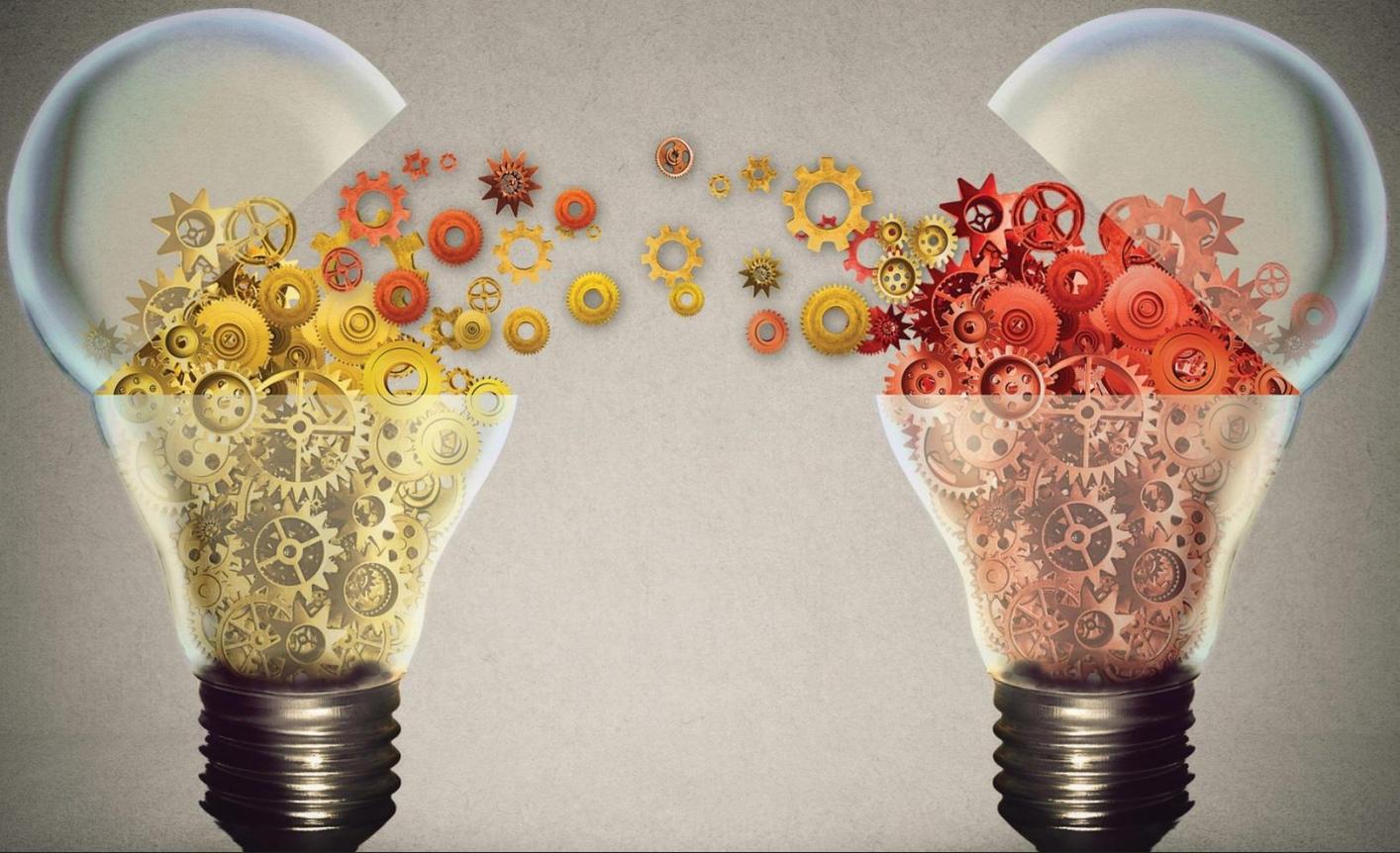


UNE Postgraduate Conference 2017



'Intersections of Knowledge'
17-18 January 2017

Conference Proceedings



**Postgraduate
Conference**

Conference Proceedings

“Intersections of Knowledge”

UNE Postgraduate Conference 2017

17th and 18th January 2017
Resource Management Building
University of New England

Acknowledgement

Phillip Thomas – UNE Research Services Co-chair and convenor

Postgraduate Conference Organising Committee: – Stuart Fisher (Co-Chair)

Eliza Kent, Grace Jeffery, Emma Lockyer, Bezaye Tessema, Kristal Spreadborough, Kerry Gleeson, Marguerite Jones, Anne O'Donnell-Ostini, Rubeca Fancy, Maximillian Obiakor, Jane Michie, John Cook, Sanaz Alian, Julie Orr, Vivek Nemane, Nadiezhda Ramirez Cabral.



Back row left to right: Stuart Fisher, Julie Orr, Vivek Nemane, Philip Thomas, Maximillian Obiakor

Front row left to right: Emma Lockyer, Bezaye Tessema, Nadiezhda Ramirez Cabral, Kerry Gleeson, Kristal Spreadborough, Rubeca Fancy, Anne O'Donnell-Ostini, Grace Jeffery.

Absent: Eliza Kent, Marguerite Jones, John Cook, Jane Michie,

UNE Areas: IT Training, Research Services, Audio-Visual Support, Marketing and Public Relations, Corporate Communications, Strategic Projects Group, School of Science and Technology, VC's Unit, Workforce Strategy, Information Technology Directorate and Development Unit.

Sponsor: UNE Life, University of New England Student Association (UNESA)



Research creates knowledge and when we share what we have discovered we create rich intersections that self-generate new thinking, ideas and actions within and across networks. With this in mind, we decided to keep the theme “Intersections of Knowledge” for 2017 and to use this theme to carry your research conference into the future.

Within the main knowledge sharing theme of this year’s conference, we have several subthemes. These include; the communication of research results and processes into our community and society, the development and recognition of life and professional skills during higher degree research, and the broad professional opportunities that higher degree research training provides graduates.

Although the knowledge from research has a natural tendency to find appropriate application situations and contexts, it is important that the thought processes are shared more broadly and outside the research community. In this way the creativity and excitement of research discovery can be demystified and better appreciated by others. In our conference preparation this year we have pointedly looked at creating stronger connections with our community and region.

Like all worthwhile challenges, research requires dedication, conviction, perseverance and specific training. Also in common with many significant life challenges, research requires the will to succeed in a task that necessarily has an unknown result and outcome. Your conference provides an excellent opportunity to explore and share the skills and professional and personal attributes that you are developing or might need to develop, in order to succeed.

The training and experience gained through a higher degree provides those involved with specialist skills and very often specific knowledge on a particular subject. Opportunities to follow the specific areas focused on during higher degree research may or may not present themselves on completion of a degree. Within this reality it is important that higher degree researchers appreciate and recognise the toolbox of skills that they develop and then use this as a utility to explore the broad and perhaps unimagined opportunities that open up.

In order to provide better and more social opportunity for knowledge and skill development, we have expanded our conference this year and invited contributions from our honours and post-doctoral fellows. This year we have also put together a series of social events to encourage and promote networking and provide opportunities to relax and enjoy each other’s company. We have also included a much larger “special session” section to provide more research training and information for you.

I hope you will enjoy and believe you will find great benefit in your 2017 conference. On behalf of the organising committee I would like to thank you for your support and contribution, acknowledging that without it we would not have a conference at all.

Acknowledgements

It has been a privilege to convene the 2017 UNE Postgraduate Conference “Intersections of Knowledge”. I have again had the pleasure of chairing the Organising Committee alongside my co-chair Mr Stuart Fisher. The task has been made possible and manageable only through the hard work of our committee members from across the University, listed herein. I also make special mention here of the outstanding contribution of Ms Kerry Gleeson IT Trainer from the Information Technology Directorate.

A handwritten signature in black ink, appearing to read 'Thomas', with a stylized, looped initial 'T'.

Dr Philip Thomas
UNE HDR Coordinator

PROGRAM

UNE POSTGRADUATE CONFERENCE – INTERSECTIONS OF KNOWLEDGE 17th AND 18th JANUARY 2017

DAY ONE – TUESDAY 17TH JANUARY 2017

Time	Session
8:30 to 9:00	Welcome and Sign On Room: Resource Management Building Courtyard W055
9:00 to 9:15	Welcome to Country – Steve Widders Opening Speech – Adam Marshall MP Lecture Theatre: W055 Building EM1 room 272
9:15 to 10:30	Keynote Speaker – Annabelle Duncan VC University of New England Alternative Career Paths for Higher Degree Graduates Lecture Theatre: W055 Building EM1 room 272

10:30 to 10:45 MORNING TEA - Resource Management Building Courtyard

STREAM ONE

	Session One		Session Two		Session Three		Session Four	
Session titles	Making meat and veg		Learning and understanding who we are		All creatures great and small above and below the ground		Cause and effect	
TIME	Chairperson: Kristal Spreadborough Co-Chair: John Cook		Chairperson: Bezaye Tessema Co-Chair: Helen Morgan		Chairperson: Anthony Bannister-Tyrrell Co-Chair: Jayne Kinley		Chairperson: Andrew Lawson Co-Chair: Fran Hughes	
10:45 to 11:05	Responses of broilers to different early nutrition regimes using a high-quality soy protein product Apeh Omede	EM1 Room 272	Client Schemas Arising in Enactments in a Three-Day Intensive Psychodrama Group Yehoshua	EM2 Room 274	Three-dimensional visualisation of crocodile limb anatomy: new approaches to traditional methods Ada Klinkhamer	EM6 Room 232	Structure-Property Relationships in Macrocyclic and Tridentate N-Heterocyclic Carbene Metal Complexes Dean Woods	Tutorial Room 273
11:05 to 11:25	Assessing the relationship between immune competence and behavioural traits in sheep Jessica Monk	EM1 Room 272	‘Moderate Islam’: A Comparative Interrogation Ozan Angin	EM2 Room 274	Nutritional quality assessment of dung resources and suitability to dung beetles Amrit Pal Kaur	EM6 Room 232	The safety and efficacy of isometric resistance training for blood pressure management Debra Carlson	Tutorial Room 273
11:25 to 11:45	Response of broiler chickens to diets containing different levels of sodium and supplemented with microbial phytase Mst. Marjina Akter	EM1 Room 272	Withdrawn Presentation	EM2 Room 274	Australian plants as sources of antibacterial drug leads Dane Lyddiard	EM6 Room 232	The Effect of Leptin on the Oestrus cycle in Mice Eliza Metz	Tutorial Room 273
11:45 to 12:05	What lies beneath: the role of soil microorganisms in nutrient turnover under cotton Katherine Polain Video presentation	EM1 Room 272	Yes I Can! First Nations Adult Literacy Campaign and the changing relationship between schools and community Ruth Ratcliffe	EM2 Room 274	Cats, cameras & tracking collars: A glimpse into the behaviour of wild cats in the New England Tablelands Frances Zewe	EM6 Room 232	The effects of high intensity interval training on insulin resistance in metabolic syndrome Liza Haqq	Tutorial Room 273
12:05 to 12:25	Yam production in Cameroon: What is the impact of adoption of improved seed yam? Valentine P. Nchinda	EM1 Room 272	Cultural diversity and consumption spaces in and about Bankstown, Sydney Sanaz Alian	EM2 Room 274	Microbats control pest insect populations in NSW cotton fields. Heidi Kolkert	EM6 Room 232	INVITED SPEAKER A student’s perspective of The Brain Behaviour Research Internship. Erin Bourke & Claudia Saab	Tutorial Room 273

12:25 to 1:00pm LUNCH - Resource Management Building Courtyard

STREAM TWO

		Session Five		Session Six		Session Seven		Session Eight				
Session Title		Learning and consumer behaviour for all ages		Hatching new ideas		Understanding what we see and hear		Before and beyond				
Time		Chairperson: Maximilian Obiakor Co-Chair: Ben Larke		Chairperson: Philip Thomas Co-Chair: Russell Bicknell		Chairperson: Nadiezhda Ramirez-Cabral		Chairperson: Sanaz Alian				
1:00 to 1:20pm	How will a NFPO build a successful board to fulfil funding requirements of the funding body Anne-Marie Barnett	EM1 Room 272	Ascaridia galli infection does not affect egg quality in free-range laying hens Nisha Sharma	EM2 Room 274	Climate change mitigation option: The Case of a Tropical perennial grass Bezaye Tessema	EM6 Room 232	How do we Employ Advancing Technologies to Support Inclusion and Enhance Learning Outcomes in Vocational Education in Pacific Small Island Developing States? Stanley Tonkins	Tutorial Room 273				
1:20 to 1:40pm	Online consumer behaviour and decision-making in Australian families Denise Palmer	EM1 Room 272	Withdrawn Presentation	EM2 Room 274	Would deficit irrigation help in improving water productivity of durum wheat (Triticum durum) in a changing climate? A review Fitsume Desta	EM6 Room 232	Withdrawn Presentation	Tutorial Room 273				
1:40 to 2:00pm	The influences on early childhood practitioners' nature-based pedagogical approaches with children under three years of age – a presentation of research literature. Jayne Kinley	EM1 Room 272	Quantification of mitochondrial count and protoporphyrin IX associated genes expression in relation to different stages of eggshell formation in the shell gland of laying hen Sami Samiullah	EM2 Room 274	Root carbon inputs into soil from a C4 root system. Ivanah C. Oliver	EM6 Room 232	Factors that enable and inhibit the implementation of spiritual greenery activities in schools in Samtse district, Bhutan. Yangdon Yangdon	Tutorial Room 273				
2:00 to 2:20pm	Do you see what I see? Identifying the twice exceptional child in the early years. Anne O'Donnell-Ostini	EM1 Room 272	Farmers, Voluntary Stewardship Programs, and Collaborative Natural Resource Governance in Rural Australia Andrew Lawson	EM2 Room 274	I got the music in me! How do we understand emotional meaning in vocal timbre? Kristal Spreadborough	EM6 Room 232	Dialect Acquisition and language attitudes in Colombia Padraic Michael Quinn	Tutorial Room 273				
2:20 to 2:40pm	Examining generalist teacher self-efficacy in music teaching in the primary classroom with a 'Music Advisory Teacher' project. April S. Kelson	EM1 Room 272	Village chickens for sustainable rural women empowerment Harriet Gausi	EM2 Room 274	Pedagogies for Sustainability in Bush Kinder Fran Hughes	EM6 Room 232	INVITED SPEAKER Uncertain outcomes: Traversing the breach between innovation and violation in aviation maintenance Anthony Bannister-Tyrrell	Tutorial Room 273				
2:40 to 3:15 AFTERNOON TEA - Resource Management Building Courtyard												
		Special Session One		Special Session Two		Special Session Three		Special Session Four				
		Chairperson: Stuart Fisher		Chairperson: Philip Thomas		Chairperson: Eliza Kent		Chairperson: Julie Orr				
3:15 to 3:55	1	Professor Don Hine <i>Methods</i>	EM1 Room 272	4	Gopal Ramdasji Gowane <i>Genomic Selection in Breeding programs</i> Debarati Bhaduri <i>The role of biochar application in modifying soil architecture, root morphology and soil C dynamics</i>	EM2 Room 274	7	Dr Paddy Tobias <i>Introduction to digital research at UNE</i>	EM6 Room 232	10	Noelene Wyman Roth <i>Give your research an edge with NVivo</i> <i>Video presentation</i>	Tutorial Room 273
3:55 to 4:35	2	Nerelie Teese <i>Introduction to Mind Mapping</i>	EM1 Room 272	5	Dr Jason Ketter <i>Create Opportunities with Meaningful Engagement and Networking at a Conference</i>	EM2 Room 274	8	Gabrielle Lamb <i>Copyright for Researchers</i>	EM6 Room 232	11	Kerry Gleeson <i>Making Microsoft Word your friend when Thesis writing</i>	Tutorial Room 273
4:35 to 5:15	3	Cecilia Ostman & Daniel Jewiss Interns <i>introduction to quantitative research (meta-analysis, systematic review)</i>	EM1 Room 272	6	Dr Philip Thomas- Wayne Gregson <i>The place of the Doctor of Industries and Professions within postgraduate programs</i>	EM2 Room 274	9	Dr Eliza Kent <i>Strategies for Inclusion: Supporting Indigenous Research at UNE</i>	EM6 Room 232	12	Pauline Jenkins <i>Smoothing out the bumps on the road to publication</i>	Tutorial Room 273
Evening session for presenters, supervisors and invited guests												
5:30	Performance by Nyardi Dancers	The Stro										
6:30	Conference Dinner	Ticketed event	The Stro		Including a bush poetry presentation by Nerellie Tesse							

UNE POSTGRADUATE CONFERENCE – “INTERSECTIONS OF KNOWLEDGE” 17th AND 18th JANUARY 2017

DAY TWO - WEDNESDAY 18TH JANUARY

Time	Welcome and Sign On Resource Management Building W055 Courtyard
8:30 to 9:00	
9:00 to 10:00	Motivational Speaker – Kerri Pottharst W055 EM1 Room 272

10:00 to 10:15 MORNING TEA - Resource Management Building Courtyard

STREAM THREE

	Session Nine		Session Ten		Session Eleven		Session Twelve	
Session Titles	Animal, mineral or human		Arsenic and Copper		Past, Present and Community		Land and water; predicting and adapting to change	
Time	Chairperson: Anne O'Donnell-Ostini		Chairperson: Apeh Omede		Chairperson: Nirosha Kumudini Ranawaka		Chairperson: Helen McAllister	
10:15 to 10:35	The role of Profilin in regulating Cell Membrane Dynamics Rhonda Davey	EM1 Room 272	Determination of Amide Resonance Energies Adam Rosser	EM2 Room 274	Withdrawn Presentation	EM6 Room 232	Nitrate and canola oil are synergistic in reducing methanogenesis in cattle. Laura. Villar	Tutorial Room 273
10:35 to 10:55	Leptin, the latest for the fat hormone Robert A. Hart	EM1 Room 272	Investigating copper(II) complex formation with organic acids in aqueous and model wine solutions Leah Macdonald	EM2 Room 274	Ancient ferrous metal production and use at Saruq al-Hadid, Dubai, U.A.E. Ivan Stepanov	EM6 Room 232	Regulatory aspects of freshwater species sensitivity distribution model: From water trigger values to ecological hazard identification and risk assessment Maximilian Obinna Obiakor	Tutorial Room 273
10:55 to 11:15	Oxidative stress and function of putative cardio-protective compounds in the isolated cardiomyocytes Shatha Demerchi	EM1 Room 272	Effect of accelerated weathering exposure on the properties of timber-adhesive composites Sameer Ahmed Awad	EM2 Room 274	The Voice of Britten's Governess: Shifting Gender Perspectives in The Turn of the Screw Kylie Constantine	EM6 Room 232	Could dung beetles cope with and mitigate climate change Min Raj Pokhrel	Tutorial Room 273
11:15 to 11:35	Withdrawn presentation	EM1 Room 272	Role of different origin mycorrhiza in remediation and improving maize growth in soil with high concentrations of arsenic Sahar Al-Shamma	EM2 Room 274	The Phenomenon of Posthumous Honorifics Kyrah Ambagtsheer	EM6 Room 232	Climate change: friend or enemy of crop plant pathogens? Nadiezha R. Cabral	Tutorial Room 273
11:35 to 11:55	Rural Australian Memoirs as Expositions of Human-Dog Relationships Simone Lyons	EM1 Room 272	Cadmium (Cd) and Arsenic (As) in Co-contaminated Soils: Risks and Options for Management Sajanee Gunadasa	EM2 Room 274	The Theatre and the community Graham Seaman	EM6 Room 232	Modelling landslide susceptibility through frequency ratio using high resolution satellite imagery and Geographic Information Systems in a typhoon prone mountain area in northern Philippines Dymphna N. Javier	Tutorial Room 273

11:55 to 12:30 LUNCH - Resource Management Building Courtyard

	Special Session Five		Special Session Six		Special Session Seven		Special Session Eight				
	Chairperson: Stuart Fisher		Chairperson: Philip Thomas		Chairperson: Eliza Kent		Chairperson: Julie Orr				
12:30 to 1:10	13	EM1 Room 272	14	Dr Paddy Tobias <i>Opportunities in Data Science</i>	EM2 Room 274	16	Dr Fiona Utley <i>Implications of impact on research and research reporting</i>	EM6 Room 232	18	<i>Counselling Service</i> Annette Stevenson & Michael Clarke <i>'imposter syndrome'</i>	Tutorial Room 273
1:10 to 1:50		EM1 Room 272	15	Cate McGregor <i>Geographical Information Systems (GIS): are there possibilities to enhance your research with location intelligence?</i>	EM2 Room 274	17		EM6 Room 232	19	Andrew Devenish Mears <i>Words + Works + Data + Identification = ORCID, CHUTE</i>	Tutorial Room 273

STREAM FOUR

	Session Thirteen		Session Fourteen		Session Fifteen		Session Sixteen		
Session Titles	Understanding ourselves and others		Now for something different		Interpreting our past and developing our future		Playing, teaching and learning		
Time	Chairperson: Debra Carlson		Chairperson: Amrit Pal Kaur		Chairperson: Philip Thomas		Chairperson: Stanley Tonkins		
1:50 to 2:10	Withdrawn Presentation	EM1 Room 272	The uncertainty of trophic cascades from dingos in Australia Helen R. Morgan	EM2 Room 274	Withdrawn Presentation	EM6 Room 232	Facilitating participation in quality early childhood education programs for families from refugee backgrounds Cherie Lamb	Tutorial Room 273	
2:10 to 2:30	Fracked: Coal Seam Gas Extraction and Landholders' Mental Health Methuen I. Morgan	EM1 Room 272	Comparison of the range of motion between hopping and striding and their influence on muscle moment arms for the hip joint in Simosthenurus occidentalis using a dynamic muscular skeletal model. John Cook	EM2 Room 274	How important is shared vision to achieve a Learning Organisation? Valerie Dalton	EM6 Room 232	Scaffolding Learning through Play Helen L McAllister	Tutorial Room 273	
2:30 to 2:50	Results from Mosaic and Narrative research with Australian Defence Force families Marg Baber	EM1 Room 272	How when and why to revegetate with direct seeding: insights of a local case. Lorena Ruiz Talonia	EM2 Room 274	Withdrawn presentation	EM6 Room 232	Collaboration in play building: What's a teacher to do? Miriam Lili	Tutorial Room 273	
2:50 to 3:10 AFTERNOON TEA - Resource Management Building Courtyard									
JUDGING OF POSTERS FROM 3:00PM									
Poster Presentations Judged by Heiko Daniel and Eliza Kent									
An exploration of the efficacy of Polycyclic Aromatic Hydrocarbon (PAH) bioavailability prediction on aged field soils for risk assessment and bioremediation Atefeh Esmacili		Estimation of herbaceous biomass using visually ranked digital photographs Helen R. Morgan		Deep Aesthetics and the Ground of Being Julie Hawkins		Digestibility of Nutrients in Broiler Chickens Fed Diets Containing Varying Levels of Raw Soybean Meal and Microbial Protease Mammo M. Erdaw		Magnetic Biochar for mitigating Arsenic Risk Sahar Al-Shamma	
								Position of sensing microchips for detecting core body temperature changes Tellisa Kearton	
	Session Thirteen		Session Fourteen		Session Fifteen		Session Sixteen		
3:10 to 3:30	Stigma, Faith and Mental Health: Investigating Service Delivery Attitudes in Timor-Leste Ben Larke	EM1 Room 272	Population genetics, aggression behaviour and thermal tolerance of Iridomermex purpureus (meat ant) around the New England tablelands. Nirosha Kumudini Ranawaka	EM2 Room 274	Withdrawn Presentation	EM6 Room 232	Supervisory Teaching and the Development of Agency in Primary Classrooms Paul Crowhurst	Tutorial Room 273	
3:30 to 3:50	Withdrawn presentation	EM1 Room 272	A record of shell drilling predation at the dawn of animals Russell Bicknell	EM2 Room 274	Antimony(III) and not antimony(V) induces genomic instability in Silver perch: Evidence from in vivo alkaline single cell gel electrophoresis and erythrocyte micronucleus assay Maximilian Obinna Obiakor	EM6 Room 232	Bhutanese Attitudes Towards Inclusive Education: A Comparative analysis of School Leaders, Teachers, and Past Students with Sensory Impairment Rinchen Dorji	Tutorial Room 273	
4:00 to 4:45	Closing Address - Professor Sue Thomas Provost & Deputy Vice-Chancellor Prize Giving and Acknowledgements - Dr Philip Thomas W055 Lecture Theatre EM1 Room 272								

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Abstracts by Streams and Sessions

STREAM ONE

- Session One - Making meat and veg
- Session Two - Learning and understanding who we are
- Session Three - All creatures great and small above and below the ground
- Session Four - Cause and effect

Session One - Making Meat and Veg

Responses of broilers to different early nutrition regimes using a high-quality soy protein product

Apeh Omede

Doctorate

School of Environmental and Rural Science

Oral Presentation

Newly-hatched chicks suffer from delayed access to feed due to reasons like wide hatching window and conventional hatchery practices undertaken prior to dispatch. Early nutrition with high-quality diets could be useful in reversing the effects of such delay. Three experiments were conducted to assess the effect of early supplementation of a novel high-quality soy protein product, Hamlet Protein Avistart (HPA), in prestarter diets on gross responses of broiler chickens. The first, second and third experiments tested the effect of feed form and levels of HPA, prolonged supplementation of the product beyond 10 days and the route of administration, respectively. A total of 926 Ross 308 broiler (male) chicks were used, following appropriate experimental design for each experiment. Our findings showed that early provision of HPA in crumbled diets for 10 days enhanced feed intake and growth performance compared to mash diets. The optimal period of supplementation lies between 10 and 24 days, which was also the most economical period for use of the product in diets for birds. Administering HPA as paste in addition to in-diet supplementation improved weight gain and feed conversion of birds at the finisher phase. These improvements were most likely as a result of low content of anti-nutritional factors and high level of digestible amino acids of HPA. The results of the studies showed that early supplementation of HPA in prestarter diets is a promising strategy to enhance broiler chicken performance and a tool for mitigating the effects of delayed access to feed in birds.

Keywords: Feed intake, newly-hatched chicks, prestarter diets, soy-protein, weight gain

Assessing the relationship between immune competence and behavioural traits in sheep

Jessica Monk

Doctorate

School of Environmental and Rural Science

Oral Presentation

Resilience is the ability of an animal to cope with short-term challenges and return to its pre-challenge state. Strategies aiming to identify and select resilient animals that can better cope with our production systems are expected to improve livestock productivity and welfare. Livestock cope with environmental and disease challenges through immunological, physiological and behavioural defence responses which have been demonstrated to be highly integrated in some species (e.g. pigs). The current experiment aimed to investigate whether such relationships also exist in sheep. Ewes (n=340; 3.5 years of age) were phenotyped and ranked for immune competence and from these, high (n=50) and low (n=49) sheep representing the extremes of the phenotype underwent a suite of tests; threat perception, arena, isolation box, flight speed, maze and food competition. During these tests, a range of behavioural and physiological responses were measured. Key measures in the threat perception test such as vigilance did not differ between immune competence groups. There were also no significant differences observed in eye temperature ($P=0.36$), agitation score in the isolation box test ($P=0.25$), flight speed ($P=0.44$) or change in serum cortisol concentration after testing ($P=0.97$) between groups. While the results of other tests and behaviours are yet to be analysed, results to date suggest that the behavioural and immune competence traits investigated in the current study were not correlated. However, further testing on a larger population of animals will be necessary to establish the strength and nature of the relationship that exists between immune competence and behaviour in sheep.

Keywords: resilience; welfare; productivity; stress; behaviour

Response of broiler chickens to diets containing different levels of sodium and supplemented with microbial phytase

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Doctorate

School of Environmental and Rural Science

Oral Presentation

In a 3 x 2 factorial design, six experimental diets were formulated with three different levels of Na (1.5, 2.5 or 3.5 g/kg) and two levels of microbial phytase (0 or 500 U/kg) and were offered to 360 day-old broiler chicks in order to evaluate the effect of dietary sodium on phytase activity and subsequently on broiler performance. Dietary Na and phytase had no effect ($p > 0.05$) on overall performance and tibia bone development. Birds on the low Na diets ($p < 0.05$) had higher feed conversion ratio (FCR) than the other groups, irrespective of phytase addition. High dietary Na adversely affected ($p < 0.001$) excreta DM content, resulting in watery excreta. The diet with the highest Na level reduced ($p < 0.05$) the ileal digestibility of Ca and P. Phytase supplementation improved ($p < 0.05$) the AME value and ileal digestibility of N, P and Mg. The total tract retention of Ca, P and Mg was reduced with high Na diet, which was counteracted by phytase supplementation (Na x phytase, $p < 0.001$). Chicks in the diets containing mid-level Na had higher ($p < 0.001$) activities of Na-K-ATPase and Mg-ATPase in the jejunum. The overall results indicate that high dietary Na did not affect phytase activity but influenced the nutrient utilization of birds, which was not reflected in the overall performance and bone development of birds

Keywords: Broilers, phytase, sodium, performance, nutrient utilization

What lies beneath: The role of soil microorganisms in nutrient turnover under cotton

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Leanne Lisle and Nina Siebers

Doctorate

School of Science and Technology

Pre-recorded Video

Australian cotton farmers produce three times the world average fibre yield per year, contributing \$3 billion to our economy. However, cotton plants are notoriously lazy – they will not actively seek nutrition in the soil. Instead, they rely on soil microorganisms to process and deliver vital nutrients. Unfortunately, little is known about the microbial mechanisms that occur down the soil profile to deliver these nutrients under cotton crops. Cotton is grown in vertosols, which form deep cracks as a result of expansion and contraction, leading to top- and sub-soil mixing. Given the essential role that microorganisms play, the cotton industry needs more thorough understanding of how microbial communities are influenced and function down the soil profile. Phosphorus is a key nutrient for cotton development, but there are few reports of cotton crops responding to phosphate fertiliser. This is because the way in which cotton accesses soluble phosphorus in soil is complicated. An emerging method that evaluates in-field microbial turnover of inorganic phosphorus into soluble, plant accessible phosphate has been undertaken at UNE on soils under cotton rotations. This presentation will highlight key findings of this research, with complementary experiments that explain the microbial sub-soil processes occurring under Australian cotton crops.

Keywords: Cotton, microorganisms, phosphate, phosphorus, soil, vertosol

Yam production in Cameroon: What is the impact of adoption of improved seed yam?

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Doctorate

¹UNE Business School

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Oral Presentation

Increasing agricultural yam productivity and incomes of smallholder agricultural households through the adoption of agricultural innovations is primordial for the yam growing countries in Africa. This study assesses the impact of adoption of improved seed yam technology on yam yields and income of yam growing households in Cameroon. Propensity score matching approach is employed using 274 farm-level data collected in selected divisions in the country. The results show that the adoption of improved seed yam technology has a robust, positive and significant 39% yield (t/ha) advantage over the non-adopters. The adoption of the technology has a very high and significant ($p < 0.001$) positive causal effect on the incomes of adopters over that of non-adopters. The results allude to the importance of agricultural technology adoption for the improvement of yam productivity and household income. Hence, active promotion and dissemination of the technology is imperative to encourage the uptake of agricultural innovations that will boost productivity and incomes of smallholder yam farmers.

Keywords: Impact, adoption, seed yam, yam yields, income, Cameroon

**Session Two – Learning and understanding
who we are**

Client Schemas Arising in Enactments in a Three-Day Intensive Psychodrama Group

Yehoshua

Masters

School of Health

Oral Presentation

Psychodrama has been shown to bring about positive change by reducing inhibition and promoting spontaneity. Most studies have focused on the psychotherapeutic effects of psychodramatic techniques in single sessions. However, the effect of group process, over multiple sessions, has not been addressed. Also, the nature of clients' psychosocial schemas, arising in psychodrama enactments over multiple sessions, has not been explored. In this study, the schemas that arose in enactments in a three-day experiential psychodrama group were examined. An across case and within case approach was used with the video recorded group sessions. The data was analysed using qualitative descriptive methods and Young's early maladaptive schema framework. The dominant themes were that of disconnection and rejection, and emotional inhibition. These findings lend support for psychodrama as a group psychotherapy treatment that can reduce inhibition and promote spontaneity. This presentation will focus on the research design, data collection and data analysis challenges encountered in completing this project.

Keywords: Psychodrama, inhibition, spontaneity, psychosocial schemas, Young's early maladaptive schemas, group psychotherapy

'Moderate Islam': A Comparative Interrogation

Ozan Angin and Howard Brasted

Doctorate

School of Humanities

Oral Presentation

The term 'Moderate Islam' is increasingly used in Western and Australian nomenclature, punctuating Australian media, politics and academia. Despite its widespread use, it is a term that is marred in ambiguity. 'Moderate' Islam is consistently compared with 'Radical' Islam and invariably referenced against it rather than in its own terms. Therefore, this research will interrogate the meaning of the term 'Moderate' and 'Radical', through interviews with influential Muslim thinkers, with the object of clarifying the essence of Islam in terms of belief and practice. Findings from Australian participants will be compared to findings from Turkish participants.

The proposed interview questions are:

1. What is Islam?
2. What does 'Moderate' and 'Extremist' Islam mean?
3. Are there clear and straight forward differences between them?
4. Which Muslim thinkers/leaders have you been most influenced by?
5. What is your view of the relationship between democracy and Islam?
6. What do you understand by an Islamic State?
7. What do you understand by Islamic radicalisation?
8. In what sense do you agree or disagree with it?

This research is crucial in the current climate as it has wide ranging implications in law, politics, society and academia. No current research in Australia deals specifically nor primarily with 'Moderate Islam'. The potential to compare responses with Turkish counterparts serves to add more weight and significance to the research.

Keywords: Religion, Moderate Islam, Fundamentalism, Extremism

Yes I Can! First Nations Adult Literacy Campaign and the changing relationship between schools and community

Ruth Ratcliffe and Bob Boughton

Doctorate

School of Education

Oral Presentation

This presentation summarises the work and preliminary findings at the mid-point of my PhD candidature. My work has been centred on Brewarrina and other towns across the north west of NSW who are currently or have previously implemented the Yes I Can! First Nations Adult Literacy Campaign. Very low levels of adult literacy in First Nations communities are known to contribute to a range of problems including low education levels, financial insecurity, problematic relationships with the criminal justice system, alcohol and substance abuse, poor health and high mortality. This presentation will specifically address the ways in which the Yes I Can! campaign may be changing the relationship between the communities who undertake it and the schools and other mainstream educational institutions. Preliminary findings suggest that prior to the literacy campaign intervention the relationship between the community and schools can best be characterised by the absence of a relationship. That is, while formal consultative bodies such as the Aboriginal Education Consultative Groups exist, a range of issues including low adult literacy, prevent many community members from participating in these bodies and thus an authentic relationship between school and community is compromised. A range of indicators suggest that the Yes I Can! campaign plays a significant role in building community capacity to engage with the schools and other mainstream education institutions thereby opening new possibilities for education and capacity building.

Keywords: Literacy, education, community, First Nations

Cultural diversity and consumption spaces in and about Bankstown, Sydney

Sanaz Alian

Doctorate

School of Behavioural, Cognitive and Social Sciences

Oral Presentation

While geographical and planning literature has traditionally adopted a macro-scale focus when studying cultural diversity, in recent years this has been supplemented by an emerging concern for 'everyday multiculturalism', including more fine-grained analyses of lived experiences of multiculturalism in places such as shopping strips, gyms and community gardens. Although these micro-scale studies recognise that relationships between socialities and spatialities are important, the more specific role of built form in framing these relationships is not much explored. With a view to extending this literature, the current paper examines how intercultural encounters in public space are influenced by built form in selected activity centres in Western Sydney. Drawing on multi-layered maps of key built-form features, the particular focus of this paper is to understand the ways in which different ethnic groups express themselves through built form in selected activity centres around the regional centre of multicultural Bankstown, Sydney.

Keywords: Cultural diversity, Ambivalence, Urban design

**Session Three – All creatures great and small
above and below the ground**

Three-dimensional visualisation of crocodile limb anatomy: New approaches to traditional methods

Ada Klinkhamer

Doctorate

School of Environmental and Rural Science

Oral Presentation

Using digital techniques to study anatomy is a relatively new process enabling scientists to gain a better understanding of vertebrate anatomy in a non-destructive and easily accessible manner. One such technique is 'digital dissection' which utilises medical imaging like x-ray computed tomography (CT) and magnetic resonance imaging (MRI) to conduct a dissection in the digital sphere. Here we present the results of a digital dissection on the limb musculature of the Australian estuarine crocodile (*Crocodylus porosus*) including the presentation of a three-dimensional interactive model of the muscles described. While digital dissections are fairly common for cranial musculature, this is the first study that we are aware of to complete a limb digital dissection in any species. It has wide-scale application in understanding the limb anatomy and locomotion of crocodiles, and also in reconstructing the limb muscles of dinosaurs

Keywords: Anatomy, digital dissection, crocodile

Nutritional quality assessment of dung resources and suitability to dung beetles

Amrit Pal Kaur, Jean Drayton, and Nigel R. Andrew

Doctorate

School of Environmental and Rural Science

Oral Presentation

In terrestrial systems, insects play important ecological roles in a range of ecological processes (e.g. nutrient cycling, seed dispersal, bioturbation and pollination). Dung beetles mediate several important ecosystem processes by removing dung from pastures. After finding a dung source, dung beetles quickly relocate the manure, either by burying it under the soil, or rolling it away from the dung pat for feeding and/or nest building. However, the type and condition of dung may influence the dung beetle populations to a potential extent. These dung resources may differ in their characteristics and nutritional contents which are important for the beetles. This project will be exploring the detailed analyses of the chemical and physical properties of manure, and relate these analyses to the performance and biology of dung beetles. Firstly, the variation of dung quality will be assessed over different seasons. Secondly, using the results of the seasonal analysis, artificial diets for the dung beetles will be constructed. Using these artificial diets, it will be possible to manipulate the quality of the dung resource. It is expected that these artificial diets will then be used to determine what dung resources are attractive to beetles, and how beetles perform on diets that vary in nutritional content. And if they can survive on these artificial diets, there would be a potential benefit to dung beetle research area to perform a vast research on these beetles which would provide further clues to get deeper understanding in the ecological benefits provided by these insects

Keywords: artificial diets, dung beetles, nutritional analysis

Australian plants as sources of antibacterial drug leads

Dane Lyddiard and Ben Greatrex

Doctorate

School of Science and Technology

Oral Presentation

Bacterial pathogens are becoming increasingly resistant to our current classes of clinically useful antibiotics. This increase in resistance comes at a time when the development of novel structural classes of antibacterial drugs is experiencing a lull. Past successes have mostly come from bacterial and fungal natural products, but these traditional sources are now failing us. Australian native plants produce an abundance of secondary metabolites, many of which serve as protection against bacterial invasion and which have not been studied adequately. Tapping into antibacterial botanical natural products has been achieved by screening plant extracts using a rapid disk diffusion method. Hits have been tested further using TLC bioautographies which guide the isolation and subsequent characterisation of active compounds. Screening of native and local plants, including over 90 species in the genus *Eremophila*, have shown early signs of promise.

Keywords: antibacterial, drug discovery, antibiotics, natural products

Cats, cameras & tracking collars: A glimpse into the behaviour of wild cats in the New England Tablelands

Frances Zewe, Guy Ballard, Gerhard Körtner, Karl Vernes,
Peter Fleming, and Nick Reid

Doctorate

School of Environmental and Rural Science

Oral Presentation

Feral cats are the number one threat to native mammals in Australia: they kill them, compete with them for food and shelter, and spread disease. Land managers and scientists agree that actions to reduce these undesirable impacts are overdue, but the availability of 'tried and true' methods for monitoring and managing cats have not kept up with the impacts of cats. Furthermore, the little we know about feral cat ecology has been gleaned from cats in central Australia. The New England Tablelands is a temperate environment that provides a different suite of opportunities and challenges in the day-to-day lives of the cats that live here. My PhD aims to elucidate the abundance, behaviour and subsequent management of feral cats in the New England bioregion. This is ambitious, largely because landscape-scale, invasive-predator research is challenging. To provide the best chance of success, I conducted my PhD in a multi-disciplinary research group that supported the varying goals of many researchers. During the course of my PhD project I was able to record 90 637 locations from 37 feral cats that were fitted with GPS tracking collars. In addition, camera traps recorded over 10 000 photographs of feral cats in 3 National Parks in New England. During this conference I will present new insights on feral cat abundance, behaviour and management based on my 3 year study

Keywords: Feral cat; temporal activity patterns, space use, abundance, management.

Microbats control pest insect populations in NSW cotton fields

Heidi Kolkert, Nick Reid, Rhiannon Smith, and Romina Rader

Doctorate

School of Environmental and Rural Science

Oral Presentation

Microbats are known to predate major agricultural pests. International studies have shown that this pest control service is worth billions of dollars to farmers each year with regard to pesticide savings. This large economic benefit could provide incentive to Australian land owners to create and maintain bat habitat on-farm via revegetation and ecological restoration. However, scientific evidence highlighting the benefits of habitat restoration in Australia's intensive farming regions for the provision of pest control by microbats is scarce. A summary of three years of microbat research in the intensive cotton cropping region of northern NSW has shown that microbats occur and forage over cotton fields. DNA analysis of invertebrate remains in bat droppings has confirmed that they consume significant agricultural pests and have likely been underestimated in their role suppressing insect pest populations on Australian farms.

Keywords: insect pests, agroecosystems, microbats, ecosystem services

Session Four – Cause and effect

Structure-Property Relationships in Macrocyclic and Tridentate N-Heterocyclic Carbene Metal Complexes

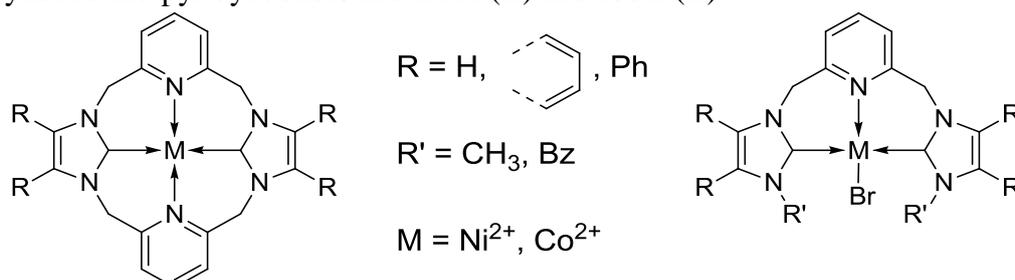
Dean Woods

Doctorate

School of Science and Technology

Oral Presentation

N-heterocyclic carbene (NHC) metal complexes are a class of coordination compound that show promise for applications in medicine and catalysis. Interest in this class of compound arises from the structural diversity possible, with the ligand motifs offering structures that are able to impart various properties to the ligand-metal complex. The ligand motif can accommodate alternate donor atoms which, with the metal, allow tuning of the ligand-metal complex properties. A number of macrocyclic and tridentate proligand precursors have been prepared as imidazolium salts. The imidazolium salts are treated with a suitable base and metal source to form a suite of NHC ligand-metal complexes with imidazol-2-ylidene, benzimidazol-2-ylidene, 4,5-diphenylimidazol-2-ylidene and pyridyl donors and nickel(II) and cobalt(II).



The relationship between structure and chemical properties has been investigated with a number of NHC metal complexes with the aim to assess their suitability towards reaction catalysis and medicinal applications.

Keywords: NHC, organometallic chemistry, imidazolium salt

The safety and efficacy of isometric resistance training for blood pressure management

Debra Carlson, JR McFarlane, G Dieberg, and N Smart

Doctorate

School of Science and Technology

Oral Presentation

Introduction: Approximately 32% of the Australian adult population has hypertension, which is a major modifiable risk factor for cardiovascular disease such as stroke and myocardial infarction. Current treatment guidelines for blood pressure management include a minimum of 30mins of moderate aerobic exercise at least 5 days per week. A series of recent analyses have shown that isometric resistance training (IRT) can be effective in producing significant blood pressure lowering effects. Concerns over hypertensive responses during IRT result in some health professionals remaining reluctant to recommend IRT.

Aims: To determine peak systolic and diastolic blood pressure, mean arterial pressure, heart rate and rate pressure product during isometric exercise.

Methods: Healthy and pre-hypertensive participants attended once for an acute session of isometric handgrip (IHG) exercise. Participants were randomised into a 5%, 10% or 30% intensity group according to blood pressure status. Training was conducted using 4 x 2min IHG exercises each separated by a 3min rest period.

Results: There were no significant differences between peak systolic and diastolic blood pressure, mean arterial pressure, heart rate and RPP across the four bouts of IHG. Peak increases in rate pressure product during IHG are significantly higher to those at baseline. Increases in RPP were relative to blood pressure status and intensity of IRT with no significant differences between normotensive and pre-hypertensive groups.

Conclusions: Cardiovascular measurements during IHG exercise indicate that it may be a safe alternative for people unable to conduct the recommended exercise to aid in blood pressure management.

Keywords: Hypertension; blood pressure; isometric resistance training

The Effect of Leptin on the Oestrus cycle in Mice

Eliza Metz

Honours

School of Science and Technology

Oral Presentation

The fat cell (adipocyte) hormone leptin has been implicated for some time in female reproduction, from the activation of the hypothalamic pituitary gonadal axis to egg and embryo development, fertilisation, implantation and the development of the placenta in utero. Irregularities occurring in these important processes can result in compromised pregnancies, including, but not limited to, intrauterine foetal growth restriction and preeclampsia. The cyclical nature of the oestrus and menstrual cycles in female mammals results in a changing environment that enables these important initial events of pregnancy. In this study we investigated the effect of a leptin antagonist on this key reproductive cycle. Female mice treated with leptin, anti-leptin and a vehicle control via subcutaneous injections had their oestrus cycles observed and reproductive organs collected at different stages of the cycle. Increased vascularisation within larger fat deposits surrounding the uterus and ovaries were observed after leptin and anti-leptin treatment against the control. The length of the oestrus cycle appeared to be altered between the different treatments against the control. The endocrine profile of the uterine and ovarian environments will be measured via LC/MS analysis and may indicate if treatment alters the release of ovarian hormones, resulting in changes in the uterine tissue and the progression of the oestrus cycle. The results may assist in understanding how leptin is involved in female reproductive physiology.

Keywords: Oestrus cycle, leptin, reproduction

The effects of high intensity interval training on insulin resistance in metabolic syndrome

Liza Haqq, Gudrun Dieberg, Jim McFarlane, Josh Denham, and Neil Smart.

Doctorate

School of Science and Technology

Oral Presentation

The prevalence rates of metabolic syndrome and polycystic ovarian syndrome (PCOS) are rising. Physical inactivity and insulin resistance are risk factors that influence their developmental process. Insulin resistance alone can trigger harmful metabolic and endocrine effects that facilitate the manifestation of cardio-metabolic syndrome. The purpose of this research study was to examine the effects of high intensity interval training (HIIT) on insulin resistance, circulating glucose and lipids, cardiorespiratory parameters and anthropometric profile of men and women with metabolic syndrome and PCOS, respectively. Participants were randomly placed in a HIIT group or a control (non-exercise) group. The HIIT group completed a 17-minute cycling protocol, consisting of a 5-minute warm up, followed by three 20 seconds efforts at 90–95% of their peak oxygen uptake (VO_{2peak}), interspersed with 2 minutes of low intensity cycling, followed by a 5 minute cool down, 3 times/week for 12 weeks. Exercise and blood testing was conducted at baseline, 6, 12 and 18 weeks. Preliminary results indicate significant improvements in VO_{2peak} (76.4%) and peak power performance (>100%), along with reductions in waist and hip circumference were also observed after HIIT (all $p < 0.05$). Waist circumference directly influences insulin resistance and enhances glucose metabolism. Therefore, HIIT is a time-efficient and effective lifestyle strategy for improving glucose and insulin control in patients with metabolic syndrome and PCOS. It has the potential to provide large benefits in reducing long term health risks such as atherosclerosis, type-II diabetes, kidney and cardiovascular disease

Keywords: Metabolic syndrome, polycystic ovarian syndrome, high intensity interval training (HIIT), exercise training.

Abstracts by Streams and Sessions

STREAM TWO

- Session Five – Learning and consumer behaviour for all ages
- Session Six – Hatching new ideas
- Session Seven – Understanding what we see and hear
- Session Eight – Before and beyond

Session Five – Learning and consumer behaviour for all ages

How will a NFPO build a successful board to fulfil funding requirements of the funding body

Anne-Marie Barnett

Doctorate

UNE Business School

Oral Presentation

The importance of non-profit organizations and the contribution of volunteers to our society are undeniable. In Australia this sector has grown rapidly over the past decade, and now makes up just over 4 per cent of GDP (just under \$43 billion), with nearly 5 million volunteers contributing an additional \$14.6 billion in unpaid work (Productivity Commission Report 2010). Government represents one of the most important funding sources for non-profit organizations and the Australian Government has foreshadowed the need for changes in the governance arrangements that underlie its relationship with the sector. The proposed study will focus on governance and will explore the external and internal influences effecting the governance and structure of a non-profit organisation forced into changing the board composition to be completely governed by volunteers in order to satisfy funding requirements. This paper outlines the summary of the literature review which has explored best practices in governance and volunteer involvement in a non-profit community based conservatorium of music striving to be recognised as a fully funded regional conservatorium by the NSW Dept of Education. This leads to asking the question “How will this organisation build a successful board to fulfil funding requirements by the funding body?” If the transition process is effectively managed, this can be a positive force for building volunteer capacity and sustainability within the organisation. The research will be conducted as a case study and accomplished through mixed methods of qualitative and quantitative research. Interviews with the president of the board (past and present) and its members, any paid staff in the employ of the organisation as well as past board members will also form a focus group.

Keywords: non-profit, governance, volunteers, boards

Online consumer behaviour and decision-making in Australian families

Denise Palmer

Doctorate

UNE Business School

Oral Presentation

Australians have embraced online shopping, with three-quarters of the country's 15.4 million internet users having made a purchase online. Drivers for the growth in online sales include: the spread of the internet to 83% of Australian homes; increased broadband access; the growth in mobile commerce; greater choice of products; and the convenience of online shopping. New retail models have emerged, with traditional retailers, known as 'bricks and mortar', morphing into 'bricks and clicks', utilising the internet as a distribution channel and enabler of electronic commerce. In parallel with the rapid rise in the use of the Internet for retailing, there has been an explosion of literature which has sought to outline models of online consumer behaviour and decision-making. This research will examine the practices and negotiation that Australian families engage in when purchasing online. The research will build on earlier studies on the effects of sex role orientation on the purchase of high-involvement products, and whether variables such as age, income, education, ethnicity and technology knowledge impact on these online purchases. Findings will assist marketers to target individual segments more effectively and to design online IMC programs that communicate meaningful messages to segments interested in online shopping using appropriate media. Assessing how couples participate in e-retailing may help marketers understand the size and importance of the internet as an integral component of their marketing communication strategy, and assist in integrating the online channel so that it is not managed in isolation from other communication channels in the overall marketing mix.

Keywords: consumer behaviour, internet marketing, online decision-making

The influences on early childhood practitioners' nature-based pedagogical approaches with children under three years of age: A presentation of research literature

Jayne Kinley

Masters

School of Education

Oral Presentation

Current Australian early childhood education and care regulatory and pedagogical frameworks expect that all children in early learning programs are offered environments that encourage them to develop a respectful appreciation of the natural world, and an understanding of their responsibilities to care for it. Personal experience with these expectations indicates that while educators are committed to offering experiences within nature, they face multiple challenges to constructing effective pedagogies that will encourage children's authentic connections to the natural world, and an understanding of their place and purpose within it. A review of contemporary research literature indicates that early childhood educators acknowledge the value of nature experiences to children's early learning and development, and that educators are intentional in offering environments that promote early connections to the natural world. The literature however raises questions about the influence of previous nature experiences on educators' pedagogical approaches, and highlights that the challenges they perceive are more than just those imposed by existing regulatory frameworks and service policies. Examination of the literature also revealed a leanness to the research into the nature-based practices of educators working with children from 6 weeks to 36 months of age. This leanness, supported by professional experience, has prompted my proposed research into the influence of educators' beliefs and understandings about young children's learning, on their nature-based pedagogical approaches. Influences may include educators' perceived challenges in outdoor early childhood settings, and their own previous nature experiences. This presentation will discuss the literature that has prompted this proposed research study.

Keywords: Early childhood; nature experiences; pedagogical approaches

Do you see what I see? Identifying the twice exceptional child in the early years

Anne O'Donnell-Ostini, Michelle Bannister-Tyrrell,

Brenda Wolodko and Jeff Bailey

Masters

School of Education

Oral Presentation

The preface of the Early Years Learning Framework states, "All children experience learning that is engaging and builds success for life." The question must be asked, is this true for children who are gifted, or in fact twice exceptional? For children who are twice exceptional, the literature provides an elusive view in the depiction of development, learning and abilities. This study provides a lens through evidence based research into how educators see and identify children with twice exceptionalities. Early Childhood Educators are often a first point of contact and one of initial identification for families of children displaying variance in their development, learning and abilities. The importance of this role must not be underestimated. To gain information on the identification of twice exceptional children, educators from three differing early childhood services were interviewed. Semi-structured interviews were used to elicit understandings on aspects of high cognitive ability, functional difficulties, twice exceptionalities and early childhood settings. A thematic and content analysis of the data was undertaken. Themes and related sub themes of the data were abstracted from the data reflecting the experiences of the educator teams and their related contexts. Preliminary findings suggest a range of components are conducive to effective identification in the early childhood setting.

Keywords: Twice exceptional; gifted; early childhood; educators; identification; interviews

Examining generalist teacher self-efficacy in music teaching in the primary classroom with a ‘Music Advisory Teacher’ project

April S. Kelson

Doctorate

School of Education

Oral Presentation

Experiencing good quality music instruction has many benefits for children in primary school. However, because of many factors including; long term and continuing reductions to generalist teacher training in music; an over-crowded curriculum; pressure on teachers to teach numeracy and literacy over other areas; and the low priority afforded to music in school communities, generalist primary school teachers often have low self-efficacy to teach music, and therefore they avoid doing it. In 2011, respected Australian academic Deirdre Russell-Bowie made suggestions for the implementation of an ‘arts advisory teacher’ to oversee the implementation of arts programs in primary schools and to improve the capacity of generalist teachers to teach arts programs themselves. The aim of this study is to discover what effect the implementation of a ‘Music Advisory Teacher’ model program has on the self-efficacy of generalist primary teachers to teach music. The study will be implemented using the paradigms of collaborative action research in conjunction with participant teachers and the pedagogy will be based on that of Kodály primary school music teaching

Keywords: Self-efficacy, music education, primary school music

Session Six – Hatching new ideas

Ascaridia galli infection does not affect egg quality in free-range laying hens

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Doctorate

School of Environmental and Rural Science

Oral Presentation

Ascaridia galli is the most prevalent helminth parasite found in free range poultry. Infections with this parasite can be associated with reduced egg production. *A. galli* is able to migrate into the hen's oviduct and become enshelled into the hen's egg causing the mature *A. galli* worms to be visible in the hen's eggs. This may degrade egg quality. However, no experiments have been performed to report the effect of the relevant *A. galli* infection levels on egg quality till date. Therefore, the aim of this study was to determine the effect of different infection levels of *A. galli* on egg quality in free range laying hens. A total of 200 Lohmann brown laying hens were allocated to four treatment groups with five replications. Hens were housed in 20 pens with 10 birds in each pens. All hens were orally inoculated at 19 weeks of age. Three treatments groups received an oral infection with three levels of *A. galli* eggs: low (250 *A. galli* eggs), medium (1000 *A. galli* eggs), and high (2500 *A. galli* eggs). The fourth control group received sham inoculation with saline. The impact of *A. galli* infection on egg quality was assessed when hens were 30 and 40 weeks of age. External egg quality parameters included egg weight, shell weight, shell thickness, shell colour, shell percentage breaking shell strength. Internal egg quality parameters included albumen height, yolk colour, haugh unit. Statistical analysis was performed using the GLM procedure in SAS software (Version 9.3, SAS Institute, Cary, NC, USA). A P value of <0.05 was considered significant.

The results demonstrated that the different infection levels of *A. galli* infection had no effect on external and internal egg quality parameters

Keywords: broiler, *Ascaridia galli*, infection, egg quality, laying hens, free-range

Acknowledgement: We would like to thank Poultry CRC, Australia for funding this project.

References:

- Dahl, C., Permin, A., Christensen, J.P., Bisgaard, M., Muhairwa, A.P., Petersen, K.M.D., Poulsen, J.S.D., & Jensen, A.L. (2002). The effect of concurrent infections with *Pasteurella multocida* and *Ascaridia galli* on free range chickens. *Vet Microbiol*, 86 (4), 313-324.
- Gauly, M., Duss, C., & Erhardt, G. (2007). Influence of *Ascaridia galli* infections and anthelmintic treatments on the behaviour and social ranks of laying hens (*Gallus gallus domesticus*). *Vet Parasitol*, 146(3-4), 271-280. doi: 10.1016/j.vetpar.2007.03.005.
- Ikeme M (1971). Observations on the pathogenicity and pathology of *Ascaridia galli*. *Parasitol*, 63:169–179.
- Reid, W. M., Mabon, J.L., & Haesbarger, W.C. (1973). Detection of worm parasites in chicken eggs by candeling. *Poult Sci*, 52, 2316-2324.

Quantification of mitochondrial count and protoporphyrin IX associated genes expression in relation to different stages of eggshell formation in the shell gland of laying hen

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Oral Presentation

Mitochondrial count per cell and genes involved in the synthesis of protoporphyrin IX (PP IX) were quantified from the shell gland tissue of laying hens at different time-points in relation to eggshell formation. PP IX was measured in 1 g of tissue. There was no significant difference ($P > 0.05$) in mitochondrial count/cell or expression of any of the PP IX synthesis genes except for the *ABCG2* and *CPOX*. PP IX per gram of tissue was significantly ($P < 0.05$) higher at the 23.5 hr time-point than 5 and 15 hrs. In conclusions, mitochondrial count/cell was not varied significantly with different stages of eggshell formation, nor with the expression levels of genes associated with PP IX synthesis and/or deposition

Keywords: mtDNA, shell colour, chicken oviduct

Farmers, Voluntary Stewardship Programs, and Collaborative Natural Resource Governance in Rural Australia

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Doctorate

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Oral Presentation

Despite investments of time, money, and goodwill by governments and farmers, the ecological, social and productive capacity of Australia's rural environment is under threat. This has spurred interest in 'collaborative governance', aspiring to combine the best of both public regulation and private self-regulation. However, there is insufficient understanding of how such arrangements work in practice. This study comprises a preliminary investigation of the potential of three non-government stewardship programs for farmers in governance collaborations. The balance of evidence shows these programs make important contributions to natural resource governance, which could be enhanced in partnerships with other government and non-government actors

Keywords: Environment, governance, stewardship, agriculture

Village chickens for sustainable rural women empowerment

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Doctorate

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Oral Presentation

Existing literature recognizes the role that keeping village chickens plays in the livelihood of rural communities. It is, however, not clear whether this is also the case in Lilongwe, one of the agricultural districts in Malawi that mainly concentrates on crop production. A cross-sectional study was conducted with the objective to evaluate socio-economic characteristics of rural farmers engaged in village chicken production. A pretested structured questionnaire was administered to a random sample of one hundred and forty-eight (148) farmers. A three-stage cluster sampling technique was used to select two sections, and two group village heads of Mitundu and Mkwinda Extension Planning Areas, from where households were sampled using random number generator. The data collected was subjected to descriptive statistics for qualitative and quantitative variables using SPSS 23. The results showed that village chickens are widely kept, 98.4% and 95.3% Female and Male-headed households, respectively. Few households (1/4) do not own land, and for those that have land, 25 % of female-headed households own half a hectare or less. By contrast, only one-sixth of male-headed households own half a hectare or less. Fifty-five percent of female-headed households fall within the lowest category (MK50 000 or less; 1 AUD = 548.346) of annual on-farm income and none of the female-headed households earn annual income above MK250 000, while 22 % of male-headed households earn above MK250 000, out of which 12 % earn above MK650 000. Despite this demography, almost all female-headed households keep village chickens, providing an opportunity for empowering rural women, if village chicken production could be improved.

Keywords: Village chicken production, rural women empowerment, livelihood, livestock ladder

**Session Seven – Understanding what we
see and hear**

Climate change mitigation option: The Case of a Tropical perennial grass

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Oral Presentation

In Eastern African highlands, land degradation is widespread and associated with deterioration of natural resources contributing to increasing poverty. Addressing land degradation is therefore a key component of poverty eradication and climate change mitigation. Research evidence has shown that adopting natural resource management innovations can potentially increase farm productivity and soil health. Hence, Ethiopia has identified such innovations as key research and development needs. A number of organizations have made considerable progress through a range of intervention strategies to rehabilitate degraded lands. There is however a need to quantify the outcomes of these interventions for soil health improvement and its impact on climate change. Knowledge of carbon storage potential and change as a result of land management offers potential to better manage land for enhanced productivity and an additional income stream through emerging carbon markets and there is significant capacity for soils in Ethiopia to store large quantities of additional carbon. Considerable work has been undertaken in Australia relating to soil carbon storage and management, but knowledge of the effects of management in Ethiopia remains limited. The aim of this research is therefore to quantify the carbon sequestration potential of a deep rooted tropical grass called vetiver, known for its soil conservation potential and being promoted widely. Undisturbed core samples to 1m soil depth were taken from under vetiver and other C₃ plants both in Australia and Ethiopia and carbon analysis is under way. This research is therefore, of great significance and will provide an objective evaluation and quantification of the potential of vetiver for land management actions to achieve land quality and productivity improvement through carbon sequestration

Keywords: Australia, Ethiopia, land degradation, land management, soil carbon, vetiver

Would deficit irrigation help in improving water productivity of durum wheat (*Triticum durum*) in a changing climate? A review

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School of Environmental and Rural Science

Oral Presentation

Water will be the most important limiting factor in crop production in a changing climate for areas projected to have reduced precipitation. Improving water productivity of crops will be a timely and effective strategy. Durum wheat (*Triticum turgidum* L. ssp. *durum*) is an important world food crop, particularly in the production of pasta. It will be essential to develop durum wheat varieties with improved water use efficiency and that are amenable to deficit irrigation to improve water productivity. For areas where critical water stress is a problem, deficit irrigation could be applied to increase the economic profitability of irrigated durum per unit of water consumed. This presentation has assessed the practical application of deficit irrigation in improving water productivity of irrigated durum wheat under changing climate. According to reviewed literature, deficit irrigation may improve the water productivity of wheat by limiting water during non-critical developmental stages, however, limiting water from anthesis to terminal grain-filling stages has a significant negative effect on dry matter production of both bread and durum wheat. Deficit irrigation beyond 50% of the crop water demand of both durum and bread wheat can do substantial harm to the total yield. The implication of the findings in regions that are projected to have increased temperature in the future is discussed. The objective of the subsequent PhD project is therefore to investigate and generate information on the importance and application of deficit irrigation in saving water for irrigated durum wheat under changing climate.

Keywords: Climate change, irrigation water, water productivity, water use efficiency

Root carbon inputs into soil from a C4 root system

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Doctorate

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Oral Presentation

To fully understand the potential of soils to act as a carbon sink in the context of climate change mitigation, it is vital that we know how much carbon is contributed from various sources and the stability of each source. Roots and root exudates have received little attention with regard to their contribution to the soil organic carbon pool. Using a soil with a history of C3 plant growth and growing Rhodes grass (*Chloris gayana*), a C4 subtropical species, we aim to determine the amount of 'new' carbon input from the root system. Isotopic Ratio Mass Spectrometry (IRMS) was used to determine $\delta^{13}\text{C}$ in the bulk soil and rhizosphere to quantify C4 derived carbon. For this research the top 30cm of a Chromosol and a Ferrosol were sourced from the NSW New England Tablelands. The soils were air-dried and sieved to <4mm, and a basal nutrient solution and water added to reach a field capacity of 60%. Pots were repacked to achieve a bulk density of 1.2g/cm³. Seven seedlings were sown into each pot and grown in a glasshouse with night/day temperatures of 15°/25°C. At regular intervals from thinning, five pots from each soil were destructively sampled and separated into bulk soil, rhizosphere soil and plants roots. Each of these components were analysed for $\delta^{13}\text{C}$. Plant root length and diameter measurements were obtained using WinRHIZO™. In this paper we describe the relationship between root growth, total root carbon input and the relative importance of C source in the root zone.

Keywords: Soil, carbon, roots, Rhodes grass

I got the music in me! How do we understand emotional meaning in vocal timbre?

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Doctorate

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Oral Presentation

Analysing vocal timbre (the sound of a singer's voice) is especially difficult as it is an element that is most immediately apparent to the listener, yet also most temporal and circumstantial. Recently, I have developed a new analytical technique for vocal timbre of popular vocal songs based on the hypothesis that the emotion expressed in vocal timbre impacts emotional perception of sung words. To extend this technique, a better understanding of how listeners process vocal timbre for emotional meaning is required. In this paper, I explore how processing non-linguistic and non-verbal cues for emotional meaning in every day contexts may contribute to our perception of emotion in vocal timbre. I pose the questions; "do we understand others as we understand ourselves?" and "Do we internalise emotional meaning in vocal timbres?". To answer these questions, links between the spoken and the sung voice are examined. How information is derived from facial expression and body language is also addressed. Finally, the potential for embodied cognition and the mirror neuron systems to facilitate our understanding of emotional meaning in vocal timbre is explored. This paper demonstrates there is sufficient evidence to suggest that we understand emotional meaning in vocal timbre through a process of embodiment and internalisation.

Keywords: Perception, vocal timbre, music, non-linguistic, non-verbal, cognitive

Pedagogies for Sustainability in Bush Kinder

Fran Hughes

Masters

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Oral Presentation

Sustainability is a pressing global issue and while there is a growing awareness of the need for children to spend more time in natural settings, the pedagogical link between education for sustainability and nature play requires further investigation. A growing research base (Kelly & White, 2013; Knight, 2011) demonstrates that reconnecting children with nature through play in natural outdoor settings has many advantages and nurtures young children's relationships with ecological life, perhaps resulting in positive change for the future of the planet. Recently, play in natural settings has become more commonplace in Australia and is what we term loosely, 'bush kinder'. There is a substantial gap in the literature that this study addresses with very little research around educator pedagogy, early childhood education for sustainability (ECEfS) and bush kinder or forest school worldwide. The purpose of this study is to deepen the perceptions and pedagogical practices of early childhood educators around ECEfS in bush kinder settings and facilitate change. Using a qualitative research approach, the study is underpinned by a social constructivist theoretical framework informed by Participatory Action Research (PAR), Appreciative Inquiry (AI) and Case Study methodologies, and employs interviews, focus groups, reflective journals and observation and documentation in the field. Initial analysis of the data has been conducted using thematic analysis. Understandings about how educators can apply a sustainability lens to their pedagogies in natural outdoor settings will assist them to critically reflect on enacting pedagogies for sustainability in Bush Kinder programs.

Keywords: early childhood education for sustainability, bush kinder, nature play.

Session Eight – Before and beyond

How do we Employ Advancing Technologies to Support Inclusion and Enhance Learning Outcomes in Vocational Education in Pacific Small Island Developing States?

Stanley Tonkins

Masters

School of Education

Oral Presentation

The background of this Research are pilot projects establishing Foundation Studies (TVET) in Pacific Small Island Developing States (PSIDS) Kiribati and Samoa, and in the Solomon Islands. Foundation Skills have been identified by key stakeholders as critical to success in post-secondary education. The program is in accordance with ‘UNESCO’s new Strategy for Technical and Vocational Education and Training (TVET) (2016-2021) (which) 'supports governments in enhancing the relevance of their TVET systems'. The strategy focuses on equipping all youth and adults with the skills required to find decent work and develop entrepreneurial and innovative mind-sets as well as becoming active citizens in an equitable, inclusive and sustainable society. It sets as priority areas youth employment, the promotion of equity and gender equality and the transition to green economies and sustainable societies.’ It is proposed to monitor the TVET programs and evaluate the use of advancing technologies efficacy in enhancing learning outcomes (LO), improving inclusion and recovery from disaster events. The approach of using small focus groups in pilot projects should provide an appropriate means for evaluation of advanced technologies as active techniques of learning. The advantage of this approach is that risks can also be better managed and there is less likely to be large scale technical failure, cost and time disadvantage. Another feature of this approach is that more novel advanced technologies may be able to be examined and assessed in local context and successful internet-platform-based content and interactions may effectively be scaled for larger application

Keywords: Employ Advancing Technologies in Pacific TVET

Factors that enable and inhibit the implementation of spiritual greenery activities in schools in Samtse district: Bhutan

Yangdon, Joy Hardy and John Haynes

Doctorate

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Oral Presentation

The Ministry of Education, Bhutan launched its nation-wide reform initiative termed Educating for Gross National Happiness in 2009. One of the ways of realizing this reform was by implementing the Green School for Green Bhutan programme, which contains eight dimensions: environmental greenery, academic greenery, intellectual greenery, social greenery, spiritual greenery, cultural greenery, aesthetic greenery and moral greenery. Schools in Bhutan have implemented the Green School for Green Bhutan programme since 2010 by initiating different activities for all the eight dimensions. Little is known about the programme, however, owing to limited research and literature. Furthermore, no research has previously been undertaken on the factors that enable and inhibit the practice of spiritual greenery activities in schools. The present study was conducted in schools in Samtse district, Bhutan to gain insights into the enablers and inhibitors of spiritual greenery activities such as meditation and mindfulness. Methodologically, the study utilized a sequential mixed method design, a case study strategy and thematic analysis with NVivo as a data management tool. The survey data were gathered from 85 teachers using a self-administered online survey. The survey data provided an empirical basis for the selection of participants in the qualitative part of the study. Qualitative data were gathered from 28 participants through a semi-structured interview. The findings from the qualitative data and the open-ended responses in the survey indicate both enablers and barriers at the individual, interpersonal, organizational/structural and socio-cultural levels.

Keywords: Green School, Spiritual greenery, meditation/mindfulness, enablers, inhibitors

Dialect Acquisition and language attitudes in Colombia

Padraic Michael Quinn

Doctorate

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Oral Presentation

This study will employ the theoretical framework of the field of Second Dialect Acquisition (SDA) to investigate the verbal repertoires of Spanish-speaking actors in Colombia who, as with actors in many other contexts of high diversity within a single language, are required to be pluri-dialectal and chameleon-like to gain and maintain employment. This study in plurilingual flexibility aims to contribute significant findings of theoretical and practical value, in addition to proposing a more flexible and descriptive theoretical framework by moving away from the geographical mobility paradigm that has traditionally been applied in SDA. Moreover, the study aims to contribute innovative theoretical insights by examining the under-explored complexities of acquisition, accommodation and adaptation in SDA. As well as the above, the study will investigate the underlying language attitudes and ideologies that are prominent in Colombia, a country in which a strong dialectal hierarchy exists and is perpetuated by folk views on language and the standard language myth. Furthermore, it will increase our understanding of Spanish dialects in the Americas – a significant contribution due to the enormous international reach of the Spanish movie and telenovela industries, and the worldwide significance of the Spanish language. This study also has important implications for the future development of resources for actors in the Spanish language, and has already generated interest from the world's leading proponent of resources in the English language for understanding dialects in theatrical contexts.

Keywords: Dialect acquisition, plurilingualism, Spanish, verbal repertoire, ideologies, folk linguistics

Abstracts by Streams and Sessions

STREAM THREE

- Session Nine - Animal, mineral or human
- Session Ten - Arsenic and Copper
- Session Eleven - Past, Present and Community
- Session Twelve - Land and water; predicting and adapting to change

Session Nine – Animal, mineral or human

The role of Profilin in regulating Cell Membrane Dynamics

Rhonda Davey, Enrico Gratton, Michelle Digman,
Nicholas Andronicos and Pierre Moens

Doctorate

School of Science and Technology

Oral Presentation

Profilin is a protein that has been shown to control cell proliferation, apoptosis (cell death) and motility. It is best known for regulating the mesh of actin filaments that give cells their shapes and enable their movements. In breast cancer cells, increasing the amount of profilin has been shown to decrease the motility of the cell and therefore their capacity for metastasis. To develop a deeper understanding of the mechanism of profilin in controlling the motility of cells, a green fluorescent protein was fused to profilin which was then introduced into the breast cancer cell line MDA-MB-231. Now visible, the diffusion characteristics of profilin were investigated using microscope techniques that focussed on the cell membrane. Analysis of the fluctuations of fluorescence over time gives us the diffusion mode (isotropic, confined or transiently confined), the diffusion rates, and the size of the confinement within the cell membrane. The cells were then perturbed by treatments that inhibited actin filament formation and by introducing mutants of profilin that disrupt its normal interactions with actin and/or lipids at the membrane. The differences in the diffusion characteristics between normal, treated, and mutants of profilin give insight into the complexities of profilin functions at the cell membrane.

Keywords: profilin, actin, diffusion

Leptin, the latest for the fat hormone

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Post-doctorate

School of Science and Technology

Oral Presentation

Leptin is a protein hormone secreted by a number of tissues, including fat and is known to signal to the brain. It has been hypothesised that leptin encodes a message for the amount of energy stored in the body, however our recent study found <0.5% of circulating leptin reached the brain in mice. However, over 12% was found entering the digestive tract in female mice and over 23% entered the digestive tract in male mice, with over half of this avoiding digestion. To investigate this further, leptin was administered orally to mice and was found to enter the circulation from the digestive tract. These data show a novel movement of a protein hormone which, to a large degree, escapes digestion and appears to cycle between the circulation and the lumen of the digestive tract. As leptin has been shown to modulate nutrient absorption from the digestive tract, the current report may have implications in understanding nutrition and the pathogenesis of obesity. Furthermore, the novel movement of a protein hormone reported may be of use in developing future orally administered therapeutic treatments and in the understanding of broader actions of hormones and their potential activity in the digestive tract.

Keywords: Leptin; Pharmacokinetics; Gastrointestinal tract; Physiology

Oxidative stress and function of putative cardio-protective compounds in the isolated cardiomyocytes

Shatha Demerchi, Pierre Moens and Jim McFarlane

Doctorate

School of Science and Technology

Oral Presentation

This study was conducted to better understand the effect of homocysteine (Hcy) as an elevated risk factor for cardiovascular disease (CVD) and the cardioprotective roles of different putative protective compounds in freshly isolated heart cells under mild and toxic oxidative conditions. We examined the effects of acute homocysteinemia in middle-aged rats' hearts on the susceptibility of freshly isolated cardiomyocytes under normal and oxidative stress conditions and the effects of putative protective compounds loading. We also measured ROS production, $[Ca^{++}]_I$ and cell contractility in single young adult rat cardiomyocytes of both sexes isolated with or without taurine using fluorescence microscopy. Finally, serum Hcy and glutathione concentrations are measured using liquid chromatography mass spectrometry (LCMS) in young adult and in middle-aged Wistar rats of both sexes. The results showed that the percentage of rod-shaped cells and the percentage of viability of isolated cells decreased following acute exposure to DL-Hcy and oxidative stress likely due to increased oxidative damage. However, we show that putative protective compounds supplement (e.g., L-carnitine, L-glutamate + L-carnitine in combination or taurine) can counteract free radical accumulation and protect against oxidative damage. Interestingly, this is the first study to demonstrate the effects of perfusing freshly isolated heart cells with a combination of L-glutamate and L-carnitine. Our findings also show that 1% L-methionine supplementation significantly increased serum Hcy levels of young adult and middle-aged male rats while non-significant in female rats. Also a small increase in serum GSH concentrations was observed in female with no significant changes in male. For the first time, our study provides new evidence suggesting that ROS production is lower in females' cardiomyocytes than males in both control and methionine groups under acute oxidative stress. Interestingly, our findings show an increase in $[Ca^{++}]_I$ in females cardiomyocytes compared to males under acute oxidative stress of both control and methionine groups which might explain the higher contractility of the female cardiomyocytes under these conditions. We also show that taurine treatment is more efficient in mild oxidative stress in female control and methionine groups compared to the male groups. Similar protective effects of taurine are reported during acute oxidative stress following exposure to chronic ROS induced by methionine in both male and female cardiomyocytes.

Keywords: Isolated cardiomyocytes, homocysteine, oxidative stress, putative protective compounds.

Rural Australian Memoirs as Expositions of Human–Dog Relationships

Simone Lyons

Doctorate

School of Arts

Oral Presentation

The dog holds a special place as companion, worker and icon in Australian culture and the nation's rural heritage. Representations of dogs in Australian art, literature and other media reflect the interwoven lives of dogs and Australian people. Many recently published memoirs of rural Australians include relational narrative – that is, narrative about related others in the autobiographical writer's life – featuring the writers' dogs. Dogs' varied roles and their importance in people's lives are recognised in various scientific and sociological findings on the human–dog bond. Anecdotal evidence, as might be found in autobiographical writing, can supplement existing findings to offer a broader view. Relational narrative involving dogs can reveal unique perspectives on human–dog relationships. Drawing on selected 21st-century memoirs, and informed by current understandings of the human–dog bond, this paper examines the ways in which human–dog relationships are represented through autobiographical storytelling. The findings will be framed within theory on relational narrative, and will contribute to scholarship on human–dog relationships and life writing in Australian and broader international contexts.

Keywords: dog, human–dog relationships, life writing, memoir, relational narrative, rural Australia

Determination of Amide Resonance Energies

Adam Rosser and Stephen Glover

Doctorate

School of Science and Technology

Oral Presentation

A new computational method has been developed to determine the amide resonance stabilisation found in a wide range of amides. This isodesmic *trans*-amidation method compares a questioned amide to *N,N*-dimethylacetamide – a planar amide defined as having 100% amidicity – and 1-aza-2-adamantanone – a fully twisted amide defined as having 0% amidicity. The amidicities of a wide range of cyclic, acyclic and anomeric amides have been determined and the results align well with qualitative predictions based on structural characteristics, such as C-N bond length, C-N bond torsion and pyramidalicity at the amide nitrogen. Good agreement was also found with amide resonance energies determined using a second, independent, computational method, carbonyl substitution nitrogen atom replacement (COSNAR). The results indicate that the new *trans*-amidation method is a reliable and flexible method for determining the amount of resonance stabilisation in amides.

Keywords: Amides, amidicity, computational chemistry, organic chemistry

Session Ten – Arsenic and Copper

Investigating copper(II) complex formation with organic acids in aqueous and model wine solutions

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Doctorate

School of Science and Technology

Oral Presentation

Emerging research is supporting the idea that the evolution of sulfur species in wine post-bottling could be linked to transition metal species. It is well known that copper is present in wine; however, copper speciation in wine is not well understood. This study was conducted to further understand the speciation of copper in wine and to determine copper complex species that are likely to be present in wine in the highest concentrations. Stability constants for complex species formed between copper(II) and a range of carboxylic acids (acetic, formic, lactic, malic, succinic, tartaric and citric) in both aqueous and 12.5% ethanol solutions, were determined. Stability constants were determined using potentiometric titrations at 25.0 ± 0.1 °C with a constant ionic strength of 0.1 M, which was maintained by the addition of KCl. The determined constants were used in conjunction with previously reported concentrations for copper and organic acids in wine, to simulate copper speciation in aqueous and ethanolic solutions containing all the investigated acids. Overall trends for binding constants determined in 12.5% ethanol were similar for those determined in aqueous solutions; however, complex species that were formed in 12.5% ethanol solution typically had larger stability constants than those formed in aqueous solution. Copper tartrate was determined to be the species that would be in the highest concentration over the pH range of wine

Keywords: copper complexes, stability constants, model wine

Effect of accelerated weathering exposure on the properties of timber-adhesive composites

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Doctorate

School of Science and Technology

Oral Presentation

Timber bridges are exposed to different environmental stresses such as UV irradiation coming from sunlight and moisture coming from rainfall. There are several strategies to reduce environmental problems, such as repairing or coating by adhesives to protect timber from UV irradiation and humidity. However, the durability of the solutions, particularly the stability of structural adhesives applied to timber, are not well understood. Also, improving structural adhesive systems and developing monitoring techniques to reinforce and increase longevity of timber are necessary. This project aims to improve adhesive properties to address this big concern about the short-term damage in timber structure. The first stage of my research focused on the evaluation of two adhesive systems, saturated and unsaturated epoxies respectively under an artificial accelerated weathering cycle (UV irradiation and humidity conditions) over exposure times of 168, 336, 504, 720 and 1008 hours, followed by chemical and mechanical tests. The results showed that saturated adhesive appears to be more resistant to UV irradiation and humidity but has lower tensile strength before exposure than unsaturated epoxy. However, the tensile strength of unsaturated adhesive is retained better on exposure to artificial weathering. The second stage of my research has included adding different modifiers, such as multi-walled carbon nanotubes (MWCNTs), microcrystalline cellulose and calcium sulfate whisker to the two adhesive systems and comparison of all specimens before and after exposure to accelerated weathering conditions. The results obtained show a significant improvement in mechanical and chemical properties and more resistance to accelerated weathering for the two epoxy systems with incorporation of 0.5% MWCNTs.

Keywords: timber, adhesive, composites, accelerated weathering, modifiers.

Role of different origin mycorrhiza in remediation and improving maize growth in soil with high concentrations of arsenic

Sahar Al-Shamma

Doctorate

School of Environmental and Rural Science

Oral Presentation

Arsenic (As) negatively affects the growth of plants, and at high concentrations can cause biomass decrease and inhibition of photosynthesis. Arsenic can enter the food chain via plant uptake and can be harmful to human health. Arbuscular mycorrhizas fungi (AMF) have a known role in enhancing plant growth and also minimising effects of toxins on plants. The effects of inoculating maize with AMF originating from soil contaminated with As and from a similar uncontaminated soil was investigated. Mycorrhizal inoculum including infected maize root, spores, and mycelium and rhizosphere soil was obtained by growing maize in a mixture of sand with As contaminated and also uncontaminated soil for 10 weeks. Maize was grown in a mixture of autoclaved uncontaminated soil: sand, 1:1 w/w, spiked with As at rates of 0, 5, 10, 25, 50, and 75 mg/kg. The mycorrhizal treatments received 100g of the inoculum which was mixed into the upper layer of the 1 kg substrate, while non-mycorrhizal treatments received 100g of autoclaved inoculum. With increased As concentrations in the soil, there was a reduction in maize growth (around 60% dry weight) and a significant increase in As concentration and uptake with decreased phosphorous (P) concentration and decreased mycorrhizal colonization (by about 35%). Inoculation with mycorrhiza significantly decreased As concentration and uptake, and increased (P) concentration in mycorrhizal plants compared with non-mycorrhizal plants. However, shoot dry weight was reduced by an average of 28% with Mycorrhiza. Dry and fresh shoot and root weight, and height of plants, were significantly greater in maize inoculated with mycorrhiza originating from contaminated soil (coM+) than mycorrhiza originating from un-contaminated soil (unM+) at 50 and 75 mg/kg As, while unM+ decreased As concentration in shoots and roots compare with coM+. Higher mycorrhizal colonization was found in maize inoculated with coM+. The translocation of As in maize was root > shoot > cobs. This study shows that growing maize with arbuscular mycorrhiza could alleviate As toxicity in contaminated soil, and at high As the origin of mycorrhiza can play an important role in remediation and toxicity to the plant.

Keywords: As; Mycorrhiza; remediation; origin of mycorrhiza; As translocation in maize

Cadmium (Cd) and Arsenic (As) in Co-contaminated Soils: Risks and Options for Management

Sajanee Gunadasa, Susan C Wilson and Matthew Tighe

Doctorate

School of Environmental and Rural Science

Oral Presentation

Overuse of agrochemicals has resulted in As and Cd co-contamination of cropland soils in many areas of the world, impacting human health and the environment. The Dry Zone of Sri Lanka has been identified by World Health Organization (WHO) as one of the world's worst impacted areas with a large proportion of the farming community affected by chronic kidney disease (CKD). This is assumed to be induced by exposure to elevated Cd and As with more than 20,000 reported related deaths. Pesticides and fertilizer used extensively in rice farming have been attributed as the most likely sources of the elevated As and Cd in groundwater and soils in the affected areas. Rice is a staple food in Sri Lanka. Arsenic and cadmium in locally grown rice have been reported at up to 90-260 $\mu\text{g}/\text{kg}$ and 10.0-92.5 $\mu\text{g}/\text{kg}$ (dw) respectively. Remediation of soils contaminated by these metals (loids) is necessary to reduce the associated risks, improve the soil resource for sustainable farming and enhance the production of healthy food. Development of technologies to reduce the risk of co-contaminated Cd and As soils is a particular challenge. Many technologies are expensive but the use of biochar, compost, and iron-rich materials as soil amendments appears to be promising. This study will investigate fate and behaviour of Cd and As in co-contaminated systems, aim to understand factors influencing mobility and bioavailability in the Dry Zone soils of Sri Lanka and assess options for effective treatment of the As and Cd co-contaminated soils.

Keywords: As/Cd Co- contaminated soils, flooded and non-flooded soil, biochar, organic substances, bioavailability

Session Eleven – Past, Present and Community

Ancient ferrous metal production and use at Saruq al-Hadid in Dubai UAE

Ivan Stepanov, Lloyd Weeks, Kristina A. Franke and Peter Grave

Doctorate

School of Humanities

Oral Presentation

Saruq al-Hadid is an archaeological site principally dated to the early Iron Age (1100-600 BC), located in the desert of Dubai. Significantly, the site preserves the largest Iron Age assemblage of iron artefacts and production refuse in Southeastern Arabia. Until the discovery of the site, most reviews of metallurgy in the region had suggested that iron use in the Iron Age was both small scale and rare. My PhD project is focused on the study of ferrous artefacts from the site, aiming to answer the questions of ancient iron technology: production, use and circulation of iron goods by prehistoric Arabian societies. All ferrous remains from Saruq al-Hadid are characterized by a very poor state of preservation (with virtually no metallic iron left). Nevertheless, a range of archaeometric analytical techniques—optical metallography, neutron tomography, as well as compositional techniques including SEM-EDS and LA-ICP-MS for sourcing of artefacts to the deposits of precursor iron ores—provide a major insight into the nature of ancient iron use at the site. The results of our research indicate that metal was forged from heterogeneously carburized mixture of soft iron and hard steel. Visual investigation suggests that there was a blade manufacturing industry at the site. Nevertheless, preliminary geochemical analyses revealed that the majority of iron artefacts were likely to have been produced from iron ores of Northwestern Iran. Overall, the ongoing characterisation of ferrous remains from Saruq al-Hadid is critical in gaining insight into the origins, spread and adoption of iron metallurgy in Arabia and the Near East more widely.

Keywords: Archaeology, Arabia, metallurgy, Iron Age

**The Voice of Britten's Governess: Shifting Gender Perspectives in
*The Turn of the Screw***

Kylie Constantine

Honours

School of Arts

Oral Presentation

The widely accepted psychoanalytic assessment by Edmund Wilson (1934) of a neurotic and sexually repressed Governess in Henry James's *The Turn of the Screw* has significantly influenced readings of Britten's eponymous opera. Philip Brett's application of Foucault's sexual archetypes reinforced this interpretation when he relegated Britten's Governess to the category of 'hysterical woman'. Yet Brett's study, a discussion of homoerotic relations between Quint and Miles, has overshadowed any serious critique of the opera's female voices. Contrary to Brett's findings, I propose that Foucault's theories of sexuality, power and discourse, enhanced by the recently identified theory of the "auditory sonorous", might instead inform a feminist reading of the *Screw* that sheds new light on the Governess. My investigation has led to the development of a schema in which the relationship between composer and performer, reflecting the ongoing tension between score and performativity, results in an anonymous 'operatic voice', in turn mirroring the Governess's anonymity. Patterns of the dissemination of Foucauldian power-knowledge are revealed, with motif acting as a sign, or 'statement', within musical discourse. Perceptions of gender paradigms in the *Screw* shift as the Governess emerges as a sexually ambiguous, evolving entity.

Keywords: Britten, Foucault, Opera, Voice, Women

The Phenomenon of Posthumous Honorifics

Kyrah Ambagtsheer

Post-doctorate

School of Humanities

Oral Presentation

Ancient Greek posthumous honorific inscriptions were a form of honorary decree erected by the state after the death of a valued member of society. Occurring predominantly in Asia Minor during the Imperial period, they share features of funerary ritual and civic social obligation. The language of posthumous honorific texts replicates that of living honours with the additional mention of the honour as deceased. Both living and posthumous honorifics could be erected in public and sacred areas in the city. However, posthumous honours could also be inscribed on funerary monuments in city cemeteries. As these inscriptions could be erected for an individual in life, and after death, the intention behind creating a posthumous honour involved more than the need to honour. Using text mining to locate and analyse inscriptions, it is possible to track the changing use of honorary language to monumentalise both the deceased and the living. Regional variation of the language used presents the opportunity to analyse the influence of Roman burial traditions on Greek funerary practice. Posthumous honours are primarily a civic phenomenon, yet their use indicates that Greek funerary cult was no longer meeting the needs of families to honour their dead.

Keywords: posthumous honorifics; ancient Greece; death; epigraphy

The theatre and the community

Graham Seaman

Honours

School of Arts

Oral Presentation

A theatre's sense of belonging to the community or communities in which it works is vital to a theatre's success. This paper focuses on the role of the community in relation to Theatre Workshop moving to Stratford East London, on the margins of metropolitan London, and the Q Theatre moving to Penrith on the margins of greater Sydney. In many ways Theatre Workshop at Stratford East London provides a model for the company at the Q Theatre in Penrith. The primary factor was the Q Theatre's relationship with the community. Although London and Sydney are two different places and the distances between the centre and the margins are vastly different, this paper will discuss the similarities and differences between Theatre Workshop and the Q Theatre, Penrith, concerning the relationship of the theatre and the community.

Keywords: Q Theatre Penrith; Theatre Workshop; community

**Session Twelve – Land and water; predicting
and adapting to change**

Nitrate and canola oil are synergistic in reducing methanogenesis in cattle

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Doctorate

School of Environmental and Rural Science

Oral Presentation

Enteric methane (CH₄) is produced by ruminants during the microbial fermentation of feed and is an important source of greenhouse gas emitted from the livestock sector. Strategies that reduce enteric CH₄ emissions are required to minimize agricultural greenhouse gas emissions. Because nitrate (NO₃) and lipids alone have been evaluated and recognized as effective dietary additives to reduce methanogenesis in ruminants, we hypothesised that the combination of NO₃ and canola oil would reduce methane emissions in beef cattle. The objective of this study was to evaluate the effect of canola oil and NO₃, added to diets alone or in combination, on CH₄ emissions and rumen fermentation. The experiment was designed as a 4x4 Latin square using 4 cannulated steers over 4 x 15-day experimental periods. Dietary treatments were: control (CON: 40% lucerne chaff and 60% barley grain), OIL (CON + 5% canola oil), NO₃ (CON + 2% NO₃ supplied as calcium salts) and NO₃+OIL (CON + 5% canola oil + 2% NO₃). CH₄ production was measured by open circuit respiration chambers. Daily intake and total volatile fatty acids concentration did not differ ($P > 0.05$) between diets. Rumen ammonia concentration (mg NH₃-N/L) was higher ($P < 0.05$) in NO₃+OIL diet. Compared with CON, NO₃+OIL in combination reduced ($P < 0.01$) CH₄ yield (g CH₄/kg DMI) by 29%. CH₄ mitigating effects of NO₃ and oil are more than additive and CH₄ emissions were reduced without compromising feed intake or rumen fermentation.

Keywords: methane, greenhouse gas, respiration chambers.

Regulatory aspects of freshwater species sensitivity distribution model: From water trigger values to ecological hazard identification and risk assessment

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Oral Presentation

Antimony (Sb) is listed as a priority pollutant in many jurisdictions because of its potential environmental and health concerns, yet its threat to aquatic biota is currently unclear. To date, due to data paucity, water quality guidelines (WQGs) for Sb are not well established and large uncertainty factors are commonly applied in derivation, which hinders robust ecological risk assessment (ERA). In this study, freshwater species sensitivity distributions (SSDs) for Sb(III) were constructed using available acute toxicity data generated from global and temperate regions. A tiered ERA approach, hazard quotients (HQs), was also applied for characterisation of risks of Sb concentrations in the freshwater environment. For each SSD, multiple parametric and nonparametric fitting models were employed and compared; and the best fit one was determined and used for 5% hazardous concentrations (HC5; 95 % of species being protected) and its corresponding predicted no effect concentration (PNEC) derivations. The HC5 values for global and temperate SSDs were estimated as 781 and 976 $\mu\text{g L}^{-1}$ Sb(III), respectively, while the PNECs for the both datasets were 156 and 195 $\mu\text{g L}^{-1}$ Sb(III), respectively. Using a previous recommended temperate-to-tropic extrapolation factor of 10 for freshwater ecosystems, an interim PNEC for the tropics was estimated as 20 $\mu\text{g L}^{-1}$ Sb(III). While data for Sb(III) concentrations in natural waters are limited, the potential ecological risks posed by Sb(III) occurring in segments of Gediz River in Turkey and northern part of Pearl River in China would be classified in high and medium risk categories, respectively. Low ecological risks of Sb(III) were characterised (~90.5%) for some countries including USA, Japan, Poland, Spain, China, Germany, Bulgaria, Slovakia, Macedonia and Brazil. The results presented in this study facilitate and help illustrate the toxic effects of Sb(III) to freshwater species and their communities.

Keywords: Antimony (Sb(III)), freshwater ecosystem, species sensitivity distributions (SSDs), water quality guidelines (WQGs), ecological risk assessment (ERA), aquatic ecotoxicology

Could dung beetles cope with and mitigate climate change

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Oral Presentation

Recycling and long-term storage of carbon in the soil is one of the major technique to reduce anthropogenic greenhouse gases (GHGs): CO₂, CH₄ and NO₂ emissions. In general, forest trees, crop plants, livestock and soil fauna are the major natural actors for GHGs. Among soil fauna, dung beetles are famous for a wide range of ecological services such as dung burial, plant nutrient recycling, plant growth enhancement, plant seeds dispersal, control flies and parasites. The unique feeding behaviour and movement within dung pats made them special underground bioengineers that decompose coarse dung fibres and return nutrients and water to the soil. There are hundreds of studies on ecological role of dung beetles but there are very limited studies on their role on greenhouse gas emissions. This proposed research will conduct experiments on how the handling of dung pats by dung beetles contribute climate change. For the study, freshly dropped dung pats will be collected from at least for 6 months untreated cattle. The collected dung will be stirred with a wooden spatula or be homogenized within 3 hours of collection. The dung pats with and without dung beetles; and with dung beetles and earthworms; will be used to assess GHGs emissions by a continuous gas analysis using a Gasmeter Gas Analyser. Furthermore, the dung beetles responses and their metabolic rate at minimum and maximum critical temperatures will be assessed by Thermolimitrespirometry. The findings of the research will explore the potentiality of dung beetles in climate change mitigation.

Keywords: Dung beetles, ecological service, greenhouse gases, climate change, mitigation

Climate change: friend or enemy of crop plant pathogens?

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Oral Presentation

Insects are affected by climate factors such as temperature and moisture. It is expected that climate change will affect geographical range, growth rate, abundance, survival, mortality, number of generations per year and other characteristics of insect dynamics. These effects are difficult to predict due to the complex interactions between insects, hosts, predators and environment. The fall armyworm (*Spodoptera frugiperda*) (FAW) is an endemic and important agricultural pest of several important crops in America. A number of outbreaks have occurred with losses estimated at millions of dollars. The objective of this research is to project the impact of climate change for the current and future suitability of FAW, as well as the risk of damage due to the number of generations. The modelling was carried out using CSIRO Mk3.0 and MIROC-H for 2050 and 2100 under the A2 SRES. The possible number of generations was estimated at 559 growing degree days per generation. A unique modelling approach linking suitability and number of generations was developed to project the risks of FAW damage. The results show changes in suitability and risk. The northern hemisphere is likely to increase in area and decreases or extinctions are expected in the southern hemisphere, with some exceptions (southern Brazil, Uruguay, Paraguay and northern Argentina) that indicate high future levels of risk. This study highlights the possible extinction of a tropical pest in areas near the Equator. In general, agricultural pest management may become more challenging under future climate and variation, and thus understanding and quantifying the possible impacts of FAW under future climate conditions is essential for future economic production of crops.

Keywords: Fall armyworm, number of generations, future suitability

Modelling landslide susceptibility through frequency ratio using high resolution satellite imagery and Geographic Information Systems in a typhoon prone mountain area in northern Philippines

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Doctorate

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Oral Presentation

In the most landslide-prone province in mountainous northern Philippines, we estimated the landslide susceptibility using frequency ratio (FR). Sixteen factors derived from the digital elevation model (DEM), scanned maps and high resolution satellite imagery were used: elevation, slope angle, slope aspect, length-slope factor, plan curvature, profile curvature, total curvature, stream power index, topographic wetness index, distance to drainage, soil type, lithology, distance to fault/lineament, land use/ land cover, distance to road and normalized difference vegetation index (NDVI). The FR method was applied using each set of DEM-, map- and satellite-derived factors separately and in combination. The highest FR, which suggested highest correlation with landslide occurrence, were the NDVI classes below 0.38. Results showed that the inclusion of satellite-derived factors exerted more influence in improving the landslide susceptibility model. Using all three factor sets, the success and prediction rates obtained were 90% and 91%, respectively.

Keywords: landslide susceptibility, frequency ratio, GIS, satellite imagery, Philippines

Abstracts by Streams and Sessions

STREAM FOUR

- Session Thirteen - Understanding ourselves and others
- Session Fourteen - Now for Something Different
- Session Fifteen - Interpreting our past and developing our future
- Session Sixteen - Playing, teaching and learning

**Session Thirteen – Understanding ourselves
and others**

Fracked: Coal Seam Gas Extraction and Landholders' Mental Health

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Doctorate

School of Behavioural, Cognitive and Social Sciences

Oral Presentation

Farmers are exposed to a unique range of vocational stressors, and while mental health morbidity is similar to their non-rural counterparts, suicide rates are higher. We examined the contribution of coal seam gas (CSG) extraction to the global stress burden and mental health of 378 Australian farmers (mean age = 53.08 years; SD = 10.28). Exploratory factor analysis revealed that CSG items added two unique dimensions to the Edinburgh Farming Stress Inventory: Off-Farm CSG Concerns (concerns about possible impacts of CSG extraction on human health, communities, and the environment) and On-Farm CSG Concerns (potential CSG impacts on farm profitability, disruption of farm operations, and privacy). Subscales based on the new factors correlated significantly with farmers' self-reported levels of depression, anxiety and stress reactivity, as assessed by the DASS-21. Latent profile analysis categorized farmers into four distinct segments based on their overall stress profiles: Non-Stressed (39%), Finance-Stressed (31%), CSG-Stressed (15%) and Globally-Stressed (15%). Farmers in the CSG-Stressed and Globally-Stressed exhibited clinically significant levels of psychological morbidity. This information can be used to inform strategies for improving mental health outcomes in the agri-gasfields of Australia.

Keywords: stress; coal seam gas; coalbed methane; landholders; mental health outcomes

Results from Mosaic and Narrative research with Australian Defence Force families

Marg Baber

Doctorate

School of Education

Oral Presentation

Children living with a parent employed in the Australian Defence Force (ADF), often experience that parent working away from home for deployment and training. Until now, research about how children experience and understand deployment has been limited to secondary data from parents and some interactions with high school students. My PhD research entitled 'Young Children's Experiences and Understandings within an ADF Family' has addressed this gap. Using Mosaic and Narrative approaches, the co-constructed data privileged children's voices that have been previously marginalised within the literature whilst also listening to parent's and educator's voices. The findings were examined using both thematic and narrative analysis, and then a socio-ecological framework was applied. The children's experiences included: transitions, relocations, digital communication technology, personal responses (including physical, emotional and cognitive), ongoing role flexibility, increased family stress, parental fatigue, protective factors within the family and ADF, family narratives, cultural metanarratives, developing coping strategies and resilience, and role models. The children's understandings of parental deployment were influenced by: changes over time, acculturation and narrative, reinforcement within the microsystem, developmental phases, time and place, parental perceptions, resources, discussions and activities and the child's ability to cope with family transitions. It is hoped these findings will inform recommendations to the ADF to improve policies affecting families with young children and the types of support provided.

Keywords: Narrative, mosaic, socio-ecological, military, defence, family

**Stigma, Faith and Mental Health:
Investigating Service Delivery Attitudes in Timor-Leste**

Ben Larke and Warren Bartik

Honours

School of Behavioural, Cognitive and Social Sciences

Oral Presentation

Stigma towards people with mental illness has been found to be present, albeit to varying degrees, amongst health care professionals. Evidence for factors posited to interact with stigma include contact with, and knowledge about, people with mental illness. The variance in stigma across cultures has also revealed cross-cultural differences in how stigma manifests and is experienced, including mental illness somatization, aetiological beliefs and their influence on preferred treatments. This study considers the pervasive influence of mental illness stigma and its nature and prevalence amongst those who provide services to people with a mental illness in Timor-Leste (East Timor). As such, it responds to an important need in assessing clinician mental illness stigma in cross-cultural contexts and is the first research of its type conducted in Timor-Leste.

Keywords: stigma, Timor-Leste, East Timor, mental illness, attitudes, service delivery

Session Fourteen – Now for something different

The uncertainty of trophic cascades from dingos in Australia

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Doctorate

School of Environmental and Rural Science

Oral Presentation

Wolves have been widely documented as being influential in top down regulation of prey and trophic cascades in North America. Reintroduction plans for the dingo in south east Australia are currently proposed with emphasis on the positive effects of canid driven trophic cascades on biodiversity. The biophysical elements of North America shape that environment for trophic cascades but it is not clear that Australia provides a comparative context for the dingo. The wolf-elk-willow trophic cascade in Yellowstone National Park provides a case study to understand the broader system controls on trophic interactions and comparatively apply the knowledge to the south east Australian environment. Both ecosystems have a canid top predator and an arid environment, making their comparison highly relevant for dingo reintroduction plans in Australia. Climate stability has emerged as the critical influence underlying trophic cascades in Yellowstone National Park through the regularity of predictable resource supply which sustains strong trophic interactions. The instability of the Australian climate which yields unpredictable resources is unlikely to produce trophic interactions of similar strength.

Keywords: climate stability; predictable resource; predator; vegetation

Comparison of the range of motion between hopping and striding and their influence on muscle moment arms for the hip joint in *Simosthenurus occidentalis* using a dynamic muscular skeletal model

John Cook and S Wroe

Doctorate

School of Environmental and Rural Science

Oral Presentation

Bipedal hopping is one of the most energy efficient styles of terrestrial locomotion. However, this requires specialised skeletal and muscular systems in the hind limbs. Of the few mammal species that do perform bipedal hopping, the largest group in size are the macropodines (kangaroos and wallabies). Many agree that there must be an upper limit in terms of body mass for bipedal hoppers, and in terms of the largest species of Macropods known as Sthenurines, there is much debate on their ability to hop. Recently it has been proposed that large sthenurines may use a striding gait instead of hopping due to differences in the morphology of the skeletal system and inferring that these differences constricted the ability to perform bipedal hopping. Our research is one of the first to use a digital approach in order to provide a biomechanical approach to this topic. Using a digital approach, we looked to compare the muscle moment arm of the hind limb muscles of a sthenurine skeleton used for hip joint flexion and extension, with different ranges of motion that represented a hopping and striding gait in both a *Simosthenurus occidentalis* and a *Macropus* species. We predict that the increased range of motion in the hip joint for a striding gait, relative to that of the range of motion for a hopping gait will require more force and will therefore generate a larger moment arm.

Keywords: Sthenurine, locomotion, kinematics, biomechanics, macropodoids.

How when and why to revegetate with direct seeding: insights of a local case

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Doctorate

School of Environmental and Rural Science

Oral Presentation

In Australian farmlands it is essential to balance agricultural land use with biodiversity conservation and recovery by incorporating native species in farm and grazing landscapes. Among different techniques for revegetation, native direct seeding is considered more convenient, due to reduced labour and material costs and the ability to incorporate a diverse mix of species. However, direct seeding for farmland restoration requires knowledge about the site's ecological suitability and the specific requirements of the species to intended to be planted. In laboratory, glasshouse and field experiments, the germination ecology and related environmental responses of native plant species that occur mainly in the Narrabri, Moree and Gwydir shires in North West NSW were investigated for suitability for direct seeding. Different seed pre-treatments and environmental conditions were compared for direct seeding suitability. Quality of seed source, seed pre-treatment and environmental conditions such as temperature and moisture were recognized as important determinant factor for successful direct-seeding of a number of important species. However, the results suggest that the requirements for germination are mostly specific (to what?) vary from species to species and among populations within species. Therefore, we propose a selection of different seed management practices and discuss their implications for direct seeding.

Keywords: Direct seeding, revegetation, farmland, Moree plains.

Population genetics, aggression behaviour and thermal tolerance of *Iridomermex purpureus* (meat ant) around the New England tablelands

Nirosha Kumudini Ranawaka

Doctorate

School of Environmental and Rural Science

Oral Presentation

Meat ant is an ecologically and economically important Australian native ant. They build characteristic nests which can be easily identified. Meat ants defend their territories from intruder ants using ritualized displays or engaged in fights. They can tolerate a wide range of temperatures and occupy various microhabitats thus ensuring their ecological dominancy. My PhD will focus three major aspects of meat ants in northern NSW: population genetics, aggression behaviour and thermal tolerance. Study sites are located from the NSW north coast across the New England tablelands. During the first phase of population genetic study, population genetic structure of the meat ants will be assessed, using single nucleotide polymorphisms as the molecular marker. In the second phase, population genetic variations of meat ant populations will be assessed across a climatic gradient across northern NSW. Aggression behaviour will be scored during behavioural assays which will be conducted in the field, between resident ants and intruder ants using different treatments. Thermal tolerance studies will be carried out in four meat ant populations again across a climatic gradient across northern NSW. Thermolimit physiology will be carried out using respirometry capabilities of meat ants. Rate of CO₂ released will be measured as a metabolic rate using different temperature treatments. In this talk I will introduce my PhD study methodologies and present findings from the behavioural studies conducted. This study will reveal more interesting information regarding the current existence and future survival of this ant species especially in the New England tablelands.

Keywords: Meat ants, population genetics, behaviour, thermal tolerance, climate change

A record of shell drilling predation at the dawn of animals

Russell Bicknell

Doctorate

School of Environmental and Rural Science

Oral Presentation

The ‘Cambrian explosion’ event is the geologically rapid evolutionary transition that records the first unequivocal appearance of most animal groups alive today. The quick development of the Cambrian marine ecosystem, some 541 million years ago, has interested various geological, biological and palaeontological researchers and has included extensive studies of Cambrian fossiliferous deposits containing both soft-bodied organisms and the hard-parts of shelly species. These studies gave rise to two major questions surrounding the Cambrian explosion: ‘What drove the explosion?’ and ‘What drove the radiation of shelly organisms?’ Cambrian predators are often hailed as the most probable ecological catalysts behind the rapid diversification of taxa at the beginning of the Cambrian, and as an explanation for why shelly organisms are present in Cambrian assemblages. Predation kick-started the Cambrian ‘arms race’ and prey responded in developing protective mechanisms, including shells and other forms of armour. This escalation led to the very first examples of predatory shell crushing and shell drilling toolkits to develop. Here, examples of shell drilling predation from one of Australia’s richest Cambrian fossil deposits are detailed. These examples are used to expand the knowledge on the biological response of shelly prey to predation and to uncover possible attack patterns and features pertaining to the shell drilling predators.

Keywords: Cambrian, evolution, predation

Session Fifteen – Interpreting our past and developing our future

How important is shared vision to achieve a Learning Organisation?

Valerie Dalton

Doctorate

UNE Business School

Oral Presentation

Peter Senge argued that five disciplines are required to achieve a Learning Organisation. One of those is Shared Vision, characterised by organisational members holding a common aspiration, a common caring that connects them. “A vision is a picture of the future you seek to create, described in the present tense, as if it were happening now” (Senge et al 1994: p.302). Much work was done by Senge and colleagues to facilitate such vision building and sharing and it is an idea that continues to be an assumed must have in successful organisations. My research suggests that a shared vision can be a looser framing of an idea and that by not locking it down might allow it to develop and grow in ways that no one individual may have anticipated or any group articulated in explicit form. Research I have conducted at a theatre company in one of our major capitals suggests that allowing people to come to an idea even one that is not connected to the core business of an organisation can build something very rich though not necessarily anticipated.

Keywords: learning organisation, shared vision, framing

Antimony(III) and not antimony(V) induces genomic instability in Silver perch: Evidence from in vivo alkaline single cell gel electrophoresis and erythrocyte micronucleus assay

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Oral Presentation

Despite the increasing consumer-led applications of antimony (Sb), cumulative impact and response characteristics for site-specific fish species are rarely examined. We conducted exposure dose response semi-static studies to examine the effects of Sb on DNA integrity and its clastogenic and/or aneugenic potential on Silver perch at different sublethal concentrations of Sb(III) (0.4 – 1.8 mg L⁻¹) and Sb(V) (0.9 - 5 mg L⁻¹). A combined assay protocol [in vivo alkaline single cell gel electrophoresis (SCGE) or Comet assay and erythrocyte micronucleus (MN)] encompassing two genotoxic endpoints, DNA migration and micronucleus, was conducted. Silver perch populations were exposed to test compounds in microcosms for 2, 6 and 14 days. Antimony (III) induced a significant DNA damage in Silver perch at 2nd day exposure, which was independent of exposure dose while Sb(V) showed no effects at all times. Both Sb oxidation states showed no clastogenic and/ or aneugenic effects as determined by the percentage MN frequency. The polychromatic erythrocyte (PCE)/ normochromatic erythrocyte (NCE) ratios indicative of cytotoxicity in Sb treatments were not significantly different from the concurrent vehicle control except for 1.8 mg L⁻¹ Sb(III). This is the first time Sb toxicity has been examined using Australian native fish species and our effect data underpin the current knowledge that Sb risk assessment should depend on the toxicological profile of individual Sb species. In addition, the results also indicated that Sb(III) could potentially induce genotoxic effect (DNA damage) in fish at sublethal concentrations and SCGE holds potential for providing more comprehensive genotoxic assessments.

Keywords: Sb(III), Sb(V), DNA damage, clastogenicity, aneugenicity, ecogenotoxicology

Session Sixteen – Playing, teaching and learning

Facilitating participation in quality early childhood education programs for families from refugee backgrounds

Cherie Lamb

Doctorate

School of Education

Oral Presentation

Children from refugee backgrounds living in Australia are less likely than children from the general population to participate equitably in quality early childhood educational programs such as kindergarten. Children who do not participate are at risk of long term negative consequences, in terms of limiting future access to higher educational opportunities, meaningful employment and financial security. The purpose of this study was to discover strengths-based strategies currently used by family support workers and early childhood educators to assist families with refugee experience to overcome access and participation barriers ultimately leading to social inclusion, maintenance of cultural and linguistic identity and effective cross-cultural integration within the context of a diverse society. By drawing upon examples of partnership models, participatory frameworks and community development strategies, the study explored current access barriers, examples of promising practice, a range of practical strategies that practitioners can implement, and future steps required to facilitate equitable participation at a population level. These strategies are drawn from current qualitative research conducted through in-depth, semi-structured interviews with 40 participants consisting of parents of young children from refugee backgrounds, family support workers and kindergarten teachers who had direct experience working with families from refugee backgrounds located in three areas of South East Queensland including the Logan, South Brisbane and Toowoomba/Lockyer Valley regions. Participants were sourced through seven organisations funded through the Pre-Kindergarten Grants Program 2013-2016, an initiative of the Queensland Dept. Education and Training.

Keywords: early childhood education; refugees; family support

Scaffolding Learning through Play

Helen L McAllister

Doctorate PhD.I

School of Education

Oral Presentation

Framed within a socio-cultural theoretical perspective in Australia, this study examines 'fading' as a scaffolding technique for early childhood teachers in kindergarten. Pedagogical knowledge of scaffolding, the scaffolding process, and strategic approaches used will be identified, in an attempt to better align teaching content with learner engagement, meaning making, and meaning potential. Socio-cultural theory proposes that our capacities and identities are co-constructed in interaction with others in specific cultural and historical circumstances. At early stages of child development, knowledge is constructed through diverse 'lived' interactions with others in face-to-face and virtual contexts. The assessment of affective and content components of these interactions provide vital clues and information for understanding the learning environment, the teacher's understanding of both content and capabilities of the student, and the knowledge-in-action of the day-to-day interactions in teaching children. This case study analysis explores what teachers know, understand and practice as part of curriculum planning, their reflective analysis of the learning environment, and the use and utility of scaffolding learning through their daily play-based programs. In addition to better understanding the teacher's role---particularly the 'fading' component to scaffolding learning---the identification of children's language, imagination, and use of environment/context throughout the process will be collected and analysed. The collection of data includes researcher's observations, semi-structured interviews, video stimulated --recall, and in-depth reflections from teachers. The context of this study is situated in kindergartens in Queensland and taken from one-on-one and/or small or large group interactions with their students from 2016-2017. The purpose of this study is to identify, develop, and best utilise the 'fading' technique in scaffolding learning, develop new insights into the complexity of early childhood development processes so that the teachers can take greater ownership in teaching and learning effectively, and identify new modes of inquiry based on a child's meaning making and potential based on context. Its objective is to identify what components of scaffolding strategies are needed to know of or understand for use within their contextualised practice. The aim is to identify the notion of 'fading' (Stone, 1998a; 1998b) as a necessary and vital component of the scaffolding process

Keywords: Socio-cultural theory; scaffolding; learning; strategies; fading; success

Collaboration in playbuilding: What's a teacher to do?

Miriam Lili

Doctorate

School of Education

Oral Presentation

Playbuilding is a form of theatre used in drama education that involves a group creation and performance of a dramatic piece or play. One of the key features of the playbuilding process is group collaboration. If the pedagogical ideal is for students to strive towards group outcomes, then how can teachers make collaboration effective in playbuilding? Research has shown that approaches to collaboration in school playbuilding contexts vary. Studies have indicated that there are a number of factors which impact on the efficacy of collaborative processes such as: time constraints; group composition; theatre skills and knowledge; social skills; and pedagogical strategies. The proposed study aims to investigate the nature of collaborative processes in playbuilding in Stages 3 and 4. It will explore strategies to improve the effectiveness of student collaboration in classroom-based playbuilding. This paper examines the current research into playbuilding in schools and highlights a number of contingent issues that appear to have an impact on the effectiveness of the collaborative process.

Keywords: Playbuilding, collaboration, drama education

Supervisory Teaching and the Development of Agency in Primary Classrooms

Paul Crowhurst

Doctorate

School of Education

Oral Presentation

The development of agency in learners is seen as an important goal of education that in recent years has enjoyed a rising profile in educational literature. Despite agency becoming a more noticeable feature in primary teacher's vernacular, little practical avenues exist for enhancing teachers' understanding of, or expertise in developing, this. Supervisory teaching is a well-established pedagogical approach that has its roots in early education, dating back as far as the time of Socrates. It is seen to develop critical thinking and reflection - vital components of agency. As a probable stimulant of agency there is a need to better understand supervisory teaching and the way it promotes agency in primary education. This has been done with the view of giving teachers a more practical foundation for intentionally developing agency in learners. A qualitative case study was conducted in the primary section of an international school in Hong Kong. Three classes were utilised as part of the study. Observations, interviews, and focus groups were used as part of the data collection. Students were seen to exercise agency through five key dynamics – scaffolding, peer tutoring, independent learning, joyfulness, and reflection. Key recommendations for primary teachers wanting to promote agency in their students are, 1 – create opportunities for Socratic style dialogue, and, 2 – develop routines that promote collaboration among students.

Keywords: agency, conferencing, supervisory teaching, critical thinking

Bhutanese Attitudes Towards Inclusive Education: A Comparative analysis of School Leaders, Teachers, and Past Students with Sensory Impairment

Rinchen Dorji

Doctorate

School of Education

Oral Presentation

In Bhutan, inclusive education is in its beginning stage of development and efforts to include children with disabilities in the mainstream regular school alongside other students without disabilities is proving difficult due to socio-cultural and economic factors. This investigation is the first large scale mixed methods study regarding inclusive education in Bhutan. To explore the attitudes, a six-point Likert scale survey instrument called the BATIE (Bhutanese Attitudes Towards Inclusive Education) was designed, reviewed by an expert panel and administered to the research participants via Qualtrics. School leaders, (n=20; male=16; female=4) comprising Vice Principals and Assistant Principals and schoolteachers (n=145; male=70, female=75) from the 8 pilot inclusive schools completed the BATIE-E (Bhutanese Attitudes Towards Inclusive Education-Educators) survey. Past students with sensory impairment (n=13; male 11; female 2) who had attended schooling in Bhutan completed the BATIE-PS (Bhutanese Attitudes Towards Inclusive Education-Past Students) survey. These data were analysed employing Rasch latent trait scaling technique (Quest) resulting in ordinal observations being converted to interval measures. Subsequently case estimates were used in multivariate techniques to detect for any significant differences for all participants compared to group factors (age, gender, years of schooling or role in the schools using SPSS. Interviews were also conducted with school leaders (n=6; male 4, female 2), schoolteachers (n=14; male 5, female 9) and past students (n=6; male 6, female 0) with sensory impairment. Interview data were coded manually to generate concepts and themes and later referenced to the research questions. Leximancer, a text mining software was also used to extract concepts and themes to triangulate those generated through manual coding. Findings of the study will be presented comparing and contrasting the attitudes towards inclusive education for these three groups. Implications for policy and education reforms will be elaborated.

Keywords: Bhutan, inclusion, attitudes, school leaders, teachers and students

POSTER PRESENTATIONS

An exploration of the efficacy of Polycyclic Aromatic Hydrocarbon (PAH) bioavailability prediction on aged field soils for risk assessment and bioremediation

Atefeh Esmaeili, S Wilson and O Knox

Doctorate

School of Environmental and Rural Science

Polycyclic aromatic hydrocarbons (PAHs) are a group of organic compounds with two or more fused aromatic rings (Banger et al. 2010). They are ubiquitous in the environment and can be found at high concentrations on industrial sites as the result of human activities and anthropogenic impacts (Wilson and Jones 1993; Juhasz et al. 2005; Bozlaker et al. 2008). There is a crucial need to improve the risk assessment approaches for these pollutant to predict and prevent their hazardous effects on humans and environment. Risk assessment based on total concentration has been criticized since factors affecting the pollutants' bioavailability (such as soil properties) are overlooked. The bioavailable fraction of contaminants is considered to provide a better estimation of risk. Therefore, identifying the most suitable method to evaluate this fraction has been an imperative challenge in recent years. Tremendous efforts have been made to improve prediction of PAH bioavailability. Some methods attempt mimic the chemical's uptake into various organisms, and indeed measure the freely dissolved concentration of the contaminant in pore water mainly under equilibrium conditions, while others measure the rapidly desorbing fraction of the contaminant using a depletive based extracting procedure. This project aims to compare the efficiency of a variety of chemical methods to predict PAH bioavailability and bioremediation endpoints in a range of naturally aged (field) contaminated soils with a focus on soil influencing factors. Methods will be validated using different bioassays with appropriate organisms.

Keywords: PAH bioavailability, bioassays, PAH contaminated soils, bioremediation, risk assessment

Estimation of herbaceous biomass using visually ranked digital photographs

Helen R. Morgan, N Reid and JT Hunter

Doctorate

School of Environment and Rural Science

Estimation of herbaceous biomass methods have generally involved calibrating visual estimates against clipped, dried and weighed biomass samples, requiring lengthy periods of estimation and destructive sampling in the field. Here we developed and tested a method that minimises field time and provides accurate estimates of above-ground herbaceous biomass by taking digital photographs in the field and subsequently ranking the images against calibration images of known biomass in the laboratory. The study was conducted in temperate grassy forest dells and derived grasslands at Booroolong Nature Reserve in the New England Tablelands Bioregion and in semi-arid grassy shrubland on Naree Station in the Mulga Lands Bioregion. The accuracy of each observer's estimates was assessed by regressing the estimated weight of each validation quadrat against the known weight, which was withheld from the observer during the estimation procedure. Regression analysis of visually estimated weights of validation quadrats yielded R² values of 80–98%, showing the method to be reliable across a range of communities in two different climatic zones. Other benefits of this method include a reference collection of photographs of herbaceous biomass of known weight. The reference library has the potential to contain a vast range of datasets from different herbaceous communities enabling scope for landscape-scale and time-series studies and monitoring.

Keywords: grassland, dry weight, calibrate, destructive sampling

Deep Aesthetics and the Ground of Being

Julie Hawkins

Doctorate

School of Humanities

Deep Aesthetics, as one Western philosophical model for experiencing Reality as the ground of being, offers us an opportunity to see ourselves as participants in the greater nonhuman world, rather than as spectators fixed in a state of separation from the natural. This paper explores the nature of Deep Aesthetic Experience, and the understanding it provides of the nature and levels of human consciousness.

Keywords: Deep Aesthetics; Reality; Ground of Being; Deep Ecology; EcoPhilosophy

Digestibility of Nutrients in Broiler Chickens Fed Diets Containing Varying Levels of Raw Soybean Meal and Microbial Protease

Mammo M. Erdaw, RA Perez-Maldonado, M Bhuiyan and PA Iji

Doctorate

School of Environmental and Rural Science

A 2 x 3 factorial study, with 3 levels of raw soybean meal (RSBM) (commercial SBM was replaced by RSBM at 0, 15, or 25 %) and 2 levels of protease (0 or 15000 PROT/kg) was used to evaluate the effects of RSBM and protease supplementations on ileal nutrient digestibility of broilers. A nitrogen-free diet (NFD) was included to enable calculation of N and amino acid flows at the ileum, and estimate standardized ileal digestibility of these nutrients. The content of trypsin inhibitors (TI) in the test diets ranged between 1940 and 10193.4 TIU/g. Rising levels of RSBM in diets increased ($P < 0.001$) the loss of ileal undigested CP while apparent and standardized ileal digestibilities (AID and SID, respectively) of CP, measured at 24 d of age were reduced ($P < 0.01$). Losses of most ileal undigested AA increased in line with increasing levels of RSBM, resulting in a reduction in the AID and SID of all AA (except methionine) at 24 d of age. When diets were supplemented with microbial protease, the AID and SID of CP were significantly ($P < 0.05$) improved due to a reduction in loss of undigested ileal CP. The AID ($P < 0.05$) and SID ($P < 0.05$) values of lysine, at 24 d of age were significantly improved due to supplementation with protease. This study showed that the ileal loss and ileal digestibility of nutrients were adversely affected by RSBM in diets but protease supplementation slightly reduced the negative effect of the ingredient.

Keywords: Amino acids, apparent ileal digestibility, broilers, microbial protease, raw soybean meal, standardized ileal digestibility

Magnetic Biochar for mitigating Arsenic Risk

Sahar Al-Shamma

Doctorate

School of Environmental and Rural Science

Magnetic biochar recently has gained interest in its capacity in pollutants sorption, however research on its influence on plant contaminant accumulation and also plant growth in contaminated soils is limited. Pot experiment conducted to compare the influence of magnetic biochar (MB), nonmagnetic biochar and Fe on the accumulation of arsenic (As) in maize growing in arsenic contaminated soil, the growth of the maize and on mycorrhizal communities. Three rates of amendments were used (0, 5, and 15 g/kg soil) for MB, coconut activated biochar (nonmagnetic biochar) and Fe. The MB was developed by coating coconut activated biochar with magnetic Fe₃O₄ nanoparticles. The MB, nonmagnetic biochar and Fe were mixed with 1 kg arsenic contaminated soil: sand mix (1:1 w/w). After 10 weeks the maize plants were harvested with dry and fresh shoot and root weight obtained, and plant height and mycorrhizal colonization measured. The concentration of As and phosphorous (P) in the maize plants was also analysed. The results showed that the addition of all amendments resulted in a significant increase in plant growth (dry and fresh shoot, fresh root, plant height), and increased P concentration in maize shoot, but plant growth and P were maximum in MB treatment at 5g/kg. Nonmagnetic biochar at 5 g/kg increased As concentration in maize shoot, while both MB and Fe amended treatments at 5g/kg showed lower As concentration in maize shoot. Mycorrhizal colonization percentage was high in all treatments, but in nonmagnetic biochar at 15mg/kg the percentage was higher than the other treatments. This study shows that magnetic biochar may have potential role in risk management for soil contaminated with As.

Keywords: Biochar, biochar, arsenic, arsenic-contaminated soil, mycorrhizal colonization

Position of sensing microchips for detecting core body temperature changes

Tellisa Kearton, AK Doughty, GN Hinch and IR Godwin

Masters

School of Environmental and Rural Science

Core body temperature may be a good indicator of health status of sheep and being able to remotely record animals that deviate from normal could be of particular benefit in animal production systems where time and labour constraints are evident. The capacity to identify sick animals remotely facilitates the likelihood of timely and successful treatment, and may aid the identification of these animals before behavioural and visual symptoms become apparent. However, the accuracy of sensing microchips and the effect of implantation position has not yet been clearly established. An experiment was conducted to investigate the effectiveness of temperature measuring microchips in the detection of temperature change in sheep. Eleven crossbred ewes were implanted with microchips positioned in the neck muscle and tail regions, sites potentially suitable for remote temperature monitoring. Baseline and treatment affected temperature measurements were taken at regular intervals from the microchips and from vaginal (core) temperature using iButton and thermocouple sensors. Treated animals were exposed to challenges designed to increase (i.v. lipopolysaccharide) and decrease (cold water gavage tube) core temperature. The temperature changes caused by the cold challenge were not well correlated with microchip temperatures. However, there were highly significant correlations between neck microchip amplitude and thermocouple and iButton measures in the lipopolysaccharide treatment. These results indicate that the location of the microchip implant affects its ability to accurately reflect core temperature changes and microchips implanted in the neck may be of use in remotely identifying feverish sheep.

Keywords: Body temperature, microchips, fever, sheep.

KEYNOTE SPEAKERS

Keynote Address – Day 1

Alternative Career Paths for Higher Degree Graduates

Professor Annabelle Duncan,
Vice-Chancellor and Chief Executive Officer of the University of New England

Biography

Professor Annabelle Duncan is the Vice-Chancellor and Chief Executive Officer of the University of New England. She joined the University in September 2010, initially as Deputy Vice-Chancellor Research and then as Deputy Vice-Chancellor.

Prior to joining UNE, Professor Duncan spent 16 years in the CSIRO, including 6 years as Chief of the Division of Molecular Science. She has also served in managerial roles within the Bio21 Institute at University of Melbourne and AgriBio Institute at La Trobe University.

Professor Duncan acted as an advisor to the Department of Foreign Affairs and Trade on biological weapons control, representing Australia at international arms control meetings and acting as a biological weapons inspector with the United Nations in Iraq.

She was awarded a Public Service Medal in 1996, and Honorary Doctor of Science (DSc) from Murdoch University in 2005 for her work in arms control.

Keynote Address – Day 2

Gold Medal Excellence, The Mindset of a Champion

Kerri Pottharst, Gold Medal Olympian

Biography

Undoubtedly one of our most popular female sporting personalities, Kerri Pottharst is Australia's most decorated indoor and beach volleyball player, having represented her country for an incredible 20 years.

Kerri Pottharst provided one of the Sydney Olympics' most endearing moments when she claimed gold alongside partner Natalie Cook in the women's beach volleyball at Bondi Beach. The pair's historic victory over their Brazilian rivals in glorious Sydney sunshine will remain one of the true highlights of the Games. It was Pottharst's second Olympic medal, having won bronze with Cook in Atlanta, delivering international sporting stardom.

Kerri Pottharst began her career as an indoor volleyballer in 1982 and by 1990 she was the best indoor player Australia had ever produced. In 1992, after a serious knee injury, she was forced to reconsider her career choice and moved to the glamorous sport of beach volleyball.

Kerri Pottharst is in high demand as a corporate speaker, providing inspirational and motivational stories of challenges, triumphs and her Olympic journey.

SPECIAL SESSIONS

Methods

Professor Don Hine

Science is an incredibly powerful tool for observing the universe and developing a deeper understanding of how it works. Testaments to its success can be found all around us: Powerful computers that fit into our pockets, medical advances dramatically increasing life expectancy, and agricultural developments to increase the likelihood that all can be fed. Despite these triumphs, a substantial amount of knowledge generated by scientists each year is fundamentally incorrect, biased, and/or grossly distorted when presented to the public. In this presentation, I will argue that the basic principles of the scientific method remain sound, but that we are experiencing widespread implementation problems - some unique to specific researchers and some that are more systemic - that are resulting in a proliferation of bad science. I will close with a discussion about what can be done to address these problems.

Introduction to Mind Mapping

Nerelie Teese

Mind Maps:

- The highest form of graphic organiser
- A valuable memory, research, study and planning tool for students and adults
- Develop and reinforce higher level thinking
- Develop effective and creative note-making and note-taking skills
- Identify existing knowledge on any topic
- Significantly improve study and learning results
- Plan and write assignments, make study timetables and structure coursework
- Plan and draft speeches, debates, presentations
- Summarise information concisely, revise key ideas
- Generate creative ideas, form independent opinions and analyse information confidently

Learn how to create informative and purposeful Mind Maps using the world's best computer – your brain!

This stimulating small group workshop teaches students how to unlock their creative abilities - developing more efficient and meaningful memory skills; effective note-taking and note-making skills; improved study and revision skills; improved assignment and project planning skills; and improved exam preparation strategies

Interns introduction to quantitative research (meta-analysis, systematic review)

Cecilia Ostman and Daniel Jewiss

Pre-conceived ideas on what research is about.

Medical Students' preconceptions of Research and Researchers is primarily through 'Fixed Resource Sessions' in First Semester, First Year. The culture typically leads to a lack of appreciation for research, and along with that, a fundamental lack of understanding into sound research design and statistics. Information is presented in a short time in order to develop a very basic approach to Statistics and Research methods which in turn leads to a lack of understanding and an unrealistic view of what research is. Another reason commonly heard in the Medical Common Room is the notion that one needs to be in a lab or needs to have some level of higher education to carry out research, which we think is incorrect. Research is the pursuit of the unknown, it takes many forms and the two essential components are a hard work ethic and a true desire to learn how to do research.

What have you been doing as part of the research project?

We have worked with A/Prof Smart to learn the processes of a Systematic Review and Meta-Analysis; the topic areas thus far of our research has been in Neil's interest in Exercise Physiology mainly but we are beginning to look beyond that scope as we develop the key skills he has taught us. This experience has been highly rewarding, with 2 published works already along with another in its final stages of editing. But more rewarding that the publications alone have been the skills and tips he has imparted to us, along with the support.

Change of Perspective

Our involvement with Neil has greatly enhanced our appreciation of research and the work that goes into conducting it. We have learnt a lot about the process of SR&MA and also more broadly critical study appraisal skills. All which will be essential in our clinical and potential academic careers. Perhaps most importantly, rather than just being a 'CV builder', we have come to perceive research as an opportunity to develop our own knowledge, but also to contribute to the betterment of science and society on the whole. It is exciting and rewarding to know that the work being put into this project could ultimately be used to help the patients we will one day treat.

Genomic Selection in Breeding programs

Gopal R. Gowane and Julius van der Werf

Endeavour Scholar: Post-doctorate

School of Environmental and Rural Science

Oral Presentation

Traditional breeding programs aimed at improving the productivity of livestock for benefit of the industry. Milk, meat, wool, etc. have been largely targeted across the globe for improvement programs that mainly targeted the available genetic variability in the population. Classical approach of genetic improvement has been identification of the high genetic merit animals in the population through meticulous data recording along with pedigree information and using these selected animals as the parents of the next generation. Nevertheless, accurate, this approach always relied upon the intensity of selection and length of the generation interval (GI). Larger the GI, more time it took to improve any given trait of interest. Since last one and a half decade there has been a revolution in genetic improvement programs due to use of genomic data in the selection procedure. Genotypic data for nearly 50 thousand SNPs (even more) is regularly used these days for prediction of the genomic breeding values (GBV) of animals for whom the phenotypic data is not yet available. This has resulted in significant reduction in the generation interval and faster rate of genetic improvement. Genomic selection has literally replaced the pedigree selection at many places. Large population can be easily brought under the genetic improvement programs and hence the benefits to the livestock industry can be increased many fold. My research aims at looking in to the bias in the genomic selection, due to the methods adopted in the process.

Keywords: Genomic Selection, Genetic Improvement, Bias, Breeding Value, SNP

The role of biochar application in modifying soil architecture, root morphology and soil C dynamics

Debarati Bhaduri, Brian Wilson, SMF Rabbi and Ivannah Oliver

Endeavour Scholar: Post-doctorate

School of Environmental and Rural Science

Oral Presentation

Biomass-derived black carbon (or Biochar) has recently attracted significant research attention due to its interactions with soil properties and potential to store additional soil carbon for climate change mitigation. Our study focuses on root-biochar interactions by exploring soil architecture and root morphology in the rhizosphere, linked with soil C dynamics. Based on a short-term glasshouse experiment growing maize in association with three different biochars (wheat chaff, poultry manure and hardwood) added to the soil. This study aims to determine the impact of biochar application and crop roots to changes in: soil microstructure (pore geometry and soil aggregation network by μ -Computed Tomography), and root morphology (WinRhizo™ analysis); and the C dynamics (total organic carbon and C-fractions) in the soil. An incubation study will examine cumulative soil respiration at various intervals to evaluate the potential of biochar to mediate soil carbon content for climate change mitigation. The study will provide new insights into the mechanisms of soil change following biochar application and further to develop a conceptual framework relating to the impact and interactions of soil roots and biochar in the rooting zone.

Keywords: Biochar; soil C-fractions; soil-root interface; maize; μ -CT analysis

Create Opportunities with Meaningful Engagement and Networking at a Conference

Jason Ketter

Opportunities can be created when you take the initiative to engage. This session will focus on how to engage and network at a conference or a business/community function to help you advance your research opportunities. Meaningful engagement to build mutually beneficial relationships requires confidence to make the “cold” approach. This session will address the importance of networking and will cover some tactics in working a conference to come away with relationships that can lead to opportunities. What are the best approaches in connecting with the influencers knowing you are one of the many seeking to connect during a tight conference schedule? Do you have the confidence to approach people at events and get the engagement going? Additionally, the implementation of your own personal “Customer Relationship Management” system is critical to ensure there is the required follow up will be discussed. How do you ensure that you will be seen as a friendly person who is nudging vs seen as a pest to avoid all future communications going into a spam folder or rolls over to voicemail. Often opportunities don’t materialize because there is a lack of follow up. Attending this session will help you develop those engagement and follow up skills that will help you advance your research agenda.

Keywords: Engagement, Networking, Connecting, Opportunities

The Professional Doctorate; Innovation underpinning the scholarship

Philip Thomas

The Doctor of Industries and Professions, (PhD.I) is a doctoral level research higher degree, tailored so as to enable individuals to develop their research skills, advance their profession and make contribution to professional practice. This doctoral degree is offered to UNE domestic and international candidates and is designed to make a significant scholarly contribution to a professional context, contribute to the candidate's professional development and integrate the application professional practice with academic knowledge. The degree encompasses the production and transformation of descriptive accounts of practice and innovation into knowledge. This knowledge is communicated through narratives within a portfolio structured thesis, an output which encompasses all the criteria of a doctoral award. This degree serves to bridge the gap between academic thinking and professional practice, achieved through project driven acculturation into academia.

Harnessing Sources of Innovation, Useful Knowledge and Leadership within a Complex Public Sector Agency Network: A Reflective Practice Perspective

Wayne Gregson, Philip Thomas, Vincent Hughes and Ray Cooksey

This Innovation Project was designed to focus on a single workplace innovation, known as "Portal2Progress" (P2P). The P2P sought to harness emergent grassroots innovation ideas within the complexity of a contemporary public sector environment; the Western Australian Department of Fire and Emergency Services (DFES). This study was essentially insider research on the development and introduction of the P2P within DFES, where the researcher was actively involved in the research process, the innovation project implementation and the leadership of the whole organisation. In this way the study had organisational, social and professional development dimensions. In this presentation, aspects of these dimensions will be explored further in order to highlight the academic and profession nexus, which this doctorate resides in and informs.

Innovation, professional doctorate, change management, academic, professional.

Introduction to Digital Research @ UNE

Paddy Tobias

To an increasing degree, all research is digital. But how do you know if you're digital solutions are the best for your research needs? The single biggest challenge in digital research is knowing what solutions will yield the best results for you and, moreover, whether this is available to you at UNE. This session will explore the various ways UNE can support you to better apply digital solutions in your research process. Digitising all aspects of your research process has advantages for efficiency, accuracy and capacity, but not if the options available are unknown or seemingly infinite. Therefore this paper will present the various services and personnel available at UNE to help you explore the many digital research options and potentially save you time. As early career researchers, you will also learn about the broader context in digital research activity nationally, government priorities and how UNE is responding to this context.

Copyright for Researchers

Gabrielle Lamb

As a researcher, you will need to ensure that you protect your own original research whilst also taking great care not to infringe any other person's rights. This session provides a brief overview of what copyright is, how it relates to your research and what you need to consider when writing and submitting your thesis. We will talk about your responsibilities as a collaborator, as an author and as a negotiator in regard to managing your copyright. This session also includes some information about Creative Commons and its benefits.

Keywords: copyright, thesis, Creative Commons

Strategies for Inclusion: Supporting Indigenous Research at UNE

Eliza Kent

The University of New England, like other Universities in Australia, is currently formulating strategies to address the structural barriers that work against Indigenous Australians participating in higher degrees by research, and the research enterprise of Universities more generally. This presentation will outline the issues that the University will need to address in order to build an inclusive research culture, one that respects and prioritizes Indigenous Australians as researchers, and Indigenous communities as partners, rather than subjects, of research.

Give your research an edge with NVivo

Noelle Wyman Roth

Video Presentation

Have you ever wondered how you could complete your research faster, and with less stress? This session will show you how you can leverage the power of NVivo to give your research an edge. Easily manage and analyse your data. Streamline your literature review. Quickly validate your thinking as you work using innovative automation. Get to publication faster.

Making Microsoft Word your friend when Thesis writing

Kerry Gleeson

The session is designed to help you cut through the rules and regulations as you prepare to format your dissertation for submission. It will show you how to make Microsoft Office Word work for you by using styles and automated options. The session aims to give you direction and guidelines as to what pages need to be included in your dissertation and how they are to be presented.

Smoothing out the bumps on the road to publication

Pauline Jenkins

This session will help you avoid publishing pitfalls by focusing on your decisions, helping to ensure that you achieve the greatest impact from your research publications. By gaining an understanding of where you are in your publishing career, and learning about the implications of your choices, your decisions will contribute to your success. Choices surrounding who you will work with, making sure collaboration doesn't become exploitation (sometimes you do need to say *no*). There may be times when you need to pick yourself up after a publishing rejection, and this session will help you to find other pathways.

Keywords: Publishing, pitfalls, pathways, choices, research

Writing Professional Papers

Brian Hardaker

Outline of a Presentation by Emeritus Professor J Brian Hardaker

Why write a paper?
What to write about
What contribution can you make?
What will be the message?
What if you have no ideas?
How to develop a concept plan
Which journal?
Why journal guidelines matter
How to write
Coping with writer's block
Writing and health
The art of writing
Clear English vs jargon
Learning about the language
Assessing readability
Polishing your paper
Who should be authors?
Coping with editors and reviewers
Cheating
The pains and rewards of writing

Opportunities in Data Science

Paddy Tobias

This paper will present the emerging potentials that data science is offering for research across a range of disciplines. Traditionally, data science was confined to the computer sciences. With better technologies and know-how, data science then become an integral part of many science disciplines usually under the term 'Big Data'. In more recent times we have seen a broadening of data science and data analytics to encompass textual and observational research fields in the humanities, the arts and the social sciences. The improvement and increasing accessibility of digital technology and techniques is bringing about a wholesale rethink of research approaches, allowing research questions to be probed in new and exciting ways. This paper will present some examples of innovative data science across various disciplines at UNE and beyond, and how you can learn more for your project.

Implications of impact for developing your research skills

Fiona Utley

As part of the National Science and Innovation Agenda there are now a range of initiatives that encourage university researchers to develop and showcase the societal benefits emerging from their research. This means that anyone contemplating a research career must come to grips with what it means to evaluate and promote research impact. In this session I will look at some of the issues arising for researchers around: demonstrating engagement with stakeholders and end-users; developing an impact pathway for their projects, and; tracking impact as an outcome of their research.

Imposter Syndrome

Michael Clarke and Annette Stevenson

Staff within the UNE Student Support Counselling Service have had the privilege of meeting hundreds of students at different points in their journey of post-graduate study. This presentation is an opportunity to let students know how the Service may assist them. The Service welcomes the opportunity to help students to identify the strengths and weaknesses they bring to study; and what they expect from themselves, supervisor, and others as they embark on this journey. This presentation will address common challenges that post-graduate students encounter, and will introduce the myriad of strategies that students have identified help them to feel engaged, supported, balanced, excited, curious and motivated during their studies and beyond.

Keywords: well-being, student support, counselling, self-care, engagement, mental-health

Words + Works + Data + Identification = ORCID

Andrew Devenish-Meares

You're writing journal articles, gathering data sets, getting your work done. How do you keep track of all you do? How do you show people your research outputs and track your academic career? How do you make sure people know that you're Bob Jones at UNE, not Bob Jones from Southern Cross? ORCID can help. An ORCID Record can help you keep your Resume in order, and an ORCID iD can make sure people are clear on who you are. The Australian Research Council (ARC) announced that Excellence in Research for Australia (ERA) reporting will ask for ORCID iD for the first time in 2018. 24 publishers including Wiley, the Royal Society and ScienceOpen will require you to have an ORCID iD before they'll publish. ORCID is fast becoming needed.

So how can UNE help you manage all this information? How can we use ORCID to make your life easier?

Answers (*and undoubtedly more questions*) will be provided.

Keywords: Career, Publishing, Identification, Software, Systems, Online

INVITED SPEAKER

A student's perspective of The Brain Behaviour Research Internship

Erin Bourke and Claudia Saab

School of Rural Medicine

Oral Presentation

Principal Supervisors Interns of the Brain Behaviour Research Group under Dr Adam Hamlin and PhD candidate Stuart Fisher

The Brain Behaviour Research Group has provided the opportunity for three students to act as interns working with Dr Adam Hamlin and PhD Candidate Stuart Fisher. The project that we are currently working on investigates whether sensory investigation therapy can reverse the neurodevelopmental, cognitive, emotional and social deficits in a rat model of chronic early life stress. The involvement in basic research has provided an excellent basis to build an understanding of the research process. This presentation will provide an insight into the research internship from the perspective of students who originally had a very limited and naïve understanding of the nature of scientific research. It will explore how the internship shaped and developed a greater understanding of research, while also creating an appreciation for research.

Keywords: Brain Behaviour Research Group, Internship, Chronic Early Life Stress

Uncertain outcomes: Traversing the breach between innovation and violation in aviation maintenance

Anthony Bannister-Tyrrell

Post-doctorate

School of Psychology, University of Newcastle

Oral Presentation

Research effort within the aviation domains of aircrew, cabin crew, aircraft traffic management, maintenance and engineering has been applied separately to the subjects of innovation and violation. Research effort has not, however, been systemically applied to the identification of decision making anomalies of aviation maintenance technicians nor the interrelationship between innovation and violation. Technology, design and manufacturing industries have certainly benefitted from innovation and innovative decision making with the generated innovative solutions being core building blocks of aircraft manufacturing. Improved performance, flight duration, construction materials, enhanced fuels and design specifications have all benefitted from innovation. The same cannot be said for maintenance practices, where deviation from established approved procedures exposes the maintainer to the risk of transitioning into a violation scenario and being held accountable for any subsequent adverse consequences. This cross-sectional, mixed methods research project aims to provide a distinct contribution to the body of knowledge by identifying the evident pre-conditions that enable an aviation maintenance tradesperson or maintenance supervisor to unintentionally violate when their decision intent was to innovate. The conduct of maintenance, within the limitations and constraints of formalised publications, documents and procedures, does not allow for the decision flexibility that is sometimes required by the tradesperson and maintenance supervisor to contend with routine variables and changing situations. In this context the intent of the study is to identify the decision processes, constraints and procedural improvements required to better define, or at the very least diminish, the blurred line between innovation and violation in aviation maintenance.

Keywords: decisions, innovation, aviation

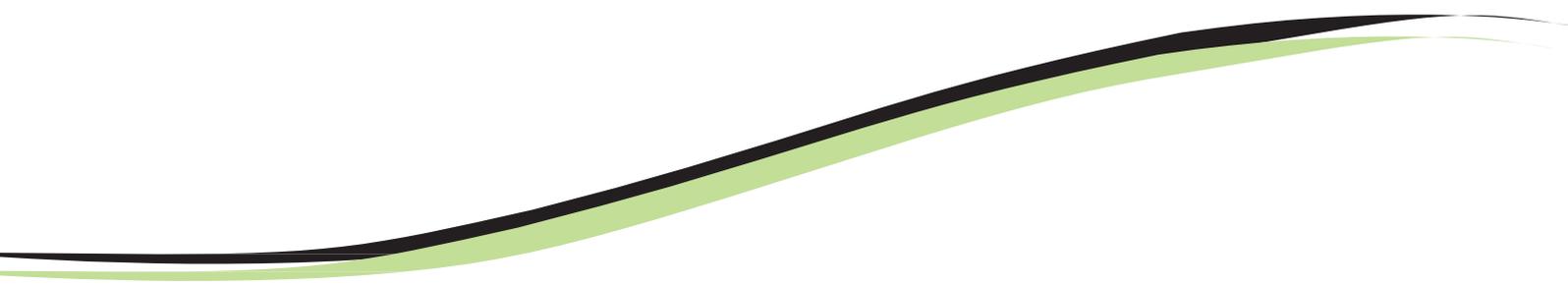
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