Transdisciplinary Nature Conservation: the IUCN Red List of Threatened Species from evaluation to practice

Morning (9:00 - 12:30)

* Theoretical introduction
* Step by step SDM workflow tutorial with Wallace

# Introduction (9:00 - 9:30/10:00)

## Antoine

* What are SDMs?
* What are SDMs used for?

# SDM workflow (9:30/10:00 - 10:30)

## Fede/Luca

* Defining our rationale
  + “Where are potential breeding sites?”
  + “Where are potential sighting locations?”
    - Mobile/sessile species
    - Home range sizes
  + “How will distribution change in the future?”
* Choosing appropriate resolution
  + Temporal
  + Spatial
  + Thematic
* Occurrence Data (Wallace component)
  + Data types
    - Presence only
    - Presence/absence
    - Detection/non-detection
  + Biases
    - Sampling
    - Detectability
    - Taxonomic biases
* Process Occurrence Data (Wallace component)
  + Dealing with biases
    - Data filtering
    - Replicating bias in background locations
    - Model bias
    - Spatial Thinning (Wallace component)

# Morning break (10:30 11:00)

# SDM workflow (11:00 - 12:30)

## Fede/Luca

* Environmental Data (Wallace component)
  + Matching our rationale
  + Typical kinds of layers
    - Climate
    - Geology
    - Podology
    - Hydrology
    - Land use/cover
    - Distance to …
    - Moving windows
    - WorldClim (Wallace component)
* Process Environmental Data (Wallace component)
  + Nich truncation
  + Variables correlation
* Partition Occurrence Data (Wallace component)
  + Model validation
  + Spatial partition
* Model (Wallace component)
  + Modelling algorithms
  + MaxEnt (Wallace component)
    - Feature classes (Wallace component)
    - Regularisation multiplyers (Wallace component)
    - Classification performance (Wallace component)
      * ROC (Receiver Operating Characteristic)
      * AUC (Area Under the ROC Curve),
      * OR (Omission Rates)
      * AIC (Akaike Information Criterion)
* Visualise (Wallace component)
  + Response curves
  + Map predictions
    - Raw and Logistic outputs (Wallace component)
    - Binary output (Wallace component)
* Project (Wallace component)
  + New locations
  + Future environmental variables
  + Multivariate Environmental Similarity Surface (MESS) (Wallace component)
* Extracting R code (Wallace component)

# Lunch break(12:30 - 14:00)

Afternoon

* Theory on SDMs as Red List assessments tools
* Students to produce SDM for threatened species

# SDMs for Red List assessments (14:00 15:30)

## Fede/Luca

* Extent Of Occurrence (EOO)
* Area Of Occurrence (AOO)
* Free workshop:
  + download threatened species occurrence (<https://www.iucnredlist.org/resources/spatial-data-download>)
  + Produce SDMs
  + Compare (visually) SDM with IUCN range

Notes

* How to prepare computers?
  + Need to install R and R package “Wallace”.