *Leopardus pardalis*, using a human-made trail at the Manu Learning Centre, Peru. Although we often think of trails through tropical rainforests as having negative impacts on local wildlife, several cats species (including the ocelot and its larger cousins pumas and jaguars) often use these trails to rapidly move around their home ranges.

#### *About Photography...*

Ecological fieldwork gets you out to some fantastic places, but often you are so focussed on the stresses and strains of your project that it is easy to forget the setting you are in! Photography for me is about taking a bit of time, wherever I am, to appreciate my surroundings and capture something unique or different about each location or ecosystem. I am happy if I get something nice enough to stick on my wall at home!

#### *About the Image...*

This image was taken in the Manu Learning Centre run by the Crees Foundation in the Peruvian Amazon. Much of the mammalian rainforest wildlife is so elusive that the only chance you will get to see many of

the species behaving naturally, is through remote cameras - just like the set-up I used here! It is essentially a photographic studio, complete with multiple remote flashes, which you set up in the forest. Lowland rainforest is probably the worst place to leave electrical equipment outside for any period of time - water always finds a way in eventually. And even if it doesn't, the termites or small mammals will find a way to ruin your wiring!

#### *About my research...*

I am currently a post-doc in the Poulsen Lab at Duke University. I use camera traps, transect data and GPS tracking to investigate how anthropogenic disturbance influences vertebrate populations in the tropics.



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## OVERALL RUNNER-UP

Mark Tatchell  
Retired

### *Toco toucan looking back*

The Toco Toucan, *Ramphastos toco*, appears to be looking back and engaged with the photographer. This is emphasised by the dramatic bill colour and shape contrasting with those of its head and made more mysterious by the shallow depth of field with focus on the eye in this close up image.



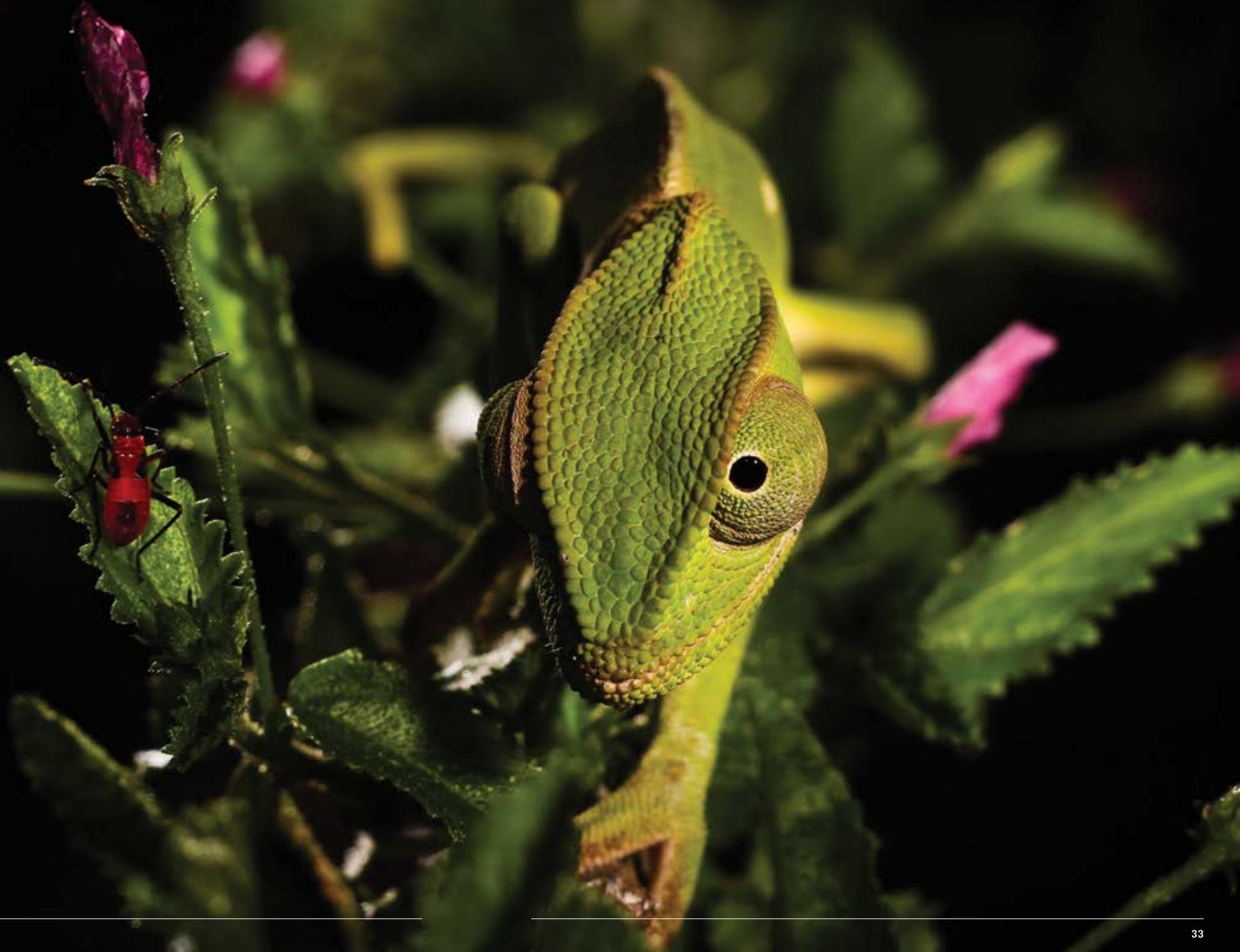
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## OVERALL STUDENT WINNER

Leejiah Dorward  
Department of Zoology, University  
of Oxford

### *I See You*

A flap-necked chameleon, *Chamaeleo dilepis*, climbs a flowering plant stem in search for a safe spot to roost for the night in Southern Tanzania.





## UP CLOSE AND PERSONAL

### WINNER

**Roberto García Roa**  
Ethology lab, Cavanilles Institute of Biodiversity and Evolutionary Biology, University of Valencia

#### *White silk*

Reptiles change their skin several times across the year. It is a delicate process that can often jeopardize the life of the animal. It is for this reason that seeing animals shedding skin in the wild is not usual. Here, a male Anolis Lizard (*sp. Anolis*) in broad daylight in Costa Rica.

## DYNAMIC ECOSYSTEMS

### WINNER

**Zoe Davies**  
Durrell Institute of Conservation and Ecology (DICE), University of Kent

#### *Salmon Run*

A brown bear, *Ursus arctos*, catching sockeye salmon, *Oncorhynchus nerka*, in Alaska, USA. The annual salmon run is highly dynamic in terms of the behaviour and population biology of both the bears and fish, as well as the level of interaction between the two species.



### STUDENT WINNER

**Karen O'Neill**  
KerryLIFE, Walsh Fellow (Teagasc), University of Dundee

#### *Canopy Bubble*

An aspect of my research looks at the potential influence of forestry plantations on catchment water quality. I was inspired to capture this image as the reflection of the canopy in the water reminded me that the manner in which humans use land is often "reflected" in the quality of our water.



### STUDENT WINNER

**Leejiah Dorward**  
Department of Zoology, University of Oxford

#### *Venomous Vine*

A Savanna vine snake, *Thelotornis capensis*, holds a firm grip on a struggling Speckle-fronted weaver, *Sporopipes frontalis*, in Southern Tanzania. Vine snake's incredible camouflage makes them perfect ambush predators, once their prey gets within striking distance their strong hemotoxic venom can quickly subdue quarry such as this weaver.



## INDIVIDUALS AND POPULATIONS

### WINNER

**Nilanjan Chatterjee**  
Wildlife Institute of India

#### *Crossing the line*

Tigers are known as fierce predators but on the other side they are also caring parents. Female tigers stay with the cubs for almost two years to ensure their survival. Here, an inquisitive cub is coming out of its mother's protection to explore the world outside.

## ECOLOGY IN ACTION

### WINNER

**Dominic Cram**  
University of Cambridge

#### *Meerkat Morning Weights*

At the Kalahari Meerkat Project, wild meerkats, *Suricata suricatta*, are habituated to the presence of human observers, and are trained to climb onto electronic balances. Close observation of meerkats, and regular collection of weight data, allow researchers from the University of Cambridge to investigate behaviour and growth in a natural ecological context.



### STUDENT WINNER

**Leejiah Dorward**  
Department of Zoology, University of Oxford

#### *Shivering Sylph*

A male long-tailed sylph, *Agelaiocercus kingie*, shakes off drops of rain after a heavy tropical shower in Rio Blanco, Colombia.



### STUDENT WINNER

**Nick Harvey**  
University of Manchester,  
Chester Zoo

#### *A Sedated Giant*

This huge white rhino bull, *Ceratotherium simum*, had to be translocated from a small reserve in KwaZulu-Natal to prevent inbreeding. He was darted from the helicopter and the capture team ran over to blindfold him, insert a tracker into his horn and push him, by hand, into a travel crate.

## ECOLOGY AND SOCIETY

### WINNER

**Leejiah Dorward**  
Department of Zoology, University  
of Oxford

#### *Home Sweet Home*

A camera trap captures a nycterid bat, *Nycteris thebaica*, leaving its unusual day roost – the inside of a latrine cesspit. These artificial caves are predator free and a constant supply of decomposing biomass keeps them at a constant warm temperature while also sustaining high populations of invertebrate food, the perfect home.



### STUDENT WINNER

**Adam Rees**  
Plymouth University

#### *Female Leatherback turtle gets into trouble*

A pregnant female Leatherback turtle, *Dermochelys coriacea*, returns to the ocean after being saved by local NGOs and scientists from becoming stranded inland. Overnight she mistook the city lights of Libreville, Gabon, for the starry night sky. Adult females rely on astronomical navigation when returning to their natal beaches to lay eggs.



## THE ART OF ECOLOGY

### WINNER

**Sanne Govaert**  
Ghent University

#### *The jar effect*

During an excursion in my third year studying biology, a butterfly, *Anthocharis cardamines*, was caught and put into a plastic jar. This way the butterfly could be easily identified and shown to the interested students. The jar was scratched, giving an artistic flare to the picture.



### STUDENT WINNER

**Jesamine Bartlett**  
University of Birmingham, British  
Antarctic Survey

#### *Divided*

Lake Tjörnarp Sweden. A deep winter warming event, sends a crack across the ice. The crack divides the lake surface horizontally, and vertically as the ice provides a barrier to the air. Then the frame is divided further still by the bank of reeds, then birch, and the band of sky.



### ENTERING CAPTURING ECOLOGY 2018

Capturing Ecology is open for all BES members to apply and is a great way to promote both your photography and the research you are involved in. The Overall winner is awarded £750, the overall runner ups are awarded £250 and the student winner is awarded £100.

We would like to extend our thanks to Oxford University Press and Cambridge University Press for kindly sponsoring £40 worth of book vouchers to category winners and student category winners, retrospectively.

The next round will open later this year, so watch this space! Further details can be found on the BES website: [www.britishecologicalsociety.org/Photocomp](http://www.britishecologicalsociety.org/Photocomp)

## INTERVIEW

# TIME TO EMBRACE THE ANTHROPOCENE: AN INTERVIEW WITH CHRIS THOMAS

Rebecca Nesbit | [rebecca@rebeccanesbit.com](mailto:rebecca@rebeccanesbit.com)

**Chris Thomas from the University of York specialises in ecology, evolution and the conservation of biodiversity in the Anthropocene. Along with his research group, he works to develop conservation strategies to enable species to survive climate change, biological invasions and other environmental challenges.**

Thomas' recently published book *Inheritors of the Earth* is inspired by the species and ecosystems he has encountered through almost four decades of fieldwork. He now questions the prevailing pessimistic view of the state of nature. We can't go back to the distribution of species before humans began modifying Earth's landscape, so instead Thomas argues that we should embrace anthropocene changes and the opportunities they bring.

**RN: Have you always believed that we should adopt a more positive attitude to the way that species are adapting to the Anthropocene, or have your views changed?**

CT: My views have changed. I used to have a thoroughly conventional, doom-laden perspective on biodiversity loss. I was aware of individual populations and species that had adjusted (in an ecological sense) and adapted (in terms of evolution) to the Anthropocene world, as we all are, but these were never sufficient to rock

my inner belief that the biological world was going to pot. After all, in 2004 I had predicted that a quarter of terrestrial species may be endangered by climate change (I still think that the losses will be extensive though the exact numbers remain uncertain).

But, gradually, my mental paradigm of biodiversity loss kept being challenged, until few of the ideas that I used to cherish were left standing. Nearly all of the species I have ever studied have shown at least some accommodation of the human-transformed world. Meanwhile, the scientific literature on ecological opportunism and evolutionary adaptation have grown and grown. Most countries of the world today contain more species than they used to a few centuries ago, and new hybrid species have come into existence.

Eventually, I came to the opinion that most of us have spent the last few decades enumerating the debit side of the Anthropocene biological account,

without simultaneously totting up the credits. Indeed, most credits (such as the arrival of a species in a new part of the world) were being treated as though they were debits, and interpreted as further evidence that the world is deviating from some imagined idealised state, set at an undefined time in the past. I still accept that losses are taking place – they obviously are – but so are gains. We need to avoid interpreting change as loss when change is inevitable.

**Are you concerned by the very negative messages we often hear about conservation?**

I am a bit. It is OK to be negative when it is a call to arms, provided that the evidence is laid out in an even-handed way, and a societal decision is then made on the way forward. My own personal set of values are such that I abhor shark finning and the poaching of the terrestrial megafauna, for example, and I very much hope that the global community will eventually get its act together to stop them.



However, with my new perspective that change is not equivalent to loss, I often find myself at odds with the (still) prevailing view that the world used to be much better in the past. Take the parochial example of the introduction of species to Britain. Most British ecologists and naturalists sign up to the dogma that biodiversity is a good thing, yet simultaneously dislike the fact that approaching 2,000 non-native species of plants and animals (and probably many more if we could count the microbes) have established 'non-native' populations in Britain. Isn't this an increase in biodiversity? As far as I am aware, no native British species has become extinct from the entirety of Britain as a consequence of these arrivals. Some have declined, of course, and others have become extinct for different reasons.

And when the great financial costs of 'invasive aliens' are quoted, most of the costs are actually voluntary societal decisions that we prefer things the way they used to be, often advised by 'experts' whose personal paradigm is to prefer a world without these species. It is a problem of people being offended, rather than a fundamental problem for ecology or evolution.

Ecological processes are not collapsing because of the arrival of these species. I find it hard to see why we should be offended by 'foreign' species that arrived in the last millennium but cherish 'native' species that arrived a few millennia earlier (in many cases they only established in human-created habitats). Call me magnanimous, but I'm prepared to cherish nearly all of them. Equally, I am as irritated by biting insects whose ancestors colonised Britain 10,000 years ago as I am by those which arrived more recently.

#### **Do you think attitudes are changing towards species that are thriving beyond their historical range?**

Yes. The penny has eventually dropped that a majority of species are shifting their distributions in response to climate change. Most species now have at least some populations outside their historical ranges (nearly all of them if you go back far enough in time). Species have survived in the past by moving

their distributions whenever there have been great swings in the world's climate, and the same is true of anthropogenic climate change.

So, I do think that attitudes are starting to change. For example, the IUCN guidelines on releasing species into the wild, published in 2013, now explicitly sanction releases outside the historical range of a species in particular circumstances, particularly when it involves the restoration of ecosystem functions (releasing an ecological equivalent to an extinct species) or saving a species from climate change. However, while environmentalists, governments and NGOs are increasingly accepting of 'natural colonisations', they still deride most unintentional introductions.

Given that human transport systems are now the most important contributors to the long-distance dispersal of species, and most ecologists think that long-distance dispersal needs to increase if species are to survive anthropogenic climate change, we need a more nuanced approach. I do not personally understand why species that reach Britain from continental Europe by means of human agency should be considered a problem. Most European plants that establish in a warmer Britain are going to do so via our gardens, not by a fluke seed attached a bird migrating from the Mediterranean. For insects, we will never know how most of them arrived. Natural dispersal good, human-assisted dispersal bad is going to be an untenable stance in the medium term. So, yes, attitudes are shifting, but there is still a long way to go.

#### **Do you think that preventing extinctions should be a focus of conservation?**

Yes, because they are our long-term insurance policy. The focus should be on globally-threatened species rather than on trying to preserve every population of every species (at a time when the distributions of species are on the move). Future biological communities, whatever they might look like, will be comprised of the descendants of today's species, so losing lots of species cuts down the options. It may reduce long-term

resilience. If the past is any guide to the future, some of the species that are currently rare will turn out to be important components of future ecosystems, just as Europe's deciduous trees used to be confined to enclaves of suitable climatic conditions during the last ice age before they spread out and grew into a forest that covered half of the continent.

#### **When deciding upon conservation priorities, do you think it is important to consider the services nature provides us with?**

Yes and no. Yes because it stops us doing stupid things that we immediately regret: do not remove a forest from a steep slope if that increases the risk of landslides. Yes because it can improve the quality of human life: do allow wildlife to flourish in parks and gardens if it brings pleasure to people. Obviously. But it is important that any consideration of ecosystem services is in addition to other approaches to conservation, rather than used as an alternative.

One risk of the approach is that it can drive short-termism. We may concentrate on delivering the services we currently require or enjoy (which are mainly provided by common and widespread species), rather than maintaining options for future generations. By the time species are on the verge of extinction, they rarely provide any significant ecosystem services (unless they are large vertebrates that generate income from 'last chance to see' tourism), and so they would shoot down the ecosystem service priority list. Yet, some of them (and we do not know which) may be crucial to future human generations. The rare Monterey Pine from coastal California and nearby Mexico is listed as endangered by the IUCN, but it has become one of the world's most important forestry trees for timber production. Which rare species will be the next Monterey Pine? We must be cautious not to prioritise short-term gains over long-term resilience of the Earth system.

#### **What advice do you have for policy makers and conservationists?**

Primarily not to treat biodiversity change as equivalent to loss. As I point out in *Inheritors*, the Earth



was not in some perfect or final state before humans pitched up. Life is a process, not a final product. So we need a conservation philosophy that is based on natural change, with humans centre stage. Such a philosophy has four overarching principles.

The first principle is to accept change. Deviations from the past state are not all 'worse'.

The second principle is to maintain flexibility for future change. There is no single way to achieve this, but, although it might seem paradoxical, the most important contribution we can make is to save the world's existing species – within reason – because they are the Earth's spare parts, which might be needed in the future when new events unleash the next stages of environmental change.

The third principle is that humans are natural within the Earth system, so anything we do is also part of the evolutionary history of life. We can be adventurous and use whatever technological or other strategies might be available to ensure that we hand an operational Earth to future generations, without fear that we will somehow make the world less natural.

And the fourth principle is that we still have to live within our planetary bounds, by which I mean that we

should pursue strategies that fulfil all of the needs – and where possible desires – of every citizen on Earth while generating the least possible collateral damage to the global environment.

#### **Do you think there will come a point where it is no longer true that fresh immigration replaces the loss of existing species in most areas, for example if one of the more extreme climate change predictions plays out?**

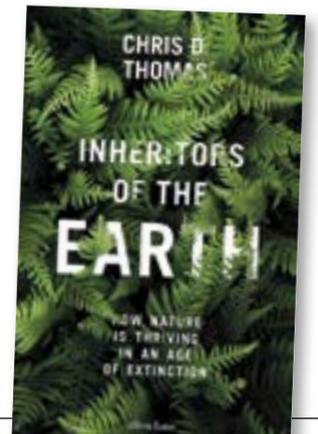
There is scant evidence that many or any biological communities are 'saturated' with species, even though a few 'keystone' immigrants can have major impacts that may either increase (as re-wilders argue) or decrease (as invasive species biologists argue) the numbers of other species in the recipient biological community. Given that most places only contain up to a couple of percent of the world's species (about 0.4% for the 2 hectares around my own house), there is still a large supply of potential immigrants available, and humans keep creating new conditions and moving species around, so I see no particular reason to expect the supply of new and additional species to dry up any time soon.

We know from palaeoecology that the faster the environment changes, the faster the turnover of species, and that novel biological

communities come into existence containing mixtures of species not previously seen. Eventually, there is near-complete change in which particular species are present in any given location. That is what is happening now. The Anthropocene transformation is in full swing.

*Inheritors of the Earth: How Nature Is Thriving in an Age of Extinction* by Chris D. Thomas is published by Allen Lane (2017).

Rebecca Nesbit is an ecologist and author, writing fiction and non-fiction on the theme of science and the ethical questions it raises. She has published a novel *A Column of Smoke* (Brambleby Books 2014) and a popular science book *Is that Fish in Your Tomato?: The Fact and Fiction of GM Foods* (Ockham Publishing 2017).



ESSAY

# CONSERVATION IN THE ANTHROPOCENE



John Wiens | Oregon State University, USA | jwiens300@gmail.com

**Earth is becoming quite a different place than people of my generation remember from our childhood. Everywhere bears the evidence of human activities – the changes that have ushered in the Anthropocene. Understanding and managing these changes is challenging both ecologists and conservationists.**



It was in this context that I picked up three books to catch up on my reading over the holidays. Each begins with observations on the state of the Earth's biodiversity, but they end up offering very different perspectives, views that reflect a growing philosophical discord in the conservation community.

Cory Bradshaw and Paul Ehrlich's book, *Killing the Koala and Poisoning the Prairie*, paints a picture of an environment plunging on a crash course toward ruin. Society pursues a "business as usual" agenda while politicians, scientists, and educators fail to provide the leadership needed

to reset the trajectory. The job of conservation, they suggest, is to maintain or enhance the benefits that biodiversity provides to people. These benefits are being diminished by mounting resource overconsumption and environmental degradation. Both are driven by human population growth, exacerbated by ignorance and greed, fostered by misinformation in the media and inadequate educational systems, and abated by economic systems that reward short-term growth—all reinforced by religion. Bradshaw and Ehrlich leave no stone unscathed. The solutions they offer rest squarely in the socio-political realm: reduce overconsumption, revamp education, change governance structures, and the like. It's a sobering, sometimes jolting, wake-up call.

E.O. Wilson has been trying to wake us up for some time. In his latest book, *Half-Earth*, he argues that any disruption of natural ecosystems diminishes biodiversity. Allowing an invasive species to enter a natural ecosystem, for example, "is the ecological equivalent of Russian roulette," and the novel ecosystems

thus created are abominations. The worldview of the "Anthropocene enthusiasts" who accept these changes, he suggests, suffers from "ignorance and carelessness." His audacious proposal, captured in the book's title, is that only by committing half the planet's land and water surface to nature can we hope to save the Earth's biodiversity. Wilson proposes that this goal could be reached by protecting the wilderness that still remains and launching major ecological restoration efforts. Doing this, however, will require a major shift in moral reasoning—an even deeper societal change than that proposed by Bradshaw and Ehrlich.

And then there is Chris Thomas' *Inheritors of the Earth*. Thomas is one of the Anthropocene enthusiasts Wilson disparages. While Thomas acknowledges that the environmental transformations of the Anthropocene have caused some species to go extinct, he also sees unexpected opportunities. Humans have created novel habitats; we have enabled species to disperse into new areas; and global warming may even

improve conditions for many species. Thomas suggests that most of the invasive species that Wilson views with alarm actually have negligible ecological effects and may create new hybrid forms by interbreeding with other species. Moreover, as species adapt to their new settings they are undergoing evolutionary changes; evolution is "in overdrive." Thus, human actions are enhancing the Earth's biodiversity rather than threatening it. Although extinctions are regrettable, Thomas argues that the loss of species may not have much effect on the future trajectory of our biological world. He does acknowledge the importance of saving species and maintaining protected areas—almost as an afterthought—but his core position is that conservationists should be realistic and accept the biological systems of the Anthropocene for what they are.

What are we to make of these sharply divergent views of conservation in the Anthropocene? Are we on the cusp of an environmental apocalypse and mounting extinctions that can only be stemmed by profound changes in society and how we use land and water, as Bradshaw, Ehrlich, and Wilson claim? Or are we witnessing a blossoming of biological diversity and complexity in response to human actions, as Thomas claims? Should we worry that the species that occur in a landscape are not the same ones that were there 50 or 100 years ago, even though there now may be more of them? Should we fight to keep the remaining nature that we have or embrace the Anthropocene with all its changes? Do invasive species bolster or diminish natural biodiversity? Put another way, is the biodiversity glass half empty and rapidly draining, or is it half full and getting fuller?

These questions underscore an ongoing debate among conservationists about what we conserve and why we do it. The positions of these three books reflect differences in values and moral commitments. Bradshaw and Ehrlich suggest that species should be protected for the ecosystem services they provide to people. Wilson argues that every species is precious to us and merits our protection. Thomas proposes instead that it is our own



welfare and well-being that matter. These are philosophical rather than scientific issues.

Philosophers distinguish between *instrumental values*, the worth of nature to people, and *intrinsic values*, the worth of nature in and of itself, simply because it exists. Like most dichotomies, this doesn't help bridge the philosophical gap, although it does identify what's at the ends of the bridge. In between lie the nuances. Most important, I think, is the matter of *quality*. Just as invasive species span a spectrum from menacing (think brown tree snakes or Nile perch) to benign or beneficial (European honeybees that pollinate crops in North America), not all "native" species are equally native, and not all imperiled species merit emergency-room efforts to save them.

Of course, quality, like beauty, is in the eye of the beholder. My parasitologist friend delights in the diversity and cunning adaptations of tapeworms, flukes, and roundworms. Frankly, these leave me (and probably most people) cold. But they are

products of the evolutionary process and parts of biodiversity no less than the birds I study (and more people appreciate). Should conservation be concerned with all of them, just those that provide ecosystem services, or those that manage to show up for the Anthropocene?

Ultimately, determining which species "belong" in nature and which are interlopers, which are worth saving, and what sort of nature we really want are societal decisions. These decisions lie at the core of conservation. But if conservationists can't decide whether to accept or fight the tide of the Anthropocene, can we hope that society will do so? As a society, are we willing to make the changes called for by Bradshaw and Ehrlich or Wilson, or will we take the easier path offered by Thomas and accept what the Anthropocene gives us? I confess I don't have an answer. But it's high time to move beyond the philosophical disagreements underlying these books to have an open conversation about options and priorities, talking with each other rather than at each other.

## RESEARCH

# HOW GROWING RICE PRODUCTION LEAVES HIPPOS SHORT OF WATER



**Mark Hassall** | University of East Anglia, UK | **Christopher Timbuka** | Ruaha National Park, Tanzania  
**Rosalind Boar** | University of East Anglia, UK

Changes in land and water use in upper reaches of catchment areas having adverse effects on ecosystems downstream, is a widespread phenomenon. In regions with sharply defined rainy seasons followed by prolonged dry seasons, as in East Africa, the effects of altering river flow during the dry season can be particularly damaging. When downstream ecosystems are national parks, designated to conserve wildlife, this creates a dilemma for governments trying to alleviate food security problems while protecting wildlife.

We studied this problem in Katavi National Park in southern Tanzania. We chose to study hippopotami because they are numerous in this park and, being semi-aquatic, are sensitive to changes in water availability. They not only need to drink water but also need water deep enough to submerge in, to thermoregulate by convective cooling.

We chose several resting sites along the Katuma River which has become increasingly depleted in the dry season due to increased deforestation and subsequent agricultural development in the upper catchment area. Effects of deforestation have been exacerbated by crop changes, from the traditional maize and vegetables, to growing rice. Rice fields are irrigated by constructing dams part way across the river to divert water through channels cut in the river banks and into an extensive network of irrigation channels.

Discharge of the Katuma River, which now stops flowing altogether during the last three months of the dry season, was compared with that in an adjacent river, the Kapapa, which flows into the park throughout the year. The Kapapa's upper catchment has been altered very little by agricultural development.



Hippopotami in the Katuma River increasingly crowd together in the remaining deep pools, reaching very high densities during the second half of the dry season. In the Kapapa catchment area they are much less crowded, engage in significantly less threatening and fighting behaviours, and engage in more courtship and mating behaviours. There were twice as many juveniles per adult than in the Katuma site. These results suggest that more crowding of hippopotami may have adverse effects on long term population processes.

The government destroyed some of the dams in the Katuma upper catchment area which lead to significant increase in discharge downstream in the park, however if this practice were to be applied on a wider scale it could deprive thousands of people of a livelihood upon which they depend. We recommend an alternative solution: grow rice exclusively during the wet season when there is substantial excess water. Currently water is diverted from the river during the dry season to be used as a weed suppressant in the empty fields. We propose installing simple lockable sluices to prevent water being diverted during the dry season. These sluices could be opened to allow irrigation of fields in the wet season. In combination with manual control of weeds this could potentially resolve the conflict of increasing food production in upper catchments while promoting wildlife conservation in downstream national parks.

## RESEARCH

# INTERDISCIPLINARY PERSPECTIVES: FROM HISTORIAN TO ECOLOGIST



**Fairlie Kirkpatrick Baird** | fairlie.kirkpatrickbaird@gmail.com



I'm standing in a cotton field, sweating under the Indian sun, eyes peeled for flickers of movement. I'm meant to be surveying pollinator species, but I'm finding surprisingly few. The seconds slowly tick by, until...there! A flit of black, a low buzzing – an *Apis dorsata* hovering purposefully two rows over. Trying to be simultaneously fast, careful and quiet, I slip between the plants, scrawl down its name and start my timer as it lands on a flower. Bee number one of the day.

As a history undergraduate, making my desired transition from social science to ecology seemed a daunting prospect last June as I prepared to leave university. However, after meeting Dr. Barbara Smith and Dr. Alfred Gathorne-Hardy, two ecologists open to the idea that history can be valuable for science, I gained the opportunity to experience ecological research first-hand. By August, I found myself waist-deep in cotton on a research station in Madhya Pradesh, central India.

Our project explores whether insect pollination improves the yield and quality of cotton crops. While this has been demonstrated in Brazil and America (Pires et al 2014, Cusser et al 2016), it has yet to be studied in India, the largest global cotton producer. The ability to show and quantify benefits could facilitate improvement of both biodiversity and farmer livelihoods, since incentivizing farmers to manage their lands for pollinators would increase populations as well as farmer yields. These are our long-term goals. In the short term, I had to become an ecologist, fast.

The hands-on nature of fieldwork was a refreshing change, and more than a little daunting. I would have struggled without PhD student Christelle Ledroit, who patiently guided me through the protocol, teaching me how to hand pollinate and use transects. I was surprised how quickly my confidence grew, but my inexperience was still challenging. Already nervous I would make a mistake, when we discovered a high boll shedding rate I became quite discouraged, not realising this is a normal effect of hand pollination.

As with historical research, it was easy to get lost in these details and forget the end goal. Nevertheless, I felt a deep sense of satisfaction after spending hot, sticky hours in the field, each treatment or observation contributing a small piece to a bigger whole that reminded me of the joys of archival work. I vividly remember the first time I correctly identified

a bee; recognizing the distinctive black-and-white abdomen of *Apis florea* imparted a disproportionate feeling of accomplishment and understanding similar to finding a key document.

Having done this project, I see history as not so different from science: both try to explain why the world exists as it does. Ultimately, they are mutually beneficial – ecology brings historical learnings into the present, while history contextualizes the science of ecology. In combination, I believe such interdisciplinary perspectives can be invaluable. This experience sparked a love of scientific research I intend to pursue, in conjunction with ecology, as an historio-ecologist – if such a thing exists!

This work was carried out at bioRe Association, India, with the support of the Oxford India Centre for Sustainable Development, Centre for Agroecology, Water and Resilience, Coventry University and the Institute for Organic Agriculture, Switzerland.

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# FROM OUR SOUTHERN CORRESPONDENT



Richard Hobbs | University of Western Australia, Australia

**So, an era finishes as Alan Crowden steps down as Bulletin editor – a personal thanks to Alan from me for his work on the Bulletin. It's one of the few society bulletins I actually look forward to leafing through. But it's Alan's offline banter that I most appreciate. Dealing with recalcitrant authors is never easy, and Alan brought a certain piercing wit to the task of dragging a Southern Correspondent piece out of me twice a year. I hope he hasn't passed on to the incumbent editorial team his accumulated war chest of techniques to make Hobbs cough up the goods.**

The occasion of Alan's editorial exit made me realize that it's 20 years since Peter Thomas, Alan's equally illustrious predecessor, caught me in an unguarded moment while sitting in the balmy heat outside the INTECOL meeting in Florence, Italy in 1998. Rather sneakily, while topping up my red wine, he suggested that it would be a great ruse to have wise words from the antipodes appearing periodically in the Bulletin. And hence over a rather nice Tuscan wine, the Southern Correspondent feature was born. Wise words have probably been relatively few and far between, and the antipodean theme has been mixed with whatever else popped into my head as the inevitable deadline approached. Surprisingly, however, feedback suggests that some Bulletin readers actually quite like the regular southern correspondence.

Despite initial misgivings about taking on yet another task, contributing the Southern Correspondent piece has been unexpectedly enjoyable. In reflective

moments, I've tried to analyse why I keep doing it. One obvious answer is that it's been good sport to bait successive Bulletin editors. Alan Crowden has been especially rewarding to interact with over deadlines. In addition, it is a rare pleasure these days to be able to write about pretty much anything and to do so in an unconstrained manner. Beyond editor harassing, writing the Southern Correspondent articles has reminded me about what scientific writing needs to be about. As well as contributing to our understanding of the natural world and how to manage it, ecology is, and clearly needs to be, FUN! Photos of ecologists doing fieldwork, counting birds, or whatever, generally illustrate people who are happy as Larry with what they are doing. Hence writing about it should also theoretically be fun.

However, observation suggests that many people find writing far from fun. Doing and applying the science is one thing, but reporting it is entirely another. There are probably many reasons for this, some to do with the writer and others to do with the process of writing something that will be accepted in a scientific journal.

Looking at the writer first, in order to write effectively, never mind enjoyably, a person needs to have some basic tools and understanding of how language is put together. This then assists the writer in constructing whatever piece of writing they need to do. This is analogous to building a house – one needs both a design and plans, but implementing the design requires tools, nails, pieces of wood and so on and the ability to stick

everything together. When I were a lad (oh dear, the old fart syndrome rears its ugly head again), we were taught proper grammar and had to tear sentences apart, understand their parts, and know how to stick them back together again so that they made sense. We knew not only what verbs and nouns were, but also weird things like adverbial clauses and split infinitives. We also knew what gerunds were, and contrary to some opinions, they are not small furry animals that live on islands off east Africa. Sadly, fads in education led to the misplaced belief that all this learning grammar wasn't really necessary and that language could be learned organically. So a generation grew up with only a scant idea of how to construct sentences and absolutely no idea where to put punctuation such as commas. Feral commas have reached plague proportions. And while you can get away with grammatical murder when texting your friends or when tweeting, this unfortunately doesn't work when trying to write anything more complicated than a shopping list, and especially not reports, essays, thesis chapters and journal articles. And so the university lecturer's lot was to become a latter-day grammar teacher, retrofitting grammatical sense into otherwise unintelligible assignments.

Fortunately, the tide seems to be turning again and at least some students enrolling for higher degrees seem to have a working knowledge of how language works. It remains enigmatic that, often, students with English as a second language actually write better English than native English speakers.

A particularly perverse aspect of the loss of proficiency in correct language usage is the journal editor or copy-editor who subscribes to an idiosyncratic view of grammar and demands subservience to this revisionist perspective on how things should be written. Some rogue editors even go so far as to rewrite text so that the original meaning is completely obscured or reinterpreted. I know of one journal that authors retreated from in droves because the managing editor insisted on more or less re-writing the manuscript, not always to the benefit of the submitted work.

This leads to the second element – namely, the process of writing something that will be accepted in a scientific journal. Lapsing into old fart mode again, I note that reading ecology papers written in last century's formative years of modern ecology is a joy. The papers are not only full of good ideas and amazing data – they are also well written and often quite lyrical in their tone. Something happened during the latter half of the 20<sup>th</sup> century, and any hint of lyricism was well and truly stomped out of scientific writing. Indeed, indigestible, turgid, dense prose seemed to be the order of the day. The first person

approach was out, and passive tense was the rule (“An experiment was conducted” instead of “I conducted an experiment”). The more obtuse you could make the text, the better it was received. Then came the tyranny of ever-shrinking word counts that added another blow to any lingering desires to add a bit of lyricism or playfulness to the otherwise dry presentation of jargon-laden results.

This process was enhanced by the increasingly KPI-driven nature of the scientific enterprise. If rewards are given and jobs retained by producing x number of papers per year, there is a strong incentive to conform to expectations. Produce the papers and do whatever it takes to get them published. Even if this means squeezing any hint of creativity and individual expression out of the process. This is odd, given that science is essentially a creative process: we're increasingly shoe-horning creative thought into KPI-driven outputs. Which aren't necessarily fun to produce – or to read. And as for accessibility to a broader audience – well, if fellow scientists find them dull to read, what hope does the general public have?

“Well, Hobbs – enough whinging, what's the answer?” I can hear a certain Alan Crowden ask. This is a valid question that, fortunately, is beginning to be asked more widely. Recent commentary (Doubleday & Connell, 2017) and books on scientific writing (Greene, 2013; Schimel, 2012) point to the need to break out from the norms adopted in the latter half of the 20<sup>th</sup> century. These authors point out that clear, concise – and interesting – writing can actually play a large part in successful publishing, work being cited, and grants being won. This doesn't mean that everyone has to morph into a JK Rowling or start writing in sonnets. And it will remain the case that some people find writing comes easily while others sweat over every word. But writing needs to be part of the ecologist's toolbox, just as much as field methods and statistics, and hence should be included in the basic ecological curriculum.

Part of the answer has also to be a move away from assessment based on quantity towards one based on quality. Of course, counting the number of papers a person has produced is easier than assessing the individual merit of particular pieces of work – however, quality based assessments are not impossible. Citations are used to some extent a surrogate index of quality. Maybe if we rewarded folks on the quality of their work rather than on simple quantity, we could all enjoy writing about our work more and, in turn, enjoy reading about other people's work more.

I recall a pivotal moment in my career, when I attended a BES symposium as a PhD student in the early 1980s. At that stage there was no Powerpoint and lectures were delivered with slides displayed via, sometimes dodgy, projectors. The order of the day was, as with written material, fairly dire presentations of not very interesting material. At a particularly dreary moment in the symposium, Bob May got up to give a talk. May was a legend even back then, and what astounded me was that he delivered a conference talk that was both scientifically amazing and also really entertaining. It had never dawned on me till then that scientific talks could be fun as well as informative. If we can reinstall fun into our scientific writing too, I think we'd all be much better off. And the science might actually resonate more with a broader audience. In a world increasingly enamoured with anti-scientific sentiment, there's a lot to lose if we don't get it right.

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## POLICY

# WHAT ARE THE FORTHCOMING LEGISLATIVE ISSUES OF INTEREST TO ECOLOGISTS AND CONSERVATIONISTS IN 2018?

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

Our objective has been for a wide range of readers, from researchers to those involved in education, policy and practice, to have a review of likely changes. This runs in parallel to our annual paper in Trends in Ecology and Evolution describing technological, societal and biological changes that are likely to have impacts on conservation.

It has been a busy, but uncertain, year with Brexit and the change in the US presidency having far ranging consequences whose implications are currently far from clear.

The previous legislative scans (Sutherland 2011–17) are available to download for free on the BES website. The issues described in those scans are not repeated here, even if still relevant.

## GLOBAL

### Marine biodiversity in areas beyond national jurisdiction

At the very end of 2017, and following a preparatory phase of more than

ten years, the UN General Assembly decided to launch formal negotiations to create a treaty to protect marine biodiversity in areas beyond national jurisdiction. The series of four negotiating meetings will begin in September 2018 and is expected to end in 2020 with a new treaty. Negotiations will address topics such as the establishment of marine protected areas and environmental assessments of activities that could damage marine ecosystems.

Among the challenges is how to protect biodiversity in areas beyond national jurisdiction without undermining the mandates of existing organizations such as Regional Fisheries Management Organizations or the International Seabed Authority, which regulates deep seabed mining. With respect to the latter, the development of regulations for the exploitation of seabed mineral resources as part of the Authority's seabed mining code continues. This will pave the way for the recovery of seabed mineral resources for commercial purposes, which is expected to follow current exploration activities approved by the Authority, and thus the searching for suitable deposits for subsequent exploitation. The regulations for exploitation are planned to be approved in 2020.

However, a number of stakeholders have expressed their deep concerns with regard to this timeline, in particular with regard to the agreement on environmental rules for exploitation. At the same time there is considerable pressure on the International Seabed Authority from countries holding exploration contracts to move forward

quickly with the development of the exploitation regulations in order to transition from the exploration to the exploitation of minerals. Key issues that continue to shape the negotiations on the regulations also relate to the issue of transparency of the process and access to environmental data.

### Developments towards the post-2020 agenda for biodiversity

In 2020, Parties to the Convention on Biological Diversity will adopt a new global biodiversity framework to succeed the Strategic Plan for Biodiversity 2011–2020. The process for developing this new agenda will be agreed by the Conference of the Parties in November in Egypt. Thus, 2018 will be a critical year, with decisions to be made about the process and direction for the post-2020 agenda for biodiversity. Final review of delivery of the current Strategic Plan will be based on a number of sources, a key one being the fifth edition of the Global Biodiversity Outlook. One input to this review will be the Global Wetlands Outlook, to be released at the Conference of the Parties to the Ramsar Convention on Wetlands in October. Other sources still in development include assessments being undertaken by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). In March, the IPBES Plenary meeting in Colombia will consider for approval four regional assessments of biodiversity and ecosystem services, and a thematic assessment on land degradation and restoration. An IPBES global assessment is due for completion in 2019.

The 2030 Agenda for Sustainable Development will be particularly relevant as the post-2020 agenda for biodiversity is being developed, both because of the importance of biodiversity and ecosystem services in achieving the Sustainable Development Goals, and because a number of the targets in the 2030 Agenda are derived from the Aichi Biodiversity Targets and therefore have a target date of 2020. With these points in mind it is also intended to take advantage of other relevant processes such as the High-Level Political Forum on Sustainable Development in July in New York and the next UN Environment Assembly in March 2019, to consider the role of biodiversity and ecosystem services in addressing the sustainable development agenda. With regard to national implementation of the post-2020 agenda for biodiversity, and in order to avoid time-lags between adoption and implementation at the national level, ideas that are being explored include the suggestion that Parties might begin considering their national commitments in advance of the formal adoption of the post-2020 agenda for biodiversity.

### Forest biodiversity and sustainable development

After a focus amongst others on the conservation and sustainable use of the oceans (Sustainable Development Goal 14) at the High-Level Political Forum on Sustainable Development in 2017, the next meeting in July 2018 will undertake a detailed review of a further set of Sustainable Development Goals, including Goal 15 on life on land. With regard to forests, input to the Forum will be provided by a conference organized by the Collaborative Partnership on Forests in February in Italy and the UN Forum on Forests, which will convene in May 2018. The UN Forum on Forests will address implementation of the first ever UN Strategic Plan for Forests 2017–2030, which calls for reversing the loss of forest cover and increasing forest area by 3 percent worldwide by 2030.

### Other area-based conservation measures

With respect to Aichi Biodiversity Target 11, and in response to an IUCN World Conservation Congress Resolution in 2012, technical guidance

on the interpretation of the wording “and other effective area-based conservation measures” (OECMs), is currently being developed. The respective task force was established in 2015 and it will present guidelines on OECMs at the 14th Conference of the Parties to the Convention on Biological Diversity in November 2018. Parties are also expected to consider the adoption of a formal definition of OECMs at the Conference in Egypt, given that it will become increasingly important to track and understand the regulatory frameworks under which these areas are managed in order to assess progress until 2020 and beyond.

### Environmental pollution

The first Conference of the Parties to the Minamata Convention on Mercury was held in September 2017 in Geneva. Next to a number of procedural and organizational issues, such as an interim arrangement for the location of the convention's secretariat in Geneva, the meeting addressed a number of substantive issues. This included agreement on a range of measures to limit the impact of mercury extraction and industrial usage, such as the adoption of guidelines to regulate artisanal and small-scale gold mining and the reduction of mercury emissions. The second Conference of the Parties is scheduled to take place in November 2018. The third UN Environment Assembly, held in December 2017, was also themed around the issue of pollution. A key focus was on marine litter and microplastics and countries agreed that the issue must be addressed as a priority in countries' environmental actions plans. Committing amongst others to the strengthening and enforcement of more integrated policies, regulations and laws, the Ministerial Declaration of the 2017 UN Environment Assembly “Towards a Pollution-Free Planet” also recognized the Kigali Amendment to the Montreal Protocol on the phasedown of short-lived climate pollutant, hydrofluorocarbons, which will enter into force in 2019.

### Environmental Safeguards

Similar to a number of financial institutions that recently updated their safeguard policies, the World Bank will launch its new Environmental

and Social Framework in 2018. The exact date is still to be determined. This will have a significant influence on government development activities around the world, as it will apply to all new Bank investment projects. One of the ten Environmental and Social Standards that form part of the framework includes Environment and Social Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources. In common with Performance Standard 6 of the International Finance Corporation, a net gain for critical habitat and no net loss for natural habitat (net gain, where feasible), are required.

In the past, the adoption of environmental standards in multilateral development banks and financial institutions has been important for the progress of law and policy around the globe, in particular with respect to environmental assessment legislation. The combination of public and private financing requirements where Equator Principles finance institutions are involved may also lead to enhanced safeguard implementation.

## EUROPE

### Brexit

A Brexit deal will be negotiated this year (prior to UK's scheduled exit in March 2019) and could have implications for environmental standards in the UK and for the rest of the EU (depending on what is agreed), especially if it is seen to be allowing the UK to “cherry pick” which standards it adheres to in order to trade with the EU as this would undermine the integrity of the single market/environmental acquis.

### Fitness Check Water Legislation

The EU have started a Fitness Check into various bits of fundamental water management legislation including the Water Framework Directive, the Floods Directive and the Urban Waste Water Treatment Directive. The fitness check will look at the relevance, effectiveness, efficiency, coherence and EU added value of the directives and will include an assessment of the potential for regulatory simplification and burden reduction. An online public consultation will be undertaken in the first half of 2018 with an opportunity for further discussion at the European Water Conference

in September 2018. The fitness check process is programmed to be completed in the second half of 2019. On the Water Framework Directive in particular it is expected that there will be lobbying from some member states and sectors to extend the 2027 deadline and to move away from the “one out all out” rule for good ecological status classification.

### Invasive Alien Species Regulation

The central component of the Invasive Alien Species Regulation is the IAS List – a list of Invasive Alien Species deemed so dangerous their use is heavily restricted across the EU. Several Member States, led by Germany, are actively hostile towards the Regulation. Having spent two years trying to prevent any species being included on the EU IAS List, these hostile nations have changed track and now called for a delay of 3 years in including any new species on the EU IAS List. In doing so they have gained support from additional Member States. There was a real risk at the meeting of the Member States in Dec 2017 that a decision would be taken to prevent any species being included on the EU IAS List for the next three years. Thereby significantly undermining efforts to reduce the IAS threat. As a compromise, the Commission and the Member States agreed to delay for one year the further inclusion of species on the IAS List. Conservationists remain concerned that this delay will be extended beyond the one year and are putting political pressure on to stop this from happening.

In 2018 the European Commission will propose a piece of secondary legislation to set the evidence criteria by which a species will be judged appropriate or not for inclusion on the Invasive Alien Species list. This legislation can be vetoed by either the European Parliament or the Member States. Industry groups are lobbying for a high evidence base, so that few if any species will be included on the list. Environmental NGOs are calling for a more measured approach.

### 2030 Climate and Energy framework

A broad-ranging legislative package aimed at driving Europe’s delivery against international climate change mitigation commitments is currently progressing through the European

co-decision process. The ‘Clean Energy for All Europeans’ package covers both renewable energy, energy efficiency and governance of the broader energy transition. The implications of the way in which Member States pursue the clean energy transition could have profound impacts on species and habitats. European Parliament has shown support for relatively ambitious targets for renewable energy and energy efficiency, whilst at the same time supporting a more strategic spatial approach to energy planning that better respects ecological limitations. Except for a ban on the use of palm oil for energy generation, they are proposing limited improvements to the current bioenergy policy which is driving wildlife damage. Uncertainty remains however, about the appetite of national governments for the progressive elements of the European Parliament’s proposal.

Member States will be needing to develop their draft National Energy & Climate Plans (as required by the Governance Regulation) this year, in preparation for the 2019 deadline (exact date to be confirmed – this is an area of intense debate – the Commission suggest 1 January; Parliament have said 6 months after regulation coming into force, or 1 June 2019 whichever is later; Council will probably push for 31 December).

### Common Agriculture Policy

Following the European Commission’s Public Consultation and Impact Assessment of the Common Agriculture Policy undertaken last year, the Commission has published its communication setting out its initial thoughts on the future of the policy, this was described by the Agriculture Commissioner, Phil Hogan, as evolution rather than revolution. The communication sets out four objectives for the Common Agriculture Policy, three are updated versions of current objectives and an additional fourth objective to address societal expectations regarding sustainable food production, in particular concerning food safety, food quality, environmental and animal welfare standards. These four objectives are underpinned by three horizontal measures or principles which apply to each objective: a new delivery model for the Common Agriculture Policy

and a commitment to a simpler policy; a shift towards a more knowledge-based agriculture based on research and innovation; and coherence of the Common Agriculture Policy with the Union’s commitment to supporting sustainable development in developing countries. In June or July 2018 it is anticipated that the Commission will formally publish its impact assessment, in the second half of the year the Commission will publish its legislative proposals and following this the co-decision process with the European Parliament and Council will begin.

### Multi-Annual Financial Framework

The current Multi-Annual Financial Framework, which sets the main EU spending priorities, runs to 2020 and the Commission is developing proposals for the next period – 2021-27. Proposals were originally due to be published in late 2017 but delayed due to Brexit and now expected in May 2018. This will be followed by negotiation between the Parliament and Council and expected adoption by the European Parliament in 2019.

### Plastics Strategy

The first-ever Europe-wide strategy on plastics, adopted on the 16 January 2018, is a part of the Commission’s transition towards a more circular economy. Their aim is to protect the environment from plastic pollution whilst fostering growth and innovation, turning a challenge into a positive agenda for the Future of Europe. They assert that there is a strong business case for transforming the way products are designed, produced, used, and recycled in the EU and by taking the lead in this transition, the Commission wants to create new investment opportunities and jobs. Under the new plans, all plastic packaging on the EU market will be recyclable by 2030, the consumption of single-use plastics will be reduced and the intentional use of microplastics will be restricted. The Commission will present the proposal on single-use plastics later in 2018. Stakeholders have until 12 February 2018 to contribute to the ongoing public consultation. The Commission will launch the work on the revision of the Packaging and Packaging Waste Directive and prepare guidelines on separate collection and sorting of waste to be issued in 2019.

### Common Fisheries Policy

Following the Commission’s proposal in 2016 for a new Technical Measures Regulation to revise the rules on how, where and when fishing can be done across different sea basins in Europe, the regulation was heavily debated in 2017 in both Council working groups and the European Parliament, and hence its adoption was delayed. Trilogue negotiations are expected to take place for most of 2018. Although the proposed new regulation aims to reduce impacts on not just fish stocks but also the wider marine environment, it is currently too early to determine if it will actually deliver in aligning with the reformed Common Fisheries Policy and environmental legislation (Birds Directive, Habitats Directive, and Marine Strategy Framework Directive).

To implement regionalised decision-making under the reformed Common Fisheries Policy, multiannual plans for each of the sea basins are to be developed. The Commission’s proposed plan for demersal fishing in the North Sea (North Sea Multiannual Plan) entered trilogue in 2017, with expected adoption in 2018. The legislation is not expected to include concrete measures to tackle fisheries impacts on the wider marine environment (e.g. seabird bycatch) but it will create the possibility for these to be agreed regionally.

## UNITED KINGDOM

### The European Union (Withdrawal) Bill

This Bill puts an end to the supremacy of European Union law in the UK by repealing the European Communities Act 1972. It also converts EU law and preserves EU-related domestic law onto the post-exit day statute book and provides delegated powers to make secondary legislation in order to prepare for leaving the EU.

At the time of writing, the date for the second reading of the bill in the House of Lords had not been set but was expected at the end of January. Given that the government does not have a majority there, and the concerns already expressed by the peers about the bill, it is expected this will not be a straightforward process. Therefore, the legislation is likely to return to the House of Commons after the House of Lords.

Over 400 amendments and 80 new clauses were tabled to the bill when in the House of Commons, with the amendment papers reaching 170 pages. A number of concerns were raised about its potential impact, including the Henry VIII powers. Henry VIII powers are concerning since it would enable the use of secondary legislation to amend the text of primary legislation. The government says it needs Henry VIII powers to tidy up “deficiencies arising from withdrawal”; referring to EU regulators, the European Court of Justice and other entities that will no longer have any sway in Brexit Britain.

Additionally, important tabled amendments that have significant consequences for the environment in particular include a new clause to enshrine EU environmental principles within law and for the establishment of a new independent environmental regulator. The clause sets out the minimum standards for consultation on these matters. However, the publication of the 25 year plan for improving the environment stated its commitment to consult in 2018 on the scope, powers and functions of a new environmental watchdog. Although no clarity was provided on the precise timescale for this.

An additional proposed clause referred to environmental protection and improvement. The clause would ensure oversight of the transfer of functions from EU institutions to domestic institutions, by requiring the Government to establish a publicly accessible register of environmental governance functions and powers exercised by EU institutions, and to make regulations that ensure that all relevant environmental powers and functions are continued.

### A UK Fisheries Bill

The Queen’s speech included a Fisheries Bill to ‘enable the UK to control access to its waters and set UK fishing quotas once it has left the EU’. At the time of writing there was no further formal information as to when to expect the Fisheries Bill to be tabled in 2018 (or even 2019 since the June 2017 Queen speech proposed a two-year legal programme). However, Defra Minister’s had already hinted to expect the publication of a White Paper on the new Fisheries Bill by the end of 2017 (which did not happen),

with the Bill being published and introduced early 2018. Hence, many are hoping the White Paper will be published early 2018.

### An Agriculture Bill

The Queen’s Speech mentioned an Agriculture Bill that will ensure an effective system is in place to support UK farmers and protect the natural environment after the UK leaves the EU, and therefore the Common Agricultural Policy. However, it appears as though a more likely approach will be the development of a UK wide Policy Statement on Agriculture that provides a framework for all UK countries. The 25 year plan for improving the environment stated, “a new environmental land management scheme will help us deliver more for the environment ... We will work closely with the devolved administrations on a framework that works for the whole of the UK and reflects the needs and individual circumstances of Scotland, Wales, Northern Ireland and England. As part of this, we will continue to engage regularly with all the devolved administrations to explore options on the design and appropriate extent of the forthcoming Agriculture Bill.”

## ENGLAND

The European Union (Withdrawal) Bill completed its 3<sup>rd</sup> reading during the week commencing 15 January 2018. Three main areas of interest are the proposed Agriculture Bill, Fisheries Bill, and the Secretary of State’s decision, announced in November 2017, to consult on a new environmental body to fill the EU governance gap. The implications of these initiatives may have a bearing on just England, or on the UK as a whole, although at present the details remain uncertain.

We know that a Transition Agreement is planned to be in place from the end of March 2019, at which point we will leave the Common Agriculture and Common Fisheries Policies. There is an intention to remain bound by EU rules, although there is no legislative mechanism to ensure this. The Multi-Annual Financial Framework period to 2020 means we will be eligible for EU funds until then and, for example, the current round of LIFE funding

remains available. There is proposed to be a statement of environmental principles to inform domestic policy and decision-making, for example enshrining 'polluter pays' in the domestic regime.

### Fisheries

The Fisheries White Paper leading to legislation in the next Parliament is expected imminently and ahead of the Agriculture Bill. It is understood the government wish to see the provision of legislative powers to enable sustainable marine management in UK waters, including 12-200nm limits, alongside controls on fishing quotas. The Marine Management Organisation may be tasked with regulating access to resources and quotas.

### Agriculture

At present it is understood that there is likely to be a Command Paper with policy questions for consultation in late February 2018. The Secretary of State has indicated that the Basic Payment Scheme subsidy will be phased out, and there will be a new method of providing financial support to farmers, moving away from subsidies to paying 'public money for public goods', a constant rhetoric now for some months. In addition there is the intention to build a natural capital approach in all land-use and management to develop a truly sustainable future for our countryside. A new universal stewardship scheme available to all has been trailed, as has the intention to maintain the total cash value of public support to agriculture through to 2022.

### Proposal for new Environment Body

The Secretary of State's intention is to create a new body that is able to hold Government to account, probably through Parliament rather than within a government department, replacing the jurisdiction of the EU. Speculation surrounds the details of such a body and its relationships to existing environmental public bodies such as Natural England and the Environment Agency. Models such as the Climate Change Committee and the Information Commissioner's Office have been put forward as ideas, in addition to models elsewhere in the world such as in New Zealand.

There is an unresolved question as to whether the targets and measures within the 25 Year Environment Plan could be placed on the statute as the basis for holding this and future governments to account over the period of the plan.

### 25 Year Environment Plan (25YEP)

On 11 January 2018 the Prime Minister launched the long awaited 25 Year Environment Plan – '*A Green Future: Our 25 Year Plan to Improve the Environment*'. Commentators have been supportive of the breadth and the real ambition in the plan, and more challenging about the detail of its implementation. In particular, the lack of a commitment to translate ambition into law by establishing an Environment Act aimed at restoring nature, to date is seen as a notable omission. The Secretary of State's speech at the Oxford Farming Conference in early January, and his verbal evidence to the House of Lords Committee into the effectiveness of the Natural Environment and Rural Communities (NERC) Act and Natural England are informative.

The plan contains a range of positive initiatives and commitments, and reconfirms that the effect of all EU laws to protect the environment will be maintained. Specific commitments include the principle of Net (environmental) Gain where the impacts of development will need to be more than outweighed by beneficial interventions for habitats and species. There are commitments to create or restore 500,000 hectares of wildlife-rich, priority habitat outside protected areas, and to create a Nature Recovery Network based on the Lawton principles. There is an intention to facilitate funding through a new domestic natural environment impact fund.

It must be recognised that writing an account such as this at a time of uncertainty and very fast moving change is, at best, an educated guess at details and timescales of the tectonic changes likely to be implemented.

## SCOTLAND

The Scottish Government publishes the Programme for Government in September, implementing Manifesto commitments for the financial year. The environment and environmental issues got more mentions in the 2018-19 version than in previous Programmes.

### Programmes for Government

The Programme for Government 2017-18 (Scottish Government, 2017) was described as the 'greenest ever' (Dixon, 2017). It strongly reflected the First Minister's ambitions, with arguably strong lines on education, environment and the economy. A strong theme is the low carbon, circular, digital, fairer economy, and repopulating and empowering Scotland's rural, coastal and island communities. Evidently, the choreography of the First Minister entering the Chamber with the Cabinet Secretary for Environment, Climate Change and Land Reform sent an important message about priorities.

As in previous programmes in Scotland, environmental rights and fairness are important themes, both in terms of helping improve the environmental fortunes of those suffering from disadvantage and also anticipating the need to resolve some environmental conflicts of interest in the absence of EU institutions (e.g. Court of Justice of the European Union).

The legislative programme for the Scottish Parliament in 2018-19 is likely to focus mainly on progressing existing Bills and allowing space to deal with legislative requirements arising from the UK Government's negotiations on Brexit.

### Climate Change Bill

This brings the 2009 Act up to date with regard to the Paris Agreement, including more ambitious targets to reduce greenhouse gas emissions so that Scotland plays its role in limiting the global temperature increase to 1.5°C above pre-industrial levels. It also seeks to increase transparency, to demonstrate the Scottish Government's commitment to sustainable economic growth, and signals to the international community that Scotland is well placed to undertake low carbon business.

The new Climate Change Plan for 2018 is expected to set an ambitious programme to reduce greenhouse gases and to provide certainty to businesses and investors about how the Scottish Government plans to reduce emissions over the 2020s and early 2030s. There is likely to be a focus on electric vehicles and associated infrastructure, heating, increasing rates of woodland planting and continuing a major programme of peatland restoration.

### Crown Estate Bill

This establishes a framework for the management of Crown Estate assets to ensure Scotland's local communities, authorities and industry can benefit from the devolution of the Crown Estate.

### Planning Bill

Responding to the independent review of the planning system, this will facilitate the provision of infrastructure to support development that Scotland is deemed to need. It offers a simpler, more effective system of development plans; and improves the procedures for preparing plans allowing communities better opportunities to influence the future of their areas.

### Grouse Moors and Deer management

Two experts groups have been established to look at the future of deer management (chaired by Simon Pepper) and grouse moor management (chaired by Professor Alan Werritty). Both groups should make key recommendations by summer 2019, which could have major implications for the regulation and management of large areas of rural Scotland.

## WALES

Wales' ground breaking legislation putting sustainable development at the centre of decision making continues to create wider consultation and new innovative products on multiple aspects of the governance of Wales and its relationships with the rest of the UK and further afield. The Environment (Wales) Act 2016 and the Well-being of Future Generations (Wales) Act (2015) both enshrine the commitment to key international obligations that will not change because of the UK's exit from the EU. The legislation

demonstrates how the crucial international work streams covering the United Nations Sustainable Development Goals, United Nations Framework Convention on Climate Change, and the United Nations Convention on Biological Diversity can be integrated at the sub-national level to drive real change.

### Well-being of Futures Generations (Wales) Act (2015)

As set out in the Well-being of Future Generations Act, the Welsh Government and its 43 public bodies must demonstrate the Five Ways of Working (Integration; prevention; collaboration; long-term; involvement) in setting well-being objectives that maximise the contribution to the seven Well-being Goals for Wales. These Ways of Working towards the Goals are increasingly being embedded in public bodies' corporate plans and reporting. To ensure everyone works towards the same purpose, the listed public bodies must work to achieve all the goals, not just one or two.

The first Future Trends Report was published in May 2017 to support Welsh public bodies balance short-term needs with the ability to also meet long-term needs. It identified key social, economic, environmental and cultural trends that could affect Wales in the future, as well as some factors that could influence the direction of those trends. A growing community across government and the research community is developing the evidence base for the next report.

All 19 local Public Services Boards are functioning and have produced their required online Assessments of local well-being. Each Assessment draws together findings from data, academic research, future trends and the views of local people, and considers their economic, social, environmental and cultural well-being. During 2017, the Public Services Boards used the assessments to draft their Well-being Plans that identify their well-being priorities. Drafts went out for consultation in September 2017, and final plans should be published by April or May 2018. The next phase is to set out the delivery actions.

In 2017, the independent Future Generations Commissioner produced her first annual report, and put her draft strategic plan 2017-2023 online. She also provided a report, 'Well-being in Wales: Planning today for

a better tomorrow,' containing 17 recommendations on the key areas of change needed for the public sector to make better decisions for future generations. The Commissioner provided individual feedback to all 19 Public Services Boards on their assessments.

### Environment (Wales) Act (2016)

As the first product of the Environment Act, the 2016 State of Natural Resources Report, produced by Natural Resources Wales, was the primary evidence base for the first National Natural Resources Policy. The State of Natural Resources Report will normally have a five-year cycle, but the second report will be published in late 2020 to bring it in line with the Assembly election cycle. This second report is currently under external stakeholder discussion to upgrade and refine its databases, develop analyses, and explore more innovative presentational styles.

Following a three-month public consultation ending in February 2017, the first Natural Resources Policy, was published on 21 August 2017. This was the second statutory product of the Environment Act. It set out policies, priorities, opportunities and challenges for the sustainable management of natural resources in Wales, especially three national priorities to deliver nature-based solutions increase renewable energy and resource efficiency, and take a place-based approach. It also identified necessary actions in relation to climate change and biodiversity, and to contribute towards the goals across the Well-being of Future Generations Act.

Area Statements, as required by the Environment Act, ensure that national priorities inform a place-based approach to local delivery and are being produced by Natural Resources Wales in partnership with diverse stakeholders, who will be encouraged and supported to take area-based action. Area Statements will, for example, support Public Authorities in complying with the Environment Act Section 6 Biodiversity and Ecosystem Resilience Duty, Local Authorities when developing Local Development Plans, and feed into Local Well-being Assessments and Plans. Six Area Statements cover terrestrial Wales, and a seventh covers Welsh marine waters. Subject areas include renewable energy, green infrastructure, natural flood alleviation, land and soil management. Natural Resources Wales aims to

deliver all-Wales coverage by the end of 2019.

Part 1 of the Environment Act promotes sustainable management of natural resources, to maintain and enhance the resilience of ecosystems and the benefits they provide. Section 7 will replace the Section 42 lists of habitats and species under the Natural Environment and Rural Communities Act in respect of Wales, with “a list of living organisms and types of habitat which are...of principle importance for the purpose of maintaining and enhancing biodiversity in relation to Wales”. This is a work in progress, reflecting the challenges of translating ecological complexity into legislative requirements.

### Marine Management

The three-month Welsh Government consultation on the draft first Welsh National Marine Plan for Welsh seas ends on 29 March 2018. It covers inshore and offshore marine plan areas for which Welsh Ministers are the marine planning authority. The draft WNMP supports the sustainable development of Welsh seas and includes policy in relation to 11 sectors, including marine aggregates. The approach to managing marine activities in the draft WNMP conforms to the Marine and Coastal Access Act 2009, UK Marine Policy Statement (2011), and applies the sustainable development principles of the Well-being of Future Generations (Wales) Act 2015 and the requirements of the Environment (Wales) Act 2016. It introduces a framework to support sustainable decision-making for Welsh seas; sets out the Welsh Government vision and strategic objectives; presents general policies (economic, environmental and social) and includes sector-specific policies.

The Welsh Government works as part of a Marine Protected Area Management Steering Group with organisations who are also marine-protected-area managing authorities. Following consultations on options to ensure Welsh Marine Protected Areas are managed to achieve and remain in favourable condition and meet statutory obligations. It now provides strategic support and guidance to management authorities to facilitate activity that has greatest impact on the condition of Marine Protected Areas, their features and network.

### Recycling and circular economy

The 2010 overarching waste strategy document for Wales “Towards Zero Waste” established ambitious targets for waste prevention and recycling. By 2050, Wales aims to have reduced the impact of waste to within its environmental limits and to recycle at least 70% of waste by 2025. To achieve this, statutory recycling targets have been set, which, coupled with an investment of up to £750 million to support local authorities to deliver next generation waste facilities, has seen Wales achieve the highest recycling rates in the UK and third in the world. Importantly, as well as significantly increasing recycling to 56%, work in the waste sector has significantly reduced emissions by 20.4% and delivered economic growth. The Welsh Government also anticipate savings against future costs of over £5.5 million on food waste and over £500 million on residual waste programs. Provisions in the Environment Act help to achieve more recycling by businesses and the public sector, and in 2017, the Welsh Government announced a £6.5 million fund to help the country move towards a circular economy.

A consultation to refresh the strategy starts in July 2018 to ensure it complements the aims set out in the Well-being of Future Generations Act and the Environment Act. The objective is to continue progressing towards Wales’ One Planet Goal of reducing the impact of waste in Wales to within environmental limits by ensuring plans and programmes continue to plan and manage Wales’ natural resources proactively, sustainably and in a joined-up way, ensuring present needs are met without compromising the needs of future generations.

### National Development Framework

A summary of the January-March 2017 Call for Evidence and Projects for the National Development Framework was published in August 2017. A consultation on Issues and Options will take place in April 2018.

### New Environmental Impact Assessment (EIA) Regulations

New regulations came into force on 16 May 2017 to reflect changes to the Directive relating to a wide range of subjects, including Agriculture, Marine, Forestry, Town and Country Planning, Land drainage, and Water resources. Individual organisations

and companies are currently looking at the implications of these within the context of the Planning Act and Environment Act.

### Wales Act 2017

The Wales Act came into force on 31 January 2017. It amends the Government of Wales Act 2006 and the Wales Act 2014, and makes provision for the implementation for many influential changes, including a new fiscal framework. It empowers the Welsh Assembly to make laws on any matter except those specifically reserved to the UK Parliament. Some of the areas that have been conceded to Wales include powers over heat and cooling networks, and devolution of a package of measures on water and sewerage. There is no clear principle underpinning the scope of the powers devolved to the assembly and those reserved to the UK Parliament.

### NORTHERN IRELAND

The Northern Ireland Executive remains in hiatus after a collapse as a result of a botched Renewable Heat Incentive scheme in January 2017. A new Northern Ireland Secretary, Karen Bradley, has reengaged talks between the two main parties with the outcome at this stage still unknown. At a United Kingdom level, the Democratic Unionist Party continue to work in partnership with the Conservative Party government in what is known as a ‘confidence and supply’ deal. However, significant uncertainty remains at local level, particularly because agriculture, fisheries and environment are devolved competencies.

### Impact of impasses on Brexit related matters

Intensification of agriculture remains the most significant contributor to biodiversity and water quality decline in Northern Ireland. Moving away from the Common Agriculture Policy as a result of Brexit, into a new domestic regime focused on the principle of ‘Public Money for [environmental] Public Goods’ has the potential to focus public money on the delivery of environmental outcomes. The legislative case for this is to be set out in the Agriculture Bill, mentioned in the Queens Speech. However it is not yet clear how much of this will apply to devolveds, with indications that the majority of the legislation will

apply to England only. It can only be assumed that devolved governments would then draft their own legislative programme for agriculture, however with no local Assembly in place this poses a significant problem for Northern Ireland. In the scenario where there is no Assembly, Northern Ireland would either take no action or the United Kingdom government would have to consider a direct rule option that would facilitate a legislative process in Northern Ireland. Despite this, the Department of Agriculture Environment and Rural Affairs are meeting with stakeholders to gain an understanding of what the Agriculture, Fisheries and Environment sectors need new domestic policy to achieve.

Most pressing however is the ‘European Union (Withdrawal) Bill’ and the transposition of Statutory Instruments/Regulations (secondary legislation) into domestic law for Northern Ireland. The Department of Agriculture Environment and Rural Affairs is currently carrying out an assessment of all relevant legislation to ensure that technical changes necessary to correct deficiencies arising as a result of the UK leaving the EU are flagged and reported. With no Northern Ireland Assembly, concern is arising amongst stakeholders that there will be no consultation on changes in Statutory Instruments/Regulations. Key pieces of European Union legislation, such as the Birds and Habitats Directive (The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995), could be weakened as a result.

### Key developments and issues awaiting ‘sign-off’

The Environmental Farming Scheme is the Department of Agriculture Environment and Rural Affairs new agri-environment programme which incentivises farmers and land managers to manage land for specific environmental needs. It has a budget of £100m and the first tranche opened in February 2017, with agreements commencing in January 2018. The scheme will open for a second tranche in March and July of 2018.

As mentioned previously, agriculture and environment are devolved issues, therefore any new change in policy or legislation, as a result of Brexit or otherwise, cannot be signed off unless by a local Minister. A Key issue awaiting ministerial sign-off includes the extension of marine Special Protected Area on the east coast of Northern Ireland, adding over 96,000ha to the protected area network for the benefit of seabirds and marine wildlife. The Department are also consulting on a new Bovine Tuberculosis strategy, with the proposal to cull badgers in core affected areas, however this is proving controversial with the public, and the strategy is unlikely to become operational unless approved by a Minister.

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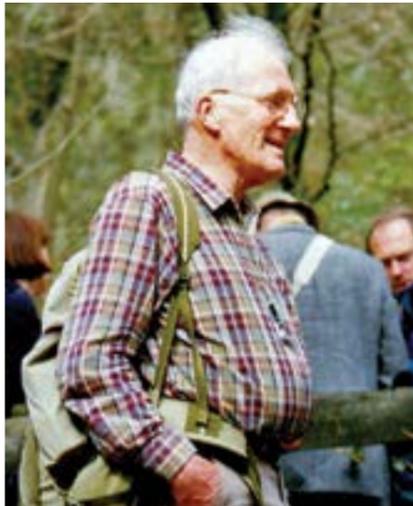
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# MICHAEL CHARLES FARADAY PROCTOR 1929–2017

Michael Proctor was an outstanding botanical polymath with a huge range of interests, taxonomic skills, and research expertise. He was a longstanding member of the British Ecological Society, joining in 1951, and was an editor of the *Journal of Ecology's* Biological Flora of the British Isles series.

Michael was born in Harrow, the son of Edith and Roland Faraday Proctor, a descendent of Michael Faraday. Michael was always interested in nature and was inspired his mother's Bevis and Jeffery's (1911) *British Plants: Their Biology and Ecology* to explore 'commons' in Harrow and the Chilterns and the Surrey Heaths. The Proctors moved in 1946 to Hampshire where Michael explored the New Forest and Purbeck. He was a scholar at Queens' College, Cambridge reading Botany, Zoology, Organic Chemistry, and Biochemistry in Part I (1948–50) and Botany in Part II of the Natural Science Tripos (1950–51) gaining a First. His direct contemporaries at Queens' included Peter Yeo and Franklyn Perring. For his PhD Michael studied the ecology and taxonomy of *Helianthemum* in Britain and Ireland under the guidance of Sir Harry Godwin. Michael belonged to the outstanding group of young botanists in Cambridge in the early 1950s including Max Walters, Peter Sell, David Coombe, and Donald Pigott, and visitors such as Eilif Dahl. Michael discovered that the Hoary Rockrose growing on Cronkley Fell (Upper Teesdale) was a unique endemic taxon, *H. canum* (now *H. oelandicum*) ssp. *laevigatum* M. Proctor. He published thorough *Biological Floras of Helianthemum* (3 spp.) and *Tuberaria guttata*, wrote *Flora Europaea* accounts of *Halimium*, *Tuberaria*, and *Helianthemum*, and studied the comparative ecology of the rare *H. apenninum* and the common *H. nummularium*. He maintained strong interests in angiosperm taxonomy, for example of *Sorbus* and *Carex*, and co-authored a Botanical Society of Britain and Ireland (BSBI) monograph on



Michael Proctor at the BBS meeting in Torquay in April 1997. Provided by Ken Adams

*Sorbus* (2010). His many contributions to *Sorbus* biology are honoured by the hybrid tree, Proctor's Rowan (*S. x proctoris*) which grows as a single tree in the Avon Gorge.

In 1954 Michael joined the Nature Conservancy (NC) in Bangor. He enjoyed exploring Snowdonia and met his future wife Jean Mobbs there. He found NC work too bureaucratic and in 1956 moved to a Lectureship at the University of Exeter. He remained there until retiring as a Reader in 1994. He continued as Honorary Research Fellow until his death. He was a very stimulating teacher, especially in the field, and taught many botanical topics. Peter Marren's *The New Naturalists* summarises Michael's lecturing with "As classroom teacher, perhaps took an over-optimistic view of the intelligence of his students".

Michael maintained a wide range of active research interests, including descriptive vegetation ecology; the vegetation and water chemistry of bogs and fens; the ecophysiology of bryophytes, ferns, and lichens, particularly desiccation tolerances; and the ecology of several Devon habitats.

He published the first bryophyte flora of Cambridgeshire (1956) which laid the basis for systematic recordings there.

In 1958 and 1959 Michael and Exeter colleague Brian Ivimey-Cook with support from the Burren Survey Committee of the BES conducted a thorough plant-sociological survey of the Burren in County Clare. Despite its great floristic interest, Burren vegetation had been ignored, especially after the fathers of phytosociology Braun-Blanquet and Tüxen visited it in 1949 and declared after a few relevés that "there is something wrong here, we must go somewhere else". Their continental system did not allow for calcifuge plants like *Antennaria dioica* and *Calluna vulgaris* to grow together with calcicolous *Dryas octopetala*! After the Burren survey, Michael revised (1968) Tansley's *Britain's Green Mantle* adding in superb new photographs. He became a key member of the National Vegetation Classification (NVC) project (1974–1981) which produced the five-volume *magnum opus* on *British Plant Communities* (1991–2000). Michael synthesised NVC data from mires as well as sharing his vast knowledge of British vegetation. NVC meetings were, to me as a young researcher then, a wonderful experience, listening to Donald Piggott, Derek Ratcliffe, and Michael discuss in detail critical aspects of British vegetation based on their vast field knowledge.

At the age of 84, Michael published his masterly book on the *Vegetation of Britain and Ireland* (2013) in the New Naturalist series. It distils his life's observations and contains nearly 400 colour photographs of his. After finishing this, he published five scanning electron microscopy studies of *Carex* leaves (2013–2015) and was working on a bryophyte manuscript when he died.

Michael was a most talented photographer. He had a gift to recognise what he described as a potentially "pleasing" image. As a

student he acquired an old German plate camera and produced prints of superb quality, some of which are in the New Naturalist *Wild Flowers* (1954) and *Mountain Flowers* (1956). He progressed to SLR cameras and colour film as they became available and later embraced digital photography. He published outstanding pictures, wrote a masterly chapter on plant photography in Turner Ettliger's *Natural History Photography* (1974), and became a Fellow of the Royal Photographic Society (1973). Peter Marren notes that "students will remember his illustrated lectures, full of slides of most dazzling quality".

Besides being an outstanding botanist, Michael was a very knowledgeable entomologist, fascinated by pollination biology, interests he shared with Peter Yeo. They frequently went plant-hunting and collecting Hymenoptera. About 1960 they were asked if they would write about pollination for the New Naturalist series. They agreed and Michael took on the challenge of photographing pollinating insects. Michael reckoned that about only one image in forty was "pleasing". In the days of colour film, photographing pollinating insects required immense patience and was expensive. Their book *The Pollination of Flowers* (1973) became a classic, and Michael, Peter, and Andrew Lack (Peter's PhD student) produced a new and much revised *The Natural History of Pollination* (1996).

Michael was a modest, self-effacing person who never sought the limelight. He joined the British Bryological Society (BBS) and the BSBI in 1950, the BES in 1951, and the British Lichen Society in

1958. He edited the BSBI's journal *Watsonia* 1959–71 and helped edit *Journal of Bryology* 1980–82. He was elected an Honorary Member of BSBI and BBS and BBS President 1984–85. He was a trustee of Paington Zoo (1969–81; 1991–96) which specialised in conservation of rare species and was a founder of the Devon Wildlife Trust. He was elected a Foreign Member of the Norwegian Academy of Science and Letters (1997) and an Honorary Member of the Hungarian Society for Plant Physiology (2000).

Michael had a dry, rather academic sense of humour, loved making puns, and possessed an inquisitive mind interested in almost everything – biology, geology, history, languages, aeroplanes, vintage cars, steam engines, and music. He had a prodigious memory and could recite long passages from AA Milne, Belloc, Flanders and Swann, and even Virgil! Being in the field with him was a learning experience as he was knowledgeable about almost every organism, from seaweeds and flies to birds and trees. He generously shared this vast knowledge with anyone interested. As a schoolboy on his Field Studies Council course on bryophytes at Malham Tarn, he stimulated my life-long interest in bryophytes and started my photographic activities.

Michael Proctor was a great botanist, plant ecologist, ecophysiological, photographer, mentor, and friend. He will be greatly missed by many.

## H John B Birks

*Journal of Ecology* have compiled a Virtual Issue in tribute to Michael. This can be viewed on the Journal's homepage.

## MEMBER NEWS

# HELEN ROY MBE



**Professor Helen Roy has been recognised in the New Year Honours list 2018, with the award of a MBE for her outstanding service to biodiversity research, citizen science and science communication.**

As the Centre for Ecology and Hydrology outlined in a press release announcing the award "Professor Roy is well known for her work on citizen science. Her CV includes leadership of several major citizen science initiatives involving tens of thousands of people, including the BBC Breathing Places Parasite Survey and EDF Energy Big Bumblebee Discovery. She has been the volunteer scheme organiser for the UK Ladybird Survey for many years, and regularly tweets about ladybirds, ecology and citizen science using the handle @UKLadybirds. She is often interviewed on TV and radio about her research and passion for biological recording, and has previously been awarded the Zoological Society of London Silver Medal in recognition of her contribution to public understanding and appreciation of zoology."

Readers will also know that Helen is an active member of our Society and has been a regular contributor to the Bulletin both via the citizen science SIG reports as well as some fascinating accounts of travels to Africa and South America. Well done Helen!



## COMMUNITY

# LAUNCHING THE ACCESSIBILITY NETWORK



Karen Devine & Linda Birkin

The Accessibility Network is open to all members who face additional physical and mental health challenges in their professional life.

### THE ACCESSIBILITY NETWORK

In mid-2017 a PhD student member approached the BES to ask how they might go about raising the issue of disability and the impact of disabilities on developing research careers. They identified a lack of access to senior role models with disabilities who had been successful, and a fear of openly discussing some of the issues that disabled researchers face. So we began the process of setting up a network for people to come together and launched the Accessibility Network at the Ecology Across Borders meeting in Ghent 2017.

During that first meeting, a number of common experiences, feelings and concerns arose, many of which complement the recent media pieces on disabilities within academic life. Examples of good practice were highlighted as was the important role of supportive lecturers, supervisors and managers.

*'I am used to hiding my condition. It's embarrassing to have to tell people, and especially my supervisor, why it's so much harder for me to do the simple tasks that they take for granted... so I don't tell them.'*

### LIFE-LONG TRAINING IN NOT SPEAKING OUT

Many disabled researchers come into academia and progress through the profession already having learned not to disclose physical and mental health conditions. The reasons for non-disclosure are complex and include:

- a perception that many conditions are associated with a stigma
- a perception of weakness
- fears that career progression will be hindered
- sounding ungrateful in asking for additional resource or help
- a perception that being included/employed/promoted is solely a means to meet diversity quotas
- explicit advice from lecturers, mentors and others to not disclose disability

Many disabled researchers are practiced at managing and compensating for their physical and mental health conditions. This can make disabilities seem invisible and contributes to a culture of secrecy. Individuals can then be less likely to be believed when they do declare their personal circumstance and its impact on all or some aspects of their professional life.



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### A LITTLE UNDERSTANDING GOES A LONG WAY

Opening a dialogue between disabled researchers and their colleagues isn't just about supporting disabled individuals; it is also about supporting their colleagues to feel confident in their own ability to create and support an inclusive workplace.

Supervisors and managers are key to creating an inclusive environment. Those with experience and awareness are more likely to feel confident in creating an open dialogue and discussing the needs of disabled researchers, leading to researchers feeling more supported and secure in addressing the additional challenges they face. Everyone we spoke to agreed supervisors were often not being deliberately unhelpful or uncaring but instead lacked confidence in having the discussions needed to remove the barriers to career progression.

### OUR NEXT STEPS

The Accessibility Network is intended to provide an opportunity for people to come together to share experiences and discuss what does and doesn't work in supporting disabled researchers, whether you are a disabled researcher or someone who supervises/manages disabled colleagues. We will meet every year at the BES Annual Meeting alongside developing an annual programme of smaller events focussing on particular aspects of research.

We will showcase different case studies in each Bulletin focussing on a variety of barriers and challenges to overcome.

Most importantly we want your thoughts on what we can do to support you as a disabled researcher or as someone who supports, supervises or manages disabled colleagues.

### HOW YOU CAN GET INVOLVED

If you would like to join the network, would like to write a Bulletin piece on this topic or have suggestions for events and activities, please get in touch with Karen Devine Karen@britishecologicalsociety.org. Any names and email addresses will be stored securely outside our main databases and not be shared without your explicit consent.



## COMMUNITY

# WIDENING ACCESS AND PARTICIPATION: A CARIBBEAN CLIMATE CHANGE EVENT



Cecilia Medupin | University of Manchester, UK | cmedupin@yahoo.com

As part of the events to mark the ESRC Festival of Social Science, a community-based organisation, Community Perspectives, delivered a one-day event: Trouble Nuh Set Like Rain! Caribbean Climate Change, in Moss Side, Manchester at the end of last year's Black History Month.

Community Perspectives is an emerging organisation dedicated to promoting diversity in STEM with a particular focus on engaging groups who are most underrepresented in these fields, and under-served, namely African Caribbean girls and women. This particular event's focus was on exploring climate injustice through a range of activities including: panel discussions on diversity in STEM, how science is funded; presentations on living with climate change and the future of the Caribbean; and interactive aquatic ecology sessions. Speakers included researchers from the Universities of Salford, Manchester, Birmingham, and community groups and freelance environmentalists. The day was spiced with good food and music.

The event enabled attendees, mainly residents of Moss Side – an inner city area with large Afro-Caribbean, Asian and Somali communities – to understand the integration of science with other disciplines, and how this can help us understand and navigate the impacts of climate change. It was also a chance to reflect on the experiences of people from BME backgrounds within higher education and in terms of career progression.



The adults and children who participated in my aquatic ecology session were very engaged as they used guides and microscopes to identify insects in sample trays representing clean and dirty rivers. It was interesting to see how excited and enthusiastic the children were as they asked so many questions. From these brief interactions, I understood that children (aged 5–12 years) from some parts of the city do not visit rivers nor attend public engagement events, such as Manchester Museum's 'Big Saturday'. I got great satisfaction showing children river invertebrates and enjoyed all aspects of the event; there was not a dull moment.

Widening participation is one of the major components of the government's education policy. As one of the key drivers for the UK's Teaching Excellence Framework (TEF), widening participation is one of the metrics measured. This implies that in order for universities to meet the TEF criterion, education needs to extend to people from under-represented backgrounds such as low income households, geographic

regions where participation in higher education is low, and disabled groups. Widening participation events are an opportunity to increase access for these groups and facilitate social mobility.

The Moss Side event was a good chance to listen to the challenges faced by the community in relation to people attending higher education. Some of the challenges that deter the chances of attaining qualifications and degrees include erratic working hours by family members which can prevent stability and support, the need to take care of loved ones, students attending underperforming schools, and very limited role models from within the community. Thus, they are also less likely to attend public engagement events organised by higher education institutions.

In order to increase participation, and in the long term improve social and educational mobility, widening participation events organised in local communities will provide opportunities to breach the gap. Furthermore, events should integrate activities beyond science, such as discussions around equality and diversity, history, music and food, such as at Moss Side. This strategy could boost registration and attendance in higher education, promote 'Citizen Science', foster research, increase interaction within communities and consequently, increase HE profile. I anticipate that in no distant future, an effective two-way interaction between local communities and higher education will be strengthened.

# MENTORS NEEDED FOR THE SOCIAL MOBILITY FOUNDATION

## SUPPORT THE NEXT GENERATION OF ASPIRING SCIENTISTS

**The Social Mobility Foundation (SMF) is looking for scientific professionals to mentor sixth-form students by email, communicating with them at least once every two weeks.**

Current barriers to social mobility mean that people from poorer backgrounds are under-represented in science and other professions. Most of us know this from our personal experiences, and statistics back it up. Just 4% of doctors come from working-class backgrounds, for example, and only 11% of journalists.

The mentoring scheme is a key part of SMF's mission to improve social mobility for young people who have the ability to flourish in the top universities and professions but lack the encouragement and networks to help them get there.

All mentees will have at least 5 As at GCSE and are predicted to achieve at least ABB at A-Level. The majority of them will have been eligible for Free School Meals (a household income of less than £16,190) whilst in secondary education.

If you are interested in becoming a mentor please visit [www.socialmobility.org.uk/sign-up-professionals](http://www.socialmobility.org.uk/sign-up-professionals) or contact [mentors@socialmobility.org.uk](mailto:mentors@socialmobility.org.uk)

As an e-mentor you would offer advice on issues such as preparing for exams, choosing where to apply for university, and writing personal statements.

Some mentors also meet their mentee face-to-face, with the support of the SMF, and this can be at organised meet-up sessions in Birmingham, Glasgow, London, Manchester or Newcastle.

The SMF is interested in hearing from potential mentors of all backgrounds, particularly science. The 'Biology & Chemistry' sector is one of the most popular amongst students, but it is also a sector where the SMF struggles to reach new mentors.

Mentoring is just one aspect of the SMF programme; pupils will also attend workshops, discussion groups and university visits. Through their programmes, the SMF has increased the probability of pupils attending a Russell Group university by up to 27%, and increased the probability of attending a university most visited by top employers by up to 43%.



## TEXT US A FIVER TO SUPPORT YOUNG ECOLOGISTS

Between 9–13 July 2018, 30 talented young people studying science A-levels at schools serving some of the most disadvantaged communities in the UK will take part in a five day residential summer school at the Margam Discovery Centre in Wales. All costs are covered by the BES.

To support these young people starting out on their career in ecology, just text **SCHL18 £5** to **70070**. Make sure to leave a space between SCHL and the amount you wish to donate up to a maximum of £10. If you are a UK tax payer you can gift aid your donation automatically and add a further 25% at no cost to you.

Please note that BES will never call you on your mobile phone or share your personal data with any other organisation unless you give us explicit consent.

## COMMUNITY

# THE MAKING OF AN AMPHIBIAN CONSERVATION BIOLOGIST



Steven Allain | Imperial College, UK

**I'm sure that everyone remembers the days of their youth when they spent hours scrambling around the undergrowth, searching for insects, amphibians and other wildlife.**



Fortunately these memories are still quite strong within my mind as it is something that I regularly do as part of my research. I'm an amphibian conservation biologist with a particular interest in disease dynamics and population monitoring. I often get asked how I got involved in what I do and the simple answer is that I really never grew up. I'm happy to share my story with a larger audience to show that if I can do it, anyone can!

I grew up in south Essex, not far from the Thames and luckily within my 'local patch' I could easily find

nine out of the thirteen native reptile and amphibian species. This is probably one of the main reasons why I clutched hold of the science of herpetology as tightly as I have but I like to think that if there hadn't have been such a high diversity, that I still would have walked down the same path. After hectic days at school I used to love watching wildlife documentaries as a way to unwind, with two of my biggest influences being Steve Irwin and Nigel Marven. If you're not familiar with either of them, they often filmed large and charismatic reptile species in far flung lands and bought them to a wider audience.

The Australian outback is a very different environment to the wilds of Essex but I still had to give it a go right?

Very quickly I learned where to find certain species in my local area and did a very loose version of monitoring, just going back regularly to ensure they were still there. At this point in my early teens I was completely unaware of habitat management or most of the fundamentals of biology other than what school had taught me. Aside from photographing the animals I found, I got involved with some volunteer groups and even completed my work experience with the Essex Wildlife Trust. This helped to establish the foundations of a true conservationist within me. I'd always been fascinated by the natural world and now I was developing the skills to apply the knowledge I'd slowly been building from TV shows and books I'd read. Although this was only a small step, it was a key turning point in my life. I had found my future purpose.

Fast forward to when I applied for my A-levels, I was dead-set on applying for a Zoology degree to take things to the next level. The

institution I'd chosen for this was Anglia Ruskin University and I studied at their Cambridge campus. I'm sure there could have been many more universities to choose from, but after attending an open day at the Chelmsford campus, I was sure it was the university for me. I started my degree in 2012 and graduated in 2015, during those 3 years I went through a great transformation. When I first entered the doors I was an amateur enthusiast and by the time I left, I was a fully practised local authority on the conservation of amphibians and reptiles. The reason being is that whilst at university, opportunities arise that allow you to specialise and follow your passions.

One of the first things I did when I started my course was to contact the local Amphibian and Reptile Group. I was acutely aware that Cambridgeshire contained a large portion of the country's great crested newts (*Triturus cristatus*) and I was interested in being involved with their conservation. The then Chairman of the Cambridgeshire and Peterborough Amphibian and Reptile Group took me under his wing and after his training, I lead my own project with a colleague looking

at great crested newts at the local crematorium. This is still ongoing five years later and will hopefully continue to do so for the foreseeable future. Shortly afterwards I was voted in as the chairman of the group and it's a position I still hold.

From the wet nights looking for great crested newts in Peterborough and Cambridge came more opportunities. My most recent of which (before I started my Masters Degree at Imperial College London) was spent in Sabah, Malaysia investigating the amphibian fauna of Mount Kinabalu. I took two gap years between the end of my Bachelors and further education in order to build up a portfolio of published research and to increase my experience. My research has taken me all across the globe and I'm now focusing on amphibian disease dynamics with the hope of starting a PhD on the topic in the next year or two. Now as part of my Masters I'm focussing on the disease dynamics of amphibians in Madagascar which promises to be both an important and exciting project!

It wasn't always plain sailing; there were a number of challenges I had to overcome. The biggest of which

was believing in both my abilities and judgement. Once I'd gained the confidence to do that, everything became that little bit easier. The one thing that helped most with this was attending scientific conferences and meeting fellow scientists of all walks of life, discussing conservation issues and speaking about our experiences. I'd thoroughly recommend attending conferences relevant to your area of interest and the sooner you start, the sooner they will start to benefit you!

I would like to take this opportunity to ask each of the readers to do me one favour from the 2018 field season onwards, that is to record any amphibians and reptiles you see. Please send these records to your local biological records centre or record them on the Record Pool website (<http://www.recordpool.org.uk/>). Even for widespread species, data is lacking to detect long-term trends in population declines. Most importantly if you find any dead amphibians then please report them to Garden Wildlife Health ([www.gardenwildlifehealth.org](http://www.gardenwildlifehealth.org)). If you've got any questions or would like to know more then please feel free to find me on Twitter: @stevoallain.





## COMMUNITY

# ECOLOGY, DO WE HAVE A PROBLEM?

Bob O'Hara

Norwegian University of Science and Technology, Norway

At the end of last year many of us were at the Ecology Across Borders meeting in Ghent, catching up with friends, making new friends, and listening to talks about the latest ecological science. Many of us, of course, were also following social media. On the statistics social media scene a lot of attention was being paid to a post on Medium by Kristian Lum: Statistics, we have a problem. In it she recounts being harassed by two senior statisticians (both of whom have subsequently been publicly identified). The events she describes are appalling, and she has my sympathy, and my admiration for having the courage to speak out.

Kristian's story is not an isolated incident in science. Over the last few years there has been a drip, drip, drip of stories of bad behaviour and abuse in academia, in the office, when doing field work, and at conferences. But it seems likely that this is only the tip of the iceberg: a lot of women do not report having been harassed, for a variety of reasons. Much of the harassment and bad behaviour that is reported is by men towards more junior women, which exacerbates the emotional pressures by adding a fear of retaliation. Even when a report is taken seriously and a perpetrator found guilty, the punishment is often wrapped in a flurry of non-disclosure agreements.

All these stories make me worry about ecology, as a discipline. Whilst I am not aware of any accusations of harassment at our meetings, I can't see why ecology should be different from other disciplines. My own experience of ecology meetings has been positive, but I have been lucky, and to a large extent this is probably a result of me being male. It seems unlikely that all ecologists are saints. What worries me is that these stories of harassment in ecology, but they haven't been made public yet. Does this mean that there are issues that we, as a community, will have to face when we find out that some of our biggest names shouldn't be a part of a scientific discipline that wants to encourage diversity?

At the end of her post, Kristian has a call to arms:

***We need to start holding prominent individuals accountable for how their inappropriate behavior negatively impacts the careers of their junior colleagues. I'm saying this publicly because whenever I have shared these stories privately with my colleagues, both men and women, they are appalled. It is time for us to be publicly and openly appalled, not just attempting to tactfully deflect inappropriate advances and privately warning other women. We need to remove the power of the "open secret" that these people use to take advantage of their respected positions in our field. We know who these people are, and we should stop tolerating this culture of harassment, or else we become complicit in it.***

I agree: we should be publicly and openly appalled. But we also need to go beyond being appalled. We have to make it clear that this sort of behaviour should not be tolerated. We have to actively support people who come forward with allegations of harassment and make sure that they are heard and taken seriously. We also have to make it clear to people when they have crossed the line.

Now, though, ecological societies are starting to act. The BES does have a Code of Conduct for events, and if anyone wants to report harassment or other unacceptable behaviour, they can report it to Amy Everard. The ESA has their own Code of Conduct, and an email address to report misconduct during or following an ESA event. I am confident that both organisations will take any complaints seriously (I know the BES will, having discussed this with them).

So here we are – I feel that we need people to speak out. But the whole problem is one where it is difficult to do this – there are feelings of guilt, shame and fear, and many of the people who need to be talked about have power. But it cannot be the fault of the person who has been harassed, and most people will be supportive.

This article was first published on the *Methods in Ecology and Evolution* blog (<https://methodsblog.wordpress.com/>) and is reprinted here with permission.

## SPECIAL INTEREST GROUP NEWS

### Announcing a new Special Interest Group:

#### PALAEOECOLOGY GROUP

Jane Bunting  
m.j.bunting@hull.ac.uk

#### TAKING A LONG VIEW OF ECOLOGICAL CHANGE

Variable rates of ecosystem processes and species lifespans mean that ecological dynamics play out over a range of spatial and temporal scales, including those well beyond a human lifetime. The current 'planet-wide experiment' of climate change and the accumulation of evidence from long-term monitoring data over the last few decades emphasise that the timescales needed to understand the effects of ecological and environmental change extend over decades, centuries and millennia. Since we do not have the luxury of waiting for such patterns and impacts to emerge, retrospective records are an important source of evidence for testing understanding, predictions and models based on theory, shorter-term and space-for-time insights (e.g. Seddon et al. 2014).

Palaeoecology, by definition, provides long-term ecological evidence, but is outside the toolkit of many ecologists and is often not well integrated with modern ecological research, to the detriment of both ecology and palaeoecology (Jackson & Blois 2015). In addition, although palaeoecology is currently included as a suitable field for support through BES grants and is increasingly represented in BES journals, engagement with the society remains low amongst palaeoecologists for a range of disciplinary and historical reasons. To shorten the link between ecology and palaeoecology we therefore propose the creation of a Palaeoecology SIG within the BES to bring the latest ecological understanding to palaeoecologists' attention and improve the use of the long time series derived from palaeoecological data within the wider ecological community.

The aims of this SIG will be to:

- Improve the understanding of and engagement with contemporary ecological science among palaeoecologists and of palaeoecological methods by neoecologists through training and networking opportunities.
- Serve as a forum for palaeoecology, a research community which is currently spread across and marginal within multiple different organisations.
- Increase membership of the BES among the palaeoecological community.
- Act as a starting point for ecologists wishing to work with palaeoecological data.

We are currently building a case for this new SIG by identifying opportunities for joint events, including training workshops, conferences and field-based interaction, and assessing support from within and beyond the BES. If you are interested in being involved, have suggestions or would like to find out more about long-term ecological evidence, please get in touch with Althea or Jane and we will add you to our mailing list and keep you informed of progress.

Jackson ST and Blois JL. (2015) Community ecology in a changing environment: Perspectives from the Quaternary. *Proceedings of the National Academy of Sciences* 112: 4915-4921.

Seddon AWR, Mackay AW, Baker AG, et al. (2014) Looking forward through the past: identification of 50 priority research questions in palaeoecology. *Journal of Ecology* 102: 256-267.

**Dr Althea Davies** (University of St. Andrews): ald7@st-andrews.ac.uk

**Dr Jane Bunting** (University of Hull): m.j.bunting@hull.ac.uk

**Dr William Gosling** (University of Amsterdam, The Netherlands)

**Dr Encarni Montoya** (Institute of Earth Sciences Jaume Almera, Spain)

**Dr Nicki Whitehouse** (Plymouth University)



Learn new fieldwork skills: extracting a lake sediment core to understand biodiversity change and human impacts in Peru © KH Roucoux

#### AGRICULTURAL ECOLOGY GROUP

Barbara Smith  
barbarasmithmail@gmail.com

The Agricultural Ecology Group has hosted a varied selection of events in the last few months and welcomed new people on board.

Increasing interest in novel approaches to sustainable livestock production prompted us to team up with the Pasture Fed Livestock Association (PLFA) who are developing one way forward, Russ Carrington summarises the event below. We welcomed Christelle Ledroit as an intern to work as Administrator for the SIG UK-India Agricultural Ecology Initiative. Christelle is based in India where she is doing her PhD on biodiversity in cotton crops. She did a great job coordinating the second UK-India Agricultural Ecology Initiative conference (also reported below) and setting up a website and social media.

Brexit continued to occupy our minds and in December the SIG hosted an interdisciplinary meeting to establish a consensus on research and policy priorities for agriculture. This was attended by a diverse group that included SIG members as well as representatives from the Landscape

Institute, CLA, ADAS, Plantlife, Rothamsted Research, BTO, RSPB, GWCT, National Trust and a number of Universities as well as independent consultants. The output from this meeting will be available on the SIG webpage.

As our student reps Claire Cresswell, Sam Leigh and Chloe Maclaren moved into the final year of their PhD I would like to give them huge thanks for all the support they gave the SIG and wish them well in their futures. We would like to welcome Nicky Stanek and Chris Woodham, both studying for PhDs at Oxford, who have offered to take on organising student events and managing social media. The next SIG event is in collaboration with the Association of Applied Biologists, 21-23rd March Advances in Science Legume and Practice in Glasgow.



**Event report: A day for ecologists with the Pasture Fed Livestock Association.** The PFLA teamed up with the Agricultural Ecology SIG in November to give ecologists the opportunity to see and experience the environmental value of grassland ecosystems from a PLFA perspective.



The event saw a diverse group of 30 people travel to the PFLA's office in Cirencester for a morning of presentations and discussion, followed by a farm walk in the afternoon.

A mixture of farmers, conservation graziers, people with an interest in

farming, students, representatives from Wildlife Trusts and academics, heard first from general manager Russ Carrington who gave an overview of the PFLA and the Pasture for Life certification programme.



Dave Stanley, a farmer and environmental consultant, spoke about the science of pasture-fed farming and soil, and Jonathan Brunyee, a farm business lecturer at the Royal Agricultural University, presented the economics of beef and sheep production and the financial implications to farmers of going wholly pasture-fed.

After lively discussion, the delegates headed off to a nearby certified Pasture for Life farm. Ian Boyd rears organic pedigree Hereford cattle on 100 hectares in the Cotswold Hills near Cheltenham.

After a tasty lunch of 100% grass-fed beef stew, prepared by Ian's wife Cathy and daughter Steph, the group heard how the farm's beef is sold direct to the consumer under their Cotswold Beef brand.

During a beautifully sunny autumnal afternoon, Ian presented his herd of Hereford cattle which was mob grazing a species-rich herbal ley containing five grasses, five legumes and five herbs. Soil structure and health was discussed with practical demonstrations showing what 'good' soil looks like.

There was plenty of debate and many ideas traded throughout the day. Feedback from the event has been very positive with attendees describing it as interesting and useful. Some intend to look into grazing systems and mob grazing in more depth, and to research direct selling meat. The PFLA hopes to host more meetings like this in future.

Russ Carrington, General Manager PLFA (info@plfa.org.uk)

**Event report: The second UK-India Agricultural Ecology Initiative conference** was hosted by the Agricultural Ecology SIG at Charles Darwin House in September 2017. Following on from the inaugural conference at the University of Calcutta in 2015, we brought together researchers and practitioners working in the UK and in India around the theme of *Ecology in Agriculture*. This two-day conference comprised four sessions which focused on: Landscape Ecology, Ecosystem services, Policy and Community Engagement and Participatory Research. Focused workshops at the end of each session enabled participants to determine on research priorities for each topic. Using this as a basis we hope to further develop a bi-lateral platform.

The main objective of the Initiative is to connect people to develop research, policy and practice to integrate ecological principles into agriculture. We have set up a website which will become our main platform for discussion, collaboration and exchange. At the moment, you can find information on the speakers for the conference, their presentations as well as a gallery. The next step will be to create the platform where researchers and practitioners can share their interests and create projects together. Another conference will follow in India in 2019 hosted by the Society for Agroecology, India where we hope our community network will grow. To see our progress stay connected by visiting our website [www.agriculturalecology.co.uk](http://www.agriculturalecology.co.uk) and follow us on twitter @AgroecoUKIndia. If you are interested by this initiative, feel free to contact us by email [ukindia.agroecology@gmail.com](mailto:ukindia.agroecology@gmail.com)

#### AQUATIC ECOLOGY GROUP

Pavel Kratina  
p.kratina@qmul.ac.uk

**Event report: Ecology Across Borders 2017.** On the first evening of the joint annual meeting in Ghent (Belgium), BESAG hosted a cheese and wine social event. It was an excellent opportunity for aquatic

ecologists to extend their network, make new friends, and identify future collaborators. We would like to thank everyone who joined us and made it such a great evening. We hope you all enjoyed it as much as we did!

While aquatic ecology was not the main focus of this meeting, there were plenty of aquatic talks at the conference. The BESAG committee members attended many of these presentations and tweeted summaries of the new freshwater and marine research (searchable using #BESaquatic). Talks ranged from eco-evo feedbacks, conservation, invasion ecology to population and community ecology. Efficiency of a new monitoring tool for invasive North American signal crayfish was demonstrated and the impacts of invasive (signal crayfish, quagga mussel, pumpkinseed sunfish) and threatened (crucian carp) species on macroinvertebrates assessed. Findings on establishment of invasive plants following river restoration or the isotopic niches of invasive and native marine oysters were among the other examples. It was refreshing to also hear about the use, persistence and degradation of environmental DNA (eDNA) in aquatic ecosystems. There were interesting presentations about seabirds, cetaceans, amphibians or functional resilience and importance of pond ecosystems. We were also given a broad overview of species richness across freshwater habitats in contrasting landscapes.

Many posters presented exciting aquatic research about parasitism in relation to climate change, impact of loss of consumers on community stability, eDNA detection of endangered fish and larvae of an endemic fish which uses mussels as egg hosts, role of kelp in detrital pathways, role of density in persistence and functioning of biogenic reefs, and effect of river restoration on nutrient flux and fish communities in urban rivers. We also attended several workshops on marine conservation through ecolabeling, eDNA metabarcoding, and remote sensing linking functional diversity of terrestrial and marine primary producers, biotic interactions and joint species distribution modelling. Overall, the meeting was inspirational and motivating, with excellent plenaries, new contacts, and ideas for future research.



#### Thursday 20th Early Career Researcher Workshops: Vegan package in R & Leadership Skills

Vegan package in R - Dr Andrew Beckerman (University of Sheffield)  
Leadership skills in academia - Prof Owen Petchey (University of Zurich).  
Time will be set aside for discussion during these workshops and there will be ample opportunity for networking throughout.

#### Friday 21st Advances in Aquatic Ecology

Leading aquatic ecologists will present their most recent findings and outline their priorities for future research. Students and ECRs are encouraged to present posters and give a "highlight talk" during the meeting.

Registration coming soon!



### BESAG ECR AWARD

The BES Aquatic Group (BESAG) will award this prize to one distinguished early career scientist at its annual meeting. The award will be made in recognition of excellent research, as demonstrated by first-authored publications in internationally relevant journals, to a scientist who is no more than 5 years after the start of their PhD, not holding a permanent academic position, and working on a relevant area of marine and/or freshwater ecosystem science.

The winner will receive the award at the BESAG annual meeting and will be invited to present their research in a keynote speech as part of the annual meeting. Conference fees, travel and accommodation expenses are covered, and the winner will receive a commemorative plaque.

Self-applications will not be accepted; nominations (of no more than 1 side A4) should be made by colleagues or collaborators. It is expected that the nominator will discuss the application with the nominee, in order to provide a summary CV (maximum 1 side A4) giving details relevant to the award

criteria above. Nominees must be members of the British Ecological Society.

Please email nominations for the 2018 round to Lee Brown (l.brown@leeds.ac.uk) before June 1st 2018.

### GET INVOLVED

Twitter: @BES\_AquaEco  
(#Thursdayjobday, #BESaquatic)

Facebook: BES-Aquatic Ecology Group

Mailing list: email  
v.r.edmonds-brown@herts.ac.uk



Alan Jones  
ajones@earthwatch.org.uk

In partnership with BES Forest Ecology SIG, two major national events:

#### Investigating Tree Archaeology: History and Technology of Woodland Management and Product Use (Part 1). 16-17 May 2018, Sheffield, UK

SYBRG (Econet) & partners are organising two conferences on the theme of "Tree Archaeology" looking at archaeology and heritage at the core of understanding treescapes. These multi-disciplinary events will link the managed woodland or individual tree to their processing and utilisation in historic buildings other structures and processes. They will bring together veteran tree specialists, dendrochronologists, archaeologists, vernacular building architects and technologists, ecologists and woodland historians to discuss the history and technology of woodland management, processes and products. The events will look at the various aspects of tree and woodland archaeology which extends from the hedgerow / wood-pasture / wood [process] to final destination [product]. We will cover five main themes across the 2 conferences:

- 1) Dendro-research: a. In trees / woodland b. In built structures
- 2) Palaeo-research: a. Botanical b. Entomological

#### 3) Landscape & Historical Landscape Interpretation

4) Process & Utilization of Timber and Wood: a. Archaeological & Historical Aspects b. Traditional and Modern Businesses

#### 5) Cultural Modification: Tree Structures & Functions

The 2-day event in May 2018 will consider issues around the legacy of veteran trees and the evidence of past management and technologies that exist in the transformed products, some of which are still found today. This event will focus mostly on the UK, but we welcome contributions from elsewhere in Europe to start to introduce themes that will be further developed at the 3-day conference. This conference will include poster presentations and displays; and an optional site visit (Gleadless Valley woodland & Bishop's House Museum) and informal meal.

The 3-day event in September 2019 (see below) will have a broader remit developing the main themes with presentations from other European countries and elsewhere with different and/or more recent traditions of management, production and process in woodlands. Further contributions from the UK will of course also be welcome and the conference will include poster presentations and displays, site visit and a living archaeology theme.

#### European Wood Pastures: past, present, & future. 5-7 September 2018, Sheffield, UK

This conference, one of the Wilder Visions series, addresses key issues relating to wood pastures and wood meadows in Britain & Europe. Taking a view that knowledge of landscape history can improve understanding of the present countryside, we explore how this helps inform and influence decisions about 'futurescapes'. With a nod to the Lawton idea of conservation needing to be bigger, bolder and more joined, we explore ideas of wood pastures past, present and future and how these might inform the 'Wilder Visions - reconstructing nature for the 21st century' development of case-study projects. We consider changing management of the landscape and how this affects biodiversity

including impacts on, for example, bird populations and diversity; and how this may change with future trajectories. We also examine similar impacts on mammals, invertebrates, and plants. The themes emerge from our long-term series of conferences and workshops going back to 1992, bringing together multi-disciplinary approaches to consider trees, woods, treed landscapes, wilding & re-wilding, and most recently 'Wood Meadows & Pastures'. We are especially interested in:

- 1) Case studies of newly-created wood pastures & wood meadows, of restored wooded commons and treescapes; of re-constructing ecologies and re-connecting communities to local treescapes;
- 2) The history of wood meadows and pastures;
- 3) Wooded commons and their management;
- 4) Shadow Woods (lost wood pastures and treescapes);
- 5) All associated aspects of ancient or veteran trees and their management.

The event will be co-chaired by Andrej Bobiec, Jeremy Dagley, Adrian Newton and Ian Rotherham. In addition, keynote speakers include Kinga Ollerer, Philip Warren and Aljos Farnon. There will be a pre-conference field visit on 4<sup>th</sup> September to Sherwood Forest.

Invitation: We invite offers of spoken and poster presentations from across Britain and beyond from a broad range of professionals, landowners, agencies and researchers to reflect the many interests, activities and projects now taking place in these remarkable habitats. Proposed papers can be emailed to info@hallamec.plus.com by 31 March 2018; early submission recommended to avoid disappointment.

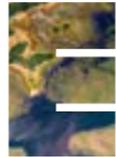
Offers of support and sponsorship: Please contact Christine Handley via email or telephone (0114 2724227) to discuss. If you wish to be put on our mailing list or to offer support or a poster presentation, please email or telephone.

For Ideas & Discussion: The conference director is Professor Ian Rotherham of Sheffield Hallam

University. Please contact Ian on [i.d.rotherham@shu.ac.uk](mailto:i.d.rotherham@shu.ac.uk) if you want to discuss ideas or participation in this important event.

These events are part of our 'Wilder Visions- re-constructing nature for the 21st century' series running over the next few years.

More information, booking forms, and updates: <http://www.ukeconet.org/events.html>



## MACROECOLOGY GROUP

**Natalie Cooper**  
[macro@britishecologicalsociety.org](mailto:macro@britishecologicalsociety.org)

The BES Macroecology/evolution SIG has two exciting meetings lined up in 2018: BES Macro 2018 and CPEG.

The BES Macro 2018 meeting will take place in St Andrews, Scotland, 10–11 July. Please join us and enjoy all kinds of macro-scale research, across diverse taxa, timescales, and career stages. We have an excellent panel of plenary speakers, as well as a student plenary, and the usual 5 minutes talks, poster session and workshops. And a Ceilidh of course! We hope you'll join us in St Andrews for two days of macro-fun! The deadline for registration is Monday, 30 April 2018. Contact us on Facebook or Twitter (@BESMacroecol #BESMacro2018) with any questions.

Our other event is "Crossing the Palaeontological-Ecological Gap (CPEG) - bringing palaeontologists and ecologists together" held at the University of Leeds, 30–31 August.

For a truly synthetic understanding of evolutionary and ecological processes, patterns should be studied at all spatial and temporal scales. Palaeontologists usually tackle ecological patterns and processes operating on longer time scales, whereas ecologists focus on those occurring on shorter time scales. This partitioning of temporal scale hinders communication, data integration and synthesis in ecology. The CPEG meeting - Crossing the Palaeontological-Ecological Gap - is designed to bring palaeontologists and ecologists together to share ideas, data

and methods in areas that are studied by both, but typically independently. These research areas include, but are not limited to, biogeography, community and population ecology, food web dynamics, and extinction selectivity. We invite all those interested in ecology, at any temporal and spatial scale, to present their research and attend this integrative meeting!

For details and to register visit [cpeg.org.uk](http://cpeg.org.uk) and follow us on Twitter @CPEG2018.

We would also like to use this opportunity to thank our outgoing Secretary Rich Grenyer for all his hard work on the SIG over the last few years. We will miss him but will strive to continue to be "formally informal". Please get in touch if you're interested in joining the committee!



## PEATLANDS RESEARCH GROUP

**Ian Rotherham**  
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**What happened during late 2017:** During the latter part of 2017 we organised several major events including two big conferences. In September, 'Peatlands for Birds: Issues & Opportunities in Re-constructing Peat Landscapes in uplands & lowlands' was a well-attended and hugely informative conference held at Sheffield Hallam University and covering major, and potentially controversial aspects of peatland conservation including truly inspiring presentations on peatland conservation and the recoveries of key bird species. Nevertheless, there remains much to do and of course issues of illegal raptor persecution remain high on the agenda. The meeting addressed major research paradigms but also considered matters of policy and practice. Key speakers included Andreas Heinemeyer, University of York, Richard Lindsay, University of East London, Des Thompson, Scottish Natural Heritage, and Pat Thompson, RSPB.

In November 2018, the SIG moved north to Cumbria where our two-day

conference at a venue overlooking the Solway Firth attracted over sixty delegates. The 'History & Heritage of the Bogs & Peatlands of Cumbria and the surrounding areas' event, had a rich mix of national and local speakers and much enthusiastic community participation as we addressed often-neglected aspects of peat sites and landscapes. The SIG was enthusiastically supported by local partners - Cumbria Boglife, Natural England, Biodiversity Research Group, RSPB, Cumbria Wildlife Trust, Allerdale Council, and the Solway Wetlands Project. Speakers included Richard Lindsay, Andre Berry, Chris Spencer, David Harpley and historian Bill Shannon.

Also in October and November, we held a one-day 'Eco-science in the Park' event on Saturday 7 October at Longshaw in the Peak District, and then an evening 'Shadow Woods' event at Sheffield Hallam University's Charles Street lecture theatre, on Monday 27 November - with Professors Chris Baines and Ian Rotherham. These events attracted around 150 members of the public to hear of the outcomes of long-term research activities by members of the BES Peatlands SIG.

In September 2018, Professor Simon Caporn spoke about the BES Peatlands SIG at the massive BogFest event with 'Moors for the Future Partnership' and the 'IUCN UK Peatland Programme' in the Peak District village of Edale. Around 1,000 people took part over a week-long programme of activities. Ian Rotherham also gave an invited presentation on the 'History and Heritage of the Peak District Moors and Bogs'.

## UPCOMING EVENTS & ACTIVITIES

2018 will be an equally busy time for the SIG with our partnership event, 'European Wood Pastures: past, present, & future', 5–7 September 2018, Sheffield; see [www.ukeconet.org](http://www.ukeconet.org) for details. This includes much on overlooked upland wood pastures and species such as black grouse. This year's 'Meres and Mosses Forum' will be held 5–6 March at Ironbridge Gorge Museum and a keynote speaker with be one of our committee members, Professor Simon Caporn of Manchester Metropolitan University.

## EMERGING IDEAS:

One of our new SIG committee members, Sunitha Pangala of University of Lancaster, is developing a proposal for an 'Early Career Peat Lecture Programme' that would be open to researchers with a PhD in peat-related research area but who do not yet have a permanent contract. This programme would offer early career researchers chance to highlight their work through series of guest lectures / seminars offered at different departments across the UK who are interested in peat-related topics. This experience would also offer the applicant opportunities to develop collaborations with established research groups. Depending on any funding available, 1–3 ECRs might be supported.

The idea is that these would be prestigious awards because of what they can offer and achieve, and it would of course be an open competition. The proposal has multiple added benefits such as career progressions, future job and collaborator opportunities, joint projects, skills transfer etc. The applicant could choose the universities and the research group seminars to which they would present, what they would present, with confirmation from the host institution regarding the benefit offered to the ECR and to the host research group. For this approach, we would have to make some funding available for travel and subsistence for the applicant to travel to the university and give the seminar.

It might also be possible to approach universities active in peat-related research and which have regular department seminars where the travel and subsistence of the speaker is funded by the inviting University. These Universities could then be included as part of this programme and applicants encouraged to choose from these Universities and then to present a plan to the SIG steering committee. This is very much a work in progress but is an exciting idea with much potential. We have a steering committee for the project of Sunitha, Simon Caporn, and Olivia Bragg. Please contact Sunitha on [s.pangala@lancaster.ac.uk](mailto:s.pangala@lancaster.ac.uk) if you want more details or to get involved.

**The BES Peatlands SIG committee:** We have recently recruited a number of people to the committee and would welcome even more! Full details of current members will be in the forthcoming group Newsletter, and in the meantime, to join the group, just email Ian Rotherham, [i.d.rotherham@shu.ac.uk](mailto:i.d.rotherham@shu.ac.uk)



## PLANT ENVIRONMENTAL PHYSIOLOGY GROUP

**Katie Field**  
[k.field@leeds.ac.uk](mailto:k.field@leeds.ac.uk)

The Plant Environmental Physiology Group (PEPG) spans the BES and the Society for Experimental Biology (SEB). We are interested in the short-term acclimation and long-term adaptation of plants to environmental change, integrating leaf and plant-level responses to biotic and abiotic stresses under field and laboratory conditions. We aim to set molecular physiology within an ecological context, providing a basis for scaling root and shoot level physiological responses to shifts in canopy, ecosystem and region as a result of changes in local and global climate.

Our remit is to:

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

PEPG is an informal group for physiologists of all ages and career stages, with as much emphasis on social interaction as on academic subjects. It's an excellent forum for meeting people working in similar fields, for socialising as well as general networking. Members interested in holding conferences, meetings, workshops or field meetings can apply through the Group Secretary for BES financial assistance and support for student attendance.

Dr Katie Field ([k.field@leeds.ac.uk](mailto:k.field@leeds.ac.uk)) is the BES secretary for PEPG, and Dr

Saoirse Tracy ([saoirse.tracy@ucd.ie](mailto:saoirse.tracy@ucd.ie)) is secretary for the SEB.

PEPG has a mailing list with nearly 300 members worldwide, messages posted to the list may include research questions/methodology and information, discussion and requests, news of future meetings and PhD/job advertisements. To sign up, or to post a message, please contact either of the group secretaries or our communications rep Dr Scott Davidson ([sjdavidson989@gmail.com](mailto:sjdavidson989@gmail.com)) or follow the instructions at: <http://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=env-physiol>

## SOCIAL MEDIA:

We have a popular Facebook page, with over 900 followers from around the world, like us at: <http://www.facebook.com/PlantEnvironmentalPhysiologyGroup> or follow us on Twitter: @PEPG\_SIG

## WELCOME TO OUR NEW COMMUNICATIONS REP!

After 3 years of excellent communications, we've waved a fond farewell and sent our very best wishes to outgoing rep Jen Cunniff as she moves on to exciting new adventures with her new post at BBSRC. We have now recruited a shiny new communications rep to the PEPG committee though - welcome Scott Davidson!



"Hi everyone, I'm Scott. I recently completed my PhD at the University of Sheffield where I was looking into scaling methane fluxes across a variety of arctic tundra ecosystems. This included looking at the role of vegetation in influencing the fluxes and using a variety of techniques such as chamber measurements, eddy covariance measurements and

remote sensing. My research interests include ecosystem processes and global change, especially in northern latitudes. I was lucky enough to undertake fieldwork in northern Alaska during my PhD which was an incredible experience.

I am about to begin a Postdoctoral Fellowship at the University of Waterloo in Canada, where I will be looking at the impact of disturbances on natural and restored peatlands across a variety of sites in Canada and assessing the subsequent impact on vegetation communities and carbon fluxes.

I'm really excited to take on this role and I look forward to possibly meeting more PEPG members in the future!"

Scott will now be manning the Facebook page, Twitter and mailing list – if you have any items you'd like distributing to our mailing list or posting on our social media pages please don't hesitate to get in touch using [sj davidson989@gmail.com](mailto:sj davidson989@gmail.com).

**PEPG Early Career Scientist Symposium, 14–16 May 2018, YHA Sheringham, Norfolk coast**

Following the success of our Snowdonia ECR Symposium last year, we've got another planned for 2018. This time we're going coastal and will be holding the event on the beautiful Norfolk coastline. We will be covering a variety of plant environmental physiology topics, based at the Sheringham YHA – the perfect position to make the most of the beautiful surrounding scenery. We will be opening for registration and talk/poster abstract submission covering in all areas of plant eco-physiology from PhD students and postdocs in the very near future – keep an eye on our website, Facebook and Twitter feeds for further info.

**PEPG Ecophysiology Field Techniques Workshop 9–15 September 2018, Quinta de Sao Pedro, Lisbon, Portugal**

We are pleased to announce that our fantastic PEPG Ecophysiology Field Techniques Workshop will be running again this year at the Quinta de Sao Pedro on the 9–15 September 2018.

This is a unique and unrivalled opportunity for MSc, PhD students and early career researchers to gain hands-on experience and training in plant ecophysiology techniques from leading scientists and manufacturers who will introduce their latest equipment and give hands-on training.

Our intensive five-day long residential workshop will include demonstrations of key field and lab techniques likely including:

- leaf-level processes including photosynthetic gas exchange, chlorophyll fluorescence (imaging), 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, including micrometeorology, eddy covariance, and remote sensing methodologies

More details are available on the field course website: <https://sites.google.com/view/pepg-workshop> We are expecting to open registration in mid-March, keep your eyes on our social media and emails. We recommend registering early as we usually sell out of workshop places very quickly.

#### Committee members

**Katie Field**  
[k.field@leeds.ac.uk](mailto:k.field@leeds.ac.uk) (BES secretary)

**Saoirse Tracy**  
[saoirse.tracy@ucd.ie](mailto:saoirse.tracy@ucd.ie) (SEB secretary)

**Scott Davidson** [sj davidson989@gmail.com](mailto:sj davidson989@gmail.com) (Communications officer)

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**Colin Osborne**  
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**Steven Driever**  
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**Amanda Rasmussen** Amanda.  
[Rasmussen@nottingham.ac.uk](mailto:Rasmussen@nottingham.ac.uk)

## PLANTS SOILS ECOSYSTEMS

**Mike Whitfield**  
[@mgwhitfield](https://twitter.com/mgwhitfield)

Plants-Soils-Ecosystems is a group for people who like dirt. If you're interested in plant-soil interactions, plant and soil ecology, or biogeochemistry, sign up!

**Plants-Soils-Ecosystems at Ecology Across Borders:** We held a successful social at the oldest pub in Ghent during Ecology Across Borders. If you made it through the snow to Café Den Turk, many thanks for coming along – I hope you had a great evening and made some new friends!

Keep an eye on our social media feeds and mailing list over the next few weeks for exciting news of our next annual meeting, this September.

## CH-CH-CH-CHANGES

We're excited to welcome some new members to the Plants-Soils-Ecosystems committee!



**Anne Cotton, University of Sheffield**

Anne is a microbial ecologist, particularly interested in plant-microbe interactions and the development and use of cutting edge molecular methods to study them.



**Sabine Reinsch, Centre for Ecology and Hydrology (@climchangesoil)**

Sabine is a soil ecologist, specifically interested in how climate and land-use affect plant-soil interactions. Sabine uses field monitoring and experimental work to develop a deeper understanding of soil processes.



**Bjorn Robroek, University of Southampton (@unpeatable)**

Bjorn is an ecosystem ecologist with an interest in the relationships between plant and microbial communities, and how these interactions play out on functions – e.g. carbon and nutrient cycling.

Your Plants-Soils-Ecosystems committee now looks like this:

- Mike Whitfield (Secretary) ([mgwhitfield@gmail.com](mailto:mgwhitfield@gmail.com))
- Jennifer Rhymes, University of Plymouth (Policy Officer)
- Jessica Clayton, University of Cologne (Student Representative)
- Rosanne Broyd, Lancaster University / James Hutton Institute (Student Representative)
- Ellen Fry, University of Manchester
- Anne Cotton, University of Sheffield
- Sabine Reinsch, Centre for Ecology and Hydrology
- Bjorn Robroek, University of Southampton

If you're interested in getting involved with the SIG, please get in touch with Mike.

## 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 member Jessica Clayton. 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](mailto: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://fb.com/BESPlantsSoilsEcosystems)) and check out our website, including the blog and journal club: [besplantsoileco.wordpress.com](https://besplantsoileco.wordpress.com).

## QUANTITATIVE ECOLOGY GROUP

**Susan Jarvis**  
[quantitative@britishecologicalsociety.org](mailto:quantitative@britishecologicalsociety.org)

**Event report: Ecology Across Borders 2017.** The Quantitative Ecology SIG had a great time at Ecology Across Borders in December, with plenty of opportunities to meet new members and network with quantitative ecologists from across Europe. We teamed up with the GFO Computational Ecology Working Group, NeCov Ecological Informatics SIG and GFO Young Modellers to run a very well attended thematic session on simulating ecology and also had plenty of opportunity to network at our social event, attended by over 50 people!

We also helped to run the pre-conference hackathon, where participants worked together to produce R packages to tackle issues submitted by the community. Amazingly it is possible to create most of an R package in a single day and the attendees produced some excellent work, working on subjects as diverse as harmonising gridded datasets ([grabr](https://github.com/grabr)), querying Flickr ([flickr](https://github.com/flickr)) and translating R error messages ([error.explain](https://github.com/error.explain)).

## EVENTS FOR 2018

We are very excited to be attending the International Statistical Ecology Conference (ISEC) in St Andrews in June/July this year. We are sponsoring a pre-conference workshop on 'Combining different data types in a single model' on 29th June. The workshop will cover a range of approaches to integrate datasets with different properties e.g. citizen science and structured survey data, into a single model. Registration for ISEC is now open ([www.isec2018.org](http://www.isec2018.org)) and you can book onto the pre-conference workshop as part of the registration process.

We're also holding our first ever Quantitative Ecology annual meeting! This will be held on the 9th July, also in St Andrews and will involve a mixture of invited and submitted talks as well as a poster session.

Abstract submission will be open soon, keep an eye on the BES website for more details!

## GETTING IN TOUCH

You can get in touch with the SIG via email [quantitative@britishecologicalsociety.org](mailto:quantitative@britishecologicalsociety.org) or via twitter @BES\_QE\_SIG. We also have a mailing list which interested members are welcome to join. Send an email to [listserv@jiscmail.ac.uk](mailto:listserv@jiscmail.ac.uk) with a blank subject header and the following text, 'Join BESQUANTITATIVE' and your full name.



## TEACHING AND LEARNING GROUP

**Alice Mauchline**  
[beslearning@britishecologicalsociety.org](mailto:beslearning@britishecologicalsociety.org)

## RECENT EVENTS

The Ecology Across Borders Meeting in Ghent at the end of 2017 provided an opportunity for us to meet as a group as well as meet with other educators from NECOV and GfÖ.



*"We got to talk about how the education zeitgeist differs from region to region: a brilliant opportunity to innovate, promote lateral thinking, and garner inspiration for what the SIG could do in the future! One thing that remains true across all regions is clear – and that's the legions of ecologists who are keenly championing exciting new approaches to teaching and learning across all levels of education."* Lewis Bartlett

We also ran our first SIG workshop at Ghent meeting; the workshop was devised and run by our Early Careers Rep, Lewis Bartlett and focused on supporting Early Career Ecologists to develop a successful teaching portfolio. All of the content from the workshop is available on our website and if you missed the conference you can read a 'teaching and learning overview' of the meeting in Lewis' blog post. Thank you Lewis for such a successful event.

To add to this success, our other Early Careers Rep, Arron Watson, received a Public Engagement Award at the Ghent meeting – congratulations Arron!

## UPCOMING EVENTS

Our first meeting of 2018 will be a one day symposium on the research-teaching nexus to be held on Friday 27th April 2018 at the University of Birmingham. This symposium will provide a forum for discussion and sharing the innovative ways in which research scientists and educators have explored the synergies between teaching and research in ecology. The symposium will primarily be of interest to HE academics (both teaching and research) and related providers of University teaching such as FSC. The format of this one-day symposium will be a combination of talks and workshops/activities to enable audience participation and engagement.

The Enhancing Fieldwork Learning Showcase event will be held at the University of Leeds on the 3-4 September and will focus on the use of mobile technologies in fieldwork teaching and learning. The meeting will have a general theme for each day, based around 'Urban Ecology' and 'Water'. Further details are available on the EFL website: [www.enhancingfieldwork.org.uk](http://www.enhancingfieldwork.org.uk)

We will also be holding a joint one day meeting with the Citizen Science SIG on 'Synergies between citizen science and Higher Education' at Reading University in the Autumn.

Further details of all our events are available on our website.

## GET INVOLVED

Please join us by visiting [besteachingandlearning.wordpress.com](http://besteachingandlearning.wordpress.com) or follow links from the BES SIG page for twitter, blog and mailing list details. We would like to hear from all our members about any new ideas for symposia, thematic sessions at the Annual Meeting or suggestions for publications. We are also keen to link up with other SIGs – so please contact Lesley Batty ([L.C.Batty@bham.ac.uk](mailto:L.C.Batty@bham.ac.uk)) with any suggestions.

We are always looking for contributors to our blog - if you would like to write something for us, then do send any suggested topics to Julia Cooke ([julia.cooke@open.ac.uk](mailto:julia.cooke@open.ac.uk)) or Becky Thomas ([rebecca.thomas@rhul.ac.uk](mailto:rebecca.thomas@rhul.ac.uk)).



We are looking forward to an exciting and productive 2018.

Website: [besteachingandlearning.wordpress.com](http://besteachingandlearning.wordpress.com)

Twitter: @BES\_TLSIG

## DATA PROTECTION

# GDPR – WHAT IT IS AND WHY YOU NEED TO KNOW ABOUT IT



Helen Peri | Membership Manager | [helen@britishecologicalsociety.org](mailto:helen@britishecologicalsociety.org)

## WHAT IS GDPR?

After 25 May 2018, the way in which the BES processes personal data will change when the EU General Data Protection Regulation (GDPR) replaces the UK Data Protection Act (1998). Collectively drawn up by the European Parliament, the Council of the European Union and the European Commission, the GDPR is designed to hand individuals back control of their personal data. All organisations processing the data of EU citizens - irrespective of their location, are required to comply.

Alongside the increased territorial scope of the legislation, there will be much greater penalties for non-compliance and a bigger emphasis on the rights and consent of the individual. With big political changes afoot, it is important to note the government's confirmation that post-Brexit, the UK will still be required to comply with the regulation.

## HOW WILL GDPR AFFECT BES MEMBERS?

The GDPR will have a major impact on our ability to communicate with our members and - with the exception of your annual membership renewal - we will not be able to contact you without your explicit consent. Any standard BES mailings, such as The Bulletin and eBulletin as well as any updates about BES events and activities will now be considered marketing material. The bottom line is that if you do not opt in to receive communications from the BES, by law we will no longer be able to send them to you and you will no longer receive them after the 25 May deadline.

## WHAT IS THE NEXT STEP?

Over the next couple of months, we will be contacting all members, asking you to update your contact preferences. This means you can choose if you would like to receive information from us, what you would like to receive and how you would like to receive it.

If you do decide that you would like to continue to receive information from us, we will ensure that your data is protected and will never pass your details on to a third party without your consent. After 25 May 2018, if you have not opted in, we will only contact you when the time comes to renew your membership.

If you have any questions about how the GDPR will affect you as a BES member, please do not hesitate to get in touch and I will be happy to answer queries you may have.



# CHARTERED INSTITUTE OF ECOLOGY AND ENVIRONMENTAL MANAGEMENT



**Sally Hayns CECol MCIEEM** | Chief Executive Officer, CIEEM  
T: 01962 868626 / Email: enquiries@cieem.net



## BREXIT UPDATE AND DEFRA'S 25 YEAR PLAN

Since the last Bulletin CIEEM has been actively disseminating the key 'asks' around Brexit to politicians in Westminster and in the devolved nations. We have held numerous meetings and discussions around the need for a new UK Environment Act post-Brexit that incorporates strong environmental principles, the value of incorporating net gain approaches into new strategies for agriculture and land management and the need for a new independent scrutiny and enforcement body.

Fortunately, we have been finding a lot of support for our ideas, some of which are shared by other professional bodies and NGOs, and it has been gratifying to see how much of the current thinking has been incorporated into the Defra 25 Year Plan for the environment.

Titled '*A Green Future: Our 25 Year Plan to Improve the Environment*', the document sets out a long-term vision as to how we can re-build a healthy, resilient environment for future generations. CIEEM welcomes this publication and applauds its vision, believing that, if properly funded and implemented, it could make a real difference in halting biodiversity loss. We are also pleased to see the references to the importance of science and evidence in decision-making.

Other positive elements include the intention to fully recognise and utilise the societal benefits of a healthy natural environment, the

inclusion of the environmental net gain approach for development, the commitment to a consultation on a new environmental scrutiny body, the desire to reconnect people and nature, and the UK government's willingness to work collaboratively – especially with the devolved administrations which is paramount. The devolved administrations in particular have expertise that we should build on.

Of course, as with all long term plans, the devil is in the detail which is largely absent. There is now a need for clarity around how the plan will be delivered, how delivery will be funded, who will deliver it, what interim targets have been identified and how progress will be monitored. It could also be argued that whilst the plan has ambition, it is an ambition that could be delivered in far less than 25 years if there was the political will to do so.

Despite these concerns the Government has identified the 'what' could be done and there is now an onus on us – researchers and practitioners – to help politicians identify the 'how'. These are challenging times but also times of opportunity to change things for the better.

## NEW PRESIDENT-ELECT

Professor Max Wade CECol CEnv FCIEEM has been chosen by members to be the next CIEEM President. After a distinguished career in higher education Max has forged a strong reputation in ecological consultancy, currently working as Technical Director (Ecology) for Aecom.



Max will become President at the November AGM when the current President, Dr Stephanie Wray CECol CEnv FCIEEM, steps down at the end of her three-year term.

## ANOTHER CIEEM-ACCREDITED DEGREE

Designed in consultation with employers of graduates coming into the sector, CIEEM's degree accreditation scheme recognises those undergraduate and taught postgraduate degree programmes and pathways that can produce graduates with the knowledge and skills that employers require. Graduates from accredited programmes qualify automatically, on application, for Graduate membership of CIEEM.

We are delighted to congratulate the following newly accredited programme.

**Edinburgh Napier University –  
MSc Wildlife Biology and  
Conservation**



## BAT MITIGATION RESEARCH

CIEEM has recently published a report on the effectiveness of some commonly-used bat mitigation techniques intended to protect bat populations impacted, or likely to be impacted, during built development. The report is the result of a research project undertaken by Professor Fiona Mathews and Dr Paul Lintott, both formerly at Exeter University.

The desk-based research was undertaken to address concerns that much of the mitigation implemented during development projects is ineffectual. Not only could this represent a considerable waste of money, it could also mean that stakeholders have a false perception of the extent to which bat roosts are protected. The report can now be downloaded from the CIEEM website.

Further details of the research can be found at:  
[www.cieem.net/bat-mitigation-strategies-research-project](http://www.cieem.net/bat-mitigation-strategies-research-project)

The next step is to use the evidence in the report to inform some new practical guidance on bat mitigation for practitioners.

## PUBLICATIONS NEWS

Functional Ecology

### HOW TO BE A GOOD REVIEWER

**Reviewers offer a valuable service to the scientific community, helping editors ensure that only high-quality research is published. Acting as a reviewer for journals is a great way to stay up to date with the latest research in your field, hone critical analysis skills, and build a broad knowledge of different methodologies and techniques. It makes you more familiar with editorial processes at journals you may want to submit to, as well as making you more recognisable to journal editors.**

As part of the careers development programme for Ecology Across Borders in Ghent, our publications team held a 'how to be a reviewer' workshop. The workshop was designed to help early career ecologists looking to review their first papers for journals, and to help those who had started to review papers and wanted to improve their skills.

The workshop was led by Simon Hoggart (Assistant Editor, *Journal of Animal Ecology*) along with guest speakers Jane Catford (University of Southampton and Associate Editor for *Journal of Ecology*), David Gibson (Southern Illinois University Carbondale and Executive Editor for *Journal of Ecology*), and Bob O'Hara (Norwegian University of Science and Technology and Senior Editor for *Methods in Ecology and Evolution*).

We started with an introduction to the basic principles of peer review and what editors expect from reviewers. The best reviews are objective, provide specific and evidenced based criticisms and constructive suggestions for improvement. Editors are looking for reviewers to judge the validity of the work and novelty of the results. We also touched on the topic of peer review ethics – reviewers should be aware of potential research ethics issues – for example, have the appropriate animal welfare guidelines been followed? Reviewers should also be vigilant to issues such as plagiarism – though many journals, including the BES journals use plagiarism checking software, we also rely on reviewers to point out problems when they notice them. Any ethical issues should be reported to the editor in the confidential comments.

Jane spoke about how she finds reviewers for the papers she is handling as an Associate Editor. Methods include tapping into her own personal networks, looking at the authors of papers cited in the manuscript, inviting reviewers the authors have recommended where appropriate, and performing online searches for similar papers. This highlighted the importance making your own papers easily discoverable with good search engine optimization, as well as having your online profiles updated with keywords and your latest publications so that editors can find you when searching for reviewers.

David Gibson talked about where editors fit in the peer review process and also discussed collaborative review (where inexperienced reviewers review a paper alongside a more senior researcher). Collaborative reviewing is a great way to review your first paper – consider asking your supervisor if you can review a paper together as a learning exercise. The BES policy on Collaborative Peer Review can be found here: <http://bit.ly/CollaborativePeerReview>.

Bob O'Hara talked about the reviewer mentoring scheme being run by *Methods in Ecology and Evolution* and the BES Quantitative Ecology Special Interest Group. Further tips included attending and speaking at conferences to get yourself known within your field, and contacting editors working in your field directly requesting the opportunity to review papers.

The BES publications team often hosts workshops at different conferences and events – please get in touch if you would like us to facilitate a workshop at your university or at a meeting you are running.

Find out more about the peer review mentoring scheme: <http://bit.ly/peerreviewmentoring>

For more information about peer review and becoming a reviewer, read the BES Guide to Peer Review: [bit.ly/BESGuidesTo](http://bit.ly/BESGuidesTo)

**James Ross** | Assistant Editor  
[james@britishecologicalsociety.org](mailto:james@britishecologicalsociety.org)

### RESEARCH HIGHLIGHTS

*Functional Ecology* has published a new Special Focus on Functional traits along a transect (<http://bit.ly/3700km>). The papers in this collection arise from work on a 3700 km North-South forest transect in China, which includes boreal, temperate and subtropical environments. They were able to collect comprehensive datasets on plant, soil, and microbial traits as well as ecosystem functions. The authors then used these unique datasets to address important ecological questions.

Issue 55:1 of *Journal of Applied Ecology* includes a Special Feature, Functional traits in agroecology. Edited by Adam Martin and Marney Isaac, this Special Feature provides a unique, trait-based insight into a range of agroecological topics, from the restoration of degraded agricultural land to assessing nutritional diversity and the consequences of crop domestication. The Editorial for the feature is free to read here: <http://bit.ly/FunctionalTraits>.

The January issue of *Methods in Ecology and Evolution* includes the Special Feature 'Qualitative methods for eliciting judgements for decision making'. It is a collection of five articles bringing together authors from a range of disciplines (including ecology, human geography, political science, land economy and management) to examine a set of qualitative techniques used in conservation research. They highlight a worrying extent of poor justification

Journal of Ecology

Methods in Ecology and Evolution

Journal of Animal Ecology

Journal of Applied Ecology

and inadequate reporting of qualitative methods in the conservation literature. The full Special Feature is freely available as part of this year's sample issue of *Methods in Ecology and Evolution*: <http://bit.ly/MEEv9i1>

The March issue of *Journal of Ecology* includes the Special Feature 'Mycorrhizal fungi as drivers and modulators of ecosystem processes' guest edited by Nina Wurzbürger and Karina Clemmensen. This Special Feature consists of seven new studies, as well as an editorial from the guest editors, and advances our understanding of how mycorrhizal fungi contribute to ecosystem function. You can also read the 2018 Harper Review (published in issue 1) which was written by Angela Moles about our understanding of key plant traits. Read the Special Feature here: [http://bit.ly/jecol106\\_2](http://bit.ly/jecol106_2)

The March issue of *Journal of Animal Ecology* includes the Special Feature on animal host-microbe interactions focusing on the host gut microbiome, covert pathogens and endo-symbionts but covering other topics too. The Special Feature is a result of an open call for submissions with the aim to capture the best research in this cutting-edge area, brought on by the advent of modern molecular approaches. These processes have made it possible to characterise the rich resident and transitory microbial communities living within animal hosts. Read the full Special Feature here: <http://bit.ly/HostMicrobeInteractions>

### IN THE NEWS

New research by Nicolás Gálvez et al. challenges assumptions that human persecution is the biggest challenge facing Chile's güiña wildcat and, instead highlights the threats presented through habitat fragmentation, and the subdivision of large farms into smaller ones. Read more about the conservation value offered by large intensive farms in the full *Journal of Applied Ecology* article (DOI: 10.1111/1365-2664.13072).



Güiña wildcat  
© Jerry Laker

New research published in the *Journal of Animal Ecology* Special Feature on Animal host-microbe interactions found a direct link between physical contact and gut bacteria in red-bellied lemurs. Likely passed through 'huddling' behaviour and touch. The research has implications for human health. The work suggested that sharing a similar microbiome within a social group may have a positive health impact, essentially harmonising the immune defence and preventing members from contracting dangerous infections. Since social bonds were associated with gut microbiota, information about gut bacteria could also be used to reconstruct the social network of their hosts.



Red-bellied lemur  
© Avery Lane, Washington State University

### ONLINE EXTRAS

The Applied Ecologist's Blog features a great infographic (<http://bit.ly/BearsInfographic>) from Clayton Lamb and colleagues, clearly demonstrating how restricting vehicle access supports grizzly bear density. The infographic follows their recent *Journal of Applied Ecology* article, Effects of habitat quality and access management on the density of a recovering grizzly bear population ([http://bit.ly/Lamb\\_bears](http://bit.ly/Lamb_bears)).

In January, *Methods in Ecology and Evolution* announced a new policy on publishing code. The policy is intended to ensure that high-quality code is readily available to our readers and to promote the use of good practice when publishing code. You can read the full policy here: <http://bit.ly/MEECodePol>. The journal have also published a Virtual Issue of Applications articles that follow the guidelines well to act as an example. This Virtual Issue, like all Applications articles, is freely available to everyone.

There have been some great videos uploaded to the *Methods in Ecology and Evolution* YouTube channel over the past couple of months. A few highlights include David Warton's

interviews with Tony Ives and Margaret Mayfield, and Henrike Schulte-to-Bruhne's whiteboard explanation of Satellite Data Fusion (<http://bit.ly/2D1IirH>).

Recent posts on the *Journal of Ecology* blog include a conference report for Ecology Across Borders from Executive Editor David Gibson, a blog post about our new Associate Editors, a video from Tim Thrippleton about his recent paper on herbaceous competition and arrested succession, and some insights from Stephen Bonser about EcoTAS 2017.

In *Functional Ecology's* InSite/Out blog series, we follow four ecologists from different fields in their daily work. You can find their posts on FunctionalEcologists.com. You can also find a report from Ecology Across Borders from blog editor Bjorn Robroek.

On the *Journal of Animal Ecology* blog there are great posts by authors including a post by Craig DeMars on predator-prey dynamics of caribou, wolves and bears, a post by Ben Weinstein on his paper 'A computer vision for animal ecology' and a post by Alfredo Sanchez Tojar on his 'How to...' paper on dominance hierarchies. If you'd like to contribute to the blog post please get in touch <http://bit.ly/JAEBlogContactUS>.

## WELCOMING OUR NEW EDITORS

Functional Ecology

Over the summer of 2017 the BES journals ran an open call for applications for Associate Editors. We were amazed by both the quality and quantity of applications. In total we received 351 applications which provided us with a great opportunity to broadening our editorial boards beyond our usual networks. We are pleased that this has resulted in a positive and significantly increased geographic diversity of our AEs. We intend to run the open call process every 3 years. We are very pleased to welcome the following new Associate Editors that joined us through the open call.

Names are printed in their corresponding journal colour.

### CANADA

Eric Lamb, University of Saskatchewan

Eric Vander Wal, Memorial University of Newfoundland

Jean-Philippe Lessard, Concordia University

Rute, Pinto, University of Waterloo

### USA

Daniel Allen, University of Oklahoma

Liza Holeski, Northern Arizona University

Danielle Levesque, University of Maine

Jan Ohlberger, University of Washington

James Dalling, University of Illinois

Orou Gaoe, The University of Tennessee

Carla Staver, Yale University

Brenda Pracheil, Oak Ridge National Laboratory

Chris Sutherland, University of Massachusetts

David Koons, Colorado State University

Julian Resasco, University of Colorado

Lars Brudvig, Michigan State University

Sarah Knutie, University of Connecticut

Andrew Park, University of Georgia

### SOUTH AMERICA

Tiago Bosisio Quental, University of São Paulo, Brazil

M. Noelia Barrios-Garcia, CONICET - CENAC, Argentina

Chris Harrod, Universidad de Antofagasta, Chile

Juan Corley, CONICET, Argentina

Julio, Louzada, Federal University of Lavras, Brazil

### SCANDINAVIA

Yngvild Vindenes, University of Oslo, Norway

Paul Kardol, Swedish University of Agricultural Sciences, Sweden

Iain Stott, University of Southern Denmark, Denmark

### UK

Seth Barribeau, University of Liverpool

Imma Oliveras, University of Oxford

Karen Bacon, University of Leeds

Edward Codling, University of Essex

Jessica Royles, University of Cambridge

Emily Shepard, University of Swansea

Clive Trueman, University of Southampton

Stuart Bearhop, University of Exeter

Andy Foote, Bangor University

Emma Cunningham, University of Edinburgh

Annette Fayet, University of Oxford

Samantha Patrick, University of Liverpool

David Richardson, University of East Anglia

### AFRICA

Heather Campbell, University of Pretoria, South Africa

Ayub Oduor, Technical University of Kenya, Kenya

Journal of Ecology

Methods in Ecology and Evolution

Journal of Animal Ecology

Journal of Applied Ecology

*Journal of Applied Ecology* also welcomes new additions to their Associate Editor mentoring opportunity. The mentoring opportunity gives early career researchers the chance to learn about the Associate Editor role and gain experience in handling manuscripts through the editorial process. They receive guidance from the Editorial Office and their assigned Senior Editor mentor. Find out more about Associate Editor mentoring and our mentees here: <http://bit.ly/AEMentoring>

The new mentees for 2018-2019 are:

Jimmy (Chi-Yeung) Choi, Centre for Integrative Ecology, Deakin University, Australia

Guadalupe Peralta, Landcare Research, New Zealand

Fabrice Requier, Universidad Nacional de Río Negro (UNRN), Argentina

Annabel Smith, Trinity College, Dublin, Ireland

Helen Wheeler, Anglia Ruskin University and Centre d'Ecologie Fonctionnelle et Evolutive, France

### EUROPE

Fred Angelier, Centre d'Etudes Biologiques de Chizé, France

Daniel Garcia, Universidad de Oviedo, Asturias, Spain

Ruben Heleno, University of Coimbra, Portugal

Jeff Lemaître, University of Lyon (University Claude Bernard Lyon 1), France

Antonio José Manzaneda Ávila, Universidad de Jaén, Spain

Elly Morriën, University of Amsterdam, Netherlands

Matthias Schleuning, Senckenberg Biodiversity and Climate Research Centre (BiK-F), Germany

Cyrille Violle, CNRS, France

Eric Allan, University of Bern, Switzerland

Giovanna Battipaglia, University of Campania, Italy

Frederik De Laender, Université de Namur ASBL, Belgium

Cristina Garcia, CIBIO/InBio, Portugal

Yoann Le Bagousse-Pinguet, King Juan Carlos University, Spain

Berangere Leys, Chrono-environnement lab, CNRS, France

Crystal McMichael, University of Amsterdam, Netherlands

Paloma Ruiz-Benito, University of Alcalá, Spain

Andres López-Sepulcre, CNRS, France

Michael Matschiner, University of Basel, Switzerland

David Soto, University of Leuven, Belgium

Allert Bijleveld, NIOZ Royal Netherlands Institute for Sea Research, Netherlands

Julien Cucherousset, CNRS, France

Carola Gomez-Rodriguez, University of Santiago de Compostela, Spain

Marta Rueda, Estación Biológica de Doñana (EBD-CSIC), Spain

Sharon Zytynska, Technical University of Munich, Germany

### CHINA

Faming Wang, South China Botanical Garden, Chinese Academy of Sciences

Chengjin Chu, Sun Yat-Sen University

Xuan Liu, Chinese Academy of Sciences

Xingfeng Si, Zhejiang University

### INDIA

Deepak Barua, Indian Institute of Science Education and Research Pune

### AUSTRALIA

Tommaso Jucker, CSIRO

Brajesh Singh, Western Sydney University

Simon Blomberg, University of Queensland

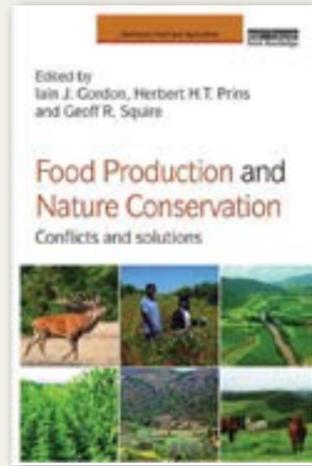
Kylie Scales, University of the Sunshine Coast

Gabriel Machovsky-Capuska, University of Sydney

Melinda Coleman, New South Wales Fisheries and National Marine Science Centre

# BOOK REVIEWS

Reviews in this issue have been collected and edited by Kate Harrison.



## Food Production and Nature Conservation: Conflicts and Solutions

Edited by Iain Gordon, Herbert Prins and Geoff Squire

Routledge (2017)  
£39.99

There is little doubt that especially on land farming has been the most environmentally transformative human activity to date. An accommodation between farming and nature must be part of the solution to the biodiversity crisis. Of course the problem is not wholly owned by natural scientists. It has large economic, social and legal/political dimensions.

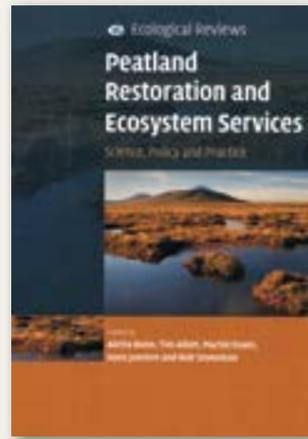
This multi author work, aims to look across disciplines at the way food production, which for the most part in this book means farming, can be “reconnected to nature”. The three main sections of the book deal with 1. the background to food security, 2. how nature management interacts with food supply, including in protected areas, 3. how innovation and protection of ecosystem services

might integrate nature and farming and 4. types of research, economy and governance needed.

Many of the individual chapters of this book are interesting, informative and at times thought provoking. For example I thought the chapter by Squires on limits to crop production useful background to a non-agronomist; the chapter by Perfecto and Vandermeer on integrating food production and nature conservation contains a compelling case why solving the world hunger problem does not involve producing more food; there is an interesting chapter by Rosling et al. about design oriented research aiming to support decisions, not just create knowledge.

Despite the above I did not find this book an easy read as the various authors frequently present reframings of topics. For example despite Perfecto and Vandermeer providing cogent argument to the contrary, the great majority of the authors made frequent reference to the need to increase food production to prevent hunger; in the concluding chapter there is a summary of the differences between land sharing and land sparing, with a proposal for reconciliation of the argument, but little on this topic elsewhere in the book. Those who are just becoming interested in this subject area and want to broaden their knowledge will find this book more useful.

**John Hopkins**



## Peatland Restoration and Ecosystem Services: Science, Policy and Practice

Edited by Aletta Bonn, Tim Allott, Martin Evans, Hans Joosten and Rob Stoneman

Cambridge University Press (2016)  
£39.99

Peatlands provide globally important ecosystem services through a diversity of climate and water regulation functions or biodiversity conservation. Whilst today covering around 0.4% of the Earth’s surface, currently degrading peatlands are responsible for a disproportionate amount (nearly a quarter) of global carbon emissions from the land-use sector. Furthermore and frequently overlooked, is that former peatlands now converted to agricultural land now release massive amounts of carbon to the atmosphere. In this context the restoration of damage ecosystem services and the ending of further degradation have become global priorities. One important point to make of course, is that whilst peatlands are now much-

reduced and cover a tiny proportion of the global land-surface, they were formerly considerably more widespread.

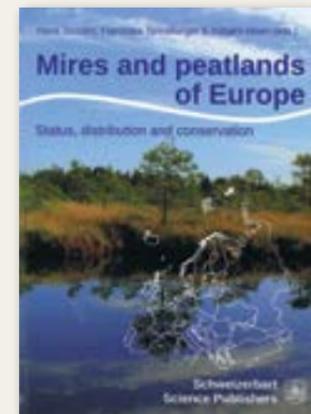
This very timely volume brings together world-class experts from science, policy and practice to highlight and debate the importance of peatlands worldwide. They do this from perspectives of ecology, society, and economy. From this standpoint the book focuses on how peatland restoration can be used to help actions for climate change mitigation.

The contents feature a range of global case studies with opportunities for reclamation and sustainable management illustrated throughout and set against the challenges currently faced by conservation biologists. The book is around 500 pages long and packed with information with black-and-white photographs, tables, diagrams, charts, and maps. The quality of the illustrations is limited and nothing is in colour, though for specialist peatland this is not a problem. For wider readership, they might find it a little hard-going.

The book is written for a global audience of environmental scientists, practitioners and policy-makers, as well as graduate students from natural and social sciences. This is a much-needed interdisciplinary book that provides essential direction towards managing and restoring peatland in a changing global environment. Usefully too, there are chapters that address cultural

and knowledge-archival aspects of peatlands – subjects which are frequently overlooked. Overall, this volume will be a standard text for the subject and hopefully will resonate beyond the core groupings of peatlands scientists, researchers and practitioners.

**Ian D. Rotherham**



## Mires and Peatlands of Europe: Status, Distribution and Conservation

Edited by Hans Joosten, Franziska Tanneberger and Asbjørn Moen

Schweizerbart (2017)  
€94 (hardback)

This volume is in every sense a weighty tome, coming in at nearly 800 pages, and representing the outcome of a mammoth, long-term undertaking. Indeed, the editorial team and the 134 authors deserve hearty congratulations for their efforts. In short, this book provides the definitive account of European mires and peatlands and will do so for the foreseeable future. The contents fall into two major sections: 1) Six major chapters on mire diversity and peatland

types, relevant terms and definitions in Europe, mire diversity and regionality, mire and peatland conservation, and mire and peatland conservation in Europe. 2) Country-based chapters and accounts for the whole of the continent.

A starting point for this discussion is that the European continent features a surprisingly impressive variety of mires and peatlands. The types and forms of mires and peatlands cover polygon, palsa and aapa mires, concentric and eccentric bogs, spring and percolation fens, coastal marshes, blanket bogs, saline fens, acid, alkaline, nutrient-poor, and nutrient-rich. In this context it becomes clear that the peatlands of Europe represent a unique resource of ecosystem biodiversity. Furthermore, they hold a great amount of the unique flora and fauna typical of peat-forming environments; and this is despite a long history of exploitation degradation.

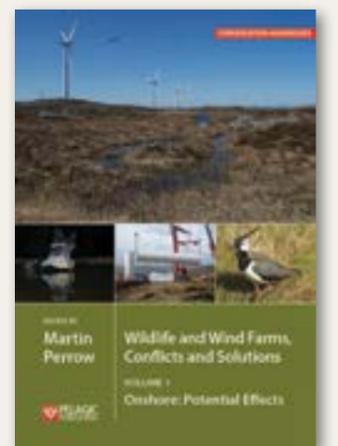
Of course, Europe is the continent which has the longest history and highest intensity of land-use, and associated with this it has a great diversity of peatland use. This in turn means that in a global context, Europe has the highest proportion of degraded peatlands. However, in parallel to the above, peatland science and technology developed alongside exploitation and because of this almost all modern peatland terminology and concepts originated and matured in Europe. The book provides a very full account of these terms and ideas.

In time, the massive degradation of Europe’s peatlands has also triggered a demand to protect these landscapes together with unique wildlife and sometimes their heritage too. (It is worth noting though that peatland heritage and archaeology are frequently less widely recognized than then core issues of ecology, hydrology and restoration). Research in recent decades has addressed issues of how these landscapes deliver vital ecosystem services and the sometimes catastrophic effects of the long-term degradation on such benefits to humanity. Natural or at least intact peatlands provide key services to things like water management and carbon sequestration, and these are compromised on degraded sites. It is now clear that some at least of these services can be restored and re-constructed. So today there is a growing awareness of the need to conserve and restore mires and peatlands; on the one hand to avoid adverse environmental and economic effects, and on the other, to bring about renewal of those services lost. Indeed, some peatland restoration projects are amongst our best examples of commercial stakeholders actually helping to finance restoration in order to gain ecosystem benefits.

With this book we have for the first time a comprehensive and up-to-date overview of European mires and peatlands in their biogeographic, cultural, and ecological context. The multi-authored is very well presented and the text is complemented by many maps, photographs, tables

and notes. Although not cheap, for a large hardback volume in colour this is not bad, and the book offers an impressive and colourful journey through the subject with interesting historical context and fascinating details. At the same time, this is a unique bringing together of the core principles and the unifying concepts of mire and peatland science. The book will be essential reading for those directly involved in peatlands, bogs, and mires, and deserves to be read more widely too.

**Ian D. Rotherham**



## Wildlife and Wind Farms - Conflicts and Solutions. Volume 1, Onshore: Potential Effects. Volume 2, Onshore: Monitoring and Mitigation

Edited by Martin Perrow  
Pelagic Publishing (2017)

Each volume £34.99

Whilst I have been sent two volumes in this series, there are a further two, dealing with similar ‘offshore’ topics. Frankly, I wish I had been sent all four, for this looks to be a trendsetter of textbooks. Pelagic Publishing is

gaining a reputation for producing modestly priced, attractively adorned and crisply edited volumes, and Volumes 1 and 2 bear this out. I'll go further - these are superb books, and I congratulate the editor and the many contributors.

Wind farms pose exceptionally challenging questions for ecologists, and it has taken several decades for the answers to be forthcoming. These two books provide a comprehensive overview of the interactions with wildlife. Volume 1 gives an overview of the potential impacts during construction and operation, and Volume 2 deals with monitoring and mitigation to minimise (and possibly eliminate) impacts. In both volumes, birds and bats feature prominently, and the emphasis on empirical, modelling and 'best practice' elements is impressive.

Volume 1 has a team of forty internationally-drawn contributors, who have written 11 chapters. These cover vegetation, invertebrates, aquatic organisms, reptiles and amphibians, bats, terrestrial mammals and birds (displacement and collision treated separately). Fully illustrated, the many photos are reproduced to a high standard. The opening chapter (by Gero Vella) provides an excellent overview of the global reach of wind farm developments and the range of technological, engineering and legislative issues governing their use. Some of these wind farms are massive - Alta Wind Energy Center in California generates 1,548 MW, and has 600 turbines (the UK's largest, and Europe's second largest, is Whitelee, near Glasgow,

generating a third of this, with 215 turbines). Perrow's synthesis chapter, running to 36 pages, provides a first rate overview, and impressively draws on a large 'grey' literature as well as the standard journal and book publications. In his own words, 'it is worrying that this volume contains no information from China or India, respectively the first and fifth largest global producers of wind energy.' Much more work on these developments is needed. Whilst impacts on birds, and notably raptors are emerging rapidly (I was intrigued to read about adverse impacts on willow ptarmigan at Smøla, where much publicity has been given to white-tailed eagle deaths), the effects on migrating bats are only coming to light now. Critically, it is the cumulative and population effects of these developments which are hardest to assess, but the book admirably addresses these.

The slimmer Volume 2, with nine chapters by 31 contributors, concentrates on monitoring, mitigation and best practice for planning and design. A lot of on-going work in Scotland is cited here (Scotland was one of the first countries to produce national-level sensitivity maps; Table 5.1 details these for more than 15 countries/regions), and there is an impressive range of modelling through to practical studies reviewed. Some of the work is highly complex, and the detail on 'Fuzzy logic' models for golden eagles (devised as part of repowering the Altamont Pass Wind Farm area) had me reaching for my tattered copy of Seton Gordon's

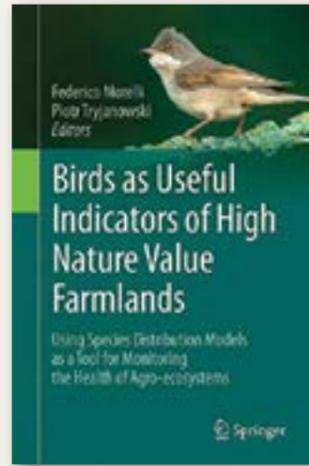
Days with The Golden Eagle (1927; marvellous). The final chapter, by Victoria Gartman and colleagues provides a comprehensive overview of a best practice approach to future planning.

One of the researchers cited in Volume 2, Alan Fielding, often reminds me that given we have had so few eagle collisions with wind turbines in Scotland it is a tribute to the planning system in place, and the huge effort that goes into scoping, designing and constructing schemes. I think he is right - so far - and these two volumes take us even further in ensuring we do our best to minimise adverse impacts of wind energy development on wildlife. Clearly, this is a fast-paced area of technological and engineering development, and further books will provide more syntheses and less emphasis on eclectic studies.

I think it is worth reflecting that in the area of renewable energy developments the ecological scientific work has been first rate. Unless you are closely involved in this area of research the planning processes, modelling approaches and assumptions on basic field data can seem bewildering.

These two volumes are excellent, and I look forward to reading more in the series.

**Des Thompson**



### Birds as Useful Indicators of High Nature Value Farmland

Edited by Federico Morelli and Piotr Tryjanowski  
Springer (2017)

£82.50 (hardback)

£65.99 (ebook)

This reasonably slim tome is essentially a series of journal articles as might appear in a special issue of a specific journal, but with additional contextualization at the start and overarching discussion at the end - rather similar to a PhD by publication in many ways. The first of the eight chapters introduces the topics of decline in biodiversity in agro-ecosystems, the importance of High Nature Value (HNV) farmland, and the challenges of identifying and monitoring such habitat. This is followed by a systematic review of HNV farmland research in Europe (Chapter 2), methods for identifying HNV farmland using GIS and monitoring it using birds as bioindicators (Chapter 3 and 4), case studies from Italy, Portugal, and Poland (Chapter 5, 6, and 7, respectively), and a drawing-all-the-threads-together discussion (Chapter 8). The book is well illustrated with maps,

graphs and schematics throughout, which helps communicate complex ideas to the reader, and is extensively referenced. Although this is a highly niche area, the focus on methods and real-world applications make this a useful book for those working in this specific area.

**Anne Goodenough**



### Bird Migration Across the Himalayas

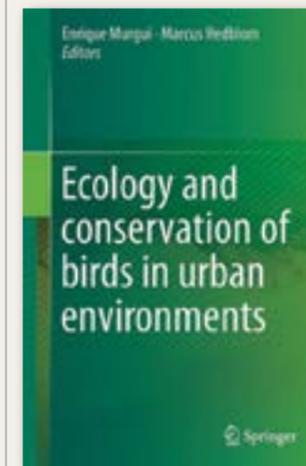
Edited by Herbert Prins and Tsewang Namgail  
Cambridge University Press (2018)

£75 (hardback)

According to the preface, this book grew out of the authors' "deep fascination for the Himalayas and their wildlife". It is an edited volume of 26 chapters plus an introduction and overarching review-style discussion drawing on the contributions as well as external literature. The contributions themselves are divided into sections on: (1) migratory routes and movement ecology; (2) physiogeography; (3) high-altitude migration; and (4) people and their effects. Somewhat surprisingly, the contributions in the second section are non-avian, focusing instead on floral

gradients, plant phenology, hydrology, and glaciology. Moreover, some of the ornithological contributions of other sections are focused on birds in the region in general rather than on migration in the region in particular, including ones on farmland birds and effects of wetland tourism. This makes the book feel rather disjointed in places and unfocussed relative to the main unifying theme. That said, each contribution is interesting in its own right and the overall book is as consistent in style, formatting, and use of tables/figures as is possible in such a multi-author compilation. In terms of the bird species studied, there is a reasonable range although there is a bias towards wildfowl. Overall, this is an interesting book for anyone who shares the editors' fascination for the Himalayas and their wildlife and, for the most part, people interested in bird migration or wetland bird ecology more generally.

**Anne Goodenough**



### Ecology and Conservation of Birds in Urban Environments

Edited by Enrique Murgui and Marcus Hedblom  
Springer (2017)

£136 (hardback)  
£136.50 (ebook)

According to the preface, the editors were concerned about the publication of two other urban ecology books during the time this book was in preparation. Based on the encouragement of others, who said that the book could still be a great contribution to the literature on the topic, work continued. Those people were right! This is a fantastic, holistic consideration of urban avifauna, covering topics as diverse as non-native species, avian adaptations to urban ecosystems, behavioural change, microevolution, phenotypic plasticity, pollution effects, brownfield sites, garden birds, and ecosystems services. It is also refreshing to see consideration of global patterns, complex multi-way interactions (e.g. non-native plant increases in urban areas and concomitant effects on birds), and monitoring frameworks selected for inclusion. The contributions also span an impressive geographical range and number of taxa. My only criticism of the book is that its appearance is not particularly inviting or inspiring, which is at odds of the content itself. To some extent this is inevitable with a journal article style book but I do wonder whether rather more could have been done to embed colour images of species, sites and interactions to make the content more appealing; this approach is used very effectively in a couple of chapters. Overall, though, this is an impressive book that is bigger in reach and remit than its title suggests. Yes, it is a book on birds in urban ecosystems but it is

also a book of urban ecology (or even ecology more generally) simply discussed through the medium of urban birds.

**Anne Goodenough**

### UPDATES:

#### Routledge Handbook of Ecosystem Services

Is now available in paperback for £47.99.

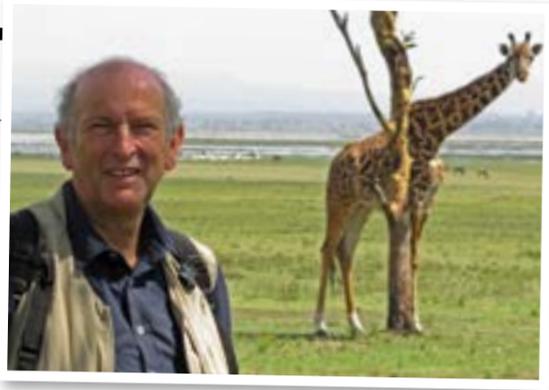
'The clearly written and presented chapters make this book highly accessible to a wide range of readers from students to specialists. I am sure this book will become a key text in this field and that I'll return to it frequently as a point of reference for future work on ecosystem services.' - Rob Brooker, BES Bulletin 47:3 (October 2016).

### CORRECTION:

A review of Routledge Handbook of Urban Forestry in the last issue, BES Bulletin 48:4 (December 2017), stated that the book was only available in hardback. It is also available at a much lower price in ebook format (£39.99).

## A FOND FAREWELL

# THE END



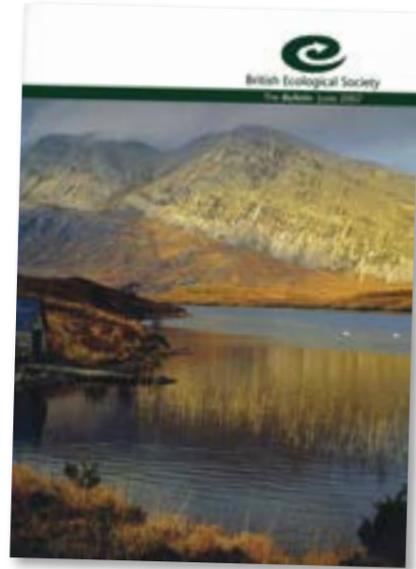
Alan Crowden | Formerly Editor of the Bulletin | alan.crowden@ntlworld.com

For most of my teens and early twenties I really wanted to study fish for a career. Big, muscular fish like salmon, or pike. When I headed for university in 1970 it was said that all you needed was a degree, and you were set for life. By the time I graduated three years later all you needed was a PhD, and you were ready for a career in biology. Doctorate done, the goalposts had scuttled another few yards from their original location and now a postdoctoral fellowship was the key to the door. At this point, one was getting a little sceptical about career progression, but a particularly attractive postdoctoral fantasy was to envisage myself wading manfully through Canadian steams in a red flannel shirt against a backdrop of mighty conifers. Then the Monty Python troupe sang the lumberjack song and that dream turned to ashes. I became a publisher instead.

Scientific publishing was good to me – I met luminaries from the early days of ecology, like Charles Elton and E. B. Ford, made friends 40 years ago who are still friends today, and travelled the world meeting a far wider range of ecologists than I would never have imagined possible.

Science book publishing rarely makes authors rich, so I have basically spent a career having to seek favours of ecologists, whether asking them to write books, review proposals or just spare some time to chat, and have found them unfailingly generous and courteous, even when saying no. When my publishing career came to a screeching halt with early retirement I had extensive discussions with careers advisers seeking an alternative home for any transferrable skills, but was unable to convince anyone, especially myself, that I would enjoy anything as much as I enjoyed collaborating with ecologists. So I set up as a freelance editor, and ploughed my own furrow.

And so to the Bulletin. First time I applied for the Editor's job, I didn't get it. Three years later it opened up again, by which time I had also failed in an application for a different role at the BES. John Lawton was President at the time, so I asked John whether I had offended against the organisation or was otherwise persona non grata. I wonder now how I had the nerve to ask, because if I was to write a list of people who would tell a person they didn't get a job because they were bloody useless, it would be heavily loaded with chaps based in Yorkshire. I applied anyway and to my eternal delight was offered the role, with 'my' first issue being June 2007. At Hazel Norman's suggestion Alison Holt and Tom Webb were appointed as Associate Editors, which was a



great idea as their vibrant enthusiasm was a vital element in the way the Bulletin developed. The constituency the Bulletin serves ranges from undergraduate students to long-retired professors, and all stages between, and readers' concerns range from 'will I get a job in ecology?' to 'are my old pals still alive?'. Alison and Tom were able to reflect the interests of a large and youthful chunk of the membership. When they had to give priority to ever increasing work and family commitments we found ourselves with Emma Sayer, a force of nature who has ten great ideas a day and takes on new commitments at roughly the same rate. Emma, who is rarely photographed without two drinks in her hand – she eventually worked out that this happened when at BES receptions I handed her my drink to hold while I took her photograph – is a jewel among Society members. Her contribution to the wider BES has been enormous and working with her on the Bulletin was just so much fun.



I looked after Charles Elton's books for a while. Any reports of sales or new printings were acknowledged with a courteous note on a postcard.

Peter Thomas was my predecessor but one as Bulletin editor, and in total I think he served 11 years as editor and then another 10 as book reviews editor. Peter has been a constant source of friendship, support and encouragement and when I grow up I want to be an utterly nice bloke like him.

Two stalwarts throughout my tenure have been our essayists John Wiens and Richard Hobbs. Readers should know that all the ideas and topical subjects they have addressed are all their own work. Any wise advice and suggestions I have offered, they have steadfastly ignored. (I did once make a small change to one essay but I think I was just in a bad mood). When I send stern emails reminding them of deadlines and other responsibilities their amusement has been palpable. They drink beer at my expense and then express themselves too inebriated to work. In other words, they have been the perfect friends and I love them dearly.

My minder at the BES has been Richard English. When the Bulletin underwent a radical redesign for the centenary of our Society in 2013, Richard was the motivating force that made sure we found the right designer. He has also been a constant source of support, advice and friendship, and I shall greatly miss working with him. All the staff at BES HQ have been consistently friendly and supportive, even when tested with short deadlines or delayed copies.



Emma 'Two drinks' Sayer shows her appreciation at being set up. Again.



Richard was very proud of his Christmas jumper. Form your own opinion.

Matt Wood is the true hero of the 2013 Bulletin redesign; he set up the new layout but we lost contact for a while after he set up his own creative agency, but he is now back at the helm and we just love what he does for us. He chose the recycled paper we use and particularly commended it for its tactile quality (Cobblers, I thought to myself quietly). When I handed BES President John Lawton the first printed copy in the new style his immediate reaction was "Feels nice!". Which is why we leave design to the expert.

As part of the 2013 revamp we asked Andy Harvey of H2 Associates to manage the print and mailing of the Bulletin which he has done promptly, meticulously and cheerfully ever since. Thanks, Andy.

The final thank-you goes to everyone who has contributed to the Bulletin in the last 10 years or so. Successive BES Presidents, who have quite enough to do already, have taken the time to contribute their thoughts to each issue. Special Interest Group secretaries have been badgered for quarterly reports. PhD students, postdocs, busy lecturers and eminent professors have all made time to share their thoughts with us, in

the hope that the Bulletin will help you to feel part of the fabulous community that is the British Ecological Society.

I can't help but end with a quote from P G Wodehouse. In a short story The Artistic Career of Corky, Bertie Wooster dabbles in a bit of vanity publishing, and finds the outcome very pleasing:

***"I always used to think that publishers had to be devilish intelligent fellows, loaded down with the grey matter; but I've got their number now. All a publisher has to do is write cheques at intervals, while a lot of deserving and industrious fellows rally round and do the real work."***

## CONTACT DETAILS

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