



# Geographical Society of New South Wales The 12<sup>th</sup> Annual Honours Conference, Friday 14<sup>th</sup> November, 2008

University of Sydney, Madsen Building (F09)

## Conference Program

09:30 - 10:00 Registration (Geosciences School Board Room, Madsen 449)

10:00 - 10:20 Welcomes by Professor John Connell, Professor Kevin Dunn

### Session 1: Environmental Geographies, Chair (Kevin Dunn)

10:20 Gemma Smart (University of New South Wales)

Validity of biological control of coffee green scales in Papua New Guinea

10:40 Robin Ma (University of Western Sydney)

Climate change mitigation and adaptation by local governments in Sydney

11:00 Claire Tucker (University of Sydney)

Breaking down the barriers: the communication of climate change information to Gippsland dairy farmers

11:20 Jessica Currie (Macquarie University)

Managing risk? Aboriginal cultural heritage and climate change in NSW

11:40 Rachel Green (University of Sydney)

From little things, big things grow: investigating remote Aboriginal community gardens

### LUNCH 12:00-12:40 pm (Madsen 449)

### Session 2: Cultural Geographies, Chair (Wendy Shaw)

12:40 Brad Ruting (University of Sydney)

Travel to the Old Country: transnational engagements and the Estonian diaspora

1:00 Natalie Swann (University of New South Wales)

Transnational acts: physical and virtual mobilities

1:20 Marita Cuomo (University of Sydney)

The treechange experience: migration to country New South Wales

1:40 Bronwyn Isaacs (University of Sydney)

Supermarket ships and traditional rips: changing cultures of consumption in Chiang Mai, Thailand

### Afternoon Tea 2:00-2:20 pm (Madsen 449)

### Session 3: Physical Geographies, Chair (Mel Neave)

2:20 Neill Dorrington (University of Sydney)

'A Dip In The Needle': changes in magnetic inclination during the Holocene in southeastern Australia

2:40 Tara Morgan (University of Technology Sydney)

Toxicity of the larvicide *Bacillus thuringiensis israelensis* on the brackish water chironomid species *Kiefferulus longilobus* (Diptera: Chironomidae)

3:00 Justin Thompson-Laing (University of Sydney)

Floodplain-water connection. Is it important? An investigation of inundation influence on floodplain soils

3:20 Lachlan McTaggart (University of Technology Sydney)

The feeding and breeding ecology of the Australian Pelican (*Pelecanus conspicillatus*) in an urban environment

### 3:40 Presentation of the Jim Rose honours prizes (Madsen 449)

## Conference abstracts (in order of presentation)

Validity of biological control of coffee green scales in Papua New Guinea

**Gemma Smart**

University of New South Wales

Papua New Guinea (PNG) accounts for approximately 1% of world coffee production. Coffee is the largest earner of foreign exchange within the PNG agricultural sector. The majority of this is grown by smallholders in the highlands region, with minimal management inputs. Inadequate pest management is one impediment to productivity. Currently, integrated pest management systems including the use of biological controls are being developed for coffee green scale (CGS), one of the significant pest species affecting crop yields. In the PNG context there appeared to be a gap in understanding how factors such as farming methods, intra-household relations and politics are likely to affect the success of biological control in Integrated Pest Management. My research aimed to quantify the predicted constraints and pathways to uptake of biological controls by assessing the socio-economic and political factors which may affect them by using a combination of discourse analysis, survey data analysis and in-depth interviews with extension officers on location in the Eastern Highlands province of PNG. I argue that imperative in both the planning and implementation stages of biocontrol in PNG is a need to develop long-term strategies that are both in harmony with natural and cultural control methods, and appropriate—culturally and practically—for the smallholder farming community. This research was completed in collaboration with the Australian Centre for International Agricultural Research (ACIAR), CAB International (CABI), The University of New South Wales (UNSW) and the Coffee Industry Corporation Ltd., PNG (CIC) as part of their research project entitled: "Sustainable management of coffee green scales in Papua New Guinea" (project number ASEM/2004/047).

Climate change mitigation and adaptation by local governments in Sydney

**Robin Ma**

University of Western Sydney

Climate Change is the most pressing issue faced by humanity in the 21st century. Climate Change is occurring on global scale through the build up of greenhouse gases in the atmosphere; however its impacts are often felt locally in vulnerable, low lying and densely populated regions. In Sydney, a significant proportion of the population resides in a coastal location, with impacts of climate change literally on their doorstep. Inland councils are also at risk with rising temperatures and increasing intensity and frequency of natural weather events.

This research examines responses and the strategic directions of local councils in the Sydney Metropolitan region, Australia, in regards to climate change. Key documents, policies, and environmental planning instruments were analysed for their usefulness. Mitigation and Adaptation action are essential to combating the present and future impacts, and thus are the key to managing climate change. One such example of a mitigative response is through the Cities for Climate Protection (CCP) program.

The case studies of two coastal and two non-coastal councils conducted as part of this research provide insight into the development of climate change responses. Analysing responses of these councils helped in determining usefulness of various policies, instruments and programs. Comparison of the case studies led to several important and interesting findings.

Breaking down the barriers: the communication of climate change information to Gippsland dairy farmers

**Claire Tucker**

University of Sydney

Climate change is one of the greatest social, economic and environmental dilemmas of our time. Concentrations of greenhouse gases in the atmosphere are continuing to increase as a result of human actions and scientific predictions estimate that even a 2°C increase in global temperatures is perilous. However, the problem of climate change extends beyond science. The true dilemma lies in the juxtaposition between the physical evidence of climate change and the human acceptance of its consequences.

Climate change poses significant complexities for the agricultural sector in Australia. Ultimately, the ability of farmers to adapt effectively to climate change can decide the success or failure of individual farms. For dairy farmers operating in Victoria's Gippsland region, despite the scientific rigour upon which climate change scenarios have been developed, the topic is not particularly well received or acknowledged.

The barriers to participating in the climate change debate for dairy farmers are widespread. For many, the amount of varied and conflicting information can often lead to frustration or disillusionment. Therefore, the capacity for farmer learning must be enhanced via agricultural extension organisations. By providing support networks through mail or email distribution lists, enhancing face-to-face contact through learning forums and adding expert industry knowledge to existing learning frameworks, many of the barriers to participation can be broken.

Managing risk? Aboriginal cultural heritage and climate change in NSW

**Jessica Currie**

Macquarie University

In New South Wales (NSW) the cultural landscape is highly susceptible to degradation from climatic processes, however, research is lacking on the possible impacts of climate change on Aboriginal cultural heritage and the implications for management. Through interviews and an analysis of existing literature on public perceptions of climate change and western frameworks of management (specifically archaeology, heritage and conservation), three broad themes were revealed. The first theme explores perceptions of climate change and finds that there were varying degrees of confidence in the projected scenarios. While climate change is growing as a priority, this does fluctuate in the context of other issues. The second theme explores the likely impacts of climate change on Aboriginal cultural heritage within the context of existing environmental stressors. Of particular concern are impacts from fire, inundation, erosion, water availability and the general health of the environment, with participants emphasising that the degradation of the environment is felt as a personal loss. The third theme explores the management opportunities and constraints and finds that climate change challenges the western construct of nature and culture with traditional knowledge identified as having the potential to inform planning and decision-making processes. The conclusion suggests that a space should be made for Aboriginal people to enter the climate change debate with information provided on the likely impacts of climate change on Aboriginal cultural heritage so they can make an informed decision on appropriate courses of action. However, the effectiveness of Aboriginal participation is dependent on the resolution of power relations and the exercise of government goodwill.

From little things, big things grow: investigating remote Aboriginal community gardens

**Rachel Green**

University of Sydney

Remote Aboriginal community gardens have the potential to create a range of benefits including building social capital and improving nutrition through greater access to fresh fruits and vegetables. This study uses participatory observation to create a narrative inquiry into the benefits, challenges and sustainability of various forms of food gardens in remote Aboriginal Communities. Nine remote Aboriginal communities and outstations were visited in Western Australia and the Northern Territory, 11 focus groups were conducted along with many individual interviews with traditional owners and key stakeholders. Greater support in terms of training, policy, funding and capacity building is required in order to sustain these community initiatives and allow them to reach their full potential.

Travel to the Old Country: transnational engagements and the Estonian diaspora

**Brad Ruting**

University of Sydney

There has been remarkably little research conducted on 'diasporic travel'—patterns of travel and tourism shaped by ethnic, cultural and familial links between places—and its implications for migrant identities, transnational engagements or economic development. This paper draws on qualitative research methods (surveys and semi-structured interviews) to investigate a number of interstices in diasporic travel research by exploring the motivations and experiences of Estonian-Australians, and their descendants, visiting their ancestral homeland.

Most Estonian-born Australians fled Estonia as the Soviet Union invaded in 1944. Connections to Estonia were severed and return was impossible for many decades. Cultural identity, nostalgia, family history, political forces and experiences of exile motivate visits to Estonia, which have become increasingly popular following Estonian independence in 1991. These visits allow kinship and cultural connections to be reaffirmed, leading to new self-conceptualisations of identity, belonging and 'home' that differ across generations and, in many cases, embrace both Estonia and Australia in asymmetric ways.

There has also been declining involvement in Estonian cultural and political activities in Australia as visits have become increasingly popular amongst Estonian-Australians. The long-distance nationalism of the exile community has been replaced with more individually-oriented forms of emergent transnationalism since Estonian independence. The motivations for these exiles and their descendants travelling to the 'old country' are significantly shaped by politics, kinship connections and a 'sense of place,' whilst experiences range from the emotional and spiritual to the banal and touristic.

Transnational acts: physical and virtual mobilities

**Natalie Swann**

University of NSW

Mobility and language are fundamental to the human condition. Yet, while people have always been mobile, and have successfully communicated across continents for centuries, recent decades have seen a remarkable increase in the scale and rapidity of movement and communication. Air travel and new forms of information and communication technologies have revolutionised the experience of migration. Zelinsky's (1971) Hypothesis of the Mobility Transition suggested that virtual forms of mobility could substitute for physical forms of mobility. However, in the context of recent research on transnational communities and new mobilities, I show that the expectation is not met in current experience.

Survey and interview data from four Australian migrant communities was used to analyse patterns of relationship between physical and virtual mobilities. The evidence demonstrates that there is a significant, positive relationship between physical and virtual mobilities. Those who communicate more also travel more. Yet physical and virtual mobilities are contingent, consistently varying between the four communities, and along various demographic axes. The combined analysis of all these factors to explain levels of physical mobility explains little of the total variation: the relationship is complex and difficult to measure.

Evidence from the interviews suggests that while economic and other material motives play some part in driving various mobilities, for most migrants, physical and virtual mobilities serve their desire to sustain personal relationship. Those methods of communication that most closely approximate shared presence are preferred, and physical co-presence is experienced as the fulfilment of those on-going relationships. Consequently, I propose that rather than envisaging communication as a method through which the underlying purposes of mobility can be fulfilled, physical mobility would be better envisaged as the ultimate form of communicative behaviour, in which shared presence is most intimately obtained.

The treechange experience: migration to country New South Wales

**Marita Cuomo**

University of Sydney

Over the past decade there has been a pronounced movement of people from metropolitan into non-metropolitan areas of New South Wales. Popular and academic discourses about this migration phenomenon have defined these coastal and inland movements as 'seachange' and 'treechange' respectively. However, academic research on these patterns has been limited, with recent studies largely focusing on quantifying flows of such migrants, identifying their demographic characteristics.

This research utilises an ethnographic approach focusing on recent migrants to Oberon and Glen Innes in New South Wales to identify the motivations underlying this migration phenomenon and analyse the experiences of these 'newcomers.' These towns appealed to newcomers due to employment opportunities, housing affordability and the natural landscapes of the towns. Kinship ties and past associations influenced newcomers' decisions to move, and stage-of-life events, such as retirement, often served the catalyst for relocation. The desire for lifestyle change significantly underpinned the decision to move, as newcomers sought a different lifestyle which they associated with rural areas, such as living in a scenic environment, feeling 'less stressed' and having a personal connection to a local community. In addition, the availability of local facilities and services in Oberon and Glen Innes forced newcomers to alter the way they performed their everyday activities and routines. Overall, newcomers to these country towns sought a different way of life and were satisfied with their 'treechange' experience.

Supermarket ships and traditional rips: changing cultures of consumption in Chiang Mai, Thailand

**Bronwyn Isaacs**

University of Sydney

In the past five years there has been an expanding literature on a phenomenon called the supermarket revolution. The dominant model used to discuss this revolution suggests that supermarket TNCs are sweeping across the Global South like a series of "waves" (for example, Reardon et al. 2007). However this wave hypothesis is inadequate and greater attention needs to be paid to local specificity and cultural difference. In particular, the billions of consumers whose lives have been affected need to be heard. This research project adopted an ethnographic methodology to interview 40 consumers in Chiang Mai, Thailand. The research found that Chiang Mai's consumers mediate the presence of new European supermarkets through local interpretations about freedom, cleanliness and class and through parallel participation in fresh market consumption practices. However the agency of local consumers to negotiate the impact of supermarkets TNCs is also held in tension with the recent liberalization of the national policy environment. It is concluded that supermarket diffusion and the so called 'modernisation' of local food cultures in the Global South is not inevitable and that the dominant model with which the supermarket revolution is understood needs to undergo a cultural redirection.

'A Dip In The Needle': changes in magnetic inclination during the Holocene in southeastern Australia

**Neill Dorrington**

University of Sydney

Sedimentary cores from a wide range of lakes in southeast Australia were analysed to determine their directional palaeomagnetism. The inclination profiles of these cores were dated by lithostratigraphic correlation with existing well-dated sequences in each lake. Several magnetic features were observed in the various profiles and formed the basis for a late Holocene inclination model for southeast Australia. This was compared to the CALS7K model of Korte and Constable (2005) as well as the eastern Australia Inclination Record and Lake Keilambete records (Barton & McElhinny, 1981; Cook & Gale, in submission). The results obtained show three distinct inclination features: an inclination maximum between the 12th and 13th centuries, a trough in inclination around the 18th century and finally, a later inclination peak occurring between the 18th and 19th centuries. The findings in this thesis may help amend and improve the eAIR and strengthen the story that lies in the gap between historical and archaeomagnetic measurements.

The spatial and temporal patterning of these inclination features are similar in that they all follow the same general northward trend apparently along constrained lines of longitude. This is in complete contrast to the CALS7K model, which shows a negative inclination feature growing from the north and extending south through much of Australia. One key longitudinal constraint comes from the records from Kangaroo Island, where none of these magnetic features were evident. The evidence points to a significantly more complicated geomagnetic field than that predicted by the CALS7K model.

Toxicity of the larvicide *Bacillus thuringiensis israelensis* on the brackish water chironomid species *Kiefferulus longilobus* (Diptera: Chironomidae)

**Tara Morgan**

University of Technology Sydney

Mosquitoes and blackflies are responsible for causing social and economic damage to communities through the spread of disease. Non-specific chemicals to control these pest vectors have resulted in direct death, resources contamination and endocrine disruptions. *Bacillus thuringiensis israelensis* (Bti) is a bacterium that produces insecticidal proteins that are specific to the suborder Nematocera of Diptera. There has been a large focus on the effect of Bti formulations in freshwater environments; however, it is also used in brackish water. Thus the aim of this project was to determine the effect of a commercial preparation of Bti (VectoBac 12As®) on a representative brackish water chironomid species (*Kiefferulus longilobus*, Kieffer).

The first objective was to determine the types of brackish water habitats that support chironomid populations. Populations in the field were not consistently abundant and varied greatly temporarily. Sequentially the components of the bioassay were optimised including physicochemical parameters, viability in brackish water and the carrier. The final bioassay found that *K. longilobus* is susceptible to VectoBac® at an application rate of above 0.0012 mg/L (LOEC). The LC50 value was determined to be 0.00682 mg/L and the NOEC was determined to be 0.0012 mg/L. It is imperative that non-target species such as chironomid larvae are not affected by these spraying programs because they are a source of nutrition for higher trophic species.

Floodplain-water connection. Is it Important? An investigation of inundation influence on floodplain soils

**Justin Thompson-Laing**

University of Sydney

Floodplains rely on specific inundation patterns to maintain soil fertility and vegetation stability. Concerns have been raised that a shift in these patterns has had a negative impact on the health of floodplain ecological communities; especially in semi-arid areas where water is limited. Soil analyses on the semi-arid Lowbidgee floodplain in south-western New South Wales were conducted to determine relationships between flood inundation frequency and the soil properties of the floodplain and adjacent hillslope, and to investigate the applicability of the "resource islands" and "intermediate disturbance hypothesis" concepts for this environment. Soils were sampled from zones representing four flood inundation frequency categories: high (return interval every year), intermediate (return interval every five years), low (return interval every ten years) and never flooded. The results of this study suggest that water, rather than nutrient concentrations, limited plant growth and density in this region. The formation of resource islands on the never flooded hillslopes was not apparent although there were some soil properties statistically higher underneath vegetation compared to inter shrub areas in intermediate and low flood frequency zones. This is significant as this is the first time this has been described in the scientific literature. Spatial variability was also clearly greatest within the intermediate and low inundation frequency zones (as compared to the frequently and rarely disturbed zones) suggesting that the intermediate disturbance hypothesis is applicable to physical systems on semi-arid floodplains such as those found in the Lower Murrumbidgee catchment. This result is also highly significant as the intermediate disturbance hypothesis has not been previously shown to apply outside of biological systems. The results of this study have helped clarify relationships between soil character, floodplain inundation patterns and vegetation health and can improve the volume, timing and duration of environmental flow releases.

The feeding and breeding ecology of the Australian Pelican (*Pelecanus conspicillatus*) in an urban environment

**Lachlan McTaggart**

University of Technology Sydney

The Australian Pelican, *Pelecanus conspicillatus*, has become more abundant in coastal urban environments over the past 30 years. Should they require management, it is important to have information on the breeding biology and ecology. Little of this information is available and most is based on random visits to sites or is contained in general studies on waterbirds. No large scale studies on the Australian Pelican have been conducted, therefore no detailed knowledge on all parameters of this bird's breeding biology are available, and even less is known about the factors that may affect them. Information is especially lacking on the hatching and fledging success of young pelicans.

This study investigates the breeding biology of the pelican with factors such as egg size, clutch size and hatching success being investigated. The reproductive success, growth, feeding and brood reduction mechanism was also investigated.

The pelicans at Pelican Island had similar hatching success to that of what was reported for natural populations. The mean clutch size was 1.93, and the mean number of hatchlings per nest was 0.65. The main cause of egg loss was flooding of the island.

Reproductive success was also similar to that of a natural population. The main cause of loss of young was fatal sibling aggression. The amount of food required to sustain a large breeding event was large, and was obtained from both natural and anthropogenic sources.