THE ISBA BULLETIN

Vol. 14 No. 1 *March 2007*

The official bulletin of the International Society for Bayesian Analysis

A MESSAGE FROM THE NEW PRESIDENT

by Peter Green
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This is my first chance to write to you as 2007 President of ISBA. It is a real pleasure to be in a position to help to advance the activities of ISBA, and to take over a society in such good shape. Many thanks from me and all of us to Alan Gelfand, the retiring president, and to others completing their terms of office, especially Deborah Ashby who has just stepped down as Executive Secretary.

By now, many of you will have heard the sad news that Pilar Iglesias passed away early in March. Pilar was a vital force in ISBA, President of the Chilean chapter and organiser of the 2004 World Meeting in Viña del Mar. But above all she was loved for her warmth and vitality; she will be much missed by all who met her.

2007 is a quiet year for major ISBA meetings, after the excitements of Valencia last June, but we have our World Meeting in 2008 to look forward to. This meeting was first announced two bulletins ago, but the contract for this has just been signed, so now its definite! The location is Hamilton Island, Queensland, Australia – one of the most beautiful venues for a conference imaginable – and the dates have changed to 21 to 25 July 2008. It's not too early to start planning how to get yourself and your students there.

As you know, ISBA has no staff and very few officers, and so the vibrancy of its activities depends very much on the membership. Please give some thought to what you could contribute! We are currently searching for a new Web editor, and for various Associate Editorships on this Bulletin – for the interviews, students' corner and Bayesian history sections; soon we need a new Editor. Perhaps you want to organise a regional meeting or one jointly with another society? Or maybe you prefer to write – it would be great to see more material on the Website, especially accessible introductions for non-Bayesians. All these things would give you satisfaction, help ISBA and statistics generally, and (especially if you're a young researcher) look great on your CV. If you'd like to discuss how you could help and what it would involve, please get in touch with me.▲

A MESSAGE FROM THE EDITOR

by J. Andrés Christen
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This number of the ISBA bulletin coincides with the very bad news of the death of our colleague Pilar Iglesis. Little else do I have to say after what some of her closest friends have circulated over email lists and also in the web site http://pliz.mat.puc.cl. In addition to this, Fernando Quintana kindly agreed to present a small tribute to Pilar which appears in page 2 of this number of the Bulletin. We also have the applications section which presents a review of Bayesian Inversion of Oceanographic Tracer Data, the Annotated Bibliography section that presents a comprehensive review of papers in the field of capture-recapture analysis and also we have the News of the world section. Thanks and I hope you enjoy reading this number of the ISBA Bulletin.▲

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A TRIBUTE TO PILAR IGLESIAS: *in memoriam*

by Fernando Quintana
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Pilar Loreto Iglesias Zuazola passed away on March 3, 2007, after losing the battle against a terrible disease diagnosed back in 1998.

Pilar was born on September 4, 1960 in Valparaíso, Chile, where she grew up and obtained her undergraduate degree. Later, she enrolled in the Ph.D. program in the University of São Paulo, where she graduated in 1993. In 1995 she was hired in the Department of Statistics, Pontificia Universidad Católica de Chile (PUCC), getting tenured in 2000. It was here that she centered most of her research activities, which resulted in many published papers in various theoretical and applied aspects of Bayesian Statistics. Her favorite topics included de Finetti-like theorems and predictivistic characterizations, product partition models, model selection, elliptical and skew-elliptical distributions, and more recently, Dirichlet processes. These research interests were also reflected in her involvement in 4 doctoral theses from U. of São Paulo and later in her participation in the creation of the Ph.D. program in Statistics at PUCC, where she directed 3 finished theses and several others in various stages of progress. Pilar was also the chair of our Department from May 2000 through May 2005.

But Pilar's contributions are by no means restricted to the academia. She had a key role in the development of Statistical Sciences in Chile, particularly through her participation in the Chilean Statistical Association (SOCHE). Pilar was President of SOCHE during the March 1998 - March 2003 period. She also had a pioneering role in the creation of the Chilean Chapter of ISBA (one of first local chapters of ISBA), and also undertaking the monumental task of organizing the celebrated ISBA 2004 conference held in Viña del Mar, Chile, in May of 2004.

Pilar showed also great passion for statistical education at all levels, leading several efforts to attract Middle and High School teachers and students. A remarkable example of such initiatives is the very creative work on bridging the path between Theater and Statistics for Education. This has been acknowledged by the International Association for Statistical Education (IASE).

Despite her disease, Pilar worked until the very end with her many students, even obtaining funding for a 4-year (FONDECYT) research project that was to be started by mid-March, 2007.

Pilar was a very likable person, with a great sense of humor (her laughter could be heard all through the building) and a radiant personality, which shined on all people around her. Pilar was also a very generous person, who always had time for answering students' questions, to discuss some technical point with a colleague or simply have a cup of coffee and free conversation with anyone interested.

Pilar finally rests in peace, but her many students, colleagues and friends will never forget her.▲

Figure 1: Pilar Loreto Iglesias Zuazola, 1960 – 2007.

Bayesian Inversion of Oceanographic Tracer Data

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In an attempt to better understand the large-scale abyssal circulation, in this study we aim to estimate the climatological velocity $\underline{\mathbf{u}} = (u, v)$, as well as tracer concentrations in a 2 *km* deep region ($\mathcal{S}$) of the South Atlantic Ocean. We use bias-corrected hydrographic data. Tracer concentration measurements (oxygen, salinity, temperature, hydrostatic pressure and silica) are available every 2m from the surface to the bottom of the ocean. The data are processed to discard outliers, restricted to thin neutral density layers and interpolated to the nearest neighbor on a regular lattice (see Figure 2). We focus on the $\gamma = 28.00$ neutral density layer which roughly corresponds to depths of 2000 ± 200 m. The link between tracer concentrations and advection is made using a 2D advection-diffusion equation

$$\underline{\mathbf{u}} \cdot \nabla C = \nabla \cdot (K \nabla C) + Q_C, \qquad (x, y) \in \mathcal{S} \qquad (1)$$

with Dirichlet boundary conditions $C = C_{\partial\mathcal{S}}$. The 2D diffusivity matrix K is diagonal with spatially constant components $\kappa^{(x)}, \kappa^{(y)}$. Using a simple geostrophic flow model, we express the zonal velocity u in terms of the meridional component v, thus reducing the number of parameters in half. We assume that the measured concentration $C^{(j)}_{D,i}$ for tracer j at grid points in $\mathcal{S}_G$ indexed by i satisfies the observation model $C^{(j)}_{D,i} = C^{(j)}_i + \epsilon^{(j)}_i$, where the $\epsilon^{(j)}_i$ are independent and normally distributed errors having zero mean and constant variance. The underlying tracer concentration $C^{(j)}_i = C^{(j)}_i(u, v, K, C_{\partial\mathcal{S}})$ is obtained as the solution to the advection-diffusion equation (1) (the forward problem). This solution is numerically approximated on the grid $\mathcal{S}_G$ using 2D multigrid iteration routines as implemented in MUDPACK by J.C. Adams. A two-dimensional Gaussian Markov random field for v, exponentially distributed horizontal diffusivities, and a Gaussian Markiv random field for each tracer concentration C over the boundary $\partial\mathcal{S}$ are selected as priors. Markov chain Monte Carlo methods are used to explore the posterior distribution which is derived (up to a normalizing constant) using Bayes' formula. In the right panel of Figure 2 we display the posterior mean flow field superimposed on the reconstructed oxygen concentration field. Our results indicate a predominant zonal flow pattern, with zonal jets reversing with latitude, consistent with tracer tongues. Current work extends this model to a multi-layer inversion.▲

References

- McKeague, I. W., Nicholls, G., Speer, K., Herbei. R. (2005), "Statistical inversion of South Atlantic circulation in an abyssal neutral density layer", *Journal of Marine Research*, **63**, 683–704.

Bayesian Capture-Recapture

by Luca Tardella
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Capture-recapture models were originally mainly developed as statistical tools for estimating the size of wild animal population for which a complete census is not feasible. Main standard references and reviews on these models can be found in some classical reference books and more recent review articles (see http://luca-tardella.sta.uniroma1.it/~cr soon).

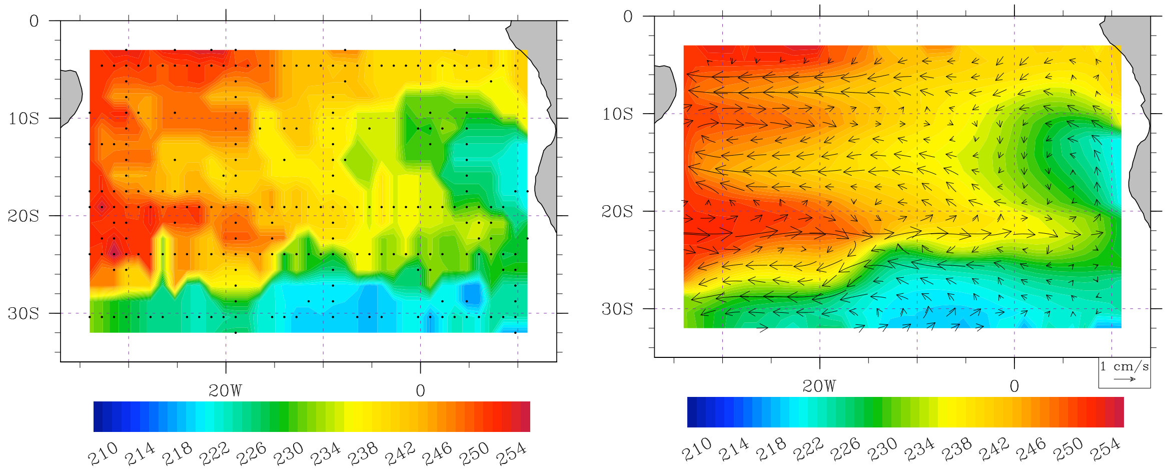
There has been an exponentially growing and very lively statistical literature where the same modeling framework has been exploited for datasets arising from contexts different from that of estimating the size of wild animal populations: census undercount; completeness of epidemiological sources for estimating prevalence of a disease; software reliability just to mention some. Following we focus especially on few recent advances in applying the Bayesian approach the above contexts.

Bayesian methods for closed population models

It is assumed that capture-recapture data have been observed for a population defined within an appropriate time frame and geographical area so that the unknown number of its units cannot change.

[1] B. J. Castledine. A Bayesian analysis of multiple-recapture sampling for a closed popu-

Figure 2: Interpolated oxygen data (left panel) on the $\gamma = 28.00$ neutral density layer; black dots indicate sites used in the inversion, and the reconstructed (posterior mean) oxygen concentration and advection field (right panel).



lation. *Biometrika*, 68:197–210, 1981.

One of the first systematic analysis of capture-recature models within the Bayesian framework. For model $\mathcal{M}_0$ Bayes and MLE solutions are compared and the role and effect of alternative options of prior information on the final solution are investigated theoretically by means of different approximations of the posterior distributions.

[2] Philip J. Smith. Bayesian analyses for a multiple capture-recapture model. *Biometrika*, 78:399–407, 1991.

Bayes, Empirical Bayes and Bayes Empirical Bayes estimates are derived for point and interval estimation of the size of a closed population.

[3] Edward I. George and Christian P. Robert. Capture-recapture estimation via Gibbs sampling. *Biometrika*, 79:677–683, 1992.

The first Bayesian analysis which in the case of homogeneous capture probabilities shows how standard MCMC tools can be used to develop a fully Bayesian analysis. Sensitivity analysis to the prior input shows non-negligible impact. Some vaguely informative priors are discussed.

[4] David Madigan and Jeremy C. York. Bayesian methods for estimation of the size of a closed population. *Biometrika*, 84:19–31, 1997.

Incomplete contingency table is approached with a loglinear models incorporating covariate information and dealing with the dependence structure using decomposable graphical models. Model averaging is used to account for model uncertainty.

[5] Sheng-Ming Lee and Cathy W. S. Chen. Bayesian inference of population size for behavioral response model. *Statist. Sinica*, 8(3):1233–1247, 1998.

The Bayesian approach is used to overcome some difficulties of the classical estimates in the presence of behavioral pattern of capture probabilities. For models $\mathcal{M}_b$ and $\mathcal{M}_{tb}$ pros and cons of their Bayesian solutions are compared via simulated data. Some sensitivity of final conclusions to prior input is highlighted.

[6] Stephen E. Fienberg, Matthew S. Johnson, and Brian W. Junker. Classical multilevel and Bayesian approaches to population size estimation using multiple lists (Pkg: P363-423). *Journal of the Royal Statistical Society, Series A: Statistics in Society*, 162:383–405, 1999.

Classical and Bayesian approaches are compared within the framework of a hierarchical modeling based on a Rash-like structure which is intimately linked to loglinear reparameterization of the contingency table parameters.

[7] O. Yoshida, J. G. Leite, and H. Bolfarine. Stochastic monotonicity properties of Bayes

estimation of the population size for capture-recapture data. *Statist. Probab. Lett.*, 42(3):257–266, 1999.

It contains theoretical insights for model $\mathcal{M}_h$ showing how posterior inference is affected by the prior distribution on the heterogeneous capture probabilities.

[8] R. King and S. P. Brooks. On the Bayesian analysis of population size. *Biometrika*, 88(2):317–336, 2001.

Advances on the use of the Reversible Jump transdimensional MCMC sampler to encompass into a single framework model averaging of log-linear models. It is also introduced a decision-theoretic analysis of cost efficiency of collecting more data source with respect to improved accuracy gained.

[9] Sanjib Basu and Nader Ebrahimi. Bayesian capture-recapture methods for error detection and estimation of population size: heterogeneity and dependence. *Biometrika*, 88(1):269–279, 2001.

It deals with model in the same spirit of $\mathcal{M}_{th}$ showing how dependence structure of trapping occasion can be dealt with so that it has little impact on final analysis. Heterogeneity is modeled as a two latent classes approach. Conditions for propriety of posterior analysis corresponding to improper prior distributions on the population size N is developed.

[10] Luca Tardella. A new Bayesian method for nonparametric capture-recapture models in presence of heterogeneity. *Biometrika*, 89(4):807–817, 2002.

Model $\mathcal{M}_h$ is reparameterized so that no functional form of the distribution of heterogeneous capture probabilities must be assumed a priori. A default Bayesian analysis is approached through formally deriving a Jeffreys prior. MCMC computations are feasible and simulated data are used to show improved frequentist properties when compare to the most used classical methods.

[11] Shen-Ming Lee, Wen-Han Hwang, and Li-Hui Huang. Bayes estimation of population size from capture-recapture models with time variation and behavior response. *Statistica Sinica*, 13(2):477–494, 2003.

A different attempt to deal with Bayesian estimates in the presence of behavioral pattern of capture probabilities possibly depending on capture occasion. Here identifiability constraints are employed and comparing the Bayes procedure with recently developed MLE approach for the same model possible improvements in terms of frequentist properties are investigated in terms of simulated data.

[12] F. Bartolucci, A. Mira, and Scaccia L. Answering two biological questions with a latent class model via mcmc applied to capture-recapture data. In F. Scalfari M. Di Bacco, G. D'Amore, editor, *Applied Bayesian Statistical Studies in Biology and Medicine*, pages 7–23. Kluwer Academic Publishers, Norwell, MA, USA, 2003.

In order to deal with unexplained heterogeneity a latent class approach to incomplete contingency table is used with particular emphasis on dealing with suitable MCMC strategies for coping with the trans-dimensional part of the model due to the unknown number of latent class. An effective delayed rejection technique is successfully compared with a standard Reversible Jump implementation of MCMC.

[13] Ruth King, Sheila M. Bird, Steve P. Brooks, Sharon J. Hutchinson, and Gordon Hay. Prior information in behavioral capture-recapture methods: Demographic influences on drug injectors' propensity to be listed in data sources and their drug-related mortality. *American Journal of Epidemiology*, 162(7):694–703, 2005.

An application of the Bayesian approach to capture-recapture models as outlined in [8] in the epidemiological context of estimating the number of drug addicts. Advantages of using genuine informative priors in the presence of some information on covariates are highlighted and Bayesian model averaging and model selection techniques are compared to classical solutions.

[14] John W. Durban and David A. Elston. Mark-recapture with occasion and individual effects: Abundance estimation through Bayesian model selection in a fixed dimensional parameter space. *Journal of Agricultural, Biological, and Environmental Statistics*, 10(3):291–305, 2005.

The approach of Fienberg et. al (1999) is addressed as a fixed dimensional parameter problem in the spirit of the product space approach for transdimensional MCMC simulations. With this different perspectives it is shown how to use standard software such as WinBugs to carry out posterior inference. The approach is allegedly limited for computational reasons to small or moderate size of undetected individuals.

[15] Michael R. Elliot and Roedrick J.A. Little. A Bayesian approach to 2000 census evaluation using ACE survey data and demographic analysis. *J. Amer. Statist. Assoc.*, 100(470):380–388, 2005.

Different original hierarchical models based on normal approximation of cell counts are proposed to investigate within a single framework multiple post enumeration surveys carried out to evaluate census underestimation. Uncertainty in demographic analysis accounting for sex ratio as well as additional race and age information is incorporated.

[16] Xiaoyin Wang, Chong Z. He, and Sun Dongchu. Bayesian inference on the patient population size given list mismatches. *Statistics in Medicine*, 24, 249–267, 2005.

Classical solutions to a previous model for capture-recapture with two occasion and possible tag matching error are compared with a Bayesian approach based on noninformative priors. Better frequentist performance of the Bayesian estimates is always experienced in the simulation study. Usefulness of the Bayesian approach is then exploited for analyzing gestational diabetes data.

[17] Sujit K. Ghosh and James L. Norris. Bayesian capture-recapture analysis and model selection allowing for heterogeneity and behavioral effects. *Journal of Agricultural, Biological, and Environmental Statistics*, 10(1):35–49, 2005.

Model $\mathcal{M}_{bh}$ is analyzed in terms of a flexible finite mixture model for the joint distribution of first capture and successive recapture heterogeneous probabilities. A decision theoretic framework is used to drive model selection.

[18] X. Wang, J. Lim, and S. L. Stokes. Forming post-strata via Bayesian treed capture-recapture models. *Biometrika*, 93(4), 2006.

For a two sample capture-recapture model heterogeneity of capture probabilities are approached through post-stratification in such a way that within stratum homogeneous capture probability can be assumed. Auxiliary information about individuals is exploited for partitioning the set of possible values of those covariates into a collection of post-strata. Such partitioning is guided by successive binary splits of available covariate ranges in the spirit of regression trees. Default and subjective analysis is made available though a careful choice of prior distribution which allows for reduced computational burden. Performance of the proposed methods is compared via simulated data.

[19] Xiaoyin Wang, Chong Z. He, and Sun Dongchu. Bayesian population estimation for small sample capture-recapture data using noninformative priors. *Journal of Statistical Planning and Inference*, 137(4):1099–1118, 2007.

Several noninformative priors are studied for making inference on the population size in model $\mathcal{M}_t$. Guidelines on the most convenient choice of noninformative prior are provided by simulation results where it is proven that Bayesian noninformative approach can produce more accurate estimates than MLE for small sample. The authors study some theoretical investigation on propriety of posteriors when improper priors are used.

Bayesian Methods for Open Population Models

In open population model capture-recapture data are analyzed in order to understand population dynamics rather than its current state. Tag-recovery data share very similar characteristics. Particular inferential emphasis is put on modeling survival and/or movement patterns. Typical problems of classical inference is over-parametrization and non-identifiability which often lead to imposing arbitrary constraints.

[1] P. Vounatsou and A. F. M. Smith. Bayesian analysis of ring-recovery data via Markov chain Monte Carlo simulation. *Biometrics*, 51:687–708,

1995.

One of the first attempt to exploit MCMC machinery in the context of open population models. Alternative models and different simulation strategies are compared and model comparison is driven by goodness of fit measure as well as Bayesian p-values. Special attention is devoted on some MCMC computational issues such as high correlation of parameters in the MCMC output.

[2] Jerome A. Dupuis. Bayesian estimation of movement and survival probabilities from capture-recapture data. *Biometrika*, 82:761–772, 1995.

Survival and movement probabilities are inferred within the Arnason-Schwartz model whose missing data structure can be exploited in order to derive standard Gibbs sampling scheme to perform final inference.

[3] V. Chavez-Demoulin. Bayesian inference for small sample capture-recapture data. *Biometrics*, 55:727–731, 1999.

Laplace approximation are usefully employed in an instance of Cormack-Jolly-Seber model for survival probabilities.

[4] S. P. Brooks, E. A. Catchpole, and B. J. T. Morgan. Bayesian animal survival estimation. *Statistical Science*, 15(4):357–376, 2000.

This is one of the first paper where it is shown how both capture-recapture models for open population, namely Cormack-Jolly-Seber model, and tag-recovery models can be investigated by means of BUGS software allowing for a more widespread use of the Bayesian methodology for animal survival. Use of Bayesian p-values for model assessment and effects of prior input on final analysis both in terms of model estimation and model averaging are discussed.

[5] S. P. Brooks, E. A. Catchpole, B. J. T. Morgan, and S. C. Barry. On the Bayesian analysis of ring-recovery data. *Biometrics*, 56(3):951–956, 2000.

In this work the authors make a cautionary warning about the importance of sensitivity analysis of conclusions to prior inputs in the use of Bayesian inference for ring recovery models. It is argued that when – as in the case of some ring recovery models – the likelihood surface has a flat ridge the naive use of a single Bayesian analysis can be misleading.

[6] J. A. Dupuis. Prior distributions for stratified capture-recapture models (Pkg: P225-244). *Journal of Applied Statistics*, 29(1-4):225–237, 2002.

Some insights on how to convey prior information in the framework of Dupuis (1995) and how sensitive are the conclusions to the prior input.

[7] R. King and S. P. Brooks. Bayesian model discrimination for multiple strata capture-recapture data. *Biometrika*, 89(4):785–806, 2002.

The model framework of Dupuis (1995) is extended so that not only one large saturated model but also a very flexible class of submodels can be simultaneously explored incorporating into the final output all uncertainties on parameter values and submodels. Heavy transdimensional MCMC computations are developed. Advantages in terms reduced posterior uncertainties and conclusions less sensitive to prior input are shown in the same data-sets of Dupuis (1995).

[8] David Poole. Bayesian estimation of survival from mark-recapture data. *Journal of Agricultural, Biological, and Environmental Statistics*, 7(2):264–276, 2002.

Bayesian analysis of Cormack-Jolly-Seber model is performed through a Metropolis-Hasting technique both for complete data and missing data cused by the absence of one or more sampling occasion during the experiment.

[9] Jerôme Dupuis, Jerome Dupuis, Jacques Badia, Marie-Line Maublanc, and Richard Bon. Survival and spatial fidelity of mouflon (*ovis gmelini*): A Bayesian analysis of an age-dependent capture-recapture model. *Journal of Agricultural, Biological, and Environmental Statistics*, 7(2):277–298, 2002.

Arnason-Schwarz model is considered within the missing data structure outlined in Dupuis (1995) in order to analyze a real data set for which genuine prior information can be conveyed through a preliminary analysis of data collected through radio-tracking device in which simple analytic form of posteriors can be used since the missing data structure is absent.

[10] S. P. Brooks, E. A. Catchpole, B. J. T. Morgan, and M. P. Harris. Bayesian methods for analysing ringing data. *Journal of Applied Statis-*

tics, 29(1-4):187–206, 2002.

An extension of previous works of the first authors which account for random effects and entertain variable dimension submodels through the use of Reversible Jump techniques.

[11] Daniela Cocchi and Carlo Trivisano. Bayesian hierarchical generalized linear models for a geographical subset of recovery data. *Environ-Metrics*, 13(2):139–153, 2002.

For a peculiar dataset of national ringing recovery of migratory species a generalized linear model for count data is employed rather than the more typical models for cohort data survival. A hierarchical Bayesian modeling with overdispersion provides an effective and flexible tool for investigating the differential effects of the length of the hunting season for the survival of different species of game birds.

[12] S. C. Barry, S. P. Brooks, E. A. Catchpole, and B. J. T Morgan. The analysis of ring-recovery data using random effects. *Biometrics*, 59(1):54–65, 2003.

An insight on the comparative merits of accounting for overdispersion by means of modeling random effects: improving goodness of fit and more realistic enlargement of prediction intervals. Bayesian p-values and DIC are employed for model checking and model choice.

[13] Devin S. Johnson and Jennifer A. Hoeting. Autoregressive models for capture-recapture data: A Bayesian approach. *Biometrics*, 59(2):341–350, 2003.

Standard Mark-Recapture and Band-Recovery models are extended to account for possible autoregressive structure of the error term in a generalized linear model formulation of the survival probabilities depending on covariates. Standard MCMC computations are implemented with WinBugs software. The impact on the final analysis of the presence of a significant autoregressive structure and insensitivity to prior input is illustrated with band recovery data of northern pintails.

[14] R. King and S. P. Brooks. Closed-form likelihoods for Arnason-Schwarz models. *Biometrika*, 90(2):435–444, 2003.

The author develop sufficient statistics for the true likelihood function for Arnason-Schwarz models already dealt with using augmented data strategy and complete data likelihood in a previous paper (King and Brooks, 2002). Needless to say the theoretical result has a great impact on the computational efficiency of the MCMC machinery in the Bayesian analysis implemented in the previous work.

[15] Ruth King and Stephen P. Brooks. Survival and spatial fidelity of mouflons: The effect of location, age, and sex. *Journal of Agricultural, Biological, and Environmental Statistics*, 8(4):486–513, 2003.

Another instance of how the issue of model choice addressed by means of transdimensional MCMC can reveal, interesting previously unnoticed population dynamics.

[16] William A. Link and Richard J. Barker. Modeling association among demographic parameters in analysis of open population capture-recapture data. *Biometrics*, 61(1):46–54, 2005.

A fully identifiable extension of the Cormack-Jolly-Seber model is introduced in order to infer jointly within the Bayesian framework and standard MCMC computations demographic components such as survival and birth rates.

[17] S. A. Sisson and Y. V. Chan. A note on Bayesian analysis of capture-recapture data with perfect recaptures. *Comm. Statist. Theory Methods*, 35:53–62, 2006.

Explicit expressions for Bayes factor of competing submodels under the framework of open population model allowing for age dependence are derived under the restriction each animal is perfectly catchable if present in the study area. It provides an alternative solution to heavy transdimensional MCMC simulation to drive model selection although in very complex studies some other computational drawbacks limit the applicability of this alternative approach.

[18] R. King, S. P. Brooks, B. J. T. Morgan, and T. Coulson. Factors influencing soay sheep survival: A Bayesian analysis. *Biometrics*, 62(1):211–220, 2006.

Survival parameters are modeled in such a way that classes of common survival structure can be selected via Reversible Jump MCMC computation. At the same time it is determined which, among other available individual covariates, enter in the survival regression function. The dataset analyzed shows how the Bayesian techniques refine and improve on classical results allowing for a comprehensive and in-depth analysis of individual and environmental factors affecting survival.

[19] O. Gimenez, C. Crainiceanu, C. Barbraud, S. Jenouvrier, and B. J. T. Morgan. Semiparametric regression in capture-recapture modeling. *Biometrics*, 62(3):691–698, 2006.

In the same sampling scheme of the Cormack-Jolly-Seber model it is shown how a generalized additive model strategy for relating the survival rates to available covariates and how P-splines and generalized linear mixed models can provide a flexible framework which overcome the need to specify strong parametric assumptions and account for sources of variation unexplained by available covariates. A WinBugs implementation with Snow Petrels Data shows effectiveness and robustness of the proposed method even though some slow mixing features are highlighted.

Other Bayesian References

This section provides just a further crude list of references of alternative Bayesian methods proposed mainly before MCMC technology was available for facing more complex models. A comprehensive updated Bibtex file with Bayesian references will be shared and maintained at `http://luca-tardella.sta.uniroma1.it/~cr`. ▲

[1] Harry V. Roberts. Informative stopping rules and inferences about population size. *Journal of the American Statistical Association*, 62:763–775, 1967.

Likely the earliest Bayesian instance of Bayesian solution for recapture data with two occasions.

[2] T. J. Gaskell and B. J. George. A Bayesian modification of the Lincoln index. *Journal of Applied Ecology*, 9(2):377–384, 1971.

[3] P. R. Freeman. Sequential recapture. *Biometrika*, 60:141–153, 1973.

[4] W. S. Jewell. Bayesian estimation of undetected errors. In *Bayesian Statistics 2*, pages 663–671. North-Holland/Elsevier (Amsterdam; New York), 1985.

[5] Adrian E. Raftery. Inference and prediction for a general order statistic model with unknown population size. *J. Amer. Statist. Assoc.*, 82(400):1163–1168, 1987.

[6] C. G. E. Boender and A. K. G. Rinnooy Kan. A multinomial Bayesian approach to the estimation of population and vocabulary size. *Biometrika*, 74(4):849–856, 1987.

[7] M. A. Amaral Turkman and K. F. Turkman. Bayesian analysis of a pure birth process with linear birth rate. In *Bayesian statistics, 3 (Valencia, 1987)*, Oxford Sci. Publ., pages 533–541. Oxford Univ. Press, New York, 1988.

[8] John Bacon-Shone. Bayesian methods for growth curves with capture-recapture. *The Statistician*, 37:307–312, 1988.

[9] Josemar Rodrigues, Heleno Bolfarine, and José Galvão Leite. A Bayesian analysis in closed animal populations from capture-recapture experiments with trap response. *Communications in Statistics, Part B – Simulation and Computation*, 17:407–430, 1988.

[10] Josemar Rodrigues, Heleno Bolfarine, and José Galvão Leite. A simple non-parametric Bayes solution to the estimation of the size of a closed animal population. *The Statistician*, 38:71–76, 1989.

[11] Heleno Bolfarine, José G. Leite, and Josemar Rodrigues. On the estimation of the size of a finite and closed population. *Biometrical Journal. Journal of Mathematical Methods in Biosciences.*, 34:577–593, 1992.

[12] Paul H. Garthwaite, Keming Yu, and Peter B. Hope. Bayesian analysis of a multiple-recapture model. *Communications in Statistics: Theory and Methods*, 24:2229–2247, 1995.

[13] Andrew R. Solow and Debra Palka. On Bayesian estimation of group size. *Biometrics*, 52:335–340, 1996.

[14] Malwane M. A. Ananda. Bayesian methods for mark-resighting surveys. *Communications in Statistics, Part A – Theory and Methods*, 26:685–697, 1997.

[15] Stephen P. Brooks. Bayesian analysis of animal abundance data via MCMC. In J. M. Bernardo, J. O. Berger, A. P. Dawid, and A.F.M. Smith, editors, *Bayesian Statistics 6 – Proceedings of the Sixth Valencia International Meeting*, pages 723–731. Clarendon Press [Oxford University Press], 1999.

MaxEnt 2007
27th International Workshop on Bayesian Inference and Maximum Entropy Methods in Science and Engineering

SARATOGA SPRINGS, NEW YORK, USA, 8-13 JULY, 2007.

For 27 years the MaxEnt workshops have explored the use of Bayesian and Maximum Entropy methods in scientific and engineering applications. All aspects of probabilistic inference such as Techniques, Applications and Foundations, are of interest. As in MaxEnt 2005, ISBA members will receive a 25USD discount in registration. Further information may be found in `http://www.maxent2007.org` .

NEWS FROM THE WORLD

by Alexandra M. Schmidt
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I would like to encourage those of you who are organizing any event around the World, to get in touch with me to announce it here.

Events

The Fifth Bayesian Modelling Applications Workshop, July, 19th 2007, Vancouver, BC, Canada.

The workshop will provide a focused but informal forum for exchanges among theorists, practitioners and tool developers. Discussions may cover research questions and insights, methodologies, techniques, and experiences with applications of Bayesian models to particular domains.The Proceedings of the workshop will be published in the CEUR Workshop Proceedings series (http://ceur-ws.org). In addition, the intention is to publish a subset of the papers in a special issue of an appropriate journal. The emphasis of this year's workshop is on issues of model views in developing and using Bayesian models. Submissions are encouraged that address fundamental issues, present concrete solutions, describe experiments, or analyze open problems, within a broad range of application areas involving diagnosis, optimization, temporal reasoning, spatial reasoning, and forecasting. In addition to submissions addressing model views, we also welcome contributions relevant to the overall focus of Bayesian modelling. Submissions addressing novel applications are particularly encouraged.

Deadline for submission of contributions: April 6th, 2007. Inquiries and submissions to: *UAIWorkshop-L@listserv.gmu.edu* .

Evidence Synthesis for Decision Modelling, July, 23rd-27th, 2007, San Servolo Island, Venice, Italy.

This course is intended for: (a) Anyone undertaking health technology assessments, including cost- effectiveness analyses, (b) Statisticians, with or without experience in meta-analysis, who wish to learn about Bayesian methods for evidence synthesis particularly in the context of cost-effectiveness analysis.

The methods taught on the course are designed to be compatible with the recent guidance issued by the National Institute for Health and Clinical Excellence (NICE) and similar bodies worldwide, requiring probabilistic methods in cost-effectiveness models. The course focuses particularly on Bayesian methods for evidence synthesis that can be integrated within a probabilistic modelling framework, and can be used to statistically combine evidence from a range of structures. The course is built around a series of examples using the WinBUGS statistical software.

For further information visit `http://www.hsrc.ac.uk/EvidenceSynthesis07/evsynth_main.htm` .

Machine Learning Summer School, , August 20th - 31st, 2007, Tuebingen, Germany.

Registration is now open for MLSS 2007, the 9th summer school in a series beginning in 2002. It is intended for students and researchers alike, who are interested in machine learning. Its goal is to present some of the topics at the core of modern machine learning, from fundamentals to state-of-the-art practice. Topics will be covered both in lectures (4-6 per subject) and in practical courses (where students will have the chance to implement methods for themselves), and are taught by world experts in their fields. In addition, informal evening talks will cover a variety of application areas in which machine learning has successfully been applied. Material is directed both at outstanding participants without previous knowledge in machine learning, and at those wishing to broaden their expertise in the area; this includes PhD, Masters, and advanced undergraduate students, postdocs, academics, and IT professionals. The MLSS also provides an excellent opportunity for interaction with top researchers in a broad cross-section of machine learning disciplines. The application deadline is April 1st 2007. For more information, please visit http://www.mlss.cc/tuebingen07/.

Third International IMS/ISBA Joint Meeting "MCMSki II": Markov Chain Monte Carlo in Theory and Practice, January, 9th-11th, 2008, Bormio, Italy (Italian Alps).

Following up on the success of the first two joint international meetings of IMS (Institute of Mathematical Statistics) and ISBA (International Society for Bayesian Analysis) held in Isla Verde, Puerto Rico, and Bormio, Italy, respectively, the third such joint meeting will again be held in Bormio, Italy (site of the world ski championships) next winter, January 9-11, 2008. The unifying theme of the conference will again be MCMC and its impact on theory and practice of statistics, but since this is a joint meeting of two diverse organizations, talks on a wide variety of topics (both Bayesian and non-Bayesian) will be presented.

There will also be a pre-conference "satellite" meeting on adaptive and other advanced MCMC methods on January 7-8, with Prof. Christian Robert again serving as lead organizer.

Further details, including registration fees, hotel accommodation, and social events, are available from the official conference website,http://musing.unipv.it/IMS-ISBA-08/index.html . ▲

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