

Spatial Dimension in Animal Management and Conservation



“...The scope of the workshop is to investigate several aspects of animal movement and spatial use and to relate them to newest challenges in wildlife management and conservation...”

7–12 August 2021

Faido, Ticino, Switzerland

University of Zurich

Department of Evolutionary Biology and Environmental Studies



Overview

Understanding how animals respond to human-induced degradation and fragmentation of suitable habitats is critical for developing appropriate management and conservation plans. New technologies have made it possible to collect animal location data and remotely sensed environmental data at finer spatial and temporal scales. This workshop will provide participants with a quantitative toolset to leverage these data sources so that they can address emerging questions in the field of animal movement ecology.

Course Description

During day one, participants will learn how to source landscape information through freely available remote sensing imagery and to import, manipulate, and represent georeferenced environmental data in R. Environmental data may represent ecological (e.g. habitat types, topography) or human activities (e.g. landscape use, settlements distribution). The aim of day one is to give participants a toolset that enables them to obtain and prepare environmental information that can be used to understand and explain animal movement patterns and space use.

Day two will be dedicated to the decomposition of movement trajectories and characterization of movement modes and phases. Participants will be exposed to the concept of net-squared displacement, an analytical method used to classify movement trajectories into alternative modes such as sedentarism, nomadism, dispersal, and migration. These statistics can be fed into generalized linear mixed models to investigate the factors responsible for the emergence of such patterns.

During day three, participants will be exposed to methods commonly used to quantify animal home ranges; the pros and cons of these methods will also be discussed. Alternative methods such as minimal convex polygons, kernel density estimators, local convex hulls, and brownian bridges will be presented. Particular attention will be given to the temporal scale of the analysis and on the environmental and anthropogenic factors that influence home ranges.

During the next day, we will use presence/absence data to analyze habitat selection and create species distribution models. Participants will be exposed to the most common methods used to investigate habitat preferences such as resource-selection functions, step-selection functions and integrated step-selection functions. Assumptions and limitations of each method will be addressed.

Finally, during the last day, participants will discover how to apply what they learned during the first four days of the workshop to develop evidence-based recommendations for the management of their study subject. In particular, participants will learn how to create various connectivity maps. Connectivity between populations is one of the most important aspects in the management of wild population in human-dominated landscapes. Lastly, we will discuss new research avenues and research gaps that will need to be addressed in the future for the integration of the spatial dimension in the conservation and management of animal species.

Each participant is expected to bring the own laptop and to have good knowledge of the R Software. The course is held in English. Data will be provided but participants are welcome to bring own data.



Lecturers and Experts

We were able to secure contribution from national and international experts. We are please to welcome as lecturers: Prof Börger Luca (Swansea University, UK), Prof Fieberg John (University of Minnesota, USA), Dr. Haverkamp Paul (University of Zurich, CH), Mr Behr Dominik (University of Zurich, CH), Mr Hofmann David (University of Zurich, CH), Dr Cozzi Gabriele (University of Zurich, CH).

Participant Eligibility

The workshop is tailored to PhD student level, and priority is given to students from UZH and ETHZ. Candidates from other Swiss universities, international universities, and Swiss-based practitioners are welcome and will be put on a waiting list based on the following selection criteria: Institutional affiliation and academic position; relevance of own research towards topics covered in the workshop; proficiency in the use of the R software; equity and balance of expertise to create a homogeneous, yet diverse, working group. The waiting list will be cleared 4-6 weeks prior the beginning of the workshop.

Candidates should send 1/2 page to Gabriele Cozzi with own details and explaining why they are interested in the workshop, how the workshop will benefit them and their (future) scientific career, whether they are or have been working with GPS movement data, whether they will bring data with them and what kind of data this is.

Costs

A contribution of 250 CHF is asked to each participant who will be fully catered during the entire duration of the workshop, from Saturday evening (7.8) till Thursday evening (12.8). Scholarships are not available. Participants are responsible to cover their own transportation to the venue. Cancellations less than a month prior beginning of the workshop will not be refund.

Module

ECO 343

2 ECTS credit points

The Venue

The workshop will take place off campus, in Faido (Switzerland) at Ostello Cappuccini Faido (<https://www.ostellofaido.com>). The Ostello has a large lecture room equipped with beamer and smaller rooms for working in subgroups. Accommodation is organized in shared rooms of 2-4 people. Breakfast, lunch, and dinner are served on site.

For additional information and registration please contact Gabriele Cozzi at gabriele.cozzi@uzh.ch

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