

Intermediate-level workshop

Bayesian population analysis using NIMBLE and JAGS

Instructors: Marc Kéry, Michael Schaub, Jaume A. Badia-Boher, Fabian R. Ketwaroo,
Matia H. Muller

Date: 8 – 12 December 2025

Venue: Swiss Ornithological Institute, Sempach, Switzerland

Computers: Bring your own laptop with latest R, NIMBLE and JAGS

Registration: CHF 600 (regular); CHF 300 (students)

In the course we introduce many key models used in the analysis of distribution, abundance and animal demography, as well as their spatial and temporal patterns, in a Bayesian analysis framework. In concept, we follow the book “*Bayesian population analysis using WinBUGS*” (Academic Press, 2012), which will be handed out for free. We introduce statistical inference and computation, and use the programs R and NIMBLE (and occasionally JAGS) to fit and understand some of the most widely used models for the analysis of animal and plant populations. Models and topics include:

- GLMs and generalized linear mixed models
- Site-occupancy models
- Cormack-Jolly-Seber models
- Multistate capture-recapture models
- N-mixture models
- Spatial models for areal and geostatistical data (e.g. CAR and Gaussian processes)
- Advanced use of NIMBLE (e.g. use of nimble functions, MCMC configuration)
- The joy of data simulation
- General integrated and Integrated population models (IPMs)

In this intermediate-level workshop about 90% of the time is spent on lecturing and 10% on solving exercises. No previous experience with program NIMBLE or JAGS, or Bayesian statistics, is assumed. However, **a good working knowledge of modern regression methods (ANOVA, ANCOVA, generalised linear models) and of program R** is required.

Send your application to Michael Schaub (michael.schaub@vogelwarte.ch), with cc to Marc Kéry (marc.kery@vogelwarte.ch), describing your background and knowledge in statistical modelling, R and NIMBLE/JAGS, by **15 August 2025 at the latest**. Workshop invitations will be sent out immediately afterwards.