Model-based multivariate analysis of abundance data using R

Instructor: **David Warton**, Ecostats Research Group, University of New South Wales, Australia.

Date: 22–26 January 2018

Venue: Seminar Room, Kirstenbosch Research Centre, South African National Biodiversity Institute, Cape Town, South Africa

Catering: Morning and afternoon tea and coffee and light lunch will be provided

Computers: Bring your own laptop with latest R and packages: mvabund, lme4, glmnet, smart, speciesmix, boral and saint

Costs: 600 USD (international attendees)
8000 ZAR (non-academics)
5000 ZAR (academics and SEEC partners)
3000 ZAR (students)

This course will provide an introduction to modern multivariate techniques, with a special focus on the analysis of abundance or presence/absence data. Multivariate analysis in ecology has been changing rapidly in recent years, with a focus now on formulating a statistical model to capture key properties of the observed data, rather than transformation of data using a dissimilarity-based framework. In recent years, model-based techniques have been developed for hypothesis testing, identifying indicator species, ordination, clustering, predictive modelling, and use of species traits as predictors to explain interspecies variation in environmental response. These techniques are more interpretable than alternatives, have better statistical properties, and can be used to address new problems, such as the prediction of a species spatial distribution from its traits alone.

Module 1: Revision of (univariate) regression analysis.
Revision of key \Stat 101" messages, the linear model, generalised linear model and linear mixed model.
Main packages: lme4.

Module 2: Computer-intensive inference and multiple responses.
The parametric bootstrap, permutation tests and the bootstrap, model selection, classical multivariate analysis, allometric line-fitting.
Main packages: lme4, mvabund, glmnet, smatr.

Module 3: Multivariate abundance data
Key properties, hypothesis testing, indicator species, compositional analysis, non-standard models.
Main packages: mvabund.

Module 4: Explaining cross-species patterns
Classifying species based on environmental response, species traits as predictors, studying species interactions.
Main packages: Speciesmix, mvabund, lme4.

Module 5: Model-based ordination and inference
Latent variable models for ordination, model-based inference for fourth corner models.
Main packages: boral, mvabund, saint.

For more information, contact: David Warton (david.warton@unsw.edu.au) or Natasha Karenyi (natashakarenyi@gmail.com)

REGISTRATION FORM

Model-based multivariate analysis of abundance data using R

22-26 January 2018, Kirstenbosch Research Centre, SANBI, Cape Town

CLOSING DATE: 30 November 2017

COMPLETE IN FULL. Use ONE form per person registering. Please write clearly. Incomplete forms will not be processed.

Return completed forms by e-mail to **Sue.Kuyper@uct.ac.za** (Sue Kuyper)

APPLICANT DETAILS		
Title:	First name:	Last name:
Contact details to be completed in full		
Postal address:		
Postal code:	Country:	
Telephone no:	Cell no:	
Email address:		

Do you have any special dietary requirements? Please be specific.	
Do you have any other special requirements that we should be made aware of? Please provide details.	

Are you a student? ❒ Yes ❒No	If yes, degree for which you are registered:
	If yes, University and Department:
My goals in attending this workshop:	
What is your level of experience with R and multivariate analyses?	
Participants need to bring their own laptops running the latest version of R and all required packages	

I, _____, agree to attend the workshop ***Model-based multivariate analysis of abundance data using R*** and agree to pay the Workshop fee.

Signature:_____ Date:_____