



## Workshops

We are pleased to announce the workshops taking place at Ecology Across Borders.

As part of your registration fee, you have access to all lunchtime workshops taking place during the Tuesday and Wednesday lunch breaks. These workshops are 1.5 hours long and do not require re-booking.

## Lunchtime Workshops

### **An Accessible Introduction to Integrated Population Models for Ecological and Evolutionary Research**

*Mitch D. Weegman, University of Missouri*

Integrated population models (IPMs) allow researchers to combine data sets that directly and indirectly inform abundance, population structure, and demographic parameters (birth, death, and dispersal rates) to deepen our understanding of fitness and population dynamics. In this workshop, facilitators and IPM experts Prof. David Hodgson (University of Exeter) and Dr. David Koons (Colorado State University) will introduce IPMs and highlight the questions in ecology and evolution that researchers can address using IPMs. Workshop participants will then work interactively with the facilitators and organiser to develop IPMs using real data, and gain hands-on practice compiling IPMs in the BUGS programming language run from the Program R platform. The facilitators will close with a discussion synthesizing the research questions that can be addressed and review how IPMs provide the robust methodological framework to answer these questions. Participants will leave with the experience of forming IPMs and will receive a copy of the programming code to construct similar models using their data. This workshop will be particularly useful for ecologists, evolutionary biologists, and natural resource managers that have a solid understanding of demographic models, statistics, and programming, but seek an introduction to the inferential benefits of integrating multiple sources of data across the life cycle in one coherent demographic analysis. Participants are encouraged to share data in advance for use during this workshop and should contact the organiser for more information.

### **Biotic interactions and joint species distribution modelling**

*Carsten Dormann (University of Freiburg) & Casper Kraan (Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research)*

Joint species distribution models (jSDMs) allow the quantification of associations among species. They may improve our ability to predict the occurrence probability, particularly of rare species by “borrowing strength” from the more common species. This is achieved using hierarchical models, which can be informed additionally by traits or phylogeny. jSDMs are currently a Wild West in ecological statistics. Several approaches exist, with very different assumptions and flexibility. For the novice, this field is very difficult to enter. This workshop shall bring together people working with

jSDMs to provide first-hand experience reports, as well as people working on community ecological questions. In advance of the workshop, we will draw up a “how to”-guide for jSDMs, featuring data preparation, model type/selection, and result visualisation/interpretation. At the beginning of the workshop, for each step, 3-5 options will be displayed and the audience votes which option they think is best (e.g. “Including data on rare or unobserved species will (a) weaken any real signal for interactions among the common species; (b) improve estimates of common species; (c) improve estimates for rare species; (d) is the key reason why I am using jSDMs.”). Audience-input will consequently determine the direction and level of detail covered. The main intention is that the audience gets a good idea of the approach, its assumptions and limitations. We will keep a running list of questions and references that will be summarised as a blog-post on Twitter, ResearchGate, or others, after the workshop.

### **Building a Teaching Portfolio as an Early Career Researcher**

*Lewis J Bartlett (University of Exeter / UC Berkeley)*

Balancing research with gaining teaching experience is often a challenge for early career research ecologists, and can be exacerbated by working at non-teaching research institutes or spending extended periods of time in the field. Increasingly, universities look for professional accreditation as a mark of teaching excellence – such requirements demand a teaching portfolio, especially for those who want to take on a lecturing career full time. Understanding how to identify or create opportunities for teaching, with the goal of building a well-developed portfolio, is crucial to managing these challenges. In this workshop, we’ll be deconstructing example portfolios and outlining pathways to professional teaching accreditation in higher education. Participants will identify their current strengths and areas for further development; the goal is to leave with the outlines of a portfolio already written, and specific ideas of how to fill experience gaps. We’ll discuss how to tackle the education literature, and how to begin engaging with the ongoing development of ecological pedagogy – both necessary for landing professional accreditation. This workshop is does not develop teaching skills, but is about navigating professional development, taking a proactive approach to finding teaching opportunities, and building a portfolio. We’ll explore the extensive roles outreach and public engagement can play in building these portfolios, we’ll also specifically explore gaining experience outside of universities. Finally, participants will be introduced to major regional initiatives which will impact their teaching now and in the future, such as the European Commission’s RRI or the UK’s TEF.

### **Ecology is fun! Designing interactive games for outreach**

*Sara Mynott (University of Exeter)*

Interactive games allow research to be shared in an engaging and memorable way. They also present a novel tool for citizen science, allowing researchers to gather meaningful data while engaging the general public. But what makes an effective game – one that aids understanding, fuels excitement and keeps people coming back? This workshop will give you the skills to plan, deliver and evaluate your own games, whether they’re used for outreach or citizen science. Following an introduction to games and what to consider, participants will work together to plan an engaging game on a topic of their choice. You may find a laptop or tablet useful here – we’ll provide pens, paper and a number of examples to get you started. During game development we will offer our guidance on how to reach your target audience and tackle common challenges. Participants will take home a series of collaborative resources, useful contacts and new skills for their science communication toolkit. The workshop will close with tips on how to keep your audience interested and use interactive games as evidence of research impact.

## **From theoretical ecology to seafood markets: advancing holistic marine conservation through ecolabeling**

*Emily McGregor & Catherine Longo, Marine Stewardship Council*

Workshop description: The workshop aims to offer a collaborative space to exchange up-to-date information on best practice in ecosystem-based resource management, particularly on mitigating food-web mediated impacts of fishing on ecosystems. Taking the perspective of an internationally-recognized voluntary certification standard that uses ecolabeling as a market incentive to drive ecological improvements, i.e., the Marine Stewardship Council (MSC), provides a helpful framework to guide the discussion, as well as the challenge of making outcomes applicable on the water, in diverse ecosystems around the world.

We'll set the scene by outlining the MSC Fishery Standard ecosystem health requirements, then ask participants to apply these guidelines in scoring two certified fisheries through an interactive online voting system. We'll briefly discuss challenges to address and any necessary improvements to the process before splitting participants into groups based on key components of the MSC ecosystem health requirements: bycatch, threatened species, habitats, and foodweb functioning. Each group will identify best practices and cutting-edge methods within each assigned topic. In plenary, participants will test applicability of new proposed measures on the fisheries presented at the start, and discuss how they fit together in an operational, holistic, broadly applicable evaluation of ecosystem health.

We envisage this workshop resulting in a synthetic overview of current ecosystem health indicators that are measurable in the real world to evaluate fishing impacts (i.e., taking into account practical constraints to implementation such as data collection, monitoring, fishing industry willingness to comply, governance burden, etc.) By contributing to this discussion participants have the opportunity to inform the ongoing review of the MSC fisheries standard requirements.

## **How can citizen science advance ecology? From data collection to biodiversity observation network design and mobile technology application**

*Helen Roy (CEH), Michael Pocock (CEH), Florian Heigl (University of Natural Resources and Life Science), Daniel Dörler (University of Natural Resources and Life Science), Anett Richter (UFZ/iDiv) & Aletta Bonn (UFZ/iDiv)*

Citizen Science is already providing 80-85% of all biodiversity data in Europe that are crucial for national reporting. In this workshop we will map and discuss: How can technical and social innovation advance the field of biodiversity monitoring? How can we develop mobile technologies, new opportunities for engagement as well as standards and indicators to advance this field?

This future lab workshop will provide background information and discuss new advances of national and international platforms, e.g. in Australia, UK, The Netherlands, France, Sweden, Belgium, Germany etc. in collaboration with GBIF and others. Two lightning talks on existing biodiversity schemes and the application of technology and the power of citizen science for biodiversity networks will set the scene of the workshop. Then, an interactive, creative future lab (Zukunftswerkstatt) will involve all participants in developing scenarios about the future of biodiversity monitoring schemes. Participants will map the European landscape of national biodiversity observation networks, learn from each other, how these were built and developed over time, and scope opportunities for a joint network. By discussing the design and technological advances, including mobile and automated monitoring devices, participants will exchange experiences and ideas on how we can advance standards and the usefulness of individual citizen science projects to foster biodiversity research and allow for meaningful trend analyses of change.

We welcome everyone with an interest in biodiversity monitoring (standards, indicators, EBVs, interoperability and harmonising data) and/or citizen science more generally to foster exchange of European biodiversity monitoring networks.

### **Introducing the Coding Club model for transferring quantitative skills among ecologists**

*The Coding Club Team (Gergana Daskalova (University of Edinburgh), John Godlee (University of Edinburgh), Francesca Mancini (University of Aberdeen), Anne Bjorkman (Aarhus University), Dries Landuyt (Ghent University), Stefano Masier (Ghent University), Shane Blowes (Tel Aviv University and German Centre for Integrative Biodiversity Research (iDiv)), Anders Kolstad (NTNU University Museum)*

The workshop will introduce Coding Club as a model for enhancing statistical and programming fluency through innovative peer-to-peer workshops and online tutorials. We will use a tutorial on analysing big data in ecology to demonstrate how participants can deliver quantitative training across academic institutions. The Coding Club model for transferring quantitative skills among ecologists helps people at all career stages gain statistical and programming fluency, facilitating the collective advancement of ecology across institutions and borders. The workshop will benefit participants by 1) building capacity for innovative quantitative teaching, 2) spearheading Coding Clubs on a wider scale, and 3) advancing skills in efficiently analysing large datasets in R.

A key aspect of Coding Club is bringing together people at different career stages to create an environment where everyone is a learner and a teacher, facilitating knowledge exchange and collective advancement of quantitative skills. The workshop will be particularly relevant for 1) people teaching quantitative skills at their home institutions, 2) people who are keen to promote statistical and programming fluency by starting their own Coding Clubs, and 3) people looking to efficiently visualise and analyse big data. To provide participants with first-hand experience of the Coding Club model and writing statistics tutorials, we will collaborate in completing a coding challenge and building a demo tutorial on a topic of their choice, which participants could develop further and deliver at their home institutions.

### **Introduction to bayesian data analysis using STAN**

*Lionel Hertzog & Maxime Dahirel (Ghent University)*

The aim of this workshop is to arm the participants with working knowledge of data analysis using bayesian approaches in STAN.

Bayesian data analysis provide multiple advantages for the analysis of ecological data, such as being able to deal with small datasets and uncertainties but also allowing flexible models to be built. STAN has recently emerged as a powerful probabilistic language to specify, fit, check and compare bayesian models.

In this workshop, participants will be given a brief introduction into the specificities of bayesian approaches focusing on issues specific to ecological datasets and questions. Then models of increasing complexities will be fitted using R in an interactive session covering a broad range of typical models, such as linear models, logistic regressions and mixed-effect models. In this session all aspects of model building in a bayesian framework will be discussed from model building to model fitness check and model comparison. Finally the workshop will end with small discussion groups where participants will be given the opportunity to discuss issues related to specific questions and/or data, such as including uncertainty in meta-analysis, how to set complex random effect structures, or fitting ODEs to data.

All ecologists with working knowledge of statistics and interest in bayesian data analysis are welcome to join. The workshop will be at an introductory level but the discussion groups at the end could foster discussions on more advanced topics.

### **Managing Stress: how to identify the signs and learn techniques to manage them**

Facilitator, [Mind](#)

*Richard English, Communications Manager, BES*

Every year, one in four of us will experience a mental health problem. University counselling staff and workplace health experts have seen a steady increase in numbers of people seeking help for mental health problems over the past decade, with research indicating nearly half of academics show symptoms of psychological distress.

We at the BES recognise the need in our community for support and for tackling stigma – which is why we are pleased to collaborate with Mind, a UK-based mental health charity, to provide this workshop.

Please join us for an informal, inclusive session that will raise awareness of unproductive stress and provide practical techniques for managing it in an academic context. Our workshop will assist you to spot early signs in students, colleagues and yourself, as well as offering options for reducing the negative impacts of stress. This workshop will also suggest ways to maintain psychological wellbeing and promote a mentally healthy work culture. At the end of the workshop, participants will be given resources to take away and share with others.

Mind provides advice and support to empower anyone experiencing a mental health problem; they campaign to improve services, raise awareness and promote understanding.

### **Media: from paper title to going viral on social media**

*BES and GfÖ Press Officers*

How do you get media attention? What makes a good story? How can visual content and digital media tools help you reach a wider audience?

We've brought together press officers and members with media expertise to share their experiences with anyone seeking increased press coverage and interested in learning more about the use of digital content to communicate internationally.

This workshop will cover five key areas of media engagement:

- Understanding how journalists work
- Media in the digital age
- Making your work stand out
- Working with a press office
- How to deal with difficult questions

Through a series of case studies, you will gain a better understanding of what journalists are looking for in a story and how to work with press offices to generate coverage on your paper and work in general.

We encourage you to bring with you titles for your next papers, abstracts and outlines of other newsworthy activities as this hands-on workshop will allow you to put the newly learned skills into practice.

## **Navigating the unfolding Open Data landscape in ecology and evolution**

*Antica Culina (Netherlands Institute of Ecology, NIOO-KNAW)*

Research across evolutionary and ecological fields can tremendously benefit from using Open (accessible online) Data (e.g. powerful ecological synthesis; supplementing the analysis with the geological or environmental data). Our interactive workshop will enable researchers to efficiently find and use this growing source. Participants will first be introduced to the main ideas behind Open Data, and be provided with a list of aggregators that enable finding data in one common search interface (equivalent to searching for papers using the Web of Science). Next, we will divide into several groups. Each group will decide on a type of datasets they would like to find and access (e.g. wild pedigrees). Over the next 45 minutes, each group will identify the best aggregators to search for their type of data, and use these to collect the data. Participants will keep track of any issues they encountered during search, and any features that have facilitated their search. In the last 30 minutes participants will discuss pros and cons of using others data (e.g. misinterpretation) and combining data at a larger scale.

Each participant will be provided with a list of places to search for the datasets. Participant are expected to bring their laptops (for data-search).

The participants will learn:

- 1) where and how to easily find and get access to ecological/evolutionary datasets
- 2) what to keep in mind when using others data or using data at the large scale
- 3) the importance of making their own data properly described, and the best practices to achieve this.

## **Techniques for decision making in conservation**

*Nibedita Mukherjee (University of Exeter)*

Conservation science and policy draw heavily on a range of qualitative techniques. However, the criteria used to select qualitative techniques in any given research project are usually unclear. This is particularly relevant where culturally important aspects and value judgements have an important role in decision making. In order to facilitate an informed selection of qualitative methods for decision making, we will discuss five methodologies. We will provide a brief overview of five techniques (Nominal Group Technique- NGT, Focus Group Discussion-FGD, Delphi technique, Q method and Interviews). This will be followed by a hands on demonstration of some of the techniques (e.g. NGT and Q) which are relatively less known.

The workshop will allow the participants to understand which methods are suitable in what context. The participants will be able to compare the merits and demerits of each method and be equipped with a better understanding of the techniques. This workshop is aimed at both first time users of the techniques (or those who are considering using them), as well as researchers who are familiar with the methodology and wish to have an overview. The intended audiences are:

1. Students who wish to learn the techniques
2. Practitioners engaged in decision making
3. Academics who might have used some of the approaches in their research and wish to broaden their knowledge base on techniques from other disciplines.

**Who is there and how do we know? Navigating the complexities of taxonomy assignments during eDNA metabarcoding studies.**

*Holly Bik (University of California), Simon Creer (Bangor University) & John Colbourne (University of Birmingham)*

Session Description (250 words): In contrast to traditional ecological studies, high-throughput sequencing approaches (eDNA metabarcoding and other –Omics workflows) are commonly carried out without any direct link between morphological and molecular data. Thus, one of the most challenging aspects of eDNA studies is the process of matching unknown nucleotides with a known taxonomic assignment (family, genus, or species ID). This workshop will clarify the use of databases and taxonomy assignment steps in eDNA metabarcoding studies. What tools and resources can (and should) be used for particular environments and target organisms? If an appropriate tool/database does not exist, how do you go about constructing your own local resource? The first part of the workshop will offer a lecture-based introduction to eDNA workflows, with an emphasis on common marker genes (16S/18S rRNA, ITS, COI, matK, etc.) and the tools/databases available for preparing standardized files for downstream ecological analysis (OTU tables analyzed in QIIME, mothur, OBITools, etc.). Next, small topic-focused groups will convene in a breakout session, to exchange ideas surrounding the use of both traditional and non-traditional metabarcoding markers; participants will be encouraged to share tools/scripts in a centrally accessible Dropbox folder. The workshop will conclude with a final reporting session by breakout group leaders and a wrap-up discussion to identify opportunities for moving forward. Workshop outputs will be used to prepare a review paper or community resource article focused on eDNA marker genes and current challenges with taxonomy assignments, and all participants will be invited to contribute as co-authors.