cebra
Centre of Excellence for Biosecurity Risk Analysis

E-UPDATE
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MESSAGE FROM THE DIRECTOR

The people that work in CEBRA continually impress me, not only because of the robust, evidence based, innovative work they produce but also the valuable relationships they are building across Government, business and academia. Our very own Assoc. Prof Jane Elith was one of twenty-one of Australia's best scientists to be elected to the Australia Academy of Science, a rare and esteemed honour, for her outstanding contributions to science. Congratulations Jane - more in the newsletter.

We continue our commitment to impact by providing solutions that connect directly to concrete problems. One shining example of this is in development and training, with the Department of Agriculture and Water Resources (DAWR), of the department's modelling capability, the Australian Animal Disease model (AADIS) to support emergency animal disease (EAD) preparedness and response. Recently Dr. Richard Bradhurst (CEBRA), Dr. Graeme Garner (DAWR), Dr. Clare Death (DAWR) and Prof. Mark Stevenson (UoM) presented and facilitated the AADIS jurisdictional training workshop at the University of Melbourne. The workshop was attended by veterinary epidemiologists and veterinary/economic researchers from the NSW Department of Primary Industry; NT Department of Primary Industry and Fisheries; QLD Department of Agriculture and Fisheries; Primary Industries and Regions SA; VIC Department of Economic Development, Jobs, Transport and Resources; WA Department of Agriculture and Food; CSIRO Black Mountain Laboratories; Australian Animal Health Laboratory (AAHL); and the UOM Faculty of Veterinary and Agricultural Sciences. Workshop attendees received training in the concept, design, configuration and use of the Australian Animal Disease Model (AADIS).

Over the last couple of months, we have continued to build our strong relationship with DAWR and to share our findings with them. With Martina Hoffman, I recently presented a workshop on 'Identifying Unexpected Biosecurity Risk' at DAWR, and Dr. James Camac presented on 'Quantifying Confidence in Pest Absence' to the DAWR Plant Division, both in Canberra. The latter presentation was a summary of the work conducted for project 1606D – more in the newsletter.

Another avenue to sharing our findings and education is through publication. Recently the book Invasive Species: Risk Assessment and Management edited by Terry Walshe, Mark Burgman, Mike Nunn and me was published by Cambridge University Press.

This book presents a comprehensive review of risk-based techniques that help policy makers and regulators protect national interests from invasive pests and pathogens before, at, and inside national borders. Selected from the research corpus of CEBRA, this book presents tested scientific solutions to the greatest challenges faced by quarantine and biosecurity policy makers and regulators today. Coming to all good bookstores near you!

Andrew Robinson

Managing Director,

Centre of Excellence for Biosecurity Risk Analysis

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CEBRA congratulates new Fellow of the Australian Academy of Science.

Congratulations to CEBRA's Associate Professor Jane Elith, who was one of twenty-one of Australia's best scientists elected as Fellows of the Australia Academy of Science for their outstanding contributions to science, a rare and esteemed honour.

Jane is an internationally acclaimed ecologist, specialising in species distribution models. This work is key to many aspects of species management, including understanding current distributions of threatened species, predicting how distributions might change over time, supporting threat management and controlling invasive species.

Jane is a Thomson Reuters highly cited researcher (2014-2016) placing her in the top 1% of scholars internationally. She was awarded the 2015 Prime Minister's prize for Life Scientist of the Year and the 2016 Fenner Medal from the Australian Academy of Science.

"I hope this award and my work inspire more people to do science" said Jane.

Jane Elith

Call for Abstracts.

Risk in an Interconnected World - University of Melbourne, 20-23 November 2017

Our world is more interconnected than ever before. From transport and technology, to trade and the environment, increasing interconnectedness presents significant challenges to government, industry and the individual. What emergent risks are we likely to face and how can we manage them?

The 10th Annual Conference of the Society for Risk Analysis Australia and New Zealand (SRA-ANZ) is calling for abstracts that delve into risk and interconnectedness from the perspective of academia, government and industry.

We are proud to announce that this year's conference will be held in conjunction with the Australasian Bayesian Network Modeling Society.

We invite abstracts for oral presentations and posters on all aspects of risk, risk analysis and risk management including the following examples:

- How are risks affected by increasing interconnectedness, and what does this mean for risk analysis and management in the future?
- What innovative methodologies are available for the monitoring and surveillance of emerging risks, both locally and internationally?
- How do we think about risk in decision-making, given the interconnected nature of social, economic and environmental tradeoffs?
- How has the use of technology changed the collection and sharing of risk-related information, and where are there opportunities for further improvement?
- How does globalization influence risk?
- What role does government play in risk management in an interconnected world?
- What role does interconnectedness play in how we understand and deal with the risks presented by climate change?
- How do governments and industry manage the risks relating to info security and cyber attacks?
- What are the applications for Bayesian networks in a risk-related setting?

Deadline for abstract submissions is 30th June 2017.

To submit an abstract, visit:

http://www.sraanzconference.org.nz/

SRA AUSTRALIA & NEW ZEALAND

ABNMS Australasian Bayesian Network Modelling Society

Making the most of negative (absence) data from surveillance programmes.

Evidence of pest absence is critical for trading with World Trade Organisation countries. This evidence is often derived from a pest not being found during an internationally recognised surveillance programme.

However, detection rates of such surveillance programmes are rarely perfect. A consequence of this imperfect detection means that observed absences can arise either because the pest is truly absent or because the surveillance programme failed to detect it. It is impossible to be absolutely sure which situation is true. It is therefore critical to quantify our confidence that a pest is absent when determining pest freedom, or whether an eradication has been successful.

"We have used an under-utilised source of surveillance information to quantify our confidence that a pest is truly absent. We are using negative records. The model we use explicitly estimates the likelihood a pest is absent by understanding the sensitivity of the surveillance system to detect a pest or pest population size and the prior belief the pest is present" said Dr James Camac from CEBRA.

Whenever surveillance is undertaken, its sensitivity to detect the pest needs to be known. This is because it is a major factor in determining how much effort (e.g. number of traps or number of visits) is required to be confident in detecting a pest or disease if it is present. However, in practice, sensitivity of surveillance programmes is not always known. In

such cases it can be estimated from experiments, published literature or expert elicitation.

Prior belief that the pest is present will depend on three things; an arrival rate (how likely is it to arrive?), climatic suitability (is the climate suitable?) and availability of hosts (is there available food?).

"At CEBRA it is important to provide solutions that connect directly to concrete problems. So, to illustrate the practical implementation of this model, we have used absence or negative data from the Mediterranean Fruit Fly (Med-Fly) and the Australian National fruit fly surveillance network" explained James.

Medfly is considered to be a major quarantine pest, and countries that have known established populations face significant trade barriers upon their exports. In Australia, each state has established fruit fly surveillance to provide both evidence of fruit fly freedom and as an early detection system for new incursions. Target surveillance programmes are an integral part of any biosecurity system.

"The model has many applications. Besides estimating the probability that a pest is absent given the surveillance effort, it can also be applied to post-outbreak scenarios such as estimating confidence in eradication success. The model also provides a general framework that allows it to be readily applied to other pests. We believe the accuracy of the model can be further improved through more sophisticated pathway analysis and climatic suitability modelling" James said.

Behind the scenes!

We all know that a business doesn't survive without efficient office administrators that work, mostly behind the scenes. One of CEBRA's unsung office administrators is Erica Kecorius.

Erica has been working on a part-time basis with CEBRA and formerly with ACERA since May 2012. Prior to that she worked at the School of Botany. As with many of us starting a new job Erica initially transferred to ACERA for a temporary 12-month period and opted to stay on a long-term basis once CEBRA was established.

Erica supports the CEBRA team with managing the everyday activities. "I like making sure everything is organised and that our business processes are all in order so that the researchers can go out and be brilliant!" said Erica.

"The day to day running of the Centre involves a variety of different activities and provides a busy and interesting workplace."

Outside the workplace Erica is also very busy, especially raising her nine-year-old twin girls – yes, they are identical – and a large and wildly energetic dog! She is a proud Essendon and Footscray (Western Bulldogs) supporter. Essendon because it was the place she grew up and Footscray because she now lives there. "It's always hard when the play each other" says Erica.

"We can't do the important and innovative work that we do at CEBRA without the support of our office administrators. We are very fortunate to have such a great team" said Andrew Robinson, CEBRA's Director.

Erica enjoys working with and supporting a wonderful group of people at CEBRA. "We have a dynamic and engaged team who are committed and enthusiastic about their work. It is a great work environment with a great group of people" Erica said.

Erica Kecorius.

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