

RESEARCH@UNE

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Dear Colleagues,

Welcome to the first of our monthly newsletters promoting research activity at UNE!

In the first months of 2009, UNE staff have excelled in research activity, in initiating new research projects and collaborations, gaining grants, winning tenders, securing consultancy contracts and publishing in an ever broadening research portfolio.

In each edition we will highlight UNE's researchers, reporting on their successes and achievements, as well as new developments and collaborations. We will be focusing on areas of UNE research and consultancy that are having demonstrable impacts on the community, government industries, policy development, business and professions at the rural, regional, national and international level.

Edition One will cover the January to March period of 2009 to get the momentum going!

A key feature of Research@UNE will be the 'Spotlight' on a particular research area in order to inform the UNE Research community as to what research is being conducted both within UNE and with external collaborators.

Information for this newsletter will be collected from Faculties and University Research Institutes and Centres, on a monthly basis. A list of contact persons who will be compiling the information in your Faculty or University Institute or Centre is at the bottom of the newsletter.

I would also like to take this opportunity to congratulate the former PVC Research, Peter Flood, on his appointment as Emeritus Professor. Peter has taken up residence in the Earth Sciences building and will be continuing his contribution to UNE in research and other activities.



Professor Ray Cooksey

Acting Pro Vice-Chancellor, Research

Spotlight

Institute for Rural Futures



The Institute for Rural Futures was founded in August 2000 as an independent research centre at the University of New England. Building on 25 years of achievements of the Australian Rural Adjustment Unit and The Rural Development Centre, the Institute has expanded capacities in environmental and rural resource management as they relate to socio-economic issues. The Institute incorporates the UN recognised and affiliated, UNESCO Centre for Bioregional Research Management which provides a conduit and focus for integrated collaborative projects in this field in Australia and internationally.

The Institute undertakes applied inter-disciplinary research across social, economic, environmental and resource issues. The focus of the Institute is on *Change* – in identifying and analysing the social, economic and environmental drivers and impacts of change. It is only through the understanding of the processes and impacts of change that rural and regional communities, along with government, can plan for the future. The public good research outputs contribute to policy innovation and adaptation. The Institute contributes knowledge, policy analysis and adaptive capability to meet identified and predictable pressures of change on non-metropolitan Australia. Through innovative, ‘on-ground’ projects and engagement with a broad spectrum of stakeholders the Institute builds practical knowledge contributing transformation capacity towards resilient sustainable futures. Critical policy priorities of Government, and related social-ecological pressures, have dominated many Institute research projects over the past year.

Throughout 2008, staff and collaborators have been involved in 24 externally funded research projects valued at more than M\$2. In addition to numerous project / government reports, staff have produced some 16 refereed publications in this time. This diverse range of projects included: nested governance institutions in natural resource management; biosecurity; water governance; social and community aspects of water trade; understanding social-ecological context in the northern Murray-Darling; economic accountability approaches to NRM; environmental risk and misdemeanours; risk of disease transmission with livestock movement; improvement of veterinary service delivery; climate change and biodiversity vulnerability assessment; weed pathway risk analysis; best practice weed detection; social-ecological spatial analysis; designing alternative landscape futures for high growth ‘sea change’ areas; better market opportunities for commercial pig production (Indonesia); and biosecurity and livestock management institutions (Indonesia). Projects examining change pressures on rural and coastal communities, agriculture and natural ecosystems have attracted considerable government and policy interest including briefings to Ministers, Senate Inquiries and the Productivity Commission.

Most recently, the entire IRF team has been involved in one of six very large Federal Government climate change vulnerability case studies. The Institute study is examining the vulnerability of the Hunter and Central Coast region -- its communities, land uses, heavy industry regional economies and ecosystems -- to climate change related sea level rise and weather perturbations such as increased intensity storm and rainfall. International collaborations and projects have continued in the England, Scotland, Germany, Canada, the USA and Asia. Of particular note are a series of projects that Dr Ian Patrick is leading in eastern Indonesia in several areas of community agri-business and governance, and livestock biosecurity.

For more information please contact Professor David Brunckhorst, Director, IRF, at dbrunckh@une.edu.au or visit the IRF website at www.ruralfutures.une.edu.au.

NEW RESEARCH PROJECTS

Land – the Carbon Bank

The Federal Department of Agriculture, Forestry and Fisheries recently announced funding for projects in the National Soil Carbon Research Program. The PIIC application “Land the Carbon Bank” received \$1.05 million over 3 years to measure, monitor and determine the viability of sequestering carbon in agricultural systems in NSW.

The project also received \$400,000 in funding from the Grains Research & Development Corporation (GRDC). The purpose of this project is to assess the impacts of changes in agricultural management on soil carbon in NSW. It is part of a national integration project that has been established under the Climate Change Research Program. This will provide national coordination and consistency of approach in providing data on changes within the separate pools of soil carbon under various management regimes and under a range of defined environments. This project will focus on attaining new data and particularly to ‘fill the gaps’ in knowledge on how adoption of best management practice or new practices may change soil carbon fractions under NSW agricultural systems (including cropping / pasture rotations / systems, reduced / no tillage crops, irrigated crops and high intensity cropping). Members of the soil carbon research team are Dr Brian Wilson (DECC), Dr Melinda McHenry (PIIC), Dr Subhadip Ghosh (PIIC) and Professor Heiko Daniel (UNE).

Kenyan forestry researcher, Christine Kainyu will join the PIIC Soil Carbon Research Group. Christine’s research program is supported by a Ford Foundation international fellowship. Her PhD studies at UNE will involve modelling the impact of on-farm management alternatives and land-use changes, on Soil Organic Carbon (SOC) sequestration.

For more information please contact Professor Bob Martin, Director, PIIC at rmarti27@une.edu.au or visit the PIIC website at <http://www.une.edu.au/piic/>.

AgLaw Research Centre - Tajikistan and Kyrgyzstan

The Australian Centre for Agriculture and Law (AgLaw Centre) is the lead research organisation working to create an improved legal and regulatory framework to enable Sustainable Land Management in the Pamir-Alai Mountains of Tajikistan and Kyrgyzstan. The project currently involves Professor Paul Martin, Dr Ian Hannam (Adjunct Associate Professor) and Michelle Lim (PhD student), with another student anticipated to join the team within the next 12 months.

The AgLaw Centre is providing guidance to the National Legal Tasks Forces in Tajikistan and Kyrgyzstan. The Centre is also supervising the work of PhD candidates that are undertaking specialized studies on issues of relevance to the legal and regulatory framework for Sustainable Land Management in the Pamir-Alai region.

For more information contact Professor Paul Martin, Director, AgLaw at paul.martin@une.edu.au.

NEW PUBLICATIONS AND REPORTS

Due to the changeover of publication reporting collection systems we are unable to provide a complete report for this first issue. We will supply year to date publication information for 2009 as soon as the new system is fully operational.

EDUCATION INVESTMENT FUND (EIF) SUBMISSIONS:

UNE has recently submitted two applications to the Education Investment Fund (EIF). They are:

- **Research Category** – *The Newholme Project* – Science Based Policy and Action for Agriculture and Environmental Change. The Newholme project tackles the unprecedented challenges facing agricultural and environmental systems and societies. The EIF component of the project is a Partnership precinct that brings together the research leaders of UNE and key partners, coupled with

strategic research infrastructure required to understand and respond to the impacts of agriculture and environmental change.

- **Higher Education Category – Intellinode** – The Intellinode project will construct, furnish and equip an innovative environmentally sustainable ‘smart’ Intellinode building. This initiative will be integral to the implementation of e-research at UNE.

GRANTS, RESEARCH CONTRACTS AND CONSULTANCIES:

Grants Successes to date for 2009:

- **Primary Industries Innovation Centre (PIIC)** is a joint venture between UNE and the NSW DPI. *Land – the Carbon Bank*. The soil carbon group, involving researchers from PIIC and the School of ERS have won \$1.05 million research funding from the Department of Agriculture, Fisheries and Forestry. The project is part of a national program comprising CSIRO, State Departments and two other universities, UWA and UTAS.
- **Primary Industries Innovation Centre (PIIC) - Mitigating ruminant methane emissions**
Dr Roger Hegarty, located at NSW DPI’s Beef Centre at UNE, has secured \$1.58 million in funding from the Federal Government’s Climate Change Research Program. A study of genetic variation in beef cattle herds that differ in methane production has received \$1.04 million to evaluate the potential for breeding cattle with reduced methane emissions, without compromising animal performance. Another \$540,000 will be used to investigate techniques to reduce methane production in ruminants by eliminating microscopic organisms called protozoa from the rumen and through the use of dietary supplements. Meat and Livestock Australia will supplement both studies with a further \$60,000 for each project.
- **Primary Industries Innovation Centre (PIIC) - Mitigating nitrous oxide emissions from soils** Soil Scientist at DPI’s Tamworth Agricultural Institute, Dr Graeme Schwenke will lead a research project to investigate options for mitigating nitrous oxide emissions from cropping soils in North-West NSW. The project will receive \$400,000 in funding from GRDC.
- **Dr Nigel Warwick and Steve Griffith.** (Botany) *Determining impacts of groundwater extraction on wallum communities on coastal sand masses. Sustainable water supply for Eastern Australia. MidCoast Water at Taree/Forster.* \$255,000. A further \$37,000 was provided separately for purchase of micrometeorological stations and plant and soil water measurement equipment.
- **Prof David Cottle.** *eDST: Decision support tools for multi-disciplinary applications in higher education.* Australian Learning and Teaching Council. Via UTAS. \$215,000.
- The **Talloires Declaration team** were successful in obtaining, in partnership with the New England Strategic Alliance of Councils (NESAC) and community groups, a \$2 million grant from the NSW Environmental Trust’s Urban Sustainability Program to improve and protect the unique high country biodiversity of the New England Region.

Research Contracts and Consultancies:

Contracts have been executed for the following projects (to date for 2009):

- **Prof Tom Maxwell (EDUC)** – funded by AusAID Australian Leadership Awards – Fellowships – *Capacity Building of leadership in early childhood education* – Value \$228,902.
- **Dr Paul Iji (ERS)** – funded by P Guinane Pty Ltd – *Effect on the general health and productivity of broiler chickens when tea tree is added to chicken feed - EXPERIMENT 2.* – Value \$52,953.
- **Dr Paul Iji (ERS)** – funded by P.Guinane Pty Ltd – *Testing the prophylactic potential of tea tree oil against development of necrotic enteritis in broiler chickens - EXPERIMENT 3* – Value \$62,150.
- **Dr Fiona Wood (BEPP)** – funded by EIDOS – *A human capital and productivity approach to investing in equitable outcomes for indigenous children*– Value \$5,500.

- **Dr Peter Merrotsy (EDUC)** – funded by EIDOS – *A human capital and productivity approach to investing in equitable outcomes for indigenous children* - Value \$8,700. (This is not a duplicate – these two EIDOS entries are separate projects)
- **Prof John Gibson (ERS)** – funded by Bill and Melinda gates Foundation – *Identifying opportunities to use livestock genetics to improve livelihoods of poor livestock keepers in Sub-Saharan Africa*– Value \$339,166.
- **Dr Darren Ryder: (ERS)** "Environmental Flows in NSW North Coast - Review of Scientific Principles and Current Knowledge".

Grant Applications

- **Dr Ian Reeve and Dr Elaine Barclay**, (IRF) *Conduct a Scoping Study of Institutional Arrangements for Water Resource Management and Water Trade in the Northern Basin*, Murray Darling Basin Authority, asking for \$113,556.
- **Prof David Brunckhorst**, (IRF) *Virtue in Space and Time: Understanding ‘Loophole’ Opportunities for Societies to Change Direction Towards Sustainable Futures*, A New Science of Virtues: A project of the University of Chicago, asking for \$US 266,200.
- **Michael Coleman**, (IRF) *Science and the Social Construction of Virtue in International Society: Climate Change and the Response of Nation-States*, A New Science of Virtues: A project of the University of Chicago, asking for \$US 211,750.
- **A/Prof. Jeremy Bruhl** (Botany): UNE/Australian Flora Foundation: *“Ploidy levels in Australian Schoeneae (Cyperaceae) inform their genetic diversity, conservation status & cultivation”*: asking for \$11,920.
- **Dr Susen Smith, Dr Darren Ryder, Dr Michael Littleddyke** (ERS): UNE/NSW DECC Public Facilities Program: *“Reducing GGE and saving energy onsite in a cool climate region: Education for sustainability”*: asking for \$250,000.
- **Dr Brett Baker** (Linguistics) was an applicant, with Prof Cathi Best (MARCS, UWA), Mark Harvey (U. Newcastle), and many others on a \$2.5m application, titled, *Attunement to the Language Environment* to the US National Institutes of Health funding scheme.
- **Dr Diane Shanley, A/Prof Nigel Marsh**, (Psychology) 2009, National Health Medical Research Council, *Evaluating psychologists' use of evidence-based treatments for children's mental health problems*. Asking for \$217,450
- **Dr Rhonda Brown, A/Prof Don Hine, Dr Einar Thorsteinsson** (Psychology) - NHMRC research grant application, *Predictors of subjective fatigue in ME/CFS and MS patients and university student controls*. Asking for \$76,250.

ARC Discovery Grant Applications:

27 ARC Discovery Grant applications were submitted at the end of February for the current round, with a total request of \$10,708,444.

The pool of applications (listed below) showed good evidence of cross-institutional (12 of 27) and international (10 of 27) collaborations. One application involved cross-Faculty collaboration. The projects are clearly designed to have concrete impacts on a variety of areas, including education and the animal genetics and production industries.

Thanks to all who worked so hard to get these applications prepared and submitted. Results will be available in October.

For further information please contact the individual researcher/s directly.

- **Dr Catherine Waters (Arts)** - *Journalism on the Move: The Special Correspondent and Victorian Print Culture* – asking for \$200,646.
- **A/Prof Russell McDougall (Arts) and Prof Helen Tiffin (Arts)** with Dr M Rolls, University of Tasmania and Prof H Gilbert, University of London - *A Comparative Analysis of Depictions and Deployments of the Indigenous and the Exotic: Human, Animal and Botanical* - asking for \$436,023.

- **Dr Cuncun Wu (Arts)** with Dr M Stevenson, Victoria University - *Peking opera, epitheatre and homoerotic writing in nineteenth-century Beijing* - asking for \$220,692.
- **Dr Stephen Wood (BCSS) and A/Prof Robert Baker (BCSS)** - *The Retail Planning Scylla and Charibdys? Maintaining the viability and vitality of main streets in competitive environments* - asking for \$365,422
- **Dr Gail Hawkes (BCSS) and Prof Victor Minichiello (FOTP)**, with Prof M Pitts, (Latrobe) - *Sexual Subjectivity and the Older Woman in 21st century Australia* - asking for \$374,678.
- **Prof Cliff Goddard (BCSS) and Dr A Gladkova (BCSS)** with Prof M Koptjevskaja Tamm, (Stockholm University), and Dr E Rakhilina, (Institute of Russian Language) - *Doing things differently: conceptual, lexical and grammatical differences in the domain of physical activities in English and Russian* - asking for \$710,571.
- **Prof Cliff Goddard (BCSS)** with Prof D Carbaugh, (University of Massachusetts) - *Talking Australian, Talking American: Communication style differences between Australian English and American English* – asking for \$679,052.
- **Prof Brian Byrne (BCSS) and Prof Don Hine (BCSS)** with Prof R Olson, (University of Colorado) - *Longitudinal twin study of literacy and language: extension to adolescence and expansion to mathematics* – asking for \$396,124.
- **Prof Nicola Schutte (BCSS)** with Prof R Schwarzer, (Freie Universitat Berlin) - *Generating Positive Outcomes Through Increasing Global Self-Efficacy* – asking for \$114,879.
- **Dr Paul Reader (HUM)** Post-doc Fellowship - *Images of ecological modernism: a search for the new culture of ecological learning* – asking for \$306,445.
- **Dr Mark Moore (HUM)** - *The Spandrel Hypothesis: Towards a Unified Theory of Stone Flaking* - asking for \$729,449.
- **Prof Ian Metcalfe (ERS)** with Dr Y Amelin (ANU), Dr R Nicoll (ANU), Dr R Mundil - Berkeley Geochronology Centre, Prof P Renne - Berkeley Geochronology Centre - *Understanding mass extinctions and deep-time climate change: International Timescale Calibration of the Late Permian-Early Triassic of Australia* – asking for \$294,843.
- **Dr John Paterson (ERS)** with Dr S Lee, (Seoul National Uni), · Dr SC George – Macquarie, · Dr GA Brock – (Macquarie), Dr CB Skovsted, (Uppsala Universitet, Sweden) - *Fossils, fuels and ancient molecules: a multidisciplinary study investigating early animal and hydrocarbon evolution in the Cambrian of central Australia* – asking for \$525,649.
- **Dr Paul Clarke (ERS)** with Prof R Bradstock, (Wollongong) - *Understanding the impact of changing atmospheric carbon dioxide on the ability of woody plants to respond to fire* – asking for \$415,617.
- **Dr Kierran Maher (ERS)** - *Geochemical and stable isotopic tools in determining the resource potential of mesothermal vein systems* – asking for \$221,324.
- **Prof Yihong Du (S&T) and Dr S Tan (S&T)** with Prof N Dancer , (Sydney) - *Transitions and singular behaviour in nonlinear partial differential equations* – asking for \$348,189.
- **Dr K Pavlov (S&T)** with Dr M Anastasio, (Illinois Institute of Technology) - *Nanotomography using a new form of Fourier holography* – asking for \$414,492.
- **Dr W Kwan (S&T) and Prof Graham Leedham (S&T)** with A/Prof J Gao, (CSU), Dr I Koprinska, (Sydney), Dr J Poon, (Sydney) - *Fingerprint identification system by co-training of hand biometrics and relevance* – asking for \$577,403.
- **Dr Chris Fellows (S&T)** with Dr W Doherty, (QUT), Dr H Yu, (IP Australia) - *Transformative biomimetic technologies for controlling inorganic crystallisation* – asking for \$450,914.
- **Dr Kankana Chakrabarty (S&T)** with Prof N Naidu, (University of Mysore, India) - *Developing an intelligent tool for achieving better consistency in student evaluation* – asking for \$105,600.
- **Prof Steve Glover (S&T)** - *Anomeric amides—unusual non-planar amides of structural, chemical and biological importance* – asking for \$400,392.
- **Prof A.S.M. Sajeev (S&T)** - *Effects of Organisational Cultural Imbalances on Risks in Global Software Engineering* – asking for \$96,497.

