Student Conference on Conservation Science 2019

WORKSHOP OUTLINES

There will be workshops on 12 topics, held on Tuesday 26 March at 14.00 to 15.30 and at 18.40 to 20.10 on Wednesday 27 March. Some workshops will be offered only in one of these sessions and some in both. We will inform you about how to sign up for workshops when you arrive at the conference. Meanwhile, **PLEASE USE THESE OUTLINES TO HELP YOU MAKE UP YOUR MIND WHICH ONES YOU WOULD MOST LIKE TO ATTEND. PLEASE DO NOT TELL US YET – YOU CAN DO THAT AT AFTER YOU ARRIVE AT THE CONFERENCE.**

Workshop A: What do you need to know? An introduction to evaluation for conservation projects (Sessions 1 & 2)

Iain Dickson [BirdLife International]

To understand the difference we are making, we as conservationists need to be able to effectively evaluate the outcomes and impacts of our work. However, conservation projects are often complex, have a wide range of potential outcomes and impacts and are often severely limited in time and resources, all of which can make it challenging to know where to direct evaluation effort. This workshop will provide an overview of the key concepts relevant to evaluating conservation projects. Making use of materials in the PRISM toolkit (www.conservationevaluation.org) we will consider what a project or project action is trying to achieve, what key questions need to be answered and how to select appropriate evaluation methods and analyses. The workshop is open to all and would be particularly useful for anyone involved in or supporting project design, implementation and/or communication.

Workshop B: Practical Conservation Genetics (Session 2 only: 27 March)

Bill Amos [Department of Zoology, University of Cambridge, UK]

The role of genetics in conservation is often misunderstood. Some seem to believe genetic analysis is close to magic, while others take the view that gathering genetic data is an expensive waste of effort. Equally, some see genetics as playing a central role in dictating the health of a population, while others feel it is less important. This workshop aims to give an overview as to what can and cannot be done using current methods. It will also explore some of the key areas of misunderstanding. Although the primary presentation will be in the form of a lecture, I hope people will bring along their own questions that can be discussed in an open forum.

Workshop C: Tips and tricks for writing grant applications: the view from a funder (Sessions 2 only: 27 March)

Claire McNulty, National Geographic Society

National Geographic Society awards grants to people working in conservation science all over the world. This session will start with a short outline of what grants are available from National Geographic, and then lead into an interactive session on how to develop a successful grant proposal, with tips and advice that will be relevant for a wider variety of funding sources, as well as National Geographic.

Workshop D: Planning a conservation research programme (Session 2 only: 27 March)

William J. Sutherland [Department of Zoology, University of Cambridge]

Some conservation research programmes are unsuccessful due to unpredictable circumstances such as illness, unusual weather or unforeseeable political problems. Many others could never be successful as they were poorly planned. A small amount of sensible planning can make considerable differences. In this workshop we will use a series of exercises to demonstrate a process called reverse planning.

Workshop E: Bringing natural capital and ecosystem services into economic decision making (Sessions 1 & 2)

Ian Bateman [UK Natural Capital Committee and
Land, Environment, Economics and Policy Institute (LEEP) University of Exeter, UK]

Like it or not, the large majority of decision in the world are made using some form of economic analysis. A recognition of this situation is becoming progressively more embedded within environmental policy and decision making – for example a 'natural capital' approach is the cornerstone of the recent 25 Year Environment Plan issued by the UK Government and it underpins much of the work of The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Given this, a knowledge of the economic thinking underpinning these approaches is extremely helpful if you wish to turn your biological and ecological knowledge into action.

Assuming no prior knowledge of economics, this workshop will provide an overview of how natural capital and ecosystems services can be brought into the decisions made by both Government and businesses. As part of this we will examine how the complex nature of the environment can be incorporated within economic decisions in ways which reflect natural and physical science information. Indeed we will discuss whether economics is the best thing that ever happened to science and the ideal way to get its messages across to policy makers! We will look at examples ranging from the case of the UK Government deciding how to improve land use to the challenges of conserving wildlife in Sumatra. Everyone is very welcome!

Workshop F: Using the Mitigation Hierarchy for better biodiversity outcomes from development projects (Sessions 1 & 2)

Edward Pollard, Adrien Lindon & Helen Temple [The Biodiversity Consultancy, Cambridge, UK]

Applying the **mitigation hierarchy** is crucial for all development projects (e.g. wind farms, roads or ports) aiming to achieve no overall negative impact on biodiversity or on balance a net gain (also referred to a No Net Loss and the Net Positive Approach). It is based on a series of essential, sequential steps that must be taken throughout the project's life cycle and as such emphasises best-practice of avoiding and minimising any negative impacts, and then restoring sites no longer used by a project, before finally considering offsetting residual impacts.

The mitigation hierarchy is a widely used approach in the management of biodiversity impacts by developments as it provides a logical and effective framework to protecting and conserving biodiversity. Yet there are many practical challenges to its design and implementation and in determining the loss or gain as a result of mitigation action or inaction.

This workshop will introduce the ecological, economic, regulatory and reputational drivers for applying the mitigation hierarchy and will delve into its four key steps. Students will work through an example in small groups aimed at achieving better biodiversity outcomes through improved design and implementation. This will be followed by an open discussion on practical challenges of implementation and participants own experiences of it. As well as a general introduction to the mitigation hierarchy, attendees will come away with an understanding of how to turn mitigation hierarchy *theory* into *practice*, as well as how to overcome some of the common barriers to effective implementation and long-term biodiversity gains.

Workshop G: Meta-analysis (Sessions 1 & 2)

Phil Martin & Gorm Shackleford [Department of Zoology, University of Cambridge, UK]

When different scientific studies show different results, what can we conclude? Is it possible to generalize in conservation? For example, if we had to summarize the effect of hunting on biodiversity loss, could we do it? This is the objective of meta-analysis: to summarize a set of scientific studies by calculating an average effect across all studies. This is not a workshop about statistical methods, but we will look at real-world publications and datasets to get you thinking about the diversity of methods that you could use for meta-analysis. We will talk about the strengths and weaknesses of meta-analysis, the types of questions you could answer using meta-analysis, the minimum amount of data you might need for meta-analysis, and some strategies for making your meta-analysis as robust and transparent as possible. You are not expected to have any experience of meta-analysis, and you will not need a laptop, but a basic understanding of experimental design would be helpful.

Workshop H: Expert Judgement
(Session 1 only: 26 March)

Mark Burgman [Centre for Environmental Policy, Imperial College, London, UK]

We use expert judgements when we need to, when the evidence we need is unavailable or incomplete, the decision is pressing and the consequences of a wrong decision are appreciable. But scientists are subject to a host of psychological and contextual biases that make their estimates of quantities or the outcomes of future events unreliable. This workshop will provide an introduction to some simple and effective ways of deciding who is an expert, and how to engage with them to obtain relatively accurate and well calibrated judgements.

Workshop I: How to write a scientific paper, or How to avoid Snoopy's problem... (Sessions 1 & 2)

Martin Fisher [Editor of Oryx, Fauna & Flora International, Cambridge, UK]

Would you like this to be you? Are you determined that your first scientific paper will be rejected (so many are!)? Attend this workshop to find out how to ensure that this happens... or perhaps even how to avoid it...

Common pitfalls, glaringly obvious errors, verbosity - all these and more easy strategies to ensure that you receive your first rejection slip will be covered in painful detail...

It's the final year of your PhD, you've finally gathered some data, and you are going to be famous... well, at least you plan to write your first scientific paper... Do yourself a favour, do the Editor a favour, attend this workshop!

Workshop J: So you want to do a questionnaire: An introduction to robust study design (Session 1 only: 26 March)

Freya St John [School of Natural Sciences, Bangor University, UK]

Many conservation scientists come from a natural science background but there is increasing awareness that successful conservation is interdisciplinary and must use knowledge and methods developed by the social sciences. Conservation scientists may need to collect quantitative data on aspects of human livelihoods e.g. estimates of volumes and spatial patterns of harvesting of a target species may be needed to quantify the sustainability of the harvest, or the likely socio-economic impacts on local people of efforts to reduce the harvest. They may also seek to understand people's attitudes, social norms and other possible influences on their behaviour. Whatever the aim, surveys need to be designed to ensure the target population is successfully sampled, that biases are considered and minimised and ethical implications considered. In this brief workshop we will focus on steps in the research design process for quantitative social surveys. The workshop would particularly suit conservationists whose training to date has been mostly in the natural sciences but all are welcome.

Workshop K: A Basic Introduction to Statistics for Conservation Science: Study Design and Analysis (Sessions 1 & 2)

Alison Johnston & Philipp Boersch-Supan [Cornell University, USA and British Trust for Ornithology, UK]

Good conservation decisions are informed by ecological knowledge, which is obtained by well-designed studies and surveys and appropriate statistical analyses. Therefore study design and analysis are important foundations of conservation science. This is an introductory workshop that will be split into two sections. Firstly, we will introduce some basic principles of study design, including representative samples, stratification, bias and power analyses. We will discuss the importance of these aspects of study design in producing a dataset that is suitable to answer your conservation questions. The second section of the workshop will explore basic principles of statistical analysis, such as statistical significance, identifying important ecological variables and pseudo-replication. The workshop will end with some guidelines for producing graphics, an important aspect of communicating your analytical results in scientific papers and to conservation decision makers. The workshop will cover some basic general principles on all these topics. Due to the limited time, these principles will be generally described, but there will not be time to answer questions about your specific datasets.

Workshop L: Using Conservation Evidence to answer conservation questions
(Session 1 only: 26 March)

Bill Sutherland [Department of Zoology, University of Cambridge, UK]

How do we answer questions like these:

- Are we using the most effective ways to get bats to cross roads?
- Hot foam, flamethrowers, blackout carpets or pesticides - how should we deal with invasive plants?
- What is the best way to stop seabirds being caught by fishers?

There is increased use of the term 'evidence-based conservation' but little exploration of how evidence should be found and applied in practice. In this workshop we will explore how to use the website www.conservationevidence.com to answer the questions above - and more - without undertaking extensive and expensive literature reviews. We will address why looking at the evidence for conservation solutions is important; explore the functionality and uses of the website www.conservationevidence.com; and undertake small group exercises to put into practice what we have learned and use Conservation Evidence to answer a realistic conservation question. This workshop will be particularly useful for students who aim to work in conservation decision making at any level.