

Satellite workshop to the 2nd World Seabird Conference 2015 in Cape Town

Bayesian integrated population modeling (IPM) using BUGS and JAGS

Instructors: **Michael Schaub & Marc Kéry**, Swiss Ornithological Institute, **Res Altwegg**, University of Cape Town, **Sarah J. Converse**, USGS Patuxent Wildlife Research Center.

Date: 19–23 October 2015

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

Computers: Bring your own laptop with latest R and WinBUGS, JAGS or OpenBUGS

Costs: 600 USD (reduced fees will apply to delegates from African countries)

Integrated population models (IPM) represent the powerful combination, in a single Leslie-type of model, of different data sources that are informative about the dynamics of an animal population (Besbeas et al. 2002; Schaub et al. 2007). Typical IPMs combine one or more time-series of counts with another data set that is directly informative about survival probabilities, such as ring-recovery or capture-recapture. However, many other sources of demographic information may be envisioned instead or in addition, including age-at-death data, occupancy or replicated point count data. Currently, for non-statisticians the only practical manner to develop and fit an IPM is using BUGS software (WinBUGS, OpenBUGS, JAGS).

This intermediate-level course is a practical and hands-on introduction to developing and fitting integrated population models using BUGS software. It is based on the successful book by Kéry & Schaub, *Bayesian Population Analysis using WinBUGS* (Academic Press, 2012), a copy of which is included in the course fee. The course also provides a thorough introduction for ecologists and wildlife managers of a very wide variety of models fit using BUGS software and as documented in the BPA book.

Contents include the following topics:

Basic introduction

- Hierarchical models as an overarching theme of population modeling, including IPMs
- Bayesian analysis of hierarchical models
- Introduction to BUGS software in the context of generalised linear models (GLM) and traditional random-effects models

Ingredients of IPMs

- State-space models
- Cormack-Jolly-Seber and ring-recovery models for estimating survival probabilities
- Multistate capture-recapture models for estimating survival and transition probabilities
- Site-occupancy models and binomial mixture models

IPM

- Theory
- Various case studies which differ in complexity and in the data types that are combined

In this intermediate-level workshop 80% of the time is spent on lecturing and 20% on solving exercises. No previous experience with program WinBUGS, or Bayesian statistics, is assumed. However, **a good working knowledge of modern regression methods (ANOVA, ANCOVA, generalised linear models) and of program R** and at least some basic knowledge about capture-recapture and/or occupancy models is required.

For more information, contact: Res Altwegg (Res.Altwegg@uct.ac.za) or Michael Schaub (michael.schaub@vogelwarte.ch)

REGISTRATION FORM

Bayesian integrated population modeling (IPM) using BUGS and JAGS

19-23 October 2015, Kirstenbosch Research Centre, SANBI, Cape Town

CLOSING DATE: 31 July 2015

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 Res.Altwegg@uct.ac.za (Res Altwegg)

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? <input type="checkbox"/> Yes <input type="checkbox"/> 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, BUGS, and capture-mark-recapture / site occupancy analyses?

Participants need to bring their own laptops running the latest version of R and one of JAGS/WinBUGS/OpenBUGS.

I, agree to attend the workshop **Bayesian integrated population modeling (IPM) using BUGS and JAGS** and agree to pay the Workshop fee of 600 USD (reduced fees will apply to delegates from African countries).