



Newsletter

February 2016

NCSE PhD thesis honoured with national award



Guruzeta Guillera-Arroita (pictured above) graduated in 2012 with a PhD awarded by the University of Kent; in March 2015 she received the RSPB's 'Outstanding PhD in Conservation Science' Award for 2015. Supervised by Byron Morgan and Martin Ridout,

with the support of Matthew Linkie from the Durrell Institute of Conservation and Ecology (DICE), Guru's thesis was entitled 'Occupancy modelling: study design and models for data collected along transects'. Guru, who is currently based at the University of Melbourne,

was represented at the award ceremony by Martin Ridout, who collected the award, including a medal specially designed by wildlife artist Robert Gillmor, on her behalf. Guru's reaction to the award is captured on the RSPB's website: www.rspb.org.uk/

Save the date — ISEC 2016

The fifth biennial International Statistical Ecology Conference (ISEC) will be held 28 June - 1 July 2016 at the University of Washington in Seattle, USA., and includes an extraordinary group of plenary speakers:

- Byron Morgan, University of Kent (UK)
- Marie-Josée Fortin, University of Toronto (Canada)
- Bob O'Hara, Senckenberg Biodiversity and Climate Research Centre (Germany)
- Ruth King, University of Edinburgh (UK)

- David Warton, University of New South Wales (Australia)
- Jim Nichols, USGS Patuxent Wildlife Research Center (USA)

Pre-conference workshops will be held at the venue on 26 & 27 June 2016:

- Spatially-explicit capture-recapture (David Borchers)
- Analysis of occupancy data using hidden Markov models and E-SURGE (Olivier Gimenez, Rémi Choquet, & Roger Pradel)

- Bayesian model selection and decision theory for ecologists (Mevin Hooten)
- Flexible programming with BUGS models: Using NIMBLE for MCMC and beyond (Perry de Valpine)
- Spatial statistical models for stream networks (Jay Ver Hoef & Erin Peterson)

Further information can be found at:

<http://iseconference.net/>

Special points of interest:

- Environmentally-friendly mayor-mobile takes to the road
- Forthcoming conferences and meetings
- Jean-Dominique Lebreton's academic descendants
- JABES best paper award goes to NCSE researchers
- Launch of SE@K webpage and twitter account

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NCSE 2015 summer meeting

The 2015 summer meeting was held at the University of Exeter's Penryn campus, outside Falmouth. The host was Stuart Townley of the University of Exeter. There were about 50 attendees. This is the fifth such summer meeting, and they alternate with ISECs. The previous four have been at St Andrews, Canterbury, Bath and Cefas in Lowestoft. They provide an opportunity for members of NCSE to get together to discuss research. The motivational speaker was David Elston, Head of BioSS, on 'Some adventures in Statistical Ecology'. The meeting dinner was held on the harbour side in Falmouth, and the beautiful setting and weather provided ample opportunities for walking, exploring the coast, and searching for wildlife.



NCSE members gather in Exeter, July 2015 © Ming Zhou

New books from NCSE

The following two books by NCSE authors have been published recently.

Newman, K.B., Buckland, S.T., Morgan, B.J.T., King, R., Borchers, D.L., Cole, D.J., Besbeas, P., Gimenez, O. and Thomas, L. 2014. *Modelling population dynamics: model formulation, fitting and assessment using state-space methods*. Springer, New York.

This book provides a unifying framework for estimating the abundance of open populations that are subject to births, deaths and movement in and out of the population. Online resources are provided at <http://www.creem.st-and.ac.uk/modpopdyn/>.

Buckland, S.T., Rexstad, E.A., Marques, T.A. and Oedekoven, C.S. 2015. *Distance*

Sampling: Methods and Applications. Springer, New York.

This book describes distance sampling methods for practitioners who need to be able to estimate the abundance of animal populations. Online resources are provided at <http://www.creem.st-and.ac.uk/DS.M&A/>.

Mayor of Lancaster does his bit for the environment

Apart from his day job as a Cefas statistician, NCSE member Jon Barry is also mayor of Lancaster until May 2016. As the first Green mayor of Lancaster, Jon decided to ditch the mayoral limousine and is, instead, using his mayoral bike (usually without the red robes). Jon says "being mayor is rewarding and interesting but can also be busy and stressful – depends which day you ask me".

Jon goes to a maximum of about 6 events per week. These can be anything from opening an art exhibition, attending a school speech day or cycling 80 miles from Barrow to Lancaster for a charity ride (pulling the mayor-mobile to make it more fun). Jon has also managed to combine mayor stuff and statistics – he gave a talk to the 'young and gifted' summer school for aspiring mathematicians in the summer.



Jon Barry with his mayor-mobile

NCSE delivers international Training Workshops

In July 2015, Monique Mackenzie, Lindesay Scott-Hayward, Rocio Prieto Gonzalez, Tilen Genov and Claudia Faustino formed a major part of the international team that delivered an 'Introduction to Statistical Modelling' workshop at the University of Witwatersrand (Wits) in Johannesburg, which taught about 150 people at

no cost with a ratio of 10 students per staff member. This was facilitated and partly funded by the Applied Centre for Climate and Earth Systems Science which is itself funded by the South African government via the National Research Foundation.

The annual International Training Work-

shops in Distance Sampling were held at St Andrews in August 2015, with 24 participants from 12 countries. Instructors included Len Thomas, David Borchers, Laura Marshall, Louise Burt and Eric Rexstad. The participants were introduced to Distance 7.0, the first major revision of the Distance software in 5 years.

Forthcoming conferences and meetings

The 28th International Biometric Conference is taking place 10-15 July 2016, at the Victoria Convention Centre, Victoria, Canada. More information is available at <http://biometricconference.org>. The 29th

International Biometric Conference will follow in Barcelona, 8-13 July 2018, at the Centre de Convencions Internacional de Barcelona.

The Euring Analytical Meeting and Workshop will be held in Barcelona in June or July 2017. Stay up-to-date with plans at <http://www.phidot.org/euring/>.

Congratulations

- to Ruth King, who has been appointed to the Thomas Bayes' Chair of Statistics at the University of Edinburgh and as a member of the RSS Research Section Committee, the Alan Turing Institute Programme Committee and the International Biometrics Society Editorial Committee;
- to David Fletcher, who has been appointed to a Chair in Statistics at the University of Kent;
- to Simon Wood, who has moved to the School of Mathematics at the University of Bristol;
- to Steve Buckland, who has been elected by the ASA and the IBS as the Editor for JABES;
- to Diana Cole, who has been appointed as an Associate Editor for Biometrics;
- to Emily Dennis, who received the Faculty of Sciences prize for postgraduate research, awarded to celebrate the University of Kent's 50th anniversary, and who

has now completed her PhD and is currently a Research Associate at the University of Kent, based at Butterfly Conservation in Dorset;

- to Chen Yu, who successfully defended his thesis on 'The use of mixture models in capture recapture' and is now training to be a teacher;
- to Roland Langrock, who started as Professor of Applied Statistics at Bielefeld University in Germany in October 2015;
- to Ben Swallow, who successfully defended his PhD thesis in August 2015 and has now moved to the Atmospheric Chemistry Research Group at the University of Bristol;
- to Ming Zhou, who won the runner-up prize at the RSS conference for her poster entitled 'Novel removal models for amphibian and reptile populations';
- to Anita Jeyam, who won the prize for the best interdisciplinary poster at the University of Kent Postgraduate Research Festival 2015;



NCSE member, David Fletcher, is appointed to a Chair in Statistics at the University of Kent

- to Rachel McCrea, who has been appointed an Associate Editor for JRSS-C;
- to Grutzeta Guillera-Arroita and José Lahoz-Montfort, who have been appointed as lecturers in ecological modelling at the University of Melbourne.

NCSE welcomes . . .

Marina Jimenez-Munoz, as a PhD student at the University of Kent, working on a project entitled 'Understanding biodiversity

change using integrated population models incorporating spatial information'.





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Mission Statement and Objectives of NCSE

NCSE's Mission Statement:

To develop, apply and communicate innovative statistical methods for collecting and analysing ecological data, thereby improving the understanding and management of wildlife populations and their environment.

The objectives of NCSE:

NCSE was set up in October 2005 as a joint venture between the Universities of Kent, Cambridge and St Andrews, with funding from the EPSRC. Its original objectives were:

- To be a Centre of international repute for the development and application of novel statistical methods in population ecology, integrating the partner Universities' research programmes and activities in statistical ecology.
- To develop novel statistical methodology for the analysis of complex data sets arising in ecology and to apply these methods to a broad collection of topical and important data sets.
- To train PhD and postdoctoral researchers to work as statistical ecologists.
- To develop a computer software system to enable ecologists to use cutting edge statistical methodology on their own data.
- To train end-users in the use of methodology and accompanying software developed by NCSE.

- To build upon and create new collaborations with relevant stakeholders.
- To develop and deliver a programme of workshops and conferences.

In 2010, NCSE was expanded to include the Universities of Bath, Bristol, Exeter, Glasgow and Sheffield, together with the Centre for Ecology and Hydrology, and the University of Cambridge dropped out, following departure of staff. This expansion was achieved with the aid of a new five-year joint EPSRC/NERC grant. Four further organisations are Project Partners: Biomathematics and Statistics Scotland; the Centre for Environment, Fisheries and Aquaculture Science; the Game and Wildlife Conservation Trust; and Marine Scotland.

NCSE is steadily broadening its areas of research expertise and activities. Active areas of research include:

- Analysis of capture recapture data
- Distance sampling
- Biodiversity monitoring
- Generalized additive models
- Modelling animal movement data
- Population dynamics models
- State-space and hidden Markov models
- Hierarchical models



Snippets!

Joe Hunt, a mathematics undergraduate at the University of Sheffield, spent the summer working on a project under the Sheffield Undergraduate Research Experience scheme, supervised by Mike Spence, funded by NERC and by NCSE. Joe worked on Coupled Gibbs ABC, an algorithm which controls the stochastic elements of a model and treats them as unknown parameters. The aim of the project was to show that Coupled Gibbs ABC can be effective in high dimensions by applying it to a multi-species size-spectrum model (Spence, Blackwell and Blanchard, 2015).

The Statistical Ecology group at Kent (SE@K) can now be contacted using the email address smsas-seak@kent.ac.uk. The group has

also launched its new webpage www.kent.ac.uk/smsas/statistics/research/seak.html and twitter account @unikentseak.