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Bayesian Analysis for Population Ecology

Ruth King, Byron J. T. Morgan, Olivier Gimenez, Stephen P. Brooks
Chapman & Hall/CRC, Boca Raton, Florida, 2010.
ISBN 978-1-4398-1187-0. 442 pp. USD 79.95.
http://www.ncse.org.uk/books/bayesian/

The text is essentially a book on Bayesian methodology with examples taken from population ecology. In this respect it serves as a solid introduction to Bayesian modeling. The book also incorporates instruction on the use of both R and **WinBUGS** for constructing and executing Bayesian models. Three appendices come with the text: A, a description of the major probability distributions employed in Bayesian models; B, a tutorial on R, specifically on developing Markov chain Monte Carlo (MCMC) and reversible jump MCMC (RJMCMC) functions. A step-by-step approach to modeling provides the reader with excellent schemata of how to model their own data. Finally, Appendix C is a tutorial on programming with **WinBUGS**, with an emphasis of calling **WinBUGS** from within R. Both tutorials are very well done.

The main text is divided into three main parts. The first addresses classical frequentist methods. The second provides a thorough overview of Bayesian methodology, and the third relates to the use of more complex Bayesian models using population ecological data.

Chapter 7, the final chapter of part 2, is a central chapter in the book. After reading the Appendices for a basic education in Bayesian modeling and MCMC procedures in particular, Chapter 7 gives more depth to the analyses. The reader is asked to download the example data and relevant libraries, and to use the code provided in R, **WinBUGS** and **Mark**, a progam designed for analyzing capture-recapture data within the classical framework. A clear discussion of how to define priors, the likelihood function, the data and initial values, and both trace and autocorrelation plots of the parameters. Complete code is also given for modeling uncertainty.

Models discussed in the third section, titled "Ecological Applications", include handling missing values, modeling random effects, multiple-state models, and state-space models. A final chapter is provided that speaks to strictly a population ecological problem: handling closed populations.

The authors have produced a text that is not only of good use to those who are analyzing population ecological data, but to anyone desiring a good overview of Bayesian modeling in general. The examples are interesting and do not hinder those not in the discipline of

population ecology from understanding the explanation of the statistical principles being discussed.

I recommend the book for a graduate level course on Bayesian modeling, as well as any course related to the Bayesian modeling of population ecological data. The reader is not expected to have a prior knowledge of Bayesian modleing, nor is there an assumption that readers are familar with R or **WinBUGS**. Only a well-rounded knowledge of classical linear statistical modeling is required.

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This preview shows page 1 - 6 out of 23 pages. Arizona State University From the SelectedWorks of Joseph M Hilbe July 17, 2015 SAS code only for Practical Guide to Logistic Regression Joseph M Hilbe, Arizona State University Available at: 1 Joseph M. Hilbe: Practical Guide to Logistic Regression Full SAS Code by Yang Liu Table of Contents Chapter 1 - SAS Code . 2 Section 1.4 . 2 Chapter 2 - SAS Code . â€ªArizona State Univ.; Emeritus Prof, Univ. of Hawaiiâ€¬ - â€ªCited by 12,955â€¬ - â€ªstatistical modelsâ€¬ - â€ªastrostatisticsâ€¬ - â€ªbiostatisticsâ€¬ - â€ªstatistical softwareâ€¬ - â€ªBayesian methodsâ€¬.Â David HosmerProfessor of Biostatistics(Emeritus) University of MassachusettsVerified email at schoolph.umass.edu. Follow. Joseph Hilbe. Arizona State Univ.; Emeritus Prof, Univ. of Hawaii. Verified email at asu.edu - Homepage.Â Negative binomial regression. JM Hilbe. Cambridge University Press, 2011. 4114. 2011. Reviewer: Joseph M. Hilbe Arizona State University. Bayesian Analysis for Population Ecology. Ruth King, Byron J. T. Morgan, Olivier Gimenez, Stephen P. Brooks Chapman & Hall/CRC, Boca Raton, Florida, 2010.Â Joseph M. Hilbe University of Hawaii, and Sociology and Statistics, Arizona State University Tempe, Arizona, United States of America E-mail: hilbe@asu.edu. Journal of Statistical Software. published by the American Statistical Association. Publications by authors named "Joseph M Hilbe". 6Publications. A Negative Binomial Regression Model of the Observed Population Density of after Annual Corn Rotation in Nebraska. Authors: Oscar PÃ©rez-HernÃ¡ndez Loren J Giesler Joseph M Hilbe. Plant Dis 2019 Dec 15;103(12):3093-3100. Epub 2019 Oct 15. T. Denny Sanford School of Social and Family Dynamics, Arizona State University, Tempe, AR 85287 (deceased in 2017). View Article. Download full-text PDF.Â Epub 2014 Nov 24. Department of Statistics, T. Denny Sanford School of Social and Family Dynamics, Arizona State University, Tempe, AZ 85287-3701. View Article. Download full-text PDF.