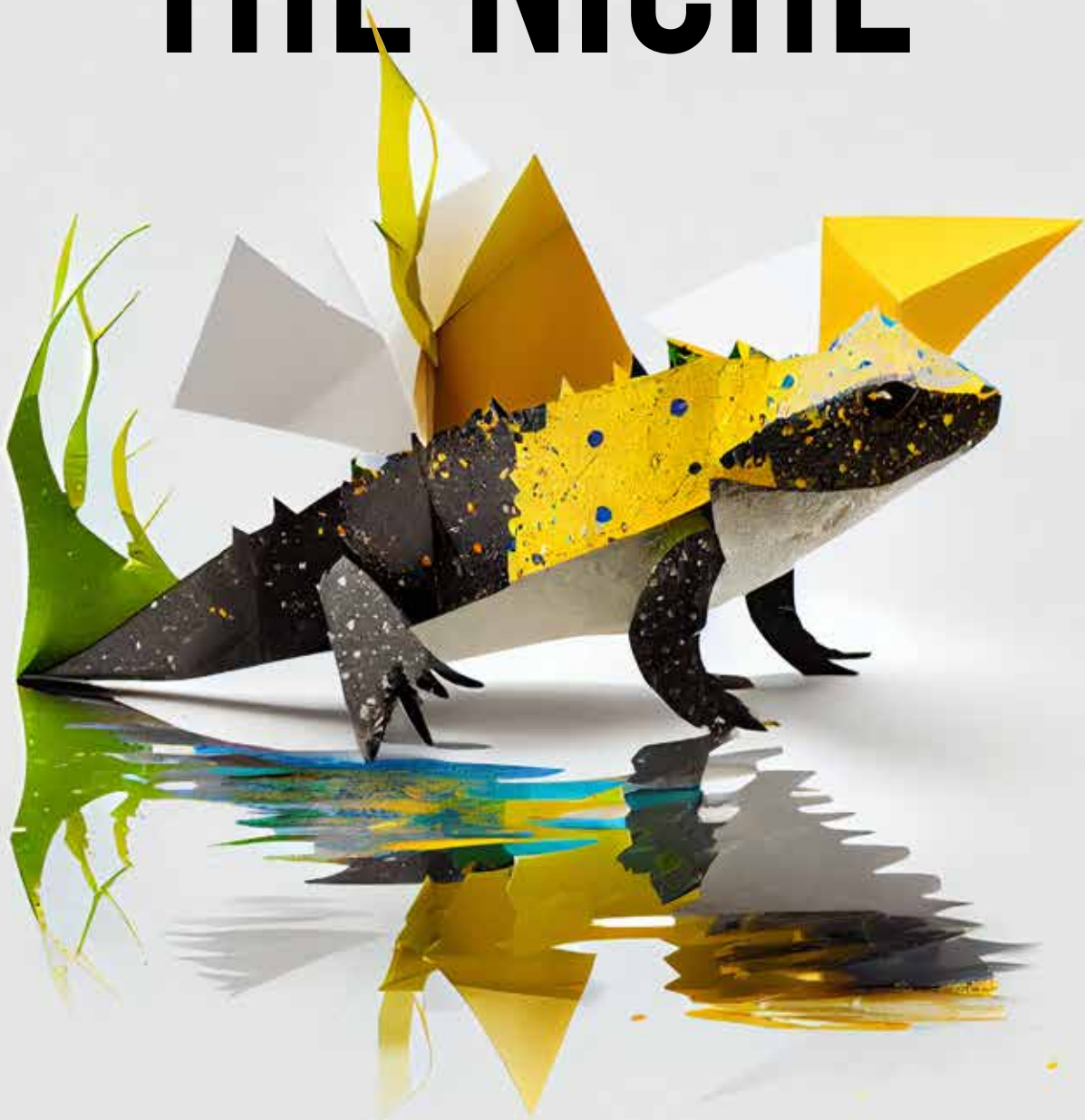


THE NICHE



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How falcon diets
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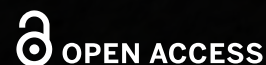
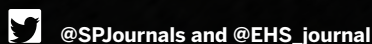
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HELICOPTERING BIGHORN SHEEP

MOJAVE DESERT, USA
BRIAN DUGOVICH

Wildlife veterinarian Ben Gonzales helps a skilled helicopter team load bighorn sheep so they can be carried back to their capture location. The researchers were taking blood samples from the sheep to measure how habitat fragmentation and disease spread are related. They found that a connected population appeared to be more resilient to infectious disease.

Journal of Animal Ecology
[doi.org/j6pz](https://doi.org/10.1111/j.1365-2656.2012.01662.x)



Submit your amazing photos to:
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THE NICHE

SUMMER 2023

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ECOLOGICAL
SOCIETY**

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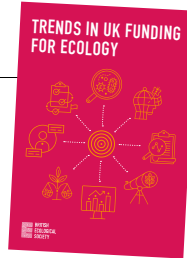
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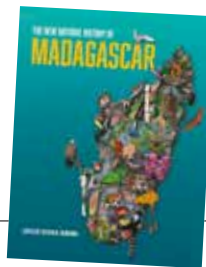


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WELCOME

There has never been a more important or exciting time to be an ecologist, says Yadvinder on p6, and who could disagree. Ecologists are going to be at the forefront in understanding what the big environmental challenges are going to be, and how they will play out. Our early career researcher awards highlight some of the amazing ecology going on out there, from understanding how landscapes and disease spread are related, to predicting how climate change will affect trophic interactions (p28).

Once we've got the research, how do we communicate it to the right people? Sallie Bailey and Jack Bloodworth argue that, in the case for biodiversity, we need to get the general public to care and government policy will follow (p22). And how do we communicate to the general public? Maybe you'll give TikTok a go (p18), start a podcast (p49), or write a song (p53).

In our photography competition (p20) we're asking for a couple of new things – more photos of plants and more photos of you! Communicating the importance of ecology involves showcasing what being an ecologist actually looks like, whether that be examining quadrants in grasslands or strapping sheep to a helicopter in the desert (p3). Let's show the world that it really is exciting to be an ecologist.

Happy reading!



Kate

Kate Harrison, Editor
theniche@britishecologicalsociety.org

NEWS & VIEWS



A BES PERSPECTIVE ON PRIORITIES FOR ECOLOGICAL RESEARCH IN THE UK

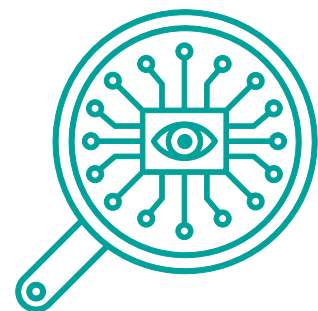
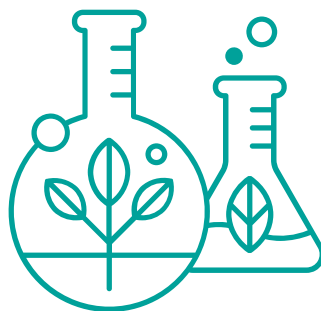
Like many of you I expect, I have enjoyed watching the Wild Isles documentary series on the BBC. To me the series really painted a picture of how marvellous the UK's ecology is, and also how imperilled and depleted it is. I believe there has never been a more important time to be an ecologist working in the UK.

This March the British Ecological Society launched a report that lays out a collective and broad vision of the priorities for UK-focused ecological research in the coming decades. Of course, the UK ecological research community also plays an important and leading role in international ecological research, from the deep oceans to the tropics to polar regions. This needs to remain valued and supported, but to keep a tractable focus for this report we focused in key ecological frontiers in UK ecological research.

We identify the core challenge as being the development and application of ecological insight to understand, address and reverse the depleted ecological state of much of the UK's terrestrial, aquatic and marine ecosystems. Addressing the challenge requires identifying and addressing gaps in empirical and theoretical understanding, embracing new technologies and tools while building on decades of experience and insight across the research and practice communities, and building bridges to other areas of research, including the social sciences and humanities.

We developed the report around five themes. The first, perhaps overarching, theme is novel futures. This recognises that the ecological systems we study have already changed from those of the 20th century, when ecology was established and developed as a science. Atmospheric change alone ensures this, but this comes on top of other drivers. These include direct human pressures on habitat loss, degradation and fragmentation; 'new native' species, some of which are invasive; amplified pathogen pressure; light pollution and novel pollutants such as microplastics, pharmaceuticals and long-lived compounds. We need to understand how ecological systems are responding to these drivers, and how we can facilitate resilience and positive ecological responses while mitigating these drivers.

The second theme is living laboratories. The urgency of climate change and biodiversity loss requires a strong focus on ecological learning through implementation, experimentation and practice. This theme recognises that that there is an exciting range of ecological stewardship and restoration activities being implemented by a range of actors, including government agencies, non-government organisations, private landowners, and private corporations seeking to meet carbon or biodiversity targets. These provide an opportunity for researchers to work closely with practitioners to develop long-term 'living laboratories' that maximise the potential for gaining robust scientific insight and dissemination of good practice.





IT IS UNDENIABLY A TIME OF URGENCY AND CHALLENGE, BUT THERE HAS ALSO NEVER BEEN A MORE EXCITING AND IMPORTANT TIME TO DO ECOLOGY AND BE AN ECOLOGIST.

The third theme is dynamic ecological systems. This recognises that, in parallel with increased empirical understanding, we must support and advance theory and models of the emergent properties of ecological system, how they develop and change in response to drivers, and how they interact with the wider Earth system in exchanges of water, carbon, energy and nutrients.

The fourth theme is wholescapes. This theme moves the gaze of attention beyond individual ecological systems (say, a patch of forest) to how systems interact across and between landscapes, waterscapes and human-dominated environments such as urban systems. A broader sense of wholescapes also embraces a wider scale, seeking to understand the connections between local ecological systems and wider supply chains, global economic drivers, and societal values. Such understanding ventures beyond a singular focus on ecology to understanding how ecological systems interact with social and economic systems.

The final theme is frontiers of discovery. This emphasises that there is still much that needs to be explored and discovered about the nature and function of ecological systems. Such frontiers include poorly understood ecologies, such as those of sediment and soil, or emerging subdisciplines such as the ecology of human health and the environment. New technologies, ranging across genome sequencing, bioacoustics, quantum sensing and machine learning, open up opportunities for new insight and advancement.

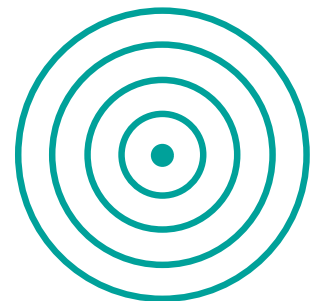
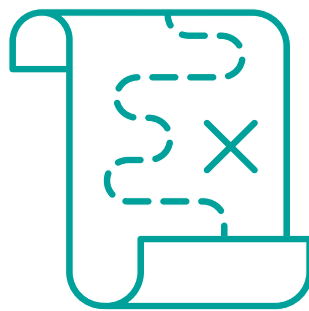
I do hope that you find our inclusive vision helpful. Over the coming months and years we will strive to engage and promote this vision with funders, policy makers and other key stakeholders.

The report was the culmination of a year-long process, involving a community-wide online consultation, a two-day workshop in London, a further workshop at the Annual Meeting in Edinburgh and inputs from a scientific steering committee throughout. I'd like to thank all who contributed to this process, in particular the workshop attendees, steering committee and BES staff who invested substantial time and energy in our efforts to support an ecological research agenda fit for the environmental and planetary challenges that we face.



The report can be downloaded at www.britishecologicalsociety.org/FutureEcology

Yadvinder Malhi
President of the British Ecological Society



DIVIDED OPINIONS ON POTENTIAL LYNX REINTRODUCTION

The Eurasian lynx has been extinct in Britain for over 1000 years. However, some conservation groups argue that their reintroduction could help in the effort to restore our natural ecosystems.

The results of the study, published in *People and Nature* are based on a survey given to 34 people representing a range of groups with an interest in the issue of lynx reintroduction in the Cairngorms National Park in Scotland. Lead author David Bavin from the Vincent Wildlife Trust explained “Our results show that Scottish views about a lynx reintroduction are far more nuanced than we assumed.”

Rather than simple yes or no responses, the responses came under five distinct perspectives:

- **Lynx for change:** supportive of reintroduction, feeling that they could facilitate ecosystem restoration.
- **Lynx for economy:** also supportive, anticipating economic benefits to local communities.
- **No to lynx:** strongly opposed, perceiving that humans are fulfilling the roles of absent large carnivores.
- **Scotland is not ready:** supported the conversation but perceived prohibitive socio-ecological barriers.
- **We are not convinced:** not satisfied that an adequate case for biodiversity gain has been made, but were open to further exploration of the potential.

A lack of trust between stakeholders was apparent, mainly stemming from previous experiences of species reintroduction and the management of recovering predators.

“The study identifies important areas of disagreement regarding the potential impacts of lynx reintroduction. Whether our environment should be managed by people, or encouraged to self-regulate, is a complicated matter,” continued Bavin.

The results of the study can provide a foundation for any future conversation regarding a potential lynx reintroduction in Scotland. (*People and Nature* doi.org/10.1016/j.pandn.2023.100000)



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© ALISTAIR AUFFRET

Mountain everlasting *Antennaria dioica* is a species with a northerly distribution in Europe, and whose seeds are not stored in the soil

NATURAL SEED BANKS WON'T BE ENOUGH TO STEM THE EFFECTS OF CLIMATE CHANGE

Many plant species can protect themselves against temporary environmental changes by storing their seeds below ground in soil seed banks. It's been thought that this natural storage of seeds could have the potential to slow changes to plant communities in response to long-term climate change.

However, a recent study led by researchers at the Swedish University of Agricultural Sciences has found that soil seed banks may not offer as much protection to climate-threatened plant species as hoped.

In the study, the researchers collected data from over 40 published studies, extracting information regarding which species had seeds present in soil and which ones were aboveground in more than 2500 locations across nine countries in Europe.

As average European temperatures have increased by almost 1°C compared to pre-industrial estimates, the researchers expected that the seeds stored in soil would be from species adapted to past, cooler conditions. Instead, the researchers found that the strategy to store seeds in the soil was more common in species that have a warmer, more southerly distribution in Europe which are already suited to higher temperatures.

Dr Alistair Auffret, lead author of the study said "We were surprised that the plants featuring seed banks mainly consisted of species better suited to warm climates. These 'warm' species are mostly weed-like generalists that can contribute to plant communities becoming more homogenous."

The results spell bad news for cool-associated species, that may be at risk from both short- and long-term climatic change. (*Journal of Ecology* doi.org/10.1111/j.1365-2745.2022.02019.x)

PEREGRINE FALCON DIETS AFFECTED BY HUMAN ACTIVITIES

A study conducted with the help of citizen scientists examined how the diet of peregrine falcons changed during the Covid-19 lockdown, with results highlighting the impact of human behaviour on urban predators.

A collaborative team made up of Brandon Mak from King's College London and Ed Drewitt from the University of Bristol, determined that falcons were forced to change their diets away from pigeons.

The researchers recruited citizen scientists to monitor 31 falcon nests around the UK across three breeding seasons – one of which took place during lockdown. As fewer pigeons were lured into the city by human food waste, it was found that London peregrines ate 15% less pigeons, instead replacing them with starlings and parakeets.

Brandon Mak, co-author of the study explained "These results indicate that peregrines in large, highly urbanised cities may be more dependent on (and thus more vulnerable to) changes in human activities to support their prey populations, particularly feral pigeons.



The study raises questions surrounding how pest control carried out by humans can affect predators that rely on 'pest' species. An example of this is the population of Northern goshawk populations in Poland reducing by almost half when farmers stopped rearing domestic pigeons that would have been their prey.

Reductions in pest species can force predators to switch prey or forage far away from their nests. This can result in poorer nutrition from less ideal prey species, or a decrease in energy for fitness or reproduction due to the effort spent on hunting.

Mak continued "The world is still learning about the consequences of lockdowns on wildlife, which promises to shed light on how human and animal lives are linked in our shared environments." Read more about the project in Crossing Fields, p16. (*People and Nature* doi.org/10.1016/j.pandn.2022.05.001)

ROBOFINCH CREATED BY TEAM TO STUDY ANIMAL COMMUNICATION

An interdisciplinary team has created a lifelike robotic finch in order to study sensory cues used by songbirds to learn their song.



© RALPH SIMON

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NEWS & VIEWS

Zebra finches are popular for studying vocal learning due to their ability to learn and modify songs. With the creation of the RoboFinch, which closely resembles real-life counterparts, researchers can study zebra finch behaviour using stimuli that can be manipulated in a way that would be impossible with live animals.

Ralph Simon, one of RoboFinch's developers, explained "Robotic models allow us to study animal communication in totally new ways, for example, the poorly understood interaction between acoustic and visual components of a signal."

There is substantial evidence to assume that combined exposure to acoustic and visual cues enhances song learning in young birds. With the RoboFinch allowing full experimental control over auditory and visual cues, the researchers are now able to investigate whether seeing how sound is produced is an important element for singing as well.

The RoboFinch produces beak movements that can be exactly matched to the presented song at a high speed, suitable for the zebra finch's highly acute vision. The team raised young zebra finches alongside the RoboFinch throughout the sensitive phase for song learning in order to validate the RoboFinch.

Judith Varkevisser who conducted the behavioural experiments explained "Zebra finches are usually careful around new objects, but they approached the RoboFinch immediately! They perched next to the robot and sang at him, but not whilst he sang or moved. They seemed to be really listening to it."

The team included detailed manuals alongside their paper in order to allow other researchers to replicate the RoboFinch or adapt it to other species. (*Methods in Ecology and Evolution* doi.org/grsgsh)



BUG BUFFETS PROVIDE HOPE FOR BATS INFECTED WITH WHITE NOSE SYNDROME

White Nose Syndrome (WNS) is one of the worst wildlife diseases of modern times. Named for the characteristic white fungal growth on infected bats' muzzles and wings, this deadly disease has caused severe declines in many hibernating North American bat species.

One of the major risks associated with WNS, is that infected bats wake from hibernation and consequently burn through large amounts of their critical winter energy reserves.

In an effort to provide a stable food supply, scientists at Bat Conservation International set up artificial 'bug buffets' near known little brown bat species hibernation sites, using light lures to attract more bugs. Having lost over 90% of their population due to WNS, the researchers were excited to see that little brown bats were foraging at significantly higher rates in sites with non-invasive bug buffets compared to those without.

Dr Winifred Frick, chief scientist for Bat Conservation International, explained "When we created bug buffets, bats ate 3–8 times more than usual. Our hope is that bats will eat more, accumulate more fat and recover quicker from WNS."

As bats play a critical role in healthy ecosystems, through pollination, seed dispersal, and pest control, finding creative solutions to offset the impacts of WNS is a top priority for many ecologists. It is hoped that this research can lead to practical and scalable conservation efforts. (*Ecological Solutions and Evidence* doi.org/grzmb6)

INTERCROPPING – THE FUTURE OF AGRICULTURAL PEST CONTROL

Intercropping, the practice of planting mixtures of crops, can be an effective pest management tool worldwide, a new study shows.

Results were compiled from 44 field studies in six continents, focusing on four crop types: cabbage, squash, cotton and onion. The crops were planted both on their own and mixed with a companion plant species. During the study, scientists recorded 272 total occurrences of 35 different plant-eating species present on crops. This makes the study one of the most comprehensive evaluations of intercropping effectiveness worldwide.

Lead researcher Philip Hahn from the University of Florida explained, “Overall, intercropping proved to be very effective against pests. However, it’s effectiveness did vary based on the pest and their feed preferences. It also depended on crop type, with cabbage and squashes showing the strongest resistance.”

There are a few common methods of intercropping. Sometimes non-profitable crops are planted around the border of the field to repel or intercept pests before they can damage the cash crop. Alternatively, companion plants can be planted within the field to disrupt pests from locating the main crop.

A common intercropping combination is known as the Three Sisters: corn, squash and beans. The study found that interspersed planting schemes, like the Three Sisters, made it harder for pests to locate their preferred plants. This method was more effective than border planting.

The new research provides recommendations for piecing together the most effective companion plantings, while also highlighting pairs that seem to be less effective. “There are a few combinations that seem to be particularly effective at reducing pest abundance,” concluded Hahn. “Overall, for growers interested in organic methods, intercropping seems to be a very effective tool.” (*Journal of Applied Ecology* doi.org/gr3r5p)



WELCOMING MAJOR EXHIBITORS TO BES2023

LifeWatch ERIC, the European Research Infrastructure Consortium providing e-Science research facilities to scientists investigating biodiversity and ecosystem functions and services, will be attending the BES Annual Meeting in Belfast as a sponsor and exhibitor. LifeWatch ERIC was established by the European Commission in 2017.

They will be joined by the Field Studies Council, the UK’s largest environmental education charity delivering outdoor learning, natural history and eco-skills courses to thousands of young people every year.

Exhibition space at BES2023 is limited and is selling fast. If you would like to join Lifewatch ERIC and the FSC at Europe’s largest conference for ecologists visit britishecologicalsociety.org/welcome-to-bes2023.



BADGER FARMING IN SOUTH KOREA HIGHLIGHTS RISKS OF POORLY REGULATED WILDLIFE TRADE

An international team of researchers from ZSL's Institute of Zoology, UCL and Seoul National University are calling for greater focus on lesser known wildlife trade practices, after their recent study highlighted deficiencies in monitoring and regulation of legal badger farming in South Korea.

The study, published in the *Journal of Asia-Pacific Biodiversity*, tracks the poorly-known practice of badger farming to supply badger trade in South Korea over the past 30 years. During this period, badger farming has been promoted as a potential substitute for bear bile farming, but a wide range of new badger-derived products have also been marketed to consumers, from nutritional supplements to badger-derived cosmetics.

The researchers believe that practices in this trade, which they say is currently largely overlooked by the South Korean government, may pose disease risks to both animal and human health, given the absence of biosecurity protocols or adequate monitoring on badger farms. They also highlight concerns around the potential impact on wild badger populations, with farms stocked with hog badgers (*Arctonyx* spp.), non-native species that have historically been imported from other countries in Asia, and Asian badgers (*Meles leucurus*), a native animal that is known to be poached in South Korea and at least occasionally, has been used to illegally stock badger farms.

Lead author, Joshua Elves-Powell said: "Research on wildlife trade, one of the most important interactions between wildlife populations and human societies, tends to be heavily dominated by high-profile – and often illegal – trades. What our study shows is that the overlooked nature of other wildlife trades, involving species that might go undetected, are perhaps not as well known, or are maybe not considered as charismatic, can present a wide range of challenges for conservationists and policy makers when it comes to establishing whether a trade is sustainable, or even whether it is economically beneficial or socially desirable.

For example, there is very little evidence to suggest that badger farming presents any less of a risk than bear farming, a practice which South Korea has just decided to end by 2026. However, bear farming is higher profile, regularly attracts media attention and is the focus of entire NGOs, such as Project Moon Bear. By contrast, government officials we spoke to were not even aware that badgers were legally farmed in South Korea.

There is clearly a hugely important role for conservation scientists to advance our understanding of less well-known wildlife trades, as well as their potential impacts."

(*Journal of Asia-Pacific Biodiversity* doi.org/10.1016/j.japb.2023.100059)



Two Asian badgers *Meles leucurus*, illegally harvested from the wild and kept on a farm in South Korea

FUNDED RESEARCH



PROTECTING THE WORLD'S LARGEST FROG

A Cameroon-based biodiversity conservation and sustainable development non-profit organisation, Voice of Nature (VoNat) received funding from the BES to help educate young amphibian conservation stewards in the Mount Nlonako area of Cameroon.

This area is a key melting pot for Cameroon's biodiversity with over 93 amphibian species, up to nine of which are classified as endangered on the IUCN Red List including the world's largest frog, the goliath frog (*Conraua goliath*).

With the guidance of Ndimuh Bertrand Shanchu, 50 young conservation stewards from seven communities in the area went on experiential learning sessions at amphibian hotspots to understand the different feeding signs, tracks, vocalisation and other signs of amphibians and the different threats they are faced with.

The excitement for goliath frog conservation amongst the conservation stewards was far above expectation, with most of them already educating their friends and families about the conservation importance of the giant frog and other endangered amphibians in the area. They have created their own environmental club as a result to sustain their new-found love of conservation.

On World Wildlife Day in 2022, the conservation stewards marched in front of communities within the Mount Nlonako area with posters of the endangered amphibian species they want protected. They also showcased drawings and presented poems, songs, articles and debates with unique conservation messages. Habitat pollution and destruction, trapping and hunting, and other activities that further jeopardise the existence of endangered amphibians are some of the practices the conservation stewards are asking their communities to stop.

The stewards' messages were well received by community members and local leaders. Hopefully further research that maps out current population hot spots will help strengthen the case for a ban on goliath frog hunting in the area.

SOIL MICROBES IN TROPICAL FOREST FRAGMENTS

The John L Harper award allows the BES to fund research that investigates the detailed study of plant populations and interactions. Gaurav Kandlikar who was awarded the John L Harper award in 2022, is investigating how soil microbes shape plant coexistence in tropical forest fragments.

Habitat degradation is one of the main drivers of biodiversity loss worldwide. One aspect of habitat degradation is that once-contiguous habitats get separated into disconnected fragments, where the edges often have distinct environmental conditions and lower biodiversity compared to forest interiors. Disruptions to plant interactions with soil-borne pathogens, mutualists, and other microbes are part of the problem, but have been largely understudied. Their study will address this gap by quantifying how microbially mediated plant coexistence dynamics are altered by fragmentation.

Plant-soil microbe interactions are key drivers of biodiversity dynamics in tropical forests, but the outcome of these interactions can change depending on abiotic environmental conditions. This complicates predictions for how soil microbes affect plant species' dynamics in fragmented forests, where environmental conditions (e.g. light and soil moisture levels) can vary substantially from the forest edge to the interior. By combining experiments, observations, and theory, their study should enable a more mechanistic understanding of microbially-mediated plant community dynamics in tropical forests.

Gaurav hopes that this work will enable progress in both fundamental and applied research. In terms of application, a better understanding of how habitat fragmentation disrupts processes like plant-soil microbe interactions should allow us to better predict community dynamics in fragmented landscapes, and inform future conservation strategies for supporting key processes that regulate plant diversity.

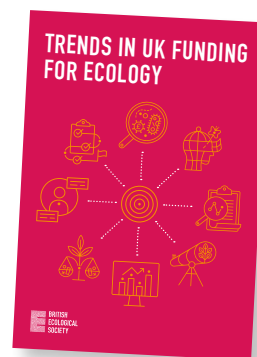
The research is being completed in close collaboration with researchers in India (Dr. Meghna Krishnadas and her PhD student Vinayak Saini) and they hope to share their findings not only with the global scientific community, but also with local community members.



TRENDS IN UK FUNDING FOR ECOLOGY



Nick Harvey Sky
BES Policy Officer



As BES members know very well, ecological research is not just fundamental to our understanding of the world around us, but also to tackling the twin biodiversity and climate crises. Funding is a crucial part of knowledge production and it must be both sufficient and secure for ecology to contribute to tackling these crises.

In concert with *The Future of Ecological Research in the UK*, we have published a report entitled *The Trends in UK Funding for Ecology*. This sets out a preliminary investigation into how the amount of funding for ecological research has changed in the UK over the past 15 years or so. This article provides an overview of this work, the full report is available on the policy pages of the BES website.

UK R&D funding structure

Overall, R&D funding has increased in real terms in the UK over the past three decades, although it has not done so as a proportion of Gross Domestic Product (GDP). The proportion of GDP allocated to Gross Expenditure of Research and Development (GERD) in the UK was 1.74% in 2019, which is lower than the OECD average of 2.4% and the EU average of 2.0%. This share is significantly lower than the government's target of 2.4% by 2027.

What about ecology? The UK R&D funding landscape is complex, which made it difficult to investigate the specific subjects that funding is

allocated to. A lack of available data meant that fine-scale analysis was only possible for projects funded by United Kingdom Research and Innovation (UKRI) (Fig. 1).

UKRI funding

UKRI maintains the Gateway to Research (GtR) website as part of the Innovation and Research Strategy of the Department for Business, Energy and Industrial Strategy (BEIS). We designed a methodology to estimate what proportion of Natural Environment Research Council (NERC) and Biotechnology and Biological Sciences Research Council (BBSRC) funding goes toward ecology and how funding for the field has changed over time, using data from GtR. NERC and BBSRC are two of the nine research councils under UKRI.

Our analysis shows an increase in the amount of funding awarded to ecology projects by NERC and BBSRC between 2006 and 2021, both in current (nominal) prices, and constant prices (amounts which have been adjusted for inflation) (Fig. 2). This would seem to be good news for UK ecology. However, it is important to set this trend in the context of wider R&D funding.

The eye-opening result of this work is that whilst funding for ecological research did increase over this period, it did so at a significantly slower rate than NERC and BBSRC funding for other subjects (Fig. 3).

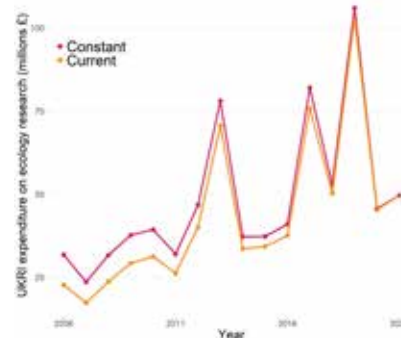


Figure 2 The change in the amount of funding awarded to ecology projects by NERC and BBSRC between 2006-2021 in current and constant prices. Inflation was calculated using the consumer price index.

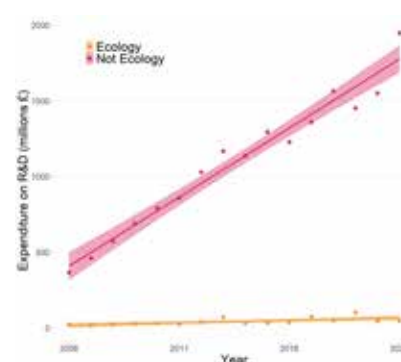


Figure 3 The change in the amount of funding awarded to ecology and non-ecology projects by NERC and BBSRC between 2006 and 2021 in current prices with a least square lines of best fit and 95% confidence intervals.

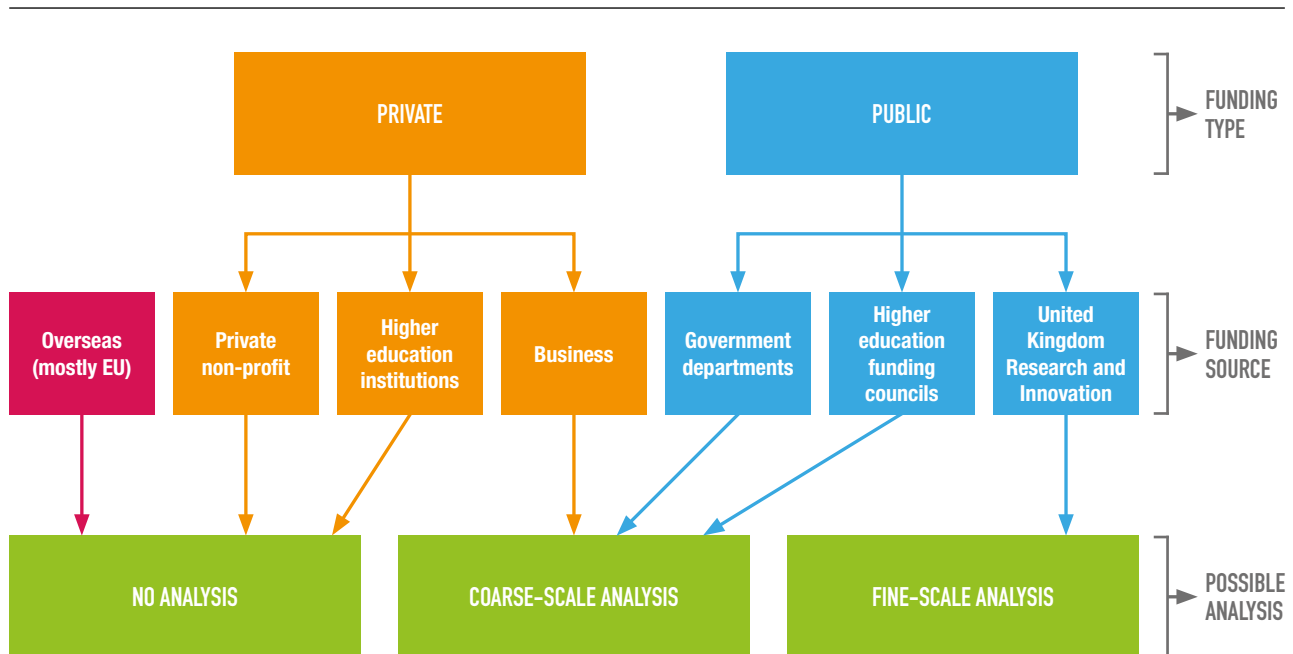


Figure 1 Sources of research funding in the UK, and what analysis was possible.

The difference in growth of UKRI funding between ecology and other subjects is worrying. This is compounded by coarse-scale analyses of other sources funding for ecology, which are presented in the full report. These suggested that ecology receives a small proportion of funding from other public and private sources, and that this small proportion is either holding steady or declining. One particularly noticeable trend was a large decline in Defra's research expenditure. All this combines to present a slightly pessimistic picture for ecology.

Opportunities and challenges

This work allows the BES to demonstrate to UKRI and other funding bodies the trajectory of funding for ecology and highlight the need to increased funding in the future. Whilst public sector funding is vital for ecology, there are opportunities to increase funding from private sources. For example, ecological consultancy work that helps businesses to mitigate risks from environmental degradation

and meet regulatory requirements generates a significant amount of valuable data. There is a role for the BES in strengthening the connections between academic and consultancy ecology. This could facilitate the flow of data between the two, allowing them to be used more in ecological research studies.

Attempting to analyse how funding for ecology research has changed over time has revealed the lack of detailed data on what disciplines and subject areas R&D funding is spent on in the UK. This makes any exhaustive and robust analysis on the relative importance placed on disciplines and subject areas difficult and makes it almost impossible for public bodies to be held to account for their R&D spending.

Currently, it is very difficult to assess the impact of changes to the UK funding landscape such as the uncertainty over the UK's association to Horizon Europe. Even if the UK's participation in Horizon Europe is

secured, the number of UK researchers in European-funded projects may take some time to get back to pre-Brexit levels because research networks have been disrupted. Without better data, changes such as this could lead to a 'silent crisis' in ecology research, where a lack of funding undermines the ability of the field to provide benefits for society and help tackle the climate and biodiversity crises, but we are not able to recognise this. Further work in this area should be a priority not just for learned societies, but also for other organisations which have a stake in UK R&D. *



GEOGRAPHY
+
ORNITHOLOGY
+
CITIZEN SCIENCE

**A CHANGE IN DIET FROM
PIGEONS TO PARAKEETS**

During the pandemic when fewer people were out and about, urban peregrines found that their usual food – pigeons – were missing. With fewer people, there was less of our waste, which meant less food for pigeons and fewer pigeons for the peregrines. So peregrine diets shifted to include other species like parakeets and starlings (see p.9). Geographer **Brandon Mak** shares his experience of working with the interdisciplinary team of ornithologists and citizen scientists who recorded these fascinating results.

(*People and Nature* doi.org/jx3m)

Who was involved in this project?

This study was led by myself, a geographer interested in the human dimensions of raptor ecology, and ornithologist Ed Drewitt who focused on the raptors' biology. We also worked with 50 citizen scientists, many of whom were birders/ornithologists themselves.

How did you find working with a group from different disciplines?

I thoroughly enjoyed every part of this project - our common interest in peregrines really kept us going. Differences between our disciplines were also refreshing as these introduced new takes to the project we otherwise might not have the confidence to pursue individually, if at all!

CROSSING FIELDS

What did you learn from others in the team that you would apply to your own work?

From seeing how birders helped each other out with tricky identifications, I have learnt how to be humble when producing science. We face many uncertainties while conducting research, and when we need help it's nice having a supportive, passionate community to turn to!



Were there any awkward moments?

When collaborating with community scientists, we sometimes had to accommodate their preferred ways of working. Veteran birders were proud of the observations they shared with us – from some we received painstakingly detailed, sometimes handwritten, notes of the peregrines' activities we then had to transcribe and reformat for conciseness. Others had to be convinced to log everything they saw, including feral pigeons, rather than only the interesting (to them) prey items.

Were there any funny experiences or surprising discoveries from this research?

With the camera always recording, we got to uncover the mystery of disappearing eggs. We captured some rare moments of peregrines accidentally breaking their eggs when shifting positions, which they then ate, shell included. This can be useful for easing concerns of suspected nest predation – or at worst, egg theft – which can occur.

On a more humorous note, we also saw how peregrines – young and adults – squabbled for food in their nests. Peregrines can be quite comical!

What advice would you give to anybody embarking on an interdisciplinary project?

Don't be afraid to pitch your idea across disciplines – you'll be surprised what common ground you can find, and being open to their different perspectives can really add value to your project. People are also usually happy to share their knowledge, especially when they are passionate about it. In the end, everyone wins!

What non ecology paper would you suggest our members read and why?

One of my favourite papers is 'Why not the city? Urban hawk watching and the end of Nature' by Christian Hunold. Detailing the everyday interactions between humans and red-tailed hawks, multi-species ethnography as utilised here unravels how humans and wildlife are part of the same ecology. Such examples challenge the nature–culture dichotomy, which is great for thinking about what urban wildlife means for society. ✨



Brandon recently completed his PhD in Geography at King's College London. His interdisciplinary research on urban peregrines in the UK examined their ecology in cities, with a focus on the relationships between humans, raptors, and their prey.

CAN PASTURE-FED LIVESTOCK FARMING IMPROVE GRASSLANDS?

Innovative beef farmers are adopting agro-ecological approaches which they believe are better for biodiversity and soils. **Lisa Norton**, UK Centre for Ecology and Hydrology and colleagues investigated the validity of these claims by comparing their grassland to those across the wider countryside.



Public concerns about the environmental impacts of meat production add to the multiple pressures already facing the livestock sector, including low income levels and a drive for large-scale tree planting on grassland. Grasslands form the dominant land cover in the UK and are integral to supporting our rural economy, but they may also be key to increasing biodiversity and maintaining and improving soil quality in the wider countryside.

In our recent study, we explored whether innovative grassland management could benefit UK farmland.

Improving the ecological health of grassland swards often means taking less action; moving away from ploughing and sowing ryegrass dominated mixtures and towards encouraging more permanent species-rich swards.

Typically, maintenance of ryegrass in agriculturally improved grasslands is dependent on high levels of artificial fertilisers which are linked with loss of

biodiversity, increased greenhouse gas emissions (GHG), land degradation, and long-term degradation of rivers and seas from nutrient runoff.

The Pasture-Fed Livestock Association (PFLA) is working to address these issues through promoting species-rich fields with increased levels of herbs and other native species and lower inputs. The primary aim of the PFLA is to feed a natural diet of 100% pasture with no supplementary grains or artificial feedstock.

Achieving this goal can be tricky, particularly during the winter months when grass growth is low and fields are vulnerable to poaching. As a result, PFLA farmers are adopting innovative grazing regimes, with many focusing on more regenerative practices, including adaptive multi-paddock grazing, long rest periods and deferred grazing.

Our study found that PFLA swards were not only taller than comparable conventionally managed fields but also botanically more diverse, containing a greater proportion of native plants and herbs such as nitrogen-fixing legumes.

Wider implications

Increasing structural and botanical diversity can benefit other species including insect pollinators, insectivorous birds and small mammals. Higher botanical and structural diversity can also provide resilience to environmental stresses, such as drought and flooding. Additionally, lower external inputs ensure livestock farms are more resilient to price changes in the fertiliser/additive markets.

If accompanied by certification (e.g. organic or Pasture For Life) the resultant produce can be marketed at a higher level. Future results of our study will explore these wider social and economic benefits for the PFLA approaches.

Our work on grassland swards and soils shows that grassland management practices, as advocated by the PFLA, are already improving the ecological condition of grasslands. Increasing uptake of these practices by the livestock sector across the UK will help towards restoring the biodiversity of agriculturally productive grassland ecosystems and will in the longer term improve carbon storage in grasslands. ✨



READ THE FULL PAPER

Can pasture-fed livestock farming practices improve the ecological condition of grassland in Great Britain? *Ecological Solutions and Evidence* doi.org/grbcjt

3

TOP TIPS

TIKTOK FOR ECOLOGISTS

Jack Walker
@dinosaurlimbs

With the modern natural environment in a state of constant change, understanding ecology has never been more necessary for everyday people. But for a science that can reach levels of incredible complexity relatively quickly, communicating this field of study to the layperson can be a challenge, especially over social media. For me, this is where TikTok stepped in.

1. Keep it simple

Gauging the level of understanding your audience innately has is essential to creating engaging content. Whenever a word seems big, a concept slightly too convoluted, or a case study too unique, don't be afraid to get simple with your explanations.

2. Work with the algorithm

The TikTok algorithm can be very picky with what it likes to promote. Sometimes it seems random, but there are a few key decisions that can increase engagement with your content:

- Avoid 'violent' terminology. Words like 'death' are quite common in sciences like ecology, but constant usage of such words risks your content being suppressed by the algorithm. Look for alternatives!
- Build off similar successful creators – there are many successful STEM accounts on TikTok, especially in the biological sciences. 'Duetting' or 'stitching' their videos to add your own insight into an interesting ecological topic is always a great way to put your knowledge out there.

3. Creativity is key

Be on the lookout for what type of video or sound is trending and keep this in mind when creating content. Mirroring your content with viral trends is a great tactic of getting more views quickly.

Don't be afraid to take inspiration from the world around you. See an interesting animal or interaction when you're out and about? Pull out your phone and start filming! People relate well to what they can easily see in their day-to-day life.



© MADE NOISE

INSPIRED BY...



BEATRIX POTTER

You may know British writer and illustrator Beatrix Potter for her creation of the much beloved character Peter Rabbit. But did you know that she was also a passionate mycologist? During her early twenties, prior to publishing her first book, she produced hundreds of botanical illustration of mushrooms and fungi. She also began collecting and observing mushroom specimens.

Potter developed a particular interest in how mushrooms reproduce, which led her to eventually write her theories and findings in a paper titled: "On the Germination of the Spores of Agaricineae," which included her illustrations.

What stood in the way of Potter and gaining scientific acclamation?

Potter attempted to submit her paper to the Linnean Society of London, the world's oldest active biological society. At the time, the society denied membership to women, did not allow them to access the scientific library and even forbade them from attending presentations of scientific papers.

As a result, her paper was 'laid on the table', an old society term meaning it was received, but not openly considered. As a result, the full paper was withdrawn and never resubmitted. However, her scientific legacy lives on through her many illustrations which are held at several British museums and consulted by mycologists to this day for their incredible accuracy.

An introduction to

OBSERVATIONAL DRAWING



Observational drawing is simply drawing what you can see. In ecology and other scientific fields, it can also mean producing clear and accurate drawings of your subject matter with additional notes. Want to improve your own drawing skills? Grab some paper and a pen or pencil, and give these exercises a go!

How do you feel about drawing?

I haven't done it in ages

I can't draw

Alright actually

Maybe skip ahead

USING SHAPES

Complicated shapes like plants and animals can be overwhelming. Try breaking your subject down into simpler shapes.



Start with these exercises

CONTINUOUS LINE DRAWING

Draw something for 1 minute without lifting your pen or pencil off the page



MEASURING THINGS OUT

To help with proportions, measure your subject then draw a box to scale & draw within the box.



DRAWING WITH THE 'WRONG' HAND

Draw something with your non-dominant hand for 2 minutes



COLOUR & TEXTURE

Once you're capturing shape & size, practice adding colour & texture. Try dots or lines for texture & different materials like pencils or watercolours for colour.



DRAWING WITH YOUR EYES CLOSED

Look at something, then close your eyes & try to draw it for 1 minute



USEFUL OBSERVATIONAL DRAWINGS ARE

Accurate - this doesn't mean they need to be photorealistic

Big - use all the space you have

Colourful - use colour whenever possible

Detailed - add the details you need

Explained - use notes to explain and expand on the drawings



CAPTURING ECOLOGY

2023

20
NEWS & VIEWS



Takeout by Sam Eberhard
Overall student winner 2022

PHOTOGRAPHY COMPETITION

GET YOUR CAMERAS READY, CAPTURING ECOLOGY IS OPENING EARLY JUNE!

Our popular photography competition is back and bigger than ever, with new categories, new prizes and new judges. Enter to promote your work, yourself and your discipline.

The overall winner of the competition will receive £750, [a fisheye lens camera](#) from Lomography and free membership for a year.

Two runners up will receive £250 and free membership for a year.

Each category will have two winners: an overall winner and a student winner. Category winners receive a £100 prize.

There are six categories that you can enter, including a brand new plants and fungi category:

Animals: Individuals and Populations

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

Networks in Nature

Demonstrate the relationships within an ecosystem or community. There should be a clear emphasis on interactions between different species.

People and Nature

Images in this category should provide a unique take on the relationships between people and nature, both positive and negative.

Plants and Fungi: Individuals and Populations

Showcase the power of plants or the fascination of fungi. As with the animal category, we want to see stunning images with the focus on one species.

The Bigger Picture

Zoom out and show us ecology on a larger scale. We are looking for photos that reveal the awe and wonder of our planet.

Ecologists in Action

Show us *you* in action! We want to see what being an ecologist actually looks like, whether out in the field or in the lab. Share your story to inspire others and highlight the important work that ecologists do.

Your photos will be judged by our panel of well-respected professional photographers and ecologists. This year we welcome new judges, including Kalyani Lodhia and Richard Bardgett.

Kalyani is a photographer and filmmaker based in London with a focus on travel and wildlife. She currently works as an assistant producer at the BBC's Natural History Unit on an exciting new wildlife series for National Geographic. In her free time, she travels solo, sharing stories from cultures and wildlife around the world.



"I'M EXCITED TO SEE IMAGES THAT TELL A STORY AND REALLY HIGHLIGHT THE CHARACTER OF THE SUBJECT, WHETHER THAT'S AN ANIMAL, PLANT OR EVEN LANDSCAPE!"

Richard Bardgett is an ecologist and past President of the BES, whose work takes him to many parts of the world. He rarely travels without his camera, which he uses to document his work, but also to capture the wonder of the places he visits and the challenges they face. Richard is executive editor of *Journal of Ecology* and will be looking out for images that showcase the fascination of plants.



"PLANTS DISPLAY A REMARKABLE DIVERSITY OF COLOUR AND FORM, PROVIDING A STRIKING VISUAL REPRESENTATION OF THE ENVIRONMENTS IN WHICH THEY LIVE AND THEIR CHALLENGES. A PERFECT SUBJECT FOR PHOTOGRAPHY."

Submissions close mid-July so you have six weeks to get snapping! Visit www.britishecologicalsociety.org/annual-photographic-competition for full details. *

Our competition is very popular among the global ecology community and receives significant media attention every year, including the BBC, The Guardian and CNN. If you would like to be a sponsor for this year's competition, contact Paul Bower, our Senior Fundraising and Development Manager.

We'd like to thank Dryad, an open data publishing platform and a community committed to the open availability and routine re-use of all research data who are one of our competitions sponsors this year.





MAKING BIODIVERSITY MAINSTREAM

We can't address the drivers of species decline without shifting the values of society towards a more nature positive outlook. The same way the climate movement has reached popular momentum, we need to mainstream biodiversity.

Sallie Bailey and **Jack Bloodworth** share ideas on how we can get biodiversity on the agenda, both in government policy and wider society.





MAINSTREAMING AS A TOOL FOR CHANGE

Scientists and policy makers are increasingly recognising the need for actions that protect or enhance biodiversity to be included in policy areas where it has not traditionally been considered. This is particularly important for policies that rely on, or have an impact on biodiversity, especially sectors that are extractive and productive, from tourism to energy. Collectively, biodiversity needs to be 'mainstreamed'.

The 2019 IPBES Global Assessment Report notes that drastically lessening the impact of the direct drivers of biodiversity decline cannot be achieved without transformative change that addresses indirect drivers. These indirect drivers relate to a range of economic and political influences that are underpinned by societal values. What this means in simple terms is we cannot comprehensively address the drivers of biodiversity decline without shifting the values of society towards a more nature positive outlook.

For mainstreaming to be a key catalyst of transformative change, it needs to be achieved at both a political and societal level, as society is highly influential in policy. The role of scientists in mainstreaming is therefore two-fold: to directly advise policy makers and to inform citizens' understanding on why change is needed and how it can be enacted.

Shifting societal and political values is no easy task, with many potential barriers to progress. Internationally, this is starting to be addressed. Mainstreaming takes a prominent place in the new Kunming-Montreal Global Biodiversity Framework, with targets that specifically outline how mainstreaming biodiversity can help meet the goals of the framework. However, there are likely to be specific barriers to mainstreaming at the national and sub-national level that need to be identified and overcome with innovative solutions.

In the same week as the publication of the new Global Biodiversity Framework, the Scottish Government also published its new draft Biodiversity Strategy.

“Shifting societal and political values is no easy task”

Its main vision is that “By 2045, Scotland will have restored and regenerated biodiversity across our land, freshwater and seas”, and to achieve this it has a key milestone of “Halting biodiversity loss by 2030”. The need to systematically mainstream biodiversity across all sectors is identified as a key lesson learned from the previous strategy.

BES ANNUAL MEETING WORKSHOP

When we learned that the BES 2022 Annual Meeting was to be held in Edinburgh, it seemed like a golden opportunity to hear the views of scientists, the third sector, eNGOs and science communicators from across Scotland, the UK and beyond on the barriers and solutions to mainstreaming. The outputs from the workshop could then be used to inform our approach to biodiversity mainstreaming when delivering the Scottish Biodiversity Strategy.

Attendees were split into small groups to draw upon the wide range of expertise in the room and enable inclusive discussion. Participants were asked to answer the following two questions:

1. What are the barriers and potential solutions to mainstreaming biodiversity across a diverse range of policy areas?
2. What are the barriers and potential solutions to mainstreaming biodiversity within the public consciousness?



MAINSTREAMING IN GOVERNMENT POLICY

From participant responses we were able to draw out four key themes:

- Availability of science and evidence
- Translating evidence into policy
- Government policy and practice
- Valuing biodiversity in economic growth

Barriers to integrating biodiversity across government departments and policies included a lack of data on biodiversity trends and the efficacy of actions intending to reverse biodiversity decline. In addition, the complexity of the concepts around biodiversity leads to challenges in translating solutions to actions on the ground. In effect, the data we have is often not effective in informing policy solutions relating to biodiversity. The key solutions offered to address this are to build in policy requirements at the start of research projects and to develop evidenced targets that can be tracked using simple and easy to understand metrics.

For the evidence that is available, there are barriers to effectively translating it into policy. Biodiversity is often seen in the global context and difficult to frame at the local level. Improving the communication of science and making it locally relevant was the primary solution suggested.

“If we do not get the message across, then positive change is unlikely to happen at the rate needed.”

Government organisational structures were noted as a barrier to biodiversity being recognised as a cross-department issue. More fundamentally however, poor understanding of the impact of biodiversity loss was perceived to be a factor in actions for short-term economic growth being prioritised over actions to improve biodiversity. Where biodiversity was not valued, motivation to embed actions for biodiversity within policy were not taken. Talking simply, biodiversity needs to be a greater priority across government. Adopting systems

thinking in government was seen as a key solution which would bring the value of biodiversity front and centre across multiple policy areas. To be fully effective, this approach should be linked with the improved data and communications solutions mentioned previously.

There were a cluster of barriers identified that highlighted the tension between economic growth and biodiversity, with many feeling the importance of biodiversity in economic growth is undervalued. Most of the solutions offered were centred on quantifying and accounting for the true value of biodiversity in economic growth through payments for ecosystem services and integrating the cost of biodiversity protection in development.



MAINSTREAMING IN SOCIETY

Perhaps unsurprisingly, some of the barriers and solutions outlined as answers to policy mainstreaming could also be applied to societal mainstreaming. Responses aligned to three broad themes:

- Communication
- Wider societal issues
- Education

Members of the public do not understand what biodiversity is and its importance in their lives. As with translating evidence, this was put down to challenges in communicating complex issues and viable solutions. Many participants felt much could be learned from approaches that led to successes for the climate change movement, including simplifying messages and solutions.

“ Citizens need to have access to green spaces and be actively involved in decision making ”

Given that UK biodiversity has one of the lowest biodiversity intactness indices in the world, poor access to nature was seen as a barrier to taking action. Why would people care if they do not know what intact biodiversity looks like? Citizens need to have access to green spaces and be actively involved in decision making through the co-creation of solutions. To many, biodiversity is an abstract concept that seemingly does not impact their day-to-day lives.

This follows on to poor nature literacy, particularly a lack of understanding of our reliance on healthy biodiversity and the impacts of consumer choices on biodiversity. Many participants thought that the way biodiversity is taught in schools could be strengthened, noting that children only learn about charismatic species, and not UK species. The general public also needs to be better informed on the impacts of their consumption habits so that they can make better consumer choices.

MAINSTREAM SOCIETY AND POLICY WILL FOLLOW!

What is clear is that mainstreaming across policy and society is not mutually exclusive. Many of the responses were common to both questions and some solutions, such as clearer science communication, are likely to facilitate mainstreaming in both policy and society. We would argue that mainstreaming in society is likely to be more impactful and influential than initially focusing on mainstreaming in policy. We suggest that the most important solution is helping society understand the need for change, thereby influencing wholesale action at all levels. If we can convince society of the need for change, policy will follow.

“ How do we, as scientists, influence society to want to change? ”

But how do we do this? It is easy for us to offer solutions as the informed and the engaged. One of the strengths, but also weaknesses, of our workshop is that we held it at a conference attended by those most 'in the know', with attendees that had self-selected to be there and were already bought in to the need to reverse the trend of biodiversity decline. How would the results have differed if we re-ran the workshop with a more representative attendance? We can look to initiatives such as the recently published People's Plan for Nature, which aimed to gather views across a wider section of society to produce 26 calls for action. Using a People's Assembly, the plan for nature was developed by directly informing participants on the importance of nature, what is driving its decline and tools for using it sustainably. After being given the information, the assembly deliberated to produce the calls for action by themselves, without expert input.





It might be suggested we look towards mass media to get the message across; the likes of Blue Planet II and An Inconvenient Truth are often put forward as examples of film making that have influenced positive behaviour change with respect to environmental issues. However, there is evidence to suggest that while these types of documentaries go some way in informing the public, they often do not translate to actual substantial and transformative behavioural change.

Our workshop findings and the evidence generated by citizen focused projects such as the People's Plan for Nature highlight the need for society to understand its own dependence on biodiversity. Everyone needs to understand that biodiversity is declining and what the impact of this decline will be. So a challenge to you all reading this is: how do we, as scientists, science policy advisors, and consultants, influence society to WANT to change outcomes for biodiversity through:

- Awareness of the need for change and
- Behaviours that will result in change?

If we get this right, there is a good chance the rest will follow. *

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ACKNOWLEDGEMENTS

We'd like to thank BES Annual Meeting organising committee for allowing us to hold this workshop, and most importantly, we'd like to express our gratitude to all participants in the workshop for willingness to give up their time and input. We hope by summarising the discussion it will form a useful resource for all those who participated and others looking to change the fate of biodiversity.



Dr Sallie Bailey FICFor

Sallie is Deputy Chief Science Advisor for Scottish Government in the areas of environment, natural resources and agriculture, bringing scientific evidence to the centre of decision-making in government and to provide oversight and assurance of science capability and activities in these policy areas. Sallie has had leadership roles in natural resource management and science / policy advice. Previously, she was a research scientist in California, USA focusing on spatial ecology, biodiversity and ecosystems.



Dr Jack Bloodworth

Jack Bloodworth is a Principal Science Advisor within the Rural & Environmental Sciences and Analytical Services (RESAS) Division of the Scottish Government. Living in rural Perthshire, he is an environmental scientist and geographer with a specialist background in water quality and environmental contaminants, having previously worked in government agencies.

EARLY CAREER RESEARCHER AWARDS

Our seven journals each award an annual prize to a paper written by a researcher at the start of their career. This year's exceptional winning papers span topics as diverse as mapping mosquito borne diseases, the importance of under-threat mosses in cloud forests, and identifying areas sensitive to plant invasions.



associated with a more acquisitive strategy, while a deeper water uptake with a more conservative strategy. The study provides an improved integrative perspective on plant functional strategies related to water and nutrient use in dryland environments, where the low availability of soil resources represents a limiting factor for plant survival and is thus a main driver of species competition and coexistence.

Angela Illuminati grew up in the Apennines in the centre of Italy. As a teenager she loved mathematics, astronomy, and philosophy and, under pristine skies full of stars, her passion for nature bloomed. She combined her love of nature and science by reading natural sciences (Perugia, Italy), motivated by the ever-growing issues related to environmental pollution and nature conservation. During her early years at university, Angela

became passionate about plant ecology and further specialised in this field during her master's at the University of Bologna. After carrying out short stays at different research centres in Europe, she commenced her PhD thesis in Spain at Rey Juan Carlos University (URJC, Madrid). She fulfilled her PhD with honours in September 2022 and is currently a post-doctoral researcher in biodiversity and conservation, URJC.

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FEATURE

HARPER PRIZE
ANGELA ILLUMINATI
UNIVERSIDAD REY JUAN CARLOS

Coordination between water uptake depth and the leaf economic spectrum in a Mediterranean shrubland

Journal of Ecology

doi.org/10.1111/jec.15948

Angela's study gives a new perspective on the links between water and nutrient use in semiarid Mediterranean plant communities. She found evidence of distinct soil water niche partitioning among 23 coexisting species. This phenomenon has been detected in several habitats, but only a few studies had previously considered it from a plant community perspective. Specifically, they detected coordination between soil water uptake depth and leaf-level carbon- and nutrient-use strategies along the Leaf Economics Spectrum, with a shallow water uptake pattern





SOUTHWOOD PRIZE

PAULA PRIST ECOHEALTH ALLIANCE

Roads and forest edges facilitate yellow fever virus dispersion

Journal of Applied Ecology

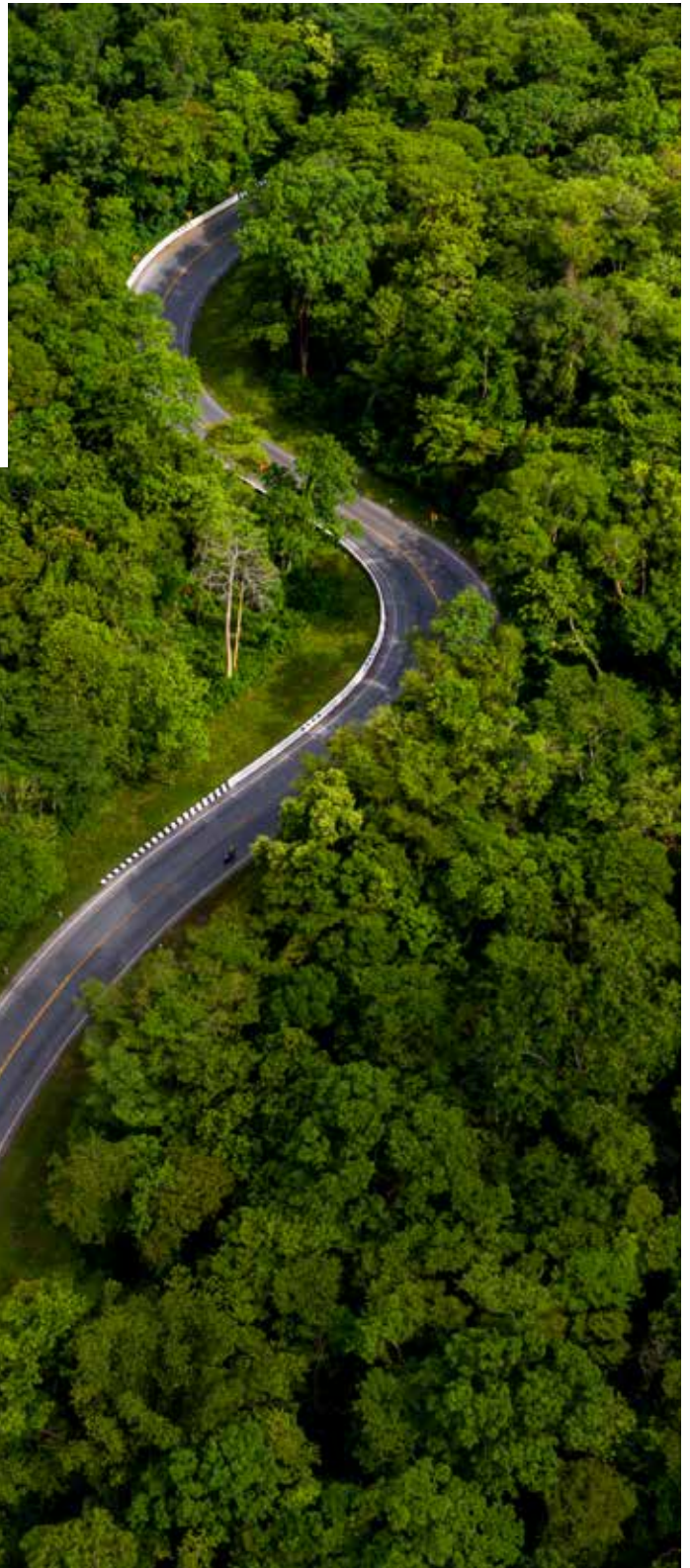
doi.org/10.1111/j.1365-2745.2022.15927.x

Much has been said about the connections between the biodiversity and the human health crises, yet, practical evidence of these connections remains relatively rare. Paula and her co-authors explored how landscape affects yellow fever virus dispersion through mosquitoes. They discovered that the yellow fever virus disperses on average 1.42 km/day, favouring roads next to forest and forest edges along agricultural areas to disperse. In contrast, core areas of forest were found to be important barriers for virus movement.

Crucially, Paula and her colleagues demonstrated that the maintenance of large blocks of forest can help to inhibit this spread, thereby generating information that can guide forest restoration and landscape management to amplify the health benefits of these interventions. Understanding this can contribute to better landscape planning and better organisation of vaccination campaigns. As such, this work by Paula and colleagues

not only advances the field of ecology, showing how the loss of biodiversity can enhance disease spread, but also leads to concrete management recommendations.

Originally from Brazil, Paula is currently a scientist at EcoHealth Alliance, USA. She tries to understand the impacts of land use change on human health through her research, with a focus on finding solutions to prevent epidemics of zoonotic diseases and to enhance the maintenance of human health in tropical areas.





HALDANE PRIZE
AYA PERMIN
UNIVERSITY OF COPENHAGEN,
DENMARK

High nitrogen-fixing rates associated with ground-covering mosses in a tropical mountain cloud forest will decrease drastically in a future climate

Functional Ecology

doi.org/gqhm62

The role of mosses and liverworts in ecosystem nitrogen cycling has been largely enigmatic. Aya has shed new light on their significance, focusing on tropical mountain cloud forests.

Although a critical nutrient for plant productivity and growth in many ecosystems, nitrogen availability is often limited. This has led to the evolution of partnerships between certain plants and nitrogen-fixing bacteria. These bacteria convert nitrogen from the atmosphere into plant-assimilable forms, thereby enhancing plant growth and productivity.

Aya's research measured the nitrogen fixation rates of a range of Peruvian ground-covering mosses and liverworts. Surprisingly, she found the nitrogen fixation rates to be relatively high, with wide variation in nitrogen fixation capabilities across the species tested. In fact, the amounts fixed

by tropical mountain cloud forest bryophytes were comparable to the amount contributed by other major nitrogen input pathways in these ecosystems, such as N deposition. Aya's investigation also examined the potential role of bryophyte nitrogen fixation in tropical mountain cloud forests under predicted environmental conditions. While temperature did not have a significant impact, moisture was found to be a critical factor, with drier conditions leading to lower rates of nitrogen fixation in the bryophytes tested.

These findings emphasize the underappreciated yet significant role of bryophyte-mediated nitrogen fixation in tropical mountain cloud forest ecosystems, with it being at least equivalent to that of mosses in boreal systems. If, as Aya's investigation suggests, nitrogen fixation by bryophytes will decline with decreased precipitation, this may have wider

downstream impacts on ecosystem productivity and soil carbon sequestration.

Aya's research underscores the need for further research into the underappreciated roles of bryophytes in tropical mountain cloud forest and other wet forest ecosystems. Such research could inform conservation and management efforts aimed at preserving these critical ecosystems in the face of impending environmental change.

Aya does not think she will ever get tired of pondering moss ecology... Growing up in the Danish countryside on an organic commune, she was exposed from an early age to the idea of seeing things as a part of and connected to a bigger context. For her, moss ecology, including how moss interacts with its environment, has many fascinating and still undiscovered aspects.



ELTON PRIZE

PABLO AUGUSTO P. ANTIQUEIRA
UNIVERSITY OF CAMPINAS,
BRAZIL

Warming and top predator loss drive direct and indirect effects on multiple trophic groups within and across ecosystems

Journal of Animal Ecology

doi.org/10.1111/j.1365-2656.2022.02017.x

The loss of top predators - trophic downgrading - often has dramatic consequences on the organisation of communities. Similarly, climatic warming is disrupting communities and ecosystems in unpredictable ways. Addressing how trophic downgrading and warming interact is a daunting challenge, especially when the effects can cascade across ecosystem boundaries, say from a grassland to a pond. It's hard to imagine what an experiment in a place like the Serengeti might look like if we were interested in removing lions from some plots but not others and experimentally warming some plots but not others. What's needed is a more tractable system. Enter the tank-bromeliad system. They support a diverse fauna of micro- and macro-organisms, both in the rainwater-fed aquatic ecosystem in the central cup, or the tank, and in the terrestrial ecosystem that is not submerged in water.

Pablo Augusto Antiqueira and colleagues took advantage of tractable tank-bromeliad systems to explore how trophic downgrading and warming affect diverse aquatic and terrestrial communities. The top predators in the tank-bromeliad system are damselfly and horsefly larvae, which are a little easier to manipulate than lions on the Serengeti. Pablo and his colleagues came up with an innovative way to warm these ecosystems: they used aquarium heaters to increase temperatures by either 2° or 4° C above ambient temperatures. (Figure 1 – a conceptual schematic of the tank-bromeliad system – is worthy of an award itself). They found that the loss of top predators affected different components of the system in a variety of

anticipated and not so anticipated ways. For instance, the loss of the top predators increased the richness and abundance of filter feeders but decreased the richness of algae in the tank bromeliads. Warming in contrast did not affect the aquatic micro- or macro-organisms but did lead to an increase in the abundance of web-building terrestrial spiders. Taken together, their results highlight how trophic downgrading and warming might affect species in direct and indirect ways, and across ecosystem boundaries. Pablo and colleagues have provided a clear framework for future experiments, be they with lions or otherwise, to explore how multiple anthropogenic drivers influence the structure of communities and the functioning of ecosystems.

Pablo is interested in observational and experimental approaches that answer questions about the factors that regulate community structure and ecosystem functioning. He completed this research as a postdoctoral researcher working with Dr Gustavo Quevedo Romero at the State University of Campinas, São Paulo, Brazil. He is currently a postdoctoral fellow at the same university, where he studies anthropogenic changes, and has also started to look at human impacts on biodiversity in urban environments. Recently, he has explored how predicted changes in precipitation patterns affect multiple aspects of biodiversity, such as food web and community components, diversity patterns of micro- and macro-organisms, and ecosystem functioning.





ROBERT MAY PRIZE

TANYA STRYDOM
UNIVERSITÉ DE MONTRÉAL,
CANADA

Food web reconstruction through phylogenetic transfer of low-rank network representation

Methods in Ecology and Evolution

doi.org/10.1111/1365-3113.12179

Despite their importance in ecological processes, collecting data on ecological interactions is a challenging task. For this reason, large parts of the world have a data deficit when it comes to species interactions and how the resulting networks are structured.

Tanya and her team present a general method to infer potential trophic interactions using a machine learning method, which applies the mechanisms learned from one problem onto another. They assembled a metaweb for Canadian mammals derived from interactions in the European food web, despite only 4% of common species being shared between

the two locations. The predictive model correctly recovered 91% of known interactions. The framework is robust enough to be used when the known network has incomplete or spurious data, making it ideal for filling gaps. The team have also provided guidance on how to adapt the framework to make it more generally applicable.

Tanya's initial training at the University of Pretoria and a M.Sc. at Stockholm University, focused on plant ecology. She was particularly interested in the effect of microclimates on plant communities. Despite enjoying the more practical nature of her previous work, Tanya has always had an avid interest in the scarier (mathematical and computational) side of ecology, leading her to her current position as a Ph.D. candidate under the supervision of Timothée Poisot at the Université de Montréal.

Tanya's current research consists primarily in spending a lot of time thinking and talking about the information contained in ecological networks, and how this information allows us to predict interactions. A working group funded by the Canadian Institute of Ecology and Evolution served as a catalyst to the development of the graph embedding and transfer learning framework. The opportunity to develop methods and tools that can be used by others is something that Tanya finds to be a particularly rewarding aspect of her work and something she hopes to pursue more of in the future.



RACHEL CARSON PRIZE

MICHELLE EVANS
CNRS, FRANCE & UNIVERSITY
OF GEORGIA, USA

Socio-ecological dynamics in urban systems: An integrative approach to mosquito-borne disease in Bengaluru, India

People and Nature

doi.org/10.1016/j.pand.2023.100000

The winner of this year's Rachel Carson prize combines field sampling of mosquitoes with in-depth interviews of people to better understand the occurrence of mosquito-borne disease in urban areas. Conducted in Sarjapur, in Karnataka, India, an area experiencing a high burden of such disease, the research showed that people's experiences of mosquitoes were mediated by how they moved around and used outdoor space. The combination of ecological and social science approaches provided insights that have important implications for managing mosquito-borne diseases

Like most ecologists, Michelle was interested in nature and the environment from a young age. It was during her bachelor's degree at Washington University in St. Louis that she became aware of the lack of humans in our imagining of nature, in particular the ways in



which science and ecology have at times been harmful to human communities. Her curiosity led her to want to bridge both the social and natural sciences. She graduated with a dual major in ecology and African studies and went on to serve as an Agroforestry Advisor with the Peace Corps in Guinea, West Africa.

During this time, witnessing the generations of expertise that her colleagues and neighbours possessed, Michelle became disillusioned with how Western conservation, as she had learned and experienced it, seemed to ignore and even disrupt local communities. She pursued a doctoral degree in integrative conservation and ecology focusing on disease ecology. This allowed her to continue to explore the theory and natural history that had sparked her initial interest in ecology, whilst providing the perspective and social science tools to explore new ways of 'doing ecology' that were more inclusive.

Michelle is currently designing predictive models of infectious diseases for district- and community-level health systems in a rural district of southeast Madagascar, in partnership with the Madagascar Ministry of Health and a health-system strengthening NGO, Pivot. The team will use the integrative approaches piloted in the *People and Nature* study to develop new conceptualizations of disease systems that take into account a plurality of perspectives from health practitioners, researchers, and health systems specialists.



GEORGINA MACE PRIZE

LUKE POTGIETER
UNIVERSITY OF TORONTO-
SCARBOROUGH, CANADA

Prioritizing sites for terrestrial
invasive alien plant management
in urban ecosystems

Ecological Solutions and Evidence

doi.org/10.1016/j.ecolsol.2023.100007

Rapid urbanisation is placing increased pressure on natural, restored and designed ecosystems to provide services for growing human populations.

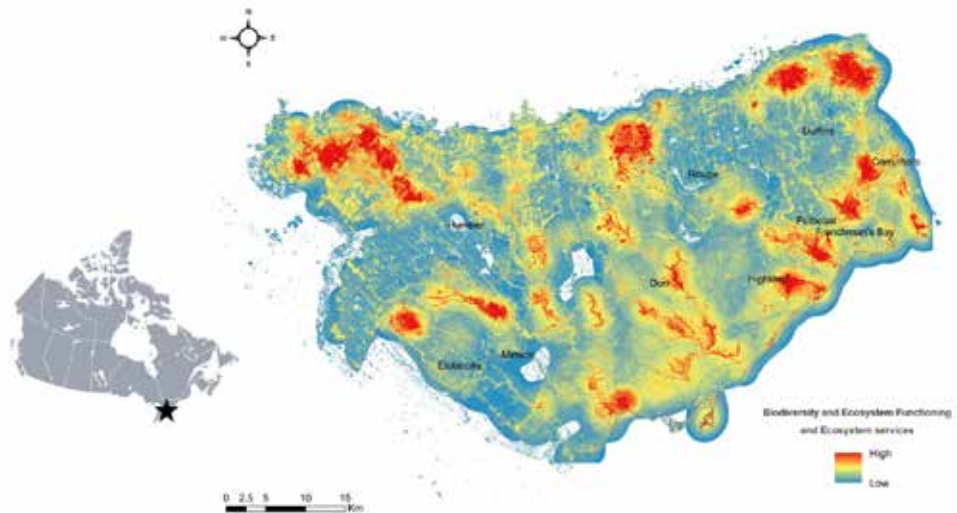
The establishment and spread of invasive non-native species within and around urban areas threaten biodiversity and ecosystem functioning and the services they provide.

In this study, Luke and colleagues developed a strategic, spatial prioritisation approach for identifying sites most vulnerable to new or expanding terrestrial non-native invasions in urban landscapes. Consulting with local conservation authorities, they developed criteria to inform their prioritisation scheme, spanning biodiversity and ecosystem services measurements. The team then compared the areas their analysis showed were sensitive to invasion with the range of a particularly invasive plant species to show that many of the areas sensitive to invasion were indeed already invaded. Ultimately, the research yielded spatially explicit recommendations on where managers should focus their plant invasion control and prevention efforts.

This exciting study combines aspects of social science, geography and ecology to produce

research that can help managers make better informed decisions. The critical importance of studies like this, that help managers understand where resources can be focused to gain the most benefit per effort spent in a world where resource is increasingly scarce, impressed the judges. Lead Editor Holly Jones was especially impressed by how the approach can be more broadly applied by others looking to prioritise management in areas beyond their study region and at other spatial scales.

Luke became interested in invasive species at an early age when the diversity surrounding the farm he lived on just outside Cape Town, South Africa, became increasingly transformed for agriculture and invasive species established themselves as regular features of the landscape. His winning article was part of a broader project with the local conservation authority in Toronto, Canada, which he worked on during the COVID-19 pandemic, and he has since drawn from the approaches used in his study for several subsequent projects in cities across South Africa. ✨



Priority sites sensitive to new or expanding terrestrial alien plant invasions across the Toronto region based on biodiversity importance and ecosystem functioning, and the provision of ecosystem services.

YOUR SOCIETY

NOTICE BOARD



INVASION SCIENCE

IMPROVING THE CONTRIBUTION OF INVASION SCIENCE TO POLICY AND MANAGEMENT

◆ TUESDAY 20 JUNE 2023

📍 LLANDUDNO, NORTH WALES (IN PERSON ONLY)

This one day in-person event will bring together academics, practitioners and policy makers to discuss and share ideas between different sectors of invasion science, and will consist of keynote speakers, early career networking sessions, updates on GB policy and lightning talks from researchers and practitioners.



MACROECOLOGY GROUP

Things are really gearing up for our annual Macroecology SIG Meeting, #2023BESMacroBrum, which is being held at the University of Birmingham on 12-13 July. We have two amazing plenary speakers lined up; Prof. Cang Hui, Stellenbosch University, South Africa, and Dr Shan Huang, University of Birmingham, UK. There will also be a Student Plenary, as well as a poster session and workshops. The conference will be a hybrid event again this year, so we are excited to have a diverse range of people able to attend.

Although registration for the conference is due to be closed before this issue of *The Niche* is published, if you would like to join us, please do check the Eventbrite page just in case places are still available! And if you aren't able to register, there will be lots of updates via twitter, so be sure to follow the BES Macro twitter account (@BESMacroecol) and #2023BESMacroBrum. As always, if you have any questions or you want to send anything out to the mailing list (e.g. job opportunities), please email macro@britishecologicalsociety.org. To join the list, see our SIG's BES webpage or visit <https://tinyurl.com/BESMacroMailingList>



FOREST ECOLOGY GROUP

Do you have a passion for science communication and love talking science through a range of social media platforms? Do you also love forest ecology?! Then the Forest Ecology SIG needs you! We are looking for an enthusiastic new member to join our SIG committee and run our social media channels and help run our website. Interested? Get in touch via our Twitter @BESForests or forest@britishecologicalsociety.org



SPECIAL INTEREST GROUPS

Our volunteer groups form communities around the many different areas of ecology and organise meetings and events throughout the year.

To join one of our groups and hear more about their events and activities, please head to our website, or give them a follow on Twitter.



AGRICULTURAL ECOLOGY GROUP

@bes_aeg

Facilitates knowledge exchange between both ecologists and academics working in agricultural systems and those working in the food system in the widest sense including conservationists, farmers, social scientists and policy makers.



AQUATIC ECOLOGY GROUP

@BES_AquaEco

Brings together all areas of aquatic ecology to promote and facilitate interdisciplinary working.



CITIZEN SCIENCE GROUP

@BESCitSci

Provides a forum for sharing details of current citizen science in ecology, and as a community to foster and support creativity in research via citizen science.



CLIMATE CHANGE GROUP

@BESClimate

Fosters a vibrant community of ecologists who are all working on climate change issues. This includes a full range of climate change impacts, adaptation and mitigation and related topics, relevant to ecology.



CONSERVATION ECOLOGY GROUP

@BESConservation

Provides a platform for facilitating exchange between theoretical ecologists, applied ecologists and practitioners interested in conservation issues.



ECOLOGICAL GENETICS GROUP

@BES_EGG

Develops the community of ecologists working on ecological genetics issues and provides a forum for discussion on ecological genetics.



FOREST ECOLOGY GROUP

@BESForests

Stimulate discussion on all aspects of forest ecology, in biomes from boreal to tropical, including both natural and managed systems.



INVASION SCIENCE

@BESInvasionSci

Provides a network to connect researchers and practitioners both nationally and internationally, who work in the field of invasion science.



MACROECOLOGY GROUP

@BESMacroecol

Provide a forum to unite researchers who work in, or are influenced by, macroecology, facilitate inter-disciplinary collaboration and showcase methodological advances.



MICROBIAL ECOLOGY GROUP

@BES_Microbial

Guide the synthesis of research investigating the role of microbes in organismal and ecosystem function, achieved through regular meetings and workshops.



MOVEMENT ECOLOGY GROUP

@BES_Move_SIG

Provides a platform for facilitating exchange and collaborations in the wide-ranging, cross-disciplinary field of movement ecology research.



PALAEOECOLOGY GROUP

@BES_Palaeo

Improves exchange between palaeoecology and ecology to encourage more integrative use of long-term ecological data.



PARASITES & PATHOGENS GROUP

@ParasiteSIG

Provides a forum for parasite and pathogen ecologists and evolutionary biologists to make and maintain contacts and exchange and discuss ideas.



PEATLANDS RESEARCH GROUP

@BES_Peat

Forum for exchange of information between ecologists, conservationists, land managers, policy makers, and others interested in peat and peatlands landscapes.



PLANT ENVIRONMENTAL PHYSIOLOGY GROUP

@PEPG_SIG

Advance and promote the science and practice of plant environmental physiology.



PLANTS SOILS ECOSYSTEMS

@BESPlantSoilEco

Promote research on plant-soil interactions and their role in ecosystems through workshops, symposia, and events.



QUANTITATIVE ECOLOGY GROUP

@BES_QE_SIG

Provides a forum to advance quantitative ecology and support quantitative skills development for all ecologists.



TEACHING AND LEARNING GROUP

@BES_TLSIG

Supports those who teach and learn ecological sciences, in the classroom, field and lab.



TROPICAL ECOLOGY GROUP

@BES_Tropical

Promote and facilitate communication and interaction between tropical ecologists, practitioners and policy.

ANNUAL MEETING

ANNOUNCING BES2023 PLENARY SPEAKERS

The BES Annual Meeting in Belfast (12-15 December) will be a highlight in the ecology calendar – a celebration of science from across the globe, a chance to explore the latest research and to meet other ecologists in a welcoming space. At the core of our Annual Meeting, there are four internationally renowned plenary speakers, and we are delighted to announce our line-up for 2023.

Jane Stout will be delivering the 12 Months in Ecology plenary, a personal reflection on the important topical issues affecting ecologists and their work over the past year. Jane's work as a Professor at Trinity College Dublin focuses on understanding complexities of natural ecosystems and interactions between nature and people. She is also the co-founder of All-Ireland Pollinator Plan and Natural Capital Ireland.



Stuart Davies will be delivering the Georgina Mace Lecture, a session named in honour of the visionary conservation ecologist and first female president of the BES. Stuart leads the Smithsonian Forest Global Earth Observatory, a network of 66 large-scale forest research sites in 27 countries which monitor the growth and survival of approximately seven million trees. He holds the Frank Levinson Chair in Global Forest Science and is a Senior Staff Scientist at the Smithsonian Tropical Research Institute.



Isabella Tree will be delivering the BES Lecture. Isabella is an award-winning journalist and author. Her book *Wilding*, the story of the ambitious journey she and her husband the conservationist Charlie Burrell undertook to rewild their farm, has sold quarter of a million copies worldwide and been translated into eight languages. She served on the Mayor of London's 2022/3 Rewilding London Task Force and has been awarded a CIEEM Medal for her contribution to ecology and environmental management, and the Royal Geographical Society's Ness Award.



Finally, the presidential address will be delivered by current BES President **Yadvinder Malhi**. Since being elected to the role in 2020 Yadvinder has spearheaded the Future of Ecological Research in the UK report and overseen the new BES strategic plan, as well as being a vocal champion for many of the BES's achievements during his time as president. Outside of the BES, Yadvinder is a Professor at the University of Oxford and a Fellow of the Royal Society.



THEMATIC SESSIONS

Thematic sessions are an important opportunity for members of the community to shape the programme of the Annual Meeting.

Each year these sessions provide a platform for the exploration of particularly timely, innovative, and important questions in ecology, and for highlighting the integration of disciplines. BES2023 will be no exception with key areas identified including conservation genetics, fire ecology, and green finance and renewable energy.

WORKSHOPS

Workshops at the Annual Meeting are interactive sessions that encourage networking, skills development, and creative thinking. At past meetings these have included statistical training, policy debates, grant-writing, publishing, career development, and public engagement.

This year workshops will include an online Early Careers Day, a grants workshop providing writing tips for our new portfolio, opportunities to speak to reviewers from BES journals and practitioner focused publication workshops.

The full programme of BES2023 thematic sessions and workshops will be announced in July.

CALL FOR ABSTRACTS

We invite you to present your work to the global ecological community, by submitting an abstract through our open call for BES2023.

Last year over 900 ecologists from all career stages delivered oral and poster presentations both online and in-person.

The call for abstracts will open in July and close at 17:00 (BST), Wednesday 6 September.



ANNUAL MEETING 2023

12-15 December
ICC Belfast
Northern Ireland
#BES2023



**BRITISH
ECOLOGICAL
SOCIETY**

BES2022 was our largest Annual Meeting to date with over 1400 ecologists from all over the world coming together to share, learn and discuss cutting-edge ecological science.

This December join us in Belfast for an inspiring programme of talks, workshops and networking events suitable for all career stages: researchers, practitioners, and policy makers alike. Whether this is your first Annual Meeting or you've been coming along for years, BES2023 will be one not to miss!

FOR MORE INFORMATION VISIT

britishecologicalsociety.org/events/bes-annual-meeting-2023
or get in touch: events@britishecologicalsociety.org

This year we are delighted to be returning to Belfast, the capital of Northern Ireland. We would like to thank Belfast City Council, Tourism Northern Ireland and Visit Belfast for their support of the BES Annual Meeting 2023.



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Belfast**



**TOURISM
NORTHERN
IRELAND**

WHAT'S IT LIKE SITTING ON A BES COMMITTEE?

Fred Windsor

Grants Committee member since 2020

Lecturer in Ecology, Cardiff University

@Fred_Windsor

COULD YOU BRIEFLY TELL US ABOUT YOUR RESEARCH AND CAREER?

I started my career as a freshwater ecologist, working in a range of different study systems – from pristine alpine streams to heavily urbanised lowland rivers. During this time, I became increasingly interested in the interactions between organisms, and how they affect their responses to environmental change. I developed these interests further during a series of postdoctoral research positions, but mainly in terrestrial ecosystems, where methods and theory surrounding ecological interactions are better developed. Now, as a new Lecturer in Ecology at Cardiff University, I am applying network thinking to freshwater ecosystems.

WHY DID YOU JOIN THE BES?

Particularly during my PhD, but also after, the BES provided me with lots of different opportunities for learning, funding and networking. My main motivation for joining the BES was to return the favour and help to provide the same opportunities to a new set of ecologists. I hope, through my activities as part of the BES, I am in some way doing this!

WHY DID YOU DECIDE TO JOIN GRANTS COMMITTEE?

Working on a BES committee allows me to give back to the Society whilst at the same time benefiting immensely by developing new skills, knowledge and connections. So, when I saw an advertisement for an open position on the Grants Committee, I jumped at the chance!



WHAT DO YOU ENJOY MOST ABOUT SITTING ON A COMMITTEE?

Seeing the diversity and quality of research proposals from across the ecological community is one of my favourite parts of the Grants Committee. Plus, being able to help support ecologists in their ideas is incredibly rewarding and a great honour.

WHAT KIND OF WORK DO YOU DO AS A COMMITTEE MEMBER?

There are a range of activities that the Grants Committee complete. We review the applications submitted to the BES

two times per year, whilst also ranking and assessing which are able to be funded for each round. Less frequently, we also engage in other activities – for example, I have spoken at the early career workshops for the BES annual meeting and also provided ideas for the new BES grants portfolio.

HOW MUCH TIME DOES IT TAKE UP IN YOUR YEAR?

Surprisingly little! For each grant round (two per year), we have a one-day meeting, which requires about 4–6 hours of preparation. Then there are a range of shorter catch-up and decision-making meetings all of which amount to around 2 more days work per year. Considering the benefits I gain from the committee, the amount of time I have to contribute is minimal.

HAVE YOU LEARNT ANYTHING FROM YOUR COMMITTEE WORK THAT YOU WOULDN'T HAVE LEARNT OTHERWISE?

Through my position on the BES Grants Committee, I have gained a much better understanding of the breadth of ecological research in our community, and this has helped me to understand how my research and teaching fits into the wider field of ecology.

WHO SHOULD JOIN A COMMITTEE?

Anyone would be welcome, and the committees are enriched by a diversity of thoughts, perspectives and inputs. Ultimately the committees help to shape the activities of the BES, so being interested and passionate about ecology is the main thing! ✨



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REFLECTIONS ON A GROWING MEMBERSHIP



So, the good news is that CIEEM's membership continues to grow steadily and that really matters. It matters, of course, because a growing membership means more knowledge sharing, more income, more influence and the opportunity to do more for the profession. But, most importantly, it matters because without a strong membership we are unable to deliver our vision of helping to create and maintain a healthy natural environment for the benefit of current and future generations.

Growing our membership isn't just about attracting new members, it is about making sure we retain the ones we already have. We want membership to be for life (well, almost life) not just for a year or two. So, as our Head of Membership says to me 'make the decision to join easy and the decision to leave hard.'

That made me reflect on the nature of membership and why some people like to belong to something or to somewhere, whilst others are happy to plough their own furrow. I am in the former camp. I have been a member of the BES for over 30 years (at least twice as long as I have been a member of CIEEM). My level of engagement in BES activities may wax and wane but I have never considered leaving. I feel I belong (in both organisations fortunately) and I like that feeling. So, even in periods when I am less able to do BES-related 'stuff' I never forget that there will be future times where my engagement will be deeper and even more supportive of my professional development.

At CIEEM we are in the fortunate position that membership applications and upgrade applications have more than doubled over the past 10 years with a significant proportion of these being from students and early career practitioners – that's really great to see. But over time this is affecting the profile of our membership and we have started to ask ourselves the question, is the support and services that we are providing to members sufficiently reflecting this changing membership profile?

I hope that we are. Our new Early Careers Special Interest Group is thriving and our Student and Careers Focus Group is sharing valuable insights into the challenges that students face in entering the sector and the types of support that they need. Our Mentoring Platform provides a great opportunity to get a head start on the careers ladder and our Geographic Section events are invaluable opportunities to meet others in the sector including potential employers.

The signs are that we are making that decision to leave harder, as our retention rates for Student and Qualifying members are increasing along with our application numbers. But we must never take this for granted, which is why we must make sure that the voices of early career members are heard, listened to and have influence within the organisation.

CIEEM MEDAL 2023

The CIEEM Medal is the Institute's highest accolade, given to a person who has made an outstanding contribution to ecology and environment management in the field of research,

communication, policy influence or professional practice. The 2023 Medal winner, Dr Tony Juniper, has achieved this accolade across all four categories and it was a pleasure to be able to present him with the award during our recent awards event at the Birmingham Botanic Gardens.

Tony is an ornithologist by background but is also a well-known author, environmental campaigner, sustainability adviser and, for the past 4 years, Chair of Natural England. He is undoubtedly one of the top environmental figures of the last 30 years, playing a major role in elevating environmental issues on the political agenda, influencing the policies, programmes and agendas of governments and a wide range of organisations in the public and private sectors. He has also increased the public understanding of the environment and influenced attitudes. Importantly while he stresses the seriousness of the biodiversity and climate crises, he manages to do so in a way that suggests hope and a positive outcome if we have the courage and determination to take the necessary action.



Dr Tony Juniper, 2023 CIEEM Medal winner



Sally Hayns CEcol MCIEEM, Chief Executive Officer
01962 868626 | enquiries@cieem.net
cieem.net

MISSED OPPORTUNITIES IN LONG-TERM ECOLOGICAL RESEARCH



Unlike Edith Piaf, ecologists have much to regret. Looking back over 60 years as a botanist, with diverse projects variously involving fieldwork, my biggest regret is a failure to initiate long-term experiments (LTEs). I suspect I am not alone. In the present academic environment with large, short-term grants a major driver - not to mention the shortage of botanists with environmental skills and indeed their 'extinction' in many UK universities - opportunities unfortunately continue to be missed. This is why the ECT remains as important as ever in promoting the value of LTEs.

Writ large in my formative years was the building of the Cow Green Reservoir in Upper Teesdale in 1968-71 to supply the Teesside industries. This went ahead despite strong opposition from conservationists whose fight was weakened considerably by the absence of sound data as to how this might affect the unique flora of this landscape. Advocates for the dam pointed out that little had been written about Upper Teesdale flora compared with the Craven Pennines further south. To my knowledge, no LTEs were set up alongside the dam construction to examine questions such as whether/how such unique communities could be recreated, and to this day we have no idea whether the conservationists' fears were justified. At the same time as the Cow Green debacle, the Ainsdale dune slack system on the Lancashire coast was probably one of the best in Europe. Messams slack, over 1 km in length, was flooded every winter and



supported a myriad of orchids, *Pyrola* and *Monotropa*, and tens of thousands of natterjack toads. Extraction of water from the aquifer below the dunes has now transformed this slack into species-poor grassland and the toads are now mainly confined to manmade hollows. Although there is a grazing/non-grazing LTE at Ainsdale, no experiments were set up to unravel the effects of water table fluctuations in this precious natural ecosystem. Today it is the red squirrels in the secondary pine woodland behind the dunes that attract most visitors rather than toads and the original native vegetation. Further south, myxomatosis has had profound effects on chalk grassland but nowhere have there been LTEs, with and without grazing, in relation to the widely fluctuating rabbit populations, since the disease was introduced into the UK 50 years ago.

Looking to the future, a prime candidate for new LTEs must be the UK's temperate rainforests confined to the wettest parts of the UK. Our understanding of the long-term

ecological impacts of different levels of disturbance such as grazing/browsing pressure and human trampling is poor in such landscapes. These rainforests harbour the most diverse and luxuriant bryophyte assemblages in Europe. We now need LTEs to help inform current and future generations about how to maintain these precious habitats.

Fifty years ago, almost every UK Department of Botany had at least one plant ecologist and one other person who knew the British flora. Academics had more freedom and fewer burdens, but they lacked a 'mindset' to think in terms of initiating LTEs. Had ECT been in existence 50 years ago it is almost certain that it would have provided a major impetus for these, and we would now be in a much better position to defend threats to the environment. ECT is here for the future however, helping us all to avoid repeating the environmental mistakes of the past.

Jeffrey Duckett
Natural History Museum London
& ECT Trustee



Ben Sykes Executive Director, ECT
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COMMUNITY

MEMBER STORIES



ULRICH BROSE

German Centre for Integrative
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Twitter: @EcoNetLab
#EcologicalComplexity #FoodWebs
#BiodiversityChange

I joined the BES for... the inspiring atmosphere at the annual meetings and the opportunity to stay in touch with fantastic colleagues.

What inspires me... I am amazed at the overwhelming complexity and beauty of natural ecosystems governed by the laws of interactions and energy consumption. My inspiration lies in both enjoying the beauty and understanding the principles.

I would tell my younger self... in academia, about nine rejections accompany one acceptance, and it might be worth spending more time enjoying the success than thinking about the reasons for rejections.

My funniest fieldwork fail... there are definitely too many to list here. The epic fail was that I spent my PhD years doing very intense and long days of fieldwork, finally figuring out that in an agricultural landscape, wetland species occur where it is wet, and rare species occur where land-use intensity is low. After that, I gave up fieldwork and turned to ecological theory.

When I'm not an ecologist... I am a family person, enjoy the beauty of nature while hiking, love to cook and travel the world.

My favourite organism is... this changes on a weekly basis. There are too many amazing and beautiful species on this planet. We should preserve them all.



Calotes ceylonensis
photographed by Ulrich on a
backpacking trip in the tropical
forests of southern Sri Lanka



JULIANO MORIMOTO

University of Aberdeen & Federal
University of Paraná (UFPR)
www.jmorimoto.com
Twitter: @ju_morimoto
#Nutrition #Life-history
#Niche

What inspires me... the idea that living organisms have evolved from physical, chemical, and biological laws. It is mind-blowing (to me) to think that, from quantum phenomena to ecosystems, nature has found a way to create 'endless forms most beautiful'.

Significant experiences that have shaped my career... adversities inspired and shaped my career. From sleeping on the floor during my university years to being discriminated by peers and professors, I promised myself that I would be the change I wanted to see if I became a professor.

I would tell my younger self... just because you can, doesn't mean you should. This applies to every aspect of life and I take this (self-given) advice everywhere.

My funniest fieldwork fail... have you tried to catch butterflies with a Tupperware while they fly? Well, that was my first ever fieldwork as an undergraduate. I still remember us chasing butterflies with a lid and plastic box! You sweat, but it works!

My favourite organism is... I love insects but my favourite animal is the orca! I just find everything fascinating about them – and I watched a lot of Free Willy when I was a child (to the point where my parents questioned my obsession).



VALUING VOLUNTEERS

Karen Devine, Director of Communities and Inclusion

The BES is a membership organisation. As a charity we are governed by a president and board of trustees, and our annual cycle of events and activities are developed by committees and working groups, all of whom give their time unremunerated.



Beyond these individuals, in 2022/2023 many others gave their time to: showcase the wonders of nature to primary school children; speak up for ecology in national media; advise on new grants that better meet the needs of ecologists; help develop our 2023–2025 strategic plan; bring us all together again in person at the annual meeting; and draft policy reports. The list goes on...

We've estimated that volunteers contribute 50,000 hours of their time. This is based on the make-up of the trustees, committees the annual projects and events such as the annual meeting or the communities we support through our SIGs, networks and groups. It does not include the more difficult areas to measure such as the huge contribution many of our members make in peer review for our journals and grants, or the many people who support, advise and

drive important pieces of work through their committees. The real contribution of volunteers is much higher. We could not do what we do without you.

As this issue of *The Niche* lands on your desk, we will be celebrating National Volunteers Week for the second year. Over the last 12 months we have developed a new BES strategic plan within which we have committed to invest in our volunteers.

That investment includes the appointment of a Volunteer Officer in the next few months to ensure we are able to provide a more fair, equitable and rewarding volunteer experience at the British Ecological Society.

National Volunteers Week runs 1–7 June. It is a chance to celebrate the diversity of communities that make up the BES, including our international communities. It's a chance to recognise and celebrate the many different voluntary roles that are filled by members and non-members alike in supporting the ecological community.

Time is precious and there are ever increasing demands on it for everyone, we are incredibly conscious of the immense privilege we have in working with you and the valued contributions you make to our day-to-day work.

For everyone who has given their time to supporting the ecological community in any capacity however great or small:

THANK YOU! ✨

**50,000
HOURS**

VOLUNTEERS CONTINUE TO CONTRIBUTE A SIGNIFICANT AMOUNT OF THEIR TIME TO SUPPORTING THE ECOLOGICAL COMMUNITY AND WE ESTIMATE THE MINIMUM AMOUNT OF TIME GIVEN THROUGH BES ACTIVITIES IS JUST UNDER 50,000 HOURS.



CONNECTING SCHOOLS TO NATURE: PROJECT WRAP UP!

Sammy Mason, Amy Padfield, Alexa Roditi, Katie Forrest, BES Engagement Team

Over the past 18 months the BES has engaged with over 5000 pupils from 72 primary schools in North-East England and upskilled 65 environmental educator volunteers. As the Connecting Schools to Nature project wraps up, we reflect on the impact the project has had on pupils, teachers and educators and next steps for the future.

PUPILS AND TEACHERS CONNECTED WITH NATURE

Being connected to nature has many benefits for people including improved mental wellbeing and more positive attitudes towards the environment. Throughout our project we aimed to connect teachers and pupils with nature through a variety of different activities including workshops, training sessions and green transformations of school grounds.

Using verified connection to nature scales for children and asking teachers to reflect on their own connection to nature before and after the project we showed that these measures significantly increased over the course of the project. Furthermore, 76% of teachers agreed that their students' wellbeing had improved whilst participating in the project and 59% agreed that their own mental wellbeing had improved.

We also found that participating pupils could correctly identify more UK species of mammals, invertebrates and birds after participating in each of the three modules of the project. 85% of teachers also agreed their own ecological knowledge had improved, which will help them to run nature-based activities more confidently with future cohorts of pupils.

UPSKILLING ENVIRONMENTAL EDUCATORS

The project would not have been such a great success without the commitment of 65 environmental educator volunteers. Volunteers helped with all aspects of the project including creating resources and running activities during pupil workshops. Through a training program of digital and in-person sessions on a range of topics volunteers have gained skills which will help them not only in the project but beyond. Tom Williams, who volunteered for this project said:

“It has been great to see how enthusiastic the children were given the chance to reconnect with nature. Being involved in the BES's project has given me the opportunity to develop communication skills I hope to carry into my future career while helping to inspire younger generations and explain the power of the world around them.”

To find out more about the impacts the project had on all participants head to the BES website to read our project evaluation report.

CELEBRATION EVENT

On 14 March 2023 we had a project celebration event, hosted at the Hancock Museum in Newcastle. The event brought together teachers, volunteers, children and representatives of the project's team to share the impact of the project and highlight some of the inspiring stories from the past year.

The event featured opportunities for schools to show off the amazing nature-based activities and green transformations they've done. Schools brought along resources and artworks they'd made throughout the project including a hedgehog made of recyclable material and clay models based on the bird species they saw during their bird watch activities!

Six local schools attended the event and were awarded certificates and prizes for their achievements throughout the project. We heard inspirational stories of the impact the project has had for these schools. Rebecca Aspinall, a teacher from Nettlesworth School spoke at the event and said:

“Our children now have the skills they need to truly appreciate and engage with their environment. Pupils have been encouraged to think not only about nature already present in the school grounds, but the opportunities for nature that could be there too.”



76%

of teachers agreed that their students' wellbeing had improved whilst participating in the project

EDUCATION

EXPANDING THE PROJECT'S IMPACT THROUGH THE ENCOUNTERS PLATFORM

This celebratory event also saw the official launch of the new BES Encounters platform – an interactive digital learning website that has been co-created with teachers throughout the project. The platform is designed to help teachers embed nature-based learning into all their day-to-day teaching, offering resources and ideas to help schools on their nature connection journeys! Over the course of the project 3900 nature-based activities were logged on the platform by pupils, teachers and volunteers. These activities ranged from participating in citizen science projects, planting trees and wildflowers and creating artworks about wildlife they'd encountered.

The platform is now available for any primary school, or educator/volunteer working with children to sign up! Some of the main aspects of the platform include:

Badges: The badges page provides a structure to work through different nature-themed activities, like bird watching and invertebrate surveying. The badges are organised by award, progressing from bronze to gold award, and can be filtered by type of activity or animal taxa. Once the bronze level is completed, schools automatically receive a certificate to download, and silver level tasks are unlocked.

Resource hub: The Resource hub contains a variety of educational resources such as lesson plans and virtual school assemblies, developed by BES staff, volunteers, and other organisations. These resources can be used to plan school activities as well as complete the badges. The user can filter by type of resource to explore existing content, or upload their own contributions.

Community: The community page is an open space for teachers, pupils, and educators to share their progress and most recent activities, as well as celebrating what others have achieved. Posts are moderated by BES staff, and external organisations with accounts can also post about upcoming events or opportunities. ✨

FIND OUT MORE

If you're interested in using the Encounters platform for you own schools outreach projects or if you'd like to find out more about the platform then get in touch with Sammy Mason: sammy@britishecologicalsociety.org



CONNECTING SCHOOLS TO NATURE IN NORTH-EAST ENGLAND PROJECT

The Connecting Schools to Nature project was funded by the Government's Green Recovery Challenge Fund. The fund was developed by Defra and its Arm's-Length Bodies. It was delivered by The National Lottery Heritage Fund in partnership with Natural England and the Environment Agency.

Green Recovery Challenge Fund

Department for Environment Food & Rural Affairs

The National Lottery Heritage Fund

Environment Agency

NATURAL ENGLAND

SMASH UK

Mammal Web

County Durham Community Foundation

BANKS Community Fund
development with care

GUIDANCE FOR LGBTQIA+ INCLUSION DURING FIELDWORK

Nathan Alexander and Jaime Coon

The ALDER Network committee was delighted to see a recent article published in the BES *Journal of Applied Ecology*, which provides best practices for LGBTQIA+ inclusion during ecology fieldwork.

LGBTQIA+ individuals face a number of barriers to participation in ecology fieldwork, including physical and discriminatory risks, increased isolation and non-inclusive infrastructure at field stations.

The authors of this article, based in the US, draw on their own stories of marginalisation, which reveal a greater risk of harassment, discrimination and violence towards LGBTQIA+ people, especially in rural or remote fieldwork situations. They highlight the role of systematic inclusion in attracting and retaining a richly diverse workforce, and provide much-needed guidance based on strategies supported by scientific literature.

Co-author Nathan Alexander said,



Advocacy often fails to acknowledge structural barriers such as single gender accommodation or health insurance that does not include gender related issues that may inhibit access to ecological spaces. This is about making everywhere a better space – not just higher education.

The authors call for cisgender (those who identify with their gender assigned at birth) heterosexual mentors to actively learn about the challenges LGBTQIA+ researchers face and to promote a welcoming and supportive atmosphere. The article's recommendations to help make fieldwork more inclusive include well-developed safety plans, for example incorporating better safety measures such as providing walkie-talkies for communication. Other recommendations include avoiding gender segregated facilities, purchasing size-inclusive gear and providing gender affirming health insurance.

As well as advice to supervisors, the authors also make suggestions to the LGBTQIA+ field researchers themselves, such as keeping a personal memento on hand that makes them feel connected to their community when working in isolated locations, connecting to local LGBTQIA+ communities where safe/possible, and being cautious about using dating apps that could lead to unsafe situations.

The article also advocates systematic changes within ecology, not just in terms of fieldwork, to create safer and more welcoming experiences for those identifying as LGBTQIA+.

This article is recommended reading for any supervisors sending students into the field. Read the full article: Best practices for LGBTQIA+ inclusion during ecological fieldwork: Considering safety, cis/heteronormativity and structural barriers (*Journal of Applied Ecology* doi.org/gmr4). ✨



Co-author Jaime Coon in the field

© AMBERLY DZIESIŃSKI

INTRODUCING THE EDGE NETWORK

Promoting diversity and inclusion is essential to tackling the global environmental crises. Yet across the globe, specific challenges ecologists face relating to their gender are often overlooked.

The BES is proud to support the launch of the new Equity and Diversity for All Genders in Ecology (EDGE) Network. Focused on fostering a community of like-minded ecologists who are passionate about tackling issues pertaining to gender, we hope this network will provide a safe and inclusive space for ecologists worldwide.

AN INCLUSIVE COMMUNITY FOR ALL

Born out of the success of the REED Ecological Network, dedication displayed by our members to equity and inclusion, and a desire for a space outside of the annual meeting for ecologists to come together and discuss gender issues, the EDGE Network was created. The intention is to grow a community of impassioned individuals willing to inspire change.

Since 2016, our annual meetings have seen ecologists of all ages and career levels gather for the 'Women in Ecology breakfast session'. This later progressed into the formation of a steering group to establish the building blocks of the new network by identifying its scope and priority topics of focus ahead of its official launch at the end of 2022.

But gender related issues do not only affect women. A strong priority is to ensure the new network remains inclusive of all genders, recognising that gender is a highly personal aspect of identity and does not exist in a binary.

Appreciating that there are no one-size-fits-all solutions to gender-related issues, the EDGE Network will support people based in the UK and internationally with an awareness of the different challenges individuals face, and the different stages of progress achieved by communities across the globe.



Initial themes the network will explore include menstrual health and menopause, leadership, safe and inclusive fieldwork, as well as travel and work in an international setting. As with all the BES networks, the EDGE Network will be steered by the community, so if you have a topic in mind for discussion, or expertise to lend, get in touch!

LAUNCH OF THE NETWORK

Members shared their vision of a more gender-inclusive future for ecology at the network's launch event during the 2022 Annual Meeting.

To ensure the network focused on the needs of the ecological community, three questions were opened to the room as a starting point. These questions covered what members would want out of the network, what the manifesto should look like, and what needs may be specific to certain job roles. In the months since, the network's first official committee has been formed.

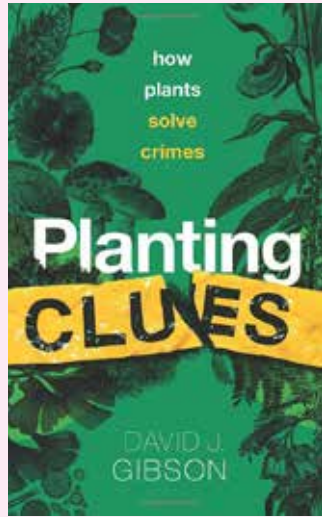
Rowan Kuminski (they/them), one of the EDGE Network's newly elected chairs said "I'm excited to serve on the EDGE Network committee and work to promote an intersectional approach to addressing gender-related challenges in ecology and related fields.

"My hope for the network is that we take concrete steps to confront issues pertaining to gender discrimination and inequalities, and create a more supportive environment for scientists affected by these issues."

We're excited to see this new supportive network within the BES unite the ecological community to create safe and inclusive space for like-minded ecologists to get together, network and collaborate. ✨

As a newly launched network, there are plenty of opportunities to get involved and have your voice heard.

If you would like to join the network, and be the first to hear about new opportunities, please email edge@britishecologicalsociety.org to be added to the mailing list.



READ

PLANTING CLUES: HOW PLANTS SOLVE CRIMES

David Gibson

Oxford University Press 2022

£18.99

To many BES members, and especially anyone who has published in *Journal of Ecology* in recent years, David Gibson will be a familiar figure. He's the author of many papers, plus a few books, on various aspects of plant ecology. But here he has combined business with pleasure, in the form of a book on 'plant crime': plants as the subjects of crime, plants as weapons of crime, and (especially) the role of plants in the solving of crimes.

It's this third aspect that I think will most fascinate those (most of us?) who enjoy a good whodunit, especially a slightly gruesome one. Indeed, the book opens with an absorbing account of the famous Lindbergh baby kidnapping case from the 1930s. How a few lengths of timber, in the hands of one extraordinarily determined and tenacious forester, eventually caught the culprit, reads like a scarcely credible thriller; you almost couldn't make it up. Much of a similar sort follows and, even if the nature of the evidence varies, the theme is the same: that *any* contact with the natural world leaves traces that can be used to link a suspect to a crime scene. This is particularly so in the case of murders, which nearly always involve someone hiding or burying a body, involving a close encounter with a lot of incriminating mud and vegetation. Technological advances mean that the opportunities continue to expand; Gibson mentions the analysis of eDNA and the plant microbiome as exciting new developments.

You almost start to feel sorry for the modern criminal, none of whom begin to realise that plants have such a capacity to incriminate. Probably no one was more surprised than Soham murderer Ian Huntley when pollen on his car and shoes linked him to the vegetation in the ditch where he had dumped the bodies of his two victims. In one sense this is good news; criminals who are unaware of such risks are unlikely to take precautions to avoid them. But, as Gibson points out, such 'plant blindness' can also afflict the forces of law and order; if lawyers, police and forensic scientists knew more botany, or knew the right people to ask (and as long as such people continue to be trained by universities), plants could do an even better job of catching criminals.

Stylistically, the book is a bit of a mixture. Parts read like pure Agatha Christie: "Edmond Locard, the 'Sherlock Holmes of France', was stumped. He had a dead body and no clues to help him find the killer". On the other hand, the pages spent explaining what RAPDs, AFLPs, microsatellites, STRs and SNPs are, and what you can do with NGS and CRISPR, read more like a textbook. Perhaps Gibson wanted to write not only something that his forensic botany students would enjoy reading, but which would also help them to answer his exam questions.

Errors are few, but a reprint should clear up the muddle between ivy and ground ivy. And anyone who would like to consult Gibson's book for legal advice should also note that the legal context is firmly American.

Ken Thompson

GET INVOLVED

If you have read an interesting book, from any genre, that touches on ecological research or concepts, then write us a review!

If you are promoting an event, have created a documentary or film, or know of any interesting ecological events coming up then please let us know about it.

For further details email Kate: kate@britishecologicalsociety.org

READ

CONSERVATION RESEARCH, POLICY AND PRACTICE

William Sutherland, Peter Brotherton, Zoe Davies, Nancy Ockendon, Nathalie Pettorelli, Juliet Vickery Eds

BES Ecological Reviews

Cambridge University Press 2020

Open access

This is a thorough and easily digestible collection of papers, which distil current best practice in the development of sound, constructive environmental policy and practice, and the rationale behind it. It is a must for anyone entering or engaged in the field of conservation. At this time we all need to be aware that any conservation measures are very likely to have an impact on other people. Therefore it is fundamentally important that all stakeholders are involved and as many as possible engaged and on board before any action is decided or implemented. This book sets out, through various social and biological research case studies, how to initiate and undertake successful conservation action, including the potential pitfalls to avoid.

A key aspect, which often seems foreign to many biological scientists, is the promotion of strategic thinking at the earliest stage to identify all underlying aims and more critically, who should be involved from the beginning in order to proceed with credibility. There is acknowledgement that strictly scientifically gained knowledge is not the only basis for developing practice and that indigenous or local knowledge can be invaluable. Might there be occasions when it is more

appropriate to take a backward step and allow those with more and longer experience of a particular wildlife interaction scenario, for example, to take a more prominent role?

There is a useful identification of the weaknesses in some common practice and warnings about hasty or simplistic interpretation of attitude survey findings. A detailed discussion of the distribution of the costs and benefits associated with any actions shows how, when not adequately balanced, these can lead to the challenge of bias from communities or those using the natural resource in question. Throughout there are numerous references to further reading and the studies that have informed the papers. Finally, there is a useful discussion of the potential role of social marketing in conservation. This book is an excellent grounding in this difficult topic.

Diana Gilbert



LISTEN

OUTDOING

Gabrielle Flinn & James Silvey

Podcast

One of the great privileges of working in nature conservation is the people you meet on your journey. When you have worked with community groups, farmers, rehabilitation groups, schools, foresters, politicians, businesses and dedicated conservationists in the Highlands of Scotland, the wider UK, Europe and beyond – you find yourself with a beautiful collection of stories. To connect with others, no matter where they're from, what they do or who they are, is to show interest in their story and passions. This opens a door both to learning something new and sharing respect with someone, regardless of your differences. When this kind of connection is formed, communication is greater and common goals can be realised – in this case, fighting the global biodiversity crisis.

Working and volunteering for conservation requires sacrifice, whether that be sacrificing personal time and stability, sacrificing a better salary or at times, in some parts of the world, sacrificing your safety. The work to conserve and restore nature, whether that be directly as a conservationist or within another role or sector, demands dedication. With OutDoing, we want to put a spotlight on these individuals, give them and their story a platform and to let their story inspire. This is a podcast about people and is for all audiences. Whilst it covers science, nature, and even social and political issues at times, it is primarily a celebration of nature's do'ers - the people working with and for the natural world.

You can catch us on Spotify, Apple Podcasts, Google Podcasts and Twitter @doing_out

READ

THE NEW NATURAL HISTORY OF MADAGASCAR

Steven M. Goodman Ed.

Princeton University Press 2022

£146

It's not often that a new book leaves me awestruck, but this is one of the exceptions. With two volumes, 2296 pages and 25 pages of contributors, this is a big book in every sense of the word. At £146 it's exceptionally good value, owing to the generosity of a number of sponsors, but priced by the kilo it's a real bargain. It's also, for a volume of this size and complexity, astonishingly up to date. Conscious that huge volumes like this have a habit of being

out of date almost before they're published, it was produced – from inviting contributors to delivery of the finished manuscript to Princeton – in a mere 17 months.

Like its 1709-page, single-volume predecessor from 2003, the scope of this volume is vast. Mostly it's divided into a series of large chapters, the earlier ones on topics such as geology, human ecology and marine and coastal ecosystems, the later ones on plants, invertebrates, fishes, amphibians, reptiles, birds, and mammals. A concluding chapter covers conservation. The large taxonomic chapters are in turn divided into short sections on specific taxa, mostly at the level of families, but the level of detail varies widely. Some iconic species get sections to themselves,

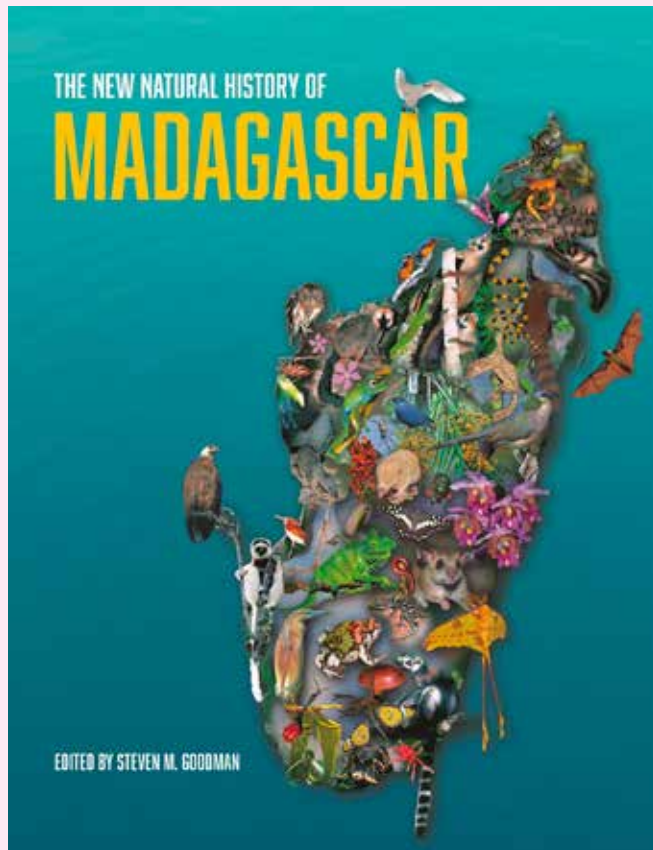
e.g. dugong, whale shark (the world's largest ectotherm), indri, ring-tailed lemur and aye-aye (unsurprisingly, there's a lot on lemurs).

For those, like me, who know nothing about Madagascar, there are surprises at every turn. Those of us who thought there was no more to the Salicaceae than *Salix* and *Populus* will be surprised (and probably appalled) to learn how many genera there are on Madagascar, many of them endemic. Two Malagasy spiders are intertidal, spending high tide in a silken tube, while another makes a secure home in a discarded snail shell. Beautiful garments have been made from the silk of another species, but the business couldn't be made to pay; carnivores, even small ones, rarely make good livestock.

But huge as this book is, such is the scale of Madagascar's biodiversity that it could have been bigger. Much bigger. In a preface the editor admits that for various reasons many taxa, not all of them small, could not be included. An introductory chapter on invertebrates is more explicit, stating that if few advances had been made in a group included in the 2003 book, that group was not covered here. So although Madagascar must have, say, carabids and syrphids like everywhere else, I assume they were covered in the earlier book; they do not appear here. Mind you, inclusion of a group doesn't necessarily mean we know very much. Madagascar's tabanids are as likely to bite you as horseflies the world over, but we don't know much else about them. Do adult Malagasy horseflies visit flowers, as they often do elsewhere? We don't know. What do larval horseflies do for a living? There are no records from Madagascar.

As Peter Raven notes in a preface, while Madagascar may well have the richest and most interesting biodiversity on the planet, it's also one of the poorest and most badly governed countries on earth. Given that its human population is set to more than double in the next 30 years, and that many people depend on the natural world for food, fuel, medicines and building materials, the future of Madagascar's biodiversity doesn't look good. Let's hope this wonderful volume, by focusing attention on this unique place, will help a little.

Ken Thompson



IT'S NOT OFTEN THAT A NEW BOOK LEAVES ME AWESTRUCK, BUT THIS IS ONE OF THE EXCEPTIONS. WITH TWO VOLUMES, 2296 PAGES AND 25 PAGES OF CONTRIBUTORS, THIS IS A BIG BOOK IN EVERY SENSE OF THE WORD.

READ

WILD MULL: A NATURAL HISTORY OF THE ISLAND AND ITS PEOPLE

Stephen Littlewood
& Martin Jones

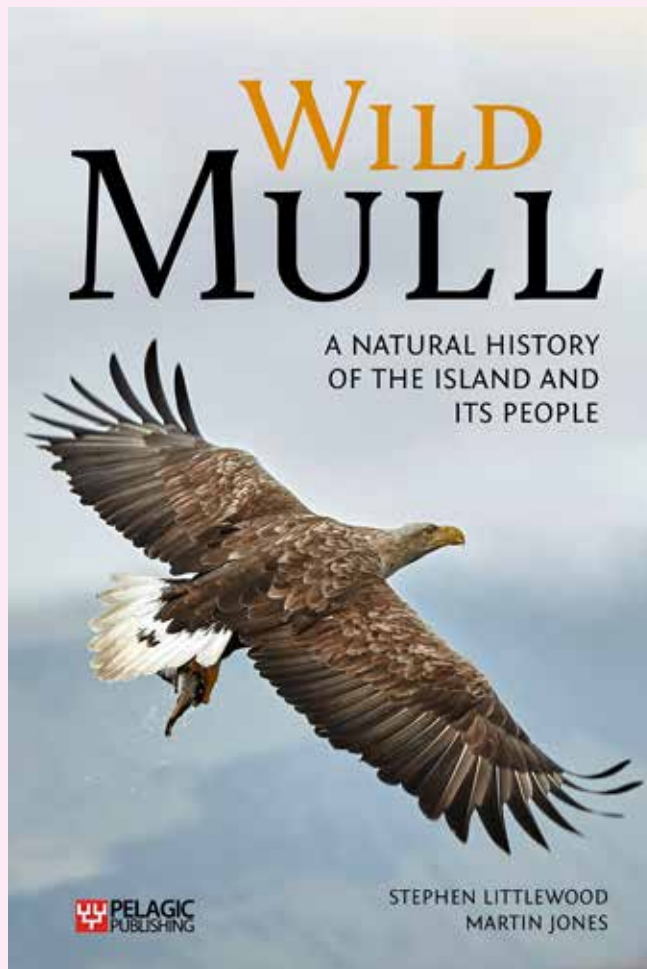
Pelagic 2021

£25

The book is filled with beautiful photography and in-depth ecological descriptions of the landscapes, wildlife, people and geology of the island. I had it sitting on my coffee table, and it even inspired a guest at my house to plan a visit to Mull!

However, the amount of knowledge shared within this book is far more than those which usually grace a coffee table. The love of the island comes across clearly from the authors' voice. They focus not only on the obvious beauties of golden eagles and otters, but also on rare orange lichens and >2,000 species of fungi found on Mull. There is an incredible density of island insight shared within these pages.

Throughout *Wild Mull*, Littlewood and Jones focus on how human and natural histories weave into one another. The chapters cover topics such as Mull's settlement history, how people have shaped the island's natural history, raptors, seabirds, land birds, mammals, the Celtic rainforest, plants, fungi, the intertidal and surrounding sea creatures, geology, and a look into the future of biodiversity on the island. While a huge amount of detail is given, the authors modestly state that they aim to "...open a window sufficient to encourage a reasonable recognition of the distinctiveness and diversity of Mull...".



I was impressed with the accuracy and clarity in their science communication on topics which I was previously knowledgeable on, which buoyed me to trust their authority on topics on which I had no prior knowledge.

In a discussion about what is truly 'wild', the authors dive into a history of the species on the island that we perceive to be 'natural', and are sometimes managed as such, but were actually introduced over the past couple hundred years or so. They discuss everything from human intervention in wildlife management to wildlife

tourism. It was great to see coverage of small-scale rewilding initiatives on Mull, such as that at Knockvologan, as well as discussions about what broader rewilding would entail.

While *Wild Mull* is a love letter to an island, serving as a "soothing balm of stories" of one of the most wild places in the UK, I really admired how the authors did not shy away from its environmental issues. For example, while they are hopeful about the marine protected area around the island, they are frank in their assessment that the lack of policing has allowed



WHILE WILD MULL IS A LOVE LETTER TO AN ISLAND, SERVING AS A "SOOTHING BALM OF STORIES" OF ONE OF THE MOST WILD PLACES IN THE UK, I REALLY ADMIRERED HOW THE AUTHORS DID NOT SHY AWAY FROM ITS ENVIRONMENTAL ISSUES.

for its abuse. On a similar note, the authors repeatedly circle back to the biodiversity crisis and the current state of climate emergency, serving as a pressing reminder to continue to fight for and protect such places. I'd really recommend this book to a nature lover who wants to become more attuned to the voices that comprise Mull's unique biodiversity.

Chloe Malinka

READ

ANCIENT WOODS, TREES AND FORESTS: ECOLOGY, HISTORY AND MANAGEMENT

Alper Çolak, Simay Kirca, Ian Rotherham Eds

Pelagic Publishing 2023

£49.99

Trees and woods are flavour of the moment in Britain – the upcoming symposium at the University of Kent on Trees for Climate Change, Biodiversity and People in June 2023; the UKNRI £14.5 million Future of UK Treescapes programme launched in 2020 but yet to show results; and the

focus by many non-government and statutory agencies to “plant more trees” or engage in “ecosystem restoration”. To guide these enthusiasms, this substantial volume should be on the shelf of all environmental policy makers and ecologists, as well as prescribed reading for students. Not just because the chapter authors are a Who’s Who of woodland ecology in the UK and Europe, but because it is about woods, trees, and *people*.

The authors bring decades of experience in British and European woodlands too. It is fitting the volume is dedicated to luminary figure Oliver Rackham, someone to whose words we need to pay more and more attention. All

contributions are a real reminder that whenever we hear about ancient woods, or feel we are standing where few have stood before, we are missing the point. Britain’s woodlands, like the rest of Europe - and indeed the world – are the product of human cultural influences acting on, with, and sometimes against, the rest of biodiversity.

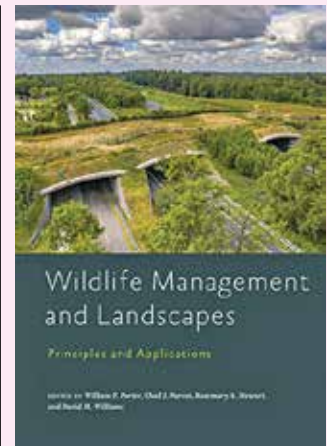
In the first contribution George Peterken makes important distinctions around just what ancient is, and the pitfalls of trying to be too simplistic about what is ancient and what not. That excellent chapter really sets the tone – challenging the reader to think about what woodlands are, and the sort of systems/landscapes from which they have emerged, and what they might become.

Finally, one short quote that sums up the volume if that be possible:

... our ancient woodlands in Britain and across much of Europe, are not ‘wildwoods’, nor even are they remnants of a ‘wildwood’. *These truly cultural landscapes mix nature and human history, woven together as a unique and rich tapestry of ecology and history ...* The story of the woods is there to be ‘read’ ...

The book is an invaluable addition to woodland literature, putting the role of people firmly with the rest of woodland biodiversity. Reading this book will give new perspectives - and certainly allow the reader to see the woodland (sic) for the trees.

Peter Bridgewater



READ

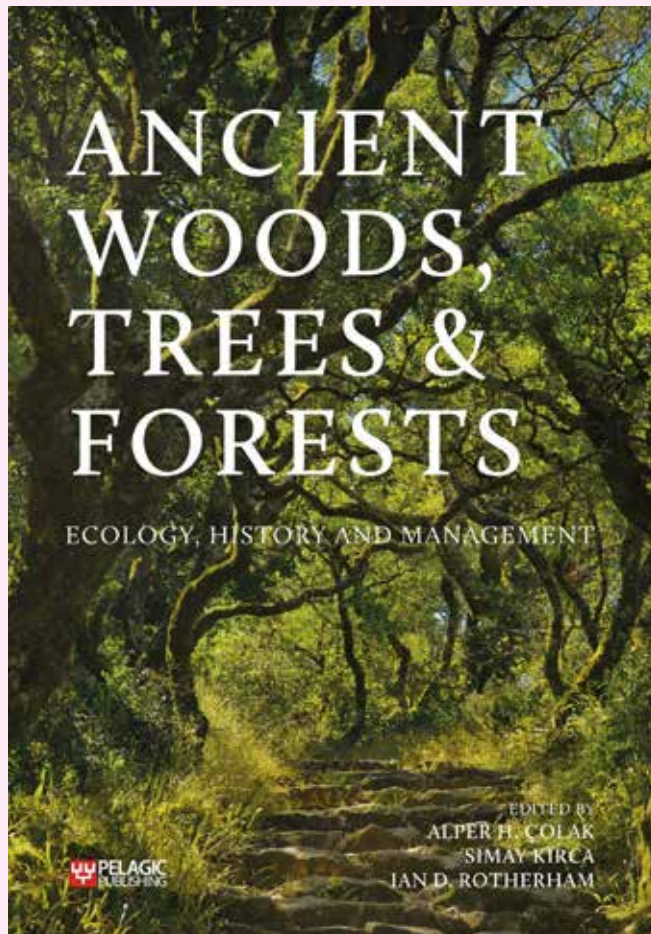
WILDLIFE MANAGEMENT AND LANDSCAPES: PRINCIPLES AND APPLICATIONS

William Porter, Chad Parent, Rosemary Stewart, David Williams Eds

John Hopkins University Press 2021

£55.50

The substantial and rapid rate of decline in wildlife worldwide is a serious concern, especially against a backdrop of global warming and rising human populations. The interplay between wildlife, humans and climate is spatially variable but more critical than at any time in the past. Landscape ecology and wildlife management are intertwined and understanding the intricate relationships between them is vital to designing and implementing conservation measures and promoting sustainable management. Issues such as habitat fragmentation, the creation of protected areas and linking corridors are of particular importance. There are four parts to this book and 48 contributors; 42 from the USA and six from



Canada. The emphasis is on North American landscapes, ecology and management.

Part I comprises three chapters which focus on the establishment and development of the landscape perspective, how wildlife management is intertwined with landscape ecology, and how the two approaches have interacted to develop and facilitate habitat management on landscapes. The major lesson that emerges is that alterations to landscapes through management have, over time, greatly affected wildlife populations and their distributions and that much confusion has arisen regarding successful integrated management.

Part II focuses on establishing a landscape foundation for wildlife managers in order to improve outcomes. It comprises six chapters each examining one or several key issues. These include the recognition of essential concepts e.g. pattern, process and scale and how they interact/affect wildlife, and how they are affected by internal and external factors. Maps, mapping and landscape classification are also discussed in relation to habitat recognition. Such methodology would also facilitate habitat demarcation including changes in extent and fragmentation of wildlife populations. Could such data collection lead to a landscape foundation for wildlife managers to share ideas and information?

Such a foundation, its establishment and operation, is the subject matter of the five chapters of Part III. One example of the issues discussed is the relevance of scales of investigation which vary considerably and influence the *modi operandi*. Other

examples include improvements in communication between landscape ecologists and landscape managers plus the creation of models and practical methods for efficient management. The value of incentive programmes is also discussed.

In Part IV the theme is how landscape ecology is applied to habitat management. The many variables involved i.e. age, size, configuration and context are examined in the opening chapter. This highlights the many possibilities that underpin management schemes. The subsequent chapters provide case studies where specific approaches have been applied. These include mapping species distributions, co-operation between various components and players as well as the influence of nongovernmental organisations.

Overall, the complexities of wildlife/management strategies are apparent in this rich and informative text which deals with both practical and theoretical components of landscape management. It is especially relevant to advanced undergraduate and postgraduate courses.

Antoinette Mannion

LISTEN

THE LÜRXX

www.the-lurxx.com

Nature Warrior Rock band the Lürxx dedicate themselves to making this world a better place for all beings through their art. Heavily influenced by the music of the late 60s and early 70s, where rock music was at the forefront of societal change, the Lürxx are determined to help drive the next wave of change necessary to save this planet!

The Lürxx have created educational songs like 'Smash the Dam' which describes the migration of the European eel and calls for a removal of the barriers which hamper this migration, or 'Nightjar' about the behaviour of these amazing birds. They have songs which immerse the listener in nature and celebrate the sheer beauty of life, and those that call to action – activist songs to save the world by.

Lead guitarist Sabú says "In a world where many people feel disconnected from their natural surroundings, we need to offer ways to connect". Vocalist and guitarist Xavi, himself an environmental scientist adds "We think there are many people out there who long for a positive, emotional connection with nature. Our music creates a harmony we can all be part of."



WATCH

ANIMALS!

By Dens & Signals

There is something uniquely exciting about entering a theatre and being given the role of a swan and golden eagle. Interactive before it had even begun *Animals!*, created by Dens & Signals, was a fascinating exploration of the issues facing nature. The vibrant colours of the stage set the scene, but it was the actors who created a fun atmosphere whilst delving into key ecological topics and complex topics – humans being the problem species!

The seven year old in our party was engaged from the outset. *Animals!* achieved the difficult task of exploring the challenges facing species and finding a way to empower the audience to be part of the solution to these issues. A highlight was the opportunity to go up on stage with our fellow audience members to discuss the issues the planet is facing and ways to overcome them. It was heartening to witness a group of children discussing ways to tackle species loss and becoming empowered to create change in the process.

Animals! was an engaging mix of important ecological topics, fun songs, interactive elements ("no eating in the meeting"), and left us both feeling uplifted and hopeful.

**Amy Padfield &
Theo Padfield (age 7)**

HORIZONS



WATER

By Nina Bryant

I grew up completely in love with open water. I liked the feeling of being contained, the strength of the water pushing from all sides, like I was being held by a great force. Although I've spent most of my life living without a body of water nearby, the places I feel at home are the places where I can swim. The emotional attachment to a place can be different when it comes to the natural world.

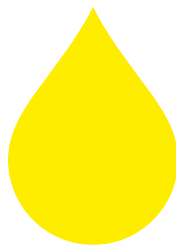
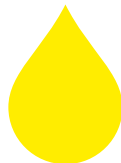
Some people don't like swimming in natural water; they don't like not knowing what's under them. I think as a child I liked the not knowing. I liked the unknowable nature of open water, its inability to be held or pinned down. Its curious nature is what made me feel at home, like I was alive but in a different way to how I was alive on land.

I remember particular swims vividly, as if they were important life events. If I close my eyes I can be getting chucked about by the waves off the Eastern Cape of South Africa with my family, treading water for what seems like hours – feeling completely exhilarated and exhausted at the same time. Feeling like I could live there if the sea would have me.

Or I can be in Clevedon, Somerset, in April – the sun out but the water only about ten degrees. I can re-live the prickling feeling as my legs and then my arms break into the water, experiencing such a completely euphoric disconnect from life, thinking if this could carry me forever then I would be okay.

This past December I was lucky enough to see baby turtles making their way to the sea for the first time in a place called Uvita in Costa Rica. Watching them just tumble out of a bucket and make the great journey to the next chapter of their lives. Walking on land looked like a tiresome business, but once they were in the water, they were free. The waves washed them back onto the sand at first, but the turtles continued, trudging on, persevering with their mission to get home. Watching them I saw how I felt about the sea: that it was easier somehow, that it just made sense.

And that's the heart of it; open water will always make sense to me. No matter where I am I will always be drawn to the sound of the coast, the murky depths of lakes and rivers, the constant unpredictability. Somewhere I can feel both contained and alive. Unlike the turtles it may not be my natural home, but it definitely makes a good second. ✨



Submit a piece for Horizons to: theniche@britishecologicalsociety.org

TAKE A STAND FOR ECOLOGY

ANNUAL MEETING 2023

12-15 December
ICC Belfast
Northern Ireland
#BES2023

This year we are staging our Annual Meeting in the capital of Northern Ireland. 1,300 ecologists from academia, consultancies, NGOs, publishers and our sister societies will converge on Belfast for 4 days of the latest in ecological research from around the world.

You can be part of Europe's largest conference for ecologists from all disciplines by reserving your sponsorship package or exhibition stand at the heart of the event. Spaces are limited so please book today to be sure of your place.

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Full page colour adverts in the December issue of *The Niche*, which goes out to 7,500 ecologists in 119 countries, start at £780. Sponsorship packages start at £400.

*VAT will be charged at 20% but organisations outside the UK may be exempt.

**Exhibitors will be offered up to 2 additional conference passes at a reduced price.



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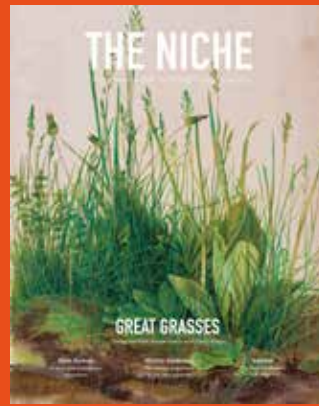
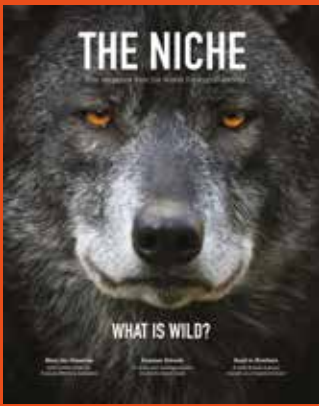
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MAKE THE NICHE EVEN BETTER

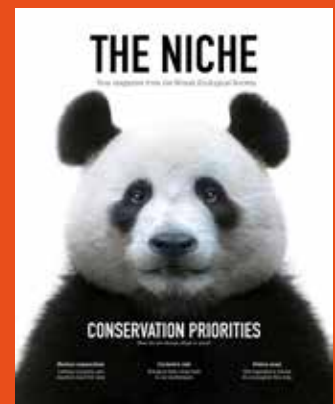
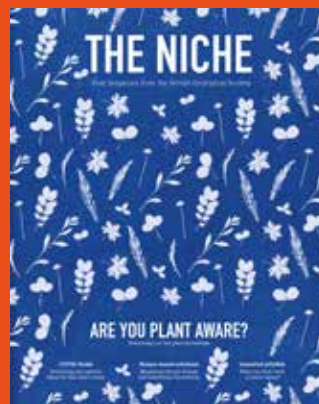
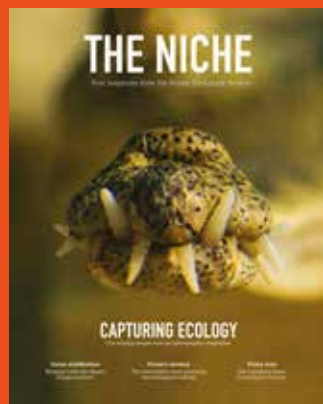
Since our last full readership survey in 2018 we have made a lot of changes to your membership magazine. *The Niche* is written by and for our vibrant community – when you read it we want you to feel excited about being a BES member.

HAVE YOUR SAY

We would really appreciate it if you could complete our short readership survey. Any feedback is gratefully received and will shape the future of the magazine.



www.surveymonkey.co.uk/r/niche-readership-survey



→ **THANK YOU** ←