Systematic Conservation Planning

Key reading
Review and highlights:
· A review paper laying out the nascent field of systematic conservation planning.
· A general review of the need and basic concepts in systematic conservation planning
· Step by step guide for systematic conservation planning

Review and highlights:
· A recent review of systematic conservation planning focusing on the protocol.

Further reading:
Review and highlights:
· A review of pitfalls associated with systematic conservation planning and general recommendations on how to better test methods, integrate uncertainty, and integrate errors associated with predictive models.

Species Distribution Models

General

Key reading

Review and highlights:
A thorough review of SDMs and their ecological basis, the niche concept,
· A general review of the assumptions of SDMs including discussion of equilibrium, biotic interactions, and spatial scale
· Review of fitting and evaluating SDMs and potential pitfalls when projecting into the future or using SDMs in conservation planning

Review and highlights:
· Comprehensive evaluation of 16 presence-only (no absences) SDM models for over 226 species across 6 regions.
One of the first studies to evaluate and compare performance of traditional modeling methods with newer methods such as machine learning, etc.

**Further reading**


**Review and highlights:**

- Using an invasive species, an exploration of various methods to minimize extrapolation errors and assess and understand SDM predictions.


**Review and highlights:**

- A review of the niche concept in SDMs
- A review of the assumptions and uncertainties inherent in all SDMs, their effects, and general methods for dealing with them using example species in California.

**Further reading for different algorithms**

**Maxent**


**Review and highlights:**

- A thorough explanation geared towards ecologists of the Maxent algorithm, its logistic output, and its components/parameters using case studies.
- Discussion of pitfalls of and how to deal with presence only data, sampling bias, background data, lack of species prevalence, and predicting outside the range of training data


**Review and highlights:**

- Another description of how the maxent algorithm works with language that is targeted for ecologists
- Descriptions and recommendations for the important settings in Maxent

**BRT models**


**Review and highlights:**

- Thorough review of what BRTs are and how they work.
- Practical review of how to optimize a BRT models various parameters and settings, how to test the model, and how to review model results using a case study.
Includes a tutorial and code to run a model using R.

**MARS models**

**GAM/GLM models**

**SDM Methods**

**Further reading**

Review and highlights:
- Recommendations for the selection of model error assessment techniques
- Introduction of the ROC AUC in an ecological setting


Review and highlights:
- Review and evaluation of methods to select presence/absence thresholds from species distribution model outputs


**Spatial Prioritization**

**General**

**Key reading**

**Further reading**


Zonation software
Key reading

Review and highlights:
· Introductions to the Zonation approach and a review of the workflow for using Zonation.

Marxan software
Key reading

Review and highlights:
· Introducing Marxan with Zones.

Review and highlights:
· Linked estimated bird density models to Marxan.

Conservation planning with climate change

General
Key reading


Ecosphere 4.

Review and highlights:
- Challenges to systematic conservation planning with climate change
- Two examples of how to handle uncertainty in future climate change projections

**No-analog climates**

*Key reading*


Review and highlights:
- Description of no-analog communities using a conceptual framework.
- A review of the problems and implications no-analog communities pose to species distribution models
- Projection of global novel climates by 2100 AD

*Further reading*


Review and highlights:
- Alternative thoughts concerning the ability of species to adapt to climate change


Review and highlights:
- Description of the problems with SDMs being projected onto novel environments (i.e. outside the range of where the model was calibrated).
- Suggestions for how to identify and report areas with no-analog or novel environments

**Invasive species**