

Introduction to decision making for applied ecology and conservation

Dates and location: 29.1.2024 – 2.2.2024, University of Bern

Registration: <https://www.cuso.ch/activity/?p=1128&uid=7117>

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OVERVIEW

Scientists and managers working to preserve biodiversity constantly need to make and advise management decisions, often with conflicting objectives, time pressure, limited resources and incomplete knowledge. Recognizing this complexity, conservation increasingly uses a range of principles and tools to make rational decisions in difficult situations.

This five-day course provides a primer in decision analysis for conservation. It is aimed at students of ecology and evolution who seek a career in making or advising conservation decisions, independently or interacting with management agencies and practitioners. Each day combines lectures, practical training, and small group activities to enable application to real-world conservation challenges. All speakers are leading experts in conservation and/or decision making, with years of experience in delivering training to future and current scientists, managers and practitioners.

PROGRAM

Day 1: conservation decision-making

- Human decision making: heuristics and biases (Dr. Jana Freundt, University of Fribourg)
- Making conservation decisions (Dr. John Ewen, Zoological Society London, UK)
- Predictions for decision-making (Dr. Stefano Canessa, University of Bern)
- Breakout: identifying components of a conservation decision problem
- Practical: structured expert elicitation

Day 2: science and values

- Setting objectives and choosing metrics (Dr. John Ewen)
- Breakout: building an objective hierarchy
- Practical: Simple Multi-Attribute Rating Technique

Day 3: uncertainty and learning

- Monitoring for conservation (Dr. Benedikt Schmidt, University of Zurich)
- Uncertainty and risk attitudes (Dr. Stefano Canessa)
- Breakout: adaptive management
- Practical: decision trees

Day 4: solving trade-offs

- Species distribution models for conservation (Prof. A. Guisan, University of Lausanne)
- Algorithms for conservation decisions (Dr. Virgilio Hermoso, University of Sevilla, Spain)
- Practical: optimal resource allocation (Dr. Alejandra Morán, University of Lausanne)

Day 5: systematic conservation planning

- Using MARXAN for conservation decisions (Dr. Virgilio Hermoso)
- Practical: designing optimal protected areas (Dr. Alejandra Morán)
- Feedback and conclusions

SPEAKERS



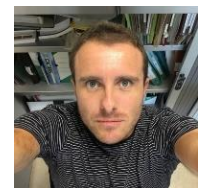
Stefano Canessa is a Senior Postdoc in the Division of Conservation Biology at the University of Bern and a Tenure-track Research Fellow at the University of Milan (Italy). His research focuses on demographic modelling, risk analysis and decision-making for endangered species recovery. He has been involved in multiple species recovery plans across the globe, ranging from frogs and turtles to birds and bats.

John Ewen is a Senior Research Fellow at the Institute of Zoology, Zoological Society of London. His research focuses on reintroduction biology and threatened species recovery. He is co-chair of New Zealand's Hihi (Stitchbird) Recovery Group and of the Sihek (Guam kingfisher) Recovery group, and is involved in many projects including birds and mammals spanning New Zealand, Australia and Mauritius.



Alejandra Morán Ordóñez is a Postdoctoral Fellow at the University of Lausanne and University of Bern. She is a landscape ecologist and ecological modeler interested in how nature and society interact, and how both can be influenced by environmental policy and ecosystems management. She uses quantitative tools to understand ecological patterns and processes across multiple spatio-temporal scales; then, she applies that ecological information to assist real conservation planning.

Virgilio Hermoso is Senior Researcher of the Spanish Research Council (CSIC). He works on decision theory applied to conservation and rehabilitation planning in freshwater ecosystems at different spatial scales from single catchments to broad conservation assessment, also using and accommodating Marxan to the needs and particularities of freshwater ecosystems.



Jana Freundt is a Senior Researcher at the Department of Economics at the University of Fribourg, Switzerland. Jana is a behavioral scientist working in the fields of political economy and social policy. She uses experiments and surveys to investigate people's economic and political behavior.

Antoine Guisan is Professor of Spatial Ecology at the University of Lausanne. His main focus is on spatial predictive modelling of plant and animal distributions and communities. Besides theoretical and methodological interests in understanding and predicting species distributions, his group develops models for various decision-making purposes, such as rare species management, assessing the potential impact of climate change on biodiversity, and anticipating biological invasions.



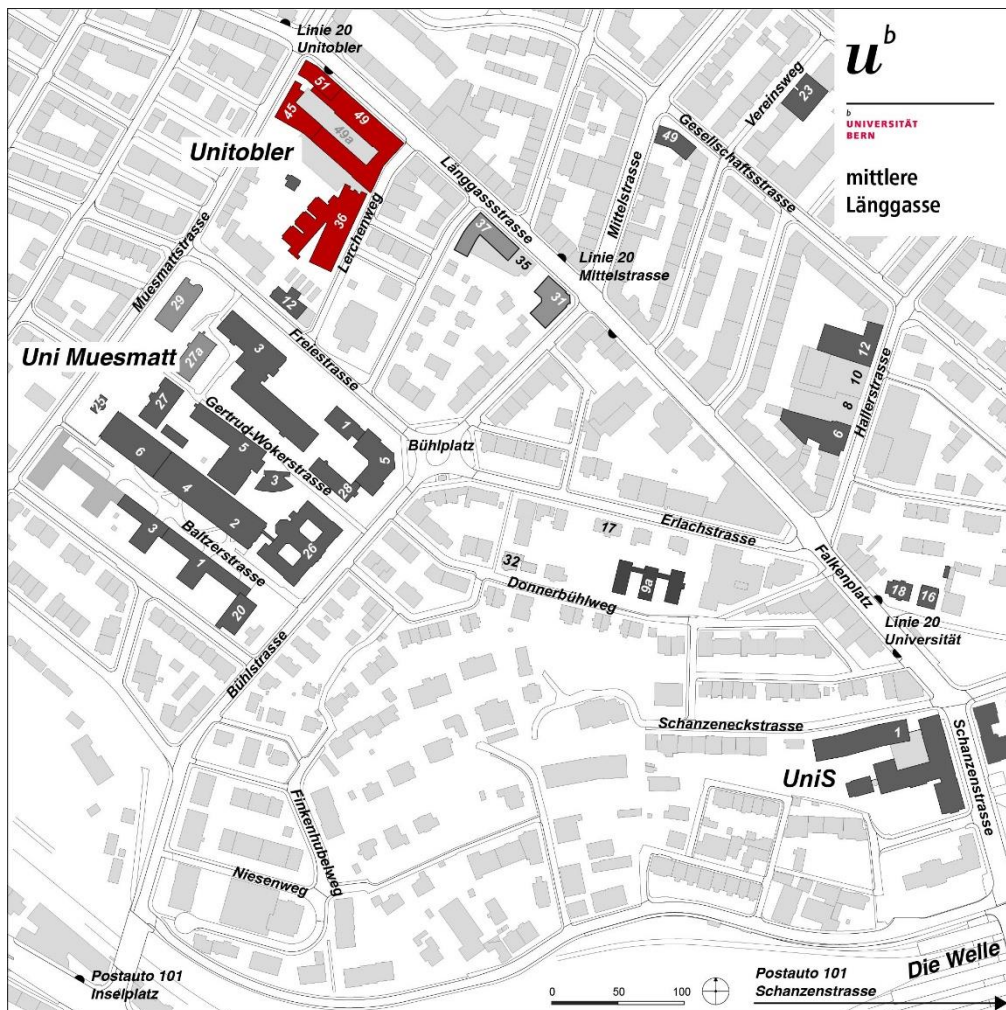
Benedikt Schmidt is a Group Leader at the University of Zürich. His research focuses on ecology and conservation of amphibians and reptiles, with an emphasis on knowledge transfer for decision making, particularly on monitoring of populations and statistics in ecology. emphasize applied research as well as the dissemination of knowledge relating to the improvement of the protection of nature and species.

PRACTICAL INFORMATION

How to get there

The course will be held at the University of Bern, UniTobler building, Lerchenweg 36, room F-121 (floor -1).

From the main station in Bern, you can walk 1.2 km from the main exit (approximately 15-20 minutes), 850 m from the secondary exit in Stadtbachstrasse (approx. 12 minutes), or take buses 102, 104, 105 or 107 (approx.. 4 minutes). Coffee breaks and lunches will be in the same building (mensa on ground floor).



Course materials and requirements

All slides, tools sessions and reading materials will all be available, some before the course, some immediately afterwards. All will be shared through a Google Drive folder, please check your email for the invitation.

- You will need your own PC/Mac laptop. Please fill the survey [at this link](#) to help with planning exercises and breakout sessions. It is especially important to know if you have a Mac or PC.
- WiFi will be available on site and will be necessary as materials will be shared throughout. As a precaution, before travelling check that you can connect to Eduroam or hotspot from your phone.
- Please check that your smartphone can read QR codes as we will use them for multiple exercises.
- You will need a spreadsheet software (Excel or open-source alternatives) to run some of the practical sessions.
- If you have at least some familiarity with GIS and have one installed on your laptop, please also indicate this in the survey, so we can plan for the spatial planning sessions on days 4-5.
- We will have some breakout sessions working on real or simulated conservation problems. If you are working on such a problem within your thesis or other work, please write us a brief summary using the survey linked above. We will select 2-3 case studies to explore during the course.

Breaks and food

There will be coffee breaks in the morning and afternoon (20 minutes each) and a longer break for lunch (1 hour). The exact timing of the shorter breaks will be adjusted depending on each session (but expect ~10:30 and ~15:30 for am and pm respectively). We plan to start each day at 9 and finish at 17, except the last day when we'll finish an hour earlier at 16 to allow return travel.

Other ground rules

To ensure you get your course certificate by CUSO at the end, don't forget to sign the attendance sheet that we will make available at the start of every day.

Reimbursements for travel etc are handled directly between you (for PhD attendees) and CUSO through the myCUSO portal.

We don't have any specific COVID-related rules in place, but we want to avoid the course being disrupted by people falling ill. We will ensure proper ventilation and airflow. If you have any symptoms, please consider wearing a close-fitting FFP2 mask. We will make available both masks and antigen tests if you need one.

Additional information on the course

Different versions of this course have been delivered in the past decade by the organizer and speakers. The most recent version was delivered for CUSO in January 2023 and was attended by 21 participants from all CUSO universities, with highly positive feedback. Most participants expressed the wish to add one day to the 4-day schedule, which we have done in this 5-day proposal.

Other previous versions, from which the current format has been developed, were delivered in collaboration with the International Union for the Conservation of Nature / Species Survival Commission (see for example <https://iucn-ctsg.org/training>), reaching an overall audience of >300 participants from 33 countries:

- 2023 Curitiba, Brazil (5-day course)
- 2022 London, United Kingdom (2-day course)
- 2022 Prague, Czech Republic (2-day course)
- 2019 Punta Islita, Costa Rica (5-day course)
- 2018 Chicago, USA (5-day course)
- 2017 London, United Kingdom (4-day course)
- 2016 Honolulu, Hawaii, USA (4-day course)
- 2016 Wellington, New Zealand (2-day course)

The overall framework and structure is based on the Training in Structured Decision Making developed by the United States Geological Survey (<https://www.usgs.gov/centers/eesc/science/structured-decision-making-methods-applications-and-capacity-building>). The systematic conservation planning component (days 4-5) will be based on several training courses delivered by speakers (Dr. Virgilio Hermoso and Dr. Alejandra Moran Ordonez; see for example <https://cibio.up.pt/en/events/advanced-course-spatial-conservation-prioritization-concepts-methods-and-applications-2/>).

Selected feedback from 2023 CUSO iteration

Useful aspect of Conservation often ignored. Lot of different aspects seen. Interactive. Good teachers. I will use some of the learning in my own job.

Really applied and well organised, due to the complexity of the topic an extra day would be greatly appreciated.

Guidance on how making decisions in conservation projects. The course facilitated having interesting discussions about problem solving and developing strategies to plan your questions and projects. Introduction to many useful tools.

It was very informative, good inputs to topics I usually don't think about on a daily basis. I liked that the course was very interactive, with exercises between lectures and lots of time for discussion.

Interactive, practicals, very approachable organizers (open, helpful,..)

I think almost everything was a strength. I feel like I learnt a lot and it was especially appealing the fact that it invited to self questioning constantly, it was challenging.

This course gave important knowledge on conservation biology in an applied perspective. I really enjoyed the course as it gave me good input related to my personal PhD subject.

Selected feedback from previous courses

The workshops were the most useful 4 days I've spent in a long time! The course was really helpful and it was great to learn some new tools for structured decision making and to get such a wide range of perspectives on some of the aspects of translocation planning that are common to many projects. It was also nice to meet such a bunch of great people. **J, Wales**

It was really enjoyable and I think a lot of it will prove to be very useful. **C, England**

Thank you so much for an amazing organization and facilitation job! It was a great privilege to be part of this group and course! **C, the Netherlands**

It was the first training I've done for years and was good to leave feeling like I'd been challenged and learnt a lot, with lots of stuff to take away and try out. Thanks for the course materials, too. **K, England**

It was very enjoyable and I anticipate that the tools will prove very useful. **T, England**

I really enjoyed the course and sat through most of it thinking my job would be so much easier if people applied the methods discussed at least to some extent. **K, England**

I found the workshop very interesting and hope to share it with colleagues. **S, Australia**

Thank you so much for having me! The course was really interesting and I hope that I can implement some of it in our work here at Nordens Ark. **E, Sweden**

Thank you for facilitating my participation. The workshop was enjoyable and informative, I look forward to applying the lessons in our projects. **K, Zambia**

Thank you very much for your great efforts and success of the training. I find it very useful and I enjoyed it a lot. Thank you very much. **P, Czech Republic**

The course was great! I've been thinking about it a lot, considering how it could be applied. **C, England**

Thanks again for running the course – I found it really useful and have already been thinking about how I can apply some of those tools to our project. **H, United States**

Fantastic thanks. It was great to meet you and the team and I got lots out of the course. **H, Scotland**

Thank you so much for the opportunity to participate in the training workshop, it was really interesting. As with workshops and conferences, the networking was of course a great added bonus from which I picked up some very promising new ideas. **P, Guatemala**

I really enjoyed the course and meeting all the lecturers and participants. I've found that the course has influenced the way I think about my project and will certainly influence planning in the future. **C, South Africa**

Thank you for this and thanks again for organising the workshop, it was all simply fantastic. **S, Australia**

I did really enjoy the workshop and conference, it was a wonderful way to learn about the process and some of the major ideas in reintroductions. Working in the siskin group was my favorite part and provided an example of how everything we learned works together. **H, United States**

It was a fantastic course which I'm busily trying to put it into practice. **D, Australia**

I am so grateful to have had the opportunity to participate in that training. It was one of the best investments of time in that kind of thing I've made in memory. It was really, really good. **S, United States**

Thanks for the wonderful workshop, I really enjoyed my time there and learned a lot. **H, United States**

Thanks for sending this along. I very much enjoyed the workshop and we are working on applying what we learned already! **L, Canada**

I absolutely loved the workshop and conference in Chicago. I found the workshop particularly beneficial and I have already been discussing ways of implementing new things over here on the Island. **JP, Australia**