Australian National University

PUBLIC LECTURE

MSI Alumni Lecture Is it there? Analysing occupancy surveys

Thursday 20 September 2012 refreshments served at 5.30pm lecture begins at 6.00pm

Professor Alan Welsh

Manning Clark Theatre 6 Building 26a, ANU

Abstract: There are many reasons why we would want to estimate the number of members of a species that are living at a given site. This is however, difficult to do well because the observations we would like to make can be and typically are affected by various measurement errors. In particular nondetection, when no members of the species are detected, so that the species is incorrectly marked as absent, can lead to misleading conclusions. Considerable effort has been made to develop methods of collecting and analysing data to deal with the problem of nondetection

I will discuss some general methods which deal with nondetection and then consider a currently popular method called occupancy modelling in more detail. I will show how we use statistical thinking to understand occupancy modelling and evaluate its properties. It is obviously important to understand when a method will or will not work well and to understand its limitations. We will see that occupancy models are more difficult to fit and interpret than is generally appreciated because the estimating equations often have multiple solutions and the estimates are unstable when the data are sparse. When the abundance of a species varies from site to site the standard analysis runs into difficulties and in this case, occupancy modelling can be just as poor as analyses which ignore nondetection completely. This raises broader philosophical questions about the use of incorrect models and the value of trying to make complicated adjustments in difficult problems.

Alan Welsh is E.J. Hannan Professor of Statistics at ANU. As well as ANU, he has held positions at the University of Chicago and the University of Southampton. He is a Fellow of the Australian Academy of Science, The Institute of Mathematical Statistics and The American Statistical Association. He has been awarded the 2012 Pitman Medal by the Statistical Society of Australia Inc in recognition of outstanding achievement in, and contribution to, the discipline of Statistics. He has just taken up the position of Managing Editor of the Australian and New Zealand Journal of Statistics. His research interests include statistical inference, statistical modelling, robustness, nonparametric and semiparametric methods, analysis of sample surveys, and ecological monitoring.

Presented by

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This lecture is free and open to the public

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